TRAFFIC IMPACT STUDY
FOR
EMERSON CENTER – SPRING ROAD

SMYRNA, GA

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A & R Project # 15-073

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1.0 INTRODUCTION

The purpose of this study is to determine the traffic impact that will result from the proposed development located on the south side of Spring Road, between Cumberland Pkwy and US 41 (Cobb Pkwy). The traffic analysis evaluates the current operations compared to the future conditions with the traffic generated by the development. The proposed development will consist of:

- Hotel: 200 Rooms
- Apartment: 300 Dwelling Units
- General Office: 65,000 sq. ft.
- Shopping Center: 15,000 sq. ft.

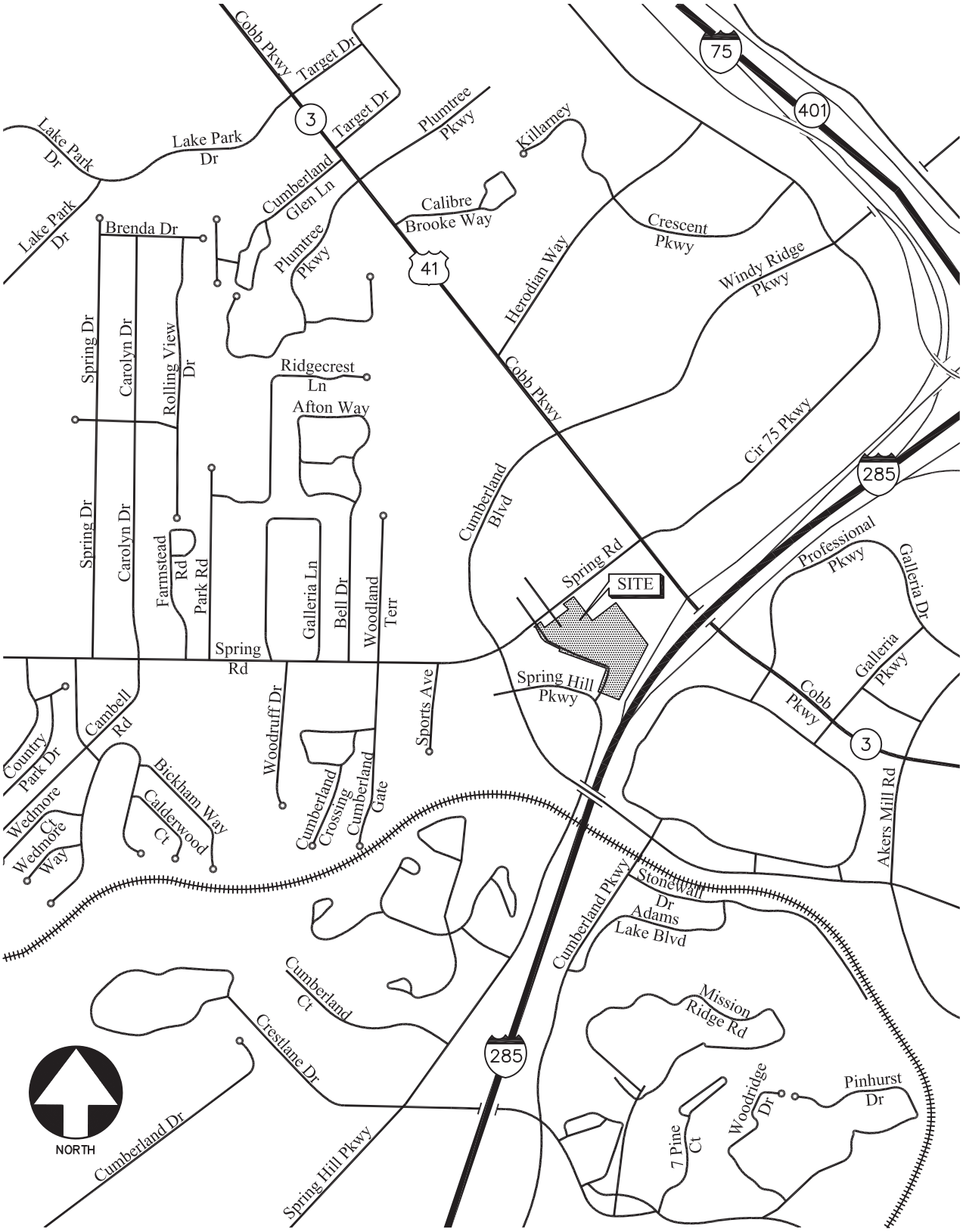
The development proposes access at the following locations:

- Site Driveway 1: Proposed Signal on Spring Road
- Site Driveway 2: Proposed Right-in / Right-out on Spring Rd
- Site Driveway 3: Proposed Full-Access on Spring Hill Pkwy

The AM and PM peak hours have been analyzed in this study. In addition to the site access points, this study includes the evaluation of traffic operations at the intersections of:

- US 41 (Cobb Pkwy) @ Spring Road / Circle 75 Pkwy
- Spring Road @ Cumberland Blvd
- Cumberland Blvd @ Spring Hill Pkwy

As part of the study area evaluation, planned improvement projects (such as widening of Spring Rd and changes to the US 41 at Spring Rd intersection) and added traffic from the nearby SunTrust Park development have been considered. Additional recommendations to improve traffic operations have been identified as appropriate. The location of the development and the surrounding roadway network is shown in Figure 1.



LOCATION MAP FIGURE 1

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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 roadway with a two-way-left-turn-lane and a posted speed limit of 45 mph in the vicinity of the site. A GDOT traffic counter location (Station ID 0672806) indicates that the daily traffic volume on Spring Road was 31,200 vehicles per day west of Cumberland Blvd in 2014. Spring Road is identified as an "Arterial" roadway in the City of Smyrna Thoroughfare Plan.

2.1.2 Cumberland Boulevard

Cumberland Boulevard is a north-south, five-lane to six-lane, undivided roadway with a posted speed limit of 35 mph in the vicinity of the site. A GDOT traffic counter location (Station ID 0673015) indicates that the daily traffic volume on Cumberland Boulevard was 17,000 vehicles per day south of Spring Rd in 2014. Cumberland Boulevard is identified as an "Arterial" roadway in the City of Smyrna Thoroughfare Plan.

2.1.3 US 41 (Cobb Parkway)

US 41 (Cobb Parkway) is a north-south, seven-lane to eight-lane, divided roadway with a posted speed limit of 45 mph in the vicinity of the site. A GDOT traffic counter location (Station ID 0672143) indicates that the daily traffic volume on US 41 (Cobb Pkwy) was 38,200 vehicles per day north of Cumberland Boulevard in 2014. Cobb Parkway is identified as an "Arterial" roadway in the City of Smyrna Thoroughfare Plan.

2.1.4 Spring Hill Parkway

Spring Hill Parkway is an east-west, two-lane, undivided roadway with a posted speed limit of 30 mph in the vicinity of the site. This roadway runs parallel to I-285 from the Paces Ferry Road interchange to Cumberland Blvd. As Spring Hill Parkway is not specifically identified in the City of Smyrna Thoroughfare Plan, it is presumed to have a "Local" roadway classification.

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, 2000 edition (HCM 2000). Synchro software, which utilizes the HCM 2000 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.

TABLE 1 – LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

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

Source: 2000 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.

TABLE 2 – LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Level-of-service	Average Control Delay (sec)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Source: 2000 Highway Capacity Manual

4.0 EXISTING TRAFFIC ANALYSIS

Existing traffic counts and intersection geometric data were obtained at the following study intersections:

- US 41 (Cobb Pkwy) @ Spring Road / Circle 75 Pkwy
- Spring Road @ Cumberland Blvd
- Cumberland Blvd @ Spring Hill Pkwy

Turning movement counts were collected on June 23, 2015. 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.

4.1 Existing Traffic Operations

Existing traffic operations were analyzed at the study intersections in accordance with the HCM methodology. The results of the analyses are shown in Table 3. The existing traffic control and lane geometry for the intersections are shown in Figure 3.

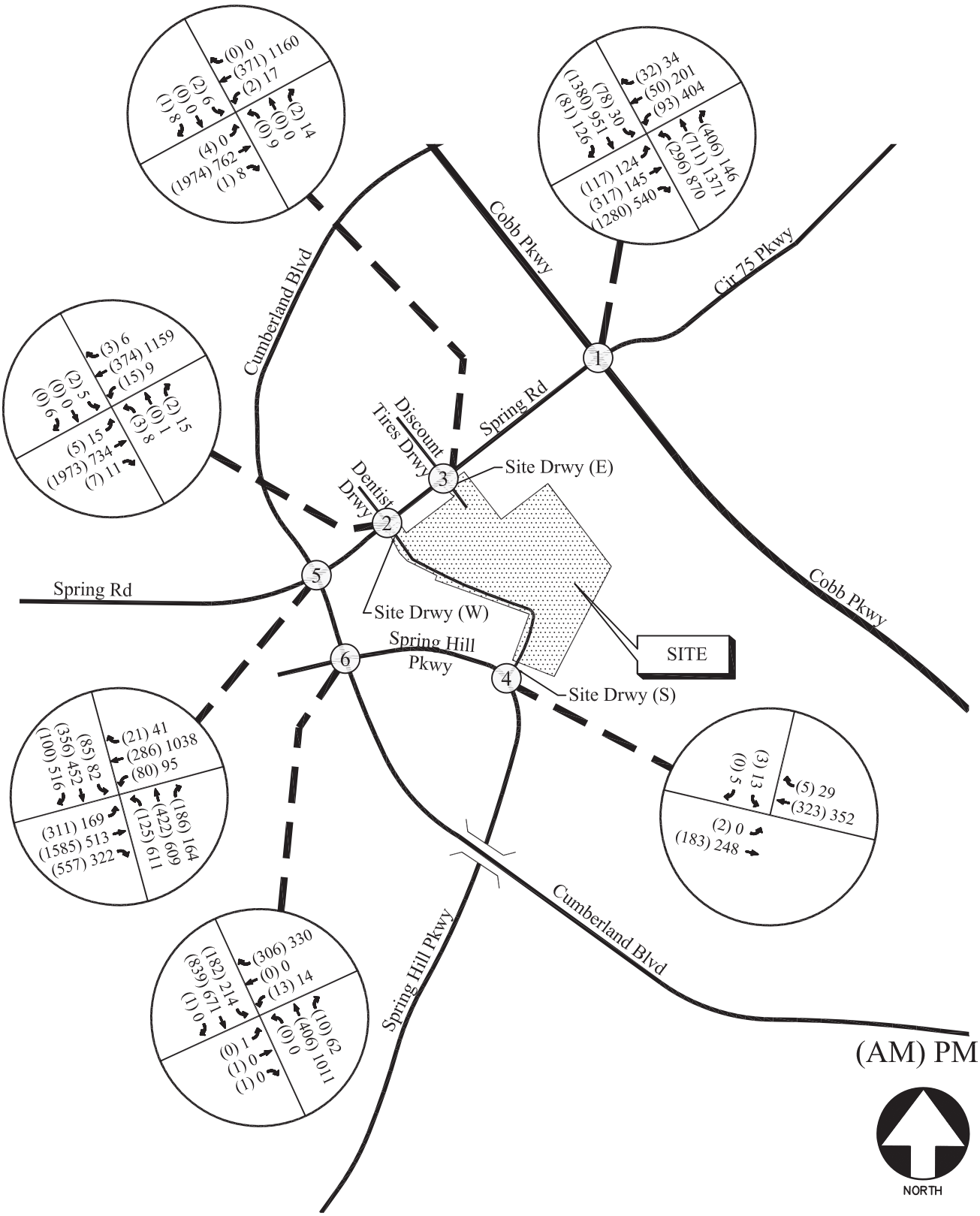
TABLE 3 – EXISTING INTERSECTION OPERATIONS

	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			LOS (Delay)	v/c ratio	LOS (Delay)	v/c ratio
1	**Cobb Pkwy (US 41) @ Spring Rd/Circle 75 Pkwy** -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	Signalized	**D (50.1)** D (48.1) E (71.2) D (45.3) D (54.5)	0.88	**D (51.2)** E (62.4) E (75.0) D (37.5) E (58.2)	0.88
2	**Spring Rd @ Existing Drwy (W) / Dentist Drwy** -Eastbound Left -Northbound Approach -Southbound Approach -Westbound Left	Stop Controlled on Northbound and Southbound	 A (8.2) C (21.6) B (10.2) B (14.1)	-	 B (12.0) B (12.1) C (22.3) A (8.8)	-
3	**Spring Rd @ Existing Drwy (E) / Discount Tires Drwy** -Eastbound Left -Northbound Approach -Southbound Approach -Westbound Left	Stop Controlled on Northbound and Southbound	 A (8.2) A (9.5) A (9.8) B (13.9)	-	 A (0.0) B (11.8) C (20.6) A (9.0)	-
4	**Spring Hill Pkwy @ Existing Drwy (S)** -Eastbound Approach -Southbound Approach	Stop Controlled on Southbound	 A (0.2) B (13.2)	-	 A (0.0) B (14.0)	-
5	**Cumberland Blvd @ Spring Rd** -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	Signalized	**C (32.0)** C (21.6) B (17.3) E (61.3) D (49.7)	0.75	**E (76.9)** D (42.7) F (95.5) F (80.1) F (81.8)	1.16

6	**Cumberland Blvd @ Colonial Pipeline Station Drwy/Spring Hill Pkwy** -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	Signalized	**B (14.2)** E (62.8) E (64.5) A (5.1) A (1.1)	0.27	**B (15.6)** E (62.5) E (64.0) B (10.2) A (2.4)	0.51

* v/c ratio is not calculated for unsignalized intersections

The results of existing traffic operations analysis indicates that all the study intersections are operating at an acceptable level-of-service ("D" or better by local standards) in both the AM and PM peak hours except for the intersection of Cumberland Blvd at Spring Rd, which operates at level-of-service "E" in the PM peak hour. This area is addressed in the "Future Traffic Analysis" section.



EXISTING WEEKDAY PEAK-HOUR VOLUMES FIGURE 2

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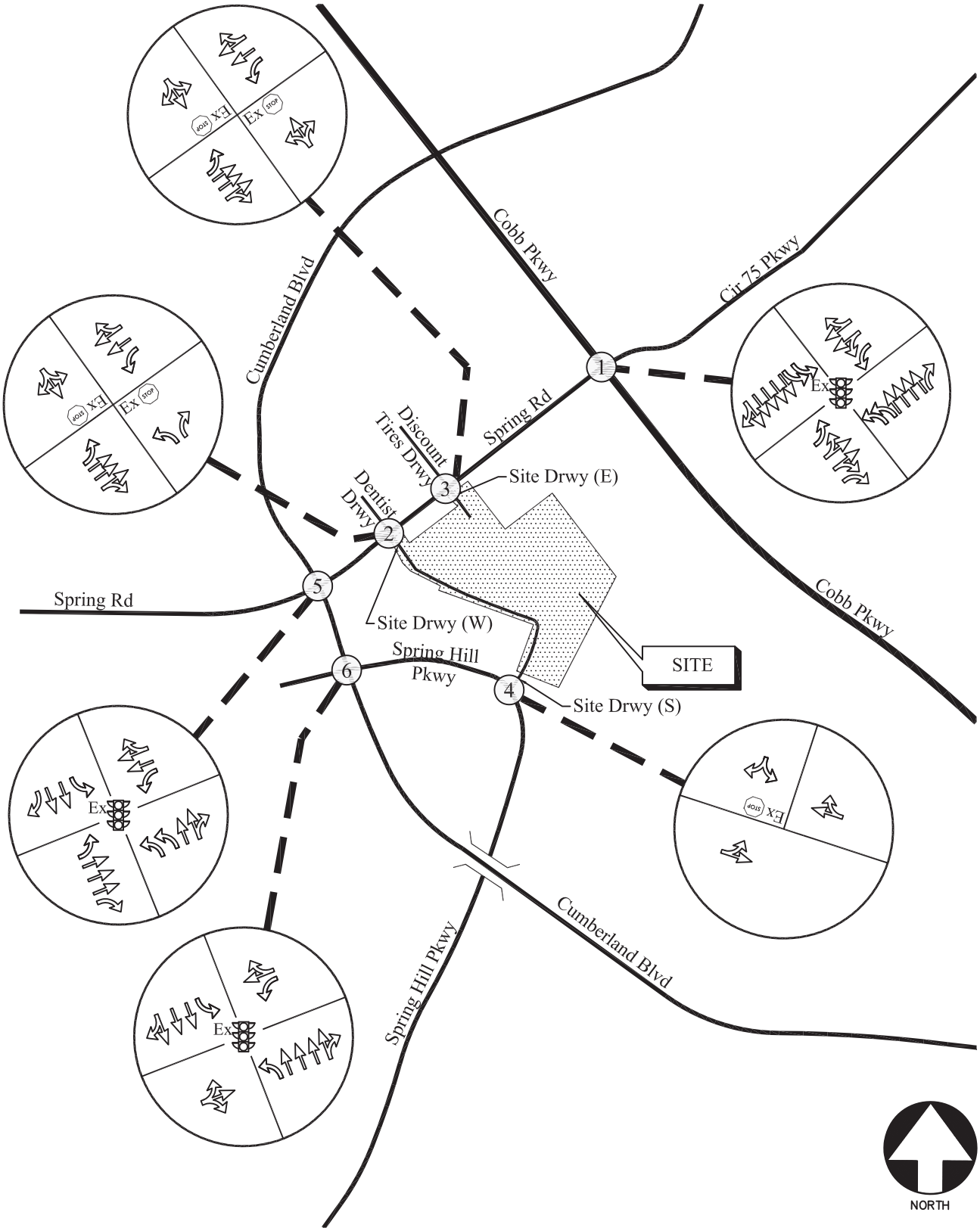

EXISTING TRAFFIC CONTROL AND LANE GEOMETRY FIGURE 3

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5.0 PROPOSED DEVELOPMENT

The proposed mixed-use development will be located on the south side of Spring Road between Cumberland Blvd and US 41 (Cobb Pkwy). The development will consist of:

- Hotel: 200 Rooms
- Apartment: 300 Dwelling Units
- General Office: 65,000 sq. ft.
- Shopping Center: 15,000 sq. ft.

The development proposes access at the following locations:

- Site Driveway 1: Proposed Signal on Spring Road
- Site Driveway 2: Proposed Right-in / Right-out on Spring Rd
- Site Driveway 3: Proposed Full-Access on Spring Hill Pkwy

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 9th 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 ITE Land Uses 220, 310, 710, and 820. 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.

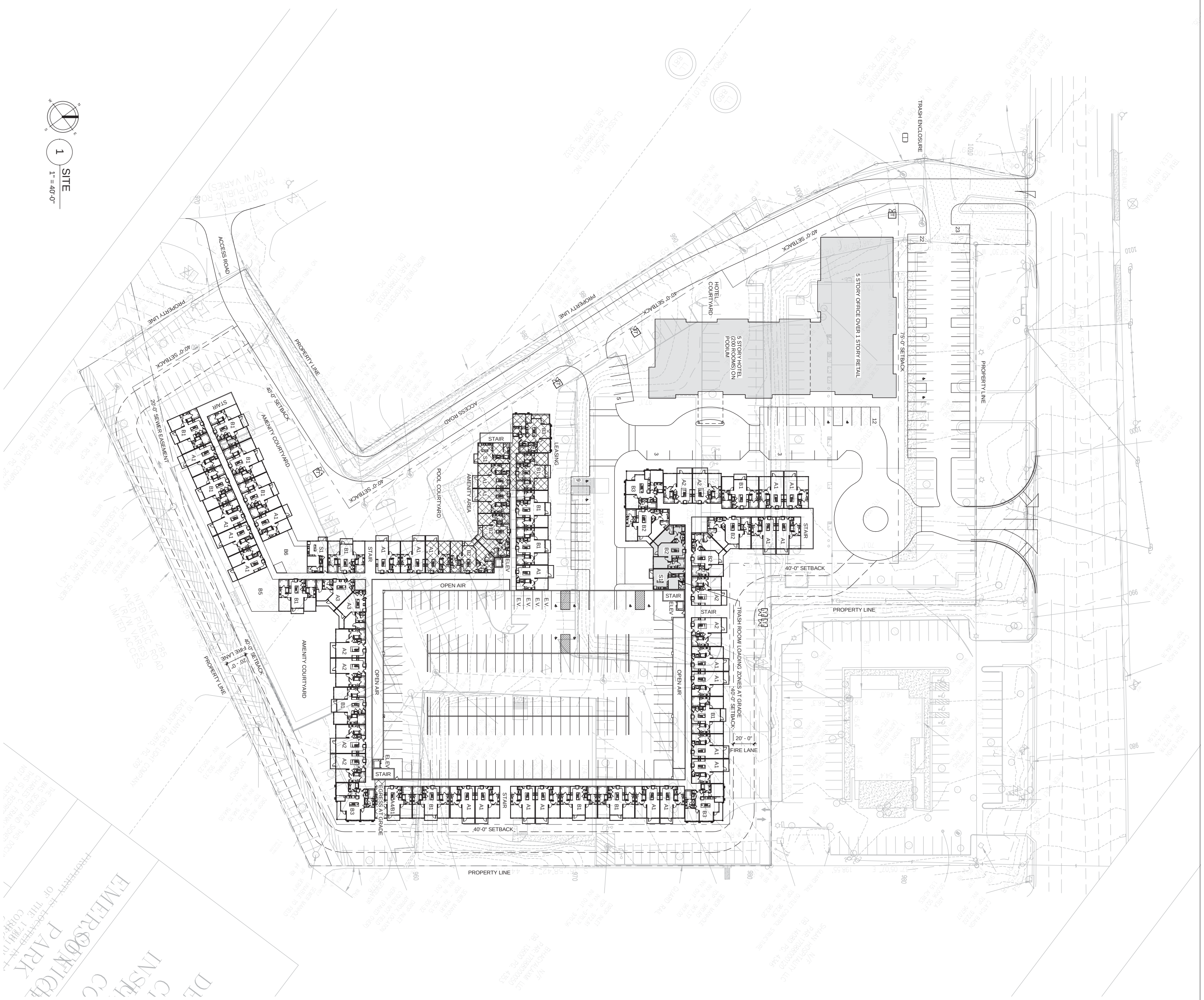
TABLE 4 – TRIP GENERATION

Land Use	Size	A.M. Peak Hour			P.M. Peak Hour			24-Hour
		Enter	Exit	Total	Enter	Exit	Total	2-way
ITE 310 – Hotel	200 Rooms	63	43	106	61	59	120	1,417
ITE 220 – Apartment	300 Units	30	121	151	119	64	183	1,942
ITE 710 – General Office Building	65,000 SF	119	17	136	26	125	151	946
ITE 820 – Shopping Center	15,000 SF	30	19	49	81	87	168	1,979
Total Site Trips (without reductions)		242	200	442	287	335	622	6,284
Internal Capture for Hotel		*-2*	*-1*	*-3*	*-4*	*-5*	*-9*	*-113*
Internal Capture for Apartment		*-2*	*-2*	*-4*	*-5*	*-8*	*-13*	*-155*
Internal Capture for General Office Building		*-1*	*-1*	*-2*	*-3*	*-5*	*-8*	*-79*
Internal Capture for Shopping Center		*-4*	*-3*	*-7*	*-9*	*-13*	*-22*	*-268*
Total Internal (Mixed-Use) Trip Reduction		-9	-7	-16	-21	-31	-52	-615
Pass-by for Shopping Center (0%) 34%		*0*	*0*	*0*	*-24*	*-25*	*-49*	*-490*
Total Pass-by Trip Reduction		0	0	0	-24	-25	-49	-490
Total New External Trips (with reductions)		**233**	**193**	**426**	**242**	**279**	**521**	**5,179**

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

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, 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 are shown in Figures 5 and 6. Pass-by volumes have also been distributed based on existing travel patterns and are shown in Figure 7.



1 SITE
1" = 40'-0"

SP-01

DRAWN BY ML
CHECKED BY JS
JOB NUMBER: 154505

SITE PLAN

ISSUE / REVISION

WESTPLAN

ASPIRE EMERSON CENTER
SMYRNA, GEORGIA

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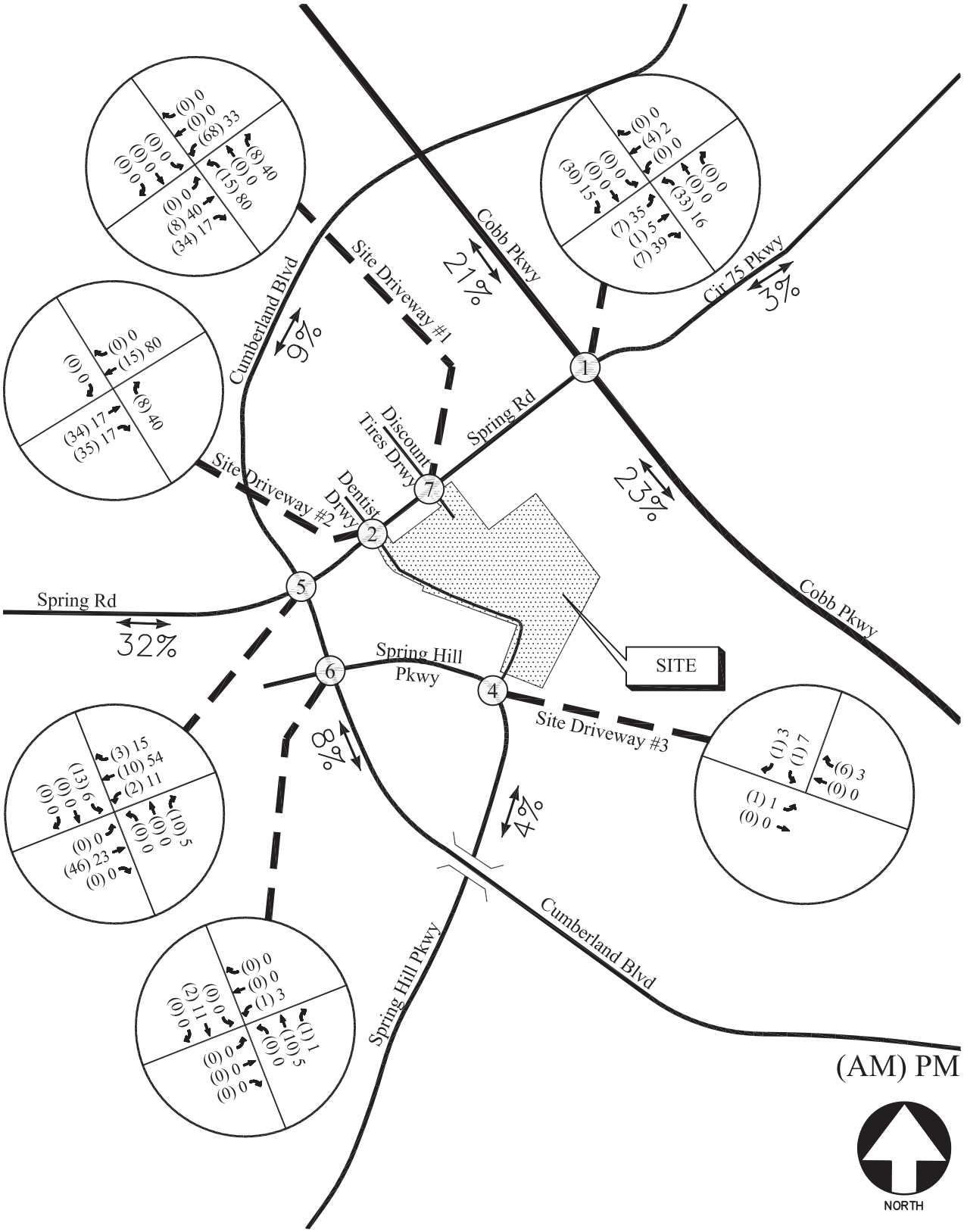

TRIP DISTRIBUTION AND SITE-GENERATED WEEKDAY PEAK HOUR VOLUMES (Office and Retail)

FIGURE 5

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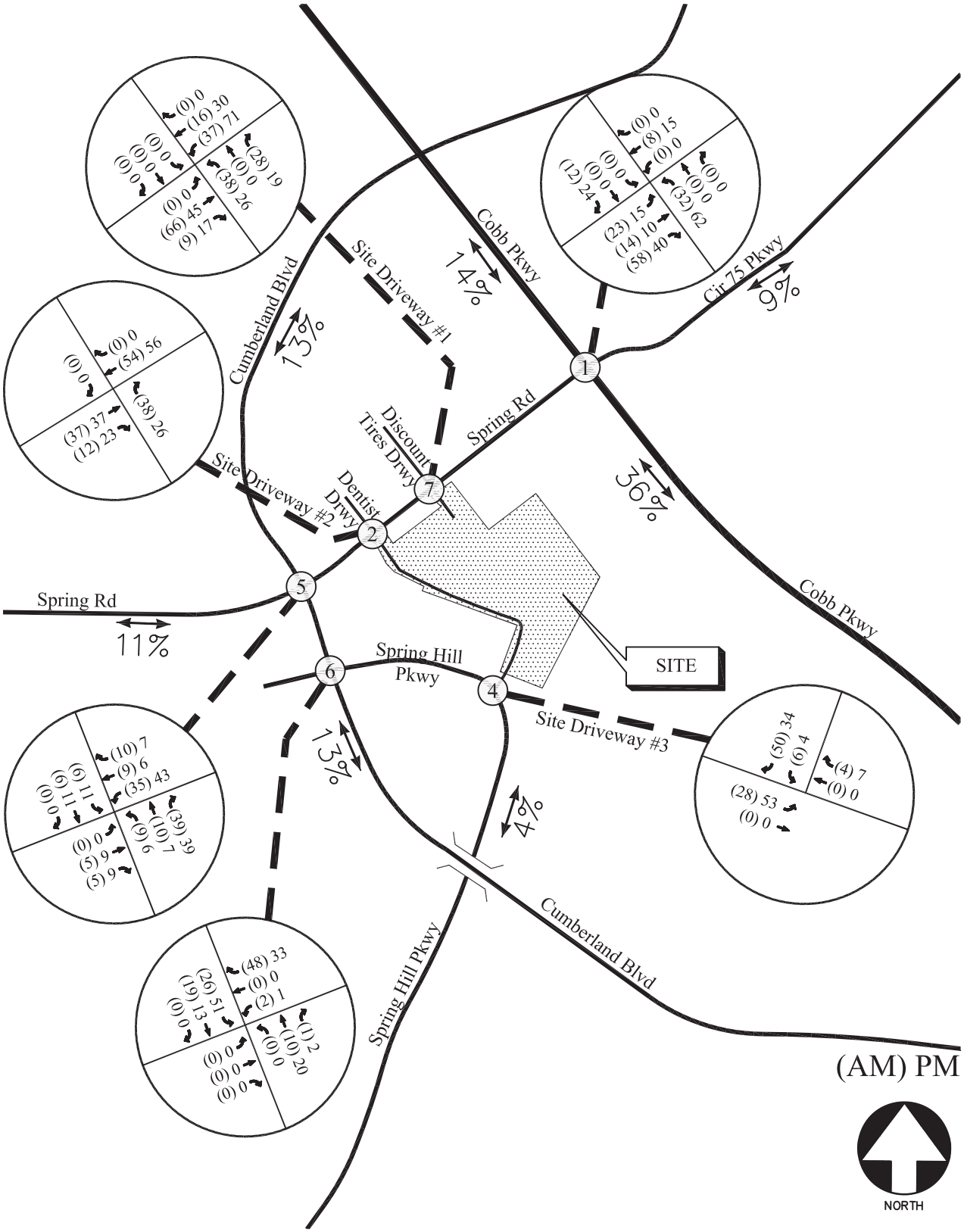

TRIP DISTRIBUTION AND SITE-GENERATED WEEKDAY PEAK HOUR VOLUMES (Residential)

FIGURE 6

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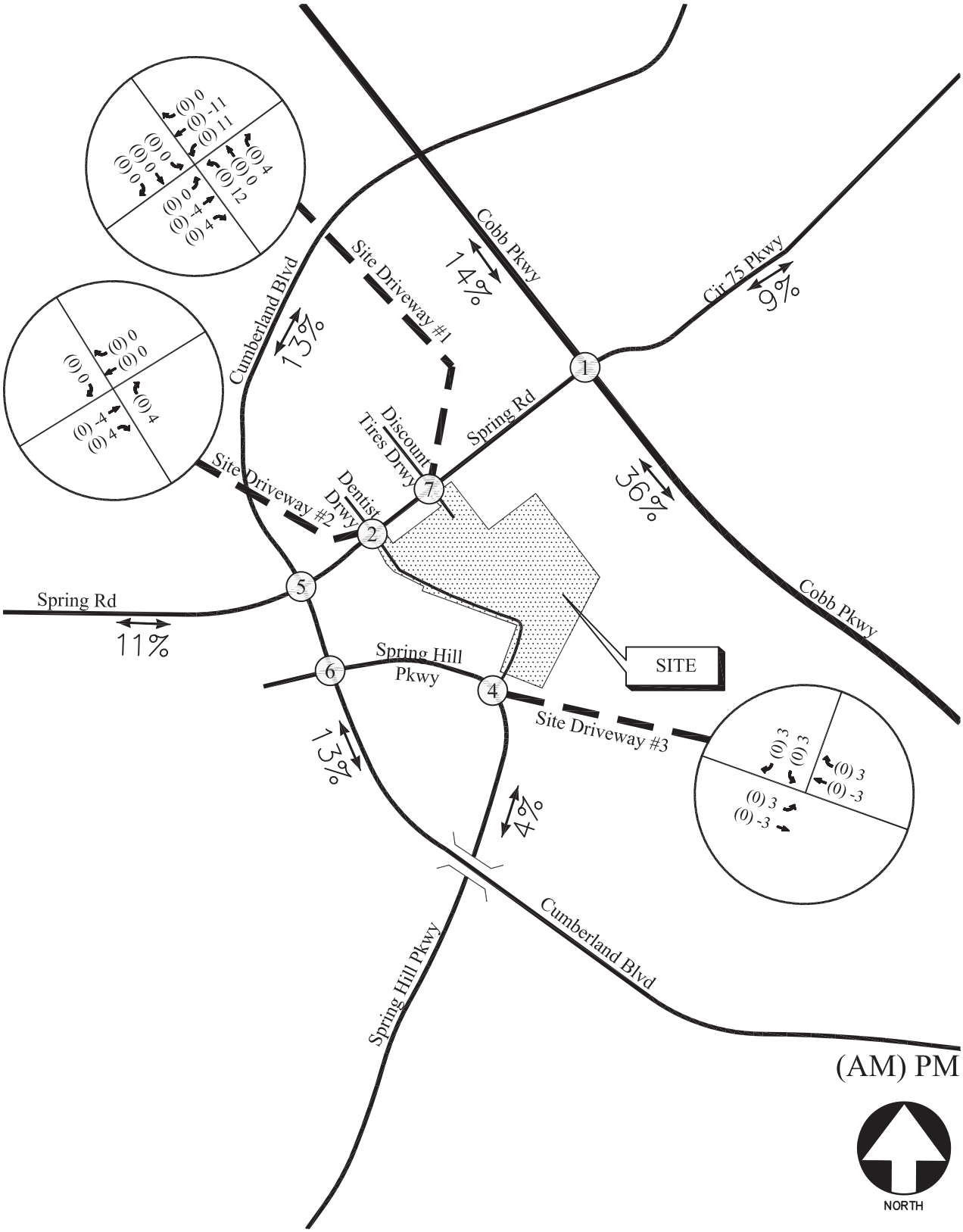

SITE PEAK HOUR PASS-BY VOLUMES (Retail) FIGURE 7

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6.0 FUTURE TRAFFIC ANALYSIS

The future traffic operations are analyzed for the "Build" and "No-Build" conditions. This provides a basis of reference for determining both the contribution of the site to overall traffic conditions and the additional improvements needed to provide sufficient site access and capacity for passing traffic. Note that survey and construction drawings would be needed to verify the feasibility and extent of additional right-of-way required for any recommended improvements.

Improvements that are identified as "System Improvements" address deficiencies that are found within the existing road network prior to any impacts from the proposed development's added traffic. Improvements that are identified as "Site Mitigation Improvements" address further impacts that are a result of the proposed development's added traffic.

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 and added traffic from other nearby planned developments (Figure 12).

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 several years revealed no consistent positive growth of through traffic; therefore, a growth rate of 1% was used in the analysis. This rate of growth is consistent with the nearby SunTrust Park DRI analysis. 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 13.

6.1.2 Planned Improvement Projects

The following improvements have been identified in the Regional Transportation Plan (Plan 2040), GDOT TransPi, and/or the local comprehensive transportation plans.

TABLE 5 – PLANNED AND PROGRAMMED IMPROVEMENTS

Route	Type of Improvement	Estimated Completion	Source	Local Project #
Spring Rd: Cumberland Blvd to Circle 75 Pkwy	Provide sidewalks along both sides of road	2020	SunTrust Park Project List Summary 08-07-14	-
Cobb Pkwy, Spring Rd, and Windy Ridge Pkwy	Update pedestrian devices and crosswalks	2020	SunTrust Park Project List Summary 08-07-14	-

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Route	Type of Improvement	Estimated Completion	Source	Local Project #
Cobb Parkway at Circle 75 Parkway / Spring Rd	Intersection Improvements	2020	SunTrust Park Project List Summary 08-07-14	-
Spring Rd: Cobb Pkwy to Bell Dr	Add westbound thru lane to accommodate intersection improvement	2020	SunTrust Park Project List Summary 08-07-14	CO-451
Cumberland Boulevard and Spring Road	Install a southbound right-turn overlap and extend southbound right lane	2020	SunTrust Park Project List Summary 08-07-14	-
Cumberland Blvd	Cobb Community Transit Route 10X Operating Assistance	2020	ARC Plan 2040	CO-453
Cobb Pkwy: between Circle 75 and I-285	Construction of an additional westbound lane on the ramp and an receiving lane on Cobb Parkway/US 41	2020	ARC Plan 2040	CO-457
Spring Rd at Cumberland Blvd	Intersection improvements, median and electronic message signs	-	Cobb Comprehensive Transportation Plan STWP	R-277
Cobb Pkwy: between Akers Mill and Spring Rd	Safety and operational improvements, turn lanes, sidewalks	-	Cobb Comprehensive Transportation Plan STWP	R-518

Projects that have been included in the future traffic models are as follows.

CO-451 Spring Rd from Cobb Pkwy to Bell Dr

The following project-related improvements have been modeled as being completed in the future conditions analysis:

- Add westbound thru lane to accommodate intersection improvement
- Median that prohibits left turns at driveways on Spring Road from US 41 to Cumberland Blvd

Figure 8 – Spring Rd Improvement Project from Cobb Pkwy to Bell Dr (CO-451)

Cobb Parkway at Circle 75 Parkway / Spring Rd

The following project-related improvements have been modeled as being completed in the future conditions analysis:

- Convert the existing eastbound shared left turn/ through lane to an exclusive through lane
- Provide an additional eastbound receiving lane
- Modify island to allow shared through/right-turn lane from northbound Cobb Parkway/US41
- Provide an additional northbound (third) left-turn lane, converting westbound receiving lane to a through lane on Spring Road, assuring proper turning envelopes and extend to Cumberland Boulevard
- Provide the westbound approach as three left-turn lanes and a shared through-right lane
- Remove the eastbound and westbound split phasing

Figure 9 – Spring Rd at US 41 Improvement Project

Cobb Parkway at Circle 75 Parkway / Spring Rd

The following project-related improvements have been modeled as being completed in the future conditions analysis:

- Construction of an additional westbound right-turn lane on the ramp
- Additional northbound receiving lane on Cobb Parkway/US 41 to allow free-flow right-turns to Circle 75 Parkway

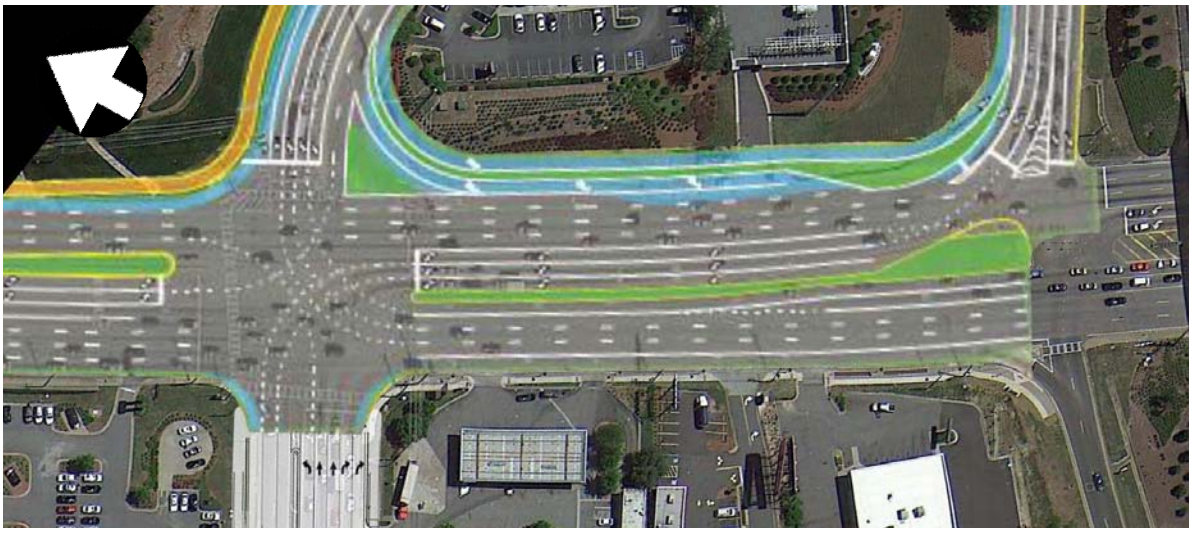


Figure 10 – US 41 at I-285 Improvement Project (CO-457)

6.1.3 Nearby Planned Development – SunTrust Park

There is a planned mixed-use development which will include a baseball stadium for the Atlanta Braves with access from US 41 at Circle 75 Parkway. Traffic from the planned development was determined from the recently completed DRI Traffic Study for the project and included in the analysis of the future "No-Build" and "Build" conditions. The added traffic volumes are shown in Figure 12.

Figure 11 – Rendering of SunTrust Park Development

6.1.4 Recommendations for System Improvements

System improvements address deficiencies that are found within the existing road network for the "No-Build" conditions. Detailed information for recommendations on each of the intersections with identified deficiencies is provided in the following narratives.

Cumberland Blvd @ Spring Rd

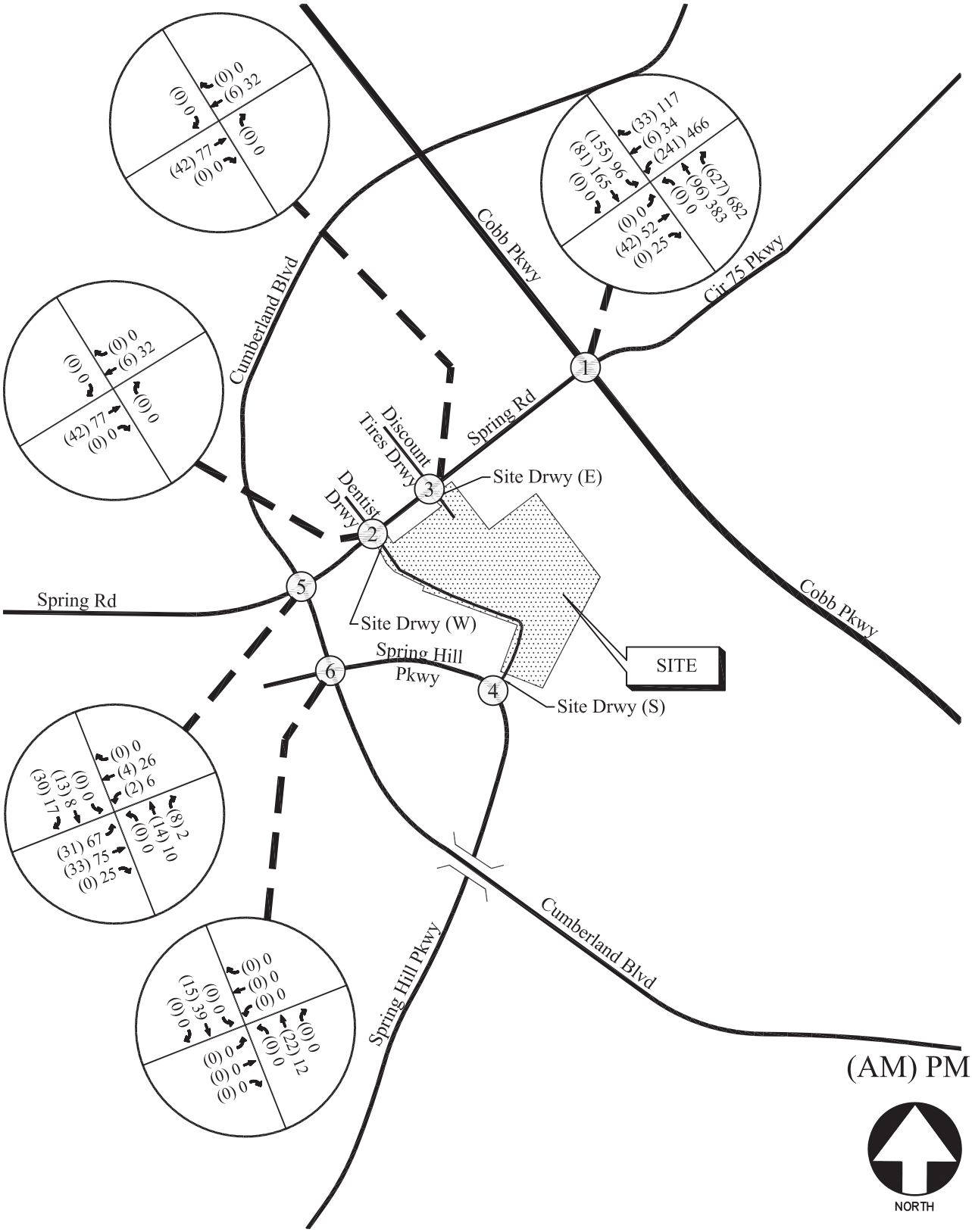
The intersection of Cumberland Blvd at Spring Rd is currently operating at an overall level-of-service "E" in the PM peak hour. While level-of-service "D" is typically desired at an intersection, the LOS standard set by the SunTrust Park DRI was based on the existing conditions (LOS E) and is consistent with GRTA guidelines. The results of the No-Build (background) conditions indicates that the intersection will maintain the level-of-service "E" standard prior to added traffic from the proposed development. Therefore, no additional system improvements have been identified for the intersection.

6.1.5 Future "No-Build" Traffic Operations

The future "No-Build" traffic operations were analyzed using the volumes in Figure 13 and the results are shown in Table 6.

TABLE 6 – FUTURE "NO-BUILD" INTERSECTION OPERATIONS

	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			LOS (Delay)	v/c ratio	LOS (Delay)	v/c ratio
1	**Cobb Pkwy (US 41) @ Spring Rd/Circle 75 Pkwy**	Signalized	**D (49.7)**	0.86	**D (44.9)**	0.78
	-Eastbound Approach		E (61.0)		D (53.4)	
	-Westbound Approach		E (61.4)		E (58.1)	
	-Northbound Approach		C (31.5)		C (33.9)	
	-Southbound Approach		E (59.0)		D (54.1)	
2	**Spring Rd @ Existing Drwy (W) / Dentist Drwy**	Stop Controlled on Northbound and Southbound		-		-
	-Northbound Approach		A (9.8)		A (8.8)	
	-Southbound Approach		A (0.0)		B (10.7)	
3	**Spring Rd @ Existing Drwy (E) / Discount Tires**	Stop Controlled on Northbound and Southbound		-		-
	-Northbound Approach		A (9.8)		A (8.7)	
	-Southbound Approach		A (9.1)		B (11.7)	
4	**Spring Hill Pkwy @ Existing Drwy (S)**	Stop Controlled on Southbound		-		-
	-Eastbound Approach		A (0.0)		A (0.0)	
	-Southbound Approach		A (0.0)		B (10.8)	
5	**Cumberland Blvd @ Spring Rd**	Signalized	**C (33.8)**	0.74	**E (74.2)**	1.16
	-Eastbound Approach		C (24.8)		D (53.0)	
	-Westbound Approach		C (21.7)		D (48.7)	
	-Northbound Approach		E (61.6)		F (98.6)	
	-Southbound Approach		D (44.6)		F (92.7)	
6	**Cumberland Blvd @ Spring Hill Pkwy**	Signalized	**B (14.0)**	0.28	**B (16.9)**	0.52
	-Eastbound Approach		E (62.6)		E (62.4)	
	-Westbound Approach		E (64.4)		E (64.0)	
	-Northbound Approach		A (5.4)		B (11.1)	
	-Southbound Approach		A (1.1)		A (5.2)	



ADDED WEEKDAY PEAK HOUR VOLUMES FROM SUNTRUST PARK DRI TRAFFIC STUDY

FIGURE 12

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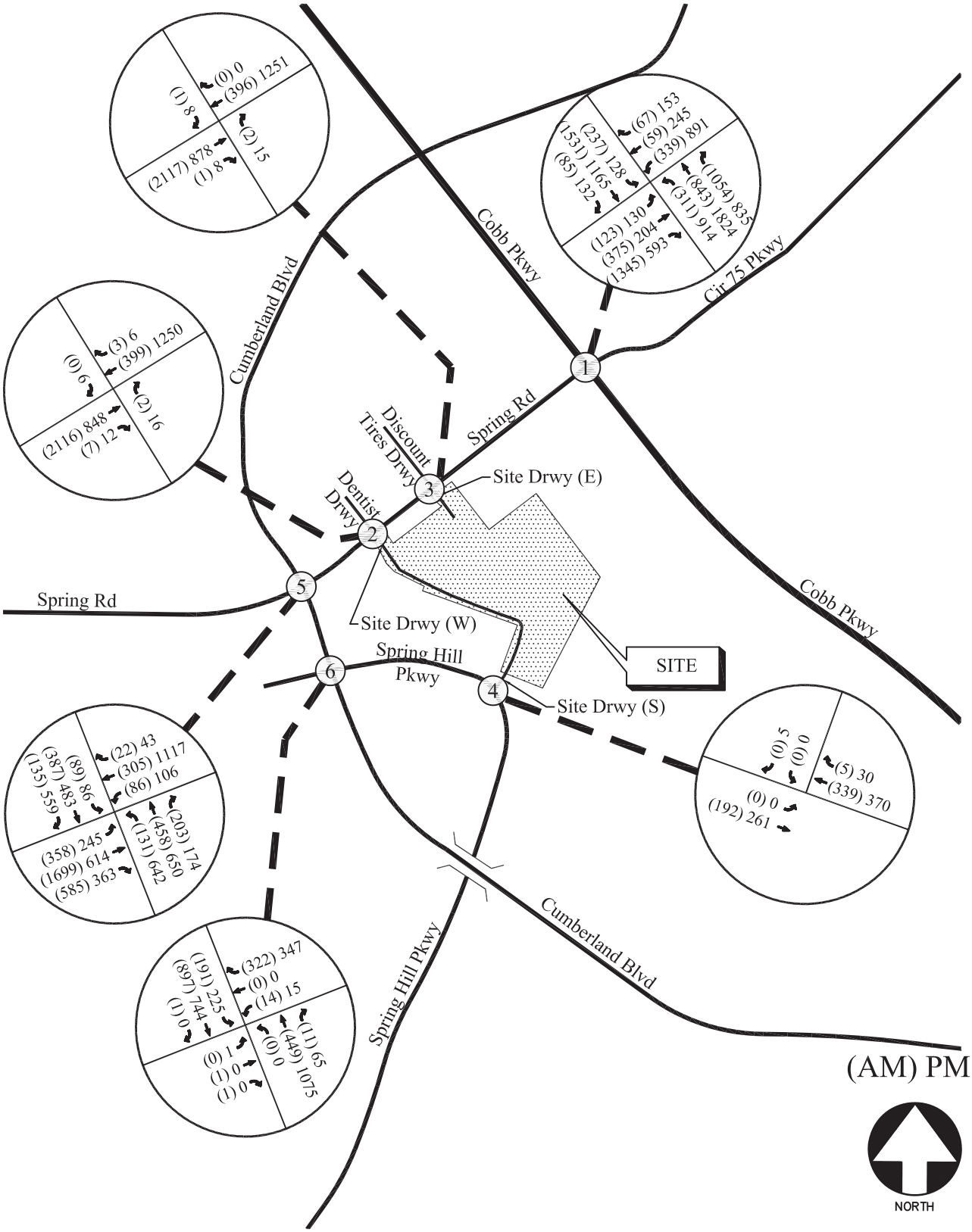

FUTURE "NO-BUILD" WEEKDAY PEAK HOUR VOLUMES FIGURE 13

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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 (Figures 5 and 6) and pass-by volumes (Figure 7) were added to base traffic volumes (Figure 13) to calculate the future traffic volumes after the construction of the development. These total future traffic volumes (Figure 14) were used to evaluate the "Build" condition, which includes the projected site traffic. The results of the "Build" operations analyses with the assumed site access configuration are shown in Tables 7 and 8.

6.2.1 Site Access Configuration

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

- Site Driveway #1: Signalized Driveway on Spring Road
    - The intersection will be signalized with a protected+permissive turn phase for traffic entering from the westbound approach
    - This driveway will consist of one entering lane and two exiting lanes. The exiting approach will have a dedicated left turn lane and a shared through / right turn lane.
    - Dedicated left turn bays will be constructed on Spring Road based on local standards as part of the signal installation.
    - A deceleration lane will be constructed for entering traffic based on local standards
- Site Driveway #2: Right-in / Right-out driveway on Spring Road
    - This driveway will consist of one entering lane and one exiting lane.
    - The intersection will be unsignalized with a YIELD sign on the northbound (driveway) approach
    - Entering right turn movements will be made from the eastbound through lane. No deceleration lane is planned due to right-of-way constraints.
- Site Driveway #3: Full-access driveway on Spring Hill Pkwy
    - This driveway will consist of one entering lane and one exiting lane.
    - The intersection will be unsignalized with a STOP sign on the southbound (driveway) approach
    - Entering left turn movements will be made from the eastbound through lane. No dedicated turn bay is planned due to right-of-way constraints.
    - Entering right turn movements will be made from the westbound through lane. No deceleration lane is warranted (See Appendix).

6.2.2 Recommendations for Site Mitigation Improvements

Improvements that are identified as mitigation improvements address deficiencies that are caused by site traffic and can be identified as related to the proposed development. Because level-of-service would not be significantly impacted beyond the projected "No-Build" conditions, mitigation improvements have not been identified outside of the recommended configuration for the site access points.

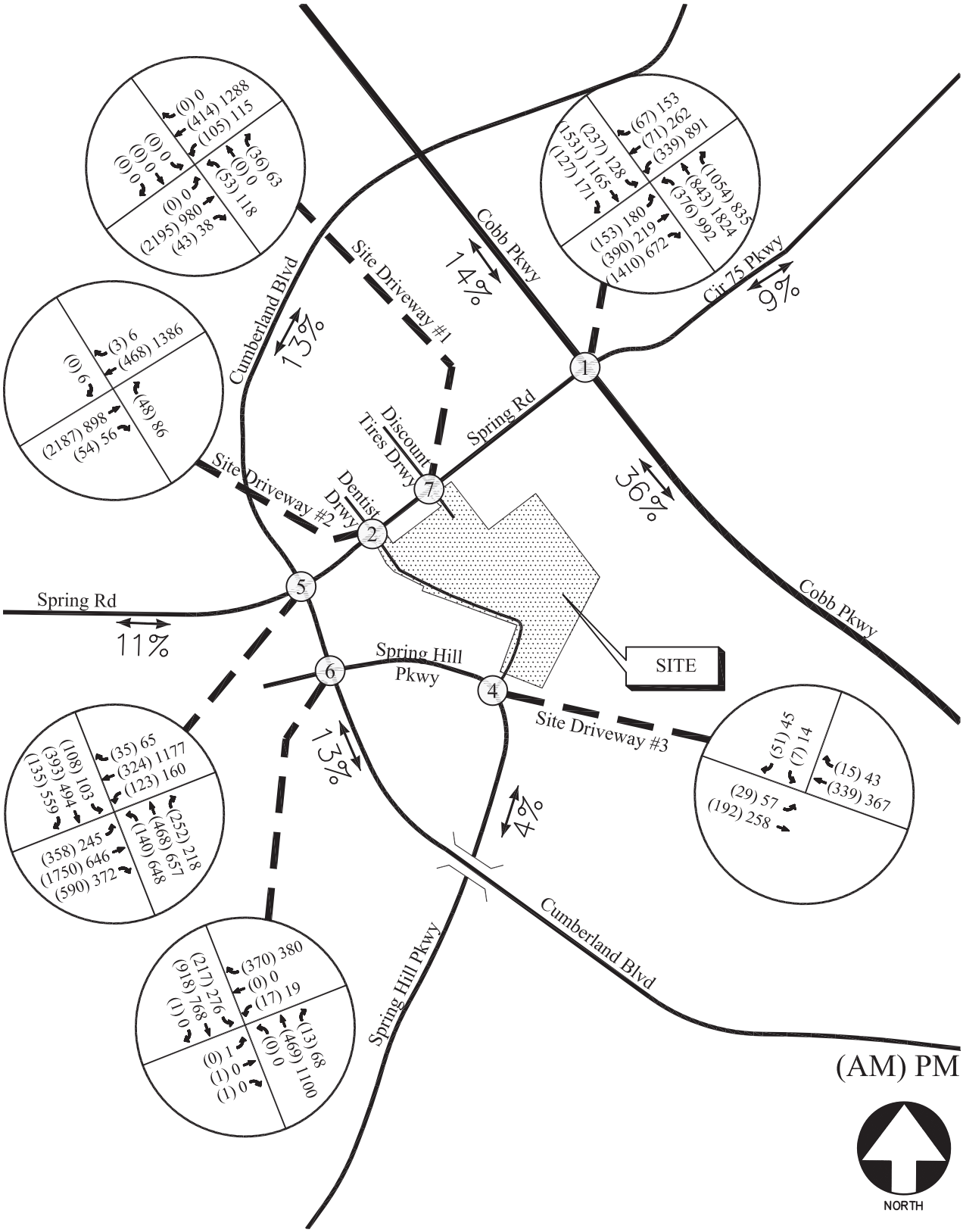
6.2.3 Future "Build" Traffic Operations

The "Build" conditions are evaluated to determine effectiveness of the recommended system and site mitigation improvements. Recommendations on traffic control and lane geometry are shown graphically in Figure 15.

TABLE 7 – FUTURE INTERSECTION OPERATIONS

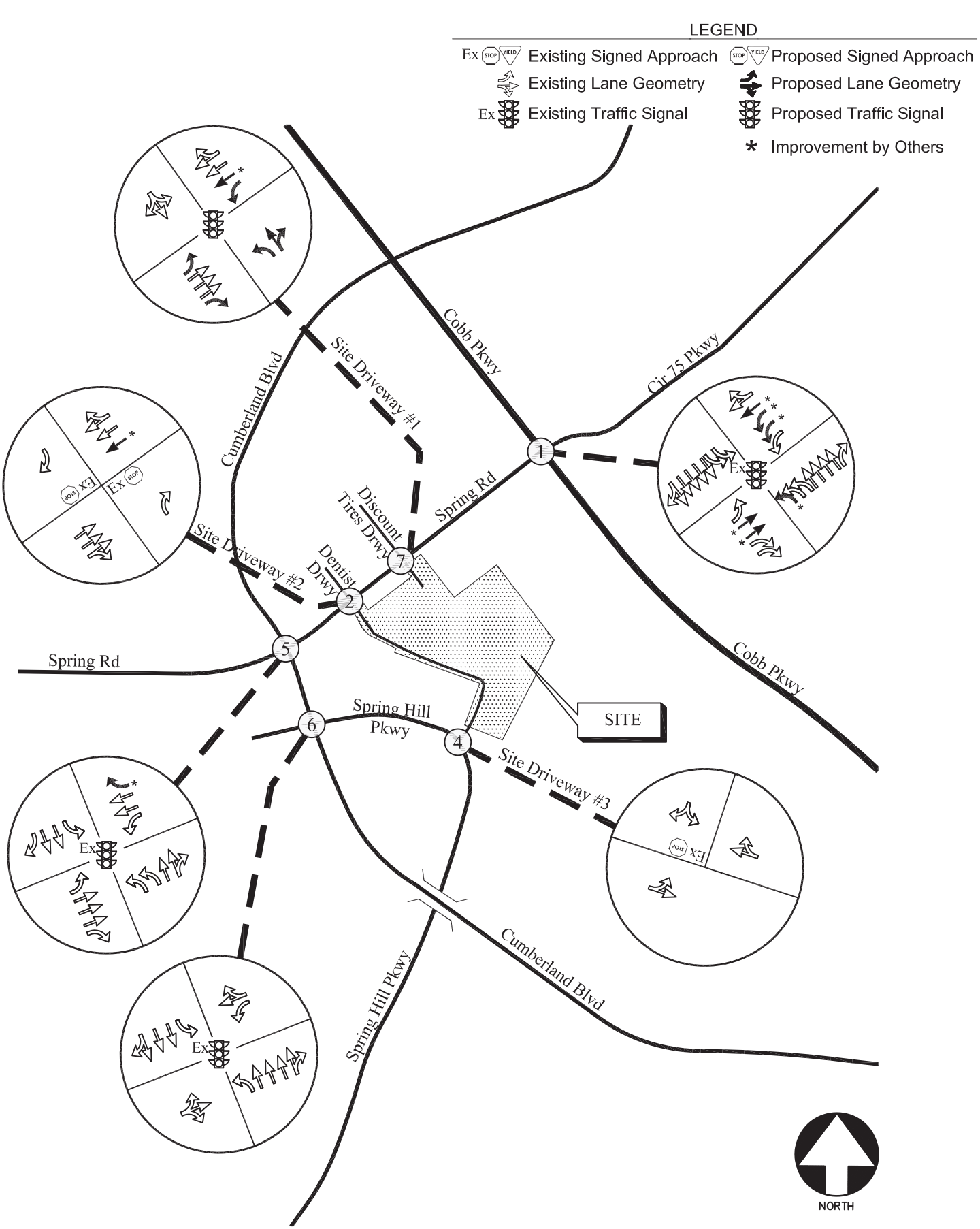
	Intersection	Future Conditions: LOS (Delay)			
		NO-BUILD WITH PLANNED IMPROVEMENT PROJECTS		BUILD WITH PLANNED IMPROVEMENT PROJECTS	
		AM Peak	PM Peak	AM Peak	PM Peak
1	**Cobb Pkwy (US 41) @ Spring Rd/Circle 75 Pkwy**	**D (49.7)**	**D (44.9)**	**D (48.5)**	**D (47.8)**
	-Eastbound Approach	E (61.0)	D (53.4)	D (46.3)	E (57.5)
	-Westbound Approach	E (61.4)	E (58.1)	E (61.1)	E (62.8)
	-Northbound Approach	C (31.5)	C (33.9)	D (37.9)	C (34.5)
	-Southbound Approach	E (59.0)	D (54.1)	E (61.3)	E (59.4)
2	**Spring Rd @ Site Drwy #2 / Dentist Drwy**				
	-Northbound Approach	A (9.8)	A (8.8)	B (11.8)	A (9.6)
	-Southbound Approach	A (0.0)	B (10.7)	A (0.0)	A (8.6)
3	**Spring Rd @ Existing Access / Discount Tires**				
	-Northbound Approach	A (9.8)	A (8.7)	-	-
	-Southbound Approach	A (9.1)	B (11.7)	-	-
4	**Spring Hill Pkwy @ Site Drwy #3**				
	-Eastbound Approach	A (0.0)	A (0.0)	A (2.0)	A (3.1)
	-Southbound Approach	A (0.0)	B (10.8)	B (12.2)	C (16.1)
5	**Cumberland Blvd @ Spring Rd**	**C (33.8)**	**E (74.2)**	**D (37.5)**	**E (78.9)**
	-Eastbound Approach	C (24.8)	D (53.0)	C (27.9)	D (52.8)
	-Westbound Approach	C (21.7)	D (48.7)	C (31.7)	F (88.7)
	-Northbound Approach	E (61.6)	F (98.6)	E (65.2)	E (73.3)
	-Southbound Approach	D (44.6)	F (92.7)	D (45.0)	F (101.4)
6	**Cumberland Blvd @ Spring Hill Pkwy**	**B (14.0)**	**B (16.9)**	**B (15.1)**	**B (19.8)**
	-Eastbound Approach	E (62.6)	E (62.4)	E (62.2)	E (60.8)
	-Westbound Approach	E (64.4)	E (64.0)	E (64.4)	E (62.6)
	-Northbound Approach	A (5.4)	B (11.1)	A (6.0)	B (14.3)
	-Southbound Approach	A (1.1)	A (5.2)	A (1.2)	A (9.0)
7	**Spring Rd @ Site Drwy #1 / Discount Tires**	-	-	**C (30.3)**	**B (11.2)**
	-Eastbound Approach	-	-	C (32.9)	B (12.1)
	-Westbound Approach	-	-	B (15.3)	A (4.2)
	-Northbound Approach	-	-	E (66.8)	E (64.3)
	-Southbound Approach	-	-	A (0.0)	A (0.0)

TABLE 8 – FUTURE "BUILD" INTERSECTION 95TH PERCENTILE QUEUES						
Intersection		Estimated Storage (ft)	NO-BUILD		BUILD	
			AM Peak	PM Peak	AM Peak	PM Peak
1	**Cobb Pkwy @ Spring Rd/Circle 75 Pkwy**					
	Eastbound Left	425	154	208	239	304
	Eastbound Through	-	235	152	128	167
	Eastbound Right	-	883	333	915	432
	Westbound Left	-	161	360	161	364
	Westbound Through	-	46	206	52	235
	Northbound Left	400	145	362	195	391
	Northbound Through	-	263	500	263	500
	Southbound Left	350	167	98	167	98
	Southbound Through	-	421	337	439	355
2	**Site Drwy #2 Dentist Drwy @ Spring Rd**					
	Eastbound Through	-	0	0	0	0
	Westbound Through	-	0	0	0	0
	Northbound Right	-	1	3	27	19
	Southbound Right	-	0	0	0	1
3	**Spring Rd @ Existing Drwy / Discount Tires**					
	Eastbound Through	-	0	0	-	-
	Westbound Through	-	0	0	-	-
	Northbound Right	-	0	2	-	-
4	**Site Driveway #3 @ Spring Hill Pkwy**					
	Eastbound Through / Left	-	0	0	4	9
	Westbound Through	-	0	0	0	0
	Southbound Left / Right	-	0	1	10	23
5	**Cumberland Blvd @ Spring Rd**					
	Eastbound Left	225	276	417	276	413
	Eastbound Through	-	604	183	631	193
	Westbound Left	215	86	21	198	54
	Westbound Through	-	55	793	144	868
	Northbound Left	-	105	536	111	480
	Northbound Through	-	304	444	372	476
	Southbound Left	135	102	103	136	154
	Southbound Through	-	231	301	235	317
	Southbound Right	-	25	837	28	869
6	**Cumberland Blvd @ Spring Hill Pkwy**					
	Eastbound Through / Left / Right	-	3	4	3	4
	Westbound Left	100	35	35	40	40
	Westbound Through	-	0	47	3	87
	Northbound Left	75	0	0	0	0
	Northbound Through	-	51	205	60	250
	Southbound Left	50	22	175	26	240
	Southbound Through	-	30	32	32	55
7	**Site Drwy #1 @ Spring Rd**					
	Eastbound Left	100	-	-	0	0
	Eastbound Through	-	-	-	840	357
	Westbound Left	150	-	-	125	33
	Westbound Through / Right	700	-	-	78	17
	Northbound Left	-	-	-	98	176
	Northbound Through / Right	-	-	-	0	0



FUTURE "BUILD" WEEKDAY PEAK HOUR VOLUMES FIGURE 14

A&R Engineering Inc.



FUTURE TRAFFIC CONTROL AND LANE GEOMETRY FIGURE 15

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 on the southern side of Spring Rd between Cumberland Blvd and US 41 (Cobb Parkway) . The development will consist of:

- Hotel: 200 Rooms
- Apartment: 300 Dwelling Units
- General Office: 65,000 sq. ft.
- Shopping Center: 15,000 sq. ft.

The development proposes full access driveways on Spring Road and Spring Hil Pkwy. Existing and future operations after completion of the project were analyzed at the intersections of:

- US 41 (Cobb Pkwy) @ Spring Road / Circle 75 Pkwy
- Spring Road @ Cumberland Blvd
- Cumberland Blvd @ Spring Hill Pkwy

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 and added traffic from other nearby planned developments. The results of the analysis are listed below:

7.1 System Recommendations and Improvements

Improvements that are identified as "System Improvements" address deficiencies that are found within the existing road network prior to any impacts from the proposed development's added traffic. The intersection of Cumberland Blvd at Spring Rd is currently operating at an overall level-of-service "E" in the PM peak hour. The results from the "No-Build" (background) conditions indicate that the intersection will maintain the level-of-service "E" standard prior to added traffic from the proposed development; therefore, no additional system improvements have been identified for the intersection.

7.2 Site Access Configuration

The following access configuration was utilized when modeling the proposed site driveway intersections.

- Site Driveway #1: Signalized Driveway on Spring Road
    - The intersection will be signalized with a protected+permissive turn phase for traffic entering from the westbound approach
    - This driveway will consist of one entering lane and two exiting lanes. The exiting approach will have a dedicated left turn lane and a shared through / right turn lane.
    - Dedicated left turn bays will be constructed on Spring Road based on local standards as part of the signal installation.
    - A deceleration lane will be constructed for entering traffic based on local standards (See Appendix)
- Site Driveway #2: Right-in / Right-out driveway on Spring Road
    - This driveway will consist of one entering lane and one exiting lane.

    - The intersection will be unsignalized with a YIELD sign on the northbound (driveway) approach
    - Entering right turn movements will be made from the eastbound through lane. No deceleration lane is planned due to right-of-way constraints.
- Site Driveway #3: Full-access driveway on Spring Hill Pkwy
    - This driveway will consist of one entering lane and one exiting lane.
    - The intersection will be unsignalized with a STOP sign on the southbound (driveway) approach
    - Entering left turn movements will be made from the eastbound through lane. No dedicated turn bay is planned.
    - Entering right turn movements will be made from the westbound through lane. No deceleration lane is planned.

7.3 Site Mitigation Improvements

Improvements that are identified as "Site Mitigation Improvements" address further impacts that are a result of the proposed development's added traffic. Because operations would not be impacted beyond the projected "No-Build" conditions, mitigation improvements have not been identified outside of the recommended configuration for the site access points.

Appendix

EXISTING INTERSECTION TRAFFIC COUNTS

Reliable Traffic Data Services, LLC

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

TMC Data
Spring Rd @ Cobb Pkwy

7-9am | 4-6pm

File Name : 37060001
Site Code : 37060001
Start Date : 6/23/2015
Page No : 1

Groups Printed- Cars, Buses & Trucks

	Cobb Pkwy Northbound					Cobb Pkwy Southbound					Spring Rd Eastbound					Spring Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	60	174	66	0	300	7	314	6	0	327	13	58	363	0	434	12	5	5	0	22	1083
07:15 AM	77	140	55	0	272	12	290	7	0	309	20	83	356	0	459	17	11	11	0	39	1079
07:30 AM	60	207	84	0	351	17	370	16	0	403	25	75	328	0	428	24	12	5	0	41	1223
07:45 AM	90	189	116	0	395	21	332	24	0	377	36	93	323	0	452	22	12	10	0	44	1268
Total	287	710	321	0	1318	57	1306	53	0	1416	94	309	1370	0	1773	75	40	31	0	146	4653
08:00 AM	71	146	101	0	318	22	345	21	0	388	28	77	320	0	425	24	13	7	0	44	1175
08:15 AM	75	169	105	0	349	18	333	20	0	371	28	72	309	0	409	23	13	10	0	46	1175
08:30 AM	86	176	109	0	371	19	251	14	0	284	28	76	319	0	423	20	12	8	0	40	1118
08:45 AM	72	162	99	0	333	7	264	21	0	292	25	93	300	0	418	24	12	3	0	39	1082
Total	304	653	414	0	1371	66	1193	76	0	1335	109	318	1248	0	1675	91	50	28	0	169	4550
*** BREAK ***																					
04:00 PM	162	332	30	0	524	6	282	39	0	327	30	15	120	0	165	95	32	18	0	145	1161
04:15 PM	159	354	42	0	555	7	261	26	0	294	28	34	120	0	182	68	33	15	0	116	1147
04:30 PM	142	306	48	0	496	12	241	23	0	276	42	30	120	0	192	103	54	12	0	169	1133
04:45 PM	192	386	35	0	613	5	254	31	0	290	35	25	147	0	207	92	48	4	0	144	1254
Total	655	1378	155	0	2188	30	1038	119	0	1187	135	104	507	0	746	358	167	49	0	574	4695
05:00 PM	197	280	38	0	515	10	237	32	0	279	32	34	152	0	218	116	39	12	0	167	1179
05:15 PM	222	371	43	0	636	6	273	35	0	314	23	40	129	0	192	100	65	6	0	171	1313
05:30 PM	259	334	30	0	623	9	187	28	0	224	34	46	112	0	192	96	49	12	0	157	1196
05:45 PM	155	348	42	0	545	7	219	24	0	250	24	38	108	0	170	92	53	14	0	159	1124
Total	833	1333	153	0	2319	32	916	119	0	1067	113	158	501	0	772	404	206	44	0	654	4812
Grand Total	2079	4074	1043	0	7196	185	4453	367	0	5005	451	889	3626	0	4966	928	463	152	0	1543	18710
Apprch %	28.9	56.6	14.5	0		3.7	89	7.3	0		9.1	17.9	73	0		60.1	30	9.9	0		
Total %	11.1	21.8	5.6	0	38.5	1	23.8	2	0	26.8	2.4	4.8	19.4	0	26.5	5	2.5	0.8	0	8.2	

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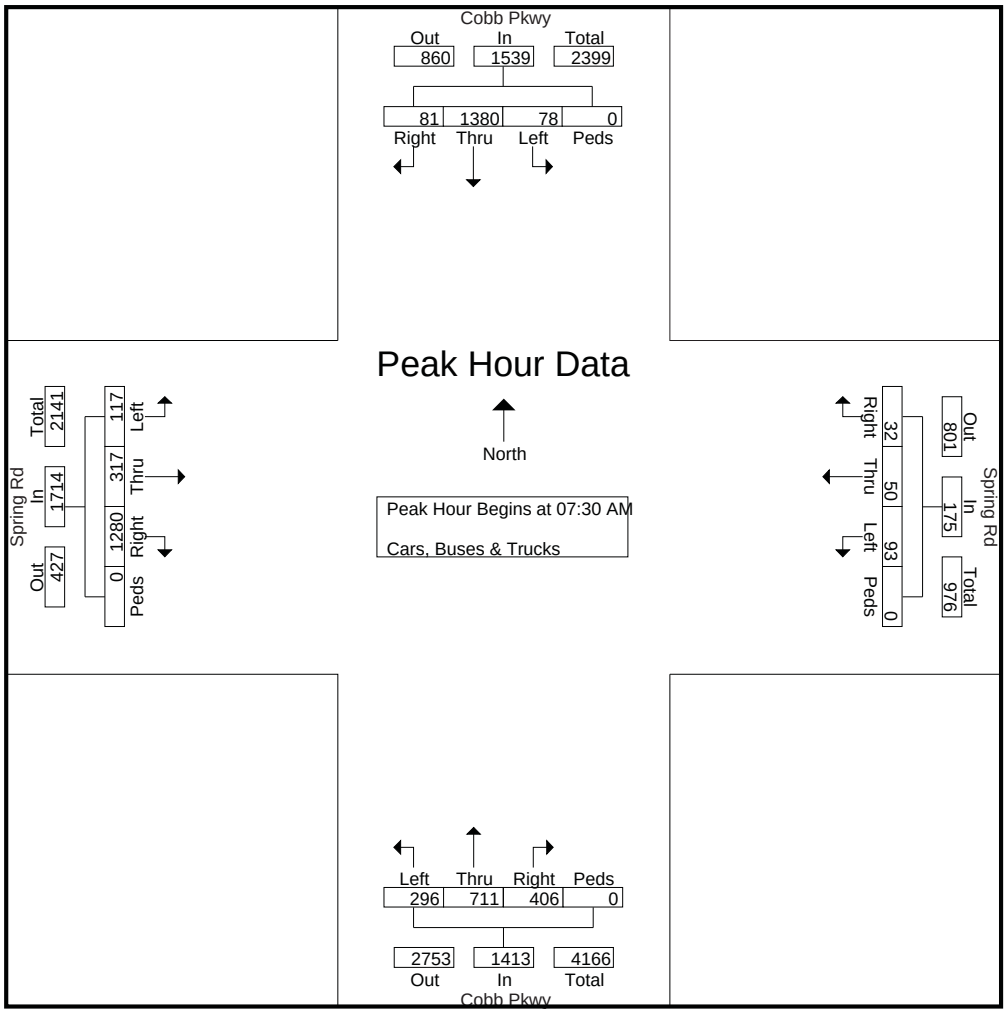
TMC Data
Spring Rd @ Cobb Pkwy

7-9am | 4-6pm

File Name : 37060001
Site Code : 37060001
Start Date : 6/23/2015

	Cobb Pkwy Northbound					Cobb Pkwy Southbound					Spring Rd Eastbound					Spring Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	60	**207**	84	0	351	17	**370**	16	0	**403**	25	75	**328**	0	428	**24**	12	5	0	41	1223
07:45 AM	**90**	189	**116**	0	**395**	21	332	**24**	0	377	**36**	**93**	323	0	**452**	22	12	**10**	0	44	**1268**
08:00 AM	71	146	101	0	318	**22**	345	21	0	388	28	77	320	0	425	24	**13**	7	0	44	1175
08:15 AM	75	169	105	0	349	18	333	20	0	371	28	72	309	0	409	23	13	10	0	**46**	1175
Total Volume	296	711	406	0	1413	78	1380	81	0	1539	117	317	1280	0	1714	93	50	32	0	175	4841
% App. Total	20.9	50.3	28.7	0		5.1	89.7	5.3	0		6.8	18.5	74.7	0		53.1	28.6	18.3	0		
PHF	.822	.859	.875	.000	.894	.886	.932	.844	.000	.955	.813	.852	.976	.000	.948	.969	.962	.800	.000	.951	.954



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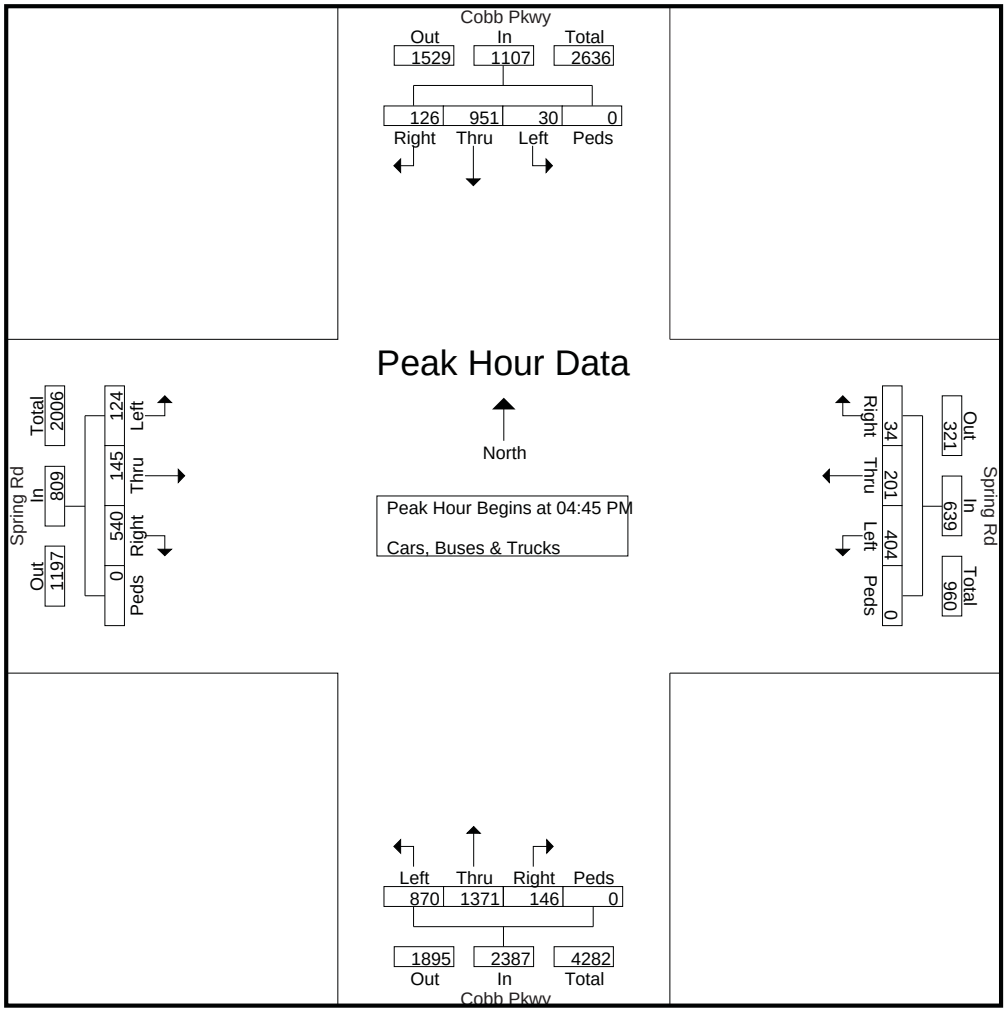
TMC Data
Spring Rd @ Cobb Pkwy

7-9am | 4-6pm

File Name : 37060001
Site Code : 37060001
Start Date : 6/23/2015

	Cobb Pkwy Northbound					Cobb Pkwy Southbound					Spring Rd Eastbound					Spring Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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	192	**386**	35	0	613	5	254	31	0	290	**35**	25	147	0	207	92	48	4	0	144	1254
05:00 PM	197	280	38	0	515	**10**	237	32	0	279	32	34	**152**	0	**218**	**116**	39	**12**	0	167	1179
05:15 PM	222	371	**43**	0	**636**	6	**273**	**35**	0	**314**	23	40	129	0	192	100	**65**	6	0	**171**	**1313**
05:30 PM	**259**	334	30	0	623	9	187	28	0	224	34	**46**	112	0	192	96	49	12	0	157	1196
Total Volume	870	1371	146	0	2387	30	951	126	0	1107	124	145	540	0	809	404	201	34	0	639	4942
% App. Total	36.4	57.4	6.1	0		2.7	85.9	11.4	0		15.3	17.9	66.7	0		63.2	31.5	5.3	0		
PHF	.840	.888	.849	.000	.938	.750	.871	.900	.000	.881	.886	.788	.888	.000	.928	.871	.773	.708	.000	.934	.941



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TMC Data
Spring Rd @
Site Drwy (W) / Dentist Drwy
7-9am | 4-6pm

File Name : 37060002
Site Code : 37060002
Start Date : 6/23/2015
Page No : 1

Groups Printed- Cars, Buses & Trucks

	Site Drwy (W) Northbound					Dentist Drwy Southbound					Spring Rd Eastbound					Spring Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	2	0	2	0	0	0	0	0	0	419	1	0	420	2	64	0	0	66	488
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	473	3	0	476	0	76	0	0	76	552
07:30 AM	0	0	0	0	0	2	0	0	0	2	2	450	2	0	454	4	90	1	0	95	551
07:45 AM	2	0	0	0	2	0	0	0	0	0	2	521	2	0	525	3	91	0	0	94	621
Total	2	0	2	0	4	2	0	0	0	2	4	1863	8	0	1875	9	321	1	0	331	2212
08:00 AM	0	0	2	0	2	0	0	0	0	0	1	517	1	0	519	2	91	1	0	94	615
08:15 AM	1	0	0	0	1	0	0	0	0	0	0	485	2	0	487	6	102	1	0	109	597
08:30 AM	0	0	1	0	1	0	0	0	0	0	1	388	2	0	391	0	86	0	0	86	478
08:45 AM	0	0	4	0	4	0	0	1	0	1	1	366	1	0	368	4	93	3	0	100	473
Total	1	0	7	0	8	0	0	1	0	1	3	1756	6	0	1765	12	372	5	0	389	2163
*** BREAK ***																					
04:00 PM	2	0	1	0	3	0	0	0	0	0	3	167	2	0	172	6	253	2	0	261	436
04:15 PM	2	0	1	0	3	2	0	0	0	2	0	171	0	0	171	2	208	0	0	210	386
04:30 PM	0	0	3	0	3	1	0	0	0	1	5	178	1	0	184	1	236	3	0	240	428
04:45 PM	0	0	2	0	2	1	0	3	0	4	6	187	6	0	199	1	258	2	0	261	466
Total	4	0	7	0	11	4	0	3	0	7	14	703	9	0	726	10	955	7	0	972	1716
05:00 PM	3	0	9	0	12	3	0	0	0	3	3	197	3	0	203	4	271	2	0	277	495
05:15 PM	2	1	2	0	5	0	0	3	0	3	3	178	2	0	183	2	318	2	0	322	513
05:30 PM	3	0	2	0	5	1	0	0	0	1	3	172	0	0	175	2	312	0	0	314	495
05:45 PM	0	0	2	0	2	0	0	2	0	2	3	153	2	0	158	4	279	0	0	283	445
Total	8	1	15	0	24	4	0	5	0	9	12	700	7	0	719	12	1180	4	0	1196	1948
Grand Total	15	1	31	0	47	10	0	9	0	19	33	5022	30	0	5085	43	2828	17	0	2888	8039
Apprch %	31.9	2.1	66	0		52.6	0	47.4	0		0.6	98.8	0.6	0		1.5	97.9	0.6	0		
Total %	0.2	0	0.4	0	0.6	0.1	0	0.1	0	0.2	0.4	62.5	0.4	0	63.3	0.5	35.2	0.2	0	35.9	

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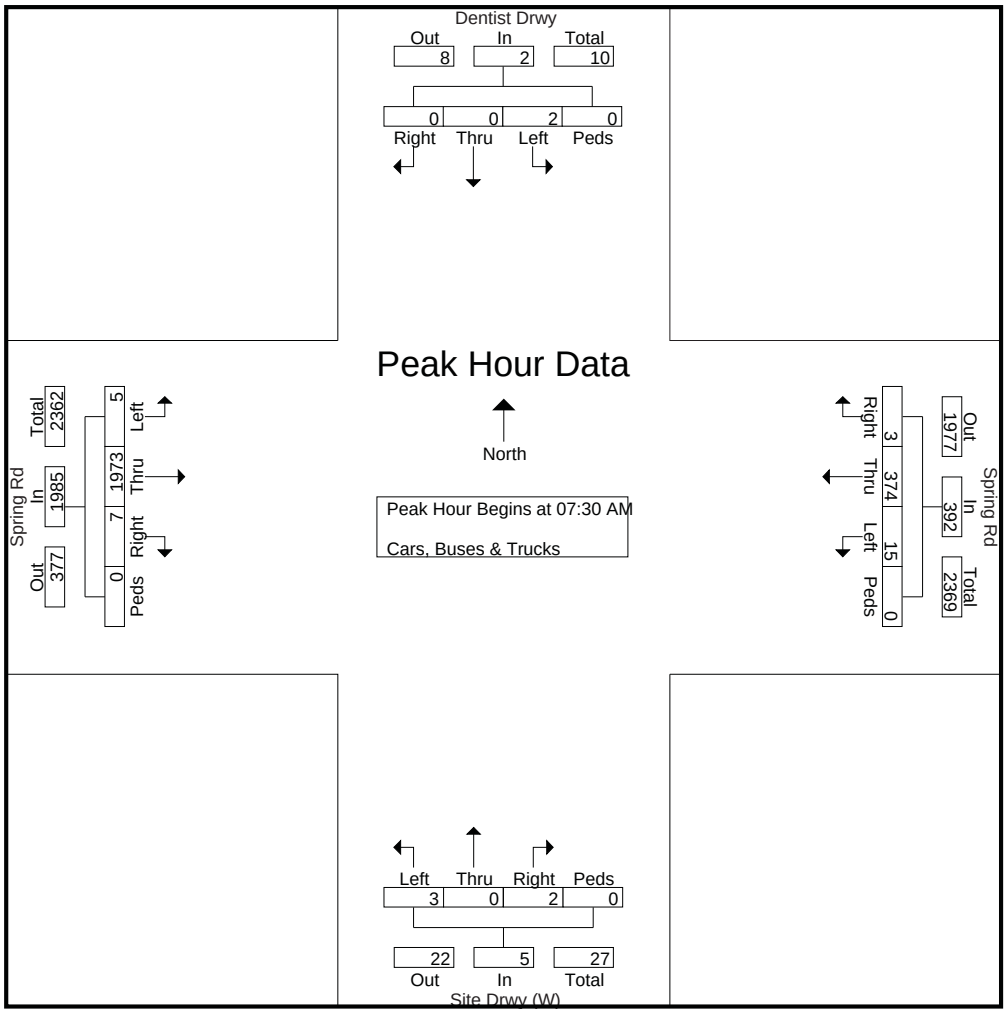
TMC Data
Spring Rd @
Site Drwy (W) / Dentist Drwy
7-9am | 4-6pm

File Name : 37060002
Site Code : 37060002
Start Date : 6/23/2015
Page No : 2

	Site Drwy (W) Northbound					Dentist Drwy Southbound					Spring Rd Eastbound					Spring Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	**2**	0	0	0	**2**	**2**	450	**2**	0	454	4	90	**1**	0	95	551
07:45 AM	**2**	0	0	0	**2**	0	0	0	0	0	2	**521**	2	0	**525**	3	91	0	0	94	**621**
08:00 AM	0	0	**2**	0	2	0	0	0	0	0	1	517	1	0	519	2	91	1	0	94	615
08:15 AM	1	0	0	0	1	0	0	0	0	0	0	485	2	0	487	**6**	**102**	1	0	**109**	597
Total Volume	3	0	2	0	5	2	0	0	0	2	5	1973	7	0	1985	15	374	3	0	392	2384
% App. Total	60	0	40	0		100	0	0	0		0.3	99.4	0.4	0		3.8	95.4	0.8	0		
PHF	.375	.000	.250	.000	.625	.250	.000	.000	.000	.250	.625	.947	.875	.000	.945	.625	.917	.750	.000	.899	.960



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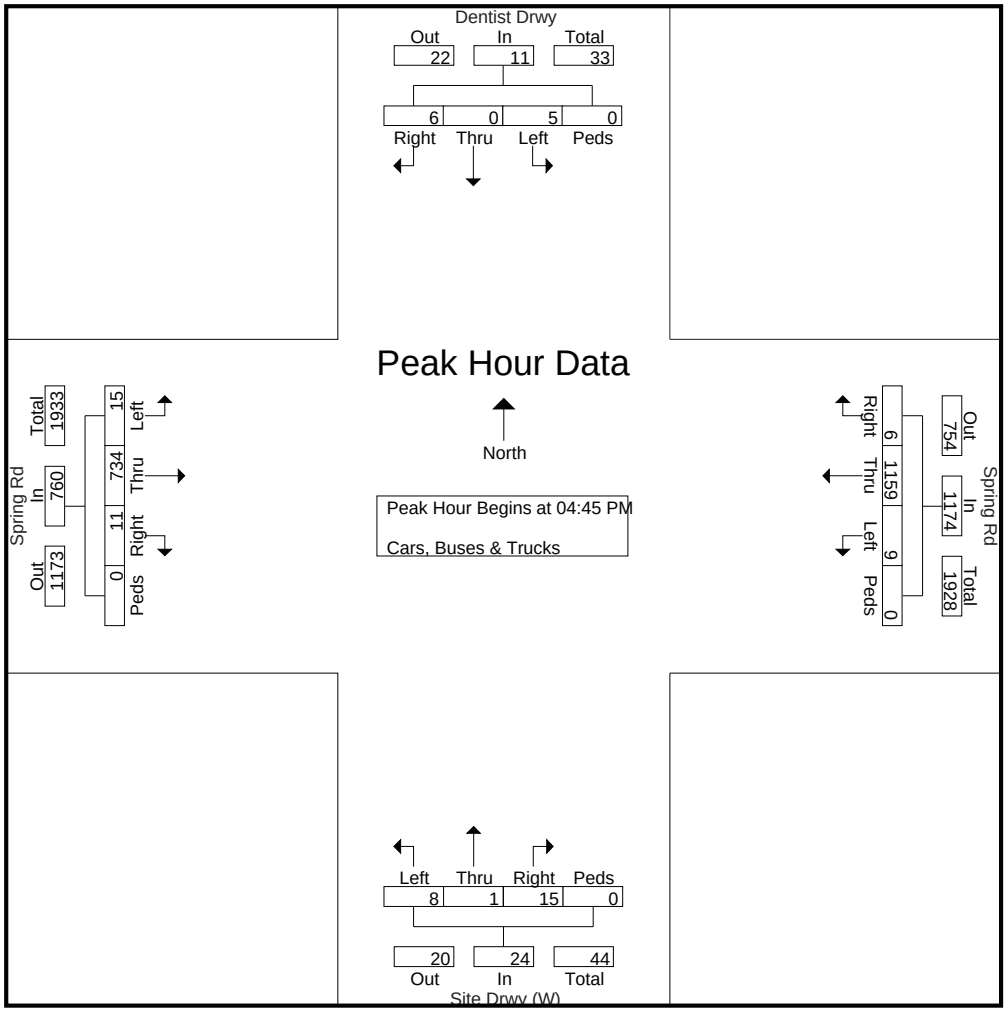
TMC Data
Spring Rd @
Site Drwy (W) / Dentist Drwy
7-9am | 4-6pm

File Name : 37060002
Site Code : 37060002
Start Date : 6/23/2015
Page No : 3

	Site Drwy (W) Northbound					Dentist Drwy Southbound					Spring Rd Eastbound					Spring Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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	0	0	2	0	2	1	0	**3**	0	**4**	**6**	187	**6**	0	199	1	258	**2**	0	261	466
05:00 PM	**3**	0	**9**	0	**12**	**3**	0	0	0	3	3	**197**	3	0	**203**	**4**	271	2	0	277	495
05:15 PM	2	**1**	2	0	5	0	0	3	0	3	3	178	2	0	183	2	**318**	2	0	**322**	**513**
05:30 PM	3	0	2	0	5	1	0	0	0	1	3	172	0	0	175	2	312	0	0	314	495
Total Volume	8	1	15	0	24	5	0	6	0	11	15	734	11	0	760	9	1159	6	0	1174	1969
% App. Total	33.3	4.2	62.5	0		45.5	0	54.5	0		2	96.6	1.4	0		0.8	98.7	0.5	0		
PHF	.667	.250	.417	.000	.500	.417	.000	.500	.000	.688	.625	.931	.458	.000	.936	.563	.911	.750	.000	.911	.960



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TMC Data
Spring Rd @
Site Drwy (E) / Discount Tires
7-9am | 4-6pm

File Name : 37060003
Site Code : 37060003
Start Date : 6/23/2015
Page No : 1

Groups Printed- Cars, Buses & Trucks

	Site Drwy (E) Northbound					Discount Tires Southbound					Spring Rd Eastbound					Spring Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	416	0	0	416	0	64	0	0	64	480
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	473	0	0	473	0	79	0	0	79	552
07:30 AM	0	0	1	0	1	0	0	1	0	1	2	451	0	0	453	0	86	0	0	86	541
07:45 AM	0	0	0	0	0	0	0	0	0	0	1	506	0	0	507	0	87	0	0	87	594
Total	0	0	1	0	1	0	0	1	0	1	3	1846	0	0	1849	0	316	0	0	316	2167
08:00 AM	0	0	0	0	0	1	0	0	0	1	1	523	1	0	525	1	95	0	0	96	622
08:15 AM	0	0	1	0	1	1	0	0	0	1	0	494	0	0	494	1	103	0	0	104	600
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	378	0	0	378	1	88	0	0	89	467
08:45 AM	0	0	2	0	2	1	0	0	0	1	0	358	2	0	360	1	99	0	0	100	463
Total	0	0	3	0	3	3	0	0	0	3	1	1753	3	0	1757	4	385	0	0	389	2152
*** BREAK ***																					
04:00 PM	2	0	1	0	3	1	0	2	0	3	0	158	2	0	160	4	262	0	0	266	432
04:15 PM	4	0	5	0	9	2	0	3	0	5	0	182	1	0	183	4	192	0	0	196	393
04:30 PM	1	0	3	0	4	3	0	2	0	5	0	176	2	0	178	5	240	0	0	245	432
04:45 PM	2	0	2	0	4	2	0	1	0	3	0	206	2	0	208	3	263	0	0	266	481
Total	9	0	11	0	20	8	0	8	0	16	0	722	7	0	729	16	957	0	0	973	1738
05:00 PM	2	0	4	0	6	1	0	2	0	3	0	198	1	0	199	4	280	0	0	284	492
05:15 PM	3	0	6	0	9	2	0	3	0	5	0	181	3	0	184	4	320	0	0	324	522
05:30 PM	2	0	2	0	4	1	0	2	0	3	0	177	2	0	179	6	297	0	0	303	489
05:45 PM	5	0	3	0	8	1	0	1	0	2	0	146	1	0	147	4	288	0	0	292	449
Total	12	0	15	0	27	5	0	8	0	13	0	702	7	0	709	18	1185	0	0	1203	1952
Grand Total	21	0	30	0	51	16	0	17	0	33	4	5023	17	0	5044	38	2843	0	0	2881	8009
Apprch %	41.2	0	58.8	0		48.5	0	51.5	0		0.1	99.6	0.3	0		1.3	98.7	0	0		
Total %	0.3	0	0.4	0	0.6	0.2	0	0.2	0	0.4	0	62.7	0.2	0	63	0.5	35.5	0	0	36	

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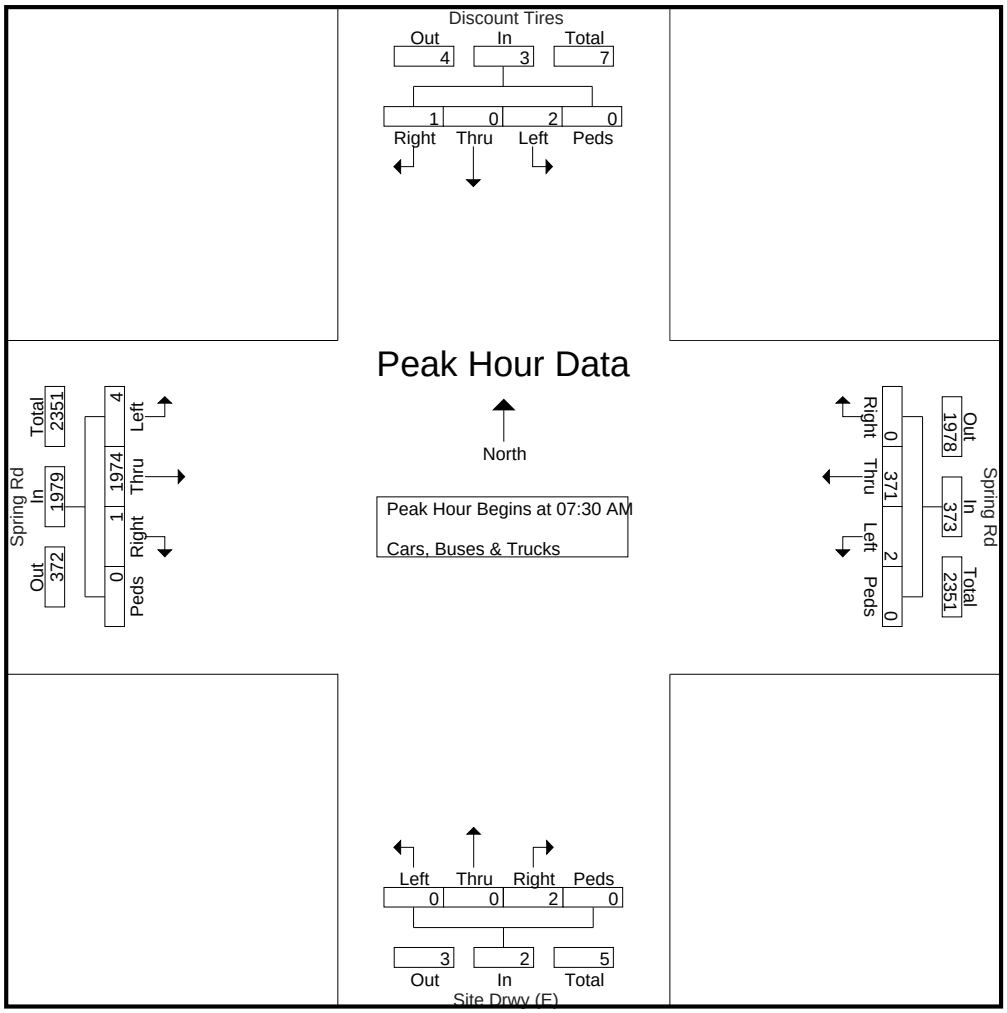
TMC Data
Spring Rd @
Site Drwy (E) / Discount Tires
7-9am | 4-6pm

File Name : 37060003
Site Code : 37060003
Start Date : 6/23/2015
Page No : 2

	Site Drwy (E) Northbound					Discount Tires Southbound					Spring Rd Eastbound					Spring Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	**1**	0	**1**	0	0	**1**	0	**1**	**2**	451	0	0	453	0	86	0	0	86	541
07:45 AM	0	0	0	0	0	0	0	0	0	0	1	506	0	0	507	0	87	0	0	87	594
08:00 AM	0	0	0	0	0	**1**	0	0	0	1	1	**523**	**1**	0	**525**	**1**	95	0	0	96	**622**
08:15 AM	0	0	1	0	1	1	0	0	0	1	0	494	0	0	494	1	**103**	0	0	**104**	600
Total Volume	0	0	2	0	2	2	0	1	0	3	4	1974	1	0	1979	2	371	0	0	373	2357
% App. Total	0	0	100	0		66.7	0	33.3	0		0.2	99.7	0.1	0		0.5	99.5	0	0		
PHF	.000	.000	.500	.000	.500	.500	.000	.250	.000	.750	.500	.944	.250	.000	.942	.500	.900	.000	.000	.897	.947



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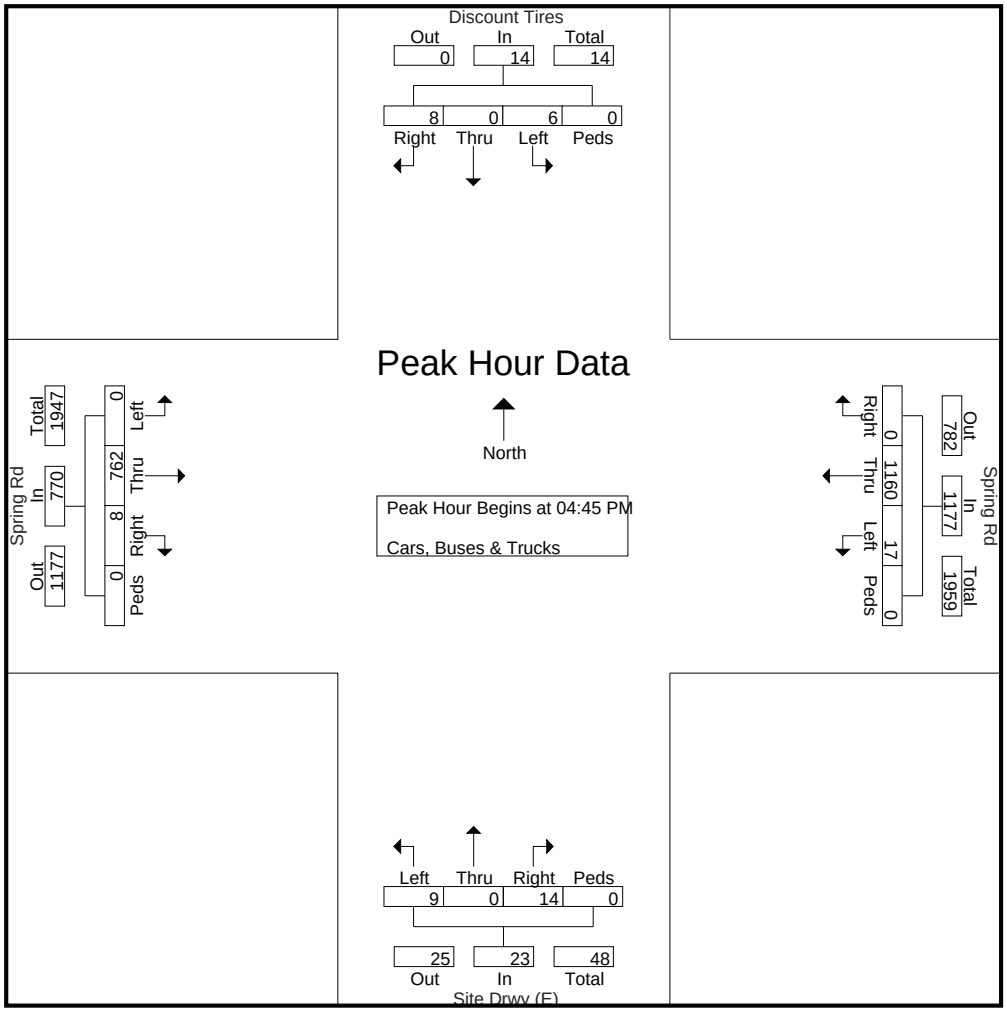
TMC Data
Spring Rd @
Site Drwy (E) / Discount Tires
7-9am | 4-6pm

File Name : 37060003
Site Code : 37060003
Start Date : 6/23/2015
Page No : 3

	Site Drwy (E) Northbound					Discount Tires Southbound					Spring Rd Eastbound					Spring Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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	2	0	2	0	4	**2**	0	1	0	3	0	**206**	2	0	**208**	3	263	0	0	266	481
05:00 PM	2	0	4	0	6	1	0	2	0	3	0	198	1	0	199	4	280	0	0	284	492
05:15 PM	**3**	0	**6**	0	**9**	2	0	**3**	0	**5**	0	181	**3**	0	184	4	**320**	0	0	**324**	**522**
05:30 PM	2	0	2	0	4	1	0	2	0	3	0	177	2	0	179	**6**	297	0	0	303	489
Total Volume	9	0	14	0	23	6	0	8	0	14	0	762	8	0	770	17	1160	0	0	1177	1984
% App. Total	39.1	0	60.9	0		42.9	0	57.1	0		0	99	1	0		1.4	98.6	0	0		
PHF	.750	.000	.583	.000	.639	.750	.000	.667	.000	.700	.000	.925	.667	.000	.925	.708	.906	.000	.000	.908	.950



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TMC Data
Spring Hill Pkwy @ Site Drwy (S)

7-9am | 4-6pm

File Name : 37060004
Site Code : 37060004
Start Date : 6/23/2015
Page No : 1

Groups Printed- Cars, Buses & Trucks

	Northbound					Site Drwy (S) Southbound					Spring Hill Pkwy Eastbound					Spring Hill Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	18	0	0	18	0	37	0	0	37	55
07:15 AM	0	0	0	0	0	0	0	2	0	2	1	37	0	0	38	0	54	0	0	54	94
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	26	0	0	26	0	68	1	0	69	95
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	52	0	0	52	0	81	3	0	84	136
Total	0	0	0	0	0	0	0	2	0	2	1	133	0	0	134	0	240	4	0	244	380
08:00 AM	0	0	0	0	0	1	0	0	0	1	0	37	0	0	37	0	77	1	0	78	116
08:15 AM	0	0	0	0	0	0	0	0	0	0	1	59	0	0	60	0	80	1	0	81	141
08:30 AM	0	0	0	0	0	1	0	0	0	1	1	45	0	0	46	0	69	1	0	70	117
08:45 AM	0	0	0	0	0	1	0	0	0	1	0	42	0	0	42	0	97	2	0	99	142
Total	0	0	0	0	0	3	0	0	0	3	2	183	0	0	185	0	323	5	0	328	516
*** BREAK ***																					
04:00 PM	0	0	0	0	0	3	0	0	0	3	0	38	0	0	38	0	45	1	0	46	87
04:15 PM	0	0	0	0	0	0	0	1	0	1	1	45	0	0	46	0	64	0	0	64	111
04:30 PM	0	0	0	0	0	1	0	0	0	1	1	44	0	0	45	0	60	2	0	62	108
04:45 PM	0	0	0	0	0	1	0	0	0	1	1	39	0	0	40	0	89	4	0	93	134
Total	0	0	0	0	0	5	0	1	0	6	3	166	0	0	169	0	258	7	0	265	440
05:00 PM	0	0	0	0	0	7	0	2	0	9	0	45	0	0	45	0	80	4	0	84	138
05:15 PM	0	0	0	0	0	3	0	1	0	4	0	63	0	0	63	0	87	15	0	102	169
05:30 PM	0	0	0	0	0	2	0	1	0	3	0	78	0	0	78	0	91	5	0	96	177
05:45 PM	0	0	0	0	0	1	0	1	0	2	0	62	0	0	62	0	94	5	0	99	163
Total	0	0	0	0	0	13	0	5	0	18	0	248	0	0	248	0	352	29	0	381	647
Grand Total	0	0	0	0	0	21	0	8	0	29	6	730	0	0	736	0	1173	45	0	1218	1983
Apprch %	0	0	0	0		72.4	0	27.6	0		0.8	99.2	0	0		0	96.3	3.7	0		
Total %	0	0	0	0	0	1.1	0	0.4	0	1.5	0.3	36.8	0	0	37.1	0	59.2	2.3	0	61.4	

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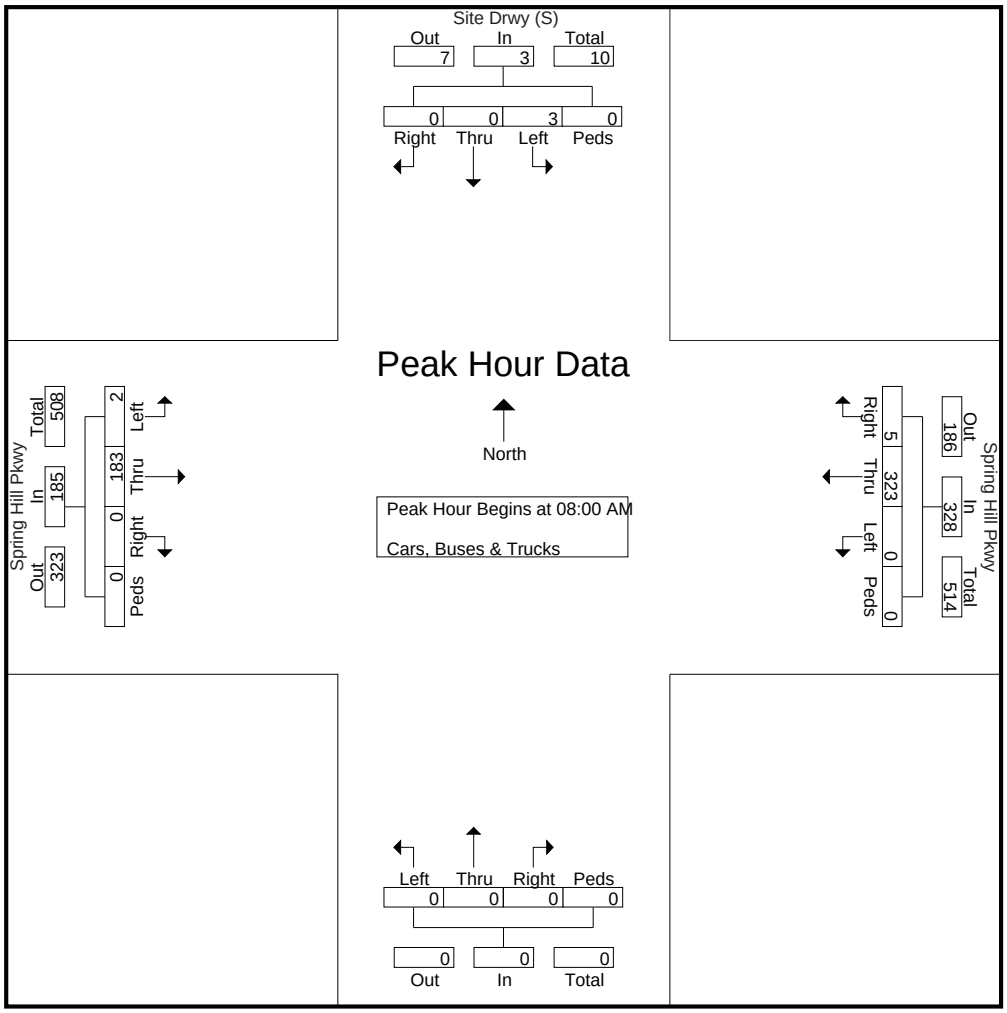
TMC Data
Spring Hill Pkwy @ Site Drwy (S)

7-9am | 4-6pm

File Name : 37060004
Site Code : 37060004
Start Date : 6/23/2015
Page No : 2

	Northbound					Site Drwy (S) Southbound					Spring Hill Pkwy Eastbound					Spring Hill Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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	0	0	0	0	0	**1**	0	0	0	**1**	0	37	0	0	37	0	77	1	0	78	116
08:15 AM	0	0	0	0	0	0	0	0	0	0	**1**	**59**	0	0	**60**	0	80	1	0	81	141
08:30 AM	0	0	0	0	0	1	0	0	0	1	1	45	0	0	46	0	69	1	0	70	117
08:45 AM	0	0	0	0	0	1	0	0	0	1	0	42	0	0	42	0	**97**	**2**	0	**99**	**142**
Total Volume	0	0	0	0	0	3	0	0	0	3	2	183	0	0	185	0	323	5	0	328	516
% App. Total	0	0	0	0		100	0	0	0		1.1	98.9	0	0		0	98.5	1.5	0		
PHF	.000	.000	.000	.000	.000	.750	.000	.000	.000	.750	.500	.775	.000	.000	.771	.000	.832	.625	.000	.828	.908



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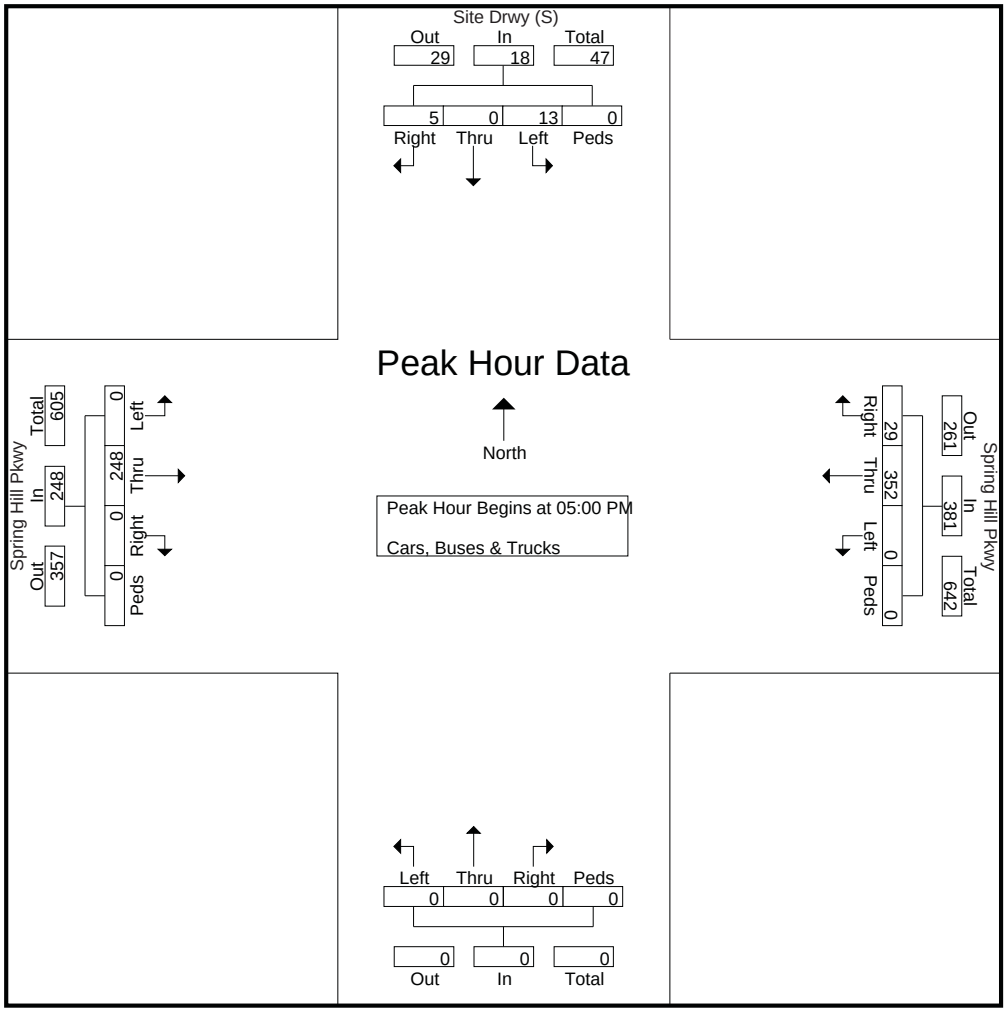
TMC Data
Spring Hill Pkwy @ Site Drwy (S)

7-9am | 4-6pm

File Name : 37060004
Site Code : 37060004
Start Date : 6/23/2015
Page No : 3

	Northbound					Site Drwy (S) Southbound					Spring Hill Pkwy Eastbound					Spring Hill Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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	0	0	0	0	0	**7**	0	**2**	0	**9**	0	45	0	0	45	0	80	4	0	84	138
05:15 PM	0	0	0	0	0	3	0	1	0	4	0	63	0	0	63	0	87	**15**	0	**102**	169
05:30 PM	0	0	0	0	0	2	0	1	0	3	0	**78**	0	0	**78**	0	91	5	0	96	**177**
05:45 PM	0	0	0	0	0	1	0	1	0	2	0	62	0	0	62	0	**94**	5	0	99	163
Total Volume	0	0	0	0	0	13	0	5	0	18	0	248	0	0	248	0	352	29	0	381	647
% App. Total	0	0	0	0		72.2	0	27.8	0		0	100	0	0		0	92.4	7.6	0		
PHF	.000	.000	.000	.000	.000	.464	.000	.625	.000	.500	.000	.795	.000	.000	.795	.000	.936	.483	.000	.934	.914



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TMC Data
Spring Rd @ Cumberland Blvd

7-9am | 4-6pm

File Name : 37060005
Site Code : 37060005
Start Date : 6/23/2015
Page No : 1

Groups Printed- Cars, Buses & Trucks

	Cumberland Blvd Northbound					Cumberland Blvd Southbound					Spring Rd Eastbound					Spring Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	23	49	28	0	100	18	57	14	0	89	60	348	76	0	484	13	55	8	0	76	749
07:15 AM	21	71	35	0	127	27	68	15	0	110	72	435	109	0	616	13	55	4	0	72	925
07:30 AM	37	100	47	0	184	23	112	20	0	155	97	367	133	0	597	18	67	1	0	86	1022
07:45 AM	25	102	49	0	176	14	80	25	0	119	76	431	136	0	643	17	83	9	0	109	1047
Total	106	322	159	0	587	82	317	74	0	473	305	1581	454	0	2340	61	260	22	0	343	3743
08:00 AM	36	116	46	0	198	26	79	24	0	129	63	405	134	0	602	21	63	3	0	87	1016
08:15 AM	27	104	44	0	175	22	85	31	0	138	75	382	154	0	611	24	73	8	0	105	1029
08:30 AM	30	94	42	0	166	28	96	27	0	151	83	336	142	0	561	21	66	8	0	95	973
08:45 AM	32	111	47	0	190	15	97	30	0	142	72	303	122	0	497	18	66	9	0	93	922
Total	125	425	179	0	729	91	357	112	0	560	293	1426	552	0	2271	84	268	28	0	380	3940
*** BREAK ***																					
04:00 PM	111	113	35	0	259	12	79	95	0	186	39	109	59	0	207	28	191	11	0	230	882
04:15 PM	158	116	36	0	310	18	117	119	0	254	41	110	72	0	223	26	199	6	0	231	1018
04:30 PM	144	121	40	0	305	15	90	118	0	223	44	117	74	0	235	10	184	9	0	203	966
04:45 PM	153	135	42	0	330	22	101	128	0	251	51	132	84	0	267	28	246	9	0	283	1131
Total	566	485	153	0	1204	67	387	460	0	914	175	468	289	0	932	92	820	35	0	947	3997
05:00 PM	150	142	41	0	333	18	96	129	0	243	41	131	75	0	247	17	235	17	0	269	1092
05:15 PM	174	146	36	0	356	24	123	119	0	266	42	131	79	0	252	24	296	9	0	329	1203
05:30 PM	134	186	45	0	365	18	132	140	0	290	35	119	84	0	238	26	261	6	0	293	1186
05:45 PM	135	134	39	0	308	18	115	138	0	271	46	106	96	0	248	33	218	3	0	254	1081
Total	593	608	161	0	1362	78	466	526	0	1070	164	487	334	0	985	100	1010	35	0	1145	4562
Grand Total	1390	1840	652	0	3882	318	1527	1172	0	3017	937	3962	1629	0	6528	337	2358	120	0	2815	16242
Apprch %	35.8	47.4	16.8	0		10.5	50.6	38.8	0		14.4	60.7	25	0		12	83.8	4.3	0		
Total %	8.6	11.3	4	0	23.9	2	9.4	7.2	0	18.6	5.8	24.4	10	0	40.2	2.1	14.5	0.7	0	17.3	

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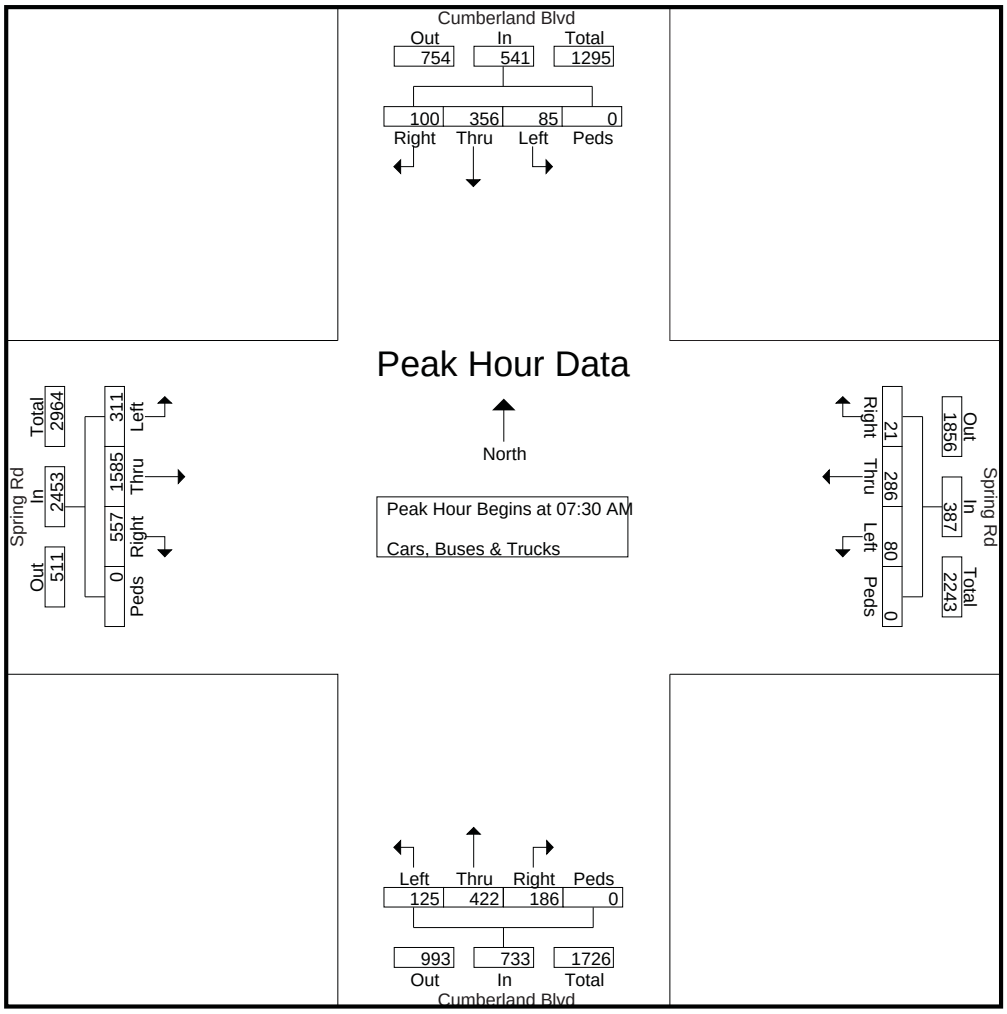
TMC Data
Spring Rd @ Cumberland Blvd

7-9am | 4-6pm

File Name : 37060005
Site Code : 37060005
Start Date : 6/23/2015
Page No : 2

	Cumberland Blvd Northbound					Cumberland Blvd Southbound					Spring Rd Eastbound					Spring Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	**37**	100	47	0	184	23	**112**	20	0	**155**	**97**	367	133	0	597	18	67	1	0	86	1022
07:45 AM	25	102	**49**	0	176	14	80	25	0	119	76	**431**	136	0	**643**	17	**83**	**9**	0	**109**	**1047**
08:00 AM	36	**116**	46	0	**198**	**26**	79	24	0	129	63	405	134	0	602	21	63	3	0	87	1016
08:15 AM	27	104	44	0	175	22	85	**31**	0	138	75	382	**154**	0	611	**24**	73	8	0	105	1029
Total Volume	125	422	186	0	733	85	356	100	0	541	311	1585	557	0	2453	80	286	21	0	387	4114
% App. Total	17.1	57.6	25.4	0		15.7	65.8	18.5	0		12.7	64.6	22.7	0		20.7	73.9	5.4	0		
PHF	.845	.909	.949	.000	.926	.817	.795	.806	.000	.873	.802	.919	.904	.000	.954	.833	.861	.583	.000	.888	.982



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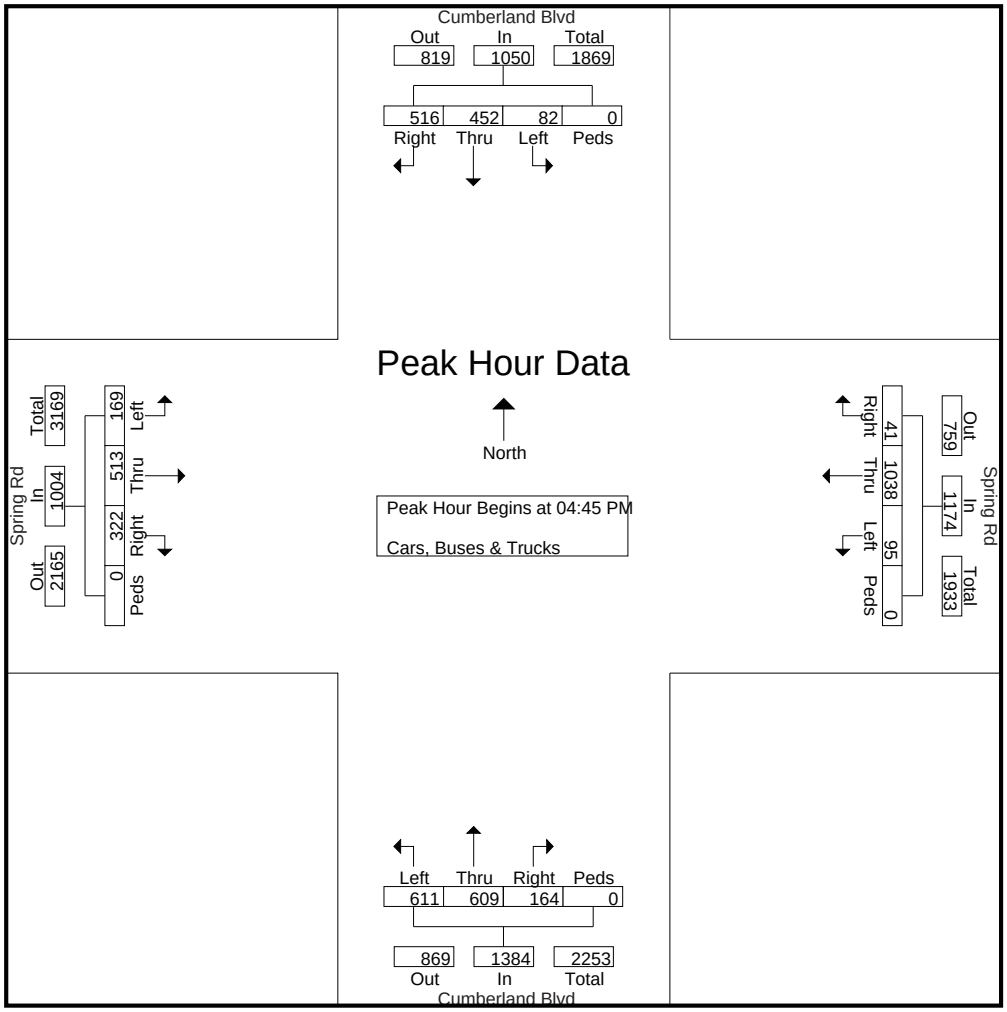
TMC Data
Spring Rd @ Cumberland Blvd

7-9am | 4-6pm

File Name : 37060005
Site Code : 37060005
Start Date : 6/23/2015
Page No : 3

	Cumberland Blvd Northbound					Cumberland Blvd Southbound					Spring Rd Eastbound					Spring Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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	153	135	42	0	330	22	101	128	0	251	**51**	**132**	**84**	0	**267**	**28**	246	9	0	283	1131
05:00 PM	150	142	41	0	333	18	96	129	0	243	41	131	75	0	247	17	235	**17**	0	269	1092
05:15 PM	**174**	146	36	0	356	**24**	123	119	0	266	42	131	79	0	252	24	**296**	9	0	**329**	**1203**
05:30 PM	134	**186**	**45**	0	**365**	18	**132**	**140**	0	**290**	35	119	84	0	238	26	261	6	0	293	1186
Total Volume	611	609	164	0	1384	82	452	516	0	1050	169	513	322	0	1004	95	1038	41	0	1174	4612
% App. Total	44.1	44	11.8	0		7.8	43	49.1	0		16.8	51.1	32.1	0		8.1	88.4	3.5	0		
PHF	.878	.819	.911	.000	.948	.854	.856	.921	.000	.905	.828	.972	.958	.000	.940	.848	.877	.603	.000	.892	.958



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TMC Data
Cumberland Blvd @ Spring Hill Pkwy

7-9am | 4-6pm

File Name : 37060006
Site Code : 37060006
Start Date : 6/23/2015

Groups Printed- Cars, Buses & Trucks

	Cumberland Blvd Northbound					Cumberland Blvd Southbound					Colonial Pipeline Station Drwy Eastbound					Spring Hill Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	53	1	0	54	21	123	0	0	144	0	0	0	0	0	1	0	38	0	39	237
07:15 AM	0	81	3	0	84	29	176	0	0	205	0	0	0	0	0	4	0	63	0	67	356
07:30 AM	0	118	4	0	122	36	197	0	0	233	0	0	0	0	0	3	0	68	0	71	426
07:45 AM	0	100	2	0	102	43	199	0	0	242	0	0	1	0	1	3	0	77	0	80	425
Total	0	352	10	0	362	129	695	0	0	824	0	0	1	0	1	11	0	246	0	257	1444
08:00 AM	0	107	3	0	110	41	204	1	0	246	0	1	0	0	1	3	0	82	0	85	442
08:15 AM	0	102	1	0	103	52	219	0	0	271	0	0	0	0	0	5	0	83	0	88	462
08:30 AM	0	97	4	0	101	46	217	0	0	263	0	0	0	0	0	2	0	64	0	66	430
08:45 AM	0	105	3	0	108	35	181	0	0	216	0	0	0	0	0	3	0	70	0	73	397
Total	0	411	11	0	422	174	821	1	0	996	0	1	0	0	1	13	0	299	0	312	1731
*** BREAK ***																					
04:00 PM	0	225	8	0	233	36	133	0	0	169	0	0	0	0	0	5	0	48	0	53	455
04:15 PM	0	221	5	0	226	40	147	0	0	187	0	0	0	0	0	3	0	51	0	54	467
04:30 PM	0	251	8	0	259	33	156	0	0	189	0	0	0	0	0	3	0	51	0	54	502
04:45 PM	0	239	15	0	254	35	166	0	0	201	0	0	0	0	0	5	1	89	0	95	550
Total	0	936	36	0	972	144	602	0	0	746	0	0	0	0	0	16	1	239	0	256	1974
05:00 PM	0	265	9	0	274	41	162	0	0	203	0	0	0	0	0	4	0	72	0	76	553
05:15 PM	0	277	20	0	297	57	156	0	0	213	0	0	0	0	0	2	0	76	0	78	588
05:30 PM	0	221	20	0	241	50	171	0	0	221	1	0	0	0	1	3	0	95	0	98	561
05:45 PM	0	248	13	0	261	66	182	0	0	248	0	0	0	0	0	5	0	87	0	92	601
Total	0	1011	62	0	1073	214	671	0	0	885	1	0	0	0	1	14	0	330	0	344	2303
Grand Total	0	2710	119	0	2829	661	2789	1	0	3451	1	1	1	0	3	54	1	1114	0	1169	7452
Apprch %	0	95.8	4.2	0		19.2	80.8	0	0		33.3	33.3	33.3	0		4.6	0.1	95.3	0		
Total %	0	36.4	1.6	0	38	8.9	37.4	0	0	46.3	0	0	0	0	0	0.7	0	14.9	0	15.7	

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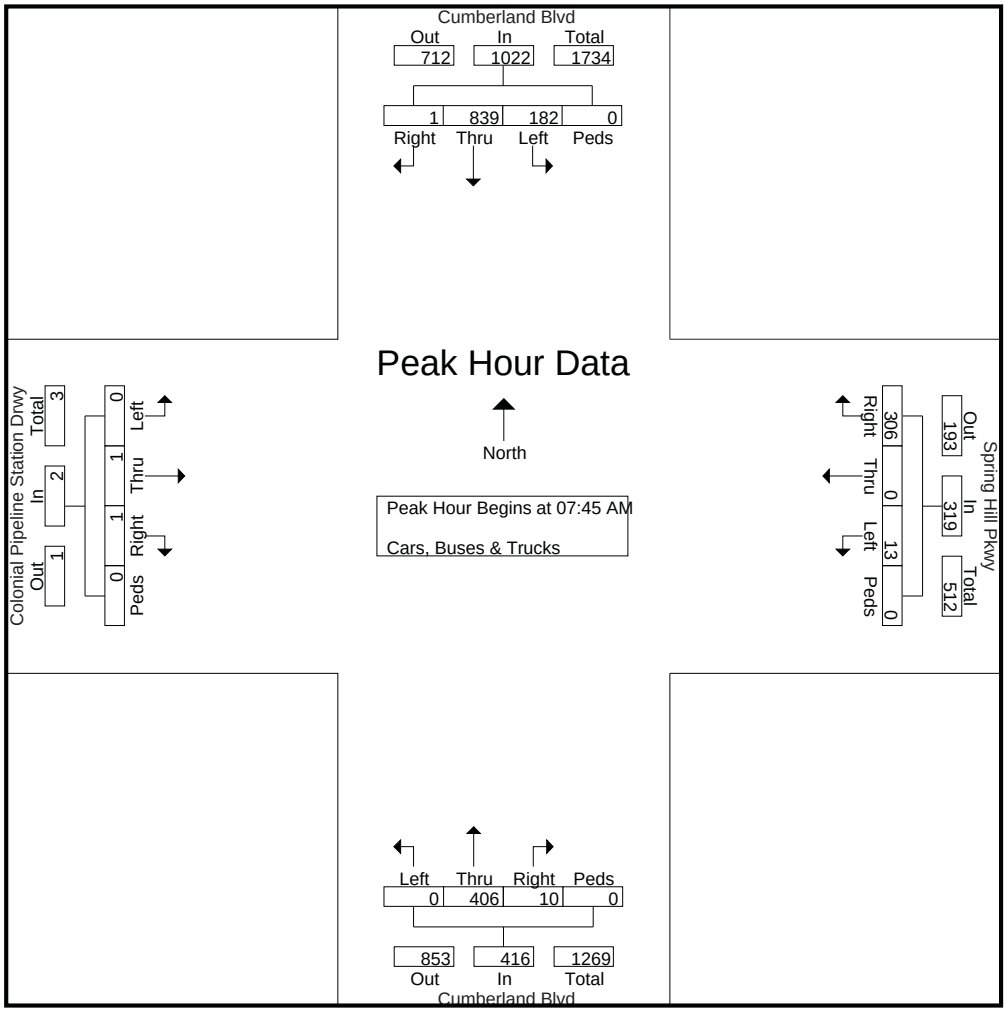
TMC Data
Cumberland Blvd @ Spring Hill Pkwy

7-9am | 4-6pm

File Name : 37060006
Site Code : 37060006
Start Date : 6/23/2015
Page No : 2

	Cumberland Blvd Northbound					Cumberland Blvd Southbound					Colonial Pipeline Station Drwy Eastbound					Spring Hill Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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	0	100	2	0	102	43	199	0	0	242	0	0	**1**	0	**1**	3	0	77	0	80	425
08:00 AM	0	**107**	3	0	**110**	41	204	**1**	0	246	0	**1**	0	0	1	3	0	82	0	85	442
08:15 AM	0	102	1	0	103	**52**	**219**	0	0	**271**	0	0	0	0	0	**5**	0	**83**	0	**88**	**462**
08:30 AM	0	97	**4**	0	101	46	217	0	0	263	0	0	0	0	0	2	0	64	0	66	430
Total Volume	0	406	10	0	416	182	839	1	0	1022	0	1	1	0	2	13	0	306	0	319	1759
% App. Total	0	97.6	2.4	0		17.8	82.1	0.1	0		0	50	50	0		4.1	0	95.9	0		
PHF	.000	.949	.625	.000	.945	.875	.958	.250	.000	.943	.000	.250	.250	.000	.500	.650	.000	.922	.000	.906	.952



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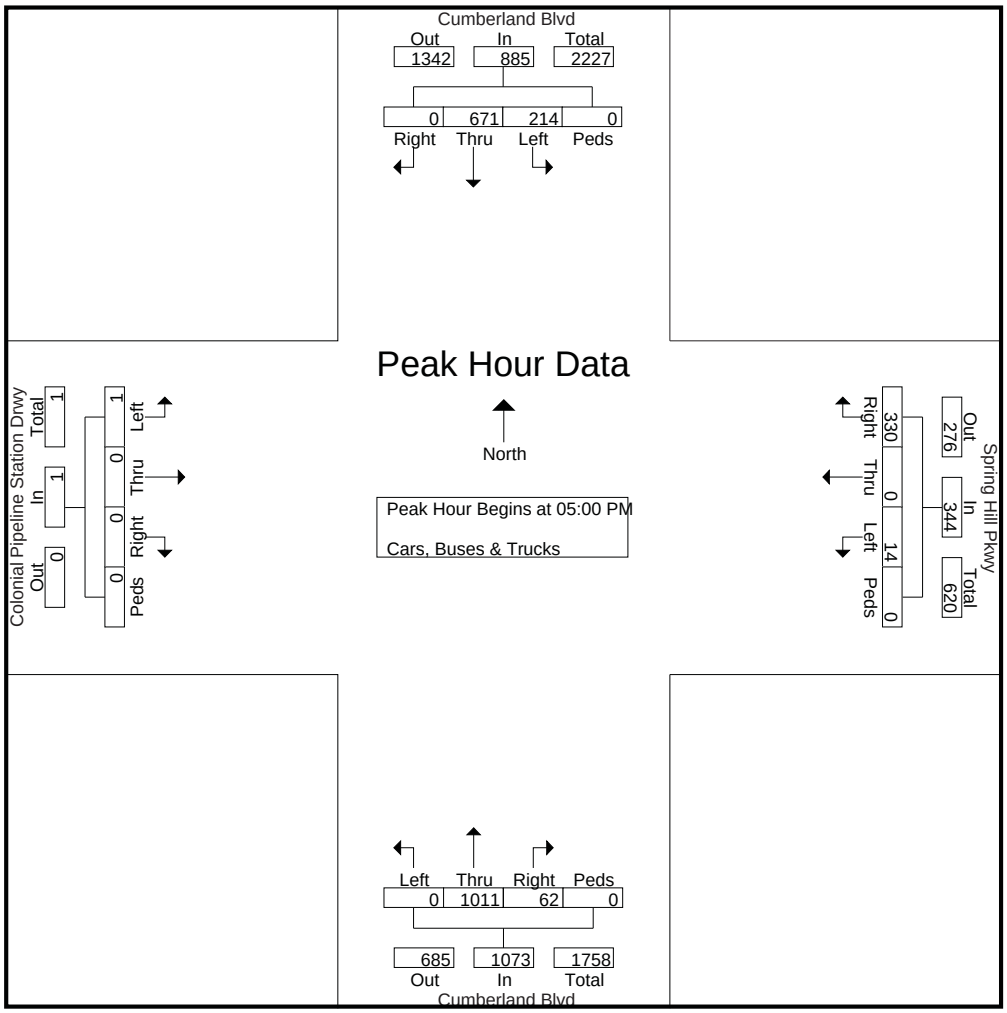
TMC Data
Cumberland Blvd @ Spring Hill Pkwy

7-9am | 4-6pm

File Name : 37060006
Site Code : 37060006
Start Date : 6/23/2015
Page No : 3

	Cumberland Blvd Northbound					Cumberland Blvd Southbound					Colonial Pipeline Station Drwy Eastbound					Spring Hill Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. 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	0	265	9	0	274	41	162	0	0	203	0	0	0	0	0	4	0	72	0	76	553
05:15 PM	0	**277**	**20**	0	**297**	57	156	0	0	213	0	0	0	0	0	2	0	76	0	78	588
05:30 PM	0	221	20	0	241	50	171	0	0	221	**1**	0	0	0	**1**	3	0	**95**	0	**98**	561
05:45 PM	0	248	13	0	261	**66**	**182**	0	0	**248**	0	0	0	0	0	**5**	0	87	0	92	**601**
Total Volume	0	1011	62	0	1073	214	671	0	0	885	1	0	0	0	1	14	0	330	0	344	2303
% App. Total	0	94.2	5.8	0		24.2	75.8	0	0		100	0	0	0		4.1	0	95.9	0		
PHF	.000	.912	.775	.000	.903	.811	.922	.000	.000	.892	.250	.000	.000	.000	.250	.700	.000	.868	.000	.878	.958



PLANNED AND PROGRAMMED IMPROVEMENTS

CO-451

PLAN 2040 RTP Update PROJECT FACT SHEET

Short Title	SPRING ROAD WIDENING FROM US 41 (COBB PARKWAY) TO BELL DRIVE
GDOT Project No.	N/A
Federal ID No.	N/A
Status	Programmed
Service Type	Roadway / General Purpose Capacity
Sponsor	City of Smyrna
Jurisdiction	Cobb County
Analysis Level	In the Region's Air Quality Conformity Analysis
Existing Thru Lane	5
Planned Thru Lane	6

Network Year	2020
Corridor Length	0.6 miles

Detailed Description and Justification

Addition of an additional westbound through lane on Spring Road, from Cobb Parkway/US 41 to Bell Drive, to accommodate need for an additional northbound left turn lane on Cobb Parkway/US 41 at Spring Road.

Phase	Status & Funding Information	Status	FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
					FEDERAL	STATE	BONDS	LOCAL/PRIVATE
PE	Local Jurisdiction/Municipality Funds	AUTH	2014	**$350,000**	~~$0,000~~	~~$0,000~~	~~$0,000~~	~~$350,000~~
ROW	Local Jurisdiction/Municipality Funds		2016	**$500,000**	$0,000	$0,000	$0,000	$500,000
UTL	Local Jurisdiction/Municipality Funds		2017	**$100,000**	$0,000	$0,000	$0,000	$100,000
CST	Local Jurisdiction/Municipality Funds		2017	**$4,000,000**	$0,000	$0,000	$0,000	$4,000,000
				$4,950,000	**$0,000**	**$0,000**	**$0,000**	**$4,950,000**

SCP: Scoping PE: Preliminary engineering / engineering / design / planning PE-OV: GDOT oversight services for engineering ROW: Right-of-way Acquistion
UTL: Utility relocation CST: Construction / Implementation ALL: Total estimated cost, inclusive of all phases

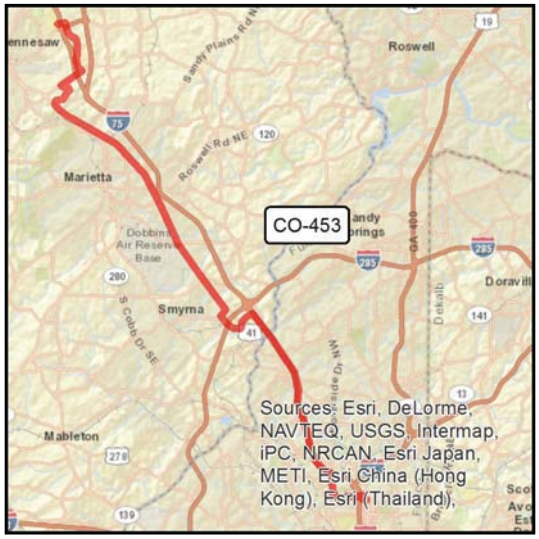
? For additional information about this project, please call (404) 463-3100 or email transportation@atlantaregional.com.

Report Generated: 6/5/2015

CO-453

PLAN 2040 RTP Update PROJECT FACT SHEET

Short Title	COBB COMMUNITY TRANSIT ROUTE 10X OPERATING ASSISTANCE
GDOT Project No.	0013137
Federal ID No.	N/A
Status	Programmed
Service Type	Transit / Operations & Maintenance
Sponsor	Cobb County
Jurisdiction	Cobb County
Analysis Level	Exempt from Air Quality Analysis (40 CFR 93)
Existing Thru Lane	N/A
Planned Thru Lane	N/A



Network Year	2020
Corridor Length	N/A miles

Detailed Description and Justification

Three-years of operating assistance for bus service running from Downtown Atlanta to Kennesaw State University, including connections to GA Tech, GA State, SCAD, SPSU, and Life U. Route 10X is a partnership with the City of Marietta, KSU, SPSU and Life U. Route 10X buses are branded differently and include on-board Wi-Fi service. Applicable university shuttle service connections will be made to Route 10X.

Phase Status & Funding Information		Status	FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
					FEDERAL	STATE	BONDS	LOCAL/PRIVATE
CST	Congestion Mitigation & Air Quality Improvement (CMAQ)	AUTH	2015	**$2,000,000**	~~$1,600,000~~	~~$0,000~~	~~$0,000~~	~~$400,000~~
				$2,000,000	**$1,600,000**	**$0,000**	**$0,000**	**$400,000**

SCP: Scoping PE: Preliminary engineering / engineering / design / planning PE-OV: GDOT oversight services for engineering ROW: Right-of-way Acquistion
UTL: Utility relocation CST: Construction / Implementation ALL: Total estimated cost, inclusive of all phases

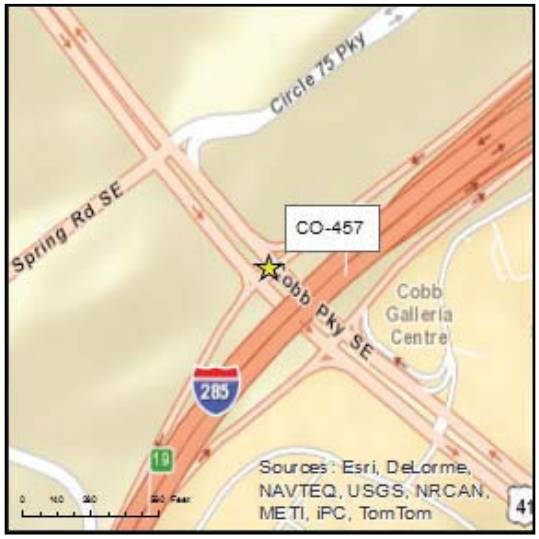
? For additional information about this project, please call (404) 463-3100 or email transportation@atlantaregional.com.

Report Generated: 6/5/2015

CO-457

PLAN 2040 RTP Update PROJECT FACT SHEET

Short Title	US 41/SR 3 (COBB PARKWAY) AT I-285 WESTBOUND RAMP
GDOT Project No.	N/A
Federal ID No.	N/A
Status	Programmed
Service Type	Roadway / Interchange Capacity
Sponsor	Cobb County
Jurisdiction	Cobb County
Analysis Level	In the Region's Air Quality Conformity Analysis
Existing Thru Lane	N/A
Planned Thru Lane	N/A



Network Year	2020
Corridor Length	0.1 miles

Detailed Description and Justification

Construction of an additional westbound right-turn lane on the ramp and an additional northbound receiving lane on Cobb Parkway/US 41 to allow free-flow right-turns from this ramp to Circle 75 Parkway. The new lane will be channelized to separate it from other northbound lanes on Cobb Parkway/US 41. Includes overhead lane designation guide signs on the ramp to guide motorists onto the appropriate lanes on Cobb Parkway/US 41.

Phase Status & Funding Information		Status	FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
					FEDERAL	STATE	BONDS	LOCAL/PRIVATE
PE	Local Jurisdiction/Municipality Funds	AUTH	2014	**$150,000**	~~$0,000~~	~~$0,000~~	~~$0,000~~	~~$150,000~~
ROW	Local Jurisdiction/Municipality Funds		2015	**$1,500,000**	$0,000	$0,000	$0,000	$1,500,000
UTL	Local Jurisdiction/Municipality Funds		2016	**$350,000**	$0,000	$0,000	$0,000	$350,000
CST	Local Jurisdiction/Municipality Funds		2016	**$2,300,000**	$0,000	$0,000	$0,000	$2,300,000
				$4,300,000	**$0,000**	**$0,000**	**$0,000**	**$4,300,000**

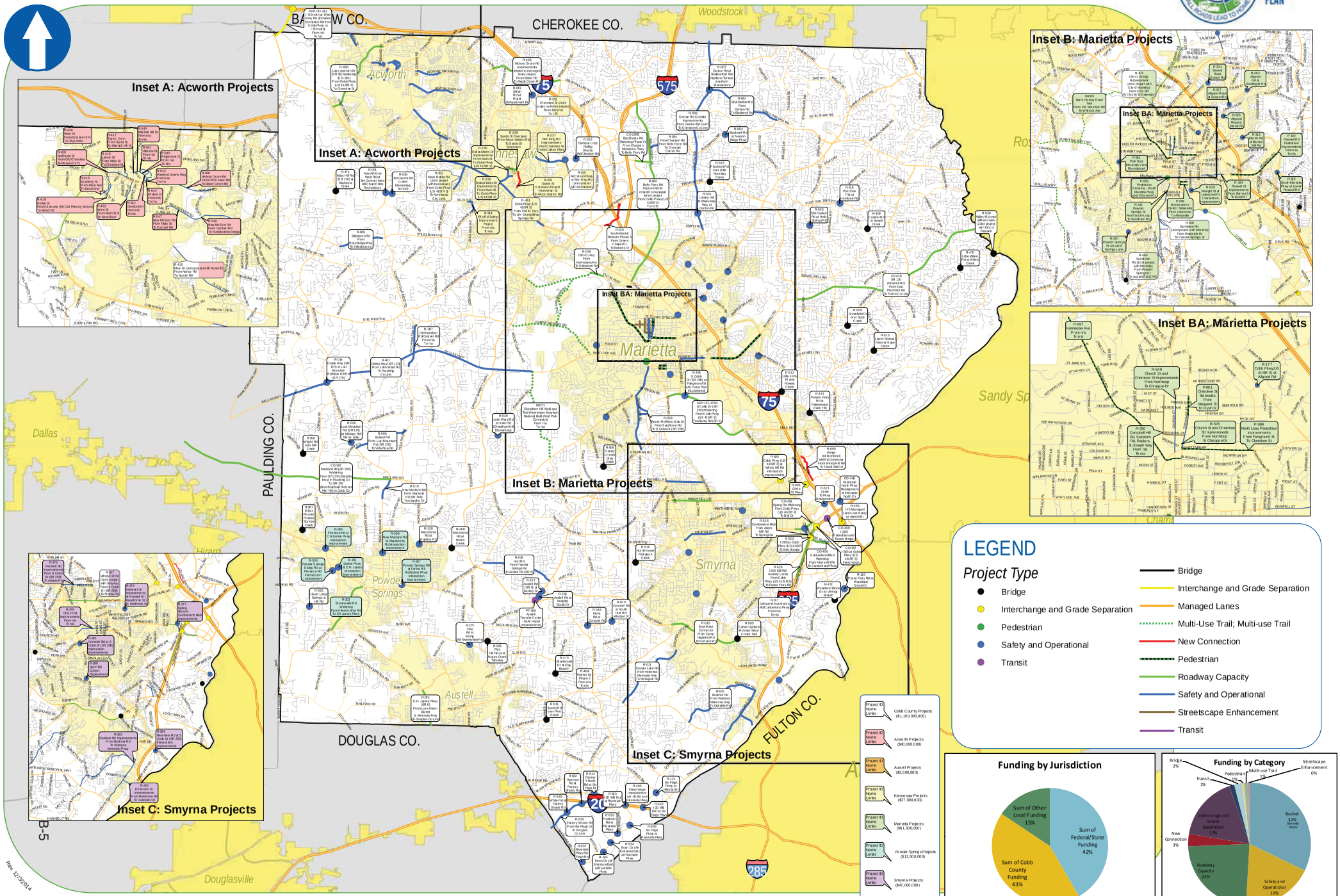
SCP: Scoping PE: Preliminary engineering / engineering / design / planning PE-OV: GDOT oversight services for engineering ROW: Right-of-way Acquistion
UTL: Utility relocation CST: Construction / Implementation ALL: Total estimated cost, inclusive of all phases

? For additional information about this project, please call (404) 463-3100 or email transportation@atlantaregional.com.

Report Generated: 6/5/2015

Short-term County and City Transportation Projects

COBB IN MOTION — ALL ROADS LEAD TO HOME
COBB COUNTY | UPDATE 2040 COMPREHENSIVE TRANSPORTATION PLAN



LEGEND

Project Type

- Bridge
- Interchange and Grade Separation
- Pedestrian
- Safety and Operational
- Transit

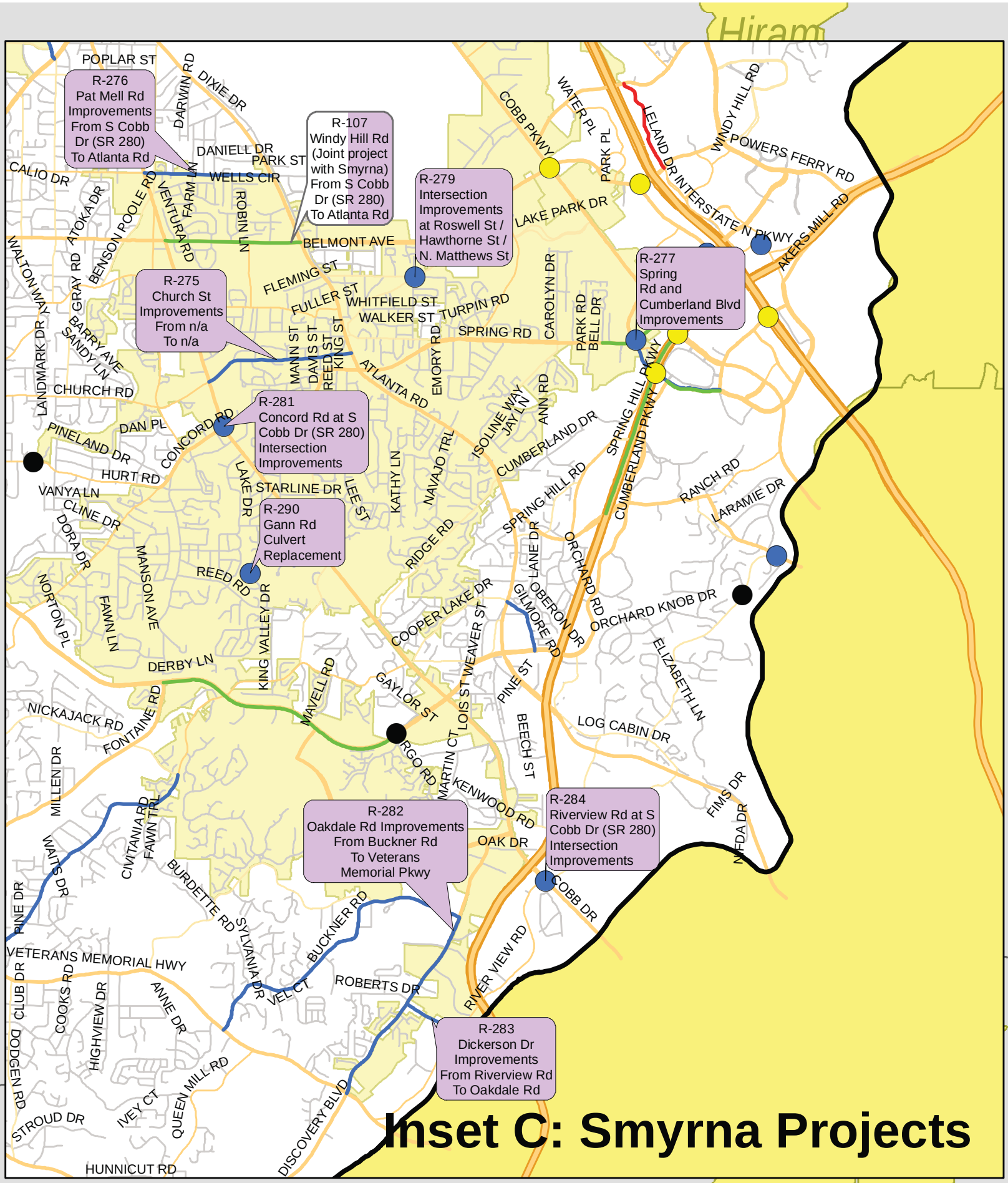
- Bridge
- Interchange and Grade Separation
- Managed Lanes
- Multi-Use Trail; Multi-use Trail
- New Connection
- Pedestrian
- Roadway Capacity
- Safety and Operational
- Streetscape Enhancement
- Transit

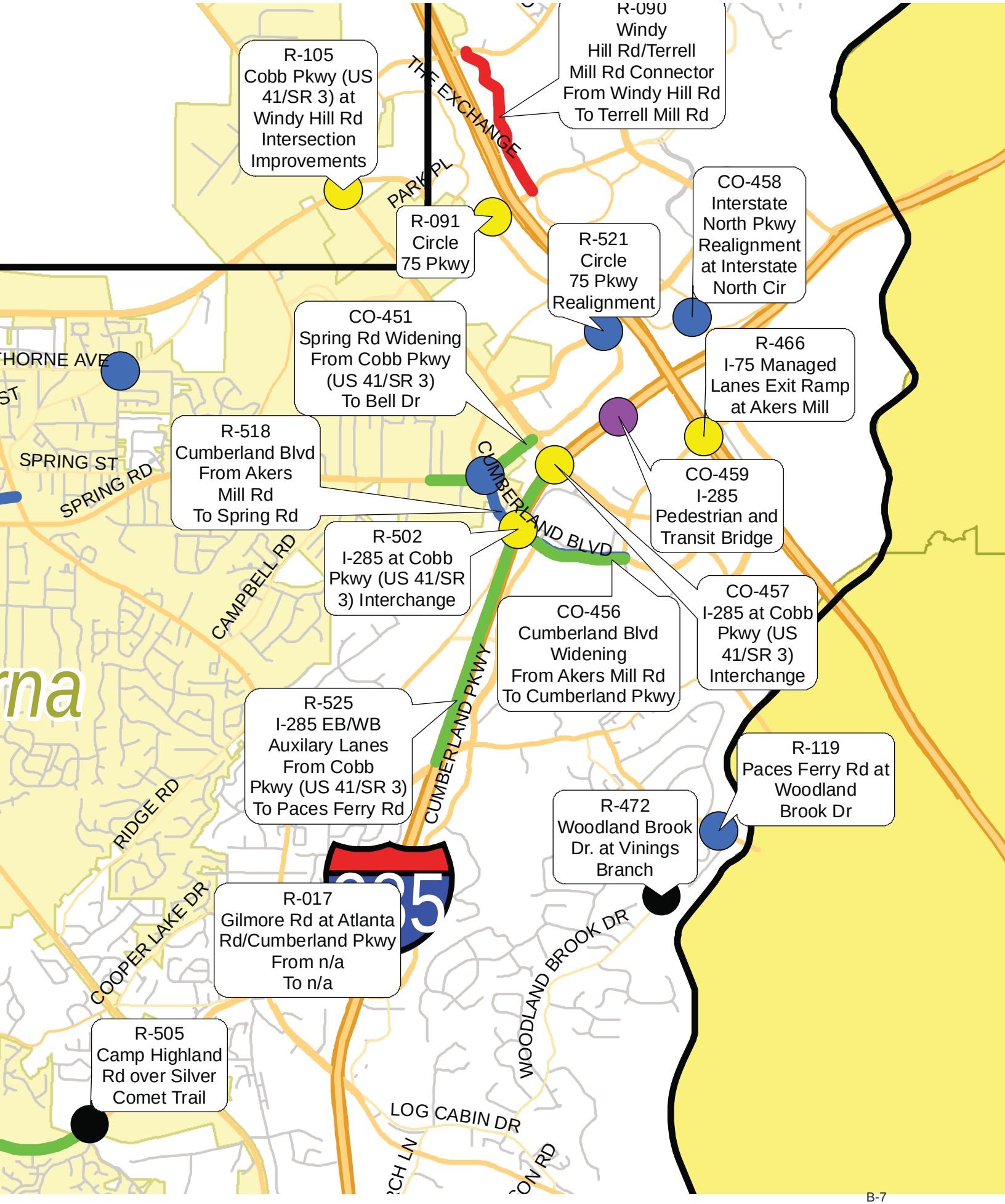
Funding by Jurisdiction

Funding by Category

Note: Funding categories not included on the map (Resurfacing, sidewalks, drainage, bridges, safety and operational improvements, congestion relief and mobility improvements). These funding categories are included in "Bucket" on the chart "Funding by Category." Detailed list on adjacent project table.

Rev. 12/3/2014


Hiram
R-276
Pat Mell Rd
Improvements
From S Cobb
Dr (SR 280)
To Atlanta Rd
R-107
Windy Hill Rd
(Joint project
with Smyrna)
From S Cobb
Dr (SR 280)
To Atlanta Rd
R-279
Intersection
Improvements
at Roswell St /
Hawthorne St /
N. Matthews St
R-277
Spring
Rd and
Cumberland Blvd
Improvements
R-275
Church St
Improvements
From n/a
To n/a
R-281
Concord Rd at S
Cobb Dr (SR 280)
Intersection
Improvements
R-290
Gann Rd
Culvert
Replacement
R-282
Oakdale Rd Improvements
From Buckner Rd
To Veterans
Memorial Pkwy
R-284
Riverview Rd at S
Cobb Dr (SR 280)
Intersection
Improvements
R-283
Dickerson Dr
Improvements
From Riverview Rd
To Oakdale Rd
POPLAR ST
DARWIN RD
DIXIE DR
DANIELL DR
PARK ST
WELLS CIR
CALIO DR
ATOKA DR
BENSON POOLE RD
VENTURA RD
FARM LN
ROBIN LN
BELMONT AVE
COBB PKWY
WATER PL
PARK PL
LELAND DR
INTERSTATE N PKWY
WINDY HILL RD
POWERS FERRY RD
LAKE PARK DR
AKERS MILL RD
WALTON WAY
GRAY RD
BARRY AVE
SANDY LN
LANDMARK DR
CHURCH RD
FLEMING ST
FULLER ST
WHITFIELD ST
WALKER ST
TURPIN RD
SPRING RD
CAROLYN DR
PARK RD
BELL DR
MANN ST
DAVIS ST
REED ST
KING ST
ATLANTA RD
EMORY RD
SPRING HILL PKWY
CUMBERLAND PKWY
ANN RD
ISOLINE WAY
JAY LN
CUMBERLAND DR
DAN PL
PINELAND DR
CONCORD RD
HURT RD
VANYA LN
CLINE DR
DORA DR
LAKE DR
STARLINE DR
LEE ST
KATHY LN
NAVAJO TRL
RANCH RD
LARAMIE DR
SPRING HILL RD
LANE DR
ORCHARD RD
OBERON DR
GILMORE RD
ORCHARD KNOB DR
ELIZABETH LN
REED RD
RIDGE RD
MANSON AVE
NORTON PL
FAWN LN
KING VALLEY DR
COOPER LAKE DR
WEAVER ST
LOIS ST
PINE ST
BEECH ST
LOG CABIN DR
DERBY LN
MAVELL RD
GAYLOR ST
NICKAJACK RD
FONTAINE RD
MILLEN DR
RGO RD
MARTIN CT
KENWOOD RD
OAK DR
FIMS DR
AFDA DR
COBB DR
CIVITANIA RD
FAWN TRL
WATTS DR
PINE DR
BURDETTE RD
SYLVANIA DR
BUCKNER RD
VEL CT
ROBERTS DR
RIVER VIEW RD
VETERANS MEMORIAL HWY
CLUB DR
COOKS RD
HIGHVIEW DR
ANNE DR
DODGEN RD
STROUD DR
IVEY CT
QUEEN MILL RD
DISCOVERY BLVD
HUNNICUT RD
Inset C: Smyrna Projects
B-6


R-105
Cobb Pkwy (US 41/SR 3) at Windy Hill Rd Intersection Improvements
R-090
Windy Hill Rd/Terrell Mill Rd Connector From Windy Hill Rd To Terrell Mill Rd
THE EXCHANGE
PARK PL
R-091
Circle 75 Pkwy
R-521
Circle 75 Pkwy Realignment
CO-458
Interstate North Pkwy Realignment at Interstate North Cir
CO-451
Spring Rd Widening From Cobb Pkwy (US 41/SR 3) To Bell Dr
R-466
I-75 Managed Lanes Exit Ramp at Akers Mill
THORNE AVE
SPRING ST
SPRING RD
R-518
Cumberland Blvd From Akers Mill Rd To Spring Rd
CUMBERLAND BLVD
CO-459
I-285 Pedestrian and Transit Bridge
R-502
I-285 at Cobb Pkwy (US 41/SR 3) Interchange
CAMPBELL RD
CO-456
Cumberland Blvd Widening From Akers Mill Rd To Cumberland Pkwy
CO-457
I-285 at Cobb Pkwy (US 41/SR 3) Interchange
R-525
I-285 EB/WB Auxilary Lanes From Cobb Pkwy (US 41/SR 3) To Paces Ferry Rd
CUMBERLAND PKWY
R-119
Paces Ferry Rd at Woodland Brook Dr
R-472
Woodland Brook Dr. at Vinings Branch
RIDGE RD
285
R-017
Gilmore Rd at Atlanta Rd/Cumberland Pkwy From n/a To n/a
COOPER LAKE DR
WOODLAND BROOK DR
R-505
Camp Highland Rd over Silver Comet Trail
LOG CABIN DR

Project List Summary 08.07.14

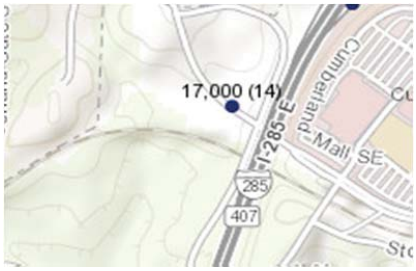
Location	Project
Areawide	Develop stadium event management plan
Internal site roads and sidewalks	Construct roads included in latest site plan. This includes pedestrian facilities along all sides of project frontage and internal roads.
Cobb Pkwy from Akers Mill Rd to Windy Ridge Pkwy	Provide sidewalks along both sides of road (fill in the gap). OR PED BRIDGE
Spring Rd from Cumberland Blvd to Circle 75 Pkwy	Provide sidewalks along both sides of road (fill in the gap)
Windy Ridge Pkwy from Interstate N Cir to Cobb Pkwy	Provide sidewalks along both sides of road (fill in the gap)
Study area of Cobb Pkwy, Spring Rd, and Windy Ridge Pkwy	Update pedestrian devices and crosswalks as needed
Areawide	Pedestrian Access Plan
Circle 75 Ramp	New access ramp
Pedestrian Bridge over I-285	Bridge
Areawide	Wayfinding Plan and Directional Signage
Areawide	Cumberland / Galleria Area Traffic Study
Pedestrian improvements along site perimeter and connecting to Windy Ridge Pkwy	Sidewalks
I-285 EB & WB Aux Lane – NO RAIL BRIDGE WORK	Aux Lanes
Realignment of Interstate N Pkwy , includes the pedestrian corridor along Interstate N Pkwy south of Windy Ridge Pkwy	Convert Interstate N Pkwy to one lane in each direction and improve ped facilities; realign Interstate N Pkwy at Interstate N Cir.
Cobb Parkway at I-285 Eastbound Off Ramp	Provide full depth eastbound shoulder to operate as third right flex as needed.
Cobb Parkway and I-285 Westbound Ramps	Provide full depth westbound shoulder to operate as fourth right lane as needed. Extend shoulder from westbound ramp to match existing right-turn decel lane at Circle 75 Pkwy

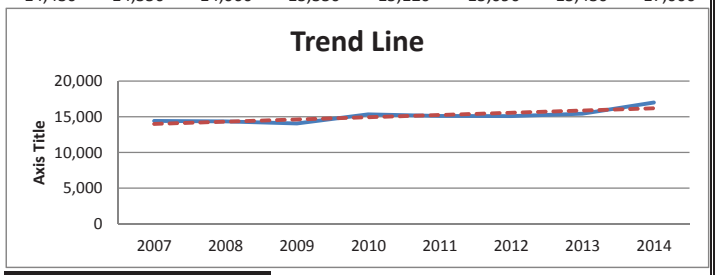
Location	Project
Cobb Parkway and Circle 75 Parkway / Spring Rd	Convert the existing eastbound shared left-turn/through lane to an exclusive through lane. * Provide an additional eastbound receiving lane. * Modify island to allow shared through/right-turn lane from northbound Cobb Parkway/US41. * Provide an additional northbound (third) left-turn lane, converting westbound receiving lane to a through lane on Spring Road, assuring proper turning envelopes and extend to Cumberland Boulevard (Int. 19). * Provide the westbound approach as three left-turn lanes and a shared through-right lane. * Remove the eastbound and westbound split phasing.
Spring Rd from Cobb Pkwy to Bell Dr	Add westbound thru lane to accommodate intersection improvement (see int #7 above)
Cumberland Boulevard and Spring Road	Install a southbound right-turn overlap and extend southbound right lane
Powers Ferry Rd	Widen northbound lane from three to four lanes between Wildwood Pkwy and Terrell Mill Rd
Powers Ferry Rd at Terrell Mill Rd	Potential intersection improvements
Powers Ferry Rd at Akers Mill Rd	Restripe and signal changes (based on DRI)
Cobb Parkway and Windy Ridge Parkway	Extend the existing southbound left-turn lane storage at least 250 feet to the maximum extent possible. * Install an eastbound right-turn overlap.
Cumberland Boulevard at Cumberland Parkway	Restripe and signal changes
Interstate N Parkway and Windy Ridge Parkway	Change the southbound left-turn traffic signal phasing to permissive-only.
Northside Dr at New Northside Dr / Interstate N Pkwy (Sandy Springs)	Restripe Northside Dr to allow a free-flow eastbound right-turn. Install southbound and westbound right-turn overlaps
Interstate N Cir to Interstate N Pkwy	Realignment of Interstate N Cir to Interstate N Pkwy (approx 1,100' of new road)
Interstate N Pkwy from Windy Ridge Pkwy to Interstate N Pkwy West	Convert Interstate N Pkwy to one lane in each direction; improve ped facilities

LINEAR REGRESSION OF DAILY TRAFFIC

Location	Growth Rate	R Squared	Station ID	Route	2007	2008	2009	2010	2011	2012	2013	2014
Cumberland Blvd	2.1%	0.70	0673015	202600	14,430	14,350	14,060	15,350	15,120	15,090	15,430	17,000
US 41 (Cobb Pkwy)	0.7%	0.15	0672143	000300	39,330	37,750	39,360	40,970	41,360	42,070	42,200	38,200
Spring Rd	-2.0%	0.91	0672806	178200	36,350	36,140	35,420	33,640	33,150	32,970	33,130	31,200
SUM OF COUNTS	-0.1%	0.04	-	-	90,110	88,240	88,840	89,960	89,630	90,130	90,760	86,400

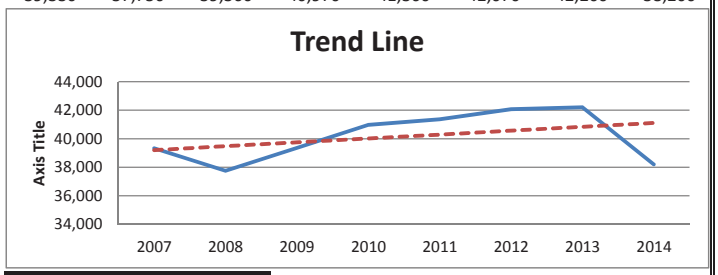
Location	Traffic Counter	RCLINK	2007	2008	2009	2010	2011	2012	2013	2014
Cumberland Blvd	0673015	202600	14,430	14,350	14,060	15,350	15,120	15,090	15,430	17,000





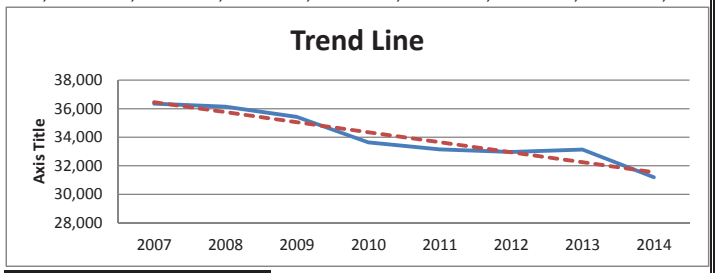
Growth Rate	2.1%	Intercept	-613,178	Slope	312.50
Trend Line	14,010	14,323	14,635	14,948	15,260	15,573	15,885	16,198

Location	Traffic Counter	RCLINK	2007	2008	2009	2010	2011	2012	2013	2014
US 41 (Cobb Pkwy)	0672143	000300	39,330	37,750	39,360	40,970	41,360	42,070	42,200	38,200



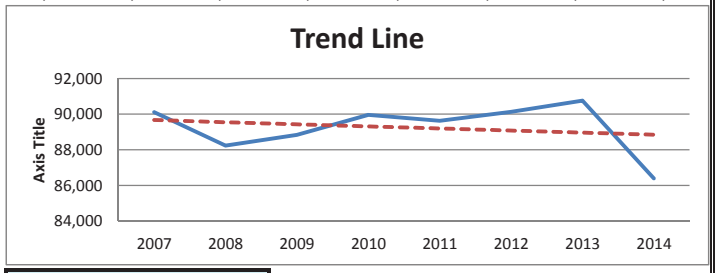
Growth Rate	0.7%	Intercept	-506,988	Slope	272.14
Trend Line	39,203	39,475	39,747	40,019	40,291	40,563	40,835	41,108

Location	Traffic Counter	RCLINK	2007	2008	2009	2010	2011	2012	2013	2014
Spring Rd	0672806	178200	36,350	36,140	35,420	33,640	33,150	32,970	33,130	31,200



Growth Rate	-2.0%	Intercept	1,444,701	Slope	-701.67
Trend Line	36,456	35,754	35,053	34,351	33,649	32,948	32,246	31,544

Location	Traffic Counter	RCLINK	2007	2008	2009	2010	2011	2012	2013	2014
SUM OF COUNTS	-	-	90,110	88,240	88,840	89,960	89,630	90,130	90,760	86,400



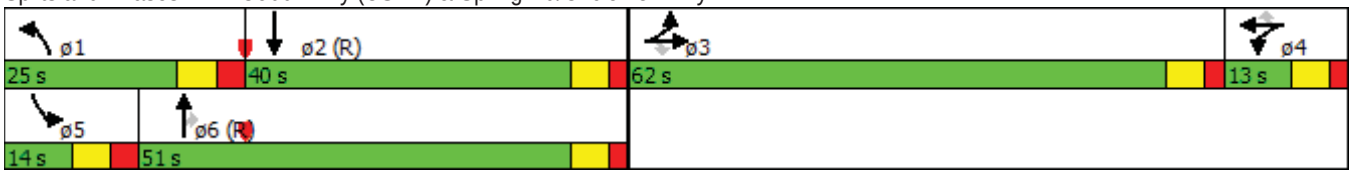
Growth Rate	-0.1%	Intercept	324,535	Slope	-117.02
Trend Line	89,668	89,551	89,434	89,317	89,200	89,083	88,966	88,849

EXISTING INTERSECTION ANALYSIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Volume (vph)	117	317	1280	93	50	32	296	711	406	78	1380
Lane Group Flow (vph)	130	387	1306	49	99	40	361	827	461	88	1580
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	3	3		4	4		1	6		5	2
Permitted Phases			3			4			6		
Detector Phase	3	3	3	4	4	4	1	6	6	5	2
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	15.0	15.0	4.0	15.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	11.0	21.0	21.0	11.0	21.0
Total Split (s)	62.0	62.0	62.0	13.0	13.0	13.0	25.0	51.0	51.0	14.0	40.0
Total Split (%)	44.3%	44.3%	44.3%	9.3%	9.3%	9.3%	17.9%	36.4%	36.4%	10.0%	28.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.0	6.0	7.0	6.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min
v/c Ratio	0.20	0.56	0.97	0.61	0.60	0.16	0.84	0.39	0.59	0.52	0.83
Control Delay	22.2	32.5	42.3	95.9	80.7	1.4	77.9	37.0	10.9	76.3	53.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	32.5	42.3	95.9	80.7	1.4	77.9	37.0	10.9	76.3	53.8
Queue Length 50th (ft)	102	348	571	49	49	0	167	170	53	41	341
Queue Length 95th (ft)	m124	448	#688	#115	83	0	202	192	151	70	380
Internal Link Dist (ft)		899			536			531			608
Turn Bay Length (ft)	450					75	330		195	350	
Base Capacity (vph)	672	706	1370	80	165	249	441	2112	776	171	1907
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.55	0.95	0.61	0.60	0.16	0.82	0.39	0.59	0.51	0.83

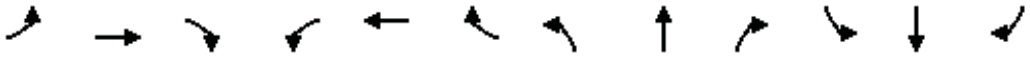
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	117	317	1280	93	50	32	296	711	406	78	1380	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.0	6.0	7.0	6.0	
Lane Util. Factor	0.95	0.95	0.88	0.91	0.91	1.00	0.97	0.86	1.00	0.97	0.81	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1766	2787	1610	3312	1583	3433	6408	1583	3433	7475	
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1766	2787	1610	3312	1583	3433	6408	1583	3433	7475	
Peak-hour factor, PHF	0.81	0.85	0.98	0.97	0.96	0.80	0.82	0.86	0.88	0.89	0.93	0.84
Adj. Flow (vph)	144	373	1306	96	52	40	361	827	461	88	1484	96
RTOR Reduction (vph)	0	0	259	0	0	38	0	0	255	0	8	0
Lane Group Flow (vph)	130	387	1047	49	99	2	361	827	206	88	1572	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4			6			
Actuated Green, G (s)	55.0	55.0	55.0	7.0	7.0	7.0	17.5	46.1	46.1	6.9	35.5	
Effective Green, g (s)	55.0	55.0	55.0	7.0	7.0	7.0	17.5	46.1	46.1	6.9	35.5	
Actuated g/C Ratio	0.39	0.39	0.39	0.05	0.05	0.05	0.12	0.33	0.33	0.05	0.25	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.0	6.0	7.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)	660	693	1094	80	165	79	429	2110	521	169	1895	
v/s Ratio Prot	0.08	0.22		c0.03	0.03		c0.11	0.13		0.03	c0.21	
v/s Ratio Perm			c0.38			0.00			0.13			
v/c Ratio	0.20	0.56	0.96	0.61	0.60	0.03	0.84	0.39	0.40	0.52	0.83	
Uniform Delay, d1	28.0	33.1	41.4	65.2	65.1	63.3	59.9	36.2	36.2	64.9	49.4	
Progression Factor	0.78	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.7	14.4	13.1	5.8	0.1	13.9	0.5	2.2	2.9	4.4	
Delay (s)	21.9	30.6	55.9	78.3	70.9	63.4	73.8	36.7	38.5	67.8	53.8	
Level of Service	C	C	E	E	E	E	E	D	D	E	D	
Approach Delay (s)		48.1			71.2			45.3			54.5	
Approach LOS		D			E			D			D	

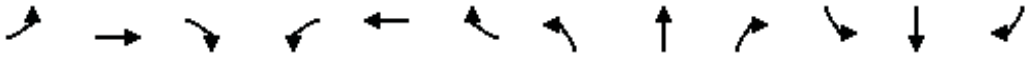
Intersection Summary			
HCM 2000 Control Delay	50.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	1973	7	15	374	3	3	0	2	2	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.62	0.95	0.88	0.62	0.92	0.75	0.38	0.92	0.25	0.25	0.92	0.92
Hourly flow rate (vph)	8	2077	8	24	407	4	8	0	8	8	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									2			
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		364			1166							
pX, platoon unblocked				0.73			0.73	0.73	0.73	0.73	0.73	
vC, conflicting volume	411			2085			2349	2556	696	1165	2558	205
vC1, stage 1 conf vol							2097	2097		457	457	
vC2, stage 2 conf vol							252	459		708	2101	
vCu, unblocked vol	411			1212			1571	1853	0	0	1856	205
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			94	100	99	99	100	100
cM capacity (veh/h)	1145			420			133	170	796	697	148	801

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	8	831	831	423	24	271	140	16	8
Volume Left	8	0	0	0	24	0	0	8	8
Volume Right	0	0	0	8	0	0	4	8	0
cSH	1145	1700	1700	1700	420	1700	1700	268	697
Volume to Capacity	0.01	0.49	0.49	0.25	0.06	0.16	0.08	0.06	0.01
Queue Length 95th (ft)	1	0	0	0	5	0	0	5	1
Control Delay (s)	8.2	0.0	0.0	0.0	14.1	0.0	0.0	21.6	10.2
Lane LOS	A				B			C	B
Approach Delay (s)	0.0				0.8			21.6	10.2
Approach LOS								C	B

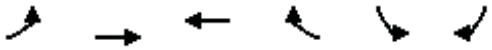
Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	1974	1	2	371	0	0	0	2	2	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.94	0.25	0.50	0.90	0.92	0.92	0.92	0.50	0.50	0.92	0.25
Hourly flow rate (vph)	8	2100	4	4	412	0	0	0	4	4	0	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		551			979							
pX, platoon unblocked				0.73			0.73	0.73	0.73	0.73	0.73	
vC, conflicting volume	412			2104			2336	2538	702	1140	2540	206
vC1, stage 1 conf vol							2118	2118		420	420	
vC2, stage 2 conf vol							218	420		720	2120	
vCu, unblocked vol	412			1239			1555	1830	0	0	1833	206
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	99	99	100	100
cM capacity (veh/h)	1143			410			128	166	797	721	163	800

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	8	840	840	424	4	275	137	4	8
Volume Left	8	0	0	0	4	0	0	0	4
Volume Right	0	0	0	4	0	0	0	4	4
cSH	1143	1700	1700	1700	410	1700	1700	797	758
Volume to Capacity	0.01	0.49	0.49	0.25	0.01	0.16	0.08	0.01	0.01
Queue Length 95th (ft)	1	0	0	0	1	0	0	0	1
Control Delay (s)	8.2	0.0	0.0	0.0	13.9	0.0	0.0	9.5	9.8
Lane LOS	A				B			A	A
Approach Delay (s)	0.0				0.1			9.5	9.8
Approach LOS								A	A

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	48.2%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	2	183	323	5	3	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.50	0.78	0.83	0.62	0.75	0.92
Hourly flow rate (vph)	4	235	389	8	4	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		690				
pX, platoon unblocked						
vC, conflicting volume	397				636	393
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	397				636	393
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1161				441	656

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	239	397	4
Volume Left	4	0	4
Volume Right	0	8	0
cSH	1161	1700	441
Volume to Capacity	0.00	0.23	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.2	0.0	13.2
Lane LOS	A		B
Approach Delay (s)	0.2	0.0	13.2
Approach LOS			B

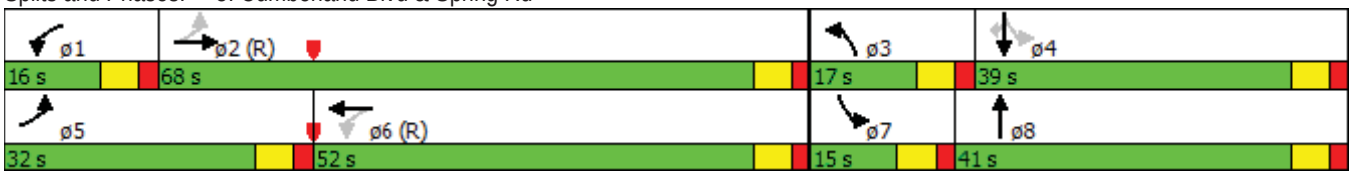
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	27.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	311	1585	557	80	286	125	422	85	356	100
Lane Group Flow (vph)	389	1723	619	96	369	149	660	104	445	123
Turn Type	pm+pt	NA	Free	pm+pt	NA	Prot	NA	pm+pt	NA	Perm
Protected Phases	5	2		1	6	3	8	7	4	
Permitted Phases	2		Free	6				4		4
Detector Phase	5	2		1	6	3	8	7	4	4
Switch Phase										
Minimum Initial (s)	4.0	15.0		4.0	15.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	38.0		10.0	37.0	10.0	36.0	10.0	38.0	38.0
Total Split (s)	32.0	68.0		16.0	52.0	17.0	41.0	15.0	39.0	39.0
Total Split (%)	22.9%	48.6%		11.4%	37.1%	12.1%	29.3%	10.7%	27.9%	27.9%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0
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)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Min		None	C-Min	None	None	None	None	None
v/c Ratio	0.62	0.70	0.39	0.56	0.27	0.59	0.85	0.62	0.60	0.27
Control Delay	20.6	31.1	0.7	57.6	9.2	81.3	57.0	50.0	53.4	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0
Total Delay	20.6	31.1	0.7	57.6	9.2	81.3	58.9	50.0	53.4	3.5
Queue Length 50th (ft)	183	450	0	37	38	71	285	67	194	0
Queue Length 95th (ft)	230	538	0	m72	m58	103	348	99	213	8
Internal Link Dist (ft)		737			284		314		449	
Turn Bay Length (ft)	225			165				135		185
Base Capacity (vph)	661	2456	1583	185	1379	269	878	170	834	498
Starvation Cap Reductn	0	0	0	0	0	0	102	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.70	0.39	0.52	0.27	0.55	0.85	0.61	0.53	0.25

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

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

Splits and Phases: 5: Cumberland Blvd & Spring Rd



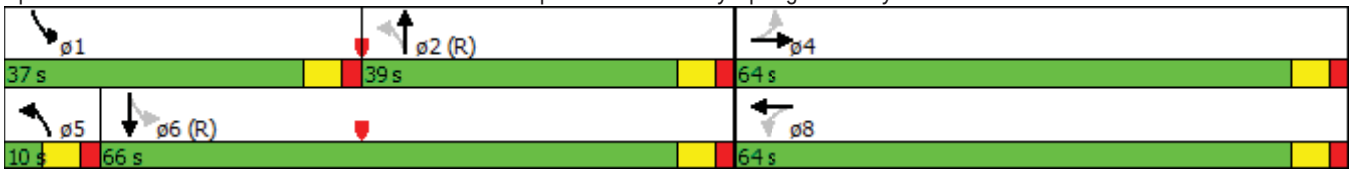
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	311	1585	557	80	286	21	125	422	186	85	356	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3487		3433	3382		1770	3539	1583
Flt Permitted	0.44	1.00	1.00	0.08	1.00		0.95	1.00		0.15	1.00	1.00
Satd. Flow (perm)	825	5085	1583	149	3487		3433	3382		270	3539	1583
Peak-hour factor, PHF	0.80	0.92	0.90	0.83	0.86	0.58	0.84	0.91	0.95	0.82	0.80	0.81
Adj. Flow (vph)	389	1723	619	96	333	36	149	464	196	104	445	123
RTOR Reduction (vph)	0	0	0	0	5	0	0	35	0	0	0	97
Lane Group Flow (vph)	389	1723	619	96	364	0	149	625	0	104	445	26
Turn Type	pm+pt	NA	Free	pm+pt	NA		Prot	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		Free	6						4		4
Actuated Green, G (s)	82.5	67.7	140.0	64.0	55.2		10.3	30.7		38.0	29.2	29.2
Effective Green, g (s)	82.5	67.7	140.0	64.0	55.2		10.3	30.7		38.0	29.2	29.2
Actuated g/C Ratio	0.59	0.48	1.00	0.46	0.39		0.07	0.22		0.27	0.21	0.21
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	629	2458	1583	170	1374		252	741		167	738	330
v/s Ratio Prot	c0.09	c0.34		0.04	0.10		c0.04	c0.18		0.04	0.13	
v/s Ratio Perm	0.27		c0.39	0.22						0.13		0.02
v/c Ratio	0.62	0.70	0.39	0.56	0.26		0.59	0.84		0.62	0.60	0.08
Uniform Delay, d1	15.8	28.2	0.0	24.3	28.7		62.8	52.3		40.9	50.2	44.6
Progression Factor	1.00	1.00	1.00	1.91	0.30		1.14	0.95		1.00	1.00	1.00
Incremental Delay, d2	1.8	1.7	0.7	3.2	0.4		3.7	8.6		7.0	1.4	0.1
Delay (s)	17.6	29.9	0.7	49.6	8.9		75.2	58.1		48.0	51.5	44.7
Level of Service	B	C	A	D	A		E	E		D	D	D
Approach Delay (s)		21.6			17.3			61.3			49.7	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBT	SBL	SBT	ø5
Lane Configurations							
Volume (vph)	1	13	0	406	182	839	
Lane Group Flow (vph)	8	20	333	443	207	878	
Turn Type	NA	Perm	NA	NA	pm+pt	NA	
Protected Phases	4		8	2	1	6	5
Permitted Phases		8			6		
Detector Phase	4	8	8	2	1	6	
Switch Phase							
Minimum Initial (s)	6.0	6.0	6.0	15.0	4.0	15.0	4.0
Minimum Split (s)	44.0	46.0	46.0	30.0	10.0	32.0	10.0
Total Split (s)	64.0	64.0	64.0	39.0	37.0	66.0	10.0
Total Split (%)	45.7%	45.7%	45.7%	27.9%	26.4%	47.1%	7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag				Lag	Lead	Lag	Lead
Lead-Lag Optimize?							
Recall Mode	None	None	None	C-Min	None	C-Min	None
v/c Ratio	0.07	0.26	0.57	0.09	0.26	0.20	
Control Delay	48.0	70.9	4.0	5.3	1.8	1.1	
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.1	
Total Delay	48.0	70.9	4.0	5.3	2.0	1.3	
Queue Length 50th (ft)	4	18	0	28	14	22	
Queue Length 95th (ft)	3	33	0	43	22	29	
Internal Link Dist (ft)	60		403	230		314	
Turn Bay Length (ft)		100			50		
Base Capacity (vph)	817	580	963	4719	924	4365	
Starvation Cap Reductn	0	0	0	0	256	2151	
Spillback Cap Reductn	0	0	14	59	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.01	0.03	0.35	0.10	0.31	0.40	

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 6: Cumberland Blvd & Colonial Pipeline Station Drwy/Spring Hill Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1	1	13	0	306	0	406	10	182	839	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		6.0		6.0	6.0			6.0		6.0	6.0	
Lane Util. Factor		1.00		1.00	1.00			0.86		1.00	0.91	
Frt		0.93		1.00	0.85			0.99		1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1969		1770	1583			6373		1770	5082	
Flt Permitted		1.00		0.75	1.00			1.00		0.45	1.00	
Satd. Flow (perm)		1969		1402	1583			6373		834	5082	
Peak-hour factor, PHF	0.92	0.25	0.25	0.65	0.92	0.92	0.92	0.95	0.62	0.88	0.96	0.25
Adj. Flow (vph)	0	4	4	20	0	333	0	427	16	207	874	4
RTOR Reduction (vph)	0	4	0	0	315	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	4	0	20	18	0	0	442	0	207	878	0
Turn Type		NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.7		7.7	7.7			103.6		120.3	120.3	
Effective Green, g (s)		7.7		7.7	7.7			103.6		120.3	120.3	
Actuated g/C Ratio		0.06		0.06	0.06			0.74		0.86	0.86	
Clearance Time (s)		6.0		6.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0			5.0		3.0	5.0	
Lane Grp Cap (vph)		108		77	87			4716		788	4366	
v/s Ratio Prot		0.00			0.01			0.07		c0.02	0.17	
v/s Ratio Perm				c0.01						c0.21		
v/c Ratio		0.04		0.26	0.21			0.09		0.26	0.20	
Uniform Delay, d1		62.6		63.4	63.2			5.1		1.7	1.7	
Progression Factor		1.00		1.00	1.00			1.00		0.64	0.59	
Incremental Delay, d2		0.1		1.8	1.2			0.0		0.2	0.1	
Delay (s)		62.8		65.2	64.5			5.1		1.3	1.1	
Level of Service		E		E	E			A		A	A	
Approach Delay (s)		62.8			64.5			5.1			1.1	
Approach LOS		E			E			A			A	

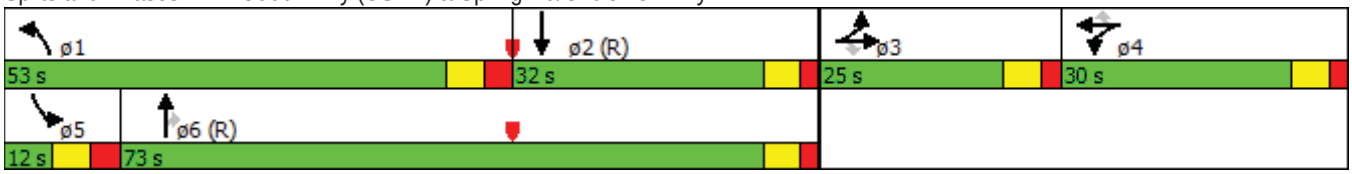
Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Volume (vph)	124	145	540	404	201	34	870	1371	146	30	951
Lane Group Flow (vph)	125	198	607	237	488	48	1036	1540	172	40	1233
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	3	3		4	4		1	6		5	2
Permitted Phases			3			4			6		
Detector Phase	3	3	3	4	4	4	1	6	6	5	2
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	15.0	15.0	4.0	15.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	11.0	21.0	21.0	11.0	21.0
Total Split (s)	25.0	25.0	25.0	30.0	30.0	30.0	53.0	73.0	73.0	12.0	32.0
Total Split (%)	17.9%	17.9%	17.9%	21.4%	21.4%	21.4%	37.9%	52.1%	52.1%	8.6%	22.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.0	6.0	7.0	6.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min
v/c Ratio	0.57	0.86	0.68	0.88	0.89	0.12	0.94	0.47	0.19	0.33	0.81
Control Delay	68.0	92.3	8.4	89.1	75.8	0.6	62.1	23.8	3.6	73.2	57.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.0	92.3	8.4	89.1	75.8	0.6	62.1	23.8	3.6	73.2	57.6
Queue Length 50th (ft)	113	187	0	232	240	0	467	274	2	18	269
Queue Length 95th (ft)	184	#256	55	#373	257	0	506	303	35	32	294
Internal Link Dist (ft)		899			536			531			608
Turn Bay Length (ft)	450					75	330		195	350	
Base Capacity (vph)	228	239	902	276	567	419	1127	3245	884	122	1526
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.83	0.67	0.86	0.86	0.11	0.92	0.47	0.19	0.33	0.81

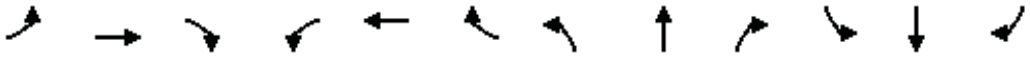
Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	124	145	540	404	201	34	870	1371	146	30	951	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.0	6.0	7.0	6.0	
Lane Util. Factor	0.95	0.95	0.88	0.91	0.91	1.00	0.97	0.86	1.00	0.97	0.81	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1763	2787	1610	3313	1583	3433	6408	1583	3433	7416	
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1763	2787	1610	3313	1583	3433	6408	1583	3433	7416	
Peak-hour factor, PHF	0.89	0.79	0.89	0.87	0.77	0.71	0.84	0.89	0.85	0.75	0.87	0.90
Adj. Flow (vph)	139	184	607	464	261	48	1036	1540	172	40	1093	140
RTOR Reduction (vph)	0	0	528	0	0	40	0	0	84	0	16	0
Lane Group Flow (vph)	125	198	79	237	488	8	1036	1540	88	40	1217	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4			6			
Actuated Green, G (s)	18.2	18.2	18.2	23.3	23.3	23.3	45.0	69.5	69.5	4.0	28.5	
Effective Green, g (s)	18.2	18.2	18.2	23.3	23.3	23.3	45.0	69.5	69.5	4.0	28.5	
Actuated g/C Ratio	0.13	0.13	0.13	0.17	0.17	0.17	0.32	0.50	0.50	0.03	0.20	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	6.0	6.0	7.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)	218	229	362	267	551	263	1103	3181	785	98	1509	
v/s Ratio Prot	0.07	c0.11		0.15	c0.15		c0.30	0.24		0.01	c0.16	
v/s Ratio Perm			0.03			0.01			0.06			
v/c Ratio	0.57	0.86	0.22	0.89	0.89	0.03	0.94	0.48	0.11	0.41	0.81	
Uniform Delay, d1	57.3	59.7	54.5	57.1	57.0	48.9	46.2	23.4	18.8	66.8	53.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.6	27.0	0.3	27.8	15.7	0.0	14.6	0.5	0.3	2.8	4.7	
Delay (s)	60.9	86.7	54.8	84.8	72.7	48.9	60.8	23.9	19.1	69.6	57.8	
Level of Service	E	F	D	F	E	D	E	C	B	E	E	
Approach Delay (s)		62.4			75.0			37.5			58.2	
Approach LOS		E			E			D			E	

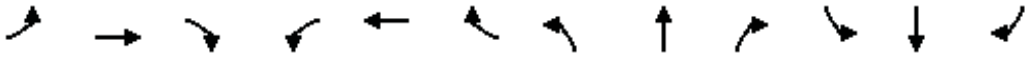
Intersection Summary			
HCM 2000 Control Delay	51.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	734	11	9	1159	6	8	1	15	5	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.62	0.93	0.46	0.56	0.91	0.75	0.67	0.25	0.42	0.42	0.92	0.50
Hourly flow rate (vph)	24	789	24	16	1274	8	12	4	36	12	0	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									2			
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		364			1166							
pX, platoon unblocked				0.93			0.93	0.93	0.93	0.93	0.93	
vC, conflicting volume	1282			813			1531	2163	275	1623	2171	641
vC1, stage 1 conf vol							850	850		1310	1310	
vC2, stage 2 conf vol							681	1314		313	862	
vCu, unblocked vol	1282			533			1305	1986	0	1405	1994	641
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			98			96	98	96	93	100	97
cM capacity (veh/h)	537			958			286	181	1008	160	197	418

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	24	316	316	182	16	849	433	52	24
Volume Left	24	0	0	0	16	0	0	12	12
Volume Right	0	0	0	24	0	0	8	36	12
cSH	537	1700	1700	1700	958	1700	1700	840	232
Volume to Capacity	0.05	0.19	0.19	0.11	0.02	0.50	0.25	0.06	0.10
Queue Length 95th (ft)	4	0	0	0	1	0	0	5	8
Control Delay (s)	12.0	0.0	0.0	0.0	8.8	0.0	0.0	12.1	22.3
Lane LOS	B				A			B	C
Approach Delay (s)	0.3				0.1			12.1	22.3
Approach LOS								B	C

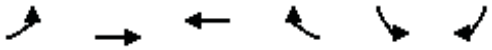
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	762	8	17	1160	0	9	0	14	6	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.93	0.67	0.71	0.91	0.92	0.75	0.92	0.58	0.75	0.92	0.67
Hourly flow rate (vph)	0	819	12	24	1275	0	12	0	24	8	0	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		551			979							
pX, platoon unblocked				0.93			0.93	0.93	0.93	0.93	0.93	
vC, conflicting volume	1275			831			1523	2148	279	1620	2154	637
vC1, stage 1 conf vol							825	825		1323	1323	
vC2, stage 2 conf vol							697	1323		297	831	
vCu, unblocked vol	1275			572			1312	1982	0	1416	1988	637
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			96	100	98	95	100	97
cM capacity (veh/h)	541			931			298	197	1013	156	195	420

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	328	328	176	24	850	425	36	20
Volume Left	0	0	0	0	24	0	0	12	8
Volume Right	0	0	0	12	0	0	0	24	12
cSH	1700	1700	1700	1700	931	1700	1700	563	250
Volume to Capacity	0.00	0.19	0.19	0.10	0.03	0.50	0.25	0.06	0.08
Queue Length 95th (ft)	0	0	0	0	2	0	0	5	6
Control Delay (s)	0.0	0.0	0.0	0.0	9.0	0.0	0.0	11.8	20.6
Lane LOS					A			B	C
Approach Delay (s)	0.0				0.2			11.8	20.6
Approach LOS								B	C

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	42.1%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	248	352	29	13	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.50	0.80	0.94	0.48	0.46	0.62
Hourly flow rate (vph)	0	310	374	60	28	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		690				
pX, platoon unblocked						
vC, conflicting volume	435				715	405
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	435				715	405
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				93	99
cM capacity (veh/h)	1125				398	646

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	310	435	36
Volume Left	0	0	28
Volume Right	0	60	8
cSH	1125	1700	435
Volume to Capacity	0.00	0.26	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.0	14.0
Lane LOS			B
Approach Delay (s)	0.0	0.0	14.0
Approach LOS			B

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization		30.3%	ICU Level of Service
Analysis Period (min)		15	

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	169	513	322	95	1038	611	609	82	452	516
Lane Group Flow (vph)	204	529	335	112	1248	694	923	96	526	561
Turn Type	pm+pt	NA	Free	pm+pt	NA	Prot	NA	pm+pt	NA	Perm
Protected Phases	5	2		1	6	3	8	7	4	
Permitted Phases	2		Free	6				4		4
Detector Phase	5	2		1	6	3	8	7	4	4
Switch Phase										
Minimum Initial (s)	4.0	15.0		4.0	15.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	38.0		10.0	37.0	10.0	36.0	10.0	38.0	38.0
Total Split (s)	15.0	51.0		12.0	48.0	29.0	53.0	14.0	38.0	38.0
Total Split (%)	11.5%	39.2%		9.2%	36.9%	22.3%	40.8%	10.8%	29.2%	29.2%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0
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)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Min		None	C-Min	None	None	None	None	None
v/c Ratio	1.13	0.30	0.21	0.33	1.10	1.14	0.73	0.47	0.60	1.07
Control Delay	137.2	31.6	0.3	25.9	98.7	130.3	38.9	29.5	46.8	93.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	41.8	0.0	0.0	0.0
Total Delay	137.2	31.6	0.3	25.9	98.7	130.3	80.7	29.5	46.8	93.0
Queue Length 50th (ft)	~148	118	0	56	~625	~352	344	44	207	~406
Queue Length 95th (ft)	#269	150	0	89	#737	#457	371	74	254	#634
Internal Link Dist (ft)		737			284		314		449	
Turn Bay Length (ft)	225			165				135		185
Base Capacity (vph)	180	1760	1583	341	1137	607	1266	209	871	522
Starvation Cap Reductn	0	0	0	0	0	0	411	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	0.30	0.21	0.33	1.10	1.14	1.08	0.46	0.60	1.07

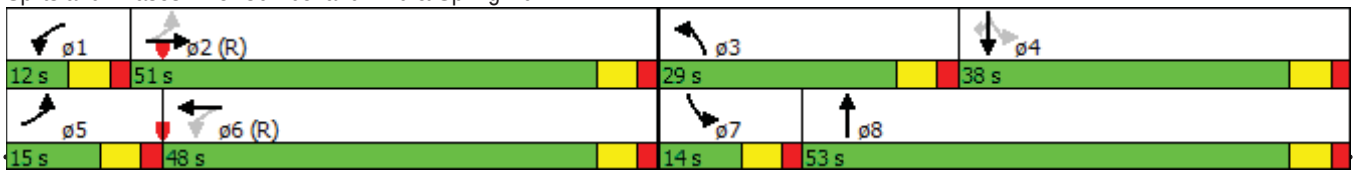
Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Cumberland Blvd & Spring Rd



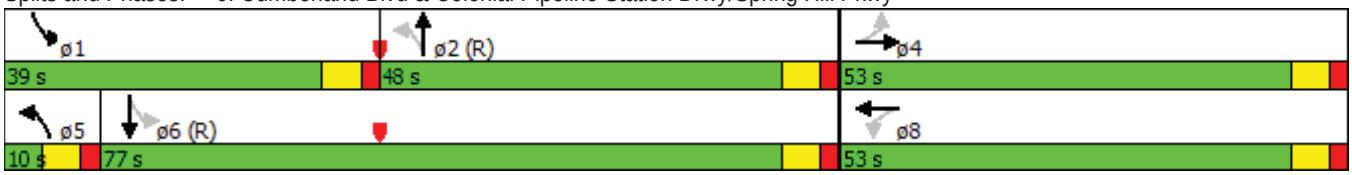
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	169	513	322	95	1038	41	611	609	164	82	452	516
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3510		3433	3436		1770	3539	1583
Flt Permitted	0.09	1.00	1.00	0.43	1.00		0.95	1.00		0.22	1.00	1.00
Satd. Flow (perm)	166	5085	1583	805	3510		3433	3436		409	3539	1583
Peak-hour factor, PHF	0.83	0.97	0.96	0.85	0.88	0.60	0.88	0.82	0.91	0.85	0.86	0.92
Adj. Flow (vph)	204	529	335	112	1180	68	694	743	180	96	526	561
RTOR Reduction (vph)	0	0	0	0	3	0	0	17	0	0	0	133
Lane Group Flow (vph)	204	529	335	112	1245	0	694	906	0	96	526	428
Turn Type	pm+pt	NA	Free	pm+pt	NA		Prot	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		Free	6						4		4
Actuated Green, G (s)	54.0	45.0	130.0	48.0	42.0		23.0	47.3		39.7	32.0	32.0
Effective Green, g (s)	54.0	45.0	130.0	48.0	42.0		23.0	47.3		39.7	32.0	32.0
Actuated g/C Ratio	0.42	0.35	1.00	0.37	0.32		0.18	0.36		0.31	0.25	0.25
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	180	1760	1583	341	1134		607	1250		205	871	389
v/s Ratio Prot	c0.08	0.10		0.02	0.35		c0.20	0.26		0.03	0.15	
v/s Ratio Perm	c0.39		c0.21	0.11						0.11		c0.27
v/c Ratio	1.13	0.30	0.21	0.33	1.10		1.14	0.73		0.47	0.60	1.10
Uniform Delay, d1	34.2	31.0	0.0	27.6	44.0		53.5	35.7		33.6	43.4	49.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	107.5	0.4	0.3	0.6	57.5		82.9	2.1		1.7	1.2	75.8
Delay (s)	141.7	31.5	0.3	28.2	101.5		136.4	37.9		35.2	44.6	124.8
Level of Service	F	C	A	C	F		F	D		D	D	F
Approach Delay (s)		42.7			95.5			80.1			81.8	
Approach LOS		D			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	76.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT	ø5
Lane Configurations								
Volume (vph)	1	0	14	0	1011	214	671	
Lane Group Flow (vph)	0	4	20	379	1190	264	729	
Turn Type	Perm	NA	Perm	NA	NA	pm+pt	NA	
Protected Phases		4		8	2	1	6	5
Permitted Phases	4		8			6		
Detector Phase	4	4	8	8	2	1	6	
Switch Phase								
Minimum Initial (s)	6.0	6.0	6.0	6.0	15.0	4.0	15.0	4.0
Minimum Split (s)	44.0	44.0	46.0	46.0	30.0	10.0	32.0	10.0
Total Split (s)	53.0	53.0	53.0	53.0	48.0	39.0	77.0	10.0
Total Split (%)	37.9%	37.9%	37.9%	37.9%	34.3%	27.9%	55.0%	7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	None	C-Min	None
v/c Ratio		0.07	0.24	0.76	0.28	0.52	0.17	
Control Delay		62.0	67.4	12.6	11.0	6.6	2.0	
Queue Delay		0.0	0.0	0.0	0.0	0.2	0.3	
Total Delay		62.0	67.4	12.6	11.0	6.8	2.3	
Queue Length 50th (ft)		4	18	0	120	29	28	
Queue Length 95th (ft)		4	34	48	185	57	53	
Internal Link Dist (ft)		60		403	230		314	
Turn Bay Length (ft)			100			50		
Base Capacity (vph)		333	472	817	4178	630	4338	
Starvation Cap Reductn		0	0	0	0	51	2848	
Spillback Cap Reductn		0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	
Reduced v/c Ratio		0.01	0.04	0.46	0.28	0.46	0.49	

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 6: Cumberland Blvd & Colonial Pipeline Station Drwy/Spring Hill Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	0	0	14	0	330	0	1011	62	214	671	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		6.0		6.0	6.0			6.0		6.0	6.0	
Lane Util. Factor		1.00		1.00	1.00			0.86		1.00	0.91	
Frt		1.00		1.00	0.85			0.99		1.00	1.00	
Flt Protected		0.95		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		2006		1770	1583			6344		1770	5085	
Flt Permitted		0.47		0.76	1.00			1.00		0.18	1.00	
Satd. Flow (perm)		993		1407	1583			6344		345	5085	
Peak-hour factor, PHF	0.25	0.25	0.25	0.70	0.92	0.87	0.92	0.91	0.78	0.81	0.92	0.25
Adj. Flow (vph)	4	0	0	20	0	379	0	1111	79	264	729	0
RTOR Reduction (vph)	0	0	0	0	356	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	4	0	20	23	0	0	1186	0	264	729	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.5		8.5	8.5			92.2		119.5	119.5	
Effective Green, g (s)		8.5		8.5	8.5			92.2		119.5	119.5	
Actuated g/C Ratio		0.06		0.06	0.06			0.66		0.85	0.85	
Clearance Time (s)		6.0		6.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0			5.0		3.0	5.0	
Lane Grp Cap (vph)		60		85	96			4177		511	4340	
v/s Ratio Prot					c0.01			0.19		c0.08	0.14	
v/s Ratio Perm		0.00		0.01						c0.36		
v/c Ratio		0.07		0.24	0.24			0.28		0.52	0.17	
Uniform Delay, d1		62.0		62.7	62.7			10.0		3.2	1.8	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.5		1.4	1.3			0.2		0.9	0.1	
Delay (s)		62.5		64.1	64.0			10.2		4.1	1.8	
Level of Service		E		E	E			B		A	A	
Approach Delay (s)		62.5			64.0			10.2			2.4	
Approach LOS		E			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

AASHTO Left Turn Lane Analyses

LEFT TURN LANE ANALYSIS
per AASHTO standards

The following left turn lane analyses were used to determine the need for dedicated turn bays at the proposed site driveway locations that are not located on State Routes.

Methodology

M.D. Harmelink utilized a probabilistic model to establish left turn lane warrants for two-lane and four-lane highways at unsignalized T-intersections. These warrants are the basis for AASHTO guidelines for justifying a left-turn lane at an unsignalized intersection. The warrants developed are in the form of sets of different volume combinations, specifically, the advancing volume, the percentage of left-turns in the advancing volume, and the opposing volume. These warrants are based on maximum allowable probabilities that one or more through vehicles are present in the queue formed by the left-turning vehicles that is waiting for a suitable gap. The warrants, as summarized by AASHTO, were developed for the approach speeds of 40, 50 and 60 mph and left turn volumes that are 5%, 10%, 20%, and 30% of the advancing stream.

AASHTO Thresholds (Exhibit 9-75, pg 685), 40 MPH				
Opposing Volumes	Advancing Volumes (by left turn %)			
	5%	10.0%	20.0%	30.0%
100	720	515	390	340
200	640	470	350	305
400	510	380	275	245
600	410	305	225	200
800	330	240	180	160

An interpolation of the thresholds is needed for other volumes and percentages that are not in the AASHTO table for left turn percentages that are not represented in the table.

Results

A graphic of the peak hour turning movements for the site, as they relate to the AASHTO criteria are provided in the following figures.

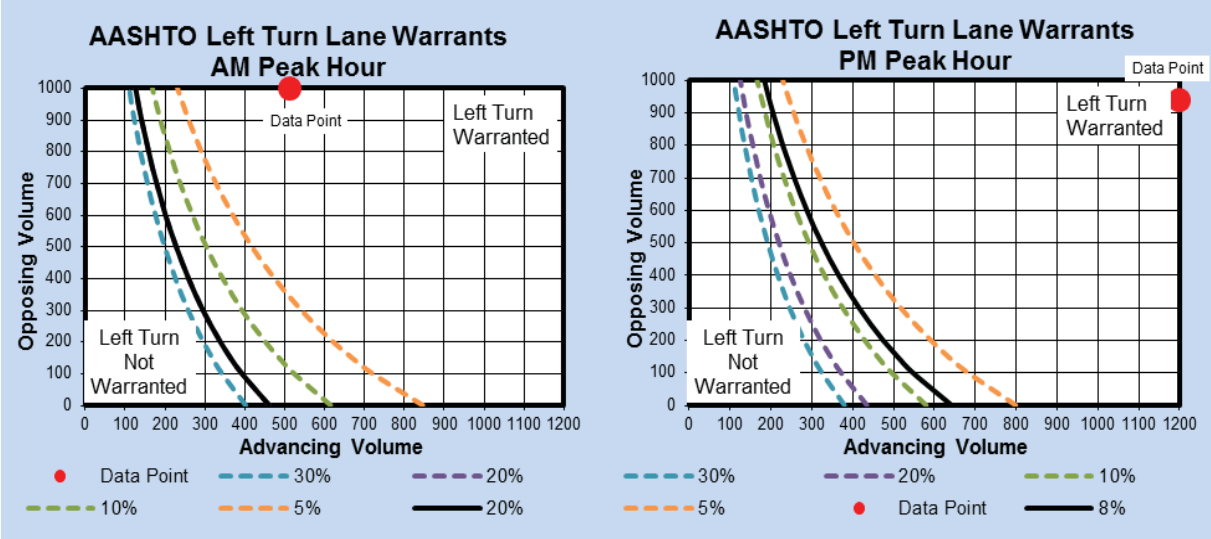


Figure 1 – AASHTO Left Turn Lane Guidelines: Site Driveway 1

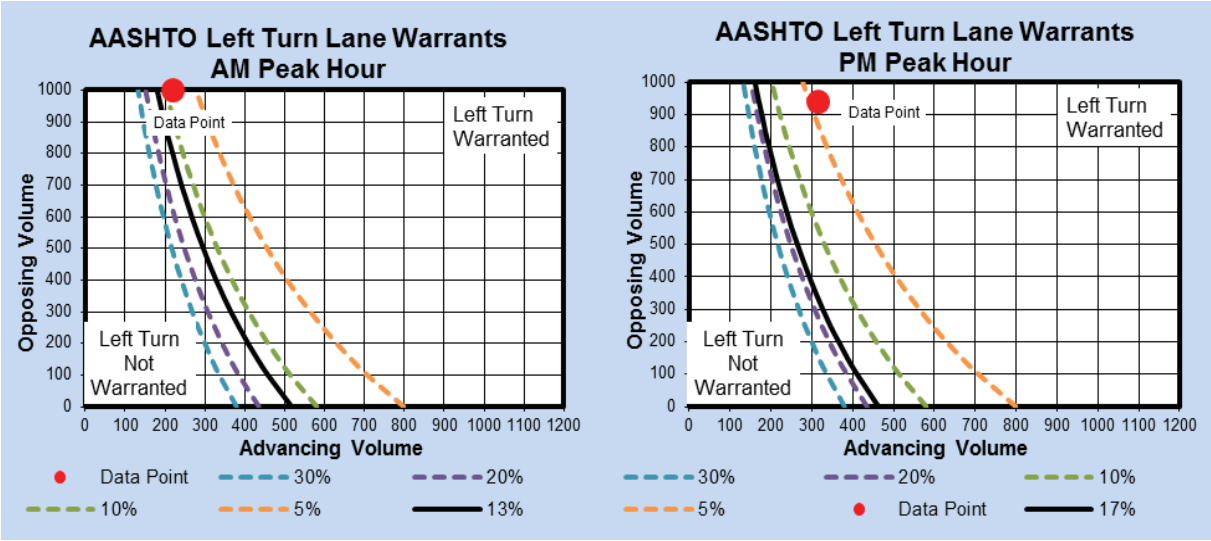


Figure 2 – AASHTO Left Turn Lane Guidelines: Site Driveway 3

Findings

The results of the analysis show that the probability of one or more vehicles queuing behind a waiting left-turn vehicle is above the 2% probability criterion for both Site Driveway #1. A Left turn lane is planned as part of the signal construction on Spring Road at Site Driveway #1.

The results of the analysis show that the probability of one or more vehicles queuing behind a waiting left-turn vehicle is above the 2% probability criterion for both Site Driveway #3., but the right-of-way constraints make installation of a left turn lane on Spring Hill Parkway at Site Driveway #3 prohibitive. Stopping sight distance (250 feet for 35 mph) should be provided.

NCHRP 457 RIGHT TURN LANE ANALYSES

RIGHT TURN LANE ANALYSIS
per NCHRP 457 guidelines

The following left turn lane analyses were used to determine the need for dedicated turn bays at the proposed site driveway locations that are not located on State Routes. The following table includes dimension requirements as identified in the City of Smyrna Code of Ordinances, Appendix D, Section 2.3(c).

Street Type	Length Storage Lane (feet)	Taper (feet)
Arterial	150	50
Major collector	150	50
Minor collector	100	50
Local	100	50

Methdology

Guidelines for determining when to provide a right-turn bay on the major road of a two-way stop-controlled intersection are provided in Hasan, T. and Stokes, R.W. "Guidelines for Right-Turn Treatments at Unsignalized Intersections and Driveways on Rural Highways" (Transportation Research Record 1579). These guidelines were based on an evaluation of the operating and collisions costs associated with the right turn maneuver relative to the cost of construction. The operating costs included those of road-user fuel and delay. Separate guidelines were developed for two-lane and four-lane roadways, which are found in the NCHRP Report 457 “Evaluating Intersection Improvements: An Engineering Study Guide”.

Results

An evaluation of site traffic in relation to these guidelines is shown graphically in the Figures below.

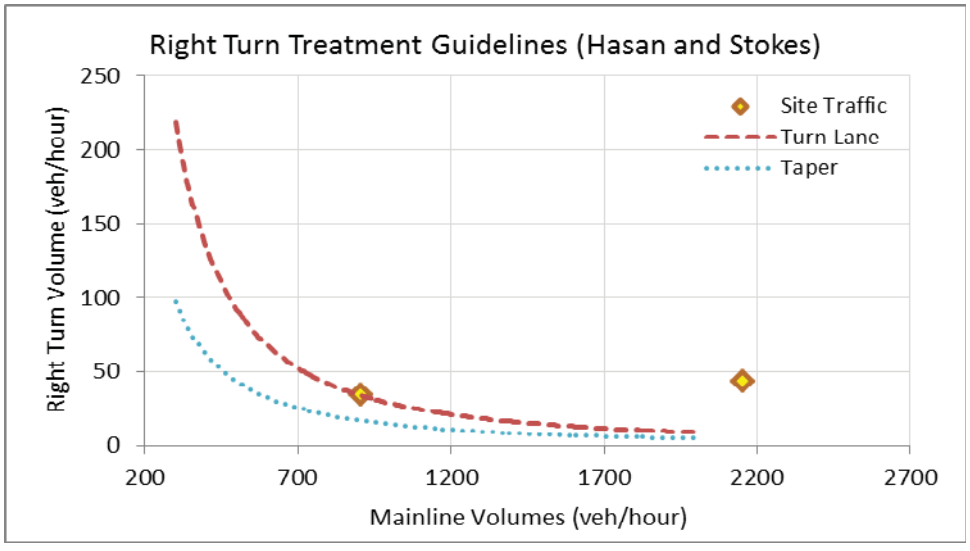


Figure 1 – NCHRP 457 Right Turn Lane Guidelines: Site Drwy 1

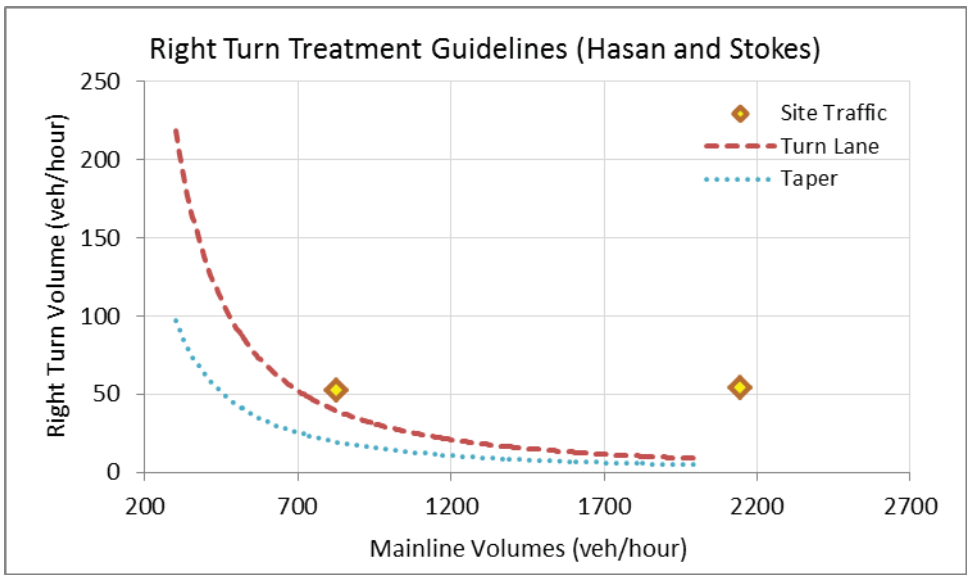


Figure 2 – NCHRP 457 Right Turn Lane Guidelines: Site Drwy 2

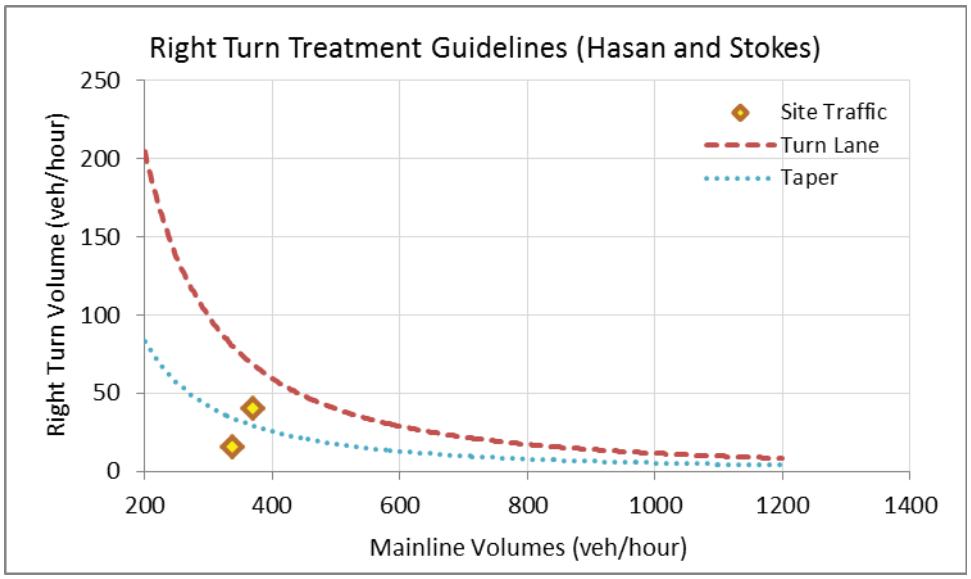


Figure 2 – NCHRP 457 Right Turn Lane Guidelines: Site Drwy 3

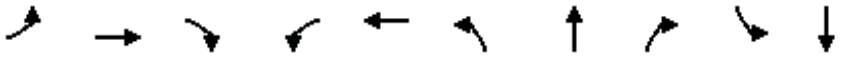
Findings

The analysis shows a deceleration lane at Site Driveway #1 on to be warranted based on the higher speed of traffic on the eastbound approach and number of right turners in the evening peak hour.

The analysis shows a deceleration lane at Site Driveway #2 on to be warranted based on the higher speed of traffic on the eastbound approach and number of right turners in the evening peak hour. However, right-of-way constraints make construction of a deceleration lane here prohibitive. Operationally, the HCM analysis does not show a significant decrease in delays without the deceleration lane.

The low volumes and speeds on the roadway would lessen the need for deceleration outside of the through lane at Site Driveway #3. Therefore, unless stopping sight distance (250 feet for 35 mph is obstructed on the westbound approach, a right turn lane is not warranted on the mainline at Site Driveway #3 using the criteria in the NCHRP Report 457.

FUTURE "NO-BUILD" INTERSECTION ANALYSIS



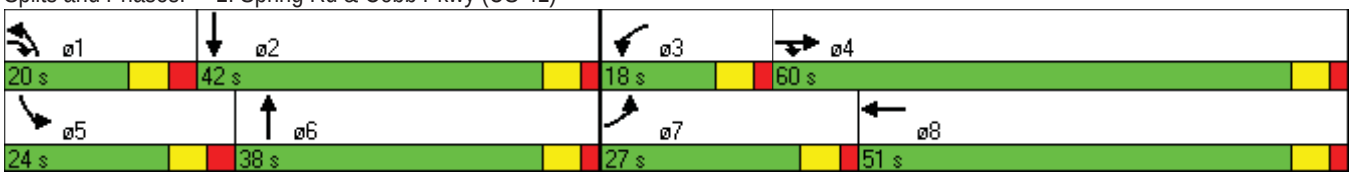
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Volume (vph)	123	375	1345	339	59	311	843	1054	237	1531
Lane Group Flow (vph)	152	441	1372	349	145	379	980	1198	266	1747
Turn Type	Prot		pt+ov	Prot		Prot		Free	Prot	
Protected Phases	7	4	4 1	3	8	1	6		5	2
Permitted Phases								Free		
Detector Phase	7	4	4 1	3	8	1	6		5	2
Switch Phase										
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	15.0		4.0	15.0
Minimum Split (s)	10.0	10.0		10.0	10.0	11.0	21.0		11.0	21.0
Total Split (s)	27.0	60.0	80.0	18.0	51.0	20.0	38.0	0.0	24.0	42.0
Total Split (%)	19.3%	42.9%	57.1%	12.9%	36.4%	14.3%	27.1%	0.0%	17.1%	30.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	3.0	2.0		3.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	7.0	6.0	4.0	7.0	6.0
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
v/c Ratio	0.73	0.33	0.96	0.82	0.12	0.82	0.63	0.76	0.71	0.90
Control Delay	49.5	35.0	66.8	78.6	14.6	77.2	50.1	3.4	71.0	57.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	35.0	66.8	78.6	14.6	77.2	50.1	3.4	71.0	57.6
Queue Length 50th (ft)	136	193	754	112	19	122	236	0	121	380
Queue Length 95th (ft)	m154	235	#883	#161	46	145	263	0	167	421
Internal Link Dist (ft)		891			536		550			608
Turn Bay Length (ft)	425					400		350	350	
Base Capacity (vph)	257	1320	1425	428	1185	463	1545	1583	417	1931
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.33	0.96	0.82	0.12	0.82	0.63	0.76	0.64	0.90

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Spring Rd & Cobb Pkwy (US 41)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	123	375	1345	339	59	67	311	843	1054	237	1531	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12	12	12	12	12	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		7.0	6.0	4.0	7.0	6.0	
Lane Util. Factor	1.00	0.95	0.88	0.94	0.95		0.94	0.86	1.00	0.97	0.81	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1711	3421	2694	4990	3232		4990	6408	1583	3433	7479	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1711	3421	2694	4990	3232		4990	6408	1583	3433	7479	
Peak-hour factor, PHF	0.81	0.85	0.98	0.97	0.96	0.80	0.82	0.86	0.88	0.89	0.93	0.84
Adj. Flow (vph)	152	441	1372	349	61	84	379	980	1198	266	1646	101
RTOR Reduction (vph)	0	0	1	0	55	0	0	0	0	0	8	0
Lane Group Flow (vph)	152	441	1371	349	90	0	379	980	1198	266	1739	0
Turn Type	Prot		pt+ov	Prot			Prot		Free	Prot		
Protected Phases	7	4	4 1	3	8		1	6		5	2	
Permitted Phases									Free			
Actuated Green, G (s)	17.0	54.0	73.0	12.0	49.0		13.0	33.7	140.0	15.3	36.0	
Effective Green, g (s)	17.0	54.0	73.0	12.0	49.0		13.0	33.7	140.0	15.3	36.0	
Actuated g/C Ratio	0.12	0.39	0.52	0.09	0.35		0.09	0.24	1.00	0.11	0.26	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	6.0		7.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	208	1320	1405	428	1131		463	1542	1583	375	1923	
v/s Ratio Prot	0.09	0.13	c0.51	0.07	0.03		0.08	0.15		0.08	c0.23	
v/s Ratio Perm									c0.76			
v/c Ratio	0.73	0.33	0.98	0.82	0.08		0.82	0.64	0.76	0.71	0.90	
Uniform Delay, d1	59.3	30.3	32.6	62.9	30.4		62.3	47.6	0.0	60.2	50.3	
Progression Factor	0.61	1.13	1.76	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.3	0.1	14.0	11.4	0.0		10.8	2.0	3.4	6.0	7.5	
Delay (s)	44.5	34.4	71.4	74.3	30.5		73.1	49.7	3.4	66.2	57.9	
Level of Service	D	C	E	E	C		E	D	A	E	E	
Approach Delay (s)		61.0			61.4			31.5			59.0	
Approach LOS		E			E			C			E	

Intersection Summary			
HCM Average Control Delay	49.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	2116	7	0	399	3	0	0	2	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.62	0.95	0.88	0.62	0.92	0.75	0.38	0.92	0.25	0.25	0.92	0.92
Hourly flow rate (vph)	0	2227	8	0	434	4	0	0	8	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359			1177							
pX, platoon unblocked				0.69			0.69	0.69	0.69	0.69	0.69	
vC, conflicting volume	438			2235			2340	2669	746	1186	2671	110
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	438			1230			1381	1856	0	0	1859	110
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	99	100	100	100
cM capacity (veh/h)	1119			389			72	50	751	701	50	922

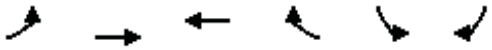
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	891	891	453	124	124	124	66	8	0
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	8	0	0	0	4	8	0
cSH	1700	1700	1700	1700	1700	1700	1700	751	1700
Volume to Capacity	0.52	0.52	0.27	0.07	0.07	0.07	0.04	0.01	0.00
Queue Length 95th (ft)	0	0	0	0	0	0	0	1	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8	0.0
Lane LOS								A	A
Approach Delay (s)	0.0			0.0				9.8	0.0
Approach LOS								A	A

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	51.0%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	2117	1	0	396	0	0	0	2	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.94	0.25	0.50	0.90	0.92	0.92	0.92	0.50	0.50	0.92	0.25
Hourly flow rate (vph)	0	2252	4	0	440	0	0	0	4	0	0	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		565			971							
pX, platoon unblocked				0.69			0.69	0.69	0.69	0.69	0.69	
vC, conflicting volume	440			2256			2405	2694	753	1195	2696	147
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	440			1257			1472	1890	0	0	1893	147
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	99	100	100	100
cM capacity (veh/h)	1116			380			61	48	750	704	48	874

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	901	901	454	176	176	88	4	4
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	4	0	0	0	4	4
cSH	1700	1700	1700	1700	1700	1700	750	874
Volume to Capacity	0.53	0.53	0.27	0.10	0.10	0.05	0.01	0.00
Queue Length 95th (ft)	0	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.8	9.1
Lane LOS							A	A
Approach Delay (s)	0.0			0.0			9.8	9.1
Approach LOS							A	A

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	50.9%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	192	339	5	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.50	0.78	0.83	0.62	0.75	0.92
Hourly flow rate (vph)	0	246	408	8	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		690				
pX, platoon unblocked						
vC, conflicting volume	416				659	412
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	416				659	412
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1143				429	640

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	246	416	0
Volume Left	0	0	0
Volume Right	0	8	0
cSH	1143	1700	1700
Volume to Capacity	0.00	0.24	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

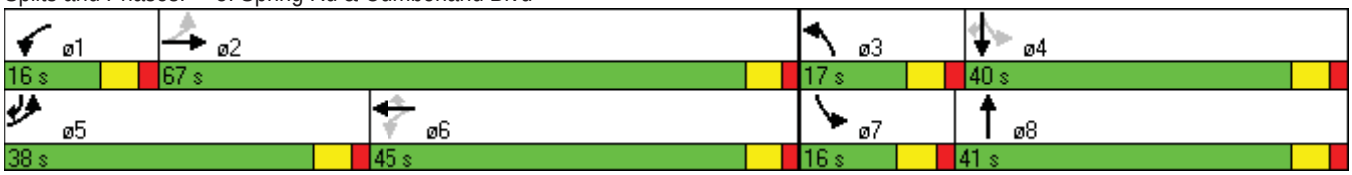
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	21.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	358	1699	585	86	305	22	131	458	89	387	135
Lane Group Flow (vph)	448	1847	650	104	355	38	156	717	109	484	167
Turn Type	pm+pt		Free	pm+pt		Perm	Prot		pm+pt		pm+ov
Protected Phases	5	2		1	6		3	8	7	4	5
Permitted Phases	2		Free	6		6			4		4
Detector Phase	5	2		1	6	6	3	8	7	4	5
Switch Phase											
Minimum Initial (s)	4.0	15.0		4.0	15.0	15.0	4.0	6.0	4.0	6.0	4.0
Minimum Split (s)	10.0	38.0		10.0	37.0	37.0	10.0	36.0	10.0	38.0	10.0
Total Split (s)	38.0	67.0	0.0	16.0	45.0	45.0	17.0	41.0	16.0	40.0	38.0
Total Split (%)	27.1%	47.9%	0.0%	11.4%	32.1%	32.1%	12.1%	29.3%	11.4%	28.6%	27.1%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?											
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.70	0.78	0.41	0.65	0.30	0.07	0.61	0.88	0.64	0.63	0.21
Control Delay	24.4	35.1	0.8	63.6	15.6	0.7	78.1	58.8	49.8	52.7	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.9	0.0	0.0	0.0
Total Delay	24.4	35.1	0.8	63.6	15.6	0.7	78.1	64.7	49.8	52.7	3.1
Queue Length 50th (ft)	234	529	0	53	41	1	75	248	68	207	0
Queue Length 95th (ft)	276	604	0	m86	m55	m1	105	300	102	231	25
Internal Link Dist (ft)		736			279			314		443	
Turn Bay Length (ft)	225			165					135		185
Base Capacity (vph)	682	2366	1583	174	1181	553	270	879	174	831	844
Starvation Cap Reductn	0	0	0	0	0	0	0	117	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.78	0.41	0.60	0.30	0.07	0.58	0.94	0.63	0.58	0.20

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

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

Splits and Phases: 5: Spring Rd & Cumberland Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	358	1699	585	86	305	22	131	458	203	89	387	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	11	11	11
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1711	3421	1531	3433	3381		1711	3421	1531
Flt Permitted	0.43	1.00	1.00	0.08	1.00	1.00	0.95	1.00		0.13	1.00	1.00
Satd. Flow (perm)	808	5085	1583	149	3421	1531	3433	3381		229	3421	1531
Peak-hour factor, PHF	0.80	0.92	0.90	0.83	0.86	0.58	0.84	0.91	0.95	0.82	0.80	0.81
Adj. Flow (vph)	448	1847	650	104	355	38	156	503	214	109	484	167
RTOR Reduction (vph)	0	0	0	0	0	25	0	35	0	0	0	99
Lane Group Flow (vph)	448	1847	650	104	355	13	156	682	0	109	484	68
Turn Type	pm+pt		Free	pm+pt		Perm	Prot			pm+pt		pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2		Free	6		6				4		4
Actuated Green, G (s)	80.1	65.1	140.0	57.3	48.3	48.3	10.4	32.3		41.1	31.5	57.3
Effective Green, g (s)	80.1	65.1	140.0	57.3	48.3	48.3	10.4	32.3		41.1	31.5	57.3
Actuated g/C Ratio	0.57	0.46	1.00	0.41	0.34	0.34	0.07	0.23		0.29	0.22	0.41
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	640	2365	1583	161	1180	528	255	780		169	770	692
v/s Ratio Prot	c0.13	c0.36		0.04	0.10		0.05	c0.20		0.04	0.14	0.02
v/s Ratio Perm	0.27		c0.41	0.22		0.01				0.15		0.03
v/c Ratio	0.70	0.78	0.41	0.65	0.30	0.02	0.61	0.87		0.64	0.63	0.10
Uniform Delay, d1	17.9	31.5	0.0	28.9	33.5	30.3	62.8	51.9		39.3	49.0	25.5
Progression Factor	1.00	1.00	1.00	1.62	0.42	0.05	1.08	0.94		1.00	1.00	1.00
Incremental Delay, d2	3.4	2.6	0.8	6.5	0.5	0.1	4.3	10.6		8.2	1.6	0.1
Delay (s)	21.2	34.1	0.8	53.3	14.6	1.4	71.8	59.4		47.5	50.6	25.5
Level of Service	C	C	A	D	B	A	E	E		D	D	C
Approach Delay (s)		24.8			21.7			61.6			44.6	
Approach LOS		C			C			E			D	

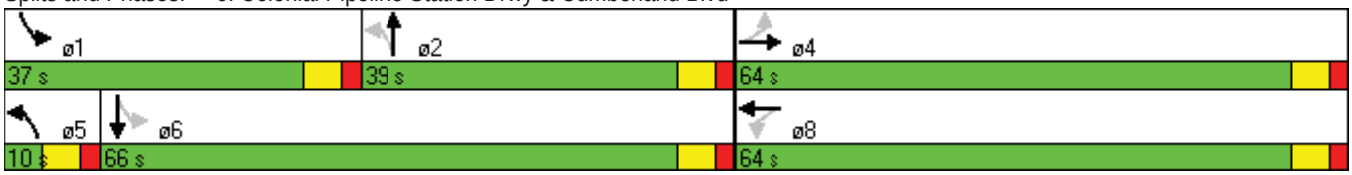
Intersection Summary			
HCM Average Control Delay	33.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		

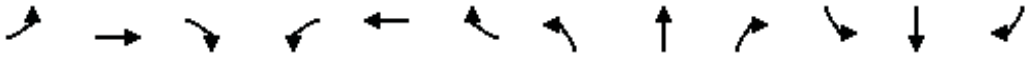
c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBT	SBL	SBT	ø5
Lane Configurations							
Volume (vph)	1	14	0	449	191	897	
Lane Group Flow (vph)	8	22	350	491	217	938	
Turn Type		Perm			pm+pt		
Protected Phases	4		8	2	1	6	5
Permitted Phases		8			6		
Detector Phase	4	8	8	2	1	6	
Switch Phase							
Minimum Initial (s)	6.0	6.0	6.0	15.0	4.0	15.0	4.0
Minimum Split (s)	44.0	46.0	46.0	30.0	10.0	32.0	10.0
Total Split (s)	64.0	64.0	64.0	39.0	37.0	66.0	10.0
Total Split (%)	45.7%	45.7%	45.7%	27.9%	26.4%	47.1%	7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag				Lag	Lead	Lag	Lead
Lead-Lag Optimize?							
Recall Mode	None	None	None	C-Min	None	C-Min	None
v/c Ratio	0.07	0.28	0.61	0.10	0.29	0.22	
Control Delay	47.5	71.4	4.8	5.7	1.9	1.1	
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.2	
Total Delay	47.5	71.4	4.8	5.7	2.1	1.3	
Queue Length 50th (ft)	4	20	0	32	14	23	
Queue Length 95th (ft)	3	35	0	51	22	30	
Internal Link Dist (ft)	60		403	230		314	
Turn Bay Length (ft)		100			50		
Base Capacity (vph)	818	580	956	4686	896	4359	
Starvation Cap Reductn	0	0	0	0	250	2214	
Spillback Cap Reductn	0	0	31	77	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.01	0.04	0.38	0.11	0.34	0.44	

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 6: Colonial Pipeline Station Drwy & Cumberland Blvd

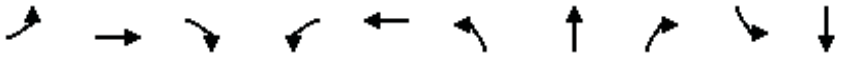




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1	1	14	0	322	0	449	11	191	897	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		6.0		6.0	6.0			6.0		6.0	6.0	
Lane Util. Factor		1.00		1.00	1.00			0.86		1.00	0.91	
Frt		0.93		1.00	0.85			0.99		1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1969		1770	1583			6373		1770	5082	
Flt Permitted		1.00		0.75	1.00			1.00		0.42	1.00	
Satd. Flow (perm)		1969		1402	1583			6373		791	5082	
Peak-hour factor, PHF	0.92	0.25	0.25	0.65	0.92	0.92	0.92	0.95	0.62	0.88	0.96	0.25
Adj. Flow (vph)	0	4	4	22	0	350	0	473	18	217	934	4
RTOR Reduction (vph)	0	4	0	0	330	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	4	0	22	20	0	0	490	0	217	938	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.9		7.9	7.9			102.8		120.1	120.1	
Effective Green, g (s)		7.9		7.9	7.9			102.8		120.1	120.1	
Actuated g/C Ratio		0.06		0.06	0.06			0.73		0.86	0.86	
Clearance Time (s)		6.0		6.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0			5.0		3.0	5.0	
Lane Grp Cap (vph)		111		79	89			4680		758	4360	
v/s Ratio Prot		0.00			0.01			0.08		c0.02	0.18	
v/s Ratio Perm				c0.02						c0.22		
v/c Ratio		0.04		0.28	0.22			0.10		0.29	0.22	
Uniform Delay, d1		62.5		63.3	63.1			5.4		1.8	1.7	
Progression Factor		1.00		1.00	1.00			1.00		0.62	0.56	
Incremental Delay, d2		0.1		1.9	1.3			0.0		0.2	0.1	
Delay (s)		62.6		65.2	64.4			5.4		1.3	1.1	
Level of Service		E		E	E			A		A	A	
Approach Delay (s)		62.6			64.4			5.4			1.1	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

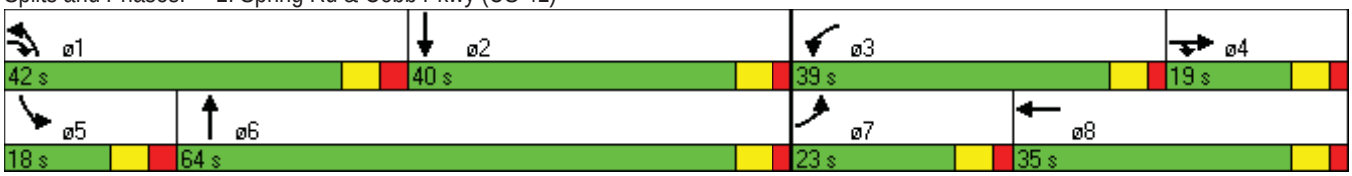


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Volume (vph)	130	204	593	891	245	914	1824	835	128	1165
Lane Group Flow (vph)	146	258	666	1024	533	1088	2049	982	171	1486
Turn Type	Prot		pt+ov	Prot		Prot		Free	Prot	
Protected Phases	7	4	4 1	3	8	1	6		5	2
Permitted Phases								Free		
Detector Phase	7	4	4 1	3	8	1	6		5	2
Switch Phase										
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	15.0		4.0	15.0
Minimum Split (s)	10.0	10.0		10.0	10.0	11.0	21.0		11.0	21.0
Total Split (s)	23.0	19.0	61.0	39.0	35.0	42.0	64.0	0.0	18.0	40.0
Total Split (%)	16.4%	13.6%	43.6%	27.9%	25.0%	30.0%	45.7%	0.0%	12.9%	28.6%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	3.0	2.0		3.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	7.0	6.0	4.0	7.0	6.0
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
v/c Ratio	0.77	0.81	0.63	0.89	0.67	0.88	0.76	0.62	0.66	0.79
Control Delay	83.9	86.4	38.3	62.7	45.2	60.0	36.7	1.8	75.6	52.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.9	86.4	38.3	62.7	45.2	60.0	36.7	1.8	75.6	52.3
Queue Length 50th (ft)	132	123	232	320	192	339	462	0	79	314
Queue Length 95th (ft)	m#208	152	333	360	206	362	500	0	98	337
Internal Link Dist (ft)		891			536		550			608
Turn Bay Length (ft)	425					400		350	350	
Base Capacity (vph)	208	318	1060	1176	791	1248	2710	1583	270	1878
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.81	0.63	0.87	0.67	0.87	0.76	0.62	0.63	0.79

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 65 (46%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Spring Rd & Cobb Pkwy (US 41)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	204	593	891	245	153	914	1824	835	128	1165	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12	12	12	12	12	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		7.0	6.0	4.0	7.0	6.0	
Lane Util. Factor	1.00	0.95	0.88	0.94	0.95		0.94	0.86	1.00	0.97	0.81	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1711	3421	2694	4990	3325		4990	6408	1583	3433	7432	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1711	3421	2694	4990	3325		4990	6408	1583	3433	7432	
Peak-hour factor, PHF	0.89	0.79	0.89	0.87	0.77	0.71	0.84	0.89	0.85	0.75	0.87	0.90
Adj. Flow (vph)	146	258	666	1024	318	215	1088	2049	982	171	1339	147
RTOR Reduction (vph)	0	0	1	0	83	0	0	0	0	0	14	0
Lane Group Flow (vph)	146	258	665	1024	450	0	1088	2049	982	171	1472	0
Turn Type	Prot		pt+ov	Prot			Prot		Free	Prot		
Protected Phases	7	4	4 1	3	8		1	6		5	2	
Permitted Phases									Free			
Actuated Green, G (s)	15.4	13.0	53.6	32.2	29.8		34.6	59.2	140.0	10.6	35.2	
Effective Green, g (s)	15.4	13.0	53.6	32.2	29.8		34.6	59.2	140.0	10.6	35.2	
Actuated g/C Ratio	0.11	0.09	0.38	0.23	0.21		0.25	0.42	1.00	0.08	0.25	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	6.0		7.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	188	318	1031	1148	708		1233	2710	1583	260	1869	
v/s Ratio Prot	0.09	0.08	0.25	c0.21	0.14		c0.22	c0.32		0.05	0.20	
v/s Ratio Perm									c0.62			
v/c Ratio	0.78	0.81	0.64	0.89	0.63		0.88	0.76	0.62	0.66	0.79	
Uniform Delay, d1	60.6	62.3	35.4	52.2	50.1		50.7	34.3	0.0	62.9	48.9	
Progression Factor	0.98	1.09	1.02	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	17.1	13.7	1.3	9.0	1.9		7.7	2.0	1.8	5.9	3.4	
Delay (s)	76.3	81.5	37.5	61.2	52.0		58.5	36.3	1.8	68.8	52.4	
Level of Service	E	F	D	E	D		E	D	A	E	D	
Approach Delay (s)		53.4			58.1			33.9			54.1	
Approach LOS		D			E			C			D	

Intersection Summary			
HCM Average Control Delay	44.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	848	12	0	1250	6	0	0	16	0	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.62	0.93	0.46	0.56	0.91	0.75	0.67	0.25	0.42	0.42	0.92	0.50
Hourly flow rate (vph)	0	912	26	0	1374	8	0	0	38	0	0	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359			1177							
pX, platoon unblocked				0.92			0.92	0.92	0.92	0.92	0.92	
vC, conflicting volume	1382			938			1280	2306	317	1720	2316	347
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1382			628			1000	2116	0	1478	2125	347
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	96	100	100	98
cM capacity (veh/h)	492			874			178	46	997	77	45	649

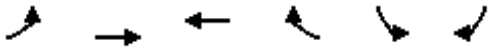
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	365	365	208	392	392	392	204	38	12
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	26	0	0	0	8	38	12
cSH	1700	1700	1700	1700	1700	1700	1700	997	649
Volume to Capacity	0.21	0.21	0.12	0.23	0.23	0.23	0.12	0.04	0.02
Queue Length 95th (ft)	0	0	0	0	0	0	0	3	1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	10.7
Lane LOS								A	B
Approach Delay (s)	0.0			0.0				8.8	10.7
Approach LOS								A	B

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	28.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	878	8	0	1251	0	0	0	15	0	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.93	0.67	0.71	0.91	0.92	0.75	0.92	0.58	0.75	0.92	0.67
Hourly flow rate (vph)	0	944	12	0	1375	0	0	0	26	0	0	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		565			971							
pX, platoon unblocked				0.92			0.92	0.92	0.92	0.92	0.92	
vC, conflicting volume	1375			956			1420	2325	321	1715	2331	458
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1375			666			1168	2147	0	1487	2153	458
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	97	100	100	98
cM capacity (veh/h)	495			850			134	44	1002	78	44	550

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	378	378	201	550	550	275	26	12
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	12	0	0	0	26	12
cSH	1700	1700	1700	1700	1700	1700	1002	550
Volume to Capacity	0.22	0.22	0.12	0.32	0.32	0.16	0.03	0.02
Queue Length 95th (ft)	0	0	0	0	0	0	2	2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	8.7	11.7
Lane LOS							A	B
Approach Delay (s)	0.0			0.0			8.7	11.7
Approach LOS							A	B

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	34.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	261	370	30	0	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.50	0.80	0.94	0.48	0.46	0.62
Hourly flow rate (vph)	0	326	394	62	0	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		690				
pX, platoon unblocked						
vC, conflicting volume	456				751	425
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	456				751	425
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1105				378	629

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	326	456	8
Volume Left	0	0	0
Volume Right	0	62	8
cSH	1105	1700	629
Volume to Capacity	0.00	0.27	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.0	10.8
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.8
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	245	614	363	106	1117	43	642	650	86	483	559
Lane Group Flow (vph)	295	633	378	125	1269	72	730	984	101	562	608
Turn Type	pm+pt		Free	pm+pt		Perm	Prot		pm+pt		pm+ov
Protected Phases	5	2		1	6		3	8	7	4	5
Permitted Phases	2		Free	6		6			4		4
Detector Phase	5	2		1	6	6	3	8	7	4	5
Switch Phase											
Minimum Initial (s)	4.0	15.0		4.0	15.0	15.0	4.0	6.0	4.0	6.0	4.0
Minimum Split (s)	10.0	38.0		10.0	37.0	37.0	10.0	36.0	10.0	38.0	10.0
Total Split (s)	21.0	59.0	0.0	13.0	51.0	51.0	30.0	55.0	13.0	38.0	21.0
Total Split (%)	15.0%	42.1%	0.0%	9.3%	36.4%	36.4%	21.4%	39.3%	9.3%	27.1%	15.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?											
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	1.21	0.31	0.24	0.37	1.06	0.13	1.24	0.88	0.74	0.82	1.13
Control Delay	163.5	29.3	0.4	9.5	59.0	1.7	163.3	45.1	59.1	63.6	119.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.0
Total Delay	163.5	29.3	0.4	9.5	59.0	1.7	163.3	47.8	59.1	63.6	119.7
Queue Length 50th (ft)	~279	143	0	17	~683	4	~426	432	56	257	~629
Queue Length 95th (ft)	#417	183	0	m21	#793	m5	#536	444	#103	301	#837
Internal Link Dist (ft)		736			279			314		443	
Turn Bay Length (ft)	225			165					135		185
Base Capacity (vph)	243	2065	1583	338	1194	564	589	1218	137	782	540
Starvation Cap Reductn	0	0	0	0	0	0	0	136	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.21	0.31	0.24	0.37	1.06	0.13	1.24	0.91	0.74	0.72	1.13

Intersection Summary

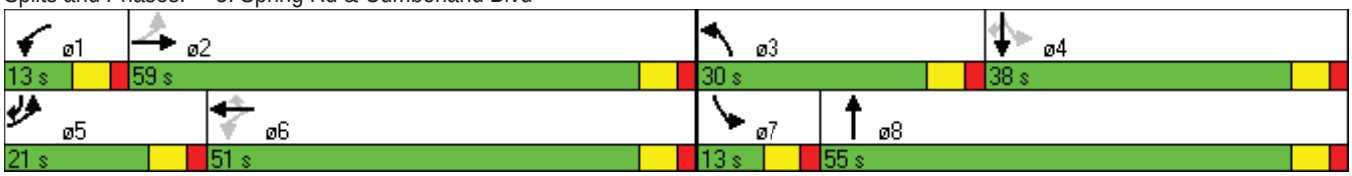
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 36 (26%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 5: Spring Rd & Cumberland Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	245	614	363	106	1117	43	642	650	174	86	483	559
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	11	11	11
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1711	3421	1531	3433	3436		1711	3421	1531
Flt Permitted	0.07	1.00	1.00	0.40	1.00	1.00	0.95	1.00		0.14	1.00	1.00
Satd. Flow (perm)	136	5085	1583	721	3421	1531	3433	3436		256	3421	1531
Peak-hour factor, PHF	0.83	0.97	0.96	0.85	0.88	0.60	0.88	0.82	0.91	0.85	0.86	0.92
Adj. Flow (vph)	295	633	378	125	1269	72	730	793	191	101	562	608
RTOR Reduction (vph)	0	0	0	0	0	29	0	16	0	0	0	3
Lane Group Flow (vph)	295	633	378	125	1269	43	730	968	0	101	562	605
Turn Type	pm+pt		Free	pm+pt		Perm	Prot			pm+pt		pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2		Free	6		6				4		4
Actuated Green, G (s)	69.9	56.9	140.0	55.9	48.9	48.9	24.0	45.1		35.1	28.1	43.1
Effective Green, g (s)	69.9	56.9	140.0	55.9	48.9	48.9	24.0	45.1		35.1	28.1	43.1
Actuated g/C Ratio	0.50	0.41	1.00	0.40	0.35	0.35	0.17	0.32		0.25	0.20	0.31
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	243	2067	1583	337	1195	535	589	1107		137	687	537
v/s Ratio Prot	c0.13	0.12		0.02	0.37		c0.21	0.28		0.04	0.16	c0.12
v/s Ratio Perm	c0.48		0.24	0.13		0.03				0.15		0.27
v/c Ratio	1.21	0.31	0.24	0.37	1.06	0.08	1.24	0.87		0.74	0.82	1.13
Uniform Delay, d1	45.1	28.2	0.0	27.3	45.5	30.5	58.0	44.8		42.8	53.5	48.4
Progression Factor	1.00	1.00	1.00	0.34	0.35	0.10	0.87	0.82		1.00	1.00	1.00
Incremental Delay, d2	127.9	0.4	0.4	0.4	39.3	0.2	121.2	7.6		18.5	7.5	78.8
Delay (s)	173.0	28.6	0.4	9.7	55.1	3.2	171.5	44.4		61.3	61.0	127.2
Level of Service	F	C	A	A	E	A	F	D		E	E	F
Approach Delay (s)		53.0			48.7			98.6			92.7	
Approach LOS		D			D			F			F	

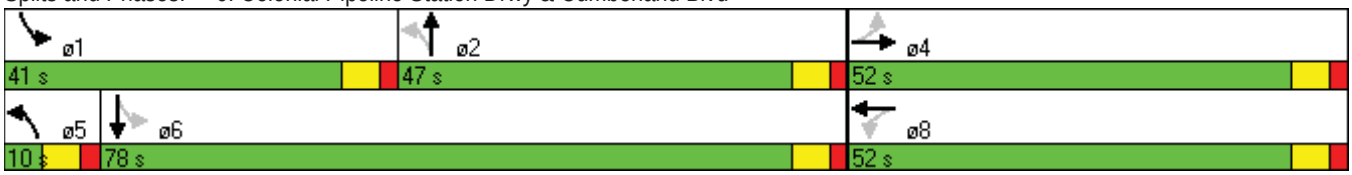
Intersection Summary			
HCM Average Control Delay	74.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		

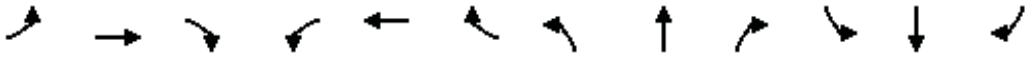
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT	ø5
Lane Configurations								
Volume (vph)	1	0	15	0	1075	225	744	
Lane Group Flow (vph)	0	4	21	399	1264	278	809	
Turn Type	Perm		Perm			pm+pt		
Protected Phases		4		8	2	1	6	5
Permitted Phases	4		8			6		
Detector Phase	4	4	8	8	2	1	6	
Switch Phase								
Minimum Initial (s)	6.0	6.0	6.0	6.0	15.0	4.0	15.0	4.0
Minimum Split (s)	44.0	44.0	46.0	46.0	30.0	10.0	32.0	10.0
Total Split (s)	52.0	52.0	52.0	52.0	47.0	41.0	78.0	10.0
Total Split (%)	37.1%	37.1%	37.1%	37.1%	33.6%	29.3%	55.7%	7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	None	C-Min	None
v/c Ratio		0.07	0.24	0.76	0.31	0.55	0.19	
Control Delay		61.0	67.6	12.3	11.9	22.0	1.2	
Queue Delay		0.0	0.0	0.1	0.0	0.2	0.2	
Total Delay		61.0	67.6	12.4	12.0	22.1	1.3	
Queue Length 50th (ft)		4	19	0	134	121	18	
Queue Length 95th (ft)		4	35	47	205	175	32	
Internal Link Dist (ft)		60		403	230		314	
Turn Bay Length (ft)			100			50		
Base Capacity (vph)		323	462	825	4103	630	4335	
Starvation Cap Reductn		0	0	0	0	48	2391	
Spillback Cap Reductn		0	0	46	649	0	0	
Storage Cap Reductn		0	0	0	0	0	0	
Reduced v/c Ratio		0.01	0.05	0.51	0.37	0.48	0.42	

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 113 (81%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 6: Colonial Pipeline Station Drwy & Cumberland Blvd



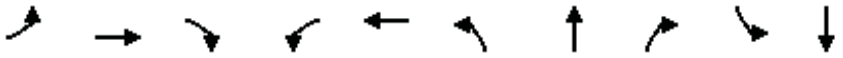


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	0	0	15	0	347	0	1075	65	225	744	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		6.0		6.0	6.0			6.0		6.0	6.0	
Lane Util. Factor		1.00		1.00	1.00			0.86		1.00	0.91	
Frt		1.00		1.00	0.85			0.99		1.00	1.00	
Flt Protected		0.95		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		2006		1770	1583			6345		1770	5085	
Flt Permitted		0.47		0.76	1.00			1.00		0.17	1.00	
Satd. Flow (perm)		982		1407	1583			6345		312	5085	
Peak-hour factor, PHF	0.25	0.25	0.25	0.70	0.92	0.87	0.92	0.91	0.78	0.81	0.92	0.25
Adj. Flow (vph)	4	0	0	21	0	399	0	1181	83	278	809	0
RTOR Reduction (vph)	0	0	0	0	374	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	4	0	21	25	0	0	1260	0	278	809	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.6		8.6	8.6			90.5		119.4	119.4	
Effective Green, g (s)		8.6		8.6	8.6			90.5		119.4	119.4	
Actuated g/C Ratio		0.06		0.06	0.06			0.65		0.85	0.85	
Clearance Time (s)		6.0		6.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0			5.0		3.0	5.0	
Lane Grp Cap (vph)		60		86	97			4102		505	4337	
v/s Ratio Prot					c0.02			0.20		c0.09	0.16	
v/s Ratio Perm		0.00		0.01						c0.38		
v/c Ratio		0.07		0.24	0.25			0.31		0.55	0.19	
Uniform Delay, d1		61.9		62.6	62.6			10.9		4.4	1.8	
Progression Factor		1.00		1.00	1.00			1.00		3.69	0.56	
Incremental Delay, d2		0.5		1.5	1.4			0.2		1.1	0.1	
Delay (s)		62.4		64.1	64.0			11.1		17.2	1.1	
Level of Service		E		E	E			B		B	A	
Approach Delay (s)		62.4			64.0			11.1			5.2	
Approach LOS		E			E			B			A	

Intersection Summary			
HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

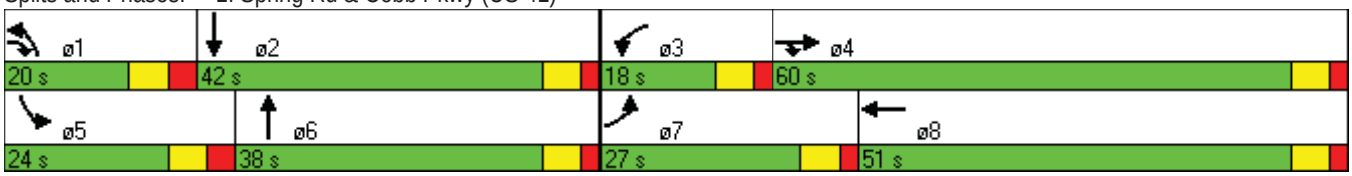
FUTURE "BUILD" INTERSECTION ANALYSIS



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Volume (vph)	153	390	1410	339	71	376	843	1054	237	1531
Lane Group Flow (vph)	189	459	1439	349	158	459	980	1198	266	1797
Turn Type	Prot		pt+ov	Prot		Prot		Free	Prot	
Protected Phases	7	4	4 1	3	8	1	6		5	2
Permitted Phases								Free		
Detector Phase	7	4	4 1	3	8	1	6		5	2
Switch Phase										
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	15.0		4.0	15.0
Minimum Split (s)	10.0	10.0		10.0	10.0	11.0	21.0		11.0	21.0
Total Split (s)	27.0	60.0	80.0	18.0	51.0	20.0	38.0	0.0	24.0	42.0
Total Split (%)	19.3%	42.9%	57.1%	12.9%	36.4%	14.3%	27.1%	0.0%	17.1%	30.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	3.0	2.0		3.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	7.0	6.0	4.0	7.0	6.0
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
v/c Ratio	0.81	0.35	1.01	0.82	0.14	0.99	0.63	0.76	0.71	0.93
Control Delay	99.1	24.3	43.8	78.6	16.1	102.5	50.1	3.4	71.0	60.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	99.1	24.3	43.8	78.6	16.1	102.5	50.1	3.4	71.0	60.2
Queue Length 50th (ft)	175	60	~799	112	24	150	236	0	121	394
Queue Length 95th (ft)	239	128	#915	#161	52	#195	263	0	167	#439
Internal Link Dist (ft)		786			536		550			608
Turn Bay Length (ft)	425					400		350	350	
Base Capacity (vph)	257	1320	1425	428	1149	463	1545	1583	417	1927
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.35	1.01	0.82	0.14	0.99	0.63	0.76	0.64	0.93

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Spring Rd & Cobb Pkwy (US 41)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	153	390	1410	339	71	67	376	843	1054	237	1531	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12	12	12	12	12	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		7.0	6.0	4.0	7.0	6.0	
Lane Util. Factor	1.00	0.95	0.88	0.94	0.95		0.94	0.86	1.00	0.97	0.81	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1711	3421	2694	4990	3257		4990	6408	1583	3433	7449	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1711	3421	2694	4990	3257		4990	6408	1583	3433	7449	
Peak-hour factor, PHF	0.81	0.85	0.98	0.97	0.96	0.80	0.82	0.86	0.88	0.89	0.93	0.84
Adj. Flow (vph)	189	459	1439	349	74	84	459	980	1198	266	1646	151
RTOR Reduction (vph)	0	0	1	0	56	0	0	0	0	0	12	0
Lane Group Flow (vph)	189	459	1438	349	102	0	459	980	1198	266	1785	0
Turn Type	Prot		pt+ov	Prot			Prot		Free	Prot		
Protected Phases	7	4	4 1	3	8		1	6		5	2	
Permitted Phases									Free			
Actuated Green, G (s)	19.0	54.0	73.0	12.0	47.0		13.0	33.7	140.0	15.3	36.0	
Effective Green, g (s)	19.0	54.0	73.0	12.0	47.0		13.0	33.7	140.0	15.3	36.0	
Actuated g/C Ratio	0.14	0.39	0.52	0.09	0.34		0.09	0.24	1.00	0.11	0.26	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	6.0		7.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	232	1320	1405	428	1093		463	1542	1583	375	1915	
v/s Ratio Prot	0.11	0.13	c0.53	0.07	0.03		0.09	0.15		0.08	c0.24	
v/s Ratio Perm									c0.76			
v/c Ratio	0.81	0.35	1.02	0.82	0.09		0.99	0.64	0.76	0.71	0.93	
Uniform Delay, d1	58.8	30.5	33.5	62.9	31.9		63.4	47.6	0.0	60.2	50.8	
Progression Factor	1.40	0.78	0.64	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	13.2	0.1	25.5	11.4	0.0		39.4	2.0	3.4	6.0	9.8	
Delay (s)	95.2	23.8	47.0	74.3	31.9		102.9	49.7	3.4	66.2	60.6	
Level of Service	F	C	D	E	C		F	D	A	E	E	
Approach Delay (s)		46.3			61.1			37.9			61.3	
Approach LOS		D			E			D			E	

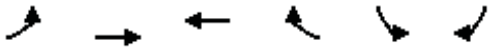
Intersection Summary			
HCM Average Control Delay	48.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	2187	54	0	468	3	0	0	48	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.62	0.95	0.88	0.62	0.92	0.75	0.38	0.92	0.25	0.25	0.92	0.92
Hourly flow rate (vph)	0	2302	61	0	509	4	0	0	192	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359			310							
pX, platoon unblocked				0.67			0.67	0.67	0.67	0.67	0.67	
vC, conflicting volume	513			2363			2460	2845	798	1470	2874	129
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	513			1292			1437	2016	0	0	2059	129
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	73	100	100	100
cM capacity (veh/h)	1049			355			63	39	722	500	36	897

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	921	921	522	145	145	145	77	192	0
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	61	0	0	0	4	192	0
cSH	1700	1700	1700	1700	1700	1700	1700	722	1700
Volume to Capacity	0.54	0.54	0.31	0.09	0.09	0.09	0.05	0.27	0.00
Queue Length 95th (ft)	0	0	0	0	0	0	0	27	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.8	0.0
Lane LOS								B	A
Approach Delay (s)	0.0			0.0				11.8	0.0
Approach LOS								B	A

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	53.5%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	29	192	339	15	7	51
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.50	0.78	0.83	0.62	0.75	0.92
Hourly flow rate (vph)	58	246	408	24	9	55
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		718				
pX, platoon unblocked						
vC, conflicting volume	433				783	421
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	433				783	421
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				97	91
cM capacity (veh/h)	1127				344	633

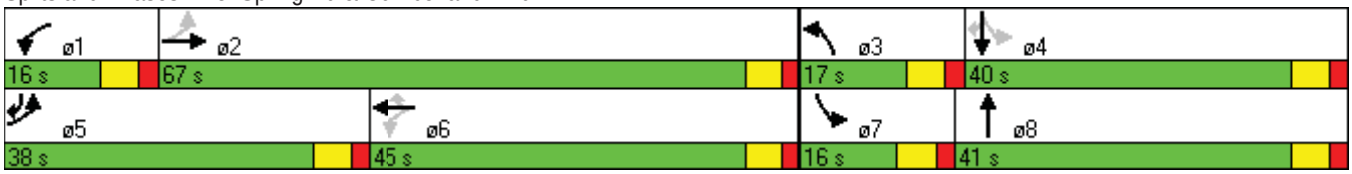
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	304	433	65
Volume Left	58	0	9
Volume Right	0	24	55
cSH	1127	1700	565
Volume to Capacity	0.05	0.25	0.11
Queue Length 95th (ft)	4	0	10
Control Delay (s)	2.0	0.0	12.2
Lane LOS	A		B
Approach Delay (s)	2.0	0.0	12.2
Approach LOS			B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	358	1750	590	123	324	35	140	468	108	393	135
Lane Group Flow (vph)	448	1902	656	148	377	60	167	779	132	491	167
Turn Type	pm+pt		Free	pm+pt		Perm	Prot		pm+pt		pm+ov
Protected Phases	5	2		1	6		3	8	7	4	5
Permitted Phases	2		Free	6		6			4		4
Detector Phase	5	2		1	6	6	3	8	7	4	5
Switch Phase											
Minimum Initial (s)	4.0	15.0		4.0	15.0	15.0	4.0	6.0	4.0	6.0	4.0
Minimum Split (s)	10.0	38.0		10.0	37.0	37.0	10.0	36.0	10.0	38.0	10.0
Total Split (s)	38.0	67.0	0.0	16.0	45.0	45.0	17.0	41.0	16.0	40.0	38.0
Total Split (%)	27.1%	47.9%	0.0%	11.4%	32.1%	32.1%	12.1%	29.3%	11.4%	28.6%	27.1%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?											
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.73	0.84	0.41	0.85	0.33	0.11	0.64	0.91	0.76	0.61	0.21
Control Delay	26.1	38.8	0.8	86.5	18.7	3.1	78.5	61.7	60.0	51.3	3.5
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0	0.0	163.3	666.0	0.0	0.0
Total Delay	26.1	39.2	0.8	86.5	18.7	3.1	78.5	225.1	726.0	51.3	3.5
Queue Length 50th (ft)	238	564	0	94	43	1	80	335	82	209	3
Queue Length 95th (ft)	276	631	0	#198	144	1	111	#372	#136	235	28
Internal Link Dist (ft)		736			279			314		443	
Turn Bay Length (ft)	225			165					135		185
Base Capacity (vph)	658	2270	1583	174	1130	546	270	887	174	831	855
Starvation Cap Reductn	0	0	0	0	0	0	0	125	0	0	0
Spillback Cap Reductn	0	79	0	0	0	0	0	316	144	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.87	0.41	0.85	0.33	0.11	0.62	1.36	4.40	0.59	0.20

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Spring Rd & Cumberland Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	358	1750	590	123	324	35	140	468	252	108	393	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	11	11	11
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1711	3421	1531	3433	3359		1711	3421	1531
Flt Permitted	0.41	1.00	1.00	0.09	1.00	1.00	0.95	1.00		0.12	1.00	1.00
Satd. Flow (perm)	764	5085	1583	156	3421	1531	3433	3359		218	3421	1531
Peak-hour factor, PHF	0.80	0.92	0.90	0.83	0.86	0.58	0.84	0.91	0.95	0.82	0.80	0.81
Adj. Flow (vph)	448	1902	656	148	377	60	167	514	265	132	491	167
RTOR Reduction (vph)	0	0	0	0	0	40	0	48	0	0	0	92
Lane Group Flow (vph)	448	1902	656	148	377	20	167	731	0	132	491	75
Turn Type	pm+pt		Free	pm+pt		Perm	Prot			pm+pt		pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2		Free	6		6				4		4
Actuated Green, G (s)	78.4	62.4	140.0	56.1	46.1	46.1	10.6	33.6		43.0	33.0	59.3
Effective Green, g (s)	78.4	62.4	140.0	56.1	46.1	46.1	10.6	33.6		43.0	33.0	59.3
Actuated g/C Ratio	0.56	0.45	1.00	0.40	0.33	0.33	0.08	0.24		0.31	0.24	0.42
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	617	2266	1583	174	1126	504	260	806		174	806	714
v/s Ratio Prot	c0.14	c0.37		0.06	0.11		0.05	c0.22		c0.05	0.14	0.02
v/s Ratio Perm	0.27		c0.41	0.28		0.01				0.18		0.03
v/c Ratio	0.73	0.84	0.41	0.85	0.33	0.04	0.64	0.91		0.76	0.61	0.10
Uniform Delay, d1	19.0	34.4	0.0	31.8	35.4	31.9	62.9	51.7		39.0	47.7	24.3
Progression Factor	1.00	1.00	1.00	1.42	0.48	0.30	1.06	0.97		1.00	1.00	1.00
Incremental Delay, d2	4.2	3.9	0.8	30.7	0.8	0.1	5.3	13.6		17.1	1.3	0.1
Delay (s)	23.3	38.3	0.8	75.8	17.9	9.8	71.9	63.8		56.1	49.1	24.4
Level of Service	C	D	A	E	B	A	E	E		E	D	C
Approach Delay (s)		27.9			31.7			65.2			45.0	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	37.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		

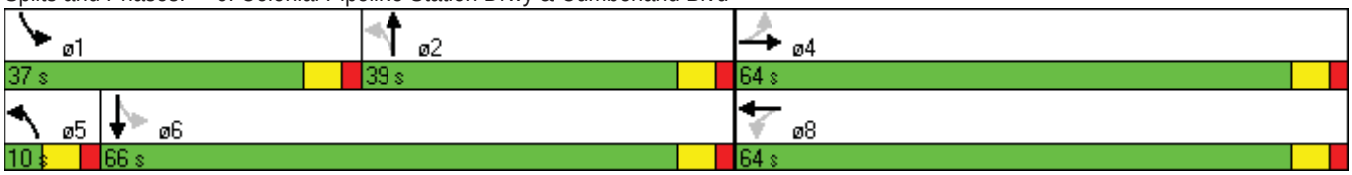
c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBT	SBL	SBT	ø5
Lane Configurations							
Volume (vph)	1	17	0	469	217	918	
Lane Group Flow (vph)	8	26	402	515	247	960	
Turn Type		Perm			pm+pt		
Protected Phases	4		8	2	1	6	5
Permitted Phases		8			6		
Detector Phase	4	8	8	2	1	6	
Switch Phase							
Minimum Initial (s)	6.0	6.0	6.0	15.0	4.0	15.0	4.0
Minimum Split (s)	44.0	46.0	46.0	30.0	10.0	32.0	10.0
Total Split (s)	64.0	64.0	64.0	39.0	37.0	66.0	10.0
Total Split (%)	45.7%	45.7%	45.7%	27.9%	26.4%	47.1%	7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag				Lag	Lead	Lag	Lead
Lead-Lag Optimize?							
Recall Mode	None	None	None	C-Min	None	C-Min	None
v/c Ratio	0.07	0.31	0.70	0.11	0.33	0.22	
Control Delay	47.0	72.2	7.8	6.5	2.3	1.2	
Queue Delay	0.0	0.0	0.1	0.0	0.3	0.2	
Total Delay	47.0	72.2	8.0	6.5	2.5	1.3	
Queue Length 50th (ft)	4	23	0	35	16	23	
Queue Length 95th (ft)	3	40	3	60	m26	32	
Internal Link Dist (ft)	60		403	230		314	
Turn Bay Length (ft)		100			50		
Base Capacity (vph)	818	580	953	4587	881	4345	
Starvation Cap Reductn	0	0	0	0	223	2213	
Spillback Cap Reductn	0	0	94	91	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.01	0.04	0.47	0.11	0.38	0.45	

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

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

Splits and Phases: 6: Colonial Pipeline Station Drwy & Cumberland Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1	1	17	0	370	0	469	13	217	918	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		6.0		6.0	6.0			6.0		6.0	6.0	
Lane Util. Factor		1.00		1.00	1.00			0.86		1.00	0.91	
Frt		0.93		1.00	0.85			0.99		1.00	1.00	
Flt Protected		1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1969		1770	1583			6369		1770	5082	
Flt Permitted		1.00		0.75	1.00			1.00		0.41	1.00	
Satd. Flow (perm)		1969		1402	1583			6369		770	5082	
Peak-hour factor, PHF	0.92	0.25	0.25	0.65	0.92	0.92	0.92	0.95	0.62	0.88	0.96	0.25
Adj. Flow (vph)	0	4	4	26	0	402	0	494	21	247	956	4
RTOR Reduction (vph)	0	4	0	0	378	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	4	0	26	24	0	0	514	0	247	960	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.3		8.3	8.3			100.8		119.7	119.7	
Effective Green, g (s)		8.3		8.3	8.3			100.8		119.7	119.7	
Actuated g/C Ratio		0.06		0.06	0.06			0.72		0.86	0.86	
Clearance Time (s)		6.0		6.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0			5.0		3.0	5.0	
Lane Grp Cap (vph)		117		83	94			4586		750	4345	
v/s Ratio Prot		0.00			0.02			0.08		c0.03	0.19	
v/s Ratio Perm				c0.02						c0.25		
v/c Ratio		0.04		0.31	0.25			0.11		0.33	0.22	
Uniform Delay, d1		62.1		63.1	62.9			6.0		1.9	1.8	
Progression Factor		1.00		1.00	1.00			1.00		0.69	0.57	
Incremental Delay, d2		0.1		2.2	1.4			0.0		0.2	0.1	
Delay (s)		62.2		65.3	64.3			6.0		1.5	1.1	
Level of Service		E		E	E			A		A	A	
Approach Delay (s)		62.2			64.4			6.0			1.2	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		

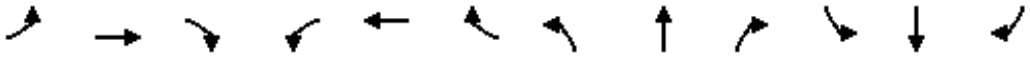
c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBT	ø4
Lane Configurations						
Volume (vph)	2195	105	414	53	0	
Lane Group Flow (vph)	2507	210	460	58	39	
Turn Type		pm+pt		Perm		
Protected Phases	2	1	6		8	4
Permitted Phases		6		8		
Detector Phase	2	1	6	8	8	
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	24.0	10.0	24.0	24.0	24.0	24.0
Total Split (s)	88.0	28.0	116.0	24.0	24.0	24.0
Total Split (%)	62.9%	20.0%	82.9%	17.1%	17.1%	17%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lead				
Lead-Lag Optimize?						
Recall Mode	C-Min	None	C-Min	None	None	None
v/c Ratio	0.76	0.76	0.11	0.51	0.11	
Control Delay	35.9	32.0	8.3	76.7	0.7	
Queue Delay	28.1	0.0	0.0	0.0	0.0	
Total Delay	63.9	32.0	8.3	76.7	0.7	
Queue Length 50th (ft)	776	159	70	52	0	
Queue Length 95th (ft)	840	125	m78	98	0	
Internal Link Dist (ft)	230		786		82	
Turn Bay Length (ft)		150				
Base Capacity (vph)	3304	323	4231	181	407	
Starvation Cap Reductn	928	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	1.06	0.65	0.11	0.32	0.10	

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 53 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

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

Splits and Phases: 7: Spring Rd & Discount Tires Drwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	2195	43	105	414	0	53	0	36	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	12	12
Total Lost time (s)		6.0		6.0	6.0		6.0	6.0				
Lane Util. Factor		0.91		1.00	0.91		1.00	1.00				
Frt		0.99		1.00	1.00		1.00	0.85				
Flt Protected		1.00		0.95	1.00		0.95	1.00				
Satd. Flow (prot)		4865		1711	4916		1770	1583				
Flt Permitted		1.00		0.04	1.00		0.76	1.00				
Satd. Flow (perm)		4865		72	4916		1410	1583				
Peak-hour factor, PHF	0.50	0.94	0.25	0.50	0.90	0.25	0.92	0.92	0.92	0.50	0.92	0.25
Adj. Flow (vph)	0	2335	172	210	460	0	58	0	39	0	0	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	36	0	0	0	0
Lane Group Flow (vph)	0	2502	0	210	460	0	58	3	0	0	0	0
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		93.7		118.1	118.1		9.9	9.9				
Effective Green, g (s)		93.7		118.1	118.1		9.9	9.9				
Actuated g/C Ratio		0.67		0.84	0.84		0.07	0.07				
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0				
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)		3256		276	4147		100	112				
v/s Ratio Prot		0.51		c0.10	0.09			0.00				
v/s Ratio Perm				c0.54			c0.04					
v/c Ratio		0.77		0.76	0.11		0.58	0.02				
Uniform Delay, d1		15.8		44.9	1.9		63.0	60.6				
Progression Factor		2.01		0.61	3.90		1.00	1.00				
Incremental Delay, d2		1.2		5.4	0.0		7.9	0.1				
Delay (s)		32.9		32.7	7.4		71.0	60.6				
Level of Service		C		C	A		E	E				
Approach Delay (s)		32.9			15.3			66.8			0.0	
Approach LOS		C			B			E			A	

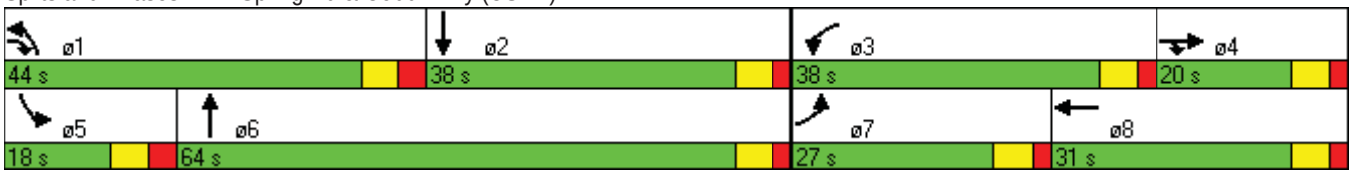
Intersection Summary			
HCM Average Control Delay	30.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Volume (vph)	180	219	672	891	262	992	1824	835	128	1165
Lane Group Flow (vph)	202	277	755	1024	555	1181	2049	982	171	1529
Turn Type	Prot		pt+ov	Prot		Prot		Free	Prot	
Protected Phases	7	4	4 1	3	8	1	6		5	2
Permitted Phases								Free		
Detector Phase	7	4	4 1	3	8	1	6		5	2
Switch Phase										
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	15.0		4.0	15.0
Minimum Split (s)	10.0	10.0		10.0	10.0	11.0	21.0		11.0	21.0
Total Split (s)	27.0	20.0	64.0	38.0	31.0	44.0	64.0	0.0	18.0	38.0
Total Split (%)	19.3%	14.3%	45.7%	27.1%	22.1%	31.4%	45.7%	0.0%	12.9%	27.1%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	3.0	2.0		3.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	7.0	6.0	4.0	7.0	6.0
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
v/c Ratio	0.85	0.81	0.68	0.91	0.80	0.90	0.76	0.62	0.66	0.88
Control Delay	76.3	92.2	44.0	65.5	55.9	59.8	36.9	1.8	75.6	57.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.3	92.2	44.0	65.5	55.9	59.8	36.9	1.8	75.6	57.7
Queue Length 50th (ft)	184	140	209	323	221	369	462	0	79	331
Queue Length 95th (ft)	#304	167	432	364	235	391	500	0	98	355
Internal Link Dist (ft)		786			536		550			608
Turn Bay Length (ft)	425					400		350	350	
Base Capacity (vph)	257	342	1117	1141	690	1319	2699	1583	270	1744
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.81	0.68	0.90	0.80	0.90	0.76	0.62	0.63	0.88

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 65 (46%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Spring Rd & Cobb Pkwy (US 41)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	219	672	891	262	153	992	1824	835	128	1165	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12	12	12	12	12	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		7.0	6.0	4.0	7.0	6.0	
Lane Util. Factor	1.00	0.95	0.88	0.94	0.95		0.94	0.86	1.00	0.97	0.81	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1711	3421	2694	4990	3334		4990	6408	1583	3433	7403	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1711	3421	2694	4990	3334		4990	6408	1583	3433	7403	
Peak-hour factor, PHF	0.89	0.79	0.89	0.87	0.77	0.71	0.84	0.89	0.85	0.75	0.87	0.90
Adj. Flow (vph)	202	277	755	1024	340	215	1181	2049	982	171	1339	190
RTOR Reduction (vph)	0	0	1	0	71	0	0	0	0	0	18	0
Lane Group Flow (vph)	202	277	754	1024	484	0	1181	2049	982	171	1511	0
Turn Type	Prot		pt+ov	Prot			Prot		Free	Prot		
Protected Phases	7	4	4 1	3	8		1	6		5	2	
Permitted Phases									Free			
Actuated Green, G (s)	19.5	14.0	56.9	31.5	26.0		36.9	58.9	140.0	10.6	32.6	
Effective Green, g (s)	19.5	14.0	56.9	31.5	26.0		36.9	58.9	140.0	10.6	32.6	
Actuated g/C Ratio	0.14	0.10	0.41	0.22	0.19		0.26	0.42	1.00	0.08	0.23	
Clearance Time (s)	6.0	6.0		6.0	6.0		7.0	6.0		7.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	238	342	1095	1123	619		1315	2696	1583	260	1724	
v/s Ratio Prot	0.12	0.08	0.28	c0.21	c0.15		c0.24	0.32		0.05	c0.20	
v/s Ratio Perm									0.62			
v/c Ratio	0.85	0.81	0.69	0.91	0.78		0.90	0.76	0.62	0.66	0.88	
Uniform Delay, d1	58.8	61.7	34.2	52.9	54.3		49.7	34.5	0.0	62.9	51.8	
Progression Factor	0.81	1.21	1.21	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	22.6	12.7	1.7	11.1	6.4		8.4	2.1	1.8	5.9	6.6	
Delay (s)	70.2	87.4	43.1	64.0	60.7		58.1	36.6	1.8	68.8	58.4	
Level of Service	E	F	D	E	E		E	D	A	E	E	
Approach Delay (s)		57.5			62.8			34.5			59.4	
Approach LOS		E			E			C			E	

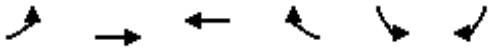
Intersection Summary			
HCM Average Control Delay	47.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	898	56	0	1386	6	0	0	86	0	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.62	0.93	0.46	0.56	0.91	0.75	0.67	0.25	0.42	0.42	0.92	0.50
Hourly flow rate (vph)	0	966	122	0	1523	8	0	0	205	0	0	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359			310							
pX, platoon unblocked	0.93			0.91			0.95	0.95	0.91	0.95	0.95	0.93
vC, conflicting volume	1531			1087			1419	2558	383	2054	2614	385
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1214			760			664	1868	0	1335	1928	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	79	100	100	99
cM capacity (veh/h)	532			773			323	68	990	84	62	1013

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	386	386	315	435	435	435	226	205	12
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	0	0	122	0	0	0	8	205	12
cSH	1700	1700	1700	1700	1700	1700	1700	990	1013
Volume to Capacity	0.23	0.23	0.19	0.26	0.26	0.26	0.13	0.21	0.01
Queue Length 95th (ft)	0	0	0	0	0	0	0	19	1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	8.6
Lane LOS								A	A
Approach Delay (s)	0.0			0.0				9.6	8.6
Approach LOS								A	A

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	30.6%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	57	258	367	43	14	45
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.50	0.80	0.94	0.48	0.46	0.62
Hourly flow rate (vph)	114	322	390	90	30	73
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		718				
pX, platoon unblocked					1.00	
vC, conflicting volume	480				986	435
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	480				985	435
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	89				88	88
cM capacity (veh/h)	1082				246	621

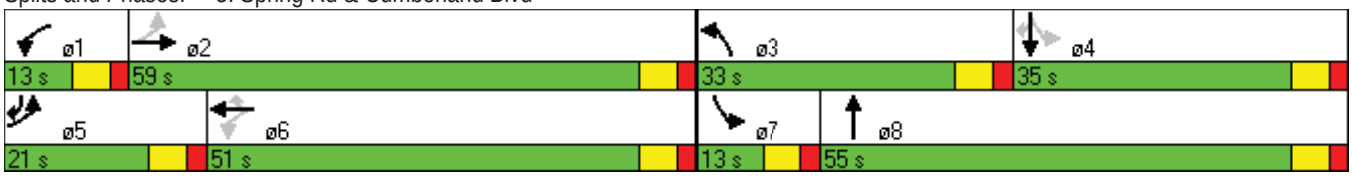
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	436	480	103
Volume Left	114	0	30
Volume Right	0	90	73
cSH	1082	1700	428
Volume to Capacity	0.11	0.28	0.24
Queue Length 95th (ft)	9	0	23
Control Delay (s)	3.1	0.0	16.1
Lane LOS	A		C
Approach Delay (s)	3.1	0.0	16.1
Approach LOS			C

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	245	646	372	160	1177	65	648	657	103	494	559
Lane Group Flow (vph)	295	666	388	188	1338	108	736	1041	121	574	608
Turn Type	pm+pt		Free	pm+pt		Perm	Prot		pm+pt		pm+ov
Protected Phases	5	2		1	6		3	8	7	4	5
Permitted Phases	2		Free	6		6			4		4
Detector Phase	5	2		1	6	6	3	8	7	4	5
Switch Phase											
Minimum Initial (s)	4.0	15.0		4.0	15.0	15.0	4.0	6.0	4.0	6.0	4.0
Minimum Split (s)	10.0	38.0		10.0	37.0	37.0	10.0	36.0	10.0	35.0	10.0
Total Split (s)	21.0	59.0	0.0	13.0	51.0	51.0	33.0	55.0	13.0	35.0	21.0
Total Split (%)	15.0%	42.1%	0.0%	9.3%	36.4%	36.4%	23.6%	39.3%	9.3%	25.0%	15.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?											
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	1.21	0.33	0.25	0.59	1.17	0.19	1.11	0.89	0.88	0.87	1.15
Control Delay	162.5	30.7	0.4	16.9	108.6	2.7	113.7	42.9	82.1	68.7	128.5
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	12.2	2.5	0.0	0.0	0.0
Total Delay	162.5	30.7	0.4	17.0	108.6	2.7	125.9	45.4	82.1	68.7	128.5
Queue Length 50th (ft)	~280	157	0	39	~791	6	~395	452	65	265	~631
Queue Length 95th (ft)	#413	193	0	54	#868	9	#480	476	#154	317	#869
Internal Link Dist (ft)		736			279			314		443	
Turn Bay Length (ft)	225			165					135		185
Base Capacity (vph)	243	1992	1583	319	1145	555	662	1215	137	709	529
Starvation Cap Reductn	0	0	0	0	0	0	17	88	0	0	0
Spillback Cap Reductn	0	0	5	2	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.21	0.33	0.25	0.59	1.17	0.19	1.14	0.92	0.88	0.81	1.15

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 36 (26%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Spring Rd & Cumberland Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	245	646	372	160	1177	65	648	657	218	103	494	559
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	11	11	11
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1711	3421	1531	3433	3417		1711	3421	1531
Flt Permitted	0.08	1.00	1.00	0.39	1.00	1.00	0.95	1.00		0.15	1.00	1.00
Satd. Flow (perm)	141	5085	1583	697	3421	1531	3433	3417		266	3421	1531
Peak-hour factor, PHF	0.83	0.97	0.96	0.85	0.88	0.60	0.88	0.82	0.91	0.85	0.86	0.92
Adj. Flow (vph)	295	666	388	188	1338	108	736	801	240	121	574	608
RTOR Reduction (vph)	0	0	0	0	0	43	0	21	0	0	0	3
Lane Group Flow (vph)	295	666	388	188	1338	65	736	1020	0	121	574	605
Turn Type	pm+pt		Free	pm+pt		Perm	Prot			pm+pt		pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2		Free	6		6				4		4
Actuated Green, G (s)	67.9	54.9	140.0	53.9	46.9	46.9	27.0	47.1		34.1	27.1	42.1
Effective Green, g (s)	67.9	54.9	140.0	53.9	46.9	46.9	27.0	47.1		34.1	27.1	42.1
Actuated g/C Ratio	0.49	0.39	1.00	0.38	0.33	0.33	0.19	0.34		0.24	0.19	0.30
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	243	1994	1583	319	1146	513	662	1150		137	662	526
v/s Ratio Prot	c0.13	0.13		0.03	0.39		c0.21	0.30		0.04	0.17	c0.12
v/s Ratio Perm	c0.46		0.25	0.20		0.04				0.17		0.27
v/c Ratio	1.21	0.33	0.25	0.59	1.17	0.13	1.11	0.89		0.88	0.87	1.15
Uniform Delay, d1	44.6	29.8	0.0	30.5	46.5	32.3	56.5	43.9		46.0	54.7	49.0
Progression Factor	1.00	1.00	1.00	0.35	0.46	0.13	0.86	0.77		1.00	1.00	1.00
Incremental Delay, d2	127.9	0.5	0.4	2.7	84.7	0.5	69.0	8.1		43.8	11.5	87.9
Delay (s)	172.6	30.2	0.4	13.4	106.0	4.5	117.5	42.1		89.8	66.2	136.9
Level of Service	F	C	A	B	F	A	F	D		F	E	F
Approach Delay (s)		52.8			88.7			73.3			101.4	
Approach LOS		D			F			E			F	

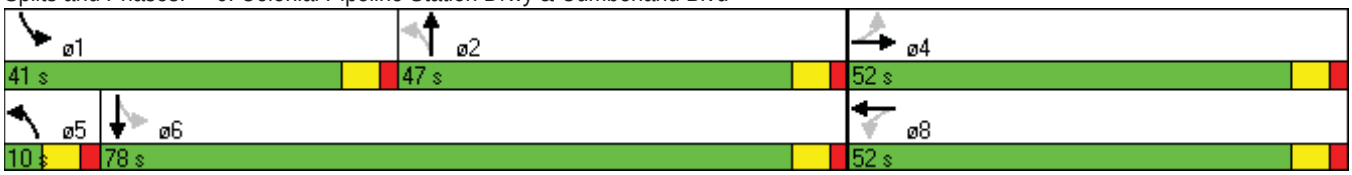
Intersection Summary			
HCM Average Control Delay	78.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT	ø5
Lane Configurations								
Volume (vph)	1	0	19	0	1100	276	768	
Lane Group Flow (vph)	0	4	27	437	1296	341	835	
Turn Type	Perm		Perm			pm+pt		
Protected Phases		4		8	2	1	6	5
Permitted Phases	4		8			6		
Detector Phase	4	4	8	8	2	1	6	
Switch Phase								
Minimum Initial (s)	6.0	6.0	6.0	6.0	15.0	4.0	15.0	4.0
Minimum Split (s)	44.0	44.0	46.0	46.0	30.0	10.0	32.0	10.0
Total Split (s)	52.0	52.0	52.0	52.0	47.0	41.0	78.0	10.0
Total Split (%)	37.1%	37.1%	37.1%	37.1%	33.6%	29.3%	55.7%	7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	None	C-Min	None
v/c Ratio		0.07	0.26	0.81	0.34	0.64	0.20	
Control Delay		58.0	64.9	17.0	15.4	25.4	2.0	
Queue Delay		0.0	0.0	0.1	0.0	0.6	0.2	
Total Delay		58.0	64.9	17.1	15.5	26.0	2.2	
Queue Length 50th (ft)		4	24	0	156	169	28	
Queue Length 95th (ft)		4	40	87	250	240	55	
Internal Link Dist (ft)		60		403	230		314	
Turn Bay Length (ft)			100			50		
Base Capacity (vph)		269	462	825	3816	613	4277	
Starvation Cap Reductn		0	0	0	0	72	2385	
Spillback Cap Reductn		0	0	44	614	0	0	
Storage Cap Reductn		0	0	0	0	0	0	
Reduced v/c Ratio		0.01	0.06	0.56	0.40	0.63	0.44	

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 113 (81%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 6: Colonial Pipeline Station Drwy & Cumberland Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	0	0	19	0	380	0	1100	68	276	768	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		6.0		6.0	6.0			6.0		6.0	6.0	
Lane Util. Factor		1.00		1.00	1.00			0.86		1.00	0.91	
Frt		1.00		1.00	0.85			0.99		1.00	1.00	
Flt Protected		0.95		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)		2006		1770	1583			6343		1770	5085	
Flt Permitted		0.39		0.76	1.00			1.00		0.16	1.00	
Satd. Flow (perm)		820		1407	1583			6343		289	5085	
Peak-hour factor, PHF	0.25	0.25	0.25	0.70	0.92	0.87	0.92	0.91	0.78	0.81	0.92	0.25
Adj. Flow (vph)	4	0	0	27	0	437	0	1209	87	341	835	0
RTOR Reduction (vph)	0	0	0	0	405	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	4	0	27	32	0	0	1292	0	341	835	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		10.3		10.3	10.3			84.1		117.7	117.7	
Effective Green, g (s)		10.3		10.3	10.3			84.1		117.7	117.7	
Actuated g/C Ratio		0.07		0.07	0.07			0.60		0.84	0.84	
Clearance Time (s)		6.0		6.0	6.0			6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0			5.0		3.0	5.0	
Lane Grp Cap (vph)		60		104	116			3810		535	4275	
v/s Ratio Prot					c0.02			0.20		c0.13	0.16	
v/s Ratio Perm		0.00		0.02						c0.41		
v/c Ratio		0.07		0.26	0.28			0.34		0.64	0.20	
Uniform Delay, d1		60.4		61.2	61.3			14.0		13.5	2.1	
Progression Factor		1.00		1.00	1.00			1.00		1.82	0.79	
Incremental Delay, d2		0.5		1.3	1.3			0.2		2.1	0.1	
Delay (s)		60.8		62.6	62.6			14.3		26.6	1.8	
Level of Service		E		E	E			B		C	A	
Approach Delay (s)		60.8			62.6			14.3			9.0	
Approach LOS		E			E			B			A	

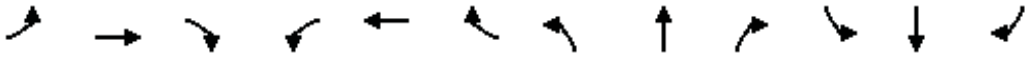
Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBT	ø4
Lane Configurations						
Volume (vph)	980	115	1288	118	0	
Lane Group Flow (vph)	1206	230	1415	128	68	
Turn Type		pm+pt		Perm		
Protected Phases	2	1	6		8	4
Permitted Phases		6		8		
Detector Phase	2	1	6	8	8	
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	24.0	10.0	24.0	24.0	24.0	24.0
Total Split (s)	67.0	37.0	104.0	36.0	36.0	36.0
Total Split (%)	47.9%	26.4%	74.3%	25.7%	25.7%	26%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lag	Lead				
Lead-Lag Optimize?						
Recall Mode	C-Min	None	C-Min	None	None	None
v/c Ratio	0.40	0.54	0.37	0.70	0.12	
Control Delay	13.0	21.8	0.3	77.8	0.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	13.0	21.8	0.3	77.8	0.5	
Queue Length 50th (ft)	121	79	2	113	0	
Queue Length 95th (ft)	357	33	17	176	0	
Internal Link Dist (ft)	230		786		82	
Turn Bay Length (ft)		150				
Base Capacity (vph)	2991	561	3860	302	650	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.40	0.41	0.37	0.42	0.10	

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 53 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 7: Spring Rd & Discount Tires Drwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	980	38	115	1288	0	118	0	63	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	12	12
Total Lost time (s)		6.0		6.0	6.0		6.0	6.0				
Lane Util. Factor		0.91		1.00	0.91		1.00	1.00				
Frt		0.98		1.00	1.00		1.00	0.85				
Flt Protected		1.00		0.95	1.00		0.95	1.00				
Satd. Flow (prot)		4823		1711	4916		1770	1583				
Flt Permitted		1.00		0.18	1.00		0.76	1.00				
Satd. Flow (perm)		4823		323	4916		1410	1583				
Peak-hour factor, PHF	0.50	0.93	0.25	0.50	0.91	0.25	0.92	0.92	0.92	0.50	0.92	0.25
Adj. Flow (vph)	0	1054	152	230	1415	0	128	0	68	0	0	0
RTOR Reduction (vph)	0	9	0	0	0	0	0	59	0	0	0	0
Lane Group Flow (vph)	0	1197	0	230	1415	0	128	9	0	0	0	0
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		86.5		109.9	109.9		18.1	18.1				
Effective Green, g (s)		86.5		109.9	109.9		18.1	18.1				
Actuated g/C Ratio		0.62		0.79	0.79		0.13	0.13				
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0				
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)		2980		426	3859		182	205				
v/s Ratio Prot		0.25		c0.07	0.29			0.01				
v/s Ratio Perm				c0.36			c0.09					
v/c Ratio		0.40		0.54	0.37		0.70	0.04				
Uniform Delay, d1		13.6		6.3	4.5		58.4	53.4				
Progression Factor		0.86		4.35	0.04		1.00	1.00				
Incremental Delay, d2		0.4		0.6	0.1		11.6	0.1				
Delay (s)		12.1		28.0	0.3		70.0	53.5				
Level of Service		B		C	A		E	D				
Approach Delay (s)		12.1			4.2			64.3			0.0	
Approach LOS		B			A			E			A	

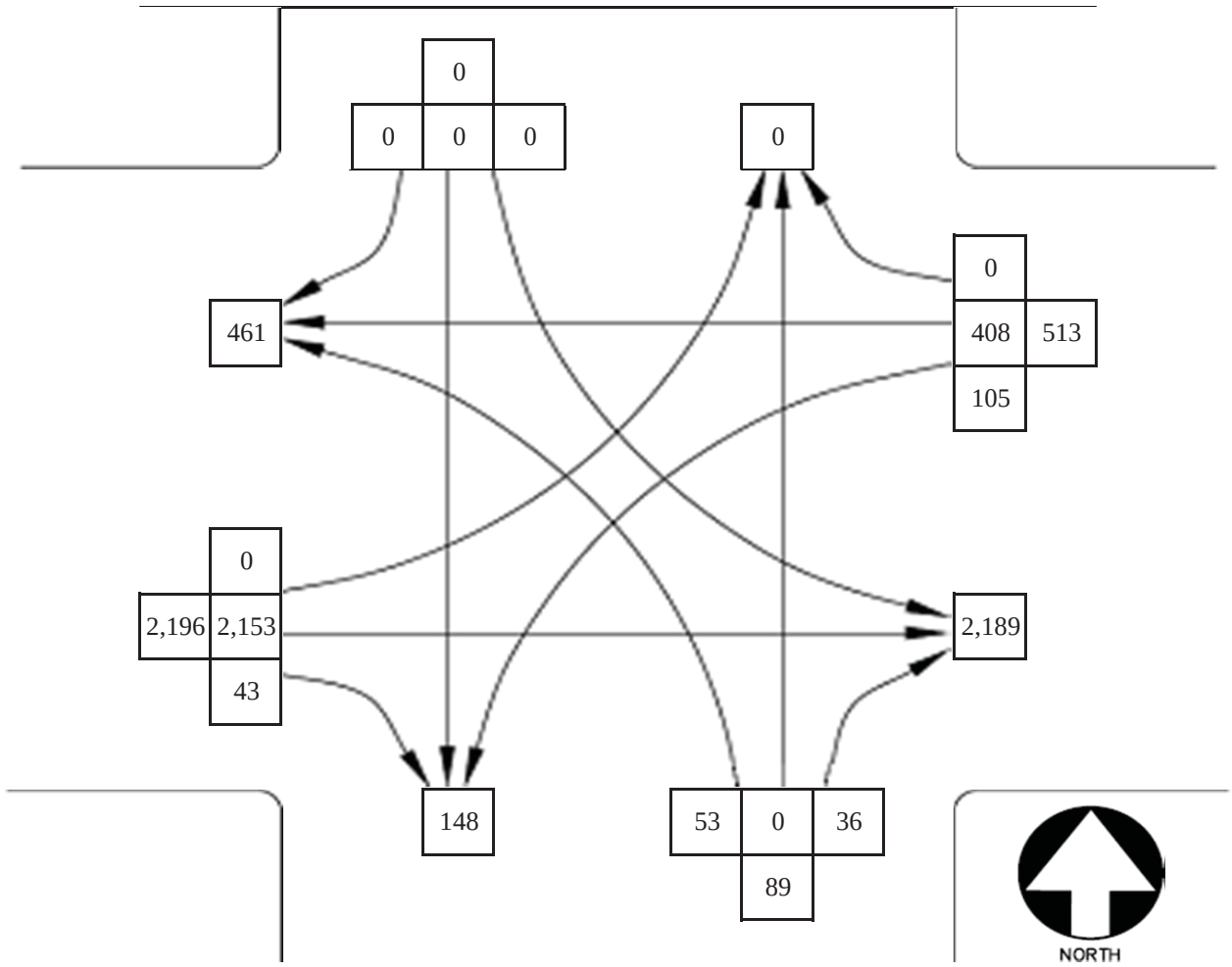
Intersection Summary			
HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

LEFT TURN PHASE ANALYSIS

Future Traffic Count Summary Sheet

Peak Hour Count (AM)



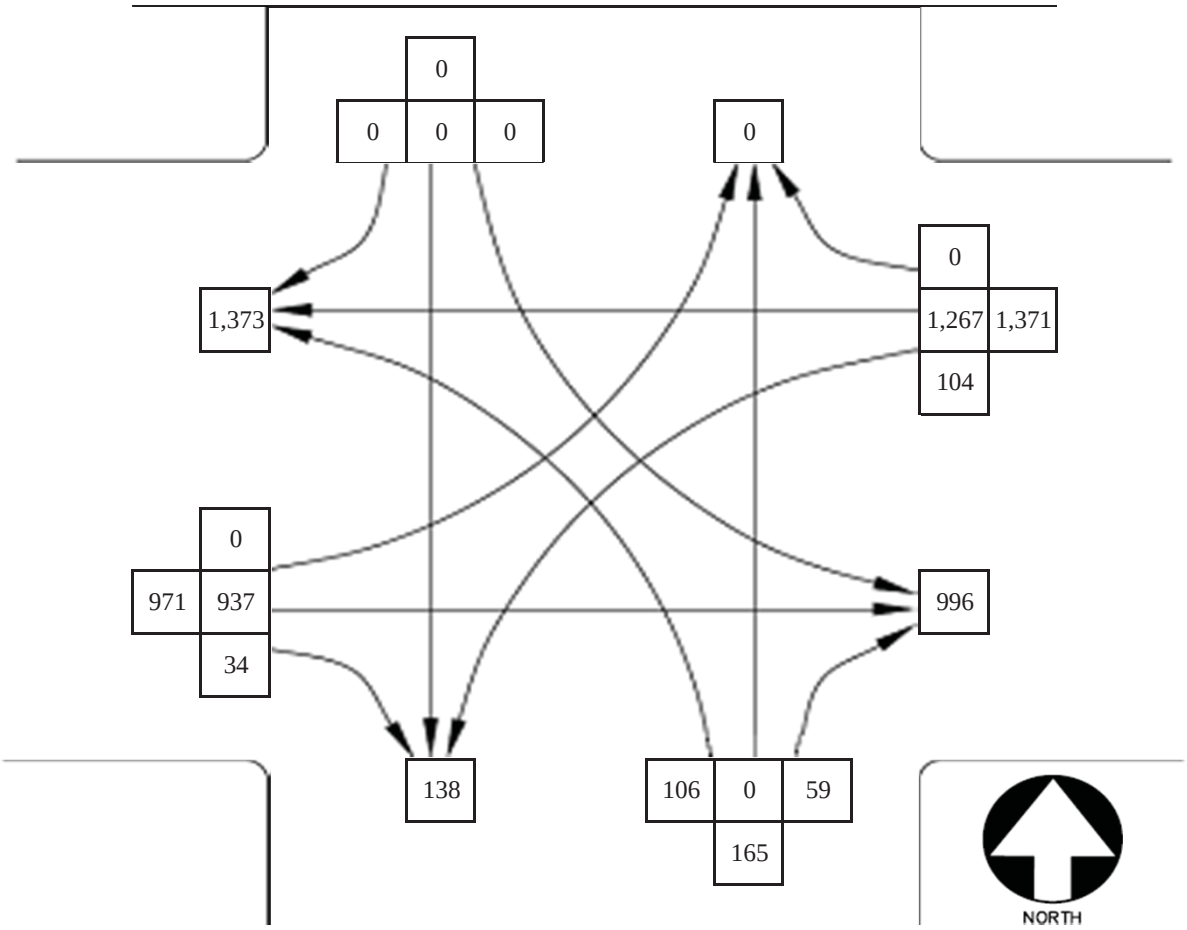
Conflicting Movements	Through Volume (V_o)	Left Turn Volume (V_{lt})	Opposing Lanes (N_o)	Cross-Product ($V_o \times V_{lt} \div N_o$)	Cross-Product Warrant?	Left Turn Volume Warrant?
NBL & SBT	0	53	1	0	NO	NO
SBL & NBT	0	0	1	0	NO	NO
EBL & WBT	408	0	3	0	NO	NO
WBL & EBT	2,153	105	2	113,033	YES	FYA lag only

LEFT TURN CRITERIA - AM PEAK HOUR

A&R Engineering Inc.

Future Traffic Count Summary Sheet

Peak Hour Count (PM)



Conflicting Movements	Through Volume (V_o)	Left Turn Volume (V_{lt})	Opposing Lanes (N_o)	Cross-Product ($V_o \times V_{lt} \div N_o$)	Cross-Product Warrant?	Left Turn Volume Warrant?
NBL & SBT	0	106	1	0	NO	FYA lag only
SBL & NBT	0	0	1	0	NO	NO
EBL & WBT	1,267	0	3	0	NO	NO
WBL & EBT	937	104	2	48,724	NO	FYA lag only

LEFT TURN CRITERIA - PM PEAK HOUR

A&R Engineering Inc.

TRAFFIC VOLUME WORKSHEETS

15-073 Emerson Center - Spring Road- Cobb County

Traffic Volumes
Future Conditions

A&R Engineering
September 2015

1 Spring Rd @ Cobb Pkwy

A.M. Peak Hour

	Northbound					Southbound					Eastbound					Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Traffic Counts	0	296	711	406	1413	0	78	1380	81	1539	0	117	317	1280	1714	0	93	50	32	175
Braves DRI Counts	0	287	728	421	1436	10	101	1491	67	1669	0	92	373	1253	1718	0	92	32	19	143
Adjustment Factor	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Existing Volumes (Adjusted)	0	296	711	406	1413	0	78	1380	81	1539	0	117	317	1280	1714	0	93	50	32	175
Growth Factor (%)	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Removed Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Braves DRI Trips	0	0	96	627	723	0	155	81	0	236	0	0	42	0	42	0	241	6	33	280
Base Condition	0	311	843	1054	2208	0	237	1531	85	1853	0	123	375	1345	1843	0	339	59	67	465
Site Residential Trips	0	32	0	0	32	0	0	0	12	12	0	23	14	58	95	0	0	8	0	8
Site Retail-Office Trips	0	33	0	0	33	0	0	0	30	30	0	7	1	7	15	0	0	4	0	4
Total New Site Trips	0	65	0	0	65	0	0	0	42	42	0	30	15	65	110	0	0	12	0	12
Pass-by Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes	0	376	843	1054	2273	0	237	1531	127	1895	0	153	390	1410	1953	0	339	71	67	477

P.M. Peak Hour

	Northbound					Southbound					Eastbound					Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Traffic Counts	0	870	1371	146	2387	0	30	951	126	1107	0	124	145	540	809	0	404	201	34	639
Braves DRI Counts	6	958	1792	190	2946	25	16	1181	135	1357	0	149	164	484	797	0	374	164	22	560
Adjustment Factor	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Existing Volumes (Adjusted)	0	870	1371	146	2387	0	30	951	126	1107	0	124	145	540	809	0	404	201	34	639
Growth Factor (%)	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Removed Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Braves DRI Trips	0	0	383	682	1065	0	96	165	0	261	0	0	52	25	77	0	466	34	117	617
Base Condition	0	914	1824	835	3573	0	128	1165	132	1425	0	130	204	593	927	0	891	245	153	1289
Site Residential Trips	0	62	0	0	62	0	0	0	24	24	0	15	10	40	65	0	0	15	0	15
Site Retail-Office Trips	0	16	0	0	16	0	0	0	15	15	0	35	5	39	79	0	0	2	0	2
Total New Site Trips	0	78	0	0	78	0	0	0	39	39	0	50	15	79	144	0	0	17	0	17
Pass-by Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes	0	992	1824	835	3651	0	128	1165	171	1464	0	180	219	672	1071	0	891	262	153	1306

Project Name
Traffic Volumes
Future Conditions

A&R Engineering
September 2015

2 Spring Rd @ Ex Drwy (W)

A.M. Peak Hour

	Northbound					Southbound					Eastbound					Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Traffic Counts	0	3	0	2	5	0	2	0	0	2	0	5	1973	7	1985	0	15	374	3	392
Braves DRI Counts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment Factor	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Existing Volumes (Adjusted)	0	3	0	2	5	0	2	0	0	2	0	5	1973	7	1985	0	15	374	3	392
Growth Factor (%)	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Removed Trips	0	-3	0	0	-3	0	-2	0	0	-2	0	-5	0	0	-5	0	-15	0	0	-15
Braves DRI Trips	0	0	0	0	0	0	0	0	0	0	0	0	42	0	42	0	0	6	0	6
Base Condition	0	0	0	2	2	0	0	0	0	0	0	0	2116	7	2123	0	0	399	3	402
Site Residential Trips	0	0	0	38	38	0	0	0	0	0	0	0	37	12	49	0	0	54	0	54
Site Retail-Office Trips	0	0	0	8	8	0	0	0	0	0	0	0	34	35	69	0	0	15	0	15
Total New Site Trips	0	0	0	46	46	0	0	0	0	0	0	0	71	47	118	0	0	69	0	69
Pass-by Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes	0	0	0	48	48	0	0	0	0	0	0	0	2187	54	2241	0	0	468	3	471

P.M. Peak Hour

	Northbound					Southbound					Eastbound					Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Traffic Counts	0	8	1	15	24	0	5	0	6	11	0	15	734	11	760	0	9	1159	6	1174
Braves DRI Counts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment Factor	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Existing Volumes (Adjusted)	0	8	1	15	24	0	5	0	6	11	0	15	734	11	760	0	9	1159	6	1174
Growth Factor (%)	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Removed Trips	0	-8	-1	0	-9	0	-5	0	0	-5	0	-15	0	0	-15	0	-9	0	0	-9
Braves DRI Trips	0	0	0	0	0	0	0	0	0	0	0	0	77	0	77	0	0	32	0	32
Base Condition	0	0	0	16	16	0	0	0	6	6	0	0	848	12	860	0	0	1250	6	1256
Site Residential Trips	0	0	0	26	26	0	0	0	0	0	0	0	37	23	60	0	0	56	0	56
Site Retail-Office Trips	0	0	0	40	40	0	0	0	0	0	0	0	17	17	34	0	0	80	0	80
Total New Site Trips	0	0	0	66	66	0	0	0	0	0	0	0	54	40	94	0	0	136	0	136
Pass-by Trips	0	0	0	4	4	0	0	0	0	0	0	0	-4	4	0	0	0	0	0	0
Future Traffic Volumes	0	0	0	86	86	0	0	0	6	6	0	0	898	56	954	0	0	1386	6	1392

Project Name
Traffic Volumes
Future Conditions

A&R Engineering
September 2015

3 Spring Rd @ Ex Drwy (E)

A.M. Peak Hour

	Northbound					Southbound					Eastbound					Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Traffic Counts	0	0	0	2	2	0	2	0	1	3	0	4	1974	1	1979	0	2	371	0	373
Braves DRI Counts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment Factor	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Existing Volumes (Adjusted)	0	0	0	2	2	0	2	0	1	3	0	4	1974	1	1979	0	2	371	0	373
Growth Factor (%)	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Removed Trips	0	0	0	0	0	0	-2	0	0	-2	0	-4	0	0	-4	0	-2	0	0	-2
Braves DRI Trips	0	0	0	0	0	0	0	0	0	0	0	0	42	0	42	0	0	6	0	6
Base Condition	0	0	0	2	2	0	0	0	1	1	0	0	2117	1	2118	0	0	396	0	396
Site Residential Trips	0	0	0	0	0	0	0	0	0	0	0	0	75	0	75	0	0	54	0	54
Site Retail-Office Trips	0	0	0	0	0	0	0	0	0	0	0	0	42	0	42	0	0	15	0	15
Total New Site Trips	0	0	0	0	0	0	0	0	0	0	0	0	117	0	117	0	0	69	0	69
Pass-by Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes	0	0	0	2	2	0	0	0	1	1	0	0	2234	1	2235	0	0	465	0	465

P.M. Peak Hour

	Northbound					Southbound					Eastbound					Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Traffic Counts	0	9	0	14	23	0	6	0	8	14	0	0	762	8	770	0	17	1160	0	1177
Braves DRI Counts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment Factor	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Existing Volumes (Adjusted)	0	9	0	14	23	0	6	0	8	14	0	0	762	8	770	0	17	1160	0	1177
Growth Factor (%)	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Removed Trips	0	-9	0	0	-9	0	-6	0	0	-6	0	0	0	0	0	0	-17	0	0	-17
Braves DRI Trips	0	0	0	0	0	0	0	0	0	0	0	0	77	0	77	0	0	32	0	32
Base Condition	0	0	0	15	15	0	0	0	8	8	0	0	878	8	886	0	0	1251	0	1251
Site Residential Trips	0	0	0	0	0	0	0	0	0	0	0	0	63	0	63	0	0	56	0	56
Site Retail-Office Trips	0	0	0	0	0	0	0	0	0	0	0	0	57	0	57	0	0	80	0	80
Total New Site Trips	0	0	0	0	0	0	0	0	0	0	0	0	120	0	120	0	0	136	0	136
Pass-by Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes	0	0	0	15	15	0	0	0	8	8	0	0	998	8	1006	0	0	1387	0	1387

Project Name
Traffic Volumes
Future Conditions

A&R Engineering
September 2015

4 Spring Hill Pkwy @ Site Drwy

A.M. Peak Hour

	Northbound					Southbound					Eastbound					Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Traffic Counts	0	0	0	0	0	0	3	0	0	3	0	2	183	0	185	0	0	323	5	328
Braves DRI Counts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment Factor	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Existing Volumes (Adjusted)	0	0	0	0	0	0	3	0	0	3	0	2	183	0	185	0	0	323	5	328
Growth Factor (%)	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Removed Trips	0	0	0	0	0	0	-3	0	0	-3	0	-2	0	0	-2	0	0	0	0	0
Braves DRI Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition	0	0	0	0	0	0	0	0	0	0	0	0	192	0	192	0	0	339	5	344
Site Residential Trips	0	0	0	0	0	0	6	0	50	56	0	28	0	0	28	0	0	0	4	4
Site Retail-Office Trips	0	0	0	0	0	0	1	0	1	2	0	1	0	0	1	0	0	0	6	6
Total New Site Trips	0	0	0	0	0	0	7	0	51	58	0	29	0	0	29	0	0	0	10	10
Pass-by Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes	0	0	0	0	0	0	7	0	51	58	0	29	192	0	221	0	0	339	15	354

P.M. Peak Hour

	Northbound					Southbound					Eastbound					Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Traffic Counts	0	0	0	0	0	0	13	0	5	18	0	0	248	0	248	0	0	352	29	381
Braves DRI Counts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment Factor	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Existing Volumes (Adjusted)	0	0	0	0	0	0	13	0	5	18	0	0	248	0	248	0	0	352	29	381
Growth Factor (%)	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Removed Trips	0	0	0	0	0	0	-13	0	0	-13	0	0	0	0	0	0	0	0	0	0
Braves DRI Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Condition	0	0	0	0	0	0	0	0	5	5	0	0	261	0	261	0	0	370	30	400
Site Residential Trips	0	0	0	0	0	0	4	0	34	38	0	53	0	0	53	0	0	0	7	7
Site Retail-Office Trips	0	0	0	0	0	0	7	0	3	10	0	1	0	0	1	0	0	0	3	3
Total New Site Trips	0	0	0	0	0	0	11	0	37	48	0	54	0	0	54	0	0	0	10	10
Pass-by Trips	0	0	0	0	0	0	3	0	3	6	0	3	-3	0	0	0	0	-3	3	0
Future Traffic Volumes	0	0	0	0	0	0	14	0	45	59	0	57	258	0	315	0	0	367	43	410

Project Name
Traffic Volumes
Future Conditions

A&R Engineering
September 2015

5 Spring Rd @ Cumberland Blvd

A.M. Peak Hour

	Northbound					Southbound					Eastbound					Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Traffic Counts	0	125	422	186	733	0	85	356	100	541	0	311	1585	557	2453	0	80	286	21	387
Braves DRI Counts	0	120	302	167	589	0	101	283	109	493	0	290	1528	512	2330	0	55	248	32	335
Adjustment Factor	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Existing Volumes (Adjusted)	0	125	422	186	733	0	85	356	100	541	0	311	1585	557	2453	0	80	286	21	387
Growth Factor (%)	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Removed Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Braves DRI Trips	0	0	14	8	22	0	0	13	30	43	0	31	33	0	64	0	2	4	0	6
Base Condition	0	131	458	203	792	0	89	387	135	611	0	358	1699	585	2642	0	86	305	22	413
Site Residential Trips	0	9	10	39	58	0	6	6	0	12	0	0	5	5	10	0	35	9	10	54
Site Retail-Office Trips	0	0	0	10	10	0	13	0	0	13	0	0	46	0	46	0	2	10	3	15
Total New Site Trips	0	9	10	49	68	0	19	6	0	25	0	0	51	5	56	0	37	19	13	69
Pass-by Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes	0	140	468	252	860	0	108	393	135	636	0	358	1750	590	2698	0	123	324	35	482

P.M. Peak Hour

	Northbound					Southbound					Eastbound					Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Traffic Counts	0	611	609	164	1384	0	82	452	516	1050	0	169	513	322	1004	0	95	1038	41	1174
Braves DRI Counts	0	478	575	132	1185	0	60	400	567	1027	0	173	496	312	981	0	114	1026	33	1173
Adjustment Factor	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Existing Volumes (Adjusted)	0	611	609	164	1384	0	82	452	516	1050	0	169	513	322	1004	0	95	1038	41	1174
Growth Factor (%)	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Removed Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Braves DRI Trips	0	0	10	2	12	0	0	8	17	25	0	67	75	25	167	0	6	26	0	32
Base Condition	0	642	650	174	1466	0	86	483	559	1128	0	245	614	363	1222	0	106	1117	43	1266
Site Residential Trips	0	6	7	39	52	0	11	11	0	22	0	0	9	9	18	0	43	6	7	56
Site Retail-Office Trips	0	0	0	5	5	0	6	0	0	6	0	0	23	0	23	0	11	54	15	80
Total New Site Trips	0	6	7	44	57	0	17	11	0	28	0	0	32	9	41	0	54	60	22	136
Pass-by Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes	0	648	657	218	1523	0	103	494	559	1156	0	245	646	372	1263	0	160	1177	65	1402

Project Name
Traffic Volumes
Future Conditions

A&R Engineering
September 2015

6 Cumberland Blvd @ Spring Hill

A.M. Peak Hour

	Northbound					Southbound					Eastbound					Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Traffic Counts	0	0	406	10	416	0	182	839	1	1022	0	0	1	1	2	0	13	0	306	319
Braves DRI Counts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment Factor	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Existing Volumes (Adjusted)	0	0	406	10	416	0	182	839	1	1022	0	0	1	1	2	0	13	0	306	319
Growth Factor (%)	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Removed Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Braves DRI Trips	0	0	22	0	22	0	0	15	0	15	0	0	0	0	0	0	0	0	0	0
Base Condition	0	0	449	11	460	0	191	897	1	1089	0	0	1	1	2	0	14	0	322	336
Site Residential Trips	0	0	10	1	11	0	26	19	0	45	0	0	0	0	0	0	2	0	48	50
Site Retail-Office Trips	0	0	10	1	11	0	0	2	0	2	0	0	0	0	0	0	1	0	0	1
Total New Site Trips	0	0	20	2	22	0	26	21	0	47	0	0	0	0	0	0	3	0	48	51
Pass-by Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes	0	0	469	13	482	0	217	918	1	1136	0	0	1	1	2	0	17	0	370	387

P.M. Peak Hour

	Northbound					Southbound					Eastbound					Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Traffic Counts	0	0	1011	62	1073	0	214	671	0	885	0	1	0	0	1	0	14	0	330	344
Braves DRI Counts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment Factor	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Existing Volumes (Adjusted)	0	0	1011	62	1073	0	214	671	0	885	0	1	0	0	1	0	14	0	330	344
Growth Factor (%)	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Removed Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Braves DRI Trips	0	0	12	0	12	0	0	39	0	39	0	0	0	0	0	0	0	0	0	0
Base Condition	0	0	1075	65	1140	0	225	744	0	969	0	1	0	0	1	0	15	0	347	362
Site Residential Trips	0	0	20	2	22	0	51	13	0	64	0	0	0	0	0	0	1	0	33	34
Site Retail-Office Trips	0	0	5	1	6	0	0	11	0	11	0	0	0	0	0	0	3	0	0	3
Total New Site Trips	0	0	25	3	28	0	51	24	0	75	0	0	0	0	0	0	4	0	33	37
Pass-by Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes	0	0	1100	68	1168	0	276	768	0	1044	0	1	0	0	1	0	19	0	380	399

Project Name
Traffic Volumes
Future Conditions

A&R Engineering
September 2015

7 Spring Rd @ Proposed Signal

A.M. Peak Hour

	Northbound					Southbound					Eastbound					Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Traffic Counts	0	0	0	0	0	0	0	0	0	0	0	0	1978	0	1978	0	0	373	0	373
Braves DRI Counts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment Factor	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Existing Volumes (Adjusted)	0	0	0	0	0	0	0	0	0	0	0	0	1978	0	1978	0	0	373	0	373
Growth Factor (%)	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Removed Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Braves DRI Trips	0	0	0	0	0	0	0	0	0	0	0	0	42	0	42	0	0	6	0	6
Base Condition	0	0	0	0	0	0	0	0	0	0	0	0	2121	0	2121	0	0	398	0	398
Site Residential Trips	0	38	0	28	66	0	0	0	0	0	0	0	66	9	75	0	37	16	0	53
Site Retail-Office Trips	0	15	0	8	23	0	0	0	0	0	0	0	8	34	42	0	68	0	0	68
Total New Site Trips	0	53	0	36	89	0	0	0	0	0	0	0	74	43	117	0	105	16	0	121
Pass-by Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future Traffic Volumes	0	53	0	36	89	0	0	0	0	0	0	0	2195	43	2238	0	105	414	0	519

P.M. Peak Hour

	Northbound					Southbound					Eastbound					Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Traffic Counts	0	0	0	0	0	0	0	0	0	0	0	0	782	0	782	0	0	1177	0	1177
Braves DRI Counts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment Factor	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Existing Volumes (Adjusted)	0	0	0	0	0	0	0	0	0	0	0	0	782	0	782	0	0	1177	0	1177
Growth Factor (%)	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
Removed Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Braves DRI Trips	0	0	0	0	0	0	0	0	0	0	0	0	77	0	77	0	0	32	0	32
Base Condition	0	0	0	0	0	0	0	0	0	0	0	0	899	0	899	0	0	1269	0	1269
Site Residential Trips	0	26	0	19	45	0	0	0	0	0	0	0	45	17	62	0	71	30	0	101
Site Retail-Office Trips	0	80	0	40	120	0	0	0	0	0	0	0	40	17	57	0	33	0	0	33
Total New Site Trips	0	106	0	59	165	0	0	0	0	0	0	0	85	34	119	0	104	30	0	134
Pass-by Trips	0	12	0	4	16	0	0	0	0	0	0	0	-4	4	0	0	11	-11	0	0
Future Traffic Volumes	0	118	0	63	181	0	0	0	0	0	0	0	980	38	1018	0	115	1288	0	1403