

**TRAFFIC IMPACT STUDY  
FOR  
SPORTS AVENUE MIXED-USE DEVELOPMENT**

**SMYRNA, GEORGIA**



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# EXECUTIVE SUMMARY

Traffic impacts were evaluated for the added traffic from the proposed Sports Avenue Mixed-Use Development located on Sports Avenue, in Smyrna, Georgia. The future conditions are evaluated for two scenarios. In Scenario 1 the proposed development consists of:

- 325 apartments
- 3,000 square feet of retail
- 20,000 square feet of Office/Office Amenity/Live/Work Commercial

In Scenario 2 the proposed development consists of:

- 600 apartments
- 40,000 square feet of retail

The analysis included the evaluation of Future operations for 'No-Build' conditions and "Build" conditions for both scenarios. Both 'No-Build' and 'Build' conditions account for increases in annual growth of through traffic.

The development proposes full access driveway on Sports Avenue. Existing and future operations were analyzed at the intersections of:

- Spring Road / Circle 75 Parkway at US 41 (SR 3 / Cobb Parkway)
- Spring Road at Cumberland Boulevard
- Spring Road at Sports Avenue

## Site Access/Project Improvements

The proposed site driveway on Sports Avenue will be a two lane driveway. Since Sports Avenue is a dead end roadway and does not carry significant amount of traffic, the project driveway does not require any additional turn lanes. The intersection of Sports Avenue at Spring Road is signalized and will continue to operate at acceptable level of service in the future.

## System Improvements

Since GDOT/Cobb DOT/City of Smyrna have recently carried out improvements to the study roadway network, we are not recommending any further system improvements. The intersections of Spring Road at Cumberland Parkway and Spring Road at Cobb Parkway will operate at levels of service 'E' or 'F' without adding any site traffic. These levels of service will get worse once the site traffic is added.

## Conclusion

The results of the study indicate that the roadway network in the surrounding area is already at its capacity in spite of the recent roadway improvements. The negative impact from the proposed development traffic will be higher if the higher density option (scenario 2) is built on the site. The roadway network can better accommodate traffic from the density proposed in scenario 1.

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# 1.0 INTRODUCTION

The purpose of this study is to determine the traffic impact that will result from the proposed mixed-use development located on Sports Avenue off of Spring Road in Smyrna, Georgia. The traffic analysis evaluates the current operations compared to the future conditions with the traffic generated by the development. The future conditions are evaluated for two scenarios. In Scenario 1 the proposed development consists of:

- 325 apartments
- 3,000 square feet of retail
- 20,000 square feet of Office/Office Amenity/Live/Work Commercial

In Scenario 2 the proposed development consists of:

- 600 apartments
- 40,000 square feet of retail

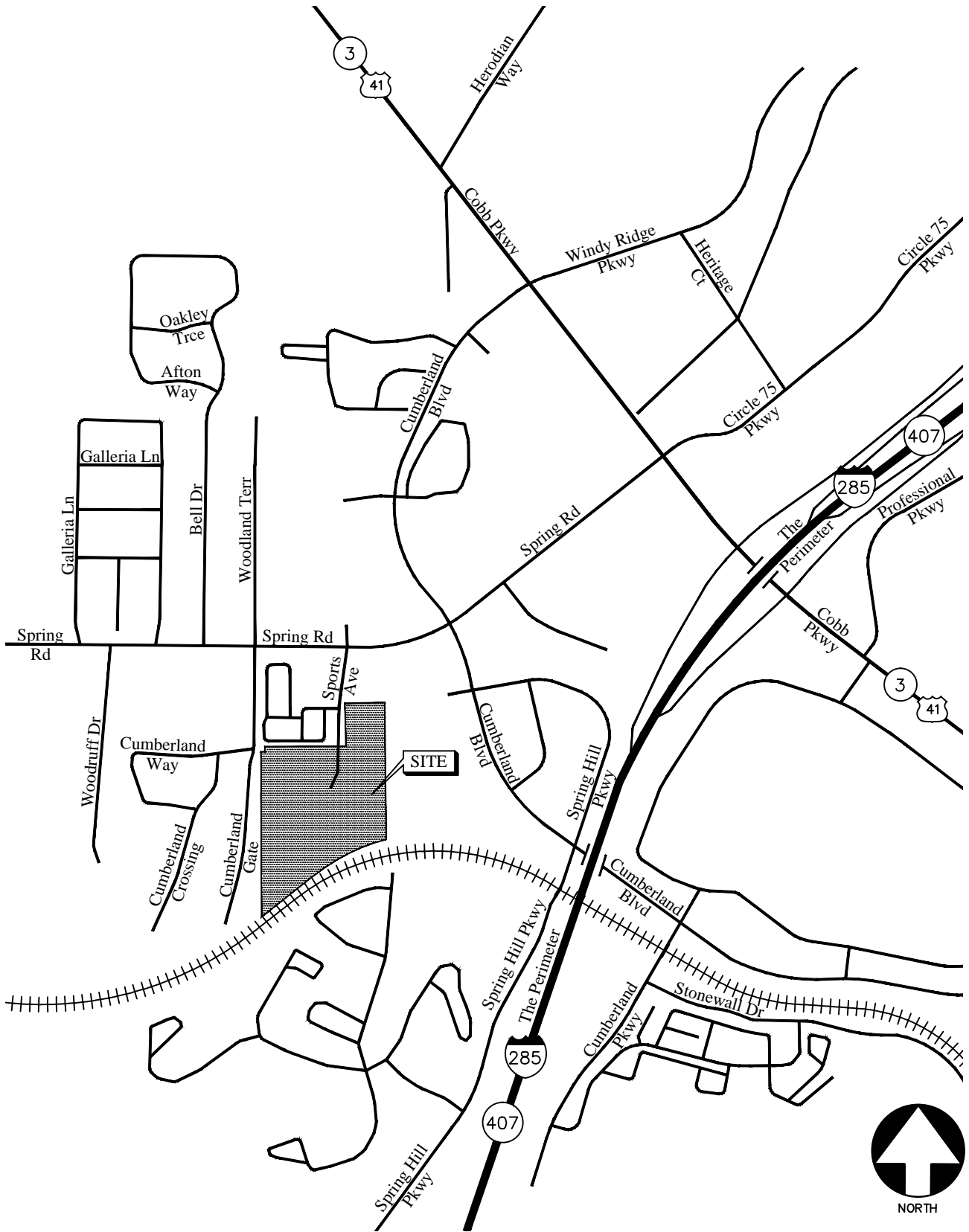


The development proposes one full access driveway on Sports Avenue.

The AM and PM peak hours have been analyzed in this study. This study includes the evaluation of traffic operations at the intersections of:

- Spring Road / Circle 75 Parkway at US 41 (SR 3 / Cobb Parkway)
- Spring Road at Cumberland Boulevard
- Spring Road at Sports Avenue

Recommendations to improve traffic operations have been identified as appropriate and are discussed in detail in the following sections of the report. The location of the development and the surrounding roadway network is shown in Figure 1.



LOCATION MAP

FIGURE 1  
A&R Engineering Inc.

## **2.0 EXISTING FACILITIES / CONDITIONS**

### **2.1 Roadway Facilities**

The following is a brief description of each of the roadway facilities located in proximity to the site:

#### **2.1.1 *Spring Road***

Spring Road is an east-west, six-lane, median-divided roadway with a posted speed limit of 45 mph in the vicinity of the site. GDOT traffic counts (Station ID 0672806) indicate that the daily traffic volume on Spring Road is 33,300 vehicles per day west of Cumberland Gate. GDOT classifies Spring Road as an Urban Local roadway.

#### **2.1.2 *Circle 75 Parkway***

Circle 75 Parkway is an undivided roadway with five westbound lanes and three eastbound lanes with a posted speed limit of 30 mph in the eastbound/northbound direction and 35 mph in the westbound/southbound direction.

#### **2.1.3 *US 41 (SR 3 / Cobb Parkway)***

US 41 (SR 3 / Cobb Parkway) is a north-south, fourteen-lane, median-divided roadway at its intersection with five southbound through lanes and four northbound through lanes. It has a posted speed limit of 45 mph in the vicinity of the site. GDOT traffic counts (Station ID's 0672143 & 0672145) indicate that the daily traffic volume on US 41 (SR 3 / Cobb Parkway) is 40,000 vehicles per day south of Plumtree Parkway and 22,400 vehicles per day north of Cumberland Boulevard. GDOT classifies US 41 (SR 3 / Cobb Parkway) as an Urban Principal Arterial - Other roadway.

#### **2.1.4 *Cumberland Boulevard***

Cumberland Boulevard is a north-south, undivided roadway with a posted speed limit of 35 mph in the vicinity of the site. Cumberland Boulevard is a four-lane roadway with a two-way left-turn lane to the north of Spring Road and a five-lane roadway to the south of Spring Road. GDOT traffic counts (Station ID 0673015) indicate that the daily traffic volume on Cumberland Boulevard is 18,900 vehicles per day north of Spring Hill Parkway. GDOT classifies Cumberland Boulevard as an Urban Minor Arterial roadway.

#### **2.1.5 *Sports Avenue***

Sports Avenue is a north-south, two-lane, undivided roadway without any posted speed limit.



## 3.0 STUDY METHODOLOGY

In this study, the methodology used for evaluating traffic operations at each of the subject intersections is based on the criteria set forth in the Transportation Research Board's Highway Capacity Manual, 2010 edition (HCM 2010). Synchro software, which utilizes the HCM 2010 methodology, was used for the analysis. The following is a description of the methodology employed for the analysis of unsignalized and signalized intersections.

### 3.1 Unsignalized Intersections

For unsignalized intersections at which the side street or minor street is controlled by a stop sign, the criteria for evaluating traffic operations are the level-of-service (LOS) for the turning movements at the intersection and the level-of-service for the overall intersection. Level-of-service is based on the average controlled delay incurred at the intersection. Controlled delay for unsignalized intersections includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Several factors affect the controlled delay for unsignalized intersections, such as the availability and distribution of gaps in the conflicting traffic stream, critical gaps, and follow-up time for a vehicle in the queue.

Level-of-service is assigned a letter designation from "A" through "F". Level-of-service "A" indicates excellent operations with little delay to motorists, while level-of-service "F" exists when there are insufficient gaps of acceptable size to allow vehicles on the side street to cross safely, resulting in extremely long total delays and long queues. The level-of-service criteria for two-way stop-controlled and all-way stop-controlled (unsignalized) intersections are given in Table 1.

Level-of-service	Average Delay (sec)
A	$\leq 10$
B	$> 10$ and $\leq 15$
C	$> 15$ and $\leq 25$
D	$> 25$ and $\leq 35$
E	$> 35$ and $\leq 50$
F	$> 50$

Source: 2010 Highway Capacity Manual

### 3.2 Signalized Intersections

For signalized intersections, it is necessary to evaluate both capacity and level-of-service in order to evaluate the overall operation of the intersection. The capacity analysis of an intersection is performed by comparing the volume of traffic using the various lane groups at the intersection to the capacity of those lane groups. This results in a volume/capacity (v/c) ratio for each lane group. A v/c ratio greater than 1.0 indicates that the volume of traffic has exceeded the capacity available, resulting in a temporary excess of demand. Although the capacity of the entire intersection is not defined, a composite v/c ratio for the sum of the critical lane groups within the intersection is computed. This composite v/c ratio is an indication of the overall intersection sufficiency.

Level-of-service for a signalized intersection is defined in terms of average controlled delay per vehicle, which is composed of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The level-of-service criteria for signalized intersections, based on average controlled delay, are shown in Table 2. Level-of-service “A” indicates operations with very low controlled delay, while level-of-service “F” describes operations with extremely high average controlled delay. Level-of-service “E” is typically considered to be the limit of acceptable delay, and level-of-service “F” is considered unacceptable by most drivers.

<b>TABLE 2 – LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS</b>	
<b>Level-of-service</b>	<b>Average Control Delay (sec)</b>
<b>A</b>	$\leq 10$
<b>B</b>	$> 10$ and $\leq 20$
<b>C</b>	$> 20$ and $\leq 35$
<b>D</b>	$> 35$ and $\leq 55$
<b>E</b>	$> 55$ and $\leq 80$
<b>F</b>	$> 80$

Source: 2010 Highway Capacity Manual

## 4.0 EXISTING TRAFFIC ANALYSIS

### 4.1 Existing Traffic Volumes

Existing traffic counts were obtained at the following study intersections:

- Spring Road / Circle 75 Parkway at US 41 (SR 3 / Cobb Parkway)
- Spring Road at Cumberland Boulevard
- Spring Road at Sports Avenue / Aldi Driveway

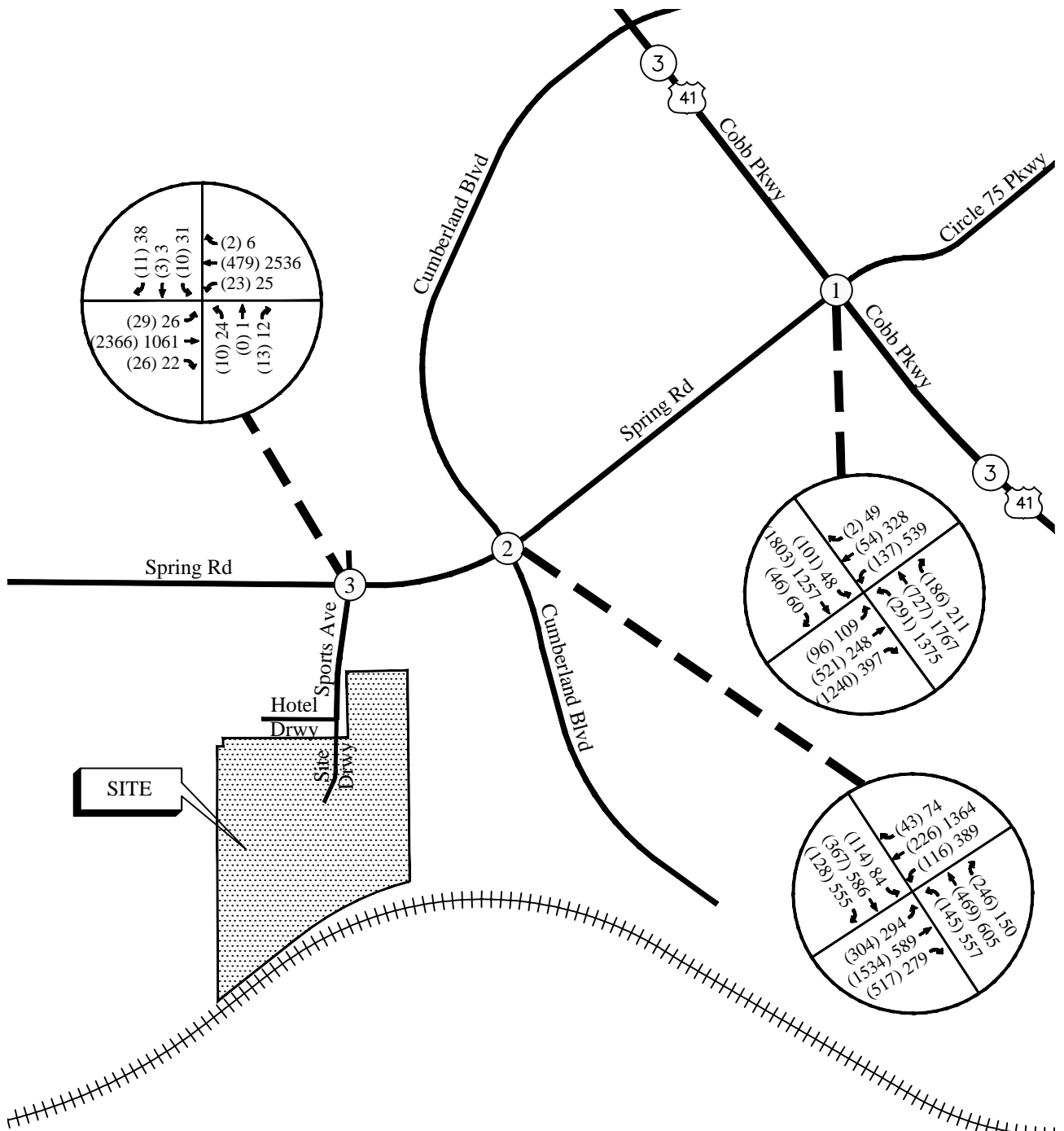
Turning movement counts were collected on Thursday, October 5, 2017. Pedestrian traffic data was also included in the counts. All turning movement counts were recorded during the AM and PM peak hours between 7:00am to 9:00am and 4:00pm to 6:00pm, respectively. The four consecutive 15-minute interval volumes that summed to produce the highest volume at the intersections were then determined. These volumes make up the peak hour traffic volumes for the intersections counted and are shown in Figure 2.

### 4.2 Existing Traffic Operations

Existing traffic operations were analyzed at the study intersections in accordance with the HCM methodology. Existing signal timings for the three intersections were obtained from Cobb DOT and City of Smyrna and used in our analysis. The results of the analyses are shown in Tables 3. The existing traffic control and lane geometry for the intersections are shown in Figure 3.

TABLE 3 – EXISTING INTERSECTION OPERATIONS				
Intersection		Traffic Control	LOS (Delay)	
			AM Peak Hour	PM Peak Hour
1	<b><u>Spring Rd / Circle 75 Pkwy @ US 41 (SR 3 / Cobb Pkwy)</u></b>	Signalized	<b><u>F (80.6)</u></b>	<b><u>E (62.6)</u></b>
	-Eastbound Approach		F (138.4)	D (49.2)
	-Westbound Approach		E (70.4)	F (144.0)
	-Northbound Approach		D (43.7)	D (45.1)
	-Southbound Approach		D (45.9)	E (55.5)
2	<b><u>Spring Rd @ Cumberland Blvd</u></b>	Signalized	<b><u>D (35.8)</u></b>	<b><u>F (83.4)</u></b>
	-Eastbound Approach		A (6.0)	F (80.8)
	-Westbound Approach		C (29.9)	D (53.5)
	-Northbound Approach		F (90.3)	E (74.1)
	-Southbound Approach		D (52.4)	F (139.7)
3	<b><u>Spring Rd @ Sports Ave</u></b>	Signalized	<b><u>B (17.1)</u></b>	<b><u>A (5.8)</u></b>
	-Eastbound Approach		A (9.3)	A (8.4)
	-Westbound Approach		D (45.0)	A (1.4)
	-Northbound Approach		E (68.9)	E (60.8)
	-Southbound Approach		E (70.5)	E (65.6)

The results of existing traffic operations analysis indicate that the intersection of Spring Road at Sports Avenue is operating at level-of-service “B” or better in both the AM and PM peak hours. The intersections of Spring Road at Cobb Parkway and Cumberland Boulevard are seen to be operating at level of service “F” in one of the peak hours.



(AM) PM





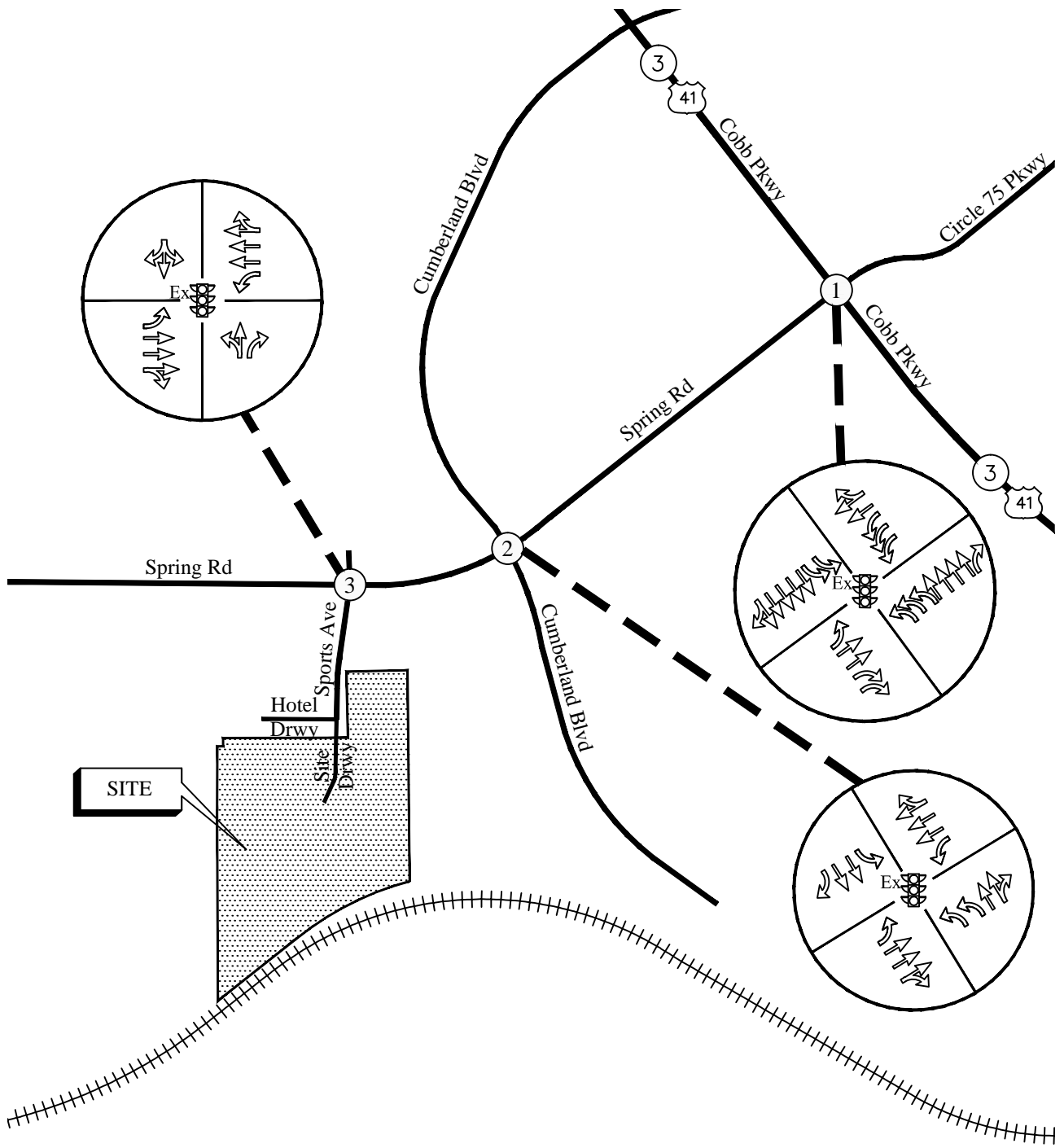
EXISTING WEEKDAY PEAK-HOUR VOLUMES

FIGURE 2

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**LEGEND**

-  Existing Lane Geometry
-  Existing Traffic Signal



EXISTING TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 3

A&R Engineering Inc.

## 5.0 PROPOSED DEVELOPMENT

The proposed mixed-use site will be located at the south-end of Sports Avenue in Smyrna, Georgia. We have analyzed the development for two different scenarios. In Scenario 1 the proposed development is assumed to consist of:

- 325 apartments
- 3,000 square feet of retail
- 20,000 square feet of Office/Office Amenity/Live/Work Commercial

In Scenario 2 the proposed development is assumed to consist of:

- 600 apartments
- 40,000 square feet of retail

Access to the development is proposed on Sports Avenue. A site plan is shown in Figure 4.

### 5.1 Trip Generation

Trip generation estimates for the project were based on the rates and equations published in the 10th edition of the Institute of Transportation Engineers (ITE) Trip Generation report. This reference contains traffic volume count data collected at similar facilities nationwide. The trip generation was based on the following ITE Land Uses: 221 – *Multifamily Housing (Mid-Rise)*, 710 – *General Office Building* and 820 – *Shopping Center*. Due to the nature of the development, pass-by and mixed-use reductions have been applied per ITE standards. The calculated total trip generation for the proposed development is shown in Table 4 for Scenario 1 and Table 5 for Scenario 2.

TABLE 4 – TRIP GENERATION (SCENARIO 1)								
Land Use	Size	AM Peak Hour			PM Peak Hour			24 Hour
		Enter	Exit	Total	Enter	Exit	Total	Two-way
ITE 820 – Shopping Center	3,000 sf	95	58	153	19	22	41	554
<b>Mixed-Use Reduction</b>		-10	-9	-19	-2	-4	-6	-74
<b>Pass-by Trips (0%) 34%</b>		0	0	0	-6	-6	-12	-120
ITE 710 – General Office Building (includes Office Amenity/Live/Work Comercial)	20,000 sf	39	6	45	4	21	25	223
<b>Mixed-Use Reduction</b>		-2	-1	-3	-1	0	-1	-21
ITE 220 – Multifamily Housing (Mid-Rise)	325 units	28	81	109	84	53	137	1,770
<b>Mixed-Use Reduction</b>		-7	-9	-16	-3	-2	-5	-57
<b>Total Trips (without Reductions)</b>		162	145	307	107	96	203	2,547
<b>New External Trips (with Reductions)</b>		143	126	269	95	84	179	2,275

\*pass-by trips (AM) PM; 24 Hour pass-by trips estimated by considering PM pass-by as 10% of daily volume

**TABLE 5 – TRIP GENERATION (SCENARIO 2)**

Land Use	Size	AM Peak Hour			PM Peak Hour			24 Hour
		Enter	Exit	Total	Enter	Exit	Total	Two-way
<b>ITE 820 – Shopping Center</b>	40,000 sf	107	65	172	132	144	276	3,224
<b>Mixed-Use Reduction</b>		-10	-8	-18	-12	-17	-29	-322
<b>Pass-by Trips (0%) 34%</b>		0	0	0	-41	-43	-84	-840
<b>ITE 220 – Multifamily Housing (Mid-Rise)</b>	600 Units	52	146	198	151	96	247	3,268
<b>Mixed-Use Reduction</b>		-8	-10	-18	-17	-12	-29	-322
<b>Total Trips (without Reductions)</b>		159	211	370	283	240	523	6,492
<b>New External Trips (with Reductions)</b>		141	193	334	213	168	381	5,008

\*pass-by trips (AM) PM; 24 Hour pass-by trips estimated by considering PM pass-by as 10% of daily volume

## 5.2 Trip Distribution

The trip distribution describes how traffic arrives and departs from the site. An overall trip distribution was developed for the site based on a review of the existing travel patterns in the area and the locations of major roadways and highways that will serve the development. The site-generated peak hour traffic volumes, shown in Table 4 and Table 5, were assigned to the study area intersections based on this distribution. The outer-leg distribution and AM and PM peak hour new traffic generated by the site is shown in Figure 5 for Scenario 1 and Figure 6 for Scenario 2. Pass-by volumes have also been distributed based on existing travel patterns and are shown in Figure 7 for Scenario 1 and Figure 8 for Scenario 2.

# Site Concept

Cumberland - Smyrna, Georgia



**DEVELOPMENT DATA**

Total Units: 325 Units  
 Total Beds: 452 Beds  
 Buildings 300, 400, and 600 = 3 Stories  
 Buildings 100, 200, 500 and 700 = 3/4 Splits

**PARKING**

426 Surface Spaces (9 Handicap, 2 Van Accessible)  
 25 Tandem Spaces  
 40 Integrated Garages (1 Van Accessible)  
 Total Parking: 491 Spaces  
 (1.51 Spaces/Unit)  
 (1.09 Spaces/Bed)

**BUILDING AREAS**

Office/Amenity 9,638 sf  
 Multi-family 307,494 sf  
 Retail 3,612 sf  
 Live/Work Commercial 10,129 sf

**VEHICULAR ENTRY GATES**

15' MU DISTRICT SIDE SETBACK

40' MU DISTRICT REAR SETBACK

50' SPRING ROAD CDD-2 REAR SETBACK (VARIANCE REQUESTED)

20' MU DISTRICT FRONT SETBACK

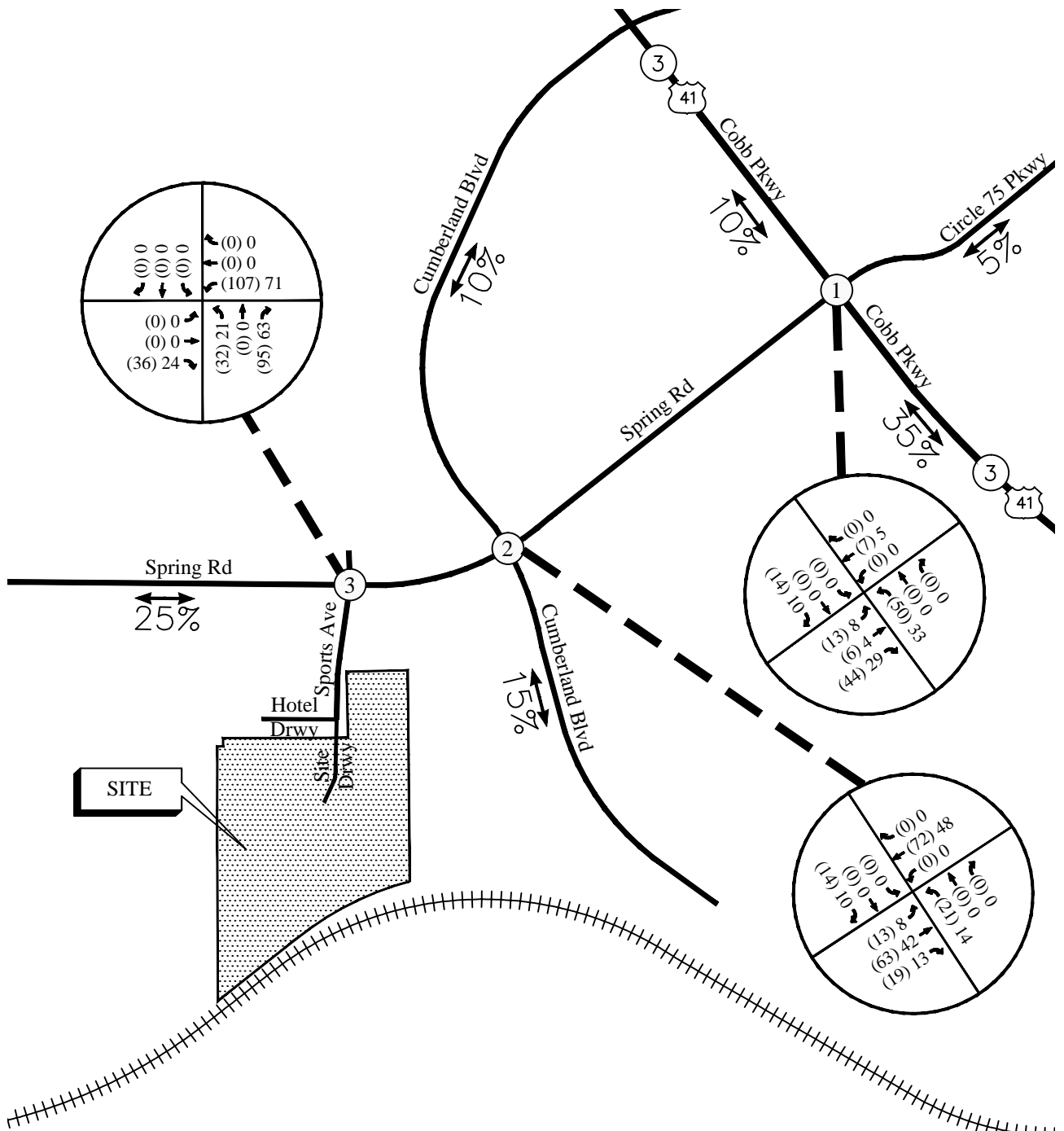
50' SPRING ROAD CDD-2 FRONT SETBACK (VARIANCE REQUESTED)

TRASH COMPACTOR

STREAM - 25' STATE BUFFER;  
 50' UNDISTURBED BUFFER;  
 75' IMPERVIOUS BUFFER

15' MU DISTRICT SIDE SETBACK



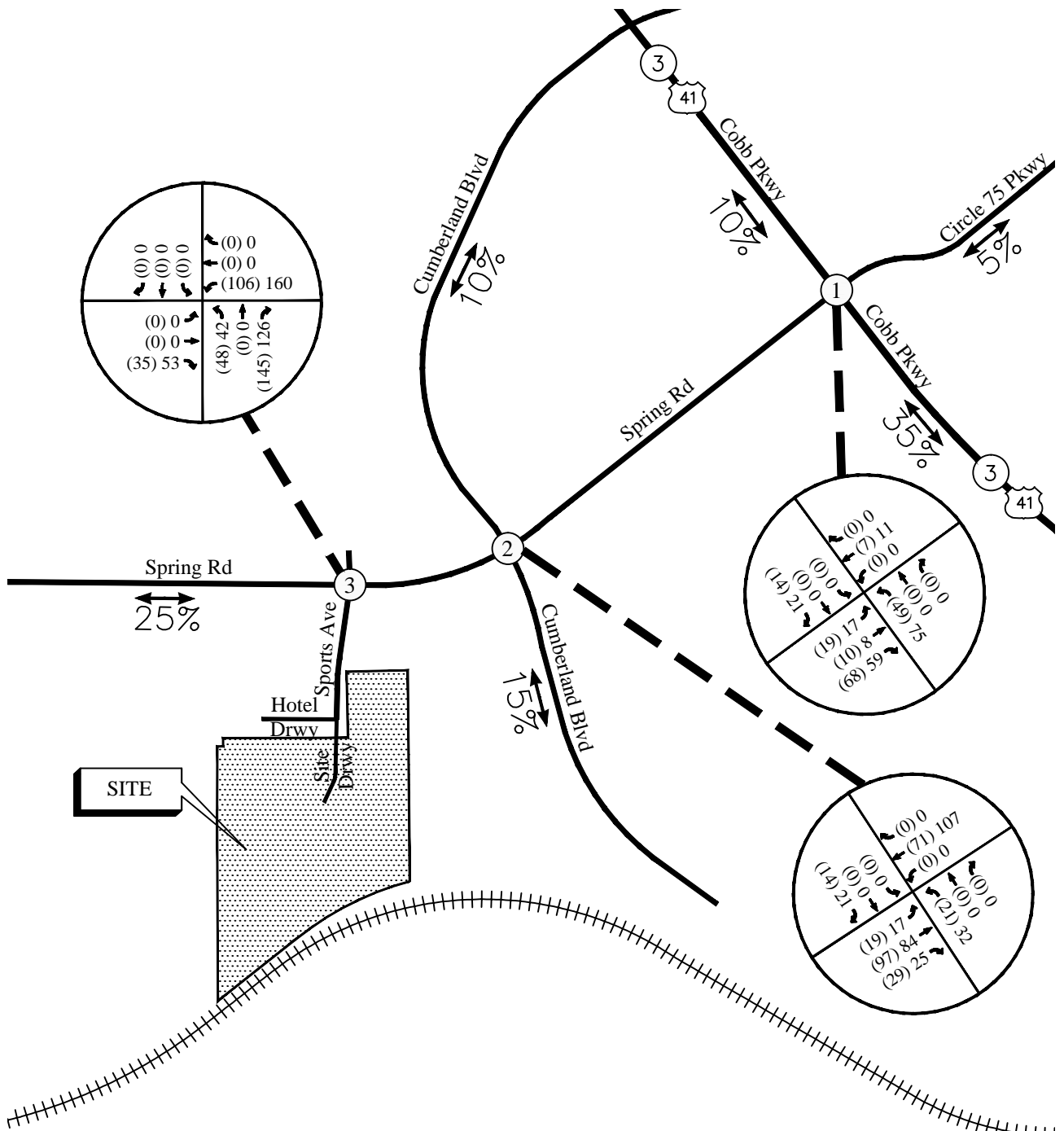


(AM) PM



TRIP DISTRIBUTION AND SITE-GENERATED  
WEEKDAY PEAK HOUR VOLUMES (SCENARIO 1)

FIGURE 5  
A&R Engineering Inc.

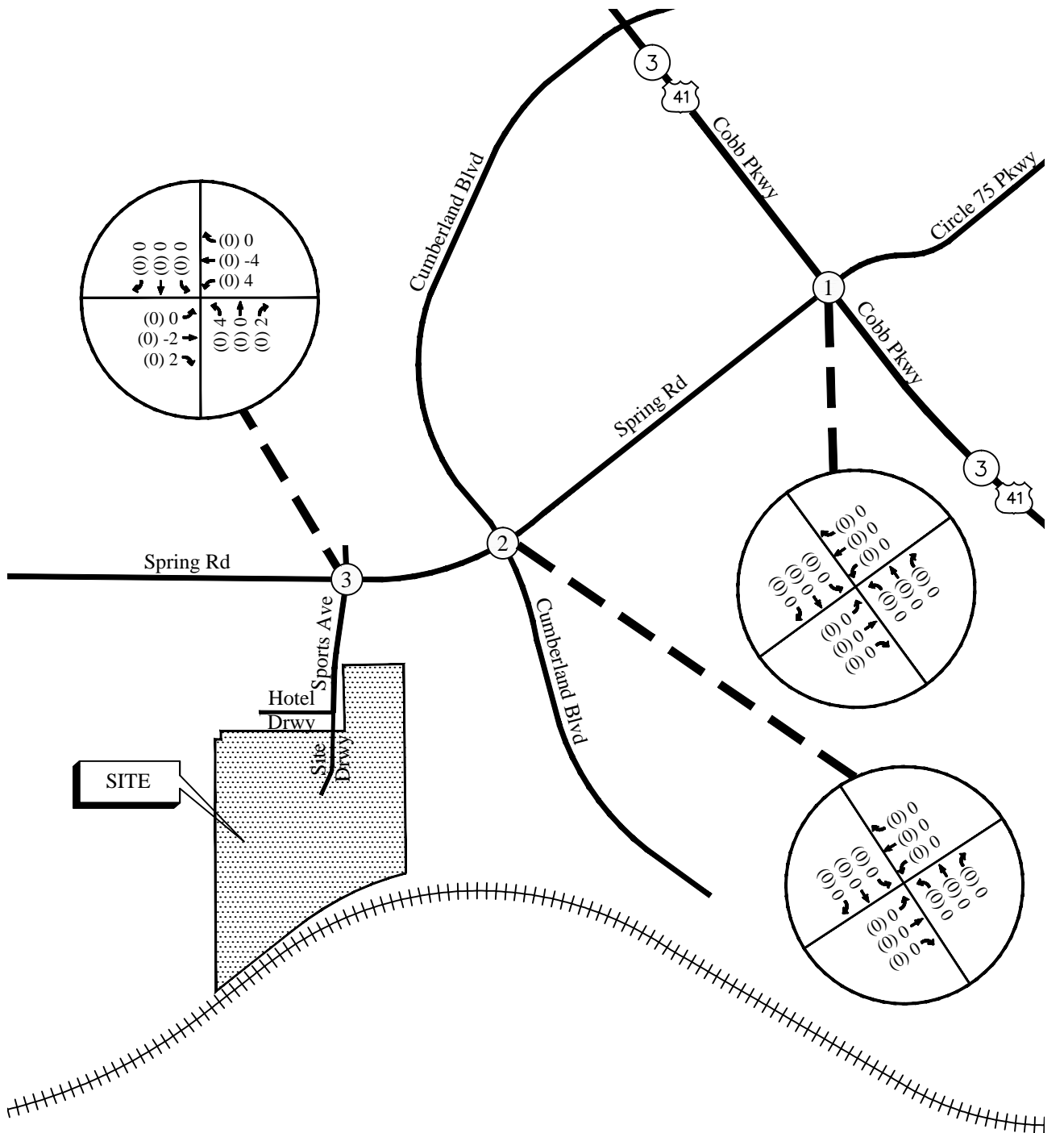


(AM) PM



TRIP DISTRIBUTION AND SITE-GENERATED  
WEEKDAY PEAK HOUR VOLUMES (SCENARIO 2)

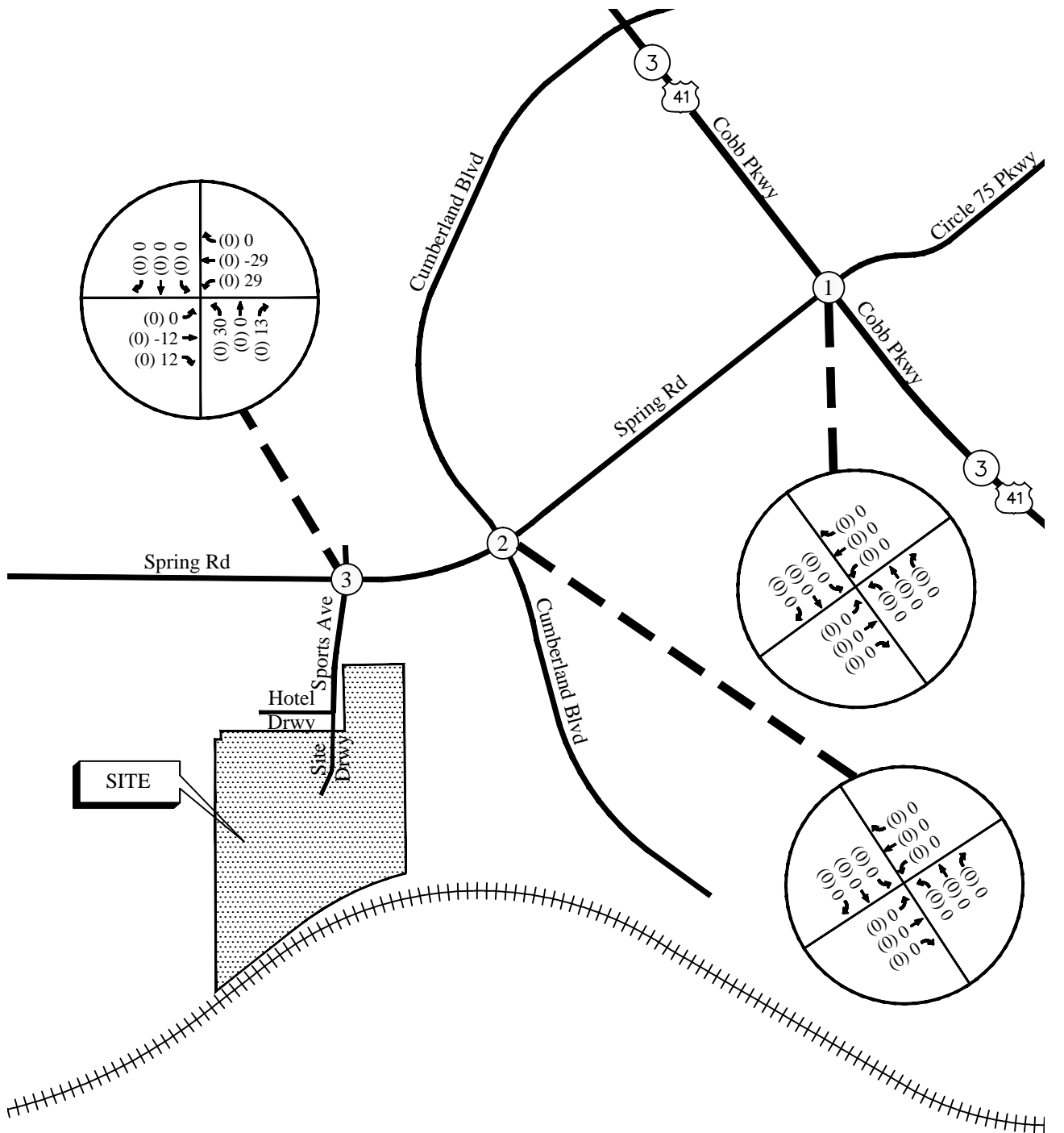
FIGURE 6  
A&R Engineering Inc.



SITE PEAK HOUR PASS-BY VOLUMES (SCENARIO 1)

FIGURE 7

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(AM) PM



SITE PEAK HOUR PASS-BY VOLUMES (SCENARIO 2)

FIGURE 8

A&R Engineering Inc.

## **6.0 FUTURE TRAFFIC ANALYSIS**

The future traffic operations are analyzed for the “Build” and “No-Build” conditions.

### **6.1 Future “No-Build” Conditions**

The “No-Build” (or background) conditions provide an assessment of how traffic will operate in the study horizon year without the study site being developed as proposed, with projected increases in through traffic volumes due to normal annual growth. The Future “No-Build” volumes consist of the existing traffic volumes (Figure 2) plus increases for annual growth of through traffic.

#### **6.1.1 Annual Traffic Growth**

In order to evaluate future traffic operations in this area, a projection of normal traffic growth was applied to the existing volumes. The Georgia Department of Transportation recorded average daily traffic volumes at several locations in the vicinity of the site. Reviewing the growth over the last three years and accounting for unopened parts of the Battery project, it is proposed to include 3% annual background growth. This growth factor was applied to the existing traffic volumes between collector and arterial roadways in order to estimate the future year traffic volumes prior to the addition of site-generated traffic. The resulting Future “No-Build” volumes on the roadway are shown in Figure 9.

#### **6.1.2 Future “No-Build” Traffic Operations**

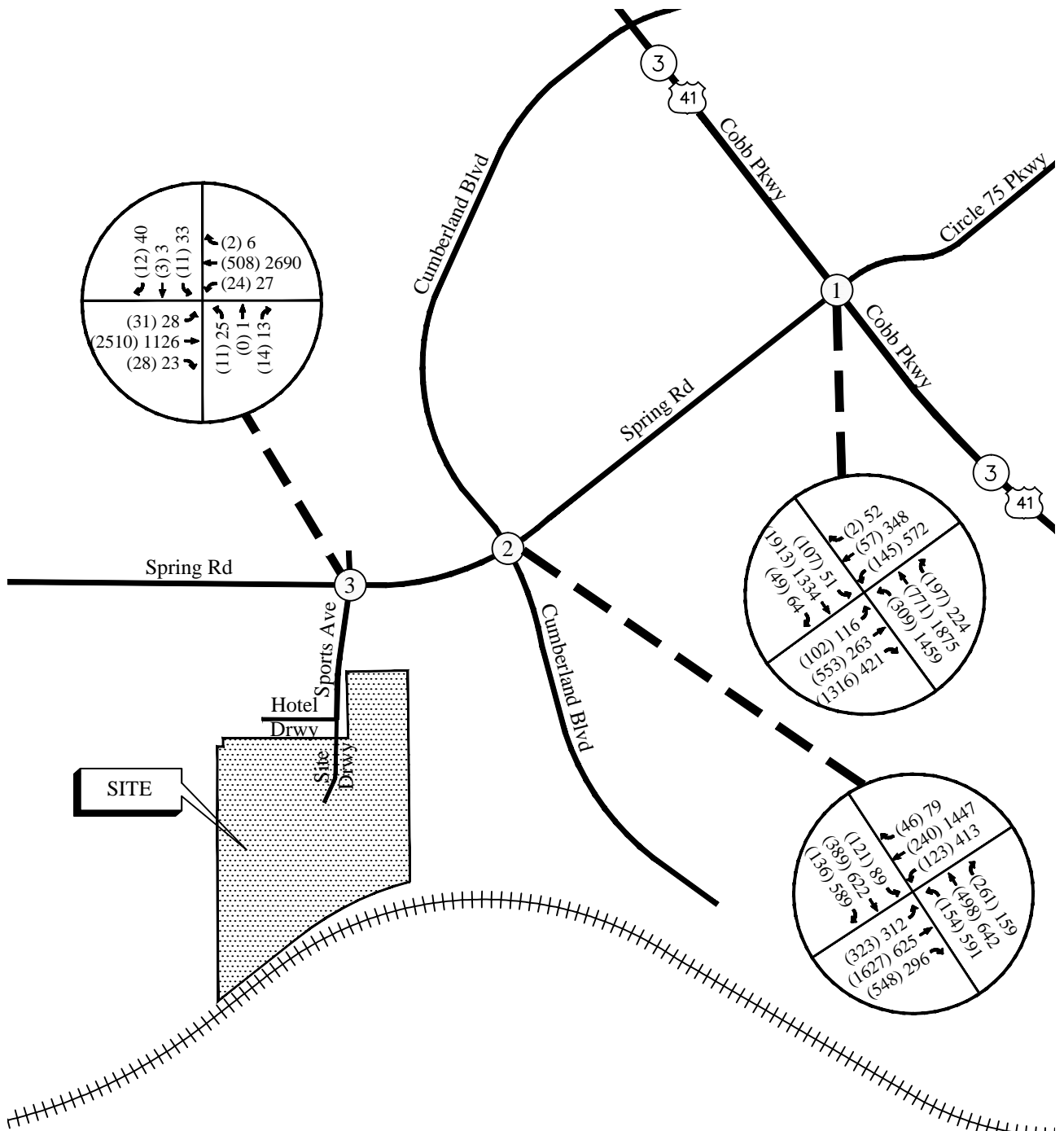
The future “No-Build” traffic operations were analyzed using the volumes in Figure 9 and the results are shown in Tables 6. The signal timings have been optimized for “No-Build” and “Build” conditions. The results of the analyses, including the recommended system improvements, are discussed in detail in Section 6.1.3.

**TABLE 6 – FUTURE “NO-BUILD” INTERSECTION OPERATIONS**

Intersection		Traffic Control	LOS (Delay)	
			AM Peak Hour	PM Peak Hour
1	<b><u>Spring Rd / Circle 75 Pkwy @ US 41 (SR 3 / Cobb Pkwy)</u></b>	Signalized	<b><u>F (88.4)</u></b>	<b><u>E (66.7)</u></b>
	-Eastbound Approach		F (156.7)	D (47.9)
	-Westbound Approach		E (70.9)	F (154.6)
	-Northbound Approach		D (44.1)	D (47.6)
	-Southbound Approach		D (48.3)	E (63.0)
2	<b><u>Spring Rd @ Cumberland Blvd</u></b>	Signalized	<b><u>D (48.1)</u></b>	<b><u>F (119.0)</u></b>
	-Eastbound Approach		C (24.7)	F (130.1)
	-Westbound Approach		C (32.9)	E (74.3)
	-Northbound Approach		F (100.7)	F (117.6)
	-Southbound Approach		D (53.7)	F (176.3)
3	<b><u>Spring Rd @ Sports Ave</u></b>	Signalized	<b><u>B (18.0)</u></b>	<b><u>A (5.7)</u></b>
	-Eastbound Approach		B (10.4)	A (8.8)
	-Westbound Approach		D (45.5)	A (1.0)
	-Northbound Approach		E (68.7)	E (60.5)
	-Southbound Approach		E (70.5)	E (65.7)

**6.1.3 Recommendations for System Improvements**

Since GDOT/Cobb DOT/City of Smyrna have recently carried out improvements to the study roadway network, we are not recommending any further system improvements. Spring Road is already a six lane median divided roadway with turn lanes at major intersections. Cobb Parkway intersection with Spring Road has been recently improved to accommodate additional capacity and includes 15 approach lanes (northbound and southbound combined) to the intersection on Cobb Parkway and ten approach lanes on Spring Road and Circle 75 Pkwy approaches. For new developments, we recommend that travel demand strategies to reduce vehicle trips be planned and implemented. These strategies may include multimodal trips, carpooling, flextime for employees, better use of transit and shuttle bus facilities etc.



(AM) PM



FUTURE (NO-BUILD) WEEKDAY PEAK HOUR VOLUMES

FIGURE 9

A&R Engineering Inc.

## 6.2 Future “Build” Conditions

The “Build” or development conditions include the estimated background traffic from the “No-Build” conditions plus the added traffic from the proposed development. In order to evaluate future traffic operations in this area, the additional traffic volumes from the site and pass-by volumes were added to base traffic volumes to calculate the future traffic volumes after the construction of the development. These total future traffic volumes are shown in Figure 10 for Scenario 1 and Figure 11 for Scenario 2. The existing signal timings obtained from COBB DOT and City of Smyrna have been used and optimized for the “No-Build” and “Build” conditions.

### 6.2.1 Site Access Configuration

The following access configuration was utilized when modeling the proposed site driveway intersection:

- Full-access driveway on Sports Avenue
  - This driveway is assumed to consist of one entering and one exiting lane with a stop sign on eastbound Hotel Driveway.

### 6.2.2 Future “Build” Traffic Operations

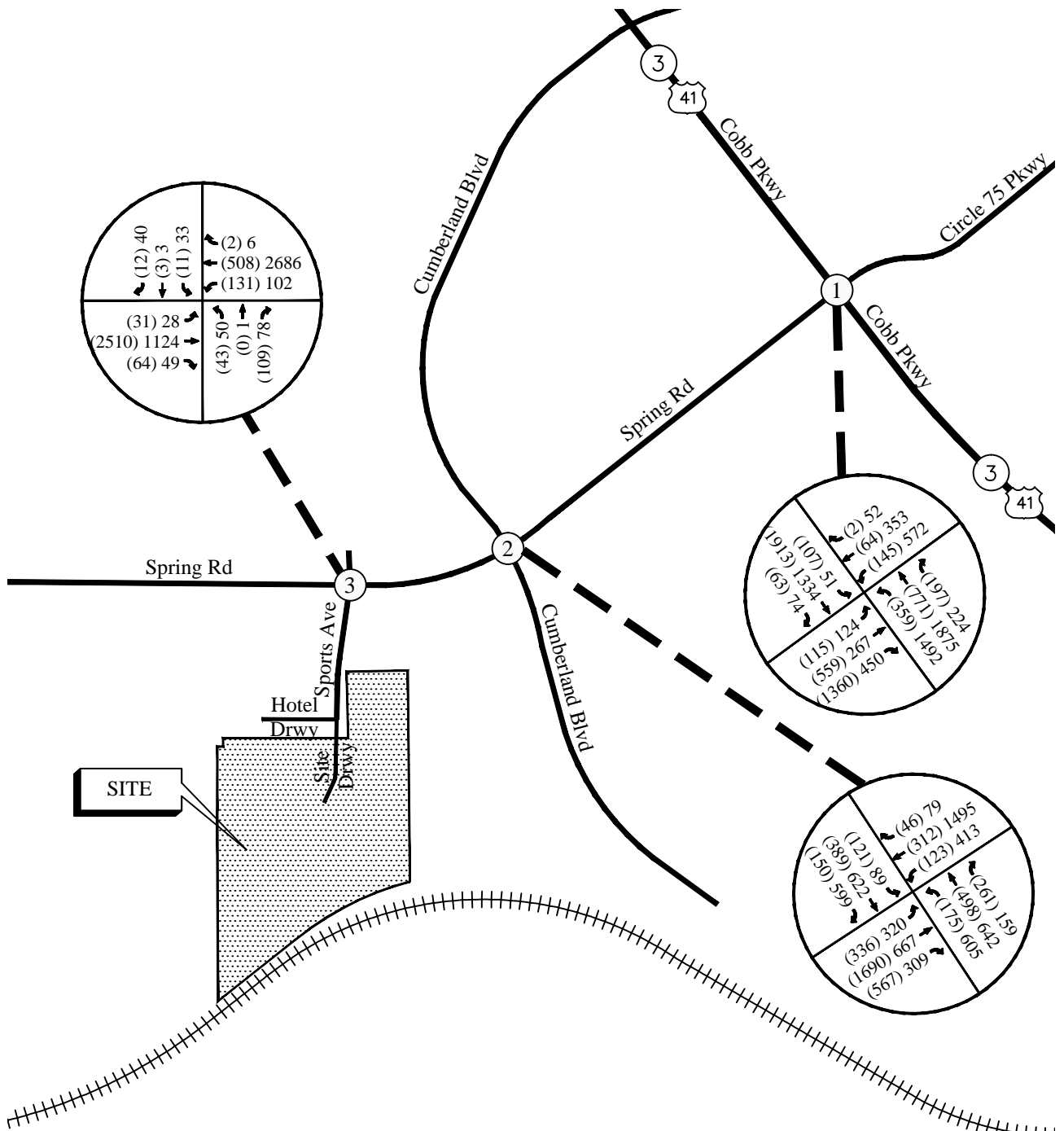
The total future traffic volumes (Figure 10 and Figure 11) were used to evaluate the “Build” condition, which includes the projected site traffic. Recommendations on traffic control and lane geometry are shown graphically in Figure 12. The results of the “Build” operations analyses with the assumed site access configuration are shown in Table 7. The results of the analyses, including the recommended improvements, are discussed in detail in Section 6.2.3.

TABLE 7 – FUTURE “BUILD” INTERSECTION OPERATIONS					
Intersection		Build Condition: LOS (Delay)			
		SCENARIO 1		SCENARIO 2	
		AM Peak	PM Peak	AM Peak	PM Peak
1	<b><u>Spring Rd/Circle 75 Pkwy @ US41 (SR3/ Cobb Pkwy)</u></b>	<b>F (84.2)</b>	<b>E (70.6)</b>	<b>F (87.2)</b>	<b>E (73.2)</b>
	-Eastbound Approach	F (144.2)	D (47.9)	F (151.2)	D (47.1)
	-Westbound Approach	E (69.6)	F (161.5)	E (69.6)	F (160.9)
	-Northbound Approach	D (44.9)	D (54.3)	D (44.9)	E (59.2)
	-Southbound Approach	D (48.5)	E (60.5)	D (48.5)	E (62.5)
2	<b><u>Spring Rd @ Cumberland Blvd</u></b>	<b>D (47.3)</b>	<b>F (116.2)</b>	<b>D (47.3)</b>	<b>F (123.6)</b>
	-Eastbound Approach	C (24.7)	F (135.1)	C (25.0)	F (140.9)
	-Westbound Approach	C (33.7)	E (73.3)	D (34.3)	F (82.2)
	-Northbound Approach	F (98.3)	F (101.9)	F (98.3)	F (109.1)
	-Southbound Approach	D (54.1)	F (182.3)	D (54.1)	F (189.6)
3	<b><u>Spring Rd @ Sports Ave</u></b>	<b>C (33.0)</b>	<b>A (8.0)</b>	<b>D (40.0)</b>	<b>B (12.9)</b>
	-Eastbound Approach	C (24.2)	B (12.2)	C (32.2)	B (17.2)
	-Westbound Approach	E (55.4)	A (1.0)	E (59.4)	A (3.5)
	-Northbound Approach	E (65.1)	E (60.2)	E (62.4)	E (61.0)
	-Southbound Approach	E (63.1)	E (66.5)	E (59.0)	F (84.4)
4	<b><u>Site Driveway on Sports Avenue</u></b>				
	-Eastbound Left	B (10.3)	A (9.9)	B (10.9)	B (12.2)



### ***6.2.3 Recommendations for Site Access / Project Improvements***

The proposed site driveway on Sports Avenue will be a two lane driveway. Since Sports Avenue is a dead end roadway and does not carry significant amount of traffic, the project driveway does not require any additional turn lanes. The intersection of Sports Avenue at Spring Road is signalized and will continue to operate at acceptable level of service in the future.

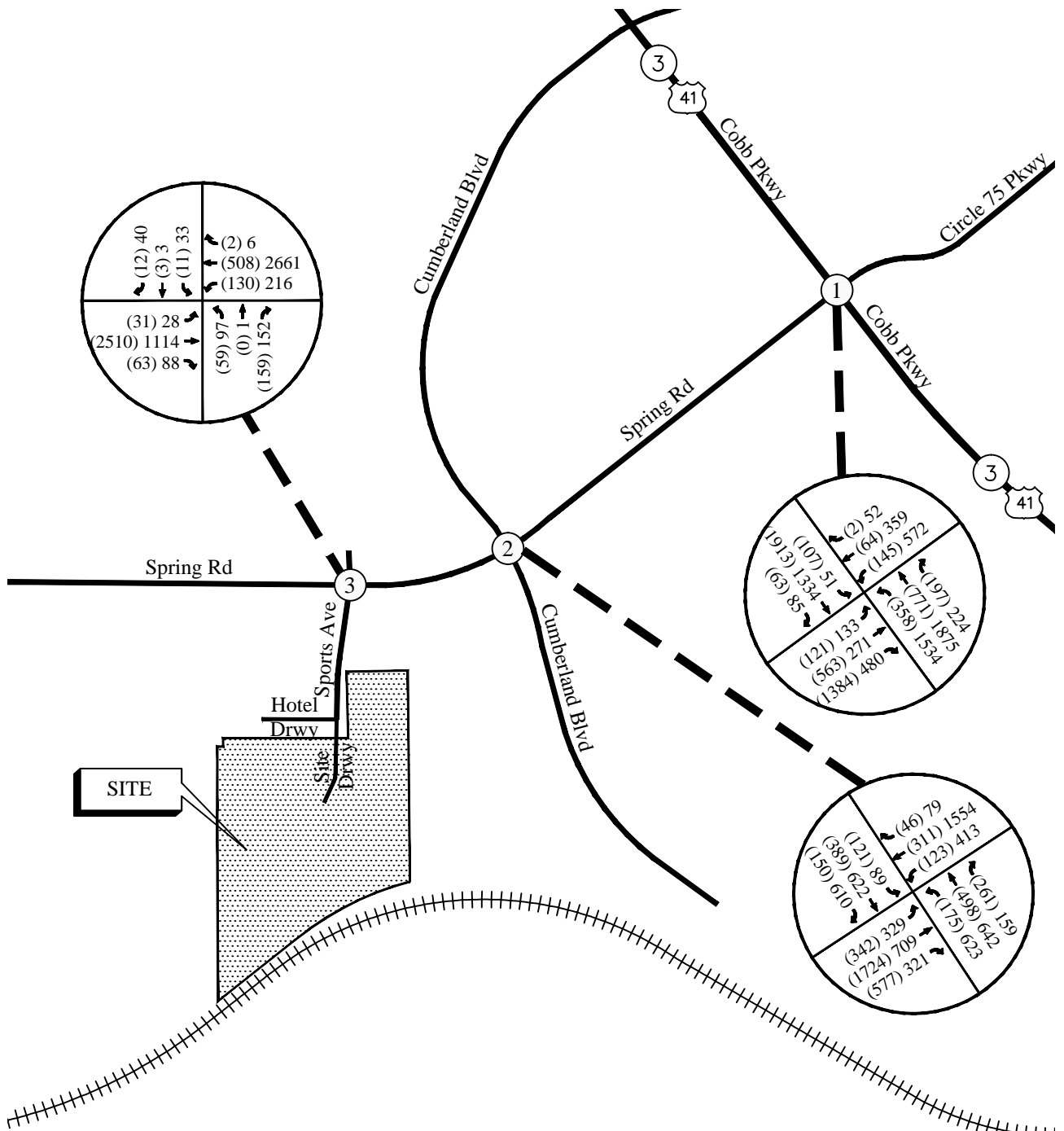


(AM) PM



FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES  
(SCENARIO 1)

FIGURE 10  
A&R Engineering Inc.



(AM) PM

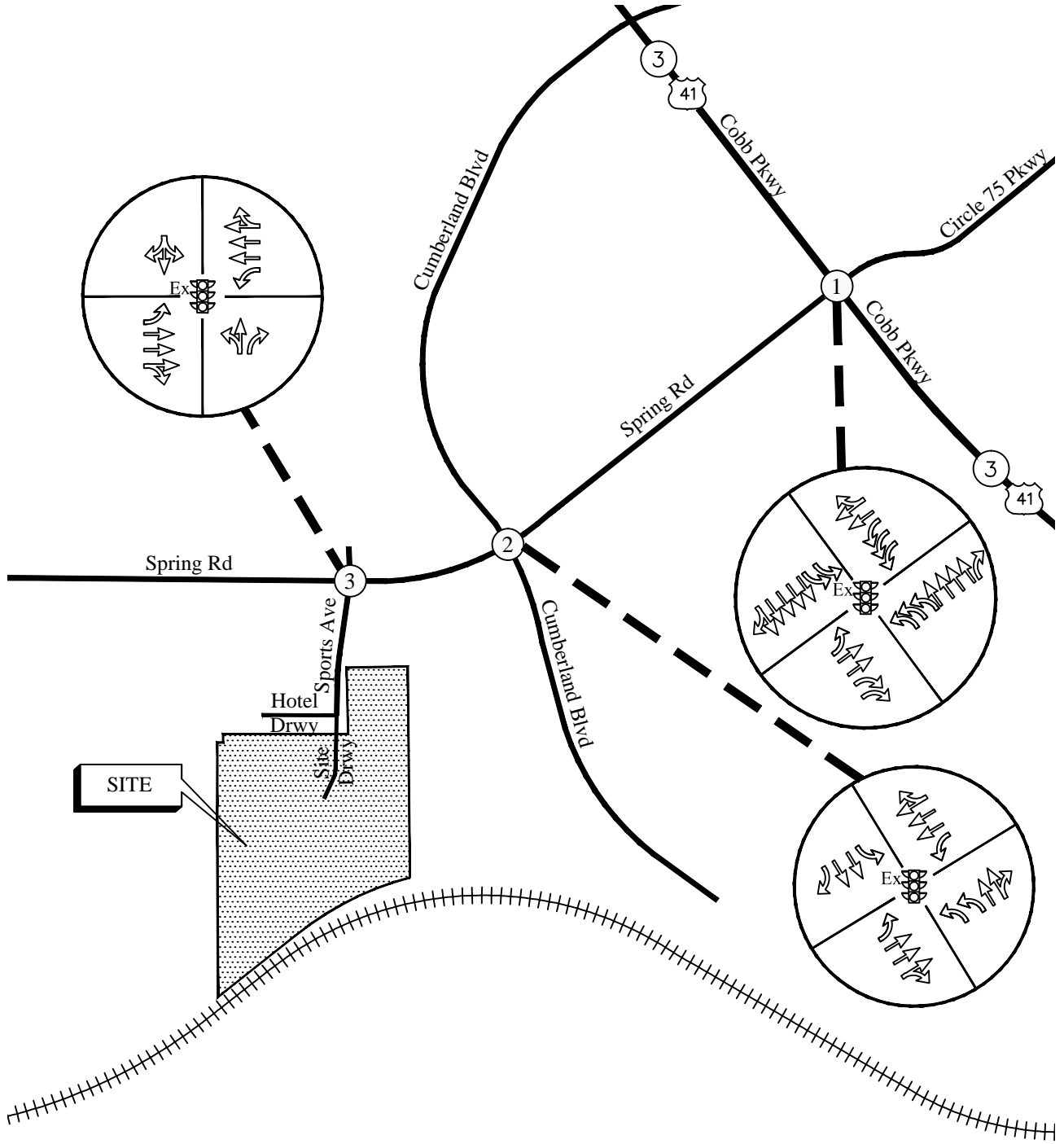


FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES  
(SCENARIO 2)

FIGURE 11  
A&R Engineering Inc.

**LEGEND**

-  Existing Lane Geometry
-  Existing Traffic Signal
-  Proposed Lane Geometry



**FUTURE TRAFFIC CONTROL AND LANE GEOMETRY**

**FIGURE 12**

**A&R Engineering Inc.**

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

Traffic impacts were evaluated for the added traffic from the proposed mixed-use development that will be located at the south-end of Sports Avenue in Smyrna, Georgia. The future conditions are evaluated for two scenarios. In Scenario 1 the proposed development is assumed to consist of:

- 325 apartments
- 3,000 square feet of retail
- 20,000 square feet of Office/Office Amenity/Live/Work Commercial

In Scenario 2 the proposed development is assumed to consist of:

- 600 apartments
- 40,000 square feet of retail

Access to the development is proposed on Sports Avenue. Existing and future operations after completion of the project were analyzed at the intersections of:

- Spring Road / Circle 75 Parkway at US 41 (SR 3 / Cobb Parkway)
- Spring Road at Cumberland Boulevard
- Spring Road at Sports Avenue

The analysis included the evaluation of Future operations for “No-Build” and “Build” conditions, both of which account for increases in annual growth of through traffic. The results of the analysis indicate that the traffic impacts to the roadway network are greater for Scenario 2 compared to Scenario 1. Also, as discussed below the options to further increase capacity at nearby intersection are limited.

### 7.1 Site Access / Project Improvements

The proposed site driveway on Sports Avenue will be a two lane driveway. Since Sports Avenue is a dead end roadway and does not carry significant amount of traffic, the project driveway does not require any additional turn lanes. The intersection of Sports Avenue at Spring Road is signalized and will continue to operate at acceptable level of service in the future.

### 7.2 System Improvements

Since GDOT/Cobb DOT/City of Smyrna have recently carried out improvements to the study roadway network, we are not recommending any further system improvements. Spring Road is already a six lane median divided roadway with turn lanes at major intersections. Cobb Parkway intersection with Spring Road has been recently improved to accommodate additional capacity and includes 15 approach lanes (northbound and southbound combined) to the intersection on Cobb Parkway and ten approach lanes on Spring Road and Circle 75 Pkwy approaches. It is uncommon to anticipate wider intersection approach than what exists at this intersection. Therefore for this development, we recommend that travel demand strategies to reduce vehicle trips be planned and implemented. These strategies may include multimodal trips, carpooling, flextime for employees, better use of transit and shuttle bus facilities etc.

## **Appendix**

Existing Intersection Traffic Counts .....	
Linear Regression of Daily Traffic.....	
Existing Intersection Analysis.....	
Future “No-Build” Intersection Analysis .....	
Future “Build” Intersection Analysis .....	
Traffic Volume Worksheets .....	

**EXISTING INTERSECTION TRAFFIC COUNTS**

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TMC Data  
 Cobb Pkwy @ Spring Rd/ Circle 75 Pkwy

File Name : 41310001  
 Site Code : 41310001  
 Start Date : 10/5/2017  
 Page No : 1

7-9am | 4-6pm

## Groups Printed- Cars, Trucks, Buses

Start Time	Cobb Pkwy Northbound					Cobb Pkwy Southbound					Spring Rd Eastbound					Circle 75 Pkwy Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	59	132	79	0	270	16	430	4	0	450	11	109	313	0	433	24	6	9	0	39	1192
07:15 AM	75	141	57	0	273	12	438	5	0	455	16	102	323	0	441	38	4	3	0	45	1214
07:30 AM	65	164	57	0	286	25	474	12	0	511	14	113	308	0	435	21	7	2	0	30	1262
07:45 AM	66	136	87	0	289	26	395	18	0	439	20	129	311	0	460	38	16	6	0	60	1248
Total	265	573	280	0	1118	79	1737	39	0	1855	61	453	1255	0	1769	121	33	20	0	174	4916
08:00 AM	83	158	60	0	301	29	516	6	0	551	23	124	380	0	527	34	12	0	0	46	1425
08:15 AM	72	189	21	0	282	28	450	21	0	499	18	140	255	0	413	32	11	0	0	43	1237
08:30 AM	58	175	42	0	275	15	428	8	0	451	31	130	304	0	465	32	13	0	0	45	1236
08:45 AM	78	205	63	0	346	29	409	11	0	449	24	127	301	0	452	39	18	2	0	59	1306
Total	291	727	186	0	1204	101	1803	46	0	1950	96	521	1240	0	1857	137	54	2	0	193	5204
*** BREAK ***																					
04:00 PM	250	367	57	0	674	14	282	20	0	316	34	29	93	0	156	82	36	8	0	126	1272
04:15 PM	276	380	37	0	693	9	295	23	2	329	35	33	110	0	178	110	49	9	0	168	1368
04:30 PM	339	390	46	0	775	9	341	19	0	369	19	35	102	0	156	91	51	10	0	152	1452
04:45 PM	322	413	35	0	770	9	312	32	2	355	24	52	85	0	161	100	66	15	0	181	1467
Total	1187	1550	175	0	2912	41	1230	94	4	1369	112	149	390	0	651	383	202	42	0	627	5559
05:00 PM	347	404	31	0	782	8	312	13	0	333	26	51	92	0	169	140	96	16	0	252	1536
05:15 PM	346	474	42	0	862	9	316	12	0	337	28	45	125	0	198	126	75	9	0	210	1607
05:30 PM	343	358	66	0	767	22	293	22	0	337	27	70	91	0	188	144	77	12	0	233	1525
05:45 PM	339	531	72	0	942	9	336	13	0	358	28	82	89	0	199	129	80	12	0	221	1720
Total	1375	1767	211	0	3353	48	1257	60	0	1365	109	248	397	0	754	539	328	49	0	916	6388
Grand Total	3118	4617	852	0	8587	269	6027	239	4	6539	378	1371	3282	0	5031	1180	617	113	0	1910	22067
Apprch %	36.3	53.8	9.9	0		4.1	92.2	3.7	0.1		7.5	27.3	65.2	0		61.8	32.3	5.9	0		
Total %	14.1	20.9	3.9	0	38.9	1.2	27.3	1.1	0	29.6	1.7	6.2	14.9	0	22.8	5.3	2.8	0.5	0	8.7	



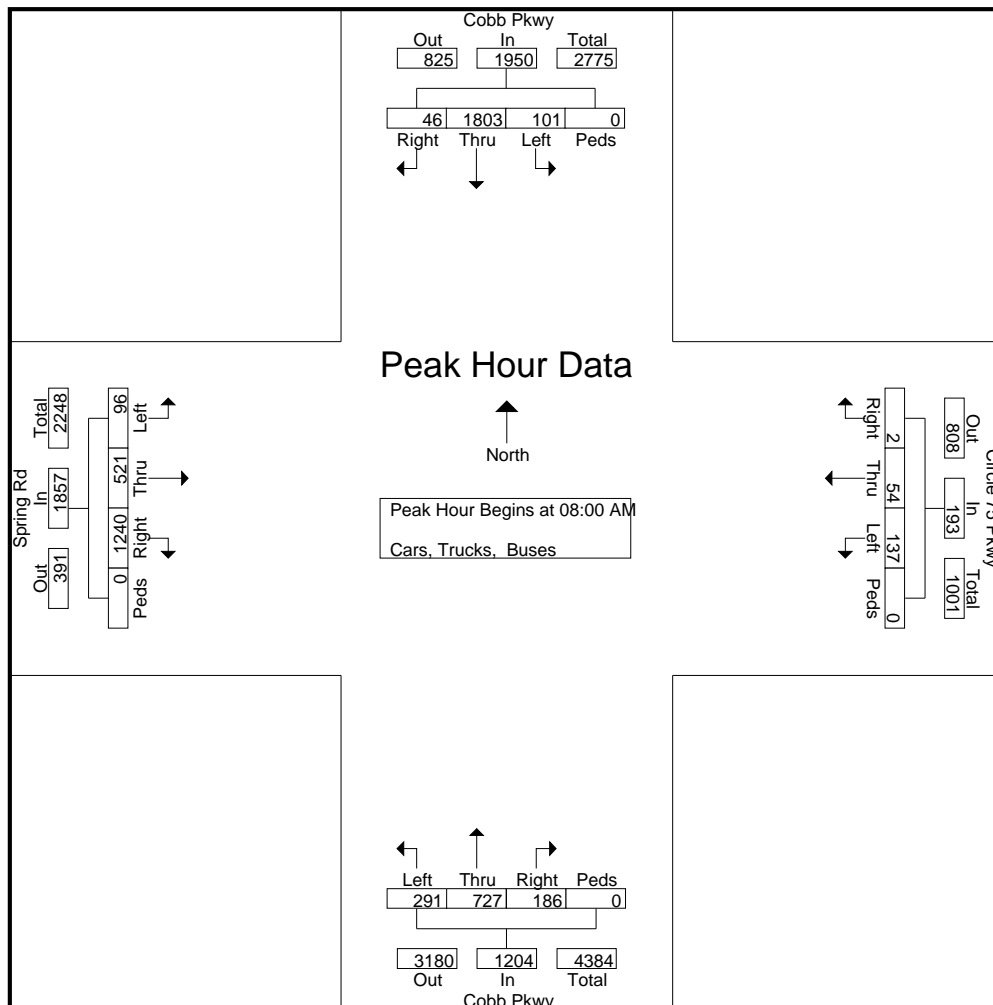
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TMC Data  
 Cobb Pkwy @ Spring Rd/ Circle 75 Pkwy  
 7-9am | 4-6pm

File Name : 41310001  
 Site Code : 41310001  
 Start Date : 10/5/2017  
 Page No : 2

Start Time	Cobb Pkwy Northbound					Cobb Pkwy Southbound					Spring Rd Eastbound					Circle 75 Pkwy Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	83	158	60	0	301	29	516			551	23	124	380		527	34	12	0	0	46	1425
08:15 AM	72	189	21	0	282	28	450	21	0	499	18	140	255	0	413	32	11	0	0	43	1237
08:30 AM	58	175	42	0	275	15	428	8	0	451	31	130	304	0	465	32	13	0	0	45	1236
08:45 AM	78	205	63	0	346	29	409	11	0	449	24	127	301	0	452	39	18	2	0	59	1306
Total Volume	291	727	186	0	1204	101	1803	46	0	1950	96	521	1240	0	1857	137	54	2	0	193	5204
% App. Total	24.2	60.4	15.4	0		5.2	92.5	2.4	0		5.2	28.1	66.8	0		71	28	1	0		
PHF	.877	.887	.738	.000	.870	.871	.874	.548	.000	.885	.774	.930	.816	.000	.881	.878	.750	.250	.000	.818	.913



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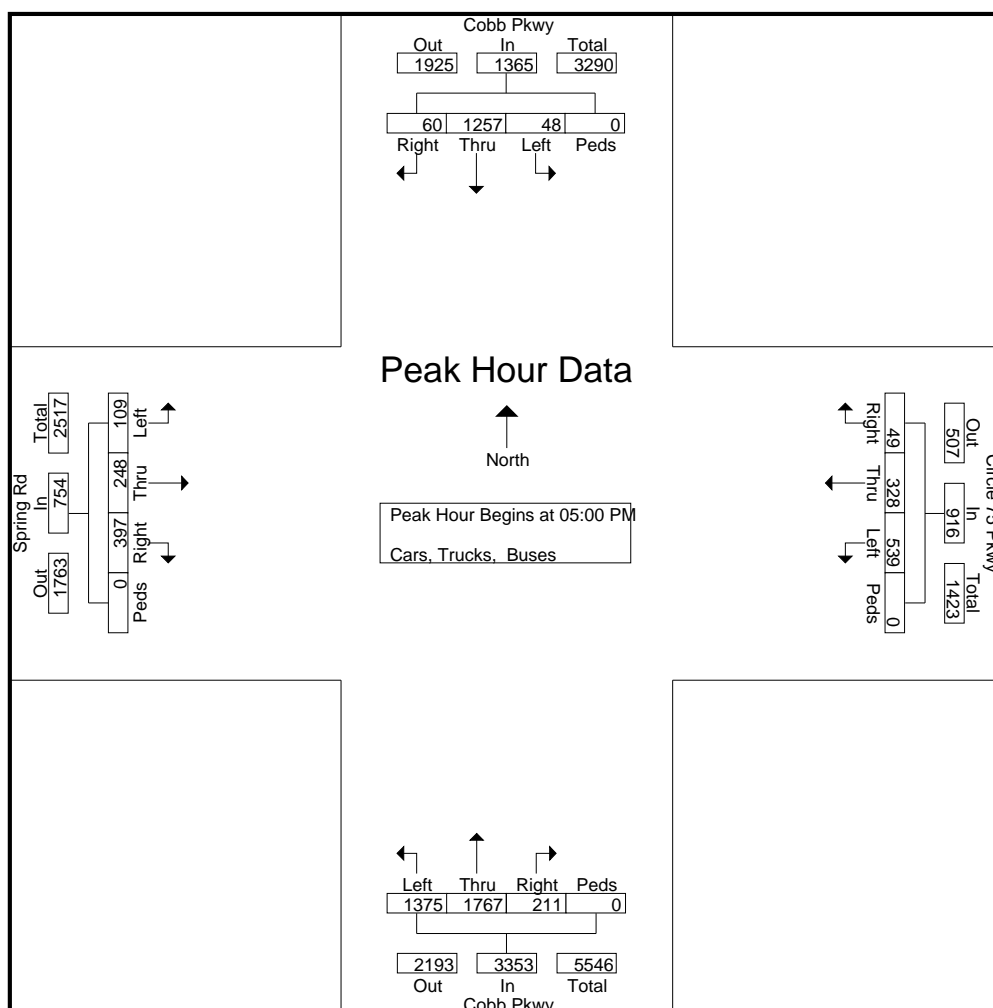
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TMC Data  
 Cobb Pkwy @ Spring Rd/ Circle 75 Pkwy

File Name : 41310001  
 Site Code : 41310001  
 Start Date : 10/5/2017  
 Page No : 3

7-9am | 4-6pm

Start Time	Cobb Pkwy Northbound					Cobb Pkwy Southbound					Spring Rd Eastbound					Circle 75 Pkwy Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	347	404	31	0	782	8	312	13	0	333	26	51	92	0	169	140	96	16	0	252	1536
05:15 PM	346	474	42	0	862	9	316	12	0	337	28	45	125	0	188	126	75	9	0	210	1607
05:30 PM	343	358	66	0	767	22	293	22	0	337	27	70	91	0	188	144					
05:45 PM	339	531	72	0	942	9	336	13	0	358	28	82	89	0	199	129	80	12	0	221	1720
Total Volume	1375	1767	211	0	3353	48	1257	60	0	1365	109	248	397	0	754	539	328	49	0	916	6388
% App. Total	41	52.7	6.3	0		3.5	92.1	4.4	0		14.5	32.9	52.7	0		58.8	35.8	5.3	0		
PHF	.991	.832	.733	.000	.890	.545	.935	.682	.000	.953	.973	.756	.794	.000	.947	.936	.854	.766	.000	.909	.928



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TMC Data  
 Spring Rd @ Windy Ridge Pkwy

7-9am | 4-6pm

File Name : 41310002  
 Site Code : 41310002  
 Start Date : 10/5/2017  
 Page No : 1

## Groups Printed- Cars, Trucks, Buses

Start Time	Windy Ridge Pkwy Northbound					Windy Ridge Pkwy Southbound					Spring Rd Eastbound					Spring Rd Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	35	37	31	1	104	15	42	32	0	89	49	370	84	0	503	12	42	8	1	63	759
07:15 AM	16	45	35	0	96	13	53	14	0	80	32	308	36	1	377	6	34	4	1	45	598
07:30 AM	30	45	37	0	112	11	50	19	0	80	50	325	61	0	436	18	56	10	1	85	713
07:45 AM	43	78	49	0	170	31	89	31	0	151	95	444	139	0	678	34	70	6	0	110	1109
Total	124	205	152	1	482	70	234	96	0	400	226	1447	320	1	1994	70	202	28	3	303	3179
08:00 AM	35	88	49	0	172	26	79	27	0	132	90	377	102	1	570	33	62	6	0	101	975
08:15 AM	34	103	68	0	205	40	99	29	0	168	70	398	144	0	612	32	56	10	0	98	1083
08:30 AM	31	142	65	0	238	22	80	24	0	126	75	364	119	0	558	23	53	12	1	89	1011
08:45 AM	45	136	64	0	245	26	109	48	2	185	69	395	152	0	616	28	55	15	0	98	1144
Total	145	469	246	0	860	114	367	128	2	611	304	1534	517	1	2356	116	226	43	1	386	4213
*** BREAK ***																					
04:00 PM	129	78	20	4	231	27	80	158	0	265	64	130	72	0	266	57	248	11	3	319	1081
04:15 PM	154	99	30	2	285	14	106	140	2	262	79	149	91	11	330	75	319	12	1	407	1284
04:30 PM	154	148	29	0	331	12	115	150	0	277	62	106	59	0	227	63	301	12	0	376	1211
04:45 PM	183	119	40	1	343	23	109	136	4	272	66	126	74	1	267	83	350	15	0	448	1330
Total	620	444	119	7	1190	76	410	584	6	1076	271	511	296	12	1090	278	1218	50	4	1550	4906
05:00 PM	125	131	53	1	310	24	141	151	1	317	77	154	67	4	302	97	358	16	2	473	1402
05:15 PM	146	142	36	1	325	22	144	143	6	315	79	152	66	3	300	90	353	19	1	463	1403
05:30 PM	122	163	31	0	316	20	171	133	0	324	62	132	66	1	261	94	339	21	0	454	1355
05:45 PM	164	169	30	0	363	18	130	128	2	278	76	151	80	1	308	108	314	18	1	441	1390
Total	557	605	150	2	1314	84	586	555	9	1234	294	589	279	9	1171	389	1364	74	4	1831	5550
Grand Total	1446	1723	667	10	3846	344	1597	1363	17	3321	1095	4081	1412	23	6611	853	3010	195	12	4070	17848
Apprch %	37.6	44.8	17.3	0.3		10.4	48.1	41	0.5		16.6	61.7	21.4	0.3		21	74	4.8	0.3		
Total %	8.1	9.7	3.7	0.1	21.5	1.9	8.9	7.6	0.1	18.6	6.1	22.9	7.9	0.1	37	4.8	16.9	1.1	0.1	22.8	

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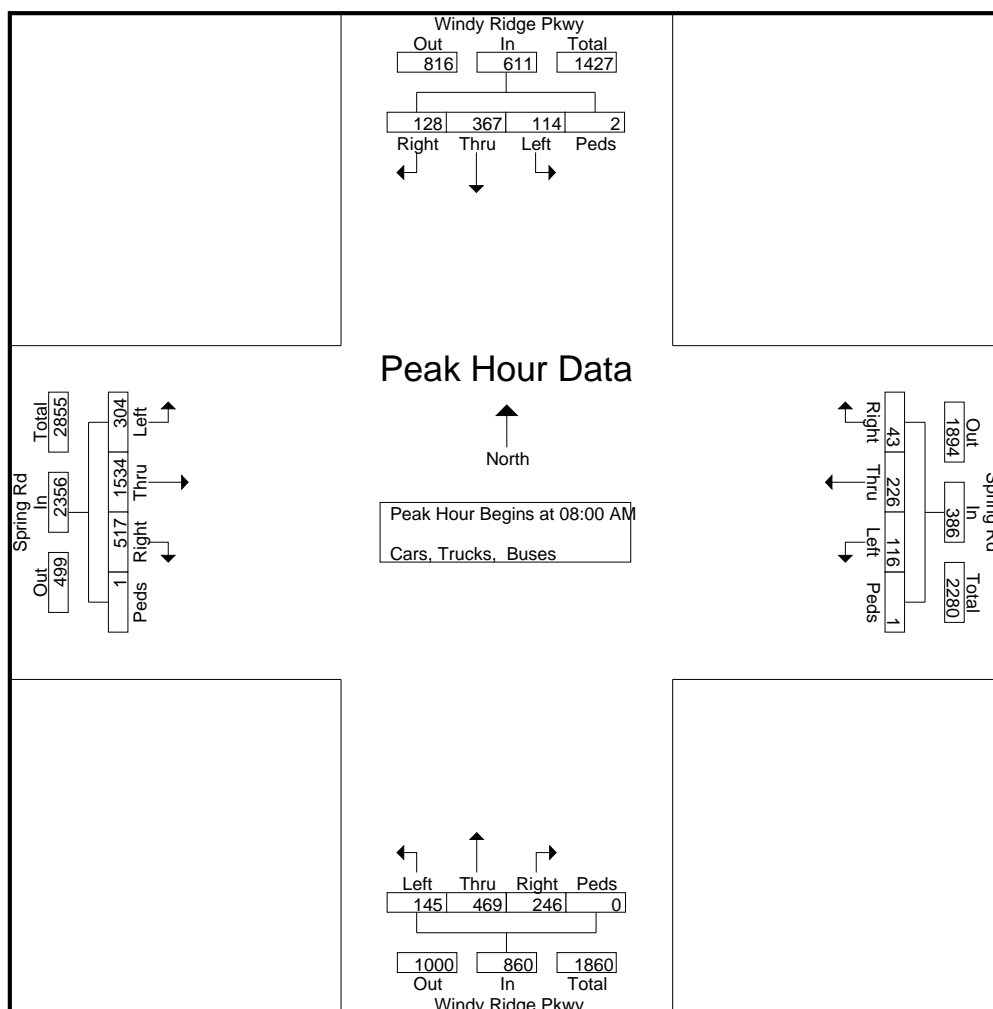
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TMC Data  
 Spring Rd @ Windy Ridge Pkwy

File Name : 41310002  
 Site Code : 41310002  
 Start Date : 10/5/2017  
 Page No : 2

7-9am | 4-6pm

Start Time	Windy Ridge Pkwy Northbound					Windy Ridge Pkwy Southbound					Spring Rd Eastbound					Spring Rd Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	35	88	49	0	172	26	79	27	0	132	90	377	102	1	570	33	62	6	0	101	975
08:15 AM	34	103	68	0	205	40	99	29	0	168	70	398	144	0	612	32	56	10	0	98	1083
08:30 AM	31	142										364	119	0	558	23	53	12	1	89	1011
08:45 AM	45	136	64	0	245	26	109	48	2	185	69	395	152	0	616	28	55	15	0	98	1144
Total Volume	145	469	246	0	860	114	367	128	2	611	304	1534	517	1	2356	116	226	43	1	386	4213
% App. Total	16.9	54.5	28.6	0		18.7	60.1	20.9	0.3		12.9	65.1	21.9	0		30.1	58.5	11.1	0.3		
PHF	.806	.826	.904	.000	.878	.713	.842	.667	.250	.826	.844	.964	.850	.250	.956	.879	.911	.717	.250	.955	.921



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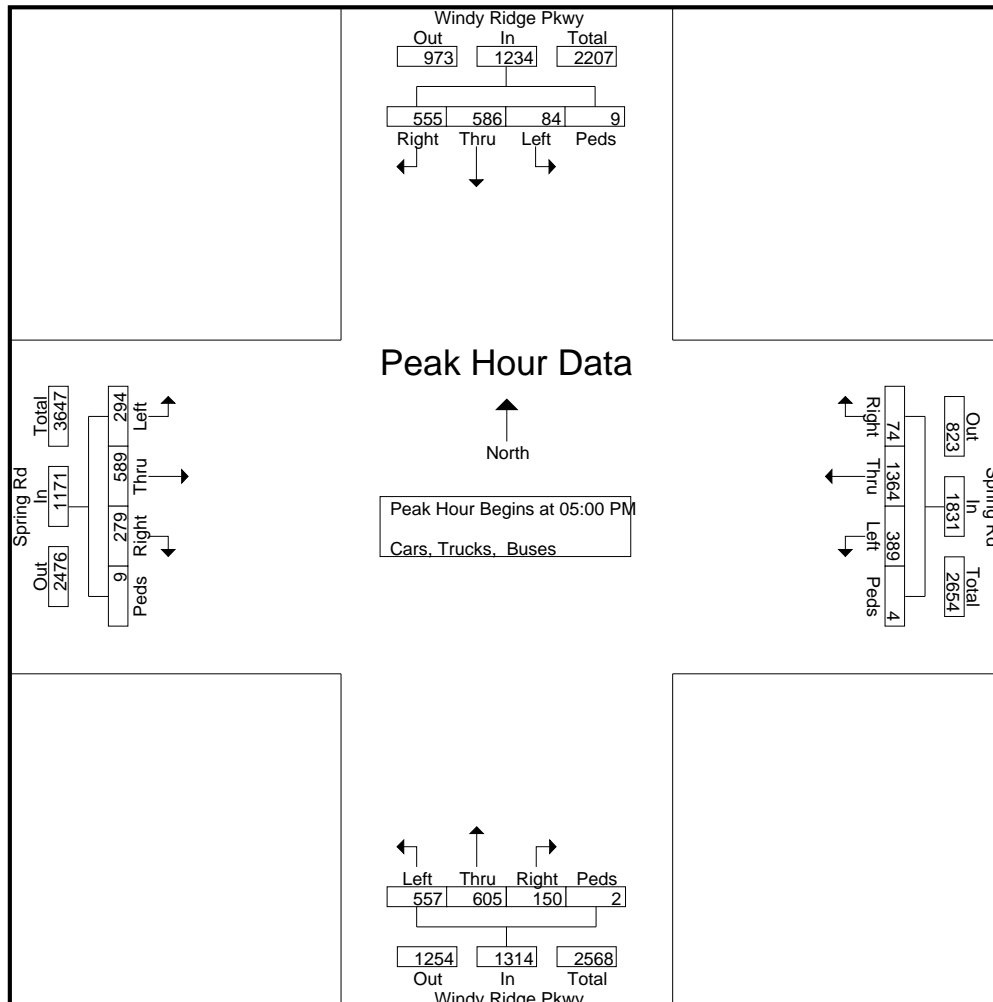
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TMC Data  
 Spring Rd @ Windy Ridge Pkwy

File Name : 41310002  
 Site Code : 41310002  
 Start Date : 10/5/2017  
 Page No : 3

7-9am | 4-6pm

Start Time	Windy Ridge Pkwy Northbound					Windy Ridge Pkwy Southbound					Spring Rd Eastbound					Spring Rd Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	125	131	53	1	310	24	141	151		278	154		4	302	97	358		2	473	1402	
05:15 PM	146	142	36	1	325	22	144	143	6	315	79	152	66	3	300	90	353	19	1	463	1403
05:30 PM	122	163	31	0	316	20	171	133	0	324	62	132	66	1	261	94	339	21	0	454	1355
05:45 PM	164	169			363	18	130	128	2	278	76	151	80	1	308	108	314	18	1	441	1390
Total Volume	557	605	150	2	1314	84	586	555	9	1234	294	589	279	9	1171	389	1364	74	4	1831	5550
% App. Total	42.4	46	11.4	0.2		6.8	47.5	45	0.7		25.1	50.3	23.8	0.8		21.2	74.5	4	0.2		
PHF	.849	.895	.708	.500	.905	.875	.857	.919	.375	.952	.930	.956	.872	.563	.950	.900	.953	.881	.500	.968	.989



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TMC Data  
 Spring Rd @ Sports Ave

7-9am | 4-6pm

File Name : 41310003  
 Site Code : 41310003  
 Start Date : 10/5/2017  
 Page No : 1

## Groups Printed- Cars, Trucks, Buses

Start Time	Sports Ave Northbound					Aldi Drwy Southbound					Spring Rd Eastbound					Spring Rd Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	7	0	2	4	13	0	0	0	0	0	5	494	7	0	506	7	87	0	0	94	613
07:15 AM	1	0	2	1	4	2	0	0	1	3	5	360	4	0	369	6	65	0	0	71	447
07:30 AM	3	0	7	3	13	0	0	1	1	2	6	442	11	2	461	7	101	0	0	108	584
07:45 AM	4	0	4	0	8	2	1	5	0	8	8	664	4	0	676	5	145	1	0	151	843
Total	15	0	15	8	38	4	1	6	2	13	24	1960	26	2	2012	25	398	1	0	424	2487
08:00 AM	1	0	4	2	7	1	0	2	0	3	6	566	3	0	575	5	111	0	0	116	701
08:15 AM	0	0	2	0	2	3	0	4	0	7	9	597	10	0	616	7	112	1	0	120	745
08:30 AM	5	0	3	4	12	4	2	0	3	9	6	539	9	0	554	6	111	0	1	118	693
08:45 AM	4	0	4	2	10	4	0	3	2	9	8	604	4	0	616	3	133	0	4	140	775
Total	10	0	13	8	31	12	2	9	5	28	29	2306	26	0	2361	21	467	1	5	494	2914
*** BREAK ***																					
04:00 PM	2	0	7	3	12	7	0	12	0	19	7	257	5	0	269	9	516	2	0	527	827
04:15 PM	3	0	15	1	19	4	0	9	4	17	5	308	4	0	317	6	612	2	1	621	974
04:30 PM	7	0	5	0	12	6	0	16	2	24	5	203	5	1	214	11	606	1	0	618	868
04:45 PM	6	0	1	3	10	8	1	9	3	21	6	248	0	3	257	3	677	2	1	683	971
Total	18	0	28	7	53	25	1	46	9	81	23	1016	14	4	1057	29	2411	7	2	2449	3640
05:00 PM	7	0	4	1	12	10	1	7	0	18	7	281	7	2	297	7	639	1	0	647	974
05:15 PM	7	1	3	1	12	9	0	16	2	27	4	281	10	1	296	9	621	1	0	631	966
05:30 PM	4	0	4	4	12	4	1	6	1	12	9	251	5	0	265	6	599	2	0	607	896
05:45 PM	3	0	2	6	11	11	0	15	3	29	2	301	4	1	308	8	601	0	0	609	957
Total	21	1	13	12	47	34	2	44	6	86	22	1114	26	4	1166	30	2460	4	0	2494	3793
Grand Total	64	1	69	35	169	75	6	105	22	208	98	6396	92	10	6596	105	5736	13	7	5861	12834
Apprch %	37.9	0.6	40.8	20.7		36.1	2.9	50.5	10.6		1.5	97	1.4	0.2		1.8	97.9	0.2	0.1		
Total %	0.5	0	0.5	0.3	1.3	0.6	0	0.8	0.2	1.6	0.8	49.8	0.7	0.1	51.4	0.8	44.7	0.1	0.1	45.7	

# Reliable Traffic Data Services, LLC

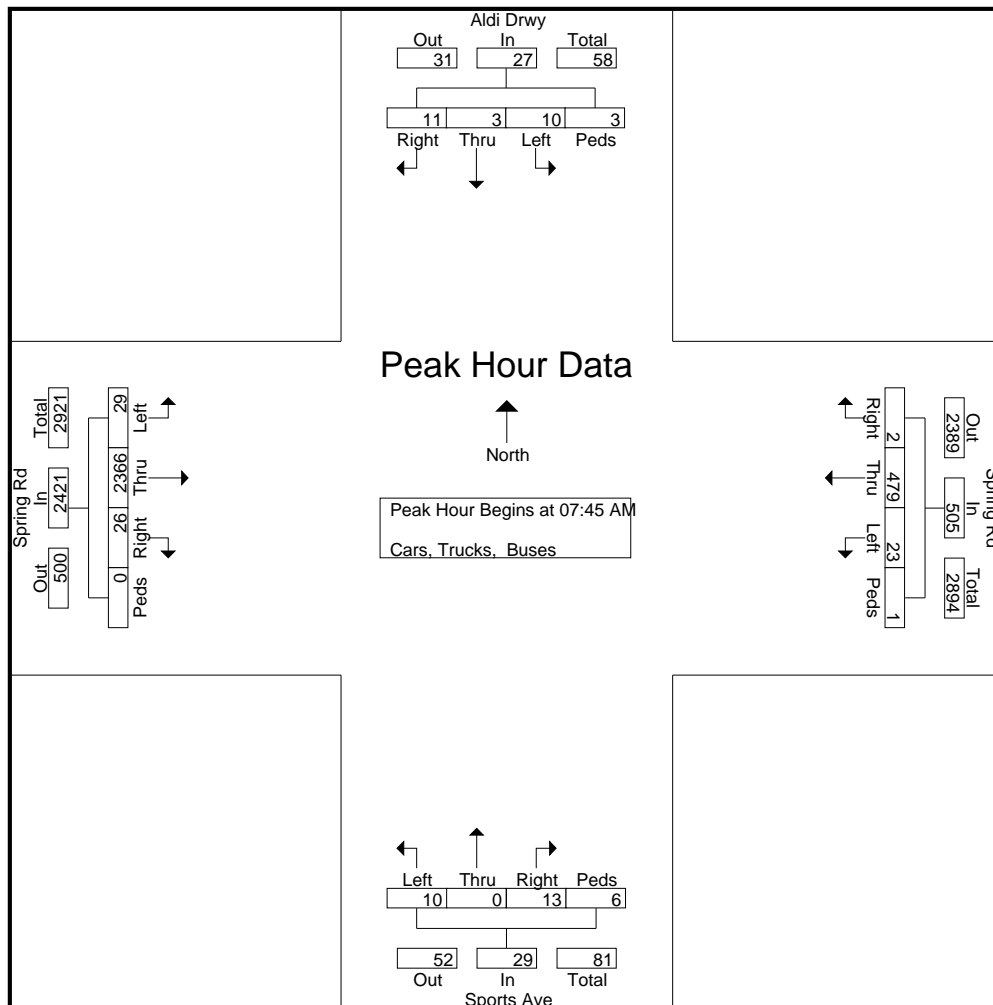
Tel: (770) 578-8158 | Fax: (770) 578-8159  
 info@reliabletraffic.org | www.reliabletraffic.org

TMC Data  
 Spring Rd @ Sports Ave

7-9am | 4-6pm

File Name : 41310003  
 Site Code : 41310003  
 Start Date : 10/5/2017  
 Page No : 2

Start Time	Sports Ave Northbound					Aldi Drwy Southbound					Spring Rd Eastbound					Spring Rd Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	4	0	4	0	8	2	1	5	0	8	8	664			676	5	145	1	0	151	843
08:00 AM	1	0	4	2	7	1	0	2	0	3	6	566	3	0	575	5	111	0	0	116	701
08:15 AM	0	0	2	0	2	3	0	4	0	7	9	597	10	0	616	7	112	1	0	120	745
08:30 AM	5	0	3	4	12	4	2	0	3	9	6	539	9	0	554	6	111	0	1	118	693
Total Volume	10	0	13	6	29	10	3	11	3	27	29	2366	26	0	2421	23	479	2	1	505	2982
% App. Total	34.5	0	44.8	20.7		37	11.1	40.7	11.1		1.2	97.7	1.1	0		4.6	94.9	0.4	0.2		
PHF	.500	.000	.813	.375	.604	.625	.375	.550	.250	.750	.806	.891	.650	.000	.895	.821	.826	.500	.250	.836	.884



# Reliable Traffic Data Services, LLC

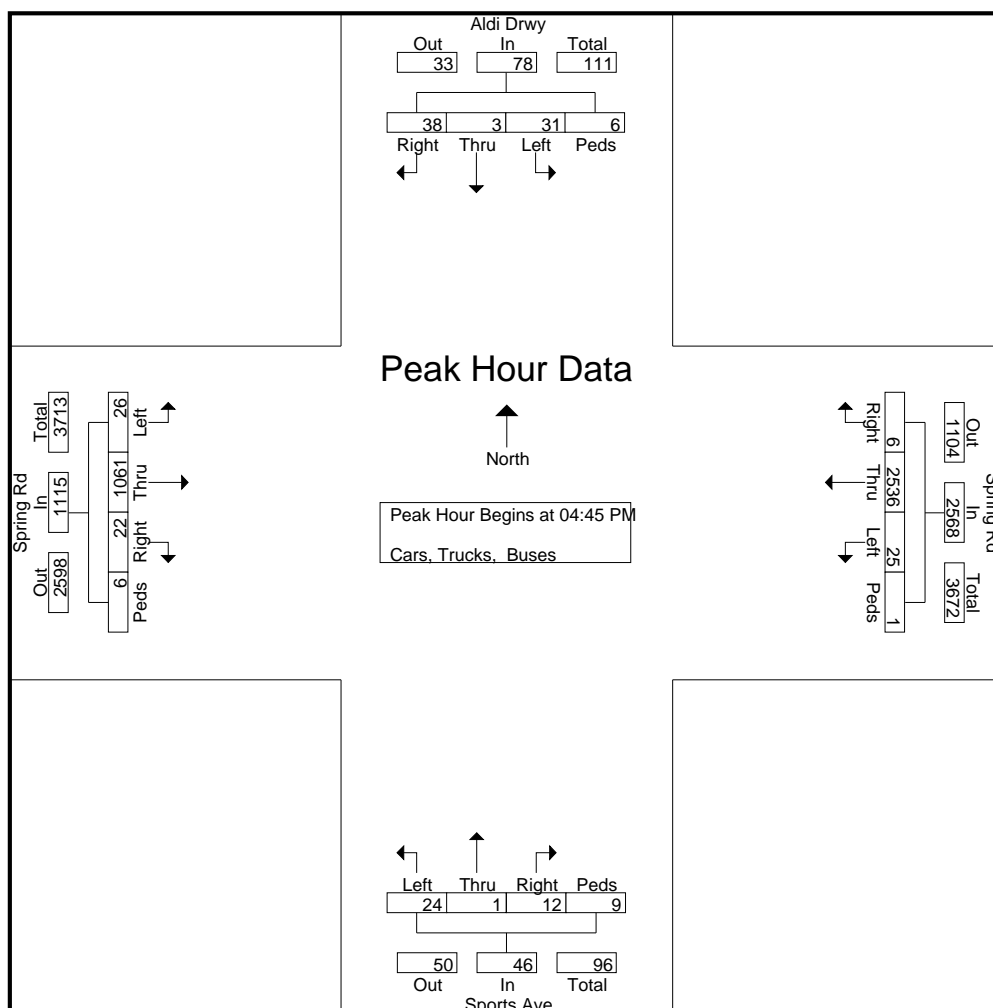
Tel: (770) 578-8158 | Fax: (770) 578-8159  
 info@reliabletraffic.org | www.reliabletraffic.org

TMC Data  
 Spring Rd @ Sports Ave

7-9am | 4-6pm

File Name : 41310003  
 Site Code : 41310003  
 Start Date : 10/5/2017  
 Page No : 3

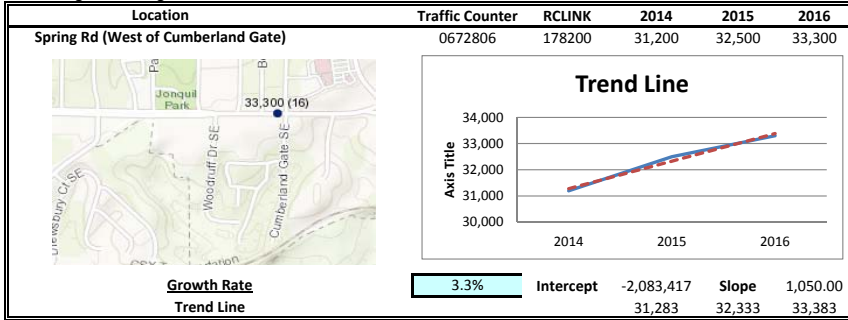
Start Time	Sports Ave Northbound					Aldi Drwy Southbound					Spring Rd Eastbound					Spring Rd Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	6	0	1	3	10	8	1	9	3	21	6	248	0	3	257	3	677	2	1	683	971
05:00 PM	7	0	4	1	12	10	1	7	0	18	7	281			297	7	639	1	0	647	974
05:15 PM	7	1	3	1	12	9	0	16	2	27	4	281	10	1	296	9	621	1	0	631	966
05:30 PM	4	0	4	4	12	4	1	6	1	12	9	251	5	0	265	6	599	2	0	607	896
Total Volume	24	1	12	9	46	31	3	38	6	78	26	1061	22	6	1115	25	2536	6	1	2568	3807
% App. Total	52.2	2.2	26.1	19.6		39.7	3.8	48.7	7.7		2.3	95.2	2	0.5		1	98.8	0.2	0		
PHF	.857	.250	.750	.563	.958	.775	.750	.594	.500	.722	.722	.944	.550	.500	.939	.694	.936	.750	.250	.940	.977



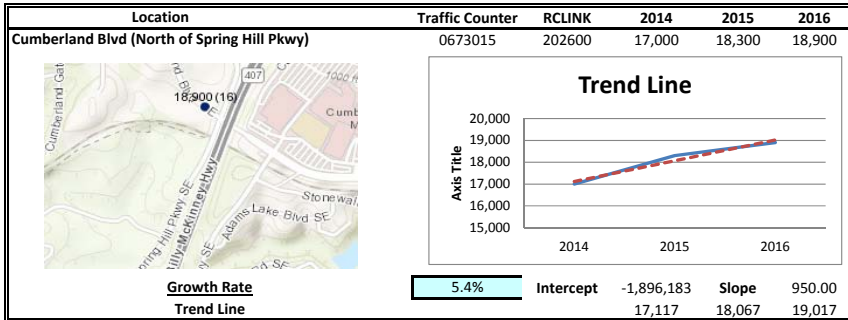


# LINEAR REGRESSION OF DAILY TRAFFIC

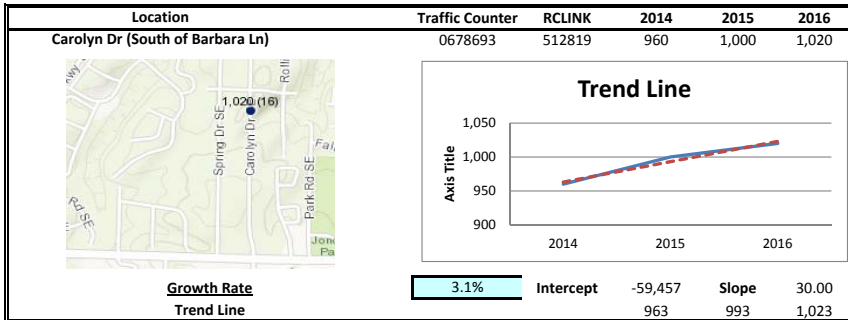
Location	Growth Rate	R Squared	Station ID	Route	2014	2015	2016	
Spring Rd (West of Cumberland	3.3%	0.98	0672806	178200	31,200	32,500	33,300	urban - Local
Cumberland Blvd (North of Spri	5.4%	0.96	0673015	202600	17,000	18,300	18,900	urban - Minor Arterial
Carolyn Dr (South of Barbara Lr	3.1%	0.96	0678693	512819	960	1,000	1,020	
Cobb Pkwy (South of Plumtree	2.3%	0.94	0672143	000300	38,200	39,500	40,000	urban - Principal Arteri
Cobb Pkwy (North of Cumberla	3.3%	1.00	0672145	000300	21,000	21,700	22,400	urban - Principal Arteri
<b>Weighted Average</b>	<b>3.3%</b>	<b>0.97</b>	<b>Sum of Count Stations =</b>		<b>108,360</b>	<b>113,000</b>	<b>115,620</b>	



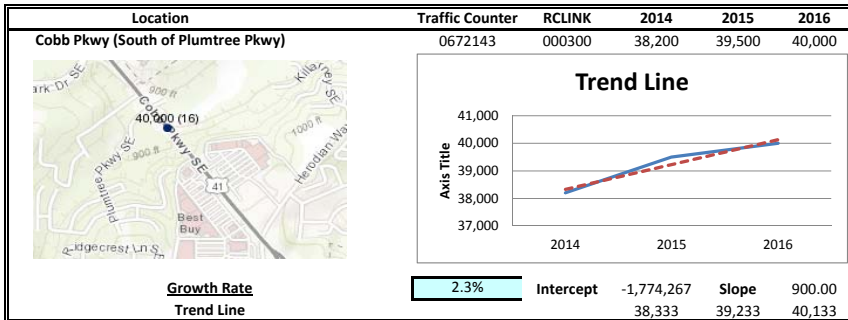
Sum X  
Sum Y  
Sum XY  
Sum X<sup>2</sup>  
Count  
a  
b  
Mean Y  
SS<sub>tot</sub>  
SS<sub>res</sub>  
R<sup>2</sup>



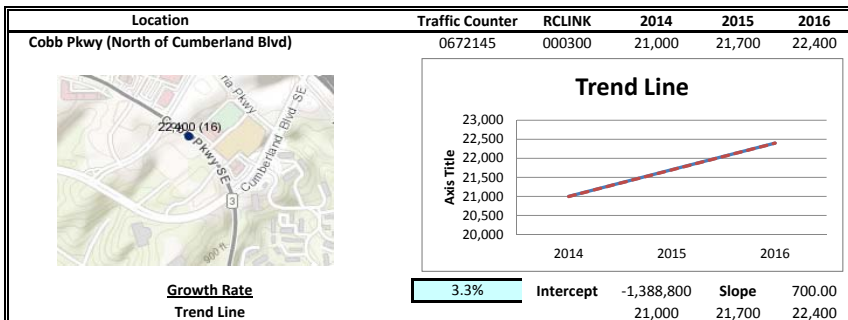
Sum X  
Sum Y  
Sum XY  
Sum X<sup>2</sup>  
Count  
a  
b  
Mean Y  
SS<sub>tot</sub>  
SS<sub>res</sub>  
R<sup>2</sup>



Sum X  
Sum Y  
Sum XY  
Sum X<sup>2</sup>  
Count  
a  
b  
Mean Y  
SS<sub>tot</sub>  
SS<sub>res</sub>  
R<sup>2</sup>



Sum X  
Sum Y  
Sum XY  
Sum X<sup>2</sup>  
Count  
a  
b  
Mean Y  
SS<sub>tot</sub>  
SS<sub>res</sub>  
R<sup>2</sup>

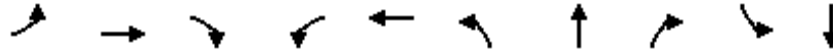


Sum X  
Sum Y  
Sum XY  
Sum X<sup>2</sup>  
Count  
a  
b  
Mean Y  
SS<sub>tot</sub>  
SS<sub>res</sub>  
R<sup>2</sup>

## **EXISTING INTERSECTION ANALYSIS**

Timings  
 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy

Existing AM  
 11/15/2017

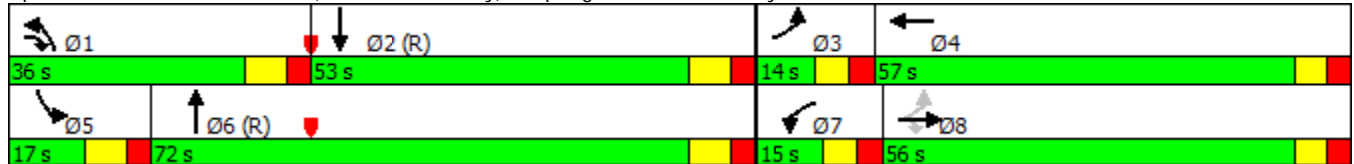


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↶	↕	↷	↶↷	↕	↶↷	↕	↷	↶↷	↕↶↷
Traffic Volume (vph)	96	521	1240	137	54	291	727	186	101	1803
Future Volume (vph)	96	521	1240	137	54	291	727	186	101	1803
Turn Type	pm+pt	NA	pm+ov	Prot	NA	Prot	NA	Free	Prot	NA
Protected Phases	3	8	1	7	4	1	6		5	2
Permitted Phases	8		8					Free		
Detector Phase	3	8	1	7	4	1	6		5	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	14.0		6.0	14.0
Minimum Split (s)	14.0	44.0	14.0	14.0	57.0	14.0	44.0		14.0	44.0
Total Split (s)	14.0	56.0	36.0	15.0	57.0	36.0	72.0		17.0	53.0
Total Split (%)	8.8%	35.0%	22.5%	9.4%	35.6%	22.5%	45.0%		10.6%	33.1%
Yellow Time (s)	4.0	4.0	5.0	4.0	4.0	5.0	5.0		5.0	5.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	8.0	7.0	7.0	8.0	8.0		8.0	8.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag		Lead	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Min		None	C-Min

Intersection Summary
























Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 44 (28%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 130  
 Control Type: Actuated-Coordinated

Splits and Phases: 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy



HCM 2010 Signalized Intersection Summary  
 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy

Existing AM  
 11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	521	1240	137	54	2	291	727	186	101	1803	46
Future Volume (veh/h)	96	521	1240	137	54	2	291	727	186	101	1803	46
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	105	573	1363	151	59	2	320	799	0	111	1981	51
Adj No. of Lanes	1	2	2	3	2	0	3	4	1	2	5	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	514	1084	1083	213	1066	36	412	2687	664	153	2923	75
Arrive On Green	0.07	0.51	0.51	0.04	0.31	0.31	0.08	0.42	0.00	0.04	0.38	0.38
Sat Flow, veh/h	1774	3539	2787	5003	3494	118	5003	6408	1583	3442	7666	197
Grp Volume(v), veh/h	105	573	1363	151	30	31	320	799	0	111	1559	473
Grp Sat Flow(s),veh/h/ln	1774	1770	1393	1668	1770	1842	1668	1602	1583	1721	1509	1828
Q Serve(g_s), s	6.6	17.3	49.0	4.8	1.9	1.9	10.0	13.2	0.0	5.1	34.5	34.5
Cycle Q Clear(g_c), s	6.6	17.3	49.0	4.8	1.9	1.9	10.0	13.2	0.0	5.1	34.5	34.5
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	514	1084	1083	213	540	562	412	2687	664	153	2301	697
V/C Ratio(X)	0.20	0.53	1.26	0.71	0.06	0.06	0.78	0.30	0.00	0.73	0.68	0.68
Avail Cap(c_a), veh/h	514	1084	1083	250	553	576	875	2687	664	194	2301	697
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.12	0.12	0.12	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.0	31.4	36.4	75.6	39.3	39.3	72.0	30.8	0.0	75.5	41.3	41.3
Incr Delay (d2), s/veh	0.0	0.1	117.4	7.3	0.0	0.0	3.2	0.3	0.0	9.6	1.6	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.3	10.0	72.9	4.2	1.7	1.8	8.3	9.9	0.0	4.8	20.9	25.5
LnGrp Delay(d),s/veh	35.0	31.4	153.8	82.9	39.3	39.3	75.2	31.1	0.0	85.1	42.9	46.6
LnGrp LOS	D	C	F	F	D	D	E	C		F	D	D
Approach Vol, veh/h		2041			212			1119			2143	
Approach Delay, s/veh		113.3			70.4			43.7			45.9	
Approach LOS		F			E			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.2	69.0	14.0	55.8	15.1	75.1	13.8	56.0				
Change Period (Y+Rc), s	8.0	8.0	7.0	7.0	8.0	8.0	7.0	7.0				
Max Green Setting (Gmax), s	28.0	45.0	7.0	50.0	9.0	64.0	8.0	49.0				
Max Q Clear Time (g_c+I1), s	12.0	36.5	8.6	3.9	7.1	15.2	6.8	51.0				
Green Ext Time (p_c), s	1.1	8.5	0.0	14.2	0.1	48.6	0.1	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			71.4									
HCM 2010 LOS			E									
<b>Notes</b>												

Timings  
2: Cumberland Blvd & Spring Rd

Existing AM  
11/15/2017

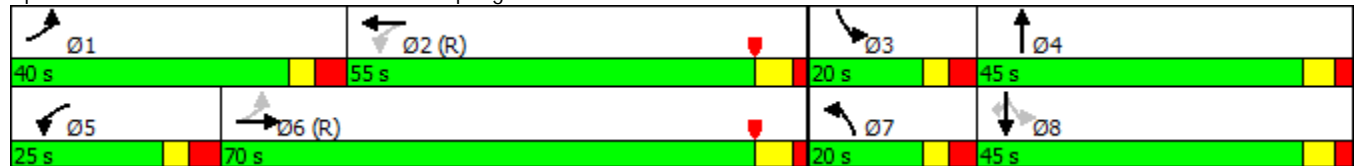


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↵	↑↑↑	↵	↑↑↑	↵↵	↑↑	↵	↑↑	↵
Traffic Volume (vph)	304	1534	116	226	145	469	114	367	128
Future Volume (vph)	304	1534	116	226	145	469	114	367	128
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	7	4	3	8	
Permitted Phases	6		2				8		8
Detector Phase	1	6	5	2	7	4	3	8	8
Switch Phase									
Minimum Initial (s)	4.0	12.0	4.0	12.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	15.0	44.0	15.0	41.0	15.0	45.0	15.0	44.0	44.0
Total Split (s)	40.0	70.0	25.0	55.0	20.0	45.0	20.0	45.0	45.0
Total Split (%)	25.0%	43.8%	15.6%	34.4%	12.5%	28.1%	12.5%	28.1%	28.1%
Yellow Time (s)	3.0	4.5	3.0	4.5	3.0	3.8	3.0	3.8	3.8
All-Red Time (s)	3.8	2.0	3.9	2.0	3.4	2.5	3.4	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.5	6.9	6.5	6.4	6.3	6.4	6.3	6.3
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary






















Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 154 (96%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 140  
 Control Type: Actuated-Coordinated

Splits and Phases: 2: Cumberland Blvd & Spring Rd



HCM 2010 Signalized Intersection Summary  
2: Cumberland Blvd & Spring Rd

Existing AM  
11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	304	1534	517	116	226	43	145	469	246	114	367	128
Future Volume (veh/h)	304	1534	517	116	226	43	145	469	246	114	367	128
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	330	1667	0	126	246	47	158	510	267	124	399	139
Adj No. of Lanes	1	3	0	1	3	0	2	2	0	1	2	1
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	673	2430	0	262	1734	319	203	537	280	170	867	386
Arrive On Green	0.26	0.96	0.00	0.06	0.40	0.40	0.06	0.24	0.24	0.07	0.24	0.24
Sat Flow, veh/h	1774	5253	0	1774	4318	794	3442	2249	1173	1774	3539	1578
Grp Volume(v), veh/h	330	1667	0	126	191	102	158	401	376	124	399	139
Grp Sat Flow(s),veh/h/ln	1774	1695	0	1774	1695	1722	1721	1770	1652	1774	1770	1578
Q Serve(g_s), s	18.2	6.7	0.0	6.6	5.7	6.0	7.2	35.7	35.9	8.4	15.4	11.7
Cycle Q Clear(g_c), s	18.2	6.7	0.0	6.6	5.7	6.0	7.2	35.7	35.9	8.4	15.4	11.7
Prop In Lane	1.00		0.00	1.00		0.46	1.00		0.71	1.00		1.00
Lane Grp Cap(c), veh/h	673	2430	0	262	1361	691	203	422	394	170	867	386
V/C Ratio(X)	0.49	0.69	0.00	0.48	0.14	0.15	0.78	0.95	0.95	0.73	0.46	0.36
Avail Cap(c_a), veh/h	807	2430	0	365	1361	691	293	428	400	206	867	386
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.76	0.00	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.7	2.0	0.0	25.4	30.4	30.5	74.3	59.9	60.0	46.2	51.4	50.0
Incr Delay (d2), s/veh	0.4	1.2	0.0	1.3	0.2	0.4	8.0	30.6	33.0	9.8	0.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	13.0	4.9	0.0	6.0	4.9	5.3	6.6	28.6	27.3	8.0	12.1	8.9
LnGrp Delay(d),s/veh	18.1	3.2	0.0	26.7	30.6	30.9	82.3	90.6	93.0	56.0	51.8	50.6
LnGrp LOS	B	A		C	C	C	F	F	F	E	D	D
Approach Vol, veh/h		1997			419			935			662	
Approach Delay, s/veh		5.7			29.5			90.1			52.3	
Approach LOS		A			C			F			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	27.9	70.7	16.8	44.5	15.7	83.0	15.8	45.5				
Change Period (Y+Rc), s	* 6.8	6.5	6.4	* 6.3	6.9	6.5	6.4	* 6.3				
Max Green Setting (Gmax), s	* 33	48.5	13.6	* 39	18.1	63.5	13.6	* 39				
Max Q Clear Time (g_c+I1), s	20.2	8.0	10.4	37.9	8.6	8.7	9.2	17.4				
Green Ext Time (p_c), s	0.9	39.4	0.1	0.3	0.2	52.9	0.2	5.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				35.5								
HCM 2010 LOS				D								
<b>Notes</b>												

Timings  
3: Sports Ave/Aldi Drwy & Spring Rd

Existing AM  
11/15/2017

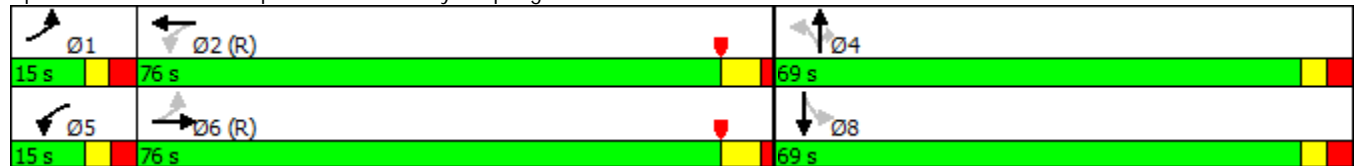


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↙	↑↑↑	↙	↑↑↑		↖	↗		↕
Traffic Volume (vph)	29	2366	23	479	10	0	13	10	3
Future Volume (vph)	29	2366	23	479	10	0	13	10	3
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases	1	6	5	2		4			8
Permitted Phases	6		2		4	4	4	8	
Detector Phase	1	6	5	2	4	4	4	8	8
Switch Phase									
Minimum Initial (s)	4.0	12.0	4.0	12.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	41.0	15.0	25.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	15.0	76.0	15.0	76.0	69.0	69.0	69.0	69.0	69.0
Total Split (%)	9.4%	47.5%	9.4%	47.5%	43.1%	43.1%	43.1%	43.1%	43.1%
Yellow Time (s)	3.0	4.8	3.0	4.8	3.1	3.1	3.1	3.1	3.1
All-Red Time (s)	3.3	1.6	3.1	1.6	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	6.3	6.4	6.1	6.4		6.5	6.5		6.5
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 2 (1%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 130  
 Control Type: Actuated-Coordinated





















Splits and Phases: 3: Sports Ave/Aldi Drwy & Spring Rd





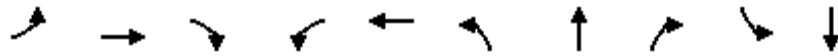
HCM 2010 Signalized Intersection Summary  
3: Sports Ave/Aldi Drwy & Spring Rd

Existing AM  
11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	2366	26	23	479	2	10	0	13	10	3	11
Future Volume (veh/h)	29	2366	26	23	479	2	10	0	13	10	3	11
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.98		0.98	0.98		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	33	2689	30	26	544	2	11	0	15	11	3	12
Adj No. of Lanes	1	3	0	1	3	0	0	1	1	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	729	4085	45	134	4103	15	154	0	118	70	25	54
Arrive On Green	0.02	0.79	0.79	0.02	0.78	0.78	0.08	0.00	0.08	0.08	0.08	0.08
Sat Flow, veh/h	1774	5185	58	1774	5230	19	1434	0	1546	495	332	709
Grp Volume(v), veh/h	33	1756	963	26	353	193	11	0	15	26	0	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1852	1774	1695	1859	1434	0	1546	1536	0	0
Q Serve(g_s), s	0.6	36.5	36.8	0.5	4.0	4.0	0.0	0.0	1.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.6	36.5	36.8	0.5	4.0	4.0	0.9	0.0	1.4	2.3	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.01	1.00		1.00	0.42		0.46
Lane Grp Cap(c), veh/h	729	2671	1459	134	2659	1458	154	0	118	149	0	0
V/C Ratio(X)	0.05	0.66	0.66	0.19	0.13	0.13	0.07	0.00	0.13	0.17	0.00	0.00
Avail Cap(c_a), veh/h	791	2671	1459	202	2659	1458	583	0	604	618	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.96	0.96	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.2	7.5	7.5	8.7	4.1	4.1	68.7	0.0	68.9	69.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.3	2.4	0.7	0.1	0.2	0.2	0.0	0.5	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	24.1	26.6	0.7	3.4	3.8	0.8	0.0	1.1	2.0	0.0	0.0
LnGrp Delay(d),s/veh	3.2	8.8	9.9	9.3	4.2	4.3	68.9	0.0	69.4	69.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	E		E	E		
Approach Vol, veh/h		2752			572			26			26	
Approach Delay, s/veh		9.1			4.5			69.2			69.9	
Approach LOS		A			A			E			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.4	131.9		18.7	8.8	132.4		18.7				
Change Period (Y+Rc), s	* 6.3	* 6.4		6.5	6.1	* 6.4		6.5				
Max Green Setting (Gmax), s	* 8.7	* 70		62.5	8.9	* 70		62.5				
Max Q Clear Time (g_c+I1), s	2.6	6.0		3.4	2.5	38.8		4.3				
Green Ext Time (p_c), s	0.0	63.4		0.2	0.0	30.8		0.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				9.2								
HCM 2010 LOS				A								
<b>Notes</b>												

Timings  
 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy

Existing PM  
 11/15/2017

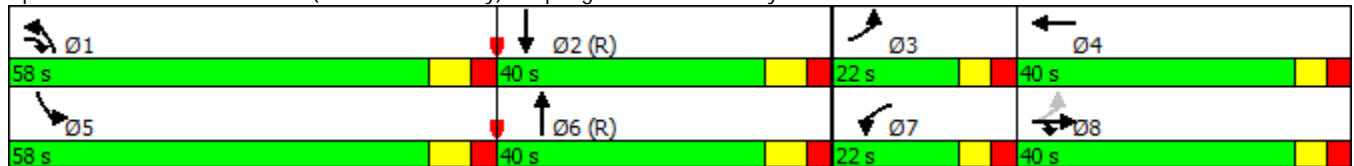


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↘	↑↑	↗	↘↘↘	↑↑	↘↘↘	↑↑↑	↗	↘↘	↑↑↑↑
Traffic Volume (vph)	109	248	397	539	328	1375	1767	211	48	1257
Future Volume (vph)	109	248	397	539	328	1375	1767	211	48	1257
Turn Type	pm+pt	NA	pt+ov	Prot	NA	Prot	NA	Free	Prot	NA
Protected Phases	3	8	8 1	7	4	1	6		5	2
Permitted Phases	8							Free		
Detector Phase	3	8	8 1	7	4	1	6		5	2
Switch Phase										
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	14.0		6.0	14.0
Minimum Split (s)	19.0	19.0		19.0	57.0	20.0	36.0		36.0	44.0
Total Split (s)	22.0	40.0		22.0	40.0	58.0	40.0		58.0	40.0
Total Split (%)	13.8%	25.0%		13.8%	25.0%	36.3%	25.0%		36.3%	25.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	5.0	5.0		5.0	5.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0		7.0	7.0	8.0	8.0		8.0	8.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag		Lead	Lag
Lead-Lag Optimize?										
Recall Mode	None	None		None	None	None	C-Min		None	C-Min

Intersection Summary
























Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 15 (9%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated

Splits and Phases: 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy



HCM 2010 Signalized Intersection Summary  
 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy

Existing PM  
 11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	248	397	539	328	49	1375	1767	211	48	1257	60
Future Volume (veh/h)	109	248	397	539	328	49	1375	1767	211	48	1257	60
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	117	267	427	580	353	53	1478	1900	0	52	1352	65
Adj No. of Lanes	1	2	2	3	2	0	3	4	1	2	5	0
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	484	1243	469	500	74	1547	3513	868	116	2039	98
Arrive On Green	0.02	0.05	0.05	0.09	0.16	0.16	0.31	0.55	0.00	0.03	0.27	0.27
Sat Flow, veh/h	1774	3539	2787	5003	3091	460	5003	6408	1583	3442	7477	358
Grp Volume(v), veh/h	117	267	427	580	201	205	1478	1900	0	52	1090	327
Grp Sat Flow(s),veh/h/ln	1774	1770	1393	1668	1770	1782	1668	1602	1583	1721	1509	1800
Q Serve(g_s), s	9.0	11.8	15.8	15.0	17.2	17.5	46.3	30.5	0.0	2.4	25.7	25.8
Cycle Q Clear(g_c), s	9.0	11.8	15.8	15.0	17.2	17.5	46.3	30.5	0.0	2.4	25.7	25.8
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		0.20
Lane Grp Cap(c), veh/h	218	484	1243	469	286	288	1547	3513	868	116	1646	491
V/C Ratio(X)	0.54	0.55	0.34	1.24	0.70	0.71	0.96	0.54	0.00	0.45	0.66	0.67
Avail Cap(c_a), veh/h	263	730	1437	469	365	367	1563	3513	868	1076	1646	491
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.84	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.4	71.6	32.0	72.5	63.4	63.5	54.2	23.2	0.0	75.8	51.6	51.7
Incr Delay (d2), s/veh	1.7	0.8	0.1	123.7	4.2	4.6	13.6	0.6	0.0	2.7	2.1	7.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.7	9.5	9.9	22.1	13.6	13.9	31.2	19.7	0.0	2.1	16.3	20.0
LnGrp Delay(d),s/veh	59.1	72.4	32.1	196.2	67.7	68.2	67.7	23.8	0.0	78.5	53.8	58.7
LnGrp LOS	E	E	C	F	E	E	E	C		E	D	E
Approach Vol, veh/h		811			986			3378			1469	
Approach Delay, s/veh		49.3			143.4			43.0			55.7	
Approach LOS		D			F			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	57.5	51.6	18.0	32.9	13.4	95.7	22.0	28.9				
Change Period (Y+Rc), s	8.0	8.0	7.0	7.0	8.0	8.0	7.0	7.0				
Max Green Setting (Gmax), s	50.0	32.0	15.0	33.0	50.0	32.0	15.0	33.0				
Max Q Clear Time (g_c+I1), s	48.3	27.8	11.0	19.5	4.4	32.5	17.0	17.8				
Green Ext Time (p_c), s	1.1	4.2	0.1	3.9	0.2	0.0	0.0	4.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			61.5									
HCM 2010 LOS			E									
<b>Notes</b>												

Timings  
2: Cumberland Blvd & Spring Rd

Existing PM  
11/15/2017

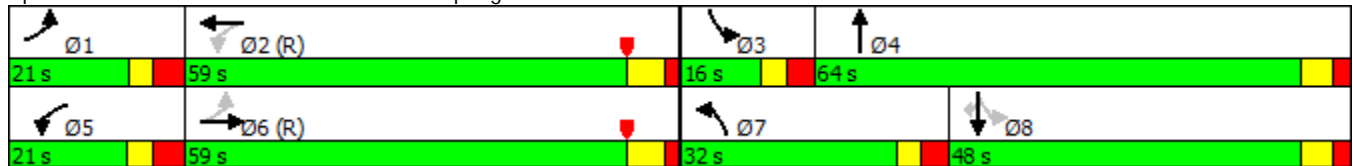


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↵	↑↑↓	↵	↑↑↓	↵↵	↑↓	↵	↑↑	↵
Traffic Volume (vph)	294	589	389	1364	557	605	84	586	555
Future Volume (vph)	294	589	389	1364	557	605	84	586	555
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	7	4	3	8	
Permitted Phases	6		2				8		8
Detector Phase	1	6	5	2	7	4	3	8	8
Switch Phase									
Minimum Initial (s)	4.0	12.0	4.0	12.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	15.0	44.0	15.0	41.0	15.0	45.0	15.0	44.0	44.0
Total Split (s)	21.0	59.0	21.0	59.0	32.0	64.0	16.0	48.0	48.0
Total Split (%)	13.1%	36.9%	13.1%	36.9%	20.0%	40.0%	10.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.5	3.0	4.5	3.0	3.8	3.0	3.8	3.8
All-Red Time (s)	3.8	2.0	3.9	2.0	3.4	2.5	3.4	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.5	6.9	6.5	6.4	6.3	6.4	6.3	6.3
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary






















Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 77 (48%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated

Splits and Phases: 2: Cumberland Blvd & Spring Rd



HCM 2010 Signalized Intersection Summary  
2: Cumberland Blvd & Spring Rd

Existing PM  
11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	294	589	279	389	1364	74	557	605	150	84	586	555
Future Volume (veh/h)	294	589	279	389	1364	74	557	605	150	84	586	555
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	0.99		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	297	595	0	393	1378	75	563	611	152	85	592	561
Adj No. of Lanes	1	3	0	1	3	0	2	2	0	1	2	1
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	227	1669	0	426	1619	88	551	1050	261	267	922	406
Arrive On Green	0.18	0.66	0.00	0.09	0.33	0.33	0.16	0.37	0.37	0.05	0.26	0.26
Sat Flow, veh/h	1774	5253	0	1774	4934	269	3442	2806	697	1774	3539	1560
Grp Volume(v), veh/h	297	595	0	393	947	506	563	385	378	85	592	561
Grp Sat Flow(s),veh/h/ln	1774	1695	0	1774	1695	1813	1721	1770	1733	1774	1770	1560
Q Serve(g_s), s	14.2	8.4	0.0	14.1	41.7	41.7	25.6	27.8	28.0	5.6	23.8	41.7
Cycle Q Clear(g_c), s	14.2	8.4	0.0	14.1	41.7	41.7	25.6	27.8	28.0	5.6	23.8	41.7
Prop In Lane	1.00		0.00	1.00		0.15	1.00		0.40	1.00		1.00
Lane Grp Cap(c), veh/h	227	1669	0	426	1112	595	551	662	648	267	922	406
V/C Ratio(X)	1.31	0.36	0.00	0.92	0.85	0.85	1.02	0.58	0.58	0.32	0.64	1.38
Avail Cap(c_a), veh/h	227	1669	0	426	1112	595	551	662	648	291	922	406
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.00	0.29	0.29	0.29	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.1	19.9	0.0	43.7	50.1	50.1	67.2	40.0	40.1	40.7	52.5	59.1
Incr Delay (d2), s/veh	165.7	0.6	0.0	10.1	2.6	4.7	44.1	1.3	1.3	0.7	1.5	185.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	31.3	7.1	0.0	14.7	23.8	25.7	28.0	19.9	19.6	5.0	17.4	70.1
LnGrp Delay(d),s/veh	201.8	20.5	0.0	53.8	52.7	54.8	111.3	41.3	41.4	41.4	54.0	245.0
LnGrp LOS	F	C		D	D	D	F	D	D	D	D	F
Approach Vol, veh/h		892			1846			1326			1238	
Approach Delay, s/veh		80.9			53.5			71.1			139.7	
Approach LOS		F			D			E			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.0	59.0	13.8	66.2	21.0	59.0	32.0	48.0				
Change Period (Y+Rc), s	* 6.8	6.5	6.4	* 6.3	6.9	6.5	6.4	* 6.3				
Max Green Setting (Gmax), s	* 14	52.5	9.6	* 58	14.1	52.5	25.6	* 42				
Max Q Clear Time (g_c+I1), s	16.2	43.7	7.6	30.0	16.1	10.4	27.6	43.7				
Green Ext Time (p_c), s	0.0	8.8	0.0	9.8	0.0	41.1	0.0	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			82.6									
HCM 2010 LOS			F									
<b>Notes</b>												

Timings  
3: Sports Ave/Aldi Drwy & Spring Rd

Existing PM  
11/15/2017



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↗	↑↑↑	↖	↑↑↑		↖	↗		↕
Traffic Volume (vph)	26	1061	25	2536	24	1	12	31	3
Future Volume (vph)	26	1061	25	2536	24	1	12	31	3
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases	1	6	5	2		4			8
Permitted Phases	6		2		4	4	4	8	
Detector Phase	1	6	5	2	4	4	4	8	8
Switch Phase									
Minimum Initial (s)	4.0	12.0	4.0	12.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	41.0	15.0	25.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	15.0	104.0	15.0	104.0	41.0	41.0	41.0	41.0	41.0
Total Split (%)	9.4%	65.0%	9.4%	65.0%	25.6%	25.6%	25.6%	25.6%	25.6%
Yellow Time (s)	3.0	4.8	3.0	4.8	3.1	3.1	3.1	3.1	3.1
All-Red Time (s)	3.3	1.6	3.1	1.6	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	6.3	6.4	6.1	6.4		6.5	6.5		6.5
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary




















Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 137 (86%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 120  
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Sports Ave/Aldi Drwy & Spring Rd



HCM 2010 Signalized Intersection Summary  
3: Sports Ave/Aldi Drwy & Spring Rd

Existing PM  
11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	1061	22	25	2536	6	24	1	12	31	3	38
Future Volume (veh/h)	26	1061	22	25	2536	6	24	1	12	31	3	38
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.98		0.96	0.97		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	27	1083	22	26	2588	6	24	1	12	32	3	39
Adj No. of Lanes	1	3	0	1	3	0	0	1	1	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	164	3794	77	416	3866	9	197	7	190	99	19	96
Arrive On Green	0.02	0.74	0.74	0.03	1.00	1.00	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1774	5130	104	1774	5239	12	1229	59	1526	538	155	772
Grp Volume(v), veh/h	27	716	389	26	1674	920	25	0	12	74	0	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1844	1774	1695	1861	1288	0	1526	1465	0	0
Q Serve(g_s), s	0.6	11.1	11.2	0.6	0.0	0.0	0.0	0.0	1.1	4.4	0.0	0.0
Cycle Q Clear(g_c), s	0.6	11.1	11.2	0.6	0.0	0.0	3.0	0.0	1.1	7.4	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.01	0.96		1.00	0.43		0.53
Lane Grp Cap(c), veh/h	164	2507	1364	416	2502	1373	204	0	190	215	0	0
V/C Ratio(X)	0.16	0.29	0.29	0.06	0.67	0.67	0.12	0.00	0.06	0.34	0.00	0.00
Avail Cap(c_a), veh/h	229	2507	1364	484	2502	1373	328	0	329	348	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.21	0.21	0.21	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.9	6.9	6.9	5.2	0.0	0.0	62.6	0.0	61.8	64.5	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.3	0.5	0.0	0.3	0.6	0.3	0.0	0.1	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	9.0	9.8	0.5	0.2	0.4	1.8	0.0	0.9	5.5	0.0	0.0
LnGrp Delay(d),s/veh	5.3	7.2	7.4	5.2	0.3	0.6	62.9	0.0	61.9	65.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	E		E	E		
Approach Vol, veh/h		1132			2620			37				74
Approach Delay, s/veh		7.2			0.4			62.6				65.5
Approach LOS		A			A			E				E
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	124.5		26.4	8.8	124.7		26.4				
Change Period (Y+Rc), s	* 6.3	* 6.4		6.5	6.1	* 6.4		6.5				
Max Green Setting (Gmax), s	* 8.7	* 98		34.5	8.9	* 98		34.5				
Max Q Clear Time (g_c+I1), s	2.6	2.0		5.0	2.6	13.2		9.4				
Green Ext Time (p_c), s	0.0	95.1		0.4	0.0	84.1		0.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				4.3								
HCM 2010 LOS				A								
<b>Notes</b>												

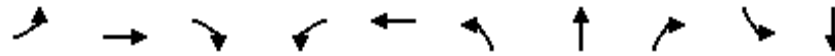
**FUTURE “NO-BUILD” INTERSECTION  
ANALYSIS**



Timings  
 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy

Future No-Build AM

11/15/2017



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↵	↑↑	↗↗	↘↘↘	↑↑	↘↘↘	↑↑↑	↗	↘↘	↑↑↑↑
Traffic Volume (vph)	102	553	1316	145	57	309	771	197	107	1913
Future Volume (vph)	102	553	1316	145	57	309	771	197	107	1913
Turn Type	pm+pt	NA	pm+ov	Prot	NA	Prot	NA	Free	Prot	NA
Protected Phases	3	8	1	7	4	1	6		5	2
Permitted Phases	8		8					Free		
Detector Phase	3	8	1	7	4	1	6		5	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	14.0		6.0	14.0
Minimum Split (s)	14.0	44.0	14.0	14.0	57.0	14.0	44.0		14.0	44.0
Total Split (s)	14.0	56.0	36.0	15.0	57.0	36.0	72.0		17.0	53.0
Total Split (%)	8.8%	35.0%	22.5%	9.4%	35.6%	22.5%	45.0%		10.6%	33.1%
Yellow Time (s)	4.0	4.0	5.0	4.0	4.0	5.0	5.0		5.0	5.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	8.0	7.0	7.0	8.0	8.0		8.0	8.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag		Lead	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Min		None	C-Min

Intersection Summary
























Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 44 (28%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated

Splits and Phases: 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy



HCM 2010 Signalized Intersection Summary  
 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy

Future No-Build AM  
 11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	553	1316	145	57	2	309	771	197	107	1913	49
Future Volume (veh/h)	102	553	1316	145	57	2	309	771	197	107	1913	49
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	112	608	1446	159	63	2	340	847	0	118	2102	54
Adj No. of Lanes	1	2	2	3	2	0	3	4	1	2	5	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	514	1084	1095	221	1074	34	433	2663	658	160	2878	74
Arrive On Green	0.07	0.51	0.51	0.04	0.31	0.31	0.09	0.42	0.00	0.05	0.38	0.38
Sat Flow, veh/h	1774	3539	2787	5003	3502	111	5003	6408	1583	3442	7666	197
Grp Volume(v), veh/h	112	608	1446	159	32	33	340	847	0	118	1655	501
Grp Sat Flow(s),veh/h/ln	1774	1770	1393	1668	1770	1843	1668	1602	1583	1721	1509	1828
Q Serve(g_s), s	7.0	18.8	49.0	5.0	2.0	2.0	10.7	14.2	0.0	5.4	37.7	37.8
Cycle Q Clear(g_c), s	7.0	18.8	49.0	5.0	2.0	2.0	10.7	14.2	0.0	5.4	37.7	37.8
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	514	1084	1095	221	543	565	433	2663	658	160	2266	686
V/C Ratio(X)	0.22	0.56	1.32	0.72	0.06	0.06	0.78	0.32	0.00	0.74	0.73	0.73
Avail Cap(c_a), veh/h	514	1084	1095	250	553	576	875	2663	658	194	2266	686
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.0	31.7	36.3	75.5	39.2	39.2	71.6	31.5	0.0	75.3	43.0	43.0
Incr Delay (d2), s/veh	0.0	0.1	144.9	8.4	0.0	0.0	3.2	0.3	0.0	11.3	2.1	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.3	10.6	80.3	4.5	1.8	1.9	8.7	10.5	0.0	5.1	22.7	27.8
LnGrp Delay(d),s/veh	35.1	31.8	181.2	83.9	39.2	39.2	74.8	31.8	0.0	86.6	45.1	49.7
LnGrp LOS	D	C	F	F	D	D	E	C		F	D	D
Approach Vol, veh/h		2166			224			1187			2274	
Approach Delay, s/veh		131.7			70.9			44.1			48.3	
Approach LOS		F			E			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.9	68.1	14.0	56.1	15.4	74.5	14.1	56.0				
Change Period (Y+Rc), s	8.0	8.0	7.0	7.0	8.0	8.0	7.0	7.0				
Max Green Setting (Gmax), s	28.0	45.0	7.0	50.0	9.0	64.0	8.0	49.0				
Max Q Clear Time (g_c+I1), s	12.7	39.8	9.0	4.0	7.4	16.2	7.0	51.0				
Green Ext Time (p_c), s	1.2	5.2	0.0	15.7	0.0	47.7	0.1	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			79.2									
HCM 2010 LOS			E									
<b>Notes</b>												

Timings  
2: Cumberland Blvd & Spring Rd

Future No-Build AM  
11/15/2017



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↵	↑↑↓	↵	↑↑↓	↵↵	↑↓	↵	↑↑	↵
Traffic Volume (vph)	323	1627	123	240	154	498	121	389	136
Future Volume (vph)	323	1627	123	240	154	498	121	389	136
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	7	4	3	8	
Permitted Phases	6		2				8		8
Detector Phase	1	6	5	2	7	4	3	8	8
Switch Phase									
Minimum Initial (s)	4.0	12.0	4.0	12.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	15.0	44.0	15.0	41.0	15.0	45.0	15.0	44.0	44.0
Total Split (s)	40.0	70.0	25.0	55.0	20.0	45.0	20.0	45.0	45.0
Total Split (%)	25.0%	43.8%	15.6%	34.4%	12.5%	28.1%	12.5%	28.1%	28.1%
Yellow Time (s)	3.0	4.5	3.0	4.5	3.0	3.8	3.0	3.8	3.8
All-Red Time (s)	3.8	2.0	3.9	2.0	3.4	2.5	3.4	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.5	6.9	6.5	6.4	6.3	6.4	6.3	6.3
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary






















Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 154 (96%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated

Splits and Phases: 2: Cumberland Blvd & Spring Rd



HCM 2010 Signalized Intersection Summary  
2: Cumberland Blvd & Spring Rd

Future No-Build AM  
11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	323	1627	548	123	240	46	154	498	261	121	389	136
Future Volume (veh/h)	323	1627	548	123	240	46	154	498	261	121	389	136
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	351	1768	0	134	261	50	167	541	284	132	423	148
Adj No. of Lanes	1	3	0	1	3	0	2	2	0	1	2	1
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	664	2377	0	253	1656	305	212	543	284	167	880	392
Arrive On Green	0.29	0.93	0.00	0.06	0.38	0.38	0.06	0.24	0.24	0.07	0.25	0.25
Sat Flow, veh/h	1774	5253	0	1774	4315	796	3442	2245	1176	1774	3539	1578
Grp Volume(v), veh/h	351	1768	0	134	203	108	167	426	399	132	423	148
Grp Sat Flow(s),veh/h/ln	1774	1695	0	1774	1695	1722	1721	1770	1652	1774	1770	1578
Q Serve(g_s), s	20.1	11.9	0.0	7.3	6.3	6.6	7.7	38.5	38.6	8.9	16.3	12.4
Cycle Q Clear(g_c), s	20.1	11.9	0.0	7.3	6.3	6.6	7.7	38.5	38.6	8.9	16.3	12.4
Prop In Lane	1.00		0.00	1.00		0.46	1.00		0.71	1.00		1.00
Lane Grp Cap(c), veh/h	664	2377	0	253	1301	660	212	428	400	167	880	392
V/C Ratio(X)	0.53	0.74	0.00	0.53	0.16	0.16	0.79	1.00	1.00	0.79	0.48	0.38
Avail Cap(c_a), veh/h	777	2377	0	349	1301	660	293	428	400	196	880	392
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	0.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	3.2	0.0	26.9	32.3	32.4	74.0	60.6	60.6	45.8	51.3	49.8
Incr Delay (d2), s/veh	0.5	1.6	0.0	1.6	0.2	0.5	9.4	42.3	44.5	17.0	0.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	14.0	8.0	0.0	6.6	5.4	5.8	7.1	31.9	30.3	8.8	12.7	9.3
LnGrp Delay(d),s/veh	18.7	4.7	0.0	28.5	32.6	32.9	83.5	102.9	105.2	62.8	51.7	50.4
LnGrp LOS	B	A		C	C	C	F	F	F	E	D	D
Approach Vol, veh/h		2119			445			992			703	
Approach Delay, s/veh		7.0			31.4			100.5			53.5	
Approach LOS		A			C			F			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	29.8	67.9	17.3	45.0	16.4	81.3	16.2	46.1				
Change Period (Y+Rc), s	* 6.8	6.5	6.4	* 6.3	6.9	6.5	6.4	* 6.3				
Max Green Setting (Gmax), s	* 33	48.5	13.6	* 39	18.1	63.5	13.6	* 39				
Max Q Clear Time (g_c+I1), s	22.1	8.6	10.9	40.6	9.3	13.9	9.7	18.3				
Green Ext Time (p_c), s	0.9	39.2	0.1	0.0	0.2	48.5	0.2	5.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			39.0									
HCM 2010 LOS			D									
<b>Notes</b>												

Timings  
3: Sports Ave/Aldi Drwy & Spring Rd

Future No-Build AM  
11/15/2017

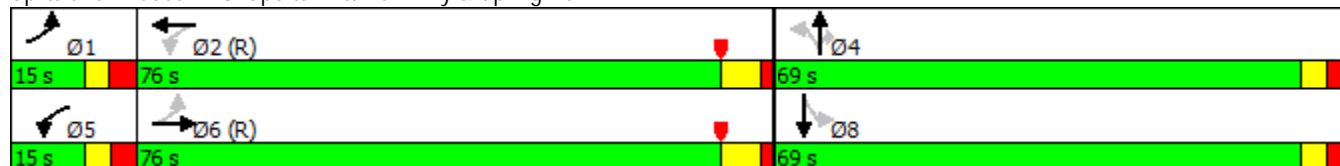


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↙	↑↑↑	↙	↑↑↑		↖	↗		↕
Traffic Volume (vph)	31	2510	24	508	11	0	14	11	3
Future Volume (vph)	31	2510	24	508	11	0	14	11	3
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases	1	6	5	2		4			8
Permitted Phases	6		2		4	4	4	8	
Detector Phase	1	6	5	2	4	4	4	8	8
Switch Phase									
Minimum Initial (s)	4.0	12.0	4.0	12.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	41.0	15.0	25.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	15.0	76.0	15.0	76.0	69.0	69.0	69.0	69.0	69.0
Total Split (%)	9.4%	47.5%	9.4%	47.5%	43.1%	43.1%	43.1%	43.1%	43.1%
Yellow Time (s)	3.0	4.8	3.0	4.8	3.1	3.1	3.1	3.1	3.1
All-Red Time (s)	3.3	1.6	3.1	1.6	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	6.3	6.4	6.1	6.4		6.5	6.5		6.5
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary




















Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 2 (1%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 140  
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Sports Ave/Aldi Drwy & Spring Rd



HCM 2010 Signalized Intersection Summary  
 3: Sports Ave/Aldi Drwy & Spring Rd

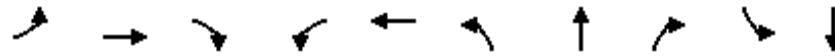
Future No-Build AM  
 11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	2510	28	24	508	2	11	0	14	11	3	12
Future Volume (veh/h)	31	2510	28	24	508	2	11	0	14	11	3	12
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.98		0.98	0.98		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	35	2852	32	27	577	2	12	0	16	12	3	14
Adj No. of Lanes	1	3	0	1	3	0	0	1	1	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	708	4080	46	123	4098	14	156	0	119	69	24	57
Arrive On Green	0.02	0.79	0.79	0.02	0.78	0.78	0.08	0.00	0.08	0.08	0.08	0.08
Sat Flow, veh/h	1774	5185	58	1774	5232	18	1440	0	1546	479	314	741
Grp Volume(v), veh/h	35	1861	1023	27	374	205	12	0	16	29	0	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1852	1774	1695	1859	1440	0	1546	1534	0	0
Q Serve(g_s), s	0.6	41.5	42.0	0.5	4.3	4.3	0.0	0.0	1.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.6	41.5	42.0	0.5	4.3	4.3	1.0	0.0	1.5	2.6	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.01	1.00		1.00	0.41		0.48
Lane Grp Cap(c), veh/h	708	2668	1458	123	2656	1457	156	0	119	150	0	0
V/C Ratio(X)	0.05	0.70	0.70	0.22	0.14	0.14	0.08	0.00	0.13	0.19	0.00	0.00
Avail Cap(c_a), veh/h	769	2668	1458	190	2656	1457	583	0	604	617	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.96	0.96	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.2	8.1	8.1	10.9	4.2	4.2	68.6	0.0	68.9	69.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.5	2.8	0.9	0.1	0.2	0.2	0.0	0.5	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	27.0	30.2	0.8	3.6	4.0	0.9	0.0	1.2	2.2	0.0	0.0
LnGrp Delay(d),s/veh	3.3	9.6	11.0	11.8	4.3	4.4	68.9	0.0	69.4	70.0	0.0	0.0
LnGrp LOS	A	A	B	B	A	A	E		E	E		
Approach Vol, veh/h		2919			606			28			29	
Approach Delay, s/veh		10.0			4.7			69.2			70.0	
Approach LOS		A			A			E			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.5	131.7		18.8	8.9	132.3		18.8				
Change Period (Y+Rc), s	* 6.3	* 6.4		6.5	6.1	* 6.4		6.5				
Max Green Setting (Gmax), s	* 8.7	* 70		62.5	8.9	* 70		62.5				
Max Q Clear Time (g_c+I1), s	2.6	6.3		3.5	2.5	44.0		4.6				
Green Ext Time (p_c), s	0.0	63.1		0.2	0.0	25.6		0.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			10.0									
HCM 2010 LOS			B									
<b>Notes</b>												

Timings  
 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy

Future No-Build PM

11/15/2017

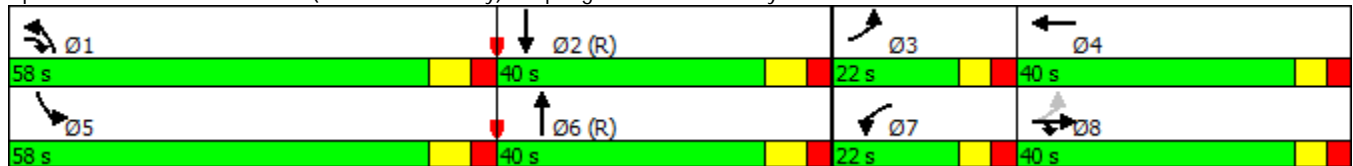


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↶	↗↗	↶↶	↶↶↶	↗↗	↶↶↶	↗↗↗	↶	↶↶	↗↗↗↗
Traffic Volume (vph)	116	263	421	572	348	1459	1875	224	51	1334
Future Volume (vph)	116	263	421	572	348	1459	1875	224	51	1334
Turn Type	pm+pt	NA	pt+ov	Prot	NA	Prot	NA	Free	Prot	NA
Protected Phases	3	8	8 1	7	4	1	6		5	2
Permitted Phases	8							Free		
Detector Phase	3	8	8 1	7	4	1	6		5	2
Switch Phase										
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	14.0		6.0	14.0
Minimum Split (s)	19.0	19.0		19.0	57.0	20.0	36.0		36.0	44.0
Total Split (s)	22.0	40.0		22.0	40.0	58.0	40.0		58.0	40.0
Total Split (%)	13.8%	25.0%		13.8%	25.0%	36.3%	25.0%		36.3%	25.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	5.0	5.0		5.0	5.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0		7.0	7.0	8.0	8.0		8.0	8.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag		Lead	Lag
Lead-Lag Optimize?										
Recall Mode	None	None		None	None	None	C-Min		None	C-Min

Intersection Summary
























Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 15 (9%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated

Splits and Phases: 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy



HCM 2010 Signalized Intersection Summary  
 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy

Future No-Build PM  
 11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	263	421	572	348	52	1459	1875	224	51	1334	64
Future Volume (veh/h)	116	263	421	572	348	52	1459	1875	224	51	1334	64
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	125	283	453	615	374	56	1569	2016	0	55	1434	69
Adj No. of Lanes	1	2	2	3	2	0	3	4	1	2	5	0
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	506	1269	469	508	76	1563	3470	857	118	1968	94
Arrive On Green	0.02	0.05	0.05	0.09	0.16	0.16	0.31	0.54	0.00	0.03	0.26	0.26
Sat Flow, veh/h	1774	3539	2787	5003	3092	459	5003	6408	1583	3442	7476	358
Grp Volume(v), veh/h	125	283	453	615	213	217	1569	2016	0	55	1156	347
Grp Sat Flow(s),veh/h/ln	1774	1770	1393	1668	1770	1782	1668	1602	1583	1721	1509	1800
Q Serve(g_s), s	9.5	12.5	16.6	15.0	18.3	18.6	50.0	33.7	0.0	2.5	27.9	28.1
Cycle Q Clear(g_c), s	9.5	12.5	16.6	15.0	18.3	18.6	50.0	33.7	0.0	2.5	27.9	28.1
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		0.20
Lane Grp Cap(c), veh/h	220	506	1269	469	291	293	1563	3470	857	118	1589	474
V/C Ratio(X)	0.57	0.56	0.36	1.31	0.73	0.74	1.00	0.58	0.00	0.47	0.73	0.73
Avail Cap(c_a), veh/h	257	730	1446	469	365	367	1563	3470	857	1076	1589	474
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.81	0.81	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.6	71.3	31.4	72.5	63.5	63.6	55.0	24.5	0.0	75.8	53.7	53.8
Incr Delay (d2), s/veh	1.9	0.8	0.1	154.7	5.6	6.0	23.6	0.7	0.0	2.9	3.0	9.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.0	9.9	10.2	24.5	14.4	14.8	47.6	21.4	0.0	2.2	17.6	21.6
LnGrp Delay(d),s/veh	58.5	72.1	31.5	227.2	69.1	69.6	78.6	25.3	0.0	78.7	56.7	63.4
LnGrp LOS	E	E	C	F	E	E	F	C		E	E	E
Approach Vol, veh/h		861			1045			3585			1558	
Approach Delay, s/veh		48.8			162.3			48.6			58.9	
Approach LOS		D			F			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	58.0	50.1	18.6	33.3	13.5	94.6	22.0	29.9				
Change Period (Y+Rc), s	8.0	8.0	7.0	7.0	8.0	8.0	7.0	7.0				
Max Green Setting (Gmax), s	50.0	32.0	15.0	33.0	50.0	32.0	15.0	33.0				
Max Q Clear Time (g_c+I1), s	52.0	30.1	11.5	20.6	4.5	35.7	17.0	18.6				
Green Ext Time (p_c), s	0.0	1.9	0.1	4.0	0.2	0.0	0.0	4.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			67.8									
HCM 2010 LOS			E									
<b>Notes</b>												



Timings  
2: Cumberland Blvd & Spring Rd

Future No-Build PM  
11/15/2017

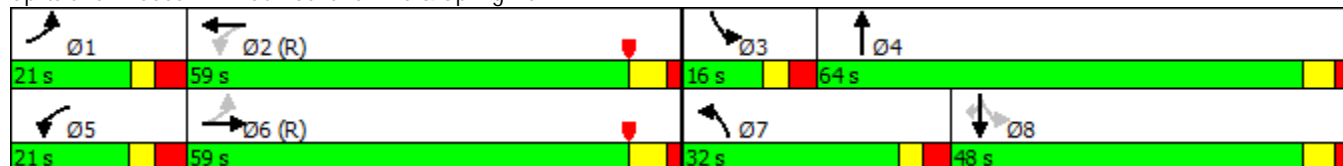


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↵	↑↑↓	↵	↑↑↓	↵↵	↑↓	↵	↑↑	↵
Traffic Volume (vph)	312	625	413	1447	591	642	89	622	589
Future Volume (vph)	312	625	413	1447	591	642	89	622	589
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	7	4	3	8	
Permitted Phases	6		2				8		8
Detector Phase	1	6	5	2	7	4	3	8	8
Switch Phase									
Minimum Initial (s)	4.0	12.0	4.0	12.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	15.0	44.0	15.0	41.0	15.0	45.0	15.0	44.0	44.0
Total Split (s)	21.0	59.0	21.0	59.0	32.0	64.0	16.0	48.0	48.0
Total Split (%)	13.1%	36.9%	13.1%	36.9%	20.0%	40.0%	10.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.5	3.0	4.5	3.0	3.8	3.0	3.8	3.8
All-Red Time (s)	3.8	2.0	3.9	2.0	3.4	2.5	3.4	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.5	6.9	6.5	6.4	6.3	6.4	6.3	6.3
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary






















Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 77 (48%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated

Splits and Phases: 2: Cumberland Blvd & Spring Rd



HCM 2010 Signalized Intersection Summary  
2: Cumberland Blvd & Spring Rd

Future No-Build PM  
11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	312	625	296	413	1447	79	591	642	159	89	622	589
Future Volume (veh/h)	312	625	296	413	1447	79	591	642	159	89	622	589
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	0.99		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	315	631	0	417	1462	80	597	648	161	90	628	595
Adj No. of Lanes	1	3	0	1	3	0	2	2	0	1	2	1
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	1669	0	415	1619	89	551	1044	259	254	922	406
Arrive On Green	0.18	0.66	0.00	0.09	0.33	0.33	0.16	0.37	0.37	0.05	0.26	0.26
Sat Flow, veh/h	1774	5253	0	1774	4933	270	3442	2806	696	1774	3539	1560
Grp Volume(v), veh/h	315	631	0	417	1005	537	597	408	401	90	628	595
Grp Sat Flow(s),veh/h/ln	1774	1695	0	1774	1695	1812	1721	1770	1733	1774	1770	1560
Q Serve(g_s), s	14.2	9.1	0.0	14.1	45.3	45.3	25.6	30.1	30.2	5.9	25.5	41.7
Cycle Q Clear(g_c), s	14.2	9.1	0.0	14.1	45.3	45.3	25.6	30.1	30.2	5.9	25.5	41.7
Prop In Lane	1.00		0.00	1.00		0.15	1.00		0.40	1.00		1.00
Lane Grp Cap(c), veh/h	218	1669	0	415	1112	595	551	658	644	254	922	406
V/C Ratio(X)	1.45	0.38	0.00	1.00	0.90	0.90	1.08	0.62	0.62	0.35	0.68	1.46
Avail Cap(c_a), veh/h	218	1669	0	415	1112	595	551	658	644	274	922	406
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.00	0.19	0.19	0.19	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.8	20.0	0.0	46.4	51.3	51.3	67.2	41.0	41.1	40.8	53.2	59.2
Incr Delay (d2), s/veh	224.8	0.6	0.0	20.1	2.7	4.8	63.1	1.8	1.8	0.8	2.1	221.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	41.6	7.7	0.0	24.8	24.9	26.9	30.6	21.4	21.1	5.3	18.6	77.4
LnGrp Delay(d),s/veh	262.7	20.7	0.0	66.5	54.0	56.1	130.3	42.8	42.9	41.6	55.2	281.0
LnGrp LOS	F	C		F	D	E	F	D	D	D	E	F
Approach Vol, veh/h		946			1959			1406			1313	
Approach Delay, s/veh		101.2			57.2			80.0			156.6	
Approach LOS		F			E			E			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.0	59.0	14.2	65.8	21.0	59.0	32.0	48.0				
Change Period (Y+Rc), s	* 6.8	6.5	6.4	* 6.3	6.9	6.5	6.4	* 6.3				
Max Green Setting (Gmax), s	* 14	52.5	9.6	* 58	14.1	52.5	25.6	* 42				
Max Q Clear Time (g_c+I1), s	16.2	47.3	7.9	32.2	16.1	11.1	27.6	43.7				
Green Ext Time (p_c), s	0.0	5.2	0.0	10.3	0.0	40.8	0.0	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			93.5									
HCM 2010 LOS			F									
<b>Notes</b>												

Timings  
3: Sports Ave/Aldi Drwy & Spring Rd

Future No-Build PM  
11/15/2017



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	28	1126	27	2690	25	1	13	33	3
Future Volume (vph)	28	1126	27	2690	25	1	13	33	3
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases	1	6	5	2		4			8
Permitted Phases	6		2		4	4	4	8	
Detector Phase	1	6	5	2	4	4	4	8	8
Switch Phase									
Minimum Initial (s)	4.0	12.0	4.0	12.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	41.0	15.0	25.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	15.0	104.0	15.0	104.0	41.0	41.0	41.0	41.0	41.0
Total Split (%)	9.4%	65.0%	9.4%	65.0%	25.6%	25.6%	25.6%	25.6%	25.6%
Yellow Time (s)	3.0	4.8	3.0	4.8	3.1	3.1	3.1	3.1	3.1
All-Red Time (s)	3.3	1.6	3.1	1.6	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	6.3	6.4	6.1	6.4		6.5	6.5		6.5
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary




















Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 137 (86%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow  
 Natural Cycle: 130  
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Sports Ave/Aldi Drwy & Spring Rd



HCM 2010 Signalized Intersection Summary  
3: Sports Ave/Aldi Drwy & Spring Rd

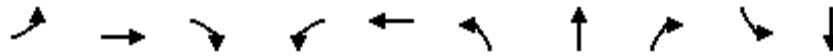
Future No-Build PM  
11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	1126	23	27	2690	6	25	1	13	33	3	40
Future Volume (veh/h)	28	1126	23	27	2690	6	25	1	13	33	3	40
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.98		0.96	0.97		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	29	1149	23	28	2745	6	26	1	13	34	3	41
Adj No. of Lanes	1	3	0	1	3	0	0	1	1	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	152	3775	76	391	3846	8	198	7	195	100	19	96
Arrive On Green	0.02	0.74	0.74	0.04	1.00	1.00	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	1774	5132	103	1774	5239	11	1202	53	1528	532	148	753
Grp Volume(v), veh/h	29	759	413	28	1776	975	27	0	13	78	0	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1844	1774	1695	1861	1255	0	1528	1432	0	0
Q Serve(g_s), s	0.7	12.2	12.2	0.6	0.0	0.0	0.0	0.0	1.2	4.9	0.0	0.0
Cycle Q Clear(g_c), s	0.7	12.2	12.2	0.6	0.0	0.0	3.4	0.0	1.2	8.3	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.01	0.96		1.00	0.44		0.53
Lane Grp Cap(c), veh/h	152	2494	1356	391	2489	1366	205	0	195	215	0	0
V/C Ratio(X)	0.19	0.30	0.30	0.07	0.71	0.71	0.13	0.00	0.07	0.36	0.00	0.00
Avail Cap(c_a), veh/h	216	2494	1356	458	2489	1366	323	0	329	344	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.0	7.2	7.2	5.4	0.0	0.0	62.3	0.0	61.4	64.5	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.3	0.6	0.0	0.2	0.3	0.3	0.0	0.1	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	9.8	10.6	0.5	0.1	0.2	1.9	0.0	0.9	5.8	0.0	0.0
LnGrp Delay(d),s/veh	5.6	7.5	7.8	5.4	0.2	0.3	62.6	0.0	61.5	65.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	E		E	E		
Approach Vol, veh/h		1201			2779			40			78	
Approach Delay, s/veh		7.6			0.3			62.3			65.5	
Approach LOS		A			A			E			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	123.8		27.0	8.9	124.1		27.0				
Change Period (Y+Rc), s	* 6.3	* 6.4		6.5	6.1	* 6.4		6.5				
Max Green Setting (Gmax), s	* 8.7	* 98		34.5	8.9	* 98		34.5				
Max Q Clear Time (g_c+I1), s	2.7	2.0		5.4	2.6	14.2		10.3				
Green Ext Time (p_c), s	0.0	95.1		0.4	0.0	83.0		0.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				4.2								
HCM 2010 LOS				A								
<b>Notes</b>												

# FUTURE “BUILD” INTERSECTION ANALYSIS

Timings

1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy

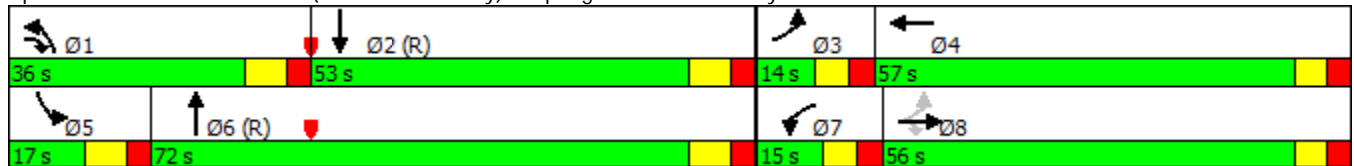


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↘	↑↑	↗↗	↘↘↘	↑↑	↘↘↘	↑↑↑	↗	↘↘	↑↑↑↑
Traffic Volume (vph)	115	559	1360	145	64	359	771	197	107	1913
Future Volume (vph)	115	559	1360	145	64	359	771	197	107	1913
Turn Type	pm+pt	NA	pm+ov	Prot	NA	Prot	NA	Free	Prot	NA
Protected Phases	3	8	1	7	4	1	6		5	2
Permitted Phases	8		8					Free		
Detector Phase	3	8	1	7	4	1	6		5	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	14.0		6.0	14.0
Minimum Split (s)	14.0	44.0	14.0	14.0	57.0	14.0	44.0		14.0	44.0
Total Split (s)	14.0	56.0	36.0	15.0	57.0	36.0	72.0		17.0	53.0
Total Split (%)	8.8%	35.0%	22.5%	9.4%	35.6%	22.5%	45.0%		10.6%	33.1%
Yellow Time (s)	4.0	4.0	5.0	4.0	4.0	5.0	5.0		5.0	5.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	8.0	7.0	7.0	8.0	8.0		8.0	8.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag		Lead	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Min		None	C-Min

Intersection Summary

Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 44 (28%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated
























Splits and Phases: 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy



HCM 2010 Signalized Intersection Summary  
 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy

Future Build AM (Scenario 1)

11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	559	1360	145	64	2	359	771	197	107	1913	63
Future Volume (veh/h)	115	559	1360	145	64	2	359	771	197	107	1913	63
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	125	608	1478	158	70	2	390	838	0	116	2079	68
Adj No. of Lanes	1	2	2	3	2	0	3	4	1	2	5	0
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	509	1084	1125	220	1077	31	487	2668	659	158	2776	91
Arrive On Green	0.07	0.51	0.51	0.04	0.31	0.31	0.10	0.42	0.00	0.05	0.36	0.36
Sat Flow, veh/h	1774	3539	2787	5003	3515	100	5003	6408	1583	3442	7605	249
Grp Volume(v), veh/h	125	608	1478	158	35	37	390	838	0	116	1650	497
Grp Sat Flow(s),veh/h/ln	1774	1770	1393	1668	1770	1845	1668	1602	1583	1721	1509	1819
Q Serve(g_s), s	7.0	18.8	49.0	5.0	2.2	2.3	12.2	14.0	0.0	5.3	38.2	38.2
Cycle Q Clear(g_c), s	7.0	18.8	49.0	5.0	2.2	2.3	12.2	14.0	0.0	5.3	38.2	38.2
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	509	1084	1125	220	542	565	487	2668	659	158	2203	664
V/C Ratio(X)	0.25	0.56	1.31	0.72	0.06	0.07	0.80	0.31	0.00	0.74	0.75	0.75
Avail Cap(c_a), veh/h	509	1084	1125	250	553	577	875	2668	659	194	2203	664
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.5	31.7	35.9	75.5	39.3	39.3	70.7	31.3	0.0	75.4	44.4	44.4
Incr Delay (d2), s/veh	0.0	0.1	142.1	8.3	0.0	0.0	3.1	0.3	0.0	10.8	2.4	7.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.8	10.6	81.7	4.4	2.0	2.1	9.7	10.4	0.0	5.0	22.9	28.0
LnGrp Delay(d),s/veh	35.6	31.8	178.0	83.8	39.3	39.3	73.8	31.7	0.0	86.2	46.8	52.0
LnGrp LOS	D	C	F	F	D	D	E	C		F	D	D
Approach Vol, veh/h		2211			230			1228			2263	
Approach Delay, s/veh		129.7			69.8			45.0			49.9	
Approach LOS		F			E			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	23.6	66.4	14.0	56.0	15.3	74.6	14.0	56.0				
Change Period (Y+Rc), s	8.0	8.0	7.0	7.0	8.0	8.0	7.0	7.0				
Max Green Setting (Gmax), s	28.0	45.0	7.0	50.0	9.0	64.0	8.0	49.0				
Max Q Clear Time (g_c+I1), s	14.2	40.2	9.0	4.3	7.3	16.0	7.0	51.0				
Green Ext Time (p_c), s	1.4	4.8	0.0	16.3	0.1	47.8	0.1	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			79.4									
HCM 2010 LOS			E									

Timings  
2: Cumberland Blvd & Spring Rd

Future Build AM (Scenario 1)

11/15/2017



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↕↕↕	↖	↕↕↕	↖↖	↕↕	↖	↕↕	↗
Traffic Volume (vph)	336	1690	123	312	175	498	121	389	150
Future Volume (vph)	336	1690	123	312	175	498	121	389	150
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	7	4	3	8	
Permitted Phases	6		2				8		8
Detector Phase	1	6	5	2	7	4	3	8	8
Switch Phase									
Minimum Initial (s)	4.0	12.0	4.0	12.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	15.0	44.0	15.0	41.0	15.0	45.0	15.0	44.0	44.0
Total Split (s)	33.0	84.0	16.0	67.0	16.0	45.0	15.0	44.0	44.0
Total Split (%)	20.6%	52.5%	10.0%	41.9%	10.0%	28.1%	9.4%	27.5%	27.5%
Yellow Time (s)	3.0	4.5	3.0	4.5	3.0	3.8	3.0	3.8	3.8
All-Red Time (s)	3.8	2.0	3.9	2.0	3.4	2.5	3.4	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.5	6.9	6.5	6.4	6.3	6.4	6.3	6.3
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 154 (96%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated






















Splits and Phases: 2: Cumberland Blvd & Spring Rd





HCM 2010 Signalized Intersection Summary  
2: Cumberland Blvd & Spring Rd

Future Build AM (Scenario 1)  
11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	336	1690	562	123	312	46	175	498	261	121	389	150
Future Volume (veh/h)	336	1690	562	123	312	46	175	498	261	121	389	150
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	361	1817	0	132	335	49	188	535	281	130	418	161
Adj No. of Lanes	1	3	0	1	3	0	2	2	0	1	2	1
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	646	2467	0	247	1794	256	206	543	285	143	834	372
Arrive On Green	0.29	0.97	0.00	0.06	0.40	0.40	0.06	0.24	0.24	0.05	0.24	0.24
Sat Flow, veh/h	1774	5253	0	1774	4498	641	3442	2245	1176	1774	3539	1577
Grp Volume(v), veh/h	361	1817	0	132	250	134	188	421	395	130	418	161
Grp Sat Flow(s),veh/h/ln	1774	1695	0	1774	1695	1749	1721	1770	1652	1774	1770	1577
Q Serve(g_s), s	20.4	6.0	0.0	7.0	7.7	8.0	8.7	37.9	38.1	8.6	16.4	13.9
Cycle Q Clear(g_c), s	20.4	6.0	0.0	7.0	7.7	8.0	8.7	37.9	38.1	8.6	16.4	13.9
Prop In Lane	1.00		0.00	1.00		0.37	1.00		0.71	1.00		1.00
Lane Grp Cap(c), veh/h	646	2467	0	247	1353	698	206	428	400	143	834	372
V/C Ratio(X)	0.56	0.74	0.00	0.53	0.19	0.19	0.91	0.98	0.99	0.91	0.50	0.43
Avail Cap(c_a), veh/h	683	2467	0	248	1353	698	206	428	400	143	834	372
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.56	0.56	0.00	0.93	0.93	0.93	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.4	1.3	0.0	25.7	31.2	31.3	74.8	60.4	60.4	49.2	53.0	52.1
Incr Delay (d2), s/veh	0.5	1.1	0.0	2.0	0.3	0.6	38.8	39.3	41.6	49.1	0.5	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	13.6	3.5	0.0	6.5	6.5	7.1	9.0	31.1	29.7	6.2	12.7	10.2
LnGrp Delay(d),s/veh	17.9	2.4	0.0	27.7	31.5	31.9	113.6	99.7	102.0	98.3	53.5	52.9
LnGrp LOS	B	A		C	C	C	F	F	F	F	D	D
Approach Vol, veh/h		2178			516			1004			709	
Approach Delay, s/veh		5.0			30.6			103.2			61.5	
Approach LOS		A			C			F			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	29.7	70.3	15.0	45.0	15.9	84.1	16.0	44.0				
Change Period (Y+Rc), s	* 6.8	6.5	6.4	* 6.3	6.9	6.5	6.4	* 6.3				
Max Green Setting (Gmax), s	* 26	60.5	8.6	* 39	9.1	77.5	9.6	* 38				
Max Q Clear Time (g_c+I1), s	22.4	10.0	10.6	40.1	9.0	8.0	10.7	18.4				
Green Ext Time (p_c), s	0.5	49.8	0.0	0.0	0.0	68.1	0.0	5.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				39.5								
HCM 2010 LOS				D								
<b>Notes</b>												

Timings  
3: Sports Ave/Aldi Drwy & Spring Rd

Future Build AM (Scenario 1)

11/15/2017



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗↗↗	↖	↗↗↗		↖	↗		↕
Traffic Volume (vph)	31	2510	131	508	43	5	104	11	3
Future Volume (vph)	31	2510	131	508	43	5	104	11	3
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases	1	6	5	2		4			8
Permitted Phases	6		2		4	4	4	8	
Detector Phase	1	6	5	2	4	4	4	8	8
Switch Phase									
Minimum Initial (s)	4.0	12.0	4.0	12.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	41.0	15.0	25.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	15.0	101.0	18.0	104.0	41.0	41.0	41.0	41.0	41.0
Total Split (%)	9.4%	63.1%	11.3%	65.0%	25.6%	25.6%	25.6%	25.6%	25.6%
Yellow Time (s)	3.0	4.8	3.0	4.8	3.1	3.1	3.1	3.1	3.1
All-Red Time (s)	3.3	1.6	3.1	1.6	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	6.3	6.4	6.1	6.4		6.5	6.5		6.5
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 2 (1%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 140  
 Control Type: Actuated-Coordinated





















Splits and Phases: 3: Sports Ave/Aldi Drwy & Spring Rd



HCM 2010 Signalized Intersection Summary  
3: Sports Ave/Aldi Drwy & Spring Rd

Future Build AM (Scenario 1)

11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	2510	64	131	508	2	43	5	104	11	3	12
Future Volume (veh/h)	31	2510	64	131	508	2	43	5	104	11	3	12
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	35	2820	72	147	571	2	48	6	117	12	3	13
Adj No. of Lanes	1	3	0	1	3	0	0	1	1	0	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	674	3632	92	167	3883	14	191	21	184	84	28	70
Arrive On Green	0.02	0.71	0.71	0.10	1.00	1.00	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1774	5101	129	1774	5231	18	1259	182	1559	444	240	592
Grp Volume(v), veh/h	35	1867	1025	147	370	203	54	0	117	28	0	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1840	1774	1695	1859	1441	0	1559	1275	0	0
Q Serve(g_s), s	0.9	56.4	58.0	6.1	0.0	0.0	0.0	0.0	11.4	0.1	0.0	0.0
Cycle Q Clear(g_c), s	0.9	56.4	58.0	6.1	0.0	0.0	5.2	0.0	11.4	5.3	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.01	0.89		1.00	0.43		0.46
Lane Grp Cap(c), veh/h	674	2414	1310	167	2517	1380	213	0	184	183	0	0
V/C Ratio(X)	0.05	0.77	0.78	0.88	0.15	0.15	0.25	0.00	0.64	0.15	0.00	0.00
Avail Cap(c_a), veh/h	736	2414	1310	208	2517	1380	351	0	336	322	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.9	14.8	15.0	44.3	0.0	0.0	64.5	0.0	67.3	63.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	2.5	4.7	26.7	0.1	0.2	0.6	0.0	3.6	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	35.5	39.9	11.8	0.1	0.1	4.0	0.0	8.8	2.0	0.0	0.0
LnGrp Delay(d),s/veh	5.9	17.2	19.7	71.0	0.1	0.2	65.1	0.0	70.9	63.7	0.0	0.0
LnGrp LOS	A	B	B	E	A	A	E		E	E		
Approach Vol, veh/h		2927			720			171			28	
Approach Delay, s/veh		18.0			14.6			69.1			63.7	
Approach LOS		B			B			E			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.5	125.2		25.4	14.3	120.3		25.4				
Change Period (Y+Rc), s	* 6.3	* 6.4		6.5	6.1	* 6.4		6.5				
Max Green Setting (Gmax), s	* 8.7	* 98		34.5	11.9	* 95		34.5				
Max Q Clear Time (g_c+I1), s	2.9	2.0		13.4	8.1	60.0		7.3				
Green Ext Time (p_c), s	0.0	95.1		0.7	0.1	34.6		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				19.9								
HCM 2010 LOS				B								
<b>Notes</b>												

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	23	2	2	125	143	52
Future Vol, veh/h	23	2	2	125	143	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	2	2	136	155	57

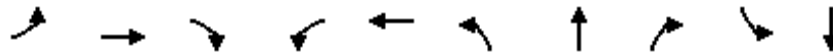
Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	295	155	155	0	0
Stage 1	155	-	-	-	-
Stage 2	140	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	696	891	1425	-	-
Stage 1	873	-	-	-	-
Stage 2	887	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	695	891	1425	-	-
Mov Cap-2 Maneuver	695	-	-	-	-
Stage 1	873	-	-	-	-
Stage 2	885	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1425	-	707	-	-
HCM Lane V/C Ratio	0.002	-	0.038	-	-
HCM Control Delay (s)	7.5	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Timings

1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy

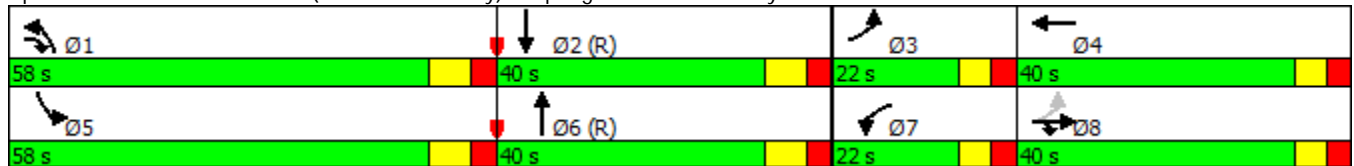


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	
Lane Configurations	↶	↗↗	↶↶	↶↶↶	↗↗	↶↶↶	↗↗↗	↶	↶↶	↗↗↗↗	
Traffic Volume (vph)	124	267	450	572	353	1492	1875	224	51	1334	
Future Volume (vph)	124	267	450	572	353	1492	1875	224	51	1334	
Turn Type	pm+pt	NA	pt+ov	Prot	NA	Prot	NA	Free	Prot	NA	
Protected Phases	3	8	8 1	7	4	1	6		5	2	
Permitted Phases	8							Free			
Detector Phase	3	8	8 1	7	4	1	6		5	2	
Switch Phase											
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	14.0		6.0	14.0	
Minimum Split (s)	19.0	19.0		19.0	57.0	20.0	36.0		36.0	44.0	
Total Split (s)	22.0	40.0		22.0	40.0	58.0	40.0		58.0	40.0	
Total Split (%)	13.8%	25.0%		13.8%	25.0%	36.3%	25.0%		36.3%	25.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0	8.0	8.0		8.0	8.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?											
Recall Mode	None	None		None	None	None	C-Min		None	C-Min	

Intersection Summary

Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 15 (9%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated
























Splits and Phases: 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy



HCM 2010 Signalized Intersection Summary  
 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy

Future Build PM (Scenario 1)

11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	124	267	450	572	353	52	1492	1875	224	51	1334	74
Future Volume (veh/h)	124	267	450	572	353	52	1492	1875	224	51	1334	74
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	132	284	479	609	376	55	1587	1995	0	54	1419	79
Adj No. of Lanes	1	2	2	3	2	0	3	4	1	2	5	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	228	526	1285	469	519	75	1563	3434	849	117	1909	106
Arrive On Green	0.02	0.05	0.05	0.09	0.17	0.17	0.31	0.54	0.00	0.03	0.26	0.26
Sat Flow, veh/h	1774	3539	2787	5003	3102	450	5003	6408	1583	3442	7415	411
Grp Volume(v), veh/h	132	284	479	609	213	218	1587	1995	0	54	1154	344
Grp Sat Flow(s),veh/h/ln	1774	1770	1393	1668	1770	1783	1668	1602	1583	1721	1509	1790
Q Serve(g_s), s	10.0	12.5	17.5	15.0	18.3	18.5	50.0	33.6	0.0	2.5	28.1	28.3
Cycle Q Clear(g_c), s	10.0	12.5	17.5	15.0	18.3	18.5	50.0	33.6	0.0	2.5	28.1	28.3
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	228	526	1285	469	296	298	1563	3434	849	117	1554	461
V/C Ratio(X)	0.58	0.54	0.37	1.30	0.72	0.73	1.02	0.58	0.00	0.46	0.74	0.75
Avail Cap(c_a), veh/h	260	730	1446	469	365	368	1563	3434	849	1076	1554	461
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.8	70.7	31.2	72.5	63.1	63.2	55.0	25.0	0.0	75.8	54.5	54.6
Incr Delay (d2), s/veh	1.9	0.7	0.1	149.3	5.2	5.6	26.6	0.7	0.0	2.8	3.2	10.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.3	9.8	10.6	24.1	14.4	14.7	48.4	21.3	0.0	2.2	17.7	21.7
LnGrp Delay(d),s/veh	57.7	71.4	31.4	221.8	68.3	68.8	81.6	25.7	0.0	78.6	57.8	65.1
LnGrp LOS	E	E	C	F	E	E	F	C		E	E	E
Approach Vol, veh/h		895			1040			3582			1552	
Approach Delay, s/veh		48.0			158.3			50.5			60.1	
Approach LOS		D			F			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	58.0	49.2	19.0	33.8	13.5	93.7	22.0	30.8				
Change Period (Y+Rc), s	8.0	8.0	7.0	7.0	8.0	8.0	7.0	7.0				
Max Green Setting (Gmax), s	50.0	32.0	15.0	33.0	50.0	32.0	15.0	33.0				
Max Q Clear Time (g_c+I1), s	52.0	30.3	12.0	20.5	4.5	35.6	17.0	19.5				
Green Ext Time (p_c), s	0.0	1.7	0.1	4.1	0.2	0.0	0.0	4.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			68.1									
HCM 2010 LOS			E									
<b>Notes</b>												

Timings  
2: Cumberland Blvd & Spring Rd

Future Build PM (Scenario 1)  
11/15/2017

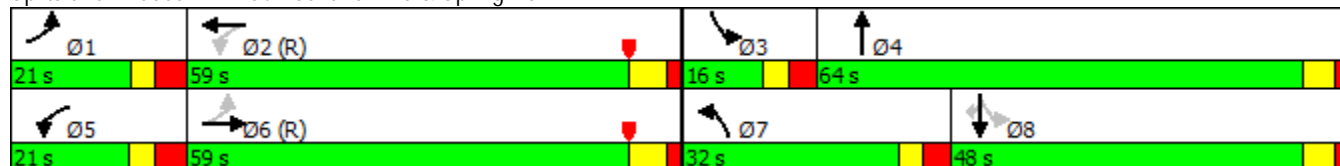


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↵	↑↑↓	↵	↑↑↓	↵↵	↑↓	↵	↑↑	↵
Traffic Volume (vph)	320	667	413	1495	605	642	89	622	599
Future Volume (vph)	320	667	413	1495	605	642	89	622	599
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	7	4	3	8	
Permitted Phases	6		2				8		8
Detector Phase	1	6	5	2	7	4	3	8	8
Switch Phase									
Minimum Initial (s)	4.0	12.0	4.0	12.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	15.0	44.0	15.0	41.0	15.0	45.0	15.0	44.0	44.0
Total Split (s)	21.0	59.0	21.0	59.0	32.0	64.0	16.0	48.0	48.0
Total Split (%)	13.1%	36.9%	13.1%	36.9%	20.0%	40.0%	10.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.5	3.0	4.5	3.0	3.8	3.0	3.8	3.8
All-Red Time (s)	3.8	2.0	3.9	2.0	3.4	2.5	3.4	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.5	6.9	6.5	6.4	6.3	6.4	6.3	6.3
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 77 (48%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated






















Splits and Phases: 2: Cumberland Blvd & Spring Rd



HCM 2010 Signalized Intersection Summary  
2: Cumberland Blvd & Spring Rd

Future Build PM (Scenario 1)

11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	320	667	309	413	1495	79	605	642	159	89	622	599
Future Volume (veh/h)	320	667	309	413	1495	79	605	642	159	89	622	599
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	323	674	0	417	1510	80	611	648	161	90	628	605
Adj No. of Lanes	1	3	0	1	3	0	2	2	0	1	2	1
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	213	1669	0	403	1622	86	551	1044	259	254	922	406
Arrive On Green	0.18	0.66	0.00	0.09	0.33	0.33	0.16	0.37	0.37	0.05	0.26	0.26
Sat Flow, veh/h	1774	5253	0	1774	4942	262	3442	2806	696	1774	3539	1560
Grp Volume(v), veh/h	323	674	0	417	1036	554	611	408	401	90	628	605
Grp Sat Flow(s),veh/h/ln	1774	1695	0	1774	1695	1814	1721	1770	1733	1774	1770	1560
Q Serve(g_s), s	14.2	9.9	0.0	14.1	47.3	47.3	25.6	30.1	30.2	5.9	25.5	41.7
Cycle Q Clear(g_c), s	14.2	9.9	0.0	14.1	47.3	47.3	25.6	30.1	30.2	5.9	25.5	41.7
Prop In Lane	1.00		0.00	1.00		0.14	1.00		0.40	1.00		1.00
Lane Grp Cap(c), veh/h	213	1669	0	403	1112	595	551	658	644	254	922	406
V/C Ratio(X)	1.52	0.40	0.00	1.03	0.93	0.93	1.11	0.62	0.62	0.35	0.68	1.49
Avail Cap(c_a), veh/h	213	1669	0	403	1112	595	551	658	644	274	922	406
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.00	0.17	0.17	0.17	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.5	20.2	0.0	46.2	52.0	52.0	67.2	41.0	41.1	40.8	53.2	59.2
Incr Delay (d2), s/veh	254.7	0.7	0.0	28.0	3.3	5.7	72.0	1.8	1.8	0.8	2.1	232.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	43.9	8.2	0.0	25.3	25.8	28.0	31.8	21.4	21.1	5.3	18.6	79.6
LnGrp Delay(d),s/veh	294.2	20.9	0.0	74.2	55.3	57.7	139.2	42.8	42.9	41.6	55.2	291.7
LnGrp LOS	F	C		F	E	E	F	D	D	D	E	F
Approach Vol, veh/h		997			2007			1420			1323	
Approach Delay, s/veh		109.4			59.9			84.3			162.4	
Approach LOS		F			E			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.0	59.0	14.2	65.8	21.0	59.0	32.0	48.0				
Change Period (Y+Rc), s	* 6.8	6.5	6.4	* 6.3	6.9	6.5	6.4	* 6.3				
Max Green Setting (Gmax), s	* 14	52.5	9.6	* 58	14.1	52.5	25.6	* 42				
Max Q Clear Time (g_c+I1), s	16.2	49.3	7.9	32.2	16.1	11.9	27.6	43.7				
Green Ext Time (p_c), s	0.0	3.2	0.0	10.4	0.0	40.1	0.0	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			98.1									
HCM 2010 LOS			F									
<b>Notes</b>												



Timings  
3: Sports Ave/Aldi Drwy & Spring Rd

Future Build PM (Scenario 1)

11/15/2017

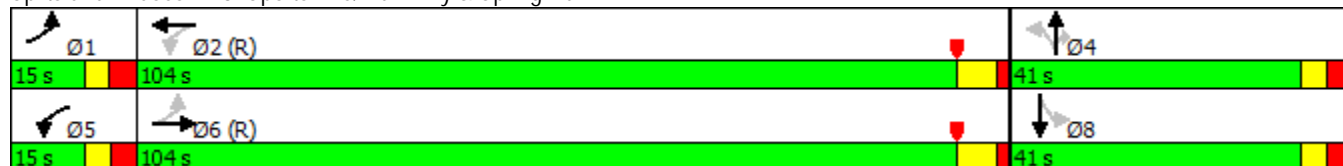


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	28	1124	102	2686	50	1	78	33	3
Future Volume (vph)	28	1124	102	2686	50	1	78	33	3
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases	1	6	5	2		4			8
Permitted Phases	6		2		4	4	4	8	
Detector Phase	1	6	5	2	4	4	4	8	8
Switch Phase									
Minimum Initial (s)	4.0	12.0	4.0	12.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	41.0	15.0	25.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	15.0	104.0	15.0	104.0	41.0	41.0	41.0	41.0	41.0
Total Split (%)	9.4%	65.0%	9.4%	65.0%	25.6%	25.6%	25.6%	25.6%	25.6%
Yellow Time (s)	3.0	4.8	3.0	4.8	3.1	3.1	3.1	3.1	3.1
All-Red Time (s)	3.3	1.6	3.1	1.6	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	6.3	6.4	6.1	6.4		6.5	6.5		6.5
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 137 (86%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 130  
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Sports Ave/Aldi Drwy & Spring Rd



HCM 2010 Signalized Intersection Summary  
 3: Sports Ave/Aldi Drwy & Spring Rd

Future Build PM (Scenario 1)  
 11/15/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	1124	49	102	2686	6	50	1	78	33	3	40
Future Volume (veh/h)	28	1124	49	102	2686	6	50	1	78	33	3	40
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.97	0.98		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	29	1147	50	104	2741	6	51	1	80	34	3	41
Adj No. of Lanes	1	3	0	1	3	0	0	1	1	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	149	3519	153	385	3746	8	204	4	226	92	18	87
Arrive On Green	0.02	0.70	0.70	0.06	1.00	1.00	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1774	4996	218	1774	5239	11	1086	24	1535	409	124	591
Grp Volume(v), veh/h	29	778	419	104	1773	974	52	0	80	78	0	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1823	1774	1695	1861	1111	0	1535	1124	0	0
Q Serve(g_s), s	0.7	14.1	14.1	2.7	0.0	0.0	0.0	0.0	7.5	5.1	0.0	0.0
Cycle Q Clear(g_c), s	0.7	14.1	14.1	2.7	0.0	0.0	8.1	0.0	7.5	13.2	0.0	0.0
Prop In Lane	1.00		0.12	1.00		0.01	0.98		1.00	0.44		0.53
Lane Grp Cap(c), veh/h	149	2388	1284	385	2424	1330	208	0	226	197	0	0
V/C Ratio(X)	0.19	0.33	0.33	0.27	0.73	0.73	0.25	0.00	0.35	0.40	0.00	0.00
Avail Cap(c_a), veh/h	213	2388	1284	431	2424	1330	300	0	331	296	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.3	9.1	9.1	6.6	0.0	0.0	61.6	0.0	61.4	64.4	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.4	0.7	0.0	0.2	0.3	0.6	0.0	0.9	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	11.0	11.8	1.8	0.1	0.2	3.8	0.0	5.8	5.9	0.0	0.0
LnGrp Delay(d),s/veh	6.9	9.4	9.8	6.6	0.2	0.3	62.3	0.0	62.4	65.6	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	E		E	E		
Approach Vol, veh/h		1226			2851			132				78
Approach Delay, s/veh		9.5			0.5			62.3				65.6
Approach LOS		A			A			E				E
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	120.8		30.0	10.9	119.1		30.0				
Change Period (Y+Rc), s	* 6.3	* 6.4		6.5	6.1	* 6.4		6.5				
Max Green Setting (Gmax), s	* 8.7	* 98		34.5	8.9	* 98		34.5				
Max Q Clear Time (g_c+I1), s	2.7	2.0		10.1	4.7	16.1		15.2				
Green Ext Time (p_c), s	0.0	95.1		0.8	0.1	81.1		0.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.1									
HCM 2010 LOS			A									
<b>Notes</b>												

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	Y
Traffic Vol, veh/h	39	0	1	90	101	50
Future Vol, veh/h	39	0	1	90	101	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	0	1	98	110	54

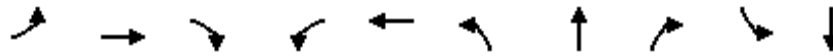
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	210	110	110	0	-	0
Stage 1	110	-	-	-	-	-
Stage 2	100	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	778	943	1480	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	924	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	777	943	1480	-	-	-
Mov Cap-2 Maneuver	777	-	-	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	923	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1480	-	777	-	-
HCM Lane V/C Ratio	0.001	-	0.055	-	-
HCM Control Delay (s)	7.4	-	9.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Timings

1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy

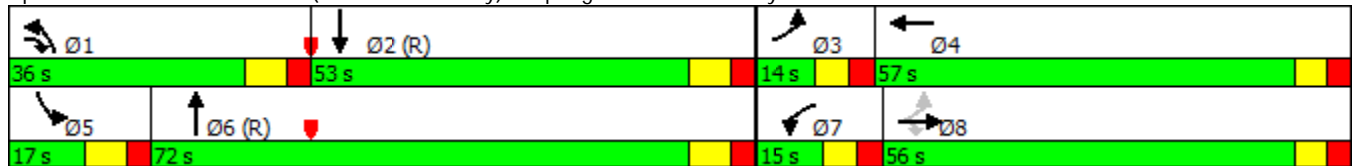


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↘	↑↑	↗↗	↘↘↘	↑↑	↘↘↘	↑↑↑	↗	↘↘	↑↑↑↑
Traffic Volume (vph)	121	563	1384	145	64	358	771	197	107	1913
Future Volume (vph)	121	563	1384	145	64	358	771	197	107	1913
Turn Type	pm+pt	NA	pm+ov	Prot	NA	Prot	NA	Free	Prot	NA
Protected Phases	3	8	1	7	4	1	6		5	2
Permitted Phases	8		8					Free		
Detector Phase	3	8	1	7	4	1	6		5	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	14.0		6.0	14.0
Minimum Split (s)	14.0	44.0	14.0	14.0	57.0	14.0	44.0		14.0	44.0
Total Split (s)	14.0	56.0	36.0	15.0	57.0	36.0	72.0		17.0	53.0
Total Split (%)	8.8%	35.0%	22.5%	9.4%	35.6%	22.5%	45.0%		10.6%	33.1%
Yellow Time (s)	4.0	4.0	5.0	4.0	4.0	5.0	5.0		5.0	5.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	8.0	7.0	7.0	8.0	8.0		8.0	8.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag		Lead	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Min		None	C-Min

Intersection Summary

Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 44 (28%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated
























Splits and Phases: 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy



HCM 2010 Signalized Intersection Summary  
 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy

Future Build AM (Scenario 2)

11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	563	1384	145	64	2	358	771	197	107	1913	63
Future Volume (veh/h)	121	563	1384	145	64	2	358	771	197	107	1913	63
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	132	612	1504	158	70	2	389	838	0	116	2079	68
Adj No. of Lanes	1	2	2	3	2	0	3	4	1	2	5	0
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	509	1084	1124	220	1077	31	486	2668	659	158	2778	91
Arrive On Green	0.07	0.51	0.51	0.04	0.31	0.31	0.10	0.42	0.00	0.05	0.37	0.37
Sat Flow, veh/h	1774	3539	2787	5003	3515	100	5003	6408	1583	3442	7605	249
Grp Volume(v), veh/h	132	612	1504	158	35	37	389	838	0	116	1650	497
Grp Sat Flow(s),veh/h/ln	1774	1770	1393	1668	1770	1845	1668	1602	1583	1721	1509	1819
Q Serve(g_s), s	7.0	19.0	49.0	5.0	2.2	2.3	12.2	14.0	0.0	5.3	38.2	38.2
Cycle Q Clear(g_c), s	7.0	19.0	49.0	5.0	2.2	2.3	12.2	14.0	0.0	5.3	38.2	38.2
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	509	1084	1124	220	542	565	486	2668	659	158	2204	664
V/C Ratio(X)	0.26	0.56	1.34	0.72	0.06	0.07	0.80	0.31	0.00	0.74	0.75	0.75
Avail Cap(c_a), veh/h	509	1084	1124	250	553	577	875	2668	659	194	2204	664
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.8	31.8	35.9	75.5	39.3	39.3	70.7	31.3	0.0	75.4	44.4	44.4
Incr Delay (d2), s/veh	0.0	0.1	152.8	8.3	0.0	0.0	3.1	0.3	0.0	10.8	2.4	7.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.0	10.7	84.5	4.4	2.0	2.1	9.7	10.4	0.0	5.0	22.9	28.0
LnGrp Delay(d),s/veh	35.8	31.8	188.7	83.8	39.3	39.3	73.8	31.7	0.0	86.2	46.7	51.9
LnGrp LOS	D	C	F	F	D	D	E	C		F	D	D
Approach Vol, veh/h		2248			230			1227			2263	
Approach Delay, s/veh		137.0			69.8			45.0			49.9	
Approach LOS		F			E			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	23.5	66.4	14.0	56.0	15.3	74.6	14.0	56.0				
Change Period (Y+Rc), s	8.0	8.0	7.0	7.0	8.0	8.0	7.0	7.0				
Max Green Setting (Gmax), s	28.0	45.0	7.0	50.0	9.0	64.0	8.0	49.0				
Max Q Clear Time (g_c+I1), s	14.2	40.2	9.0	4.3	7.3	16.0	7.0	51.0				
Green Ext Time (p_c), s	1.4	4.8	0.0	16.7	0.1	47.8	0.1	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			82.5									
HCM 2010 LOS			F									

Timings  
2: Cumberland Blvd & Spring Rd

Future Build AM (Scenario 2)  
11/15/2017

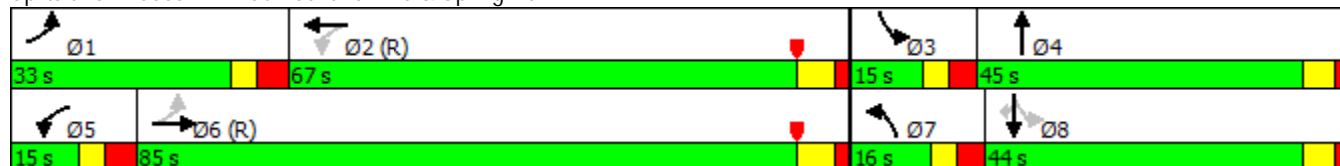


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↵	↑↑↓	↵	↑↑↓	↵↵	↑↓	↵	↑↑	↵
Traffic Volume (vph)	342	1724	123	311	175	498	121	389	150
Future Volume (vph)	342	1724	123	311	175	498	121	389	150
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	7	4	3	8	
Permitted Phases	6		2				8		8
Detector Phase	1	6	5	2	7	4	3	8	8
Switch Phase									
Minimum Initial (s)	4.0	12.0	4.0	12.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	15.0	44.0	15.0	41.0	15.0	45.0	15.0	44.0	44.0
Total Split (s)	33.0	85.0	15.0	67.0	16.0	45.0	15.0	44.0	44.0
Total Split (%)	20.6%	53.1%	9.4%	41.9%	10.0%	28.1%	9.4%	27.5%	27.5%
Yellow Time (s)	3.0	4.5	3.0	4.5	3.0	3.8	3.0	3.8	3.8
All-Red Time (s)	3.8	2.0	3.9	2.0	3.4	2.5	3.4	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.5	6.9	6.5	6.4	6.3	6.4	6.3	6.3
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary






















Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 154 (96%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated

Splits and Phases: 2: Cumberland Blvd & Spring Rd



HCM 2010 Signalized Intersection Summary  
2: Cumberland Blvd & Spring Rd

Future Build AM (Scenario 2)  
11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	342	1724	577	123	311	46	175	498	261	121	389	150
Future Volume (veh/h)	342	1724	577	123	311	46	175	498	261	121	389	150
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	368	1854	0	132	334	49	188	535	281	130	418	161
Adj No. of Lanes	1	3	0	1	3	0	2	2	0	1	2	1
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	649	2495	0	233	1779	254	206	543	285	143	834	372
Arrive On Green	0.29	0.98	0.00	0.05	0.40	0.40	0.06	0.24	0.24	0.05	0.24	0.24
Sat Flow, veh/h	1774	5253	0	1774	4496	643	3442	2245	1176	1774	3539	1577
Grp Volume(v), veh/h	368	1854	0	132	250	133	188	421	395	130	418	161
Grp Sat Flow(s),veh/h/ln	1774	1695	0	1774	1695	1749	1721	1770	1652	1774	1770	1577
Q Serve(g_s), s	21.0	4.0	0.0	7.1	7.7	8.0	8.7	37.9	38.1	8.6	16.4	13.9
Cycle Q Clear(g_c), s	21.0	4.0	0.0	7.1	7.7	8.0	8.7	37.9	38.1	8.6	16.4	13.9
Prop In Lane	1.00		0.00	1.00		0.37	1.00		0.71	1.00		1.00
Lane Grp Cap(c), veh/h	649	2495	0	233	1342	692	206	428	400	143	834	372
V/C Ratio(X)	0.57	0.74	0.00	0.57	0.19	0.19	0.91	0.98	0.99	0.91	0.50	0.43
Avail Cap(c_a), veh/h	680	2495	0	233	1342	692	206	428	400	143	834	372
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.51	0.51	0.00	0.93	0.93	0.93	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.4	0.8	0.0	26.5	31.5	31.6	74.8	60.4	60.4	49.2	53.0	52.1
Incr Delay (d2), s/veh	0.5	1.1	0.0	3.0	0.3	0.6	38.8	39.3	41.6	49.1	0.5	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	13.7	1.7	0.0	6.6	6.6	7.1	9.0	31.1	29.7	6.2	12.7	10.2
LnGrp Delay(d),s/veh	17.9	1.9	0.0	29.5	31.8	32.2	113.6	99.7	102.0	98.3	53.5	52.9
LnGrp LOS	B	A		C	C	C	F	F	F	F	D	D
Approach Vol, veh/h		2222			515			1004			709	
Approach Delay, s/veh		4.5			31.3			103.2			61.5	
Approach LOS		A			C			F			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.2	69.8	15.0	45.0	15.0	85.0	16.0	44.0				
Change Period (Y+Rc), s	* 6.8	6.5	6.4	* 6.3	6.9	6.5	6.4	* 6.3				
Max Green Setting (Gmax), s	* 26	60.5	8.6	* 39	8.1	78.5	9.6	* 38				
Max Q Clear Time (g_c+I1), s	23.0	10.0	10.6	40.1	9.1	6.0	10.7	18.4				
Green Ext Time (p_c), s	0.4	49.8	0.0	0.0	0.0	71.1	0.0	5.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			39.0									
HCM 2010 LOS			D									
<b>Notes</b>												

Timings  
3: Sports Ave/Aldi Drwy & Spring Rd

Future Build AM (Scenario 2)

11/15/2017

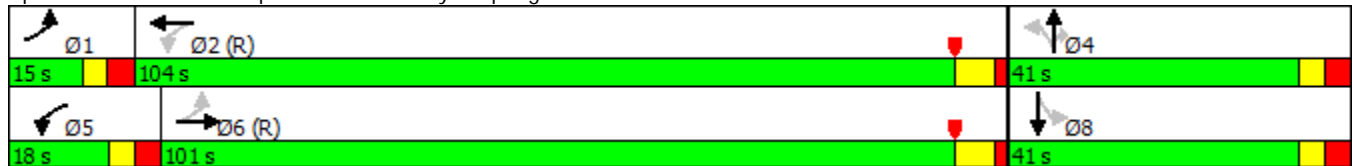


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↕↕↕	↖	↕↕↕		↕	↗		↕
Traffic Volume (vph)	31	2510	130	508	59	0	159	11	3
Future Volume (vph)	31	2510	130	508	59	0	159	11	3
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases	1	6	5	2		4			8
Permitted Phases	6		2		4	4	4	8	
Detector Phase	1	6	5	2	4	4	4	8	8
Switch Phase									
Minimum Initial (s)	4.0	12.0	4.0	12.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	41.0	15.0	25.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	15.0	101.0	18.0	104.0	41.0	41.0	41.0	41.0	41.0
Total Split (%)	9.4%	63.1%	11.3%	65.0%	25.6%	25.6%	25.6%	25.6%	25.6%
Yellow Time (s)	3.0	4.8	3.0	4.8	3.1	3.1	3.1	3.1	3.1
All-Red Time (s)	3.3	1.6	3.1	1.6	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	6.3	6.4	6.1	6.4		6.5	6.5		6.5
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 2 (1%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 140  
 Control Type: Actuated-Coordinated





















Splits and Phases: 3: Sports Ave/Aldi Drwy & Spring Rd





HCM 2010 Signalized Intersection Summary  
 3: Sports Ave/Aldi Drwy & Spring Rd

Future Build AM (Scenario 2)  
 11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	2510	63	130	508	2	59	0	159	11	3	12
Future Volume (veh/h)	31	2510	63	130	508	2	59	0	159	11	3	12
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	35	2820	71	146	571	2	66	0	179	12	3	13
Adj No. of Lanes	1	3	0	1	3	0	0	1	1	0	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	646	3463	87	165	3725	13	229	0	232	86	29	72
Arrive On Green	0.02	0.68	0.68	0.11	1.00	1.00	0.15	0.00	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1774	5103	127	1774	5231	18	1241	0	1564	365	194	485
Grp Volume(v), veh/h	35	1866	1025	146	370	203	66	0	179	28	0	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1840	1774	1695	1859	1241	0	1564	1044	0	0
Q Serve(g_s), s	1.0	62.9	64.6	6.6	0.0	0.0	0.0	0.0	17.6	0.1	0.0	0.0
Cycle Q Clear(g_c), s	1.0	62.9	64.6	6.6	0.0	0.0	9.3	0.0	17.6	9.4	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.01	1.00		1.00	0.43		0.46
Lane Grp Cap(c), veh/h	646	2301	1249	165	2414	1324	229	0	232	187	0	0
V/C Ratio(X)	0.05	0.81	0.82	0.88	0.15	0.15	0.29	0.00	0.77	0.15	0.00	0.00
Avail Cap(c_a), veh/h	708	2301	1249	201	2414	1324	322	0	337	281	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.4	18.4	18.6	45.5	0.0	0.0	62.0	0.0	65.5	59.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	3.2	6.1	27.9	0.1	0.2	0.7	0.0	6.5	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	39.4	44.2	11.8	0.1	0.1	4.9	0.0	12.7	2.0	0.0	0.0
LnGrp Delay(d),s/veh	7.5	21.6	24.8	73.4	0.1	0.2	62.7	0.0	72.0	59.5	0.0	0.0
LnGrp LOS	A	C	C	E	A	A	E		E	E		
Approach Vol, veh/h		2926			719			245			28	
Approach Delay, s/veh		22.5			15.0			69.5			59.5	
Approach LOS		C			B			E			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.5	120.3		30.2	14.8	115.0		30.2				
Change Period (Y+Rc), s	* 6.3	* 6.4		6.5	6.1	* 6.4		6.5				
Max Green Setting (Gmax), s	* 8.7	* 98		34.5	11.9	* 95		34.5				
Max Q Clear Time (g_c+I1), s	3.0	2.0		19.6	8.6	66.6		11.4				
Green Ext Time (p_c), s	0.0	95.1		0.9	0.1	27.9		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				24.4								
HCM 2010 LOS				C								
<b>Notes</b>												

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	23	2	2	125	143	52
Future Vol, veh/h	23	2	2	125	143	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	2	2	136	155	57

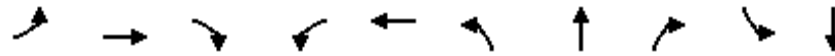
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	295	155	155	0	-	0
Stage 1	155	-	-	-	-	-
Stage 2	140	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	696	891	1425	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	887	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	695	891	1425	-	-	-
Mov Cap-2 Maneuver	695	-	-	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	885	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1425	-	707	-	-
HCM Lane V/C Ratio	0.002	-	0.038	-	-
HCM Control Delay (s)	7.5	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Timings

1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy

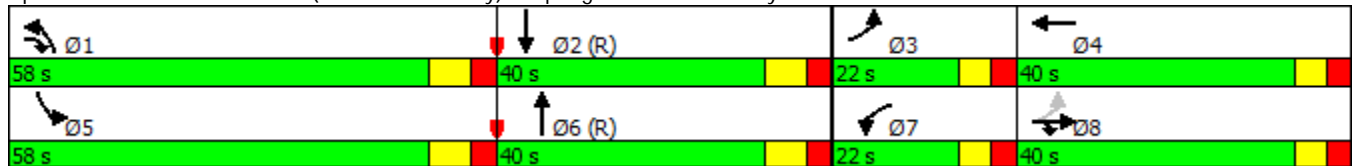


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	
Lane Configurations	↶	↕	↷	↶↷	↕	↶↷	↕	↷	↶↷	↕↶↷	
Traffic Volume (vph)	133	271	480	572	359	1534	1875	224	51	1334	
Future Volume (vph)	133	271	480	572	359	1534	1875	224	51	1334	
Turn Type	pm+pt	NA	pt+ov	Prot	NA	Prot	NA	Free	Prot	NA	
Protected Phases	3	8	8 1	7	4	1	6		5	2	
Permitted Phases	8							Free			
Detector Phase	3	8	8 1	7	4	1	6		5	2	
Switch Phase											
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	14.0		6.0	14.0	
Minimum Split (s)	19.0	19.0		19.0	57.0	20.0	36.0		36.0	44.0	
Total Split (s)	22.0	40.0		22.0	40.0	58.0	40.0		58.0	40.0	
Total Split (%)	13.8%	25.0%		13.8%	25.0%	36.3%	25.0%		36.3%	25.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0	8.0	8.0		8.0	8.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?											
Recall Mode	None	None		None	None	None	C-Min		None	C-Min	

Intersection Summary

Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 15 (9%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated
























Splits and Phases: 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy



HCM 2010 Signalized Intersection Summary  
 1: US 41 (SR 3 / Cobb Pkwy) & Spring Rd/Circle 75 Pkwy

Future Build PM (Scenario 2)

11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	133	271	480	572	359	52	1534	1875	224	51	1334	85
Future Volume (veh/h)	133	271	480	572	359	52	1534	1875	224	51	1334	85
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	141	288	511	609	382	55	1632	1995	0	54	1419	90
Adj No. of Lanes	1	2	2	3	2	0	3	4	1	2	5	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	236	551	1305	469	530	76	1563	3389	837	117	1842	116
Arrive On Green	0.03	0.05	0.05	0.09	0.17	0.17	0.31	0.53	0.00	0.03	0.25	0.25
Sat Flow, veh/h	1774	3539	2787	5003	3109	444	5003	6408	1583	3442	7352	464
Grp Volume(v), veh/h	141	288	511	609	216	221	1632	1995	0	54	1163	346
Grp Sat Flow(s),veh/h/ln	1774	1770	1393	1668	1770	1784	1668	1602	1583	1721	1509	1781
Q Serve(g_s), s	10.6	12.7	18.7	15.0	18.5	18.7	50.0	34.1	0.0	2.5	28.6	28.9
Cycle Q Clear(g_c), s	10.6	12.7	18.7	15.0	18.5	18.7	50.0	34.1	0.0	2.5	28.6	28.9
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		0.26
Lane Grp Cap(c), veh/h	236	551	1305	469	302	304	1563	3389	837	117	1512	446
V/C Ratio(X)	0.60	0.52	0.39	1.30	0.72	0.73	1.04	0.59	0.00	0.46	0.77	0.77
Avail Cap(c_a), veh/h	262	730	1446	469	365	368	1563	3389	837	1076	1512	446
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.9	70.1	31.0	72.5	62.7	62.8	55.0	25.8	0.0	75.8	55.7	55.8
Incr Delay (d2), s/veh	2.3	0.6	0.1	149.3	5.2	5.6	35.1	0.8	0.0	2.8	3.8	12.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.6	9.8	11.0	24.1	14.6	14.8	50.6	21.7	0.0	2.2	18.1	22.2
LnGrp Delay(d),s/veh	57.2	70.7	31.1	221.8	67.9	68.4	90.1	26.5	0.0	78.6	59.5	68.1
LnGrp LOS	E	E	C	F	E	E	F	C		E	E	E
Approach Vol, veh/h		940			1046			3627			1563	
Approach Delay, s/veh		47.2			157.6			55.2			62.1	
Approach LOS		D			F			E			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	58.0	48.1	19.6	34.3	13.5	92.6	22.0	31.9				
Change Period (Y+Rc), s	8.0	8.0	7.0	7.0	8.0	8.0	7.0	7.0				
Max Green Setting (Gmax), s	50.0	32.0	15.0	33.0	50.0	32.0	15.0	33.0				
Max Q Clear Time (g_c+I1), s	52.0	30.9	12.6	20.7	4.5	36.1	17.0	20.7				
Green Ext Time (p_c), s	0.0	1.1	0.1	4.2	0.2	0.0	0.0	4.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			70.5									
HCM 2010 LOS			E									
<b>Notes</b>												

Timings  
2: Cumberland Blvd & Spring Rd

Future Build PM (Scenario 2)

11/15/2017

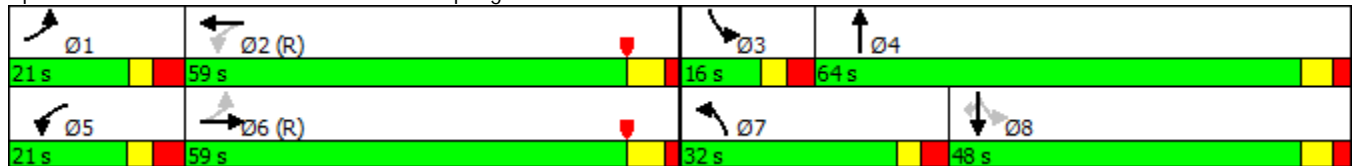


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↵	↑↑↓	↵	↑↑↓	↵↵	↑↓	↵	↑↑	↵
Traffic Volume (vph)	329	709	413	1554	623	642	89	622	610
Future Volume (vph)	329	709	413	1554	623	642	89	622	610
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	7	4	3	8	
Permitted Phases	6		2				8		8
Detector Phase	1	6	5	2	7	4	3	8	8
Switch Phase									
Minimum Initial (s)	4.0	12.0	4.0	12.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	15.0	44.0	15.0	41.0	15.0	45.0	15.0	44.0	44.0
Total Split (s)	21.0	59.0	21.0	59.0	32.0	64.0	16.0	48.0	48.0
Total Split (%)	13.1%	36.9%	13.1%	36.9%	20.0%	40.0%	10.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.5	3.0	4.5	3.0	3.8	3.0	3.8	3.8
All-Red Time (s)	3.8	2.0	3.9	2.0	3.4	2.5	3.4	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.5	6.9	6.5	6.4	6.3	6.4	6.3	6.3
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 77 (48%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated






















Splits and Phases: 2: Cumberland Blvd & Spring Rd



HCM 2010 Signalized Intersection Summary  
2: Cumberland Blvd & Spring Rd

Future Build PM (Scenario 2)

11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	329	709	321	413	1554	79	623	642	159	89	622	610
Future Volume (veh/h)	329	709	321	413	1554	79	623	642	159	89	622	610
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	332	716	0	417	1570	80	629	648	161	90	628	616
Adj No. of Lanes	1	3	0	1	3	0	2	2	0	1	2	1
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	1669	0	391	1625	83	551	1044	259	254	922	406
Arrive On Green	0.18	0.66	0.00	0.09	0.33	0.33	0.16	0.37	0.37	0.05	0.26	0.26
Sat Flow, veh/h	1774	5253	0	1774	4954	252	3442	2806	696	1774	3539	1560
Grp Volume(v), veh/h	332	716	0	417	1074	576	629	408	401	90	628	616
Grp Sat Flow(s),veh/h/ln	1774	1695	0	1774	1695	1816	1721	1770	1733	1774	1770	1560
Q Serve(g_s), s	14.2	10.8	0.0	14.1	49.9	49.9	25.6	30.1	30.2	5.9	25.5	41.7
Cycle Q Clear(g_c), s	14.2	10.8	0.0	14.1	49.9	49.9	25.6	30.1	30.2	5.9	25.5	41.7
Prop In Lane	1.00		0.00	1.00		0.14	1.00		0.40	1.00		1.00
Lane Grp Cap(c), veh/h	207	1669	0	391	1112	596	551	658	644	254	922	406
V/C Ratio(X)	1.60	0.43	0.00	1.07	0.97	0.97	1.14	0.62	0.62	0.35	0.68	1.52
Avail Cap(c_a), veh/h	207	1669	0	391	1112	596	551	658	644	274	922	406
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.00	0.11	0.11	0.11	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.6	20.3	0.0	46.1	52.9	52.9	67.2	41.0	41.1	40.8	53.2	59.2
Incr Delay (d2), s/veh	290.8	0.8	0.0	36.1	4.0	6.7	84.0	1.8	1.8	0.8	2.1	244.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	46.5	8.6	0.0	25.8	26.6	28.8	33.5	21.4	21.1	5.3	18.6	82.0
LnGrp Delay(d),s/veh	332.4	21.1	0.0	82.2	56.9	59.5	151.2	42.8	42.9	41.6	55.2	303.5
LnGrp LOS	F	C		F	E	E	F	D	D	D	E	F
Approach Vol, veh/h		1048			2067			1438			1334	
Approach Delay, s/veh		119.7			62.7			90.3			168.9	
Approach LOS		F			E			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.0	59.0	14.2	65.8	21.0	59.0	32.0	48.0				
Change Period (Y+Rc), s	* 6.8	6.5	6.4	* 6.3	6.9	6.5	6.4	* 6.3				
Max Green Setting (Gmax), s	* 14	52.5	9.6	* 58	14.1	52.5	25.6	* 42				
Max Q Clear Time (g_c+I1), s	16.2	51.9	7.9	32.2	16.1	12.8	27.6	43.7				
Green Ext Time (p_c), s	0.0	0.6	0.0	10.5	0.0	39.4	0.0	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				103.7								
HCM 2010 LOS				F								
<b>Notes</b>												

Timings  
3: Sports Ave/Aldi Drwy & Spring Rd

Future Build PM (Scenario 2)

11/15/2017



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↙	↑↑↑	↙	↑↑↑		↖	↗		↕
Traffic Volume (vph)	28	1114	216	2661	97	1	152	33	3
Future Volume (vph)	28	1114	216	2661	97	1	152	33	3
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases	1	6	5	2		4			8
Permitted Phases	6		2		4	4	4	8	
Detector Phase	1	6	5	2	4	4	4	8	8
Switch Phase									
Minimum Initial (s)	4.0	12.0	4.0	12.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	41.0	15.0	25.0	41.0	41.0	41.0	41.0	41.0
Total Split (s)	15.0	104.0	15.0	104.0	41.0	41.0	41.0	41.0	41.0
Total Split (%)	9.4%	65.0%	9.4%	65.0%	25.6%	25.6%	25.6%	25.6%	25.6%
Yellow Time (s)	3.0	4.8	3.0	4.8	3.1	3.1	3.1	3.1	3.1
All-Red Time (s)	3.3	1.6	3.1	1.6	3.4	3.4	3.4	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	6.3	6.4	6.1	6.4		6.5	6.5		6.5
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None

Intersection Summary




















Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 137 (86%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow  
 Natural Cycle: 130  
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Sports Ave/Aldi Drwy & Spring Rd



HCM 2010 Signalized Intersection Summary  
3: Sports Ave/Aldi Drwy & Spring Rd

Future Build PM (Scenario 2)  
11/15/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	1114	88	216	2661	6	97	1	152	33	3	40
Future Volume (veh/h)	28	1114	88	216	2661	6	97	1	152	33	3	40
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.98	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	29	1137	90	220	2715	6	99	1	155	34	3	41
Adj No. of Lanes	1	3	0	1	3	0	0	1	1	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	144	3081	244	384	3550	8	216	2	285	76	17	68
Arrive On Green	0.02	0.64	0.64	0.11	1.00	1.00	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	1774	4803	380	1774	5239	12	929	11	1545	240	92	367
Grp Volume(v), veh/h	29	802	425	220	1756	965	100	0	155	78	0	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1793	1774	1695	1861	939	0	1545	698	0	0
Q Serve(g_s), s	0.9	17.8	17.8	7.3	0.0	0.0	0.0	0.0	14.6	5.5	0.0	0.0
Cycle Q Clear(g_c), s	0.9	17.8	17.8	7.3	0.0	0.0	17.8	0.0	14.6	23.3	0.0	0.0
Prop In Lane	1.00		0.21	1.00		0.01	0.99		1.00	0.44		0.53
Lane Grp Cap(c), veh/h	144	2174	1150	384	2297	1261	218	0	285	161	0	0
V/C Ratio(X)	0.20	0.37	0.37	0.57	0.76	0.77	0.46	0.00	0.54	0.48	0.00	0.00
Avail Cap(c_a), veh/h	209	2174	1150	384	2297	1261	260	0	333	205	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.4	13.5	13.5	9.5	0.0	0.0	60.5	0.0	59.2	64.6	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.5	0.9	0.2	0.2	0.4	1.5	0.0	1.6	2.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	13.1	13.9	4.4	0.1	0.3	7.6	0.0	10.5	6.1	0.0	0.0
LnGrp Delay(d),s/veh	10.1	14.0	14.4	9.7	0.2	0.4	62.0	0.0	60.8	66.8	0.0	0.0
LnGrp LOS	B	B	B	A	A	A	E		E	E		
Approach Vol, veh/h		1256			2941			255				78
Approach Delay, s/veh		14.0			1.0			61.3				66.8
Approach LOS		B			A			E				E
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	114.8		36.0	15.0	109.0		36.0				
Change Period (Y+Rc), s	* 6.3	* 6.4		6.5	6.1	* 6.4		6.5				
Max Green Setting (Gmax), s	* 8.7	* 98		34.5	8.9	* 98		34.5				
Max Q Clear Time (g_c+I1), s	2.9	2.0		19.8	9.3	19.8		25.3				
Green Ext Time (p_c), s	0.0	95.1		1.1	0.0	77.4		0.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			9.1									
HCM 2010 LOS			A									
<b>Notes</b>												



Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	Y
Traffic Vol, veh/h	39	0	1	90	101	50
Future Vol, veh/h	39	0	1	90	101	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	0	1	98	110	54

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	210	110	110	0	-	0
Stage 1	110	-	-	-	-	-
Stage 2	100	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	778	943	1480	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	924	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	777	943	1480	-	-	-
Mov Cap-2 Maneuver	777	-	-	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	923	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1480	-	777	-	-
HCM Lane V/C Ratio	0.001	-	0.055	-	-
HCM Control Delay (s)	7.4	-	9.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

# TRAFFIC VOLUME WORKSHEETS

# 17-115 Mixed-Use Development - Sports Avenue, Smyrna - Traffic Impact Study

Traffic Volumes  
Future Conditions

A&R Engineering  
November 2017

## 1. Spring Rd @ Cobb Pkwy

### A.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing:	291	727	186	101	1803	46	96	521	1240	137	54	2
Growth Factor (%):	3	3	3	3	3	3	3	3	3	3	3	3
Base Condition:	309	771	197	107	1913	49	102	553	1316	145	57	2
New Trips (Scenario 1):	50	0	0	0	0	14	13	6	44	0	7	0
Pass-by Trips (Scenario 1):	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 2):	49	0	0	0	0	14	19	10	68	0	7	0
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	0	0	0	0	0	0
Future Volumes (Scenario 1):	359	771	197	107	1913	63	115	559	1360	145	64	2
Future Volumes (Scenario 2):	358	771	197	107	1913	63	121	563	1384	145	64	2

### P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing:	1375	1767	211	48	1257	60	109	248	397	539	328	49
Growth Factor (%):	3	3	3	3	3	3	3	3	3	3	3	3
Base Condition:	1459	1875	224	51	1334	64	116	263	421	572	348	52
New Trips (Scenario 1):	33	0	0	0	0	10	8	4	29	0	5	0
Pass-by Trips (Scenario 1):	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 2):	75	0	0	0	0	21	17	8	59	0	11	0
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	0	0	0	0	0	0
Future Volumes (Scenario 1):	1492	1875	224	51	1334	74	124	267	450	572	353	52
Future Volumes (Scenario 2):	1534	1875	224	51	1334	85	133	271	480	572	359	52

# 17-115 Mixed-Use Development - Sports Avenue, Smyrna - Traffic Impact Study

Traffic Volumes  
Future Conditions

A&R Engineering  
November 2017

## 2. Spring Rd @ Cumberland Blvd

### A.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing:	145	469	246	114	367	128	304	1534	517	116	226	43
Growth Factor (%):	3	3	3	3	3	3	3	3	3	3	3	3
Base Condition:	154	498	261	121	389	136	323	1627	548	123	240	46
New Trips (Scenario 1):	21	0	0	0	0	14	13	63	19	0	72	0
Pass-by Trips (Scenario 1):	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 2):	21	0	0	0	0	14	19	97	29	0	71	0
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	0	0	0	0	0	0
Future Volumes (Scenario 1):	175	498	261	121	389	150	336	1690	567	123	312	46
Future Volumes (Scenario 2):	175	498	261	121	389	150	342	1724	577	123	311	46

### P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing:	557	605	150	84	586	555	294	589	279	389	1364	74
Growth Factor (%):	3	3	3	3	3	3	3	3	3	3	3	3
Base Condition:	591	642	159	89	622	589	312	625	296	413	1447	79
New Trips (Scenario 1):	14	0	0	0	0	10	8	42	13	0	48	0
Pass-by Trips (Scenario 1):	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 2):	32	0	0	0	0	21	17	84	25	0	107	0
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	0	0	0	0	0	0
Future Volumes (Scenario 1):	605	642	159	89	622	599	320	667	309	413	1495	79
Future Volumes (Scenario 2):	623	642	159	89	622	610	329	709	321	413	1554	79

# 17-115 Mixed-Use Development - Sports Avenue, Smyrna - Traffic Impact Study

Traffic Volumes  
Future Conditions

A&R Engineering  
November 2017

3. Spring Rd @ Sports Ave

## A.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound			
	L	T	R	L	T	R	L	T	R	L	T	R	
Existing:	10	0	13	10	3	11	29	2366	26	23	479	2	504
Growth Factor (%):	3	3	3	3	3	3	3	3	3	3	3	3	3
Base Condition:	11	0	14	11	3	12	31	2510	28	24	508	2	534
New Trips (Scenario 1):	32	0	95	0	0	0	0	0	36	107	0	0	107
Pass-by Trips (Scenario 1):	0	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 2):	48	0	145	0	0	0	0	0	35	106	0	0	106
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Volumes (Scenario 1):	43	0	109	11	3	12	31	2510	64	131	508	2	641
Future Volumes (Scenario 2):	59	0	159	11	3	12	31	2510	63	130	508	2	640

## P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound			
	L	T	R	L	T	R	L	T	R	L	T	R	
Existing:	24	1	12	31	3	38	26	1061	22	25	2536	6	2567
Growth Factor (%):	3	3	3	3	3	3	3	3	3	3	3	3	3
Base Condition:	25	1	13	33	3	40	28	1126	23	27	2690	6	2723
New Trips (Scenario 1):	21	0	63	0	0	0	0	0	24	71	0	0	71
Pass-by Trips (Scenario 1):	4	0	2	0	0	0	0	-2	2	4	-4	0	0
New Trips (Scenario 2):	42	0	126	0	0	0	0	0	53	160	0	0	160
Pass-by Trips (Scenario 2):	30	0	13	0	0	0	0	-12	12	29	-29	0	0
Future Volumes (Scenario 1):	50	1	78	33	3	40	28	1124	49	102	2686	6	2794
Future Volumes (Scenario 2):	97	1	152	33	3	40	28	1114	88	216	2661	6	2883