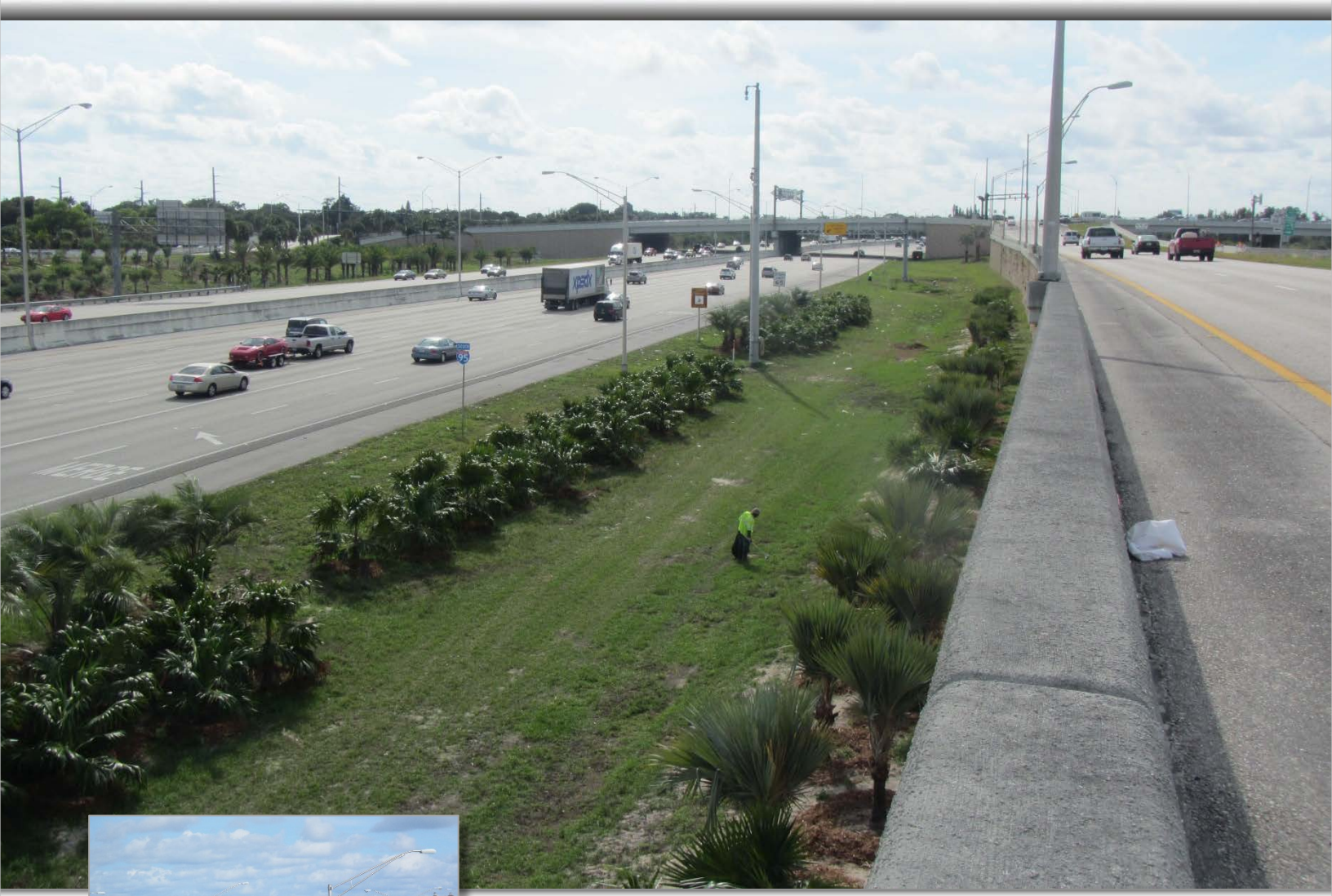
SR 9/I-95 at SR 80/Southern Boulevard Interchange PD&E Study

FPID No.: 435516-1-22-02

Efficient Transportation Decision Making (ETDM) No.: 14183



Interchange Modification Report (IMR)

July 2017

FDOT District Four

Palm Beach County

SR 9 / I-95 AT SR 80 / SOUTHERN BOULEVARD PROJECT DEVELOPMENT & ENVIRONMENT STUDY

INTERCHANGE MODIFICATION REPORT

Financial Project ID: 435516-1-22-02
FAP No.: TBD / ETDM No.: 14183
Palm Beach County

Prepared For:
FDOT District Four
3400 W. Commercial Boulevard
Ft. Lauderdale, FL 33309

Prepared by:
RS&H, Inc.
3125 W. Commercial Boulevard, Suite 130
Ft. Lauderdale, FL 33309

July 2017

SR 9/I-95 at SR 80/Southern Boulevard
Project Development and Environment Study
Interchange Modification Report
FM #: 435516-1-22-02; FAP #: TBD; ETDM #: 14183

Florida Department of Transportation
Determination of Engineering and Operational Acceptability

Acceptance of this document indicates successful completion of the review and determination of engineering and operational acceptability of the Interchange Access Request. Approval of the access request is contingent upon compliance with applicable Federal requirements, specifically the National Environmental Policy Act (NEPA) or Department's Project Development and Environment (PD&E) Procedures. Completion of the NEPA/PD&E process is considered approval of the project location design concept described in the environmental document.

Requestor	Anson Sonnett, PE Project Manager, FDOT, District Four	Date
District Interchange Review Coordinator	Scott Peterson, PE District 4, Project Development Manager	Date
State Interchange Review Coordinator	Andrew Young Systems Planning Office - Central Office	Date
FDOT Chief Engineer	Courtney Drummond, PE Chief Engineer – Central Office	Date

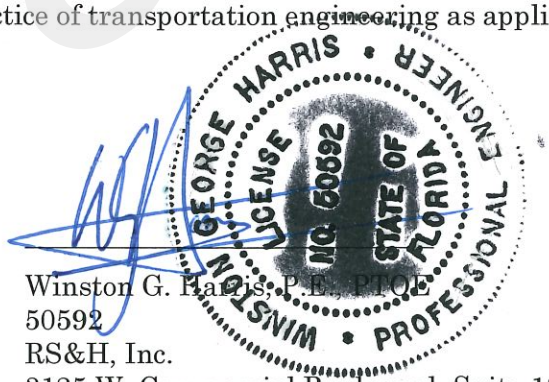
PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a registered professional engineer in the State of Florida practicing with RS&H, Inc., authorized under Section 471.023, Florida Statutes, to offer engineering services to the public through a Professional Engineer, duly licensed under Chapter 471, Florida Statutes, Certificate of Authorization (CA) No. 2294, by the State of Florida Department of Professional Regulation, Board of Professional Engineers, and that I prepared or approved the evaluation, findings, opinions, conclusions, or technical advice herby reported for:

Financial Project ID:	435516-1-22-02
Federal Aid Project No.:	TBD
ETDM No.:	14183
Project:	SR 9/I-95 at SR 80/Southern Boulevard Project Development and Environment (PD&E) Study Interchange Modification Report
County:	Palm Beach
FDOT Project Manager:	Anson Sonnett, P.E.

I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering as applied through professional judgment and experience

SIGNATURE: _____



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Date: 7/31/2017

Interchange Modification Report
SR 9 / I-95 at SR 80 / Southern Boulevard PD&E Study

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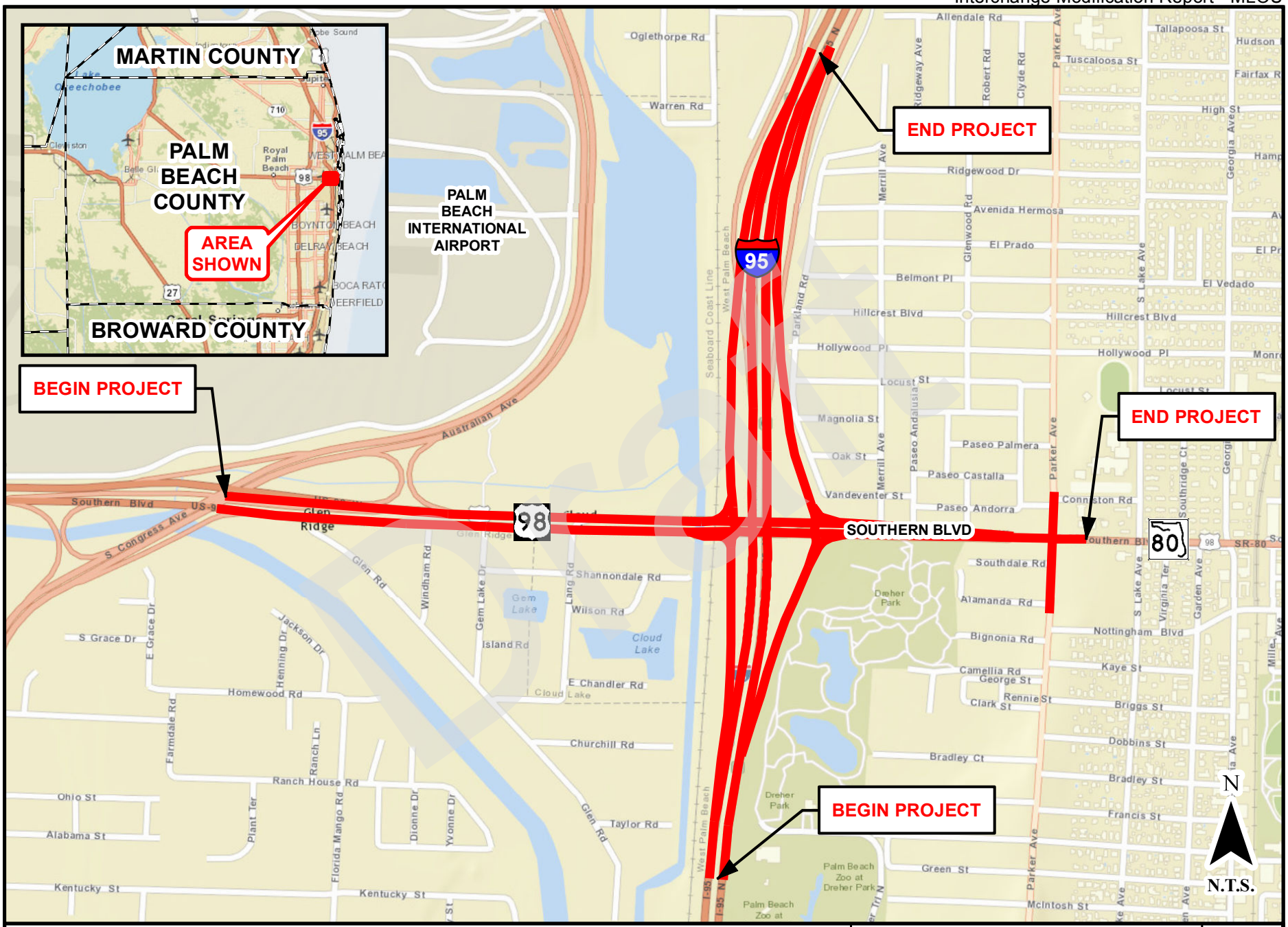
1.0 Summary of Project

1.1 Project Description

The SR 9 / I-95 at SR 80 / Southern Boulevard interchange was one of seventeen interchanges studied as part of the I-95 Interchange Master Plan (IMP) that reexamined the 2003 I-95 Interchange Master Plan Study and the State Road 9 (SR 9) / I-95 mainline project. That project added a High Occupancy Vehicle (HOV) lane and auxiliary lanes from south of Linton Boulevard to north of PGA Boulevard in Palm Beach County and also included minor improvements to eight interchanges. Overall, the I-95 Interchange Master Plan recommended new short-term and long-term improvements to interchanges based on changes in traffic volumes and updated design standards. The SR 9 / I-95 at SR 80 / Southern Boulevard interchange is located between the Forest Hill Boulevard interchange (1.45 miles to the south), and the Belvedere Road interchange (1.01 miles to the north), and in proximity to multiple municipalities including the City of West Palm Beach, Town of Cloud Lake, Town of Glen Ridge, and unincorporated Palm Beach County. Figure 1.1 depicts the project location.

This proposed interchange modification project will improve traffic operations to address traffic spillback onto SR 9 / I-95, reduce congestion, and increase safety. This project will also be developed with consideration to the potential extension of the I-95 Express Lanes through this interchange area. The overall objectives of this project include the following elements:

- Enhance safety, mobility and circulation
- Improve critical access to the Strategic Intermodal System (SIS) Facilities. Both I-95 and SR 80/Southern Boulevard are designated SIS facilities.
- Address operational and physical deficiencies of the existing interchange
- Minimize environmental and social impacts



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Title: Project Location Map

Figure: 1.1

SR 9 / I-95 is currently a ten-lane, divided interstate freeway from north of the Congress Avenue interchange to north of the PGA Boulevard interchange providing four general purpose lanes and one High Occupancy Vehicle (HOV) lane in each direction. Auxiliary lanes are also provided in both the northbound and southbound directions on various segments throughout the corridor. The existing right-of-way varies as it approaches the interchange, but the typical right-of-way ranges from approximately 300 to 600 feet. As part of the Strategic Intermodal System (SIS) and one of two major expressways (Florida's Turnpike being the other) that connect the major employment centers and residential areas of Miami-Dade, Broward and Palm Beach Counties, SR 9 / I-95 serves an important role in facilitating the north-south movement of traffic in Southeast Florida.

Under the jurisdiction of the Florida Department of Transportation (FDOT), SR 80 / Southern Boulevard is an eight-lane divided, urban principal arterial designated as an SIS facility west of SR 9 / I-95, and a four-lane divided, urban principle arterial east of SR 9 / I-95. This east-west facility currently bridges over the South Florida Rail Corridor (SFRC) / CSX Railroad and SR 9 / I-95. SR 80 / Southern Boulevard at the SR 9 / I-95 interchange is a typical diamond configuration and has dual left-turn lanes and a single right-turn lane in both the eastbound and westbound directions to access the SR 9 / I-95 on-ramps. The existing right-of-way varies from approximately 135 feet east of SR 9 / I-95 to 180 feet west of SR 9 / I-95. Sidewalks and designated bicycle lanes are provided along both sides of SR 80 / Southern Boulevard within the area of influence.

1.2 Purpose and Need for the Project

The purpose of this project is to develop recommendations for the proposed modifications to the SR 9 / I-95 and SR 80 / Southern Boulevard interchange. The proposed project will improve traffic operations at the interchange and study area roadways / intersections by implementing operational and capacity improvements to meet the future travel demand projected as a result of Palm Beach County population and employment growth. The project will further enhance safety conditions at the interchange and facilitate emergency evacuation by improving connectivity between the two SIS facilities which are also

designated evacuation routes. An extended discussion of the Need for the project is included under Section 4.0 of this report

1.3 Related Projects within the Study Area

The 2040 Long Range Transportation Plan (LRTP) Needs Plan includes the following projects:

- Implementation of Managed Lanes on I-95 from Broward County to Indiantown Road.
- Proposed Tri-Rail Station with Park-N-Ride Facility (Between Southern Boulevard and Belvedere Road)
- Proposed East-West Palm Tran Bus Grid System (Along Southern Boulevard both east and west of I-95 interchange)
- Proposed N-S Palm Tran Bus Grid System (Along Congress Avenue/Australian Avenue both north and south of Southern Boulevard)
- Proposed Bus Rapid Transit (BRT) (Along Southern Boulevard west of the I-95 interchange).

A review of the FDOT Five-Year Work Program identified the following projects related to the I-95/ SR 80 Interchange PD&E:

- SR-9/I-95 at SR-80/Southern Boulevard and Belvedere Road Landscaping
  - Item Number: 433907-1
  - NTP: 6/16/2014 – Ongoing
- I-95 at Belvedere Road, Northbound Ramp Improvement Project
  - Item No.: 439759-1
  - Programmed for design in FY 2019 and construction in FY 2021

1.4 Applicant Information

This Interchange Modification Report has been prepared for the Florida Department of Transportation, District Four. For information on the I-95/SR 80/Southern Boulevard PD&E Study and the IMR, please contact the Department's Project Manager at the following address:

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2.0 Methodology

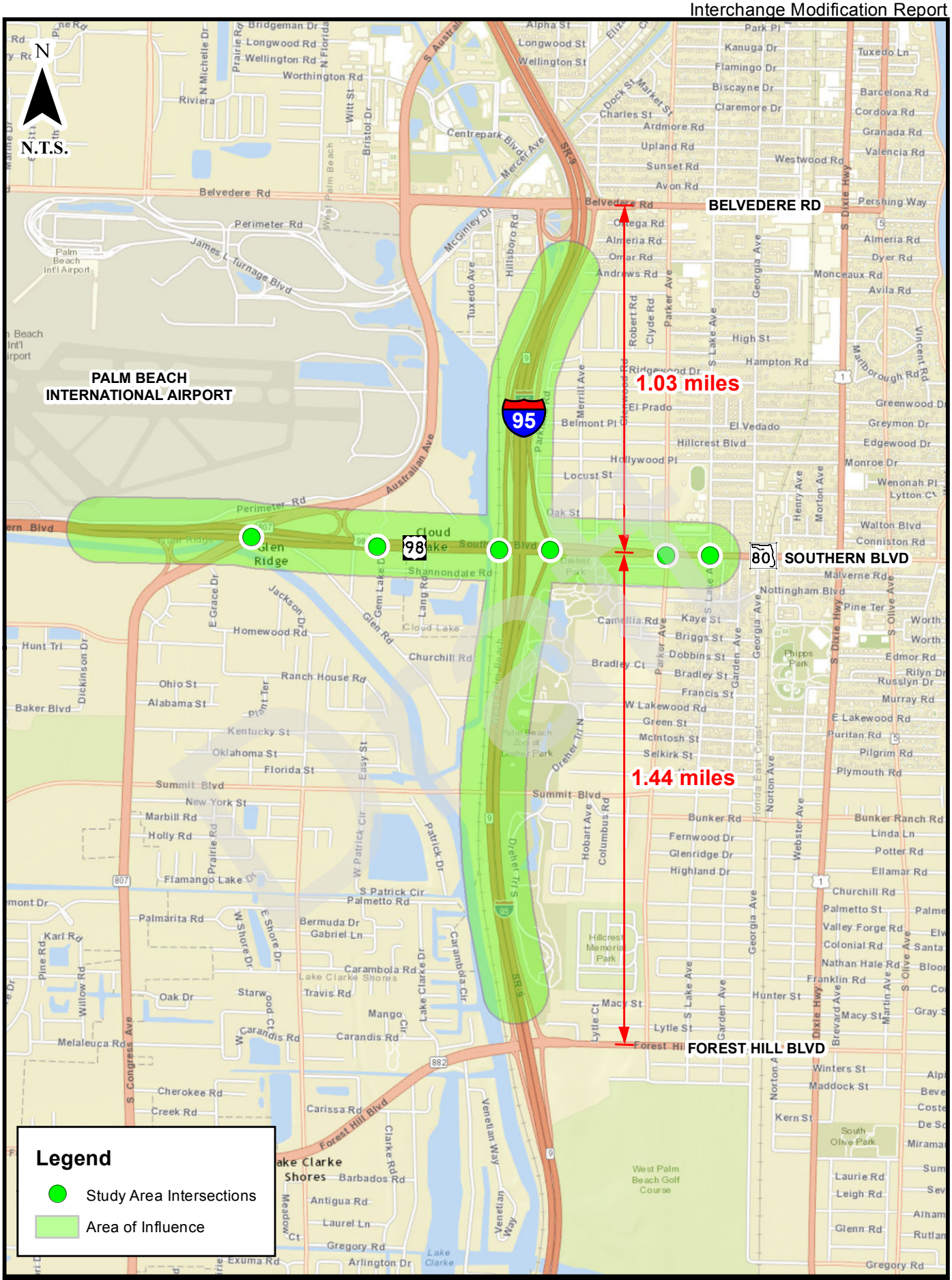
The methodology applied for the SR 9 / I-95 at Southern Boulevard IMR is documented in the Methodology Letter of Understanding (MLOU), dated March 1, 2016. The MLOU was approved by FDOT District 4 and FDOT Central Office, Systems Planning Office. The MLOU outlines the criteria, assumptions, processes, analyses and documentation requirements for the project. This approved MLOU is included with the IMR under Appendix A. The following summarizes some of the more prominent issues covered under the MLOU.

2.1 Area of Influence

The area of influence for the IMR is depicted in Figure 2.1. It incorporates the following roadway segments:

- I-95 mainline from north of Forest Hill Boulevard to south of Belvedere Road. This incorporates the ramp merge and diverge areas north of Forest Hill Boulevard and the merge and diverge areas south of Belvedere Road.
- Southern Boulevard from Australian Avenue to Lake Avenue. This incorporates the following intersections:
    - Southern Boulevard at Australian Avenue (on and off ramps)
    - Southern Boulevard at Gem Lake Drive
    - Southern Boulevard at I-95 SB Off-Ramp Terminal
    - Southern Boulevard at I-95 NB Off-Ramp Terminal
    - Southern Boulevard at Parker Avenue
    - Southern Boulevard at Lake Avenue

It should be noted that the area of influence for the IMR was modified subsequent to the March 1, 2016 MLOU. The area of influence described in the MLOU included the I-95 terminal intersections and adjacent intersections at Forest Hill Boulevard Interchange and Belvedere Road Interchange. These intersections were removed from the area of influence after it was determined that the proposed modifications associated with this study would not warrant traffic microsimulation analyses. In addition, the FDOT had on-going independent studies examining improvements to the terminal intersections at Belvedere Road and Forest Hill Boulevard. The updated area of influence (described above), is consistent with the FDOT's Interchange Access User's Guide.



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Title: Area of Influence Map

Figure: 2-1

2.2 Analysis Years

The analysis years for the project were determined as follows:

- Existing year 2015 (No Build)
- Opening year 2020 (No Build + Recommended Build Alternative)
- Interim year 2030 (No Build + Recommended Build Alternative)
- Design year 2040 (No Build + All Build Alternatives)

2.3 Travel Demand Forecasting

The Southeast Florida Regional Planning Model (SERPM), Version 7.0 provided the basis for travel demand forecasting for the project. SERPM 7 is an activity based model, built on the Florida Standard Urban Transportation Model Structure (FSUTMS). It is the adopted travel demand forecasting tool for FDOT and regional Metropolitan Planning Organizations (MPOs). In June 2015 the FDOT compiled a report detailing the development of preliminary traffic volumes for the existing year (2015) conditions and design year (2040) No Build Conditions (*Traffic Data Collection and Traffic Projections for I-95 Interchange PD&E Study, FDOT District 4, June 18, 2015*). These preliminary traffic forecast were prepared as part of the FDOT's pre-work in advance of the PD&E Study. Results from this pre-work effort were utilized in developing the traffic forecast used for the IMR. The travel demand forecasting process involved the following:

1. **Existing Year (2015) AADT, AM and PM Peak Hour Volumes:** Existing year annual average daily traffic (AADT) and peak hour volumes (AM and PM) were developed directly from 2015 field counts as part of the FDOT's pre-work activities in advance of the PD&E Study. These preliminary volumes were further reviewed for reasonableness, checked for balanced flow, and adjusted as needed, for use in the IMR.

2. **Design Year (2040) AADTs:** SERPM 7 was used to generate initial estimates of 2040 AADTs for the network. As part of the pre-work activities for the PD&E Study, FDOT developed a preliminary set of 2040 AADTs based on a validated SERPM 7 model with

post processing adjustments for balancing and reasonableness checks. These preliminary AADTs were further reviewed for reasonableness prior to use in the IMR.

3. **Design Year (2040) AM and PM Hour Volumes**: Design Year (2040) AM and PM peak hour volumes were developed using the FDOT's TmTool spreadsheet. The TmTool analysis utilized existing year peak hour volumes from step 1 (above); 2040 AADTs from step 2 (above) and K-Factors and D-Factors from Table 2.1 under Section 2.4 of the IMR. The peak hour volumes generated by TmTool were checked for reasonableness, adjusted and balanced across the network. Peak hour volumes for alternative design concepts were developed by reassignment of traffic volumes based on the change in interchange configuration and the associated traffic flow pattern.

4. **Interim Year (2030) AADT, AM and PM Peak Hour Volumes**: Interim year (2030) AADTs, AM and PM peak hour volumes were interpolated from the 2015 and 2040 traffic volumes.

5. **Opening Year (2020) AADT, AM and PM Peak Hour Volumes**: Opening year (2020) AADTs, AM and PM peak hour volumes were interpolated from the 2015 and 2040 traffic volumes.

2.4 Traffic Factors

Table 2.1 contains the traffic factors used for travel demand forecasting and operations analyses.

Table 2.4: Traffic Factors

Roadway	K(1)	D(2)	T(3)	Tf(4)	PHF(5)
I-95	8.00%	59	6.5	3	0.95
Southern Blvd., West of I-95	9.00%	62	7.5	3.5	0.95
Southern Blvd., East of I-95	9.00%	58	4.5	2	0.95
Other Arterials, West of I-95	9.00%	varies	6.5	3	0.95
Other Arterials, East of I-95	9.00%	varies	4.5	2	0.95

Notes:

(1) K-factors based on standard K, per FDOT Traffic Online
(2) D-factors based on measured 2015 peak hour traffic distribution, subject to FDOT's recommended maximum and minimums for facility type.
(3) T-factor (T_{24}) based on assessment of 5-year historical classification counts
(4) T_f (Design Hour Truck, DHT) estimated at approximately 50% of T-factor;
(5) PHF: Existing year per measured 2015 counts; Future years = 0.95.

2.5 Operations Analyses

Operations analyses were performed based on the Highway Capacity Manual (HCM), 2010. Calculations were performed using the Highway Capacity Software (HCS) for freeway segments and Synchro (version 9) for arterials/intersections. Synchro models were calibrated in accordance with guidelines provided in the FDOT's Traffic Analysis Handbook, March 2014. The calibration process was supported by field observations conducted during typical weekday AM and PM peak periods. Synchro models also incorporated guidelines provided by FDOT District 4 for right turns on red (RTOR). Per District 4 guidelines, for signalized intersection approaches with a single exclusive right turn lane, RTOR is estimated from the following relationships:

- Interchange ramp terminals: $V_{RTOR} = 0.57 * V_{RT}$
- Arterial intersections: $V_{RTOR} = 0.32\ 8\ V_{RT}$

Where: V_{RTOR} = estimated right turn on red volume

V_{RT} = measured right turn volume

The above relations were used for future conditions operations analyses and for existing conditions analyses in cases where RTOR volumes were not measured. In cases not covered by District 4 guidelines (i.e. dual or triple signalized right turn lanes), Synchro default calculations were used for estimating RTOR volume. The following measures of effectiveness (MOEs) were gathered for evaluating traffic operations:

- Project Intersections (Synchro Models)
  - Intersection LOS
  - Intersection control delay
  - 95th percentile queues
- Freeway Segments (HCS Models)
  - Basic Freeway Segments – Density and LOS
  - Freeway Merge and Diverge Segments – Density and LOS

2.6 Level of Service Standards

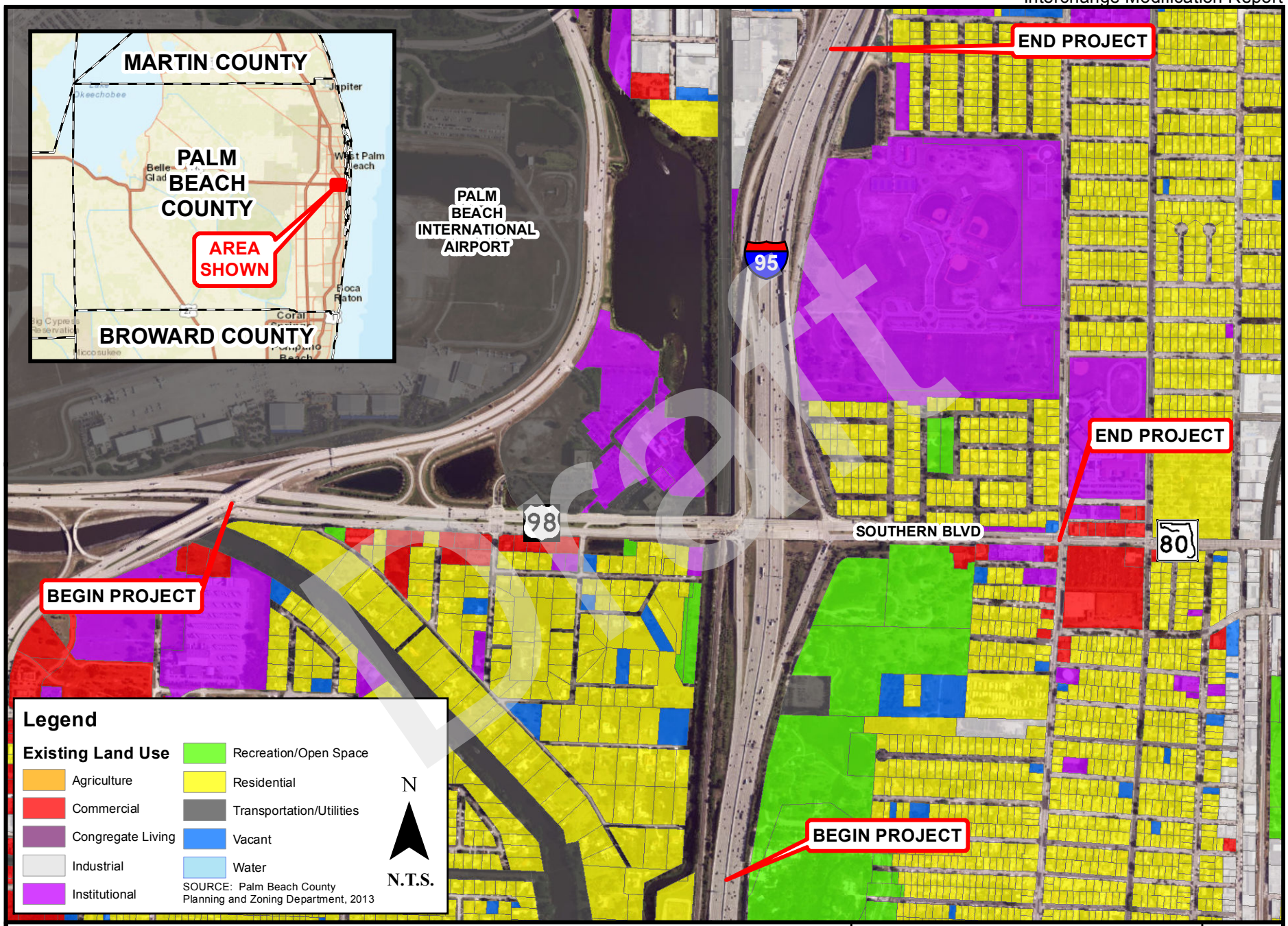
The study interchange is located within an urbanized area. Hence, level of service D is the applicable standard for this project, per FDOT's Quality level of Service Handbook, 2013.

3.0 Existing Conditions

The following sections describe conditions within the study area for the existing year 2015.

3.1 Existing Land Use

Existing land uses surrounding the interchange are predominantly residential with large recreation and conservation areas, with the exception of the northwest quadrant where the Palm Beach International Airport is located. The southwest quadrant is predominantly residential with some parks, and a small strip of commercial properties lining SR 80. In the southeast quadrant, Dreher Park is located adjacent to I-95, with residential land uses behind it and a small strip of commercial and institutional properties along SR 80. In the northeast quadrant, Bill Moss Hillcrest Paseo Park and Conniston Middle School are the largest single uses, which are surrounded by residential land with the exception of a small strip of commercial and institutional uses adjacent to SR 80.



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Title: Existing Land Use Map

Figure: 3-1

3.2 Existing Road Network

The general characteristics of the roadway facilities located within the project limits are described in the sections below. The data below is based on information gathered from the FDOT's Roadway Characteristics Inventory, Straight Line Diagrams (SLDs) and field reviews conducted for the PD&E Study. The existing roadway and intersection lane configurations are depicted in Figure 3-2 under Section 3-3 of the IMR.

Facility: SR 9/I-95 from north of Forest Hill Boulevard to south of Belvedere Road

Facility Type: Freeway, Limited Access, SIS Facility, designated evacuation route.

Functional Classification: Urban Principal Arterial – Interstate

Access Management Classification (FDOT): Class 1

Typical Section:

- Northbound Direction: 4 General Use (GU) lanes + 1 High Occupancy Vehicle (HOV) lane. In addition, two auxiliary lanes are within the segment south of Southern Boulevard (total 7 lanes) and one auxiliary lane is within the segment north of Southern Boulevard (total 6 lanes).
- Southbound Direction: 4 GU lanes + 1 HOV lane + auxiliary lanes between interchanges. In addition, one auxiliary lane is within the segment south of Southern Boulevard (total 6 lanes) and one auxiliary lane is within the segment north of Southern Boulevard (total 6 lanes).

Median Type: Barrier wall.

Posted Speed Limit: 65 mph

Facility: SR 80/Southern Boulevard from Australian Avenue to I-95

Facility Type: Arterial

Functional Classification: Urban Principal Arterial- Other

Access Management Classification (FDOT): 3

Typical Section:

- Eastbound: Varies from 3 to 4 lanes
- Westbound: 4 lanes
- Raised median

Posted Speed Limit: 45 mph

Facility: SR 80/Southern Boulevard from I-95 to Lake Avenue

Facility Type: Arterial

Functional Classification: Urban Principal Arterial- Other

Access Management Classification (FDOT): Class 3 west of Parker Avenue; Class 6 east of Parker Avenue.

Typical Section:

- Eastbound: Varies from 2 to 3 lanes
- Westbound: Varies from 2 to 3 lanes
- Raised median

Posted Speed Limit: 35 mph

3.3 Existing Traffic Volumes

As part of the pre-work activities, conducted in advance of the PD&E Study, the FDOT collected existing year (2015) traffic counts at locations throughout the project study area. These traffic counts were processed and documented in the reports: "*Traffic Data Collection and Traffic Projections for I-95 Interchange PD&E Studies, FDOT June 18, 2015*". The data collection included the following that are relevant to this IMR:

72-Hour Continuous Machine Counts at:

- I-95 North of Forest Hill Boulevard (per District 4 Statistics Unit)
- I-95 North of Southern Boulevard (per District 4 Statistics Unit)

72-Hour Vehicle Classification Counts at:

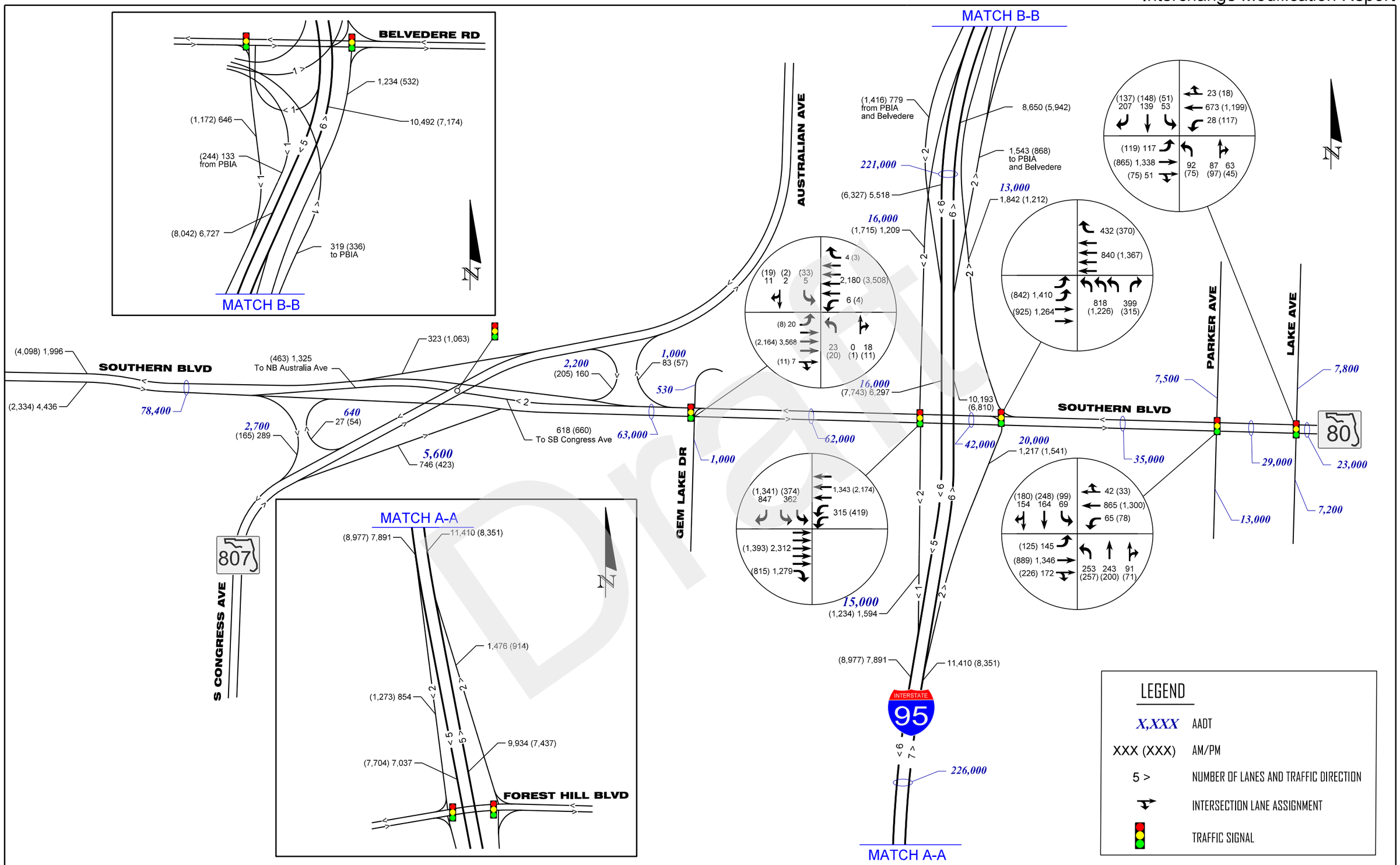
- SR 80 Westbound to Australian Avenue Northbound
- SR 80 Westbound to Australian Avenue Southbound
- Australian Avenue Northbound to SR 80 Westbound
- Australian Avenue Southbound to SR 80 Westbound
- SR 80 Eastbound to Australian Avenue Southbound
- SR 80 Eastbound to Australian Avenue Northbound
- Australian Avenue Northbound to SR 80 Eastbound
- Australian Avenue Southbound to SR 80 Eastbound
- SR 80 East of Australian Avenue

- SR 80 West of Australian Avenue

Six-hour (6:00 AM to 9:00 AM and 4:00 PM to 7:00 PM) Intersection Turning Movement Counts (including right turns on red) and 72-Hour Continuous Machine Counts on all approaches at the following intersections:

- SR 80 at Gem Lake Drive
- SR 80 at I-95 Northbound off Ramp
- SR 80 at I-95 Southbound off Ramp
- SR-80 at Parker Avenue
- SR-80 at Lake Avenue

All data collection was conducted for typical weekdays – Tuesday through Thursday. The data collected was processed to developed annual average daily traffic (AADT) for study links and peak hour turning movement volumes for the study intersections. These were checked for reasonableness and adjusted, as needed, for use in the IMR. The resulting AADTs and peak hour traffic flows for the study network are depicted in Figure 3.2.



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Existing (2015) Road Network,
AADTs, and Peak Hour Volume

Figure 3-2

SHEET 1 OF 1

$USER$ $DATE$ $TIME$ $FILE$

3.4 Existing Traffic Operations

Level of Service (LOS) analyses were conducted for the existing (2015) conditions for the roadway segments and intersections in the study network. The analyses were conducted in accordance with procedures of the HCM, 2010 Edition. HCS was used for performing calculations for freeway segments (mainline, merge, diverge and weaving segments). Synchro models were developed for performing the level of service analyses at the terminal intersections and other project intersections. The road network geometry and peak hour traffic volumes used in the analyses were maintained consistent with the information presented in previous sections of this report (Sections 3.2 and 3.3). Signal timings used were consistent with the timing sheets obtained from Palm Beach County. These signal timing sheets are contained under Appendix B. Peak Hour Factors used in the analyses were consistent with data gathered from the traffic counts. The percent trucks during the peak hours were also estimated from data gathered from the turning movement counts and machine counts. The applicable peak hour factors and truck factors are presented in Table 2.4 under Section 2 (Methodology) of the IMR.

In performing the operations analyses for the I-95 freeway segments, adjustments were made to account for the presence of HOV lanes along the mainline. One designated HOV lane is provided in the northbound and southbound directions throughout the limits of the study area. The traffic using the HOV lanes during the AM and PM peak hours was estimated from data documented in the "*2014 I-95 Managed Lanes Monitoring Report, FDOT District 4 and District 6, March 31, 2015*" (see Appendix C). Based on information contained in this report, traffic using the HOV lanes within the limits of the IMR were estimated at approximately 10% in the AM and PM peaks for NB and SB travel on I-95. The estimated HOV volume were assumed consistent throughout the study limits and were deducted from the total mainline traffic in estimating general use (GU) traffic for LOS calculations. This simplified analytical procedure assumes that traffic entering and exiting the HOV lanes remain relatively balanced within the limits of the project.

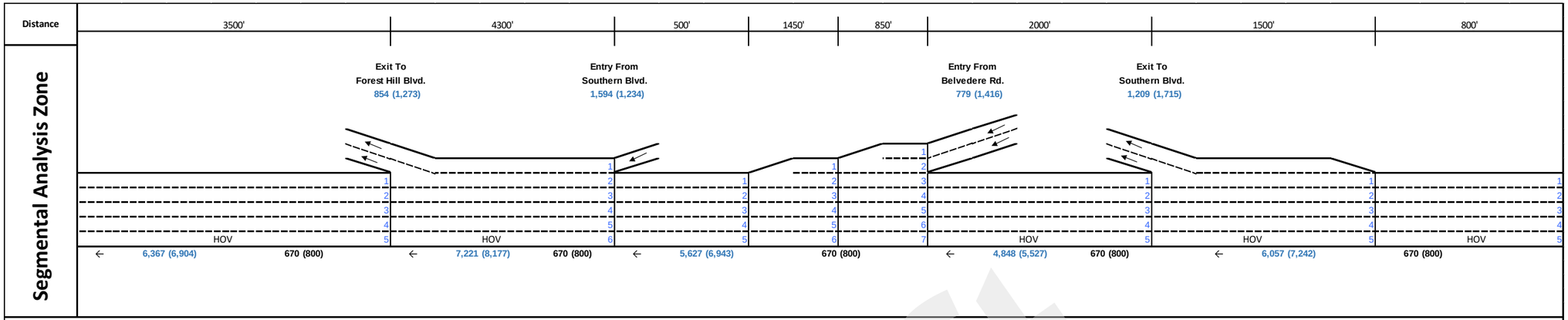
Detailed results from the HCS analyses and Synchro analyses are contained under Appendix D. The results are summarized in Figure 3.3 and Table 3.1. The results indicate that all existing HOV segments operate under capacity during the AM and PM peak hours. General Uses (GU) lanes along I-95 mainline operate under acceptable conditions (within LOS D or better) except for the following segments:

- Northbound I-95, basic freeway segment located north of the on-ramp from Forest Hill Boulevard operates at LOS E during AM peak hour.
- Northbound I-95, basic freeway segment located approximately 3,900 feet north of the on-ramp from Southern Boulevard (5 lane segment) operates at LOS F during AM peak hour.

Among the study intersections, substandard operating conditions are experienced at the following:

- Southern Boulevard at Parker Avenue (LOS E, AM peak)

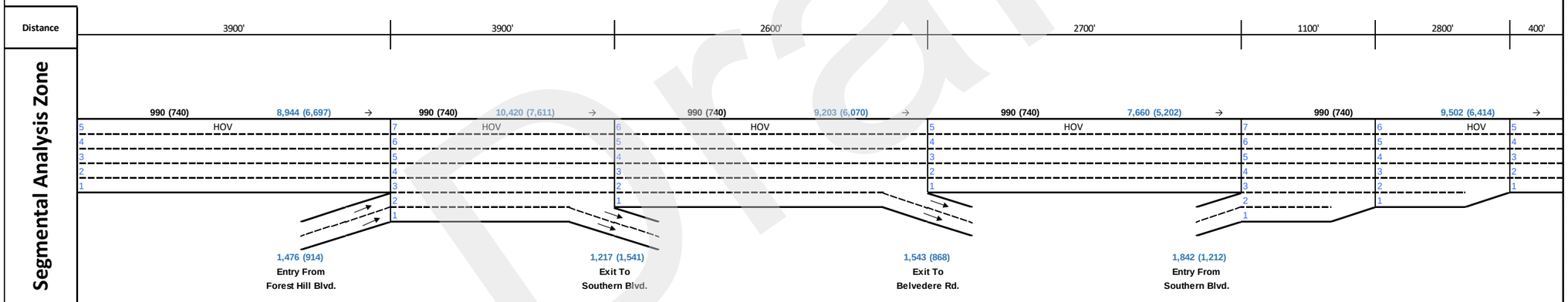
The operations analysis indicate that the I-95 northbound and southbound terminal intersections currently operate at an overall acceptable level of service. However, field observations confirmed that extensive queues are generated on the NB off-ramp and the SB off-ramp during the PM peak period (4:00 PM to 6:00 PM). The NB off-ramp was most critical as queue lengths occasionally exceed the available storage (approximately 1,540 feet) and spill onto the mainline. The spillback of queues onto I-95 mainline is a safety and operational concern. While queues on the SB off-ramp are extensive, these queues are typically not at risk for spill-back onto the mainline as the available storage on the SB off-ramp is very long (approximately 2,960 feet). Extensive eastbound right turn queues (typically extending beyond Lang Road, approximately 1,200 feet upstream) are also generated at the SB terminal intersections during AM peak period (7:00 AM to 9:00 AM).



← I-95 Southbound ←

GU Lane	Basic Freeway	Major Diverge	Basic Freeway	Ramp Roadway	Basic Freeway	On Ramp	Basic Freeway	Off Ramp	Basic Freeway
LOS AM	C	UC	C	UC	C	A	C	B	C
LOS PM	D	UC	C	UC	D	B	C	B	D

HOV Lane	HOV Lane			
LOS AM	UC	UC	UC	UC
LOS PM	UC	UC	UC	UC



→ I-95 Northbound →

GU Lane	Basic Freeway	Major Merge	Basic Freeway	Major Diverge	Basic Freeway	Major Diverge	Basic Freeway	Major Merge	Basic Freeway	Basic Freeway
LOS AM	E	UC	D	UC	D	UC	D	UC	D	F
LOS PM	D	UC	C	UC	C	UC	C	UC	C	C

HOV Lane	HOV Lane			
LOS AM	UC	UC	UC	UC
LOS PM	UC	UC	UC	UC

LEGEND
X,XXX (X,XXX) = GU AM (PM) Peak Hour Volume (vph)
X,XXX (X,XXX) = HOV AM (PM) Peak Hour Volume (vph)

FDOT

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Title: I-95 LOS - 2015 Existing

Figure: 3-3

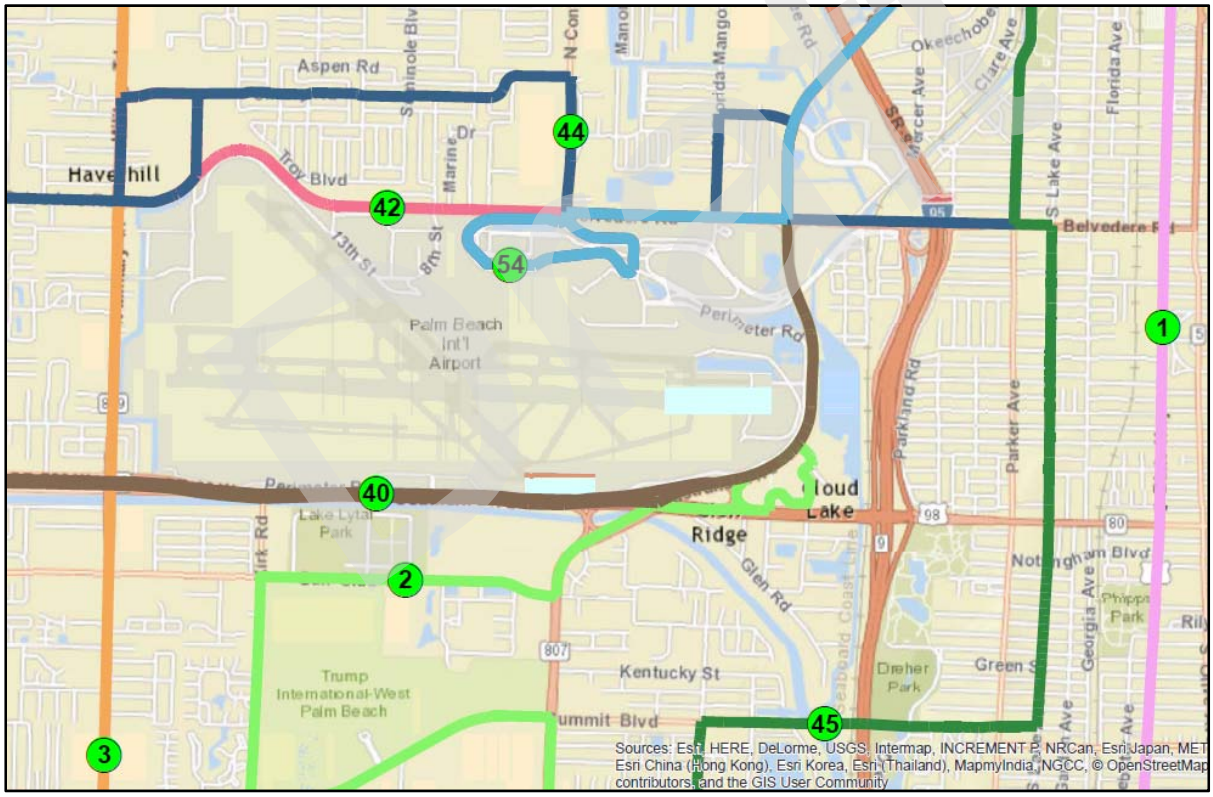
Table 3.1: Existing (2015) Intersection Level of Service

Intersection	Intersection Approach				Overall Intersection	
	Approach	Movement	Delay (sec)	LOS	Delay (sec)	LOS
			AM (PM)	AM (PM)	AM (PM)	AM (PM)
Southern Boulevard at Gem Lake Drive	Northbound	Left	64.2 (63.7)	**E (E)**	18.1 (13.5)	B (B)
		Thru/Right	61.5 (61.5)	**E (E)**		
	Southbound	Left	61.8 (65.5)	**E (E)**		
		Thru/Right	61.5 (61.6)	**E (E)**		
	Eastbound	Left	75.4 (67.7)	**E (E)**		
		Thru/Right	25.1(15.5)	C (B)		
	Westbound	Left	71.2 (70.2)	**E (E)**		
		Thru	4.7 (10.9)	A (B)		
		Right	4.2 (6.8)	A (A)		
Southern Boulevard at I-95 SB Ramp Terminal	Southbound	Left	67.2 (71.8)	**E (E)**	32.9 (49.6)	C (D)
		Right	1.6 (143.6)	A **(F)**		
	Eastbound	Thru	25.4 (42.0)	C (D)		
		Right	99.3 (1.3)	**F** (A)		
	Westbound	Left	0.9 (1)	A (A)		
		Thru	0.5 (20.2)	A (C)		
Southern Boulevard at I-95 NB Ramp Terminal	Northbound	Left	66.6 (92.8)	**E (F)**	31.3 (43.1)	C (D)
		Right	41.3 (22.5)	D (C)		
	Eastbound	Left	14.7 (8.9)	B (A)		
		Thru	2.8 (7.6)	A (A)		
	Westbound	Thru	53.2 (57.6)	D **(E)**		
		Right	50.8 (8.8)	D (A)		
Southern Boulevard at Parker Avenue	Northbound	Left	57.3 (53.7)	**E** (D)	65.1 (36.7)	**E** (D)
		Thru/Right	51.7 (50.6)	D (D)		
	Southbound	Left	51.1 (48.5)	D (D)		
		Thru/Right	61.3 (66.5)	**E (E)**		
	Eastbound	Left	37.5 (96.5)	D **(F)**		
		Thru/Right	89.5(15.1)	**F** (B)		
	Westbound	Left	55.8 (34.8)	**E** (C)		
		Thru/Right	38.8 (32.8)	D (C)		
Southern Boulevard at Lake Avenue	Northbound	Left	54.8 (51.3)	D (D)	27.9 (30.5)	C (C)
		Thru/Right	67.3 (66.6)	**E (E)**		
	Southbound	Left	51.7 (49.6)	D (D)		
		Thru	66.3 (67.4)	**E (E)**		
		Right	71.7 (64.2)	**E (E)**		
	Eastbound	Left	2.7 (54.6)	A (D)		
		Thru/Right	15.7 (7.8)	B (A)		
	Westbound	Left	20.6 (19.2)	C (B)		
		Thru/Right	22.2 (32.2)	C (C)		

3.5 Existing Transit Operations

Existing transit services within the vicinity of the project area are depicted in Figure 3.3, below. The existing bus services are operated by Palm Tran. As shown in Figure 3.3, none of the existing bus services operate along I-95. In addition, none of the bus services operate along the segment of Southern Boulevard between Lang Road (west of I-95) and Lake Avenue (east of I-95). The current bus service within the project vicinity operate at headways ranging from 30 mins to 60 mins depending on time of day and day of week. Service hours also vary by day of week – this ranges from 5:00 AM to 10:00 PM on weekdays; 7:00 AM to 10:00 PM on Saturdays and 10:00 AM to 7:00 PM on Sundays.

Figure 3.4: Existing Bus Routes



3.6 Existing Pedestrian and Bicycle Facilities

West of I-95, SR 80 has a seven-foot concrete sidewalk and a four-foot designated bicycle lane in both the westbound and eastbound directions within the project study area. East of I-95, SR 80 has a six-foot concrete sidewalk and a four-foot designated bicycle lane in the westbound and eastbound directions. The concrete sidewalk abuts the curb and gutter throughout the project area. On the bridge section over I-95 and on the bridge approaches, the back of sidewalk abuts a concrete barrier wall with an attached railing as shown in Figure 3.5. Signalized intersections on SR 80 are equipped with push button signals and pedestrian signal heads. In addition, high emphasis crosswalks are provided at the signalized intersections. I-95 is an interstate highway and is statutorily prohibited from providing bicycle and pedestrian accommodations on the freeway.

During field observations, minimal pedestrian and bicycle activity was observed during the AM and PM peak periods. Traffic counts report an average of five (5) pedestrians/bicyclists using the interchange during typical weekday AM and PM peak hours. Pedestrian and bicycle activities had no visible impact on traffic operations.

Figure 3.5: SR 80, Sidewalk and Bicycle Lane over I-95

3.7 Corridor Crash Analysis

FDOT's Crash Analysis Reporting System (CARS) was used to gather historical crash records for the I-95 and the SR 80/Southern Boulevard corridors. CARS is a database maintained annually by the FDOT for crashes reported along state highway facilities. The database provides information on various characteristics associated with each crash including: collision type, severity, weather conditions, road surface conditions and date/time information. The CARS database was researched to identify and extract crashes reported along the study corridor during the period from January 2010 through December 2014. The crashes were analyzed to make an assessment of safety conditions along the study corridors. Major findings from the safety analysis are summarized below.

I-95 Corridor

Crash data for the I-95 corridor from north of Forest Hill Boulevard to South of Belvedere Road revealed that a total of 825 reported crashes occurred from January 2010 through December 2014. During the study period, one (1) fatal crash occurred in 2012 and one (1) in 2013. A majority of the crashes experienced along the study corridor were rear end collisions accounting for 238 crashes (28.8%), followed by fixed object collisions accounting for 206 crashes (25.0%), and 142 sideswipe crashes (17.2%). Approximately 64% of the crashes occurred during daylight conditions, and 30% of the crashes occurred during dark conditions. The remaining 6% of the crashes occurred during dusk or dawn. Approximately 65% of the crashes occurred under dry roadway surface conditions, and 35% occurred under wet roadway surface conditions.

SR 80 / Southern Boulevard Corridor

Crash data for the SR 80 / Southern Boulevard corridor from west of Australian Avenue to east of Lake Avenue revealed that a total of 268 reported crashes occurred from January 2010 through December 2014. During the study period, one (1) fatal crash occurred in 2011 and one (1) in 2013. A majority of the crashes experienced along the study corridor were rear end collisions accounting for 93 crashes (34.7%), followed by fixed object collisions accounting for 44 crashes (16.4%), and 39 sideswipe crashes (14.6%). Approximately 64% of the crashes occurred during daylight conditions, and 30% of the crashes occurred during dark conditions. The remaining 6% of the crashes occurred during dusk or dawn. Approximately 72% of the

crashes occurred under dry roadway surface conditions, and 27% occurred under wet roadway surface conditions.

At the interchange of I-95 and SR 80 / Southern Boulevard, both ramp terminal intersections were listed on the FDOT's high crash list. The I-95 NB terminal intersection was listed on the high crash list in 2014, while the I-95 SB ramp terminal was listed in 2011. A crash analysis was performed for both terminal intersections to identify the predominant crash patters at these high crash locations. The results are summarized in Tables 3.4 and 3.5.

I-95 NB Ramp Terminal

Crash data for the I-95 NB terminal intersection revealed that a total of 45 reported crashes occurred from January 2010 through December 2014. During the study period 2010-2014, no fatal crashes were reported at the location. A majority of the crashes experienced along the study corridor were rear end collisions accounting for 15 crashes (33.3%), followed by angle collisions accounting for nine (9) crashes (20%), fixed object collisions accounting for eight (8) crashes (17.8%), and seven (7) sideswipe crashes (15.6%). Approximately 53% of the crashes occurred during daylight conditions, and 38% of the crashes occurred during dark conditions. The remaining 8% of the crashes occurred during dusk or dawn. Approximately 67% of the crashes occurred under dry roadway surface conditions, and 33% occurred under wet roadway surface conditions.

I-95 SB Ramp Terminal

Crash data for the I-95 SB terminal intersection revealed that a total of 14 reported crashes occurred from January 2010 through December 2014. During the study period 2010-2014, no fatal crashes were reported at the location. A majority of the crashes experienced along the study corridor were fixed object collisions accounting for 23 crashes (45.1%), followed by rear end collisions accounting for 14 crashes (27.5%), and five (5) angle crashes (10%). Approximately 57% of the crashes occurred during daylight conditions, and 37% of the crashes occurred during dark conditions. The remaining 6% of the crashes occurred during dusk or dawn. Approximately 53% of the crashes occurred under dry roadway surface conditions, and 47% occurred under wet roadway surface conditions.

The crash analysis for the I-95 and the SR 80 / Southern Boulevard corridors indicate that the predominant crash patterns of concern include: collision during wet pavement surface conditions; collisions during dark conditions, rear end collisions and, collisions with fixed objects. Probable causal factors for these crash types include: slippery pavement surface, excessive traffic congestion, inadequate roadway lighting and fixed objects located close to the travel lanes. To improve safety along both the I-95 and SR 80 / Southern Boulevard study corridors, the following improvements were recommended for consideration in the PD&E Study: improve skid resistance for the pavement surface, provide adequate drainage, improve roadway lighting and increase capacity to relieve congestion.

Table 3.2: I-95 Corridor Crash Summary

SR 9/I-95 N. of Forest Hill Blvd to S. of Belvedere Rd (MP 22.5 to 25.90)		Number of Crashes Year					5 Year Total Crashes	Mean Crashes Per Year	%
		2010	2011	2012	2013	2014			
CRASH TYPE	Rear End	31	24	49	58	76	238	47.60	28.8%
	Head On	4	0	0	0	1	5	1.00	0.6%
	Angle	19	8	18	16	14	75	15.00	9.1%
	Left Turn	0	0	0	0	0	0	0.00	0.0%
	Right Turn	0	0	0	0	0	0	0.00	0.0%
	Sideswipe	28	28	25	30	31	142	28.40	17.2%
	Backed Into	0	1	0	0	0	1	0.20	0.1%
	Coll. w/ Parked Car	0	0	2	3	0	5	1.00	0.6%
	Coll. w/ Pedestrian	0	0	0	0	0	0	0.00	0.0%
	Coll. w/ Bicycle	0	0	0	0	0	0	0.00	0.0%
	Fixed Object	20	28	47	58	53	206	41.20	25.0%
	Ran Off Road	2	0	0	0	0	2	0.40	0.2%
	Overturned	1	3	1	1	5	11	2.20	1.3%
	Other	33	20	30	32	25	140	28.00	17.0%
	Total Crashes	**138**	**112**	**172**	**198**	**205**	**825**	**165.00**	**100.0%**
SEVERITY	PDO Crashes	88	64	98	123	124	497	99.40	60.2%
	Fatal Crashes	0	0	1	1	0	2	0.40	0.2%
	Injury Crashes	50	48	73	74	81	326	65.20	39.5%
LIGHTING CONDITIONS	Daylight	76	65	110	133	145	529	105.80	64.1%
	Dusk	1	8	7	11	9	36	7.20	4.4%
	Dawn	0	6	3	6	1	16	3.20	1.9%
	Dark	61	33	52	48	50	244	48.80	29.6%
	Unknown	0	0	0	0	0	0	0.00	0.0%
SURFACE CONDITIONS	Dry	109	83	98	123	123	536	107.20	65.0%
	Wet	29	28	74	75	82	288	57.60	34.9%
	Others	0	1	0	0	0	1	0.20	0.1%
MONTH OF YEAR	January	12	11	9	14	26	72	14.40	8.7%
	February	14	8	12	10	12	56	11.20	6.8%
	March	15	8	11	12	16	62	12.40	7.5%
	April	10	23	12	16	13	74	14.80	9.0%
	May	13	7	15	17	12	64	12.80	7.8%
	June	13	6	22	20	10	71	14.20	8.6%
	July	8	14	17	30	24	93	18.60	11.3%
	August	9	4	21	7	20	61	12.20	7.4%
	September	16	9	9	22	22	78	15.60	9.5%
	October	9	11	16	16	23	75	15.00	9.1%
	November	13	3	15	18	14	63	12.60	7.6%
	December	6	8	13	16	13	56	11.20	6.8%
DAY OF WEEK	Sunday	15	9	19	25	32	100	20.00	12.1%
	Monday	19	21	35	27	35	137	27.40	16.6%
	Tuesday	19	17	21	28	35	120	24.00	14.5%
	Wednesday	25	15	20	35	33	128	25.60	15.5%
	Thursday	18	11	32	30	35	126	25.20	15.3%
	Friday	20	23	30	32	24	129	25.80	15.6%
	Saturday	22	16	15	21	11	85	17.00	10.3%
HOUR OF DAY	00:00-06:00	24	19	27	30	20	120	24.00	14.5%
	06:00-09:00	18	19	32	56	48	173	34.60	21.0%
	09:00-11:00	12	9	15	20	15	71	14.20	8.6%
	11:00-13:00	5	13	14	16	11	59	11.80	7.2%
	13:00-15:00	11	11	21	12	25	80	16.00	9.7%
	15:00-18:00	26	20	32	38	47	163	32.60	19.8%
	18:00-24:00	42	21	31	26	39	159	31.80	19.3%

Notes:

1) Collision with Bicycle Crashes include Collision with Bicycle/Collision with Bicycle in Bike Lane (Codes 11 and 12).
2) Fixed Object Crashes include collisions with sign/sign post, utility/light pole, guardrail, fence, concrete barrier wall, bridge, pier, abutment, rail, tree, shrubbery, construction barricade/sign, traffic gate, crash attenuators, other fixed objects (incl. above road).
3) Ran-off-Road Crashes include Ran in Ditch/Culvert and Ran off road into water (Codes 29 and 30).
4) Other crashes include crashes not categorized as the crash types shown in the table.
5) Dark Crashes include both scenarios - with and without street lighting.

Table 3.3: SR 80/Southern Boulevard Corridor Crash Summary

SR 80/Southern Blvd W. of Australian Ave to E. of Lake Ave (MP 18.3 to 20.64)		Number of Crashes Year					5 Year Total Crashes	Mean Crashes Per Year	%
		2010	2011	2012	2013	2014			
CRASH TYPE	Rear End	12	7	19	24	31	93	18.60	34.7%
	Head On	2	0	1	0	0	3	0.60	1.1%
	Angle	3	6	10	6	14	39	7.80	14.6%
	Left Turn	0	1	0	1	0	2	0.40	0.7%
	Right Turn	0	2	0	1	0	3	0.60	1.1%
	Sideswipe	7	0	0	4	5	16	3.20	6.0%
	Backed Into	0	0	0	0	0	0	0.00	0.0%
	Coll. w/ Parked Car	0	1	0	0	0	1	0.20	0.4%
	Coll. w/ Pedestrian	0	0	1	0	1	2	0.40	0.7%
	Coll. w/ Bicycle	0	0	2	0	0	2	0.40	0.7%
	Fixed Object	7	5	8	9	15	44	8.80	16.4%
	Ran Off Road	0	1	0	0	0	1	0.20	0.4%
	Overturned	0	1	3	3	0	7	1.40	2.6%
	Other	7	12	16	6	14	55	11.00	20.5%
	Total Crashes	**38**	**36**	**60**	**54**	**80**	**268**	**53.60**	**100.0%**
SEVERITY	PDO Crashes	17	20	29	29	47	142	28.40	53.0%
	Fatal Crashes	0	1	0	1	0	2	0.40	0.7%
	Injury Crashes	21	15	31	24	33	124	24.80	46.3%
LIGHTING CONDITIONS	Daylight	28	18	37	40	48	171	34.20	63.8%
	Dusk	0	1	3	2	4	10	2.00	3.7%
	Dawn	0	0	3	0	2	5	1.00	1.9%
	Dark	9	17	17	12	24	79	15.80	29.5%
	Unknown	1	0	0	0	2	3	0.60	1.1%
SURFACE CONDITIONS	Dry	27	19	46	39	62	193	38.60	72.0%
	Wet	10	17	14	15	16	72	14.40	26.9%
	Others	1	0	0	0	2	3	0.60	1.1%
MONTH OF YEAR	January	3	0	2	6	6	17	3.40	6.3%
	February	1	3	6	8	10	28	5.60	10.4%
	March	7	3	5	5	3	23	4.60	8.6%
	April	3	0	2	0	7	12	2.40	4.5%
	May	2	3	6	7	5	23	4.60	8.6%
	June	2	2	6	7	11	28	5.60	10.4%
	July	7	5	4	3	3	22	4.40	8.2%
	August	4	5	5	2	7	23	4.60	8.6%
	September	3	2	6	7	6	24	4.80	9.0%
	October	2	3	3	5	13	26	5.20	9.7%
	November	2	6	9	2	5	24	4.80	9.0%
	December	2	4	6	2	4	18	3.60	6.7%
DAY OF WEEK	Sunday	5	6	3	10	7	31	6.20	11.6%
	Monday	6	4	10	4	11	35	7.00	13.1%
	Tuesday	3	6	12	8	15	44	8.80	16.4%
	Wednesday	6	4	3	8	14	35	7.00	13.1%
	Thursday	3	2	10	5	11	31	6.20	11.6%
	Friday	5	6	14	12	15	52	10.40	19.4%
	Saturday	10	8	8	7	7	40	8.00	14.9%
HOUR OF DAY	00:00-06:00	3	5	10	6	7	31	6.20	11.6%
	06:00-09:00	5	1	16	9	18	49	9.80	18.3%
	09:00-11:00	5	2	4	4	6	21	4.20	7.8%
	11:00-13:00	6	2	7	8	9	32	6.40	11.9%
	13:00-15:00	6	4	4	10	4	28	5.60	10.4%
	15:00-18:00	7	9	8	9	13	46	9.20	17.2%
	18:00-24:00	6	13	11	8	23	61	12.20	22.8%

Notes:

1) Collision with Bicycle Crashes include Collision with Bicycle/Collision with Bicycle in Bike Lane (Codes 11 and 12).
2) Fixed Object Crashes include collisions with sign/sign post, utility/light pole, guardrail, fence, concrete barrier wall, bridge, pier, abutment, rail, tree, shrubbery, construction barricade/sign, traffic gate, crash attenuators, other fixed objects (incl. above road).
3) Ran-off-Road Crashes include Ran in Ditch/Culvert and Ran off road into water (Codes 29 and 30).
4) Other crashes include crashes not categorized as the crash types shown in the table.
5) Dark Crashes include both scenarios - with and without street lighting.

Table 3.4: I-95 NB Ramp Terminal Crash Summary (HCL)

SR 80/Southern Blvd at I-95 NB Ramp Terminal (MP 20.024)		Number of Crashes Year					5 Year Total Crashes	Mean Crashes Per Year	%
		2010	2011	2012	2013	2014			
CRASH TYPE	Rear End	2	0	5	4	4	15	3.00	33.3%
	Head On	0	0	0	0	0	0	0.00	0.0%
	Angle	2	2	1	1	3	9	1.80	20.0%
	Left Turn	0	0	0	0	0	0	0.00	0.0%
	Right Turn	0	0	0	0	0	0	0.00	0.0%
	Sideswipe	0	3	0	1	3	7	1.40	15.6%
	Backed Into	0	0	0	0	0	0	0.00	0.0%
	Coll. w/ Parked Car	0	0	0	0	0	0	0.00	0.0%
	Coll. w/ Pedestrian	0	0	0	0	1	1	0.20	2.2%
	Coll. w/ Bicycle	0	0	0	0	0	0	0.00	0.0%
	Fixed Object	3	1	0	2	2	8	1.60	17.8%
	Ran Off Road	0	0	0	0	0	0	0.00	0.0%
	Overturned	0	0	0	0	0	0	0.00	0.0%
	Other	0	2	0	0	3	5	1.00	11.1%
	Total Crashes	**7**	**8**	**6**	**8**	**16**	**45**	**9.00**	**100.0%**
SEVERITY	PDO Crashes	4	6	3	4	11	28	5.60	62.2%
	Fatal Crashes	0	0	0	0	0	0	0.00	0.0%
	Injury Crashes	3	2	3	4	5	17	3.40	37.8%
LIGHTING CONDITIONS	Daylight	6	3	2	5	8	24	4.80	53.3%
	Dusk	0	0	0	1	1	2	0.40	4.4%
	Dawn	0	0	1	0	1	2	0.40	4.4%
	Dark	1	5	3	2	6	17	3.40	37.8%
	Unknown	0	0	0	0	0	0	0.00	0.0%
SURFACE CONDITIONS	Dry	4	5	5	6	10	30	6.00	66.7%
	Wet	3	3	1	2	6	15	3.00	33.3%
	Others	0	0	0	0	0	0	0.00	0.0%
MONTH OF YEAR	January	1	0	0	0	0	1	0.20	2.2%
	February	0	2	2	4	3	11	2.20	24.4%
	March	1	1	1	0	2	5	1.00	11.1%
	April	1	0	0	0	1	2	0.40	4.4%
	May	0	1	2	1	0	4	0.80	8.9%
	June	0	1	0	0	2	3	0.60	6.7%
	July	2	0	0	0	0	2	0.40	4.4%
	August	0	1	0	0	0	1	0.20	2.2%
	September	0	0	1	1	4	6	1.20	13.3%
	October	0	0	0	0	2	2	0.40	4.4%
	November	0	1	0	1	1	3	0.60	6.7%
	December	2	1	0	1	1	5	1.00	11.1%
DAY OF WEEK	Sunday	1	2	1	0	0	4	0.80	8.9%
	Monday	4	0	2	1	1	8	1.60	17.8%
	Tuesday	0	1	0	1	2	4	0.80	8.9%
	Wednesday	0	1	1	2	5	9	1.80	20.0%
	Thursday	0	2	0	0	2	4	0.80	8.9%
	Friday	2	1	2	3	6	14	2.80	31.1%
	Saturday	0	1	0	1	0	2	0.40	4.4%
HOUR OF DAY	00:00-06:00	0	3	1	1	1	6	1.20	13.3%
	06:00-09:00	1	0	1	2	4	8	1.60	17.8%
	09:00-11:00	1	0	0	1	2	4	0.80	8.9%
	11:00-13:00	3	0	0	0	0	3	0.60	6.7%
	13:00-15:00	1	1	0	1	1	4	0.80	8.9%
	15:00-18:00	0	1	2	1	1	5	1.00	11.1%
	18:00-24:00	1	3	2	2	7	15	3.00	33.3%

Notes:

1) Collision with Bicycle Crashes include Collision with Bicycle/Collision with Bicycle in Bike Lane (Codes 11 and 12).
2) Fixed Object Crashes include collisions with sign/sign post, utility/light pole, guardrail, fence, concrete barrier wall, bridge, pier, abutment, rail, tree, shrubbery, construction barricade/sign, traffic gate, crash attenuators, other fixed objects (incl. above road).
3) Ran-off-Road Crashes include Ran in Ditch/Culvert and Ran off road into water (Codes 29 and 30).
4) Other crashes include crashes not categorized as the crash types shown in the table.
5) Dark Crashes include both scenarios - with and without street lighting.

Table 3.5: I-95 SB Ramp Terminal Crash Summary (HCL)

SR 80/Southern Blvd at I-95 SB Ramp Terminal (MP 19.870)		Number of Crashes Year					5 Year Total Crashes	Mean Crashes Per Year	%
		2010	2011	2012	2013	2014			
CRASH TYPE	Rear End	1	2	2	4	5	14	2.80	27.5%
	Head On	0	0	0	0	0	0	0.00	0.0%
	Angle	1	2	1	0	1	5	1.00	9.8%
	Left Turn	0	0	0	0	0	0	0.00	0.0%
	Right Turn	0	1	0	1	0	2	0.40	3.9%
	Sideswipe	1	0	1	0	0	2	0.40	3.9%
	Backed Into	0	0	0	0	0	0	0.00	0.0%
	Coll. w/ Parked Car	0	0	0	0	0	0	0.00	0.0%
	Coll. w/ Pedestrian	0	0	0	0	0	0	0.00	0.0%
	Coll. w/ Bicycle	0	0	0	0	0	0	0.00	0.0%
	Fixed Object	2	4	8	3	6	23	4.60	45.1%
	Ran Off Road	0	0	0	0	0	0	0.00	0.0%
	Overturned	0	0	0	0	0	0	0.00	0.0%
	Other	0	1	1	1	2	5	1.00	9.8%
	Total Crashes	**5**	**10**	**13**	**9**	**14**	**51**	**10.20**	**100.0%**
SEVERITY	PDO Crashes	4	6	7	5	9	31	6.20	60.8%
	Fatal Crashes	0	1	0	0	0	1	0.20	2.0%
	Injury Crashes	1	3	6	4	5	19	3.80	37.3%
LIGHTING CONDITIONS	Daylight	4	7	7	5	6	29	5.80	56.9%
	Dusk	0	1	0	0	2	3	0.60	5.9%
	Dawn	0	0	0	0	0	0	0.00	0.0%
	Dark	1	2	6	4	6	19	3.80	37.3%
	Unknown	0	0	0	0	0	0	0.00	0.0%
SURFACE CONDITIONS	Dry	1	1	9	6	10	27	5.40	52.9%
	Wet	4	9	4	3	4	24	4.80	47.1%
	Others	0	0	0	0	0	0	0.00	0.0%
MONTH OF YEAR	January	0	0	0	1	2	3	0.60	5.9%
	February	0	0	1	1	3	5	1.00	9.8%
	March	1	0	1	0	0	2	0.40	3.9%
	April	0	0	0	0	2	2	0.40	3.9%
	May	1	0	0	2	0	3	0.60	5.9%
	June	0	0	1	2	0	3	0.60	5.9%
	July	1	1	1	1	1	5	1.00	9.8%
	August	1	3	0	0	2	6	1.20	11.8%
	September	0	1	2	1	0	4	0.80	7.8%
	October	0	0	1	1	2	4	0.80	7.8%
	November	1	3	4	0	2	10	2.00	19.6%
	December	0	2	2	0	0	4	0.80	7.8%
DAY OF WEEK	Sunday	0	0	3	2	2	7	1.40	13.7%
	Monday	0	1	4	0	1	6	1.20	11.8%
	Tuesday	2	2	0	1	3	8	1.60	15.7%
	Wednesday	0	0	0	1	2	3	0.60	5.9%
	Thursday	0	1	1	1	3	6	1.20	11.8%
	Friday	1	3	3	1	0	8	1.60	15.7%
	Saturday	2	3	2	3	3	13	2.60	25.5%
HOUR OF DAY	00:00-06:00	1	0	6	2	4	13	2.60	25.5%
	06:00-09:00	0	1	1	0	2	4	0.80	7.8%
	09:00-11:00	0	1	2	1	1	5	1.00	9.8%
	11:00-13:00	0	1	2	1	1	5	1.00	9.8%
	13:00-15:00	1	2	0	2	0	5	1.00	9.8%
	15:00-18:00	3	4	2	1	2	12	2.40	23.5%
	18:00-24:00	0	1	0	2	4	7	1.40	13.7%

Notes:

1) Collision with Bicycle Crashes include Collision with Bicycle/Collision with Bicycle in Bike Lane (Codes 11 and 12).
2) Fixed Object Crashes include collisions with sign/sign post, utility/light pole, guardrail, fence, concrete barrier wall, bridge, pier, abutment, rail, tree, shrubbery, construction barricade/sign, traffic gate, crash attenuators, other fixed objects (incl. above road).
3) Ran-off-Road Crashes include Ran in Ditch/Culvert and Ran off road into water (Codes 29 and 30).
4) Other crashes include crashes not categorized as the crash types shown in the table.
5) Dark Crashes include both scenarios - with and without street lighting.

4.0 Need

The need for the proposed modifications at the I-95 and SR 80 / Southern Boulevard interchange relate to the following:

4.1 Congestion Relief and Transportation Demand

The existing I-95 at SR 80 / Southern Boulevard interchange operates at an overall acceptable level of service (LOS D or better) during AM and PM peaks. However, traffic congestion and long delays are experienced by movements to/from I-95 during AM and PM peak periods. Travel demand forecasts indicate that the interchange is expected to experience substantial traffic growth in future years. Based on the anticipated future growth in traffic, operating conditions at the interchange will further deteriorate with increased congestion and the on-set of failing conditions (LOS F) by year 2040. The proposed project will address these concerns by increasing capacity at the interchange and providing acceptable operating conditions (LOS D or better) through year 2040.

4.2 Growth and Economic Development

Population within the vicinity of the interchange is anticipated to increase by approximately 12% from 2005 through 2035 with the majority of the growth occurring to the southeast of the interchange. Employment is expected to increase by approximately 784% from 2005 through 2035 with major increases in the areas located to the northeast and southwest of the interchange. The proposed project will be critical for supporting the anticipated growth in population and employment within the vicinity, promoting economic development and fulfilling the overall vision for Palm Beach County.

4.3 Safety

The I-95 Interchange Concept Development Report (ICDR), identified the I-95 at Southern Boulevard interchange as a high crash location. Predominant crash patterns experienced at the interchange include: rear-end collisions (31%) and fixed object collisions (22%). In addition, data from the I-95 ICDR indicates that with no improvements, queues on the I-95 off-ramps could potentially spill back onto the mainline and further increase crash risk at

the interchange. The proposed project will implement geometric improvements and provide additional capacity that will assist in alleviating these safety concerns at the interchange.

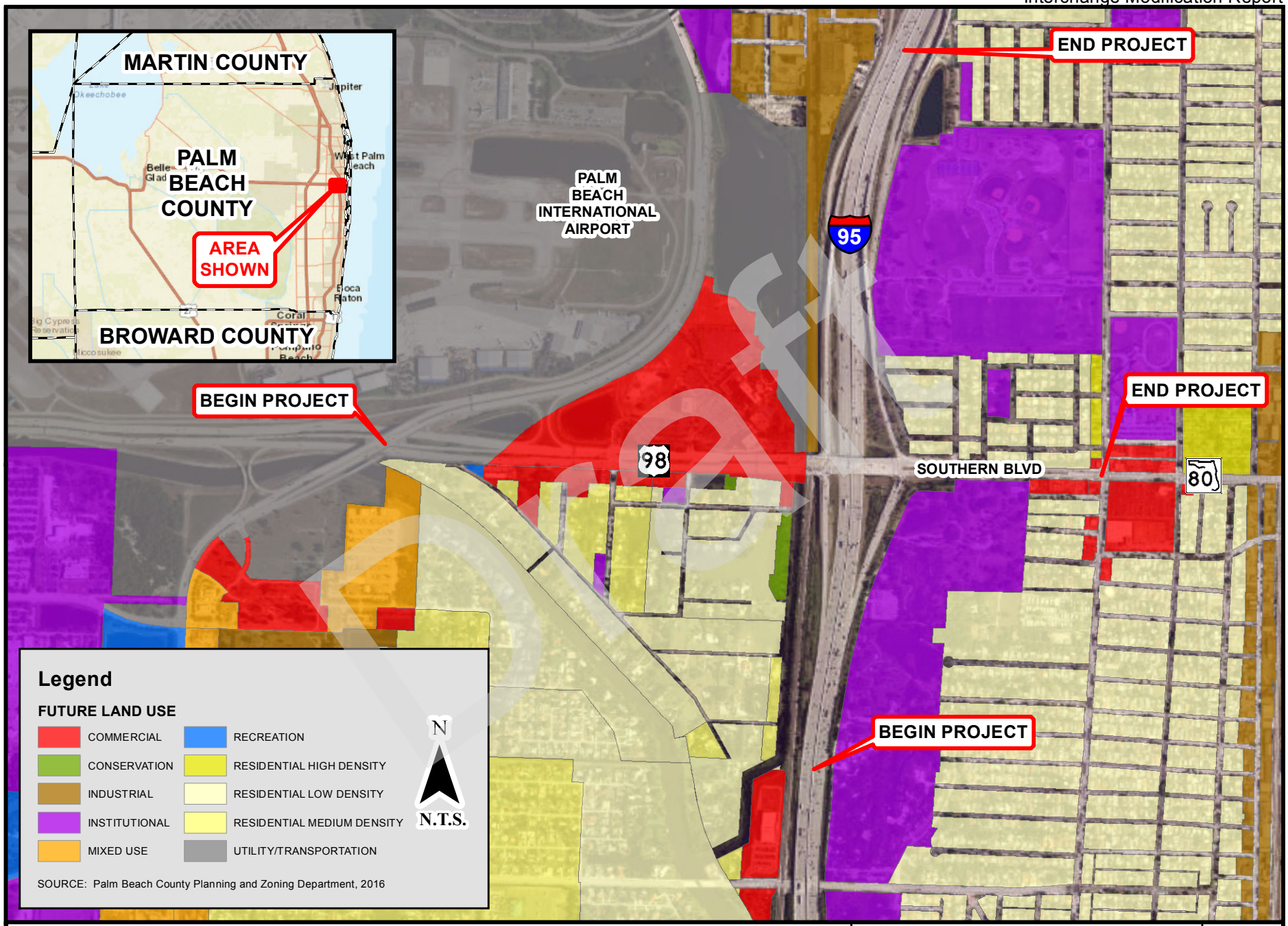
4.4 Emergency Evacuation

As part of the emergency evacuation route network designated by the Florida Division of Emergency Management, both I-95 and SR 80/Southern Boulevard. are critical in facilitating the movement of traffic during emergency evacuation periods. These facilities connect other major arterials and highways designated on the state evacuation route network within the region (such as Florida's Turnpike and US Highway 27). The proposed project will allow for enhanced emergency access and incident response times.

5.0 Future No Build Conditions

5.1 Future Land Use

Land parcels within the vicinity of the project are substantially built-out. Hence, no significant change in land use is anticipated within the project vicinity except for some redevelopment areas. Palm Beach County's future land use map shows only minor changes in land use, with some existing commercial and institutional uses designated as "Mixed Use" on the future land use map. Figure 5.1 depicts the planned future land use within the project area.



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Title: Future Land Use Map

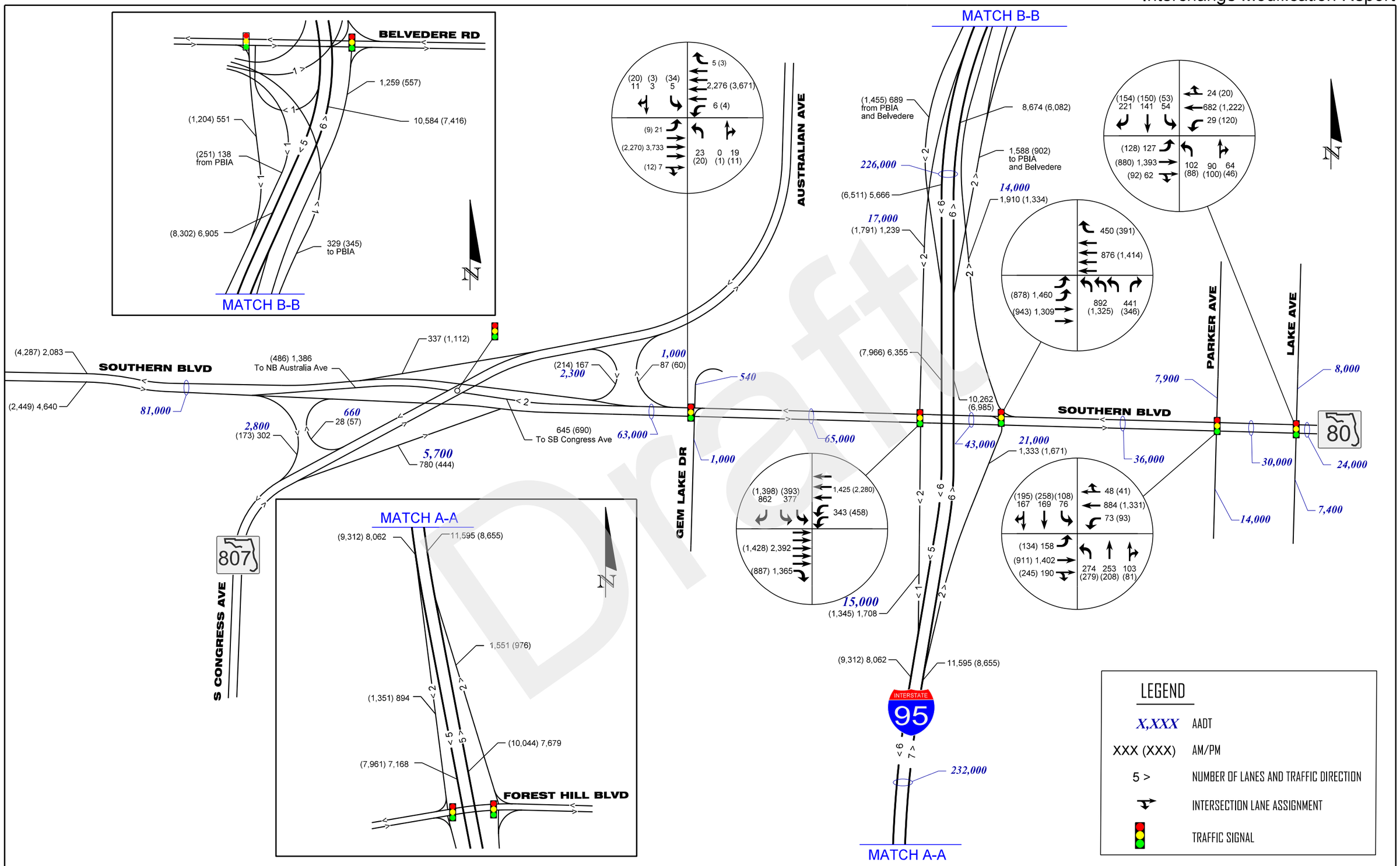
Figure: 5-1

5.2 No Build Alternative – Transportation Network

The future year No Build Alternative network includes the existing (2015) roadway conditions plus all funded and committed projects within the study corridor per the FDOT 5-Year Work Program. It also incorporates all Cost Feasible Plan projects contained in the Metropolitan Planning Organization's (MPO's) Long Range Transportation Plan (LRTP) that are located outside the immediate project limits. The roadway geometry for the No Build Alternative was determined to be consistent with the geometry for the existing 2015 road network within the project limits (Figures 3-2). This road network is described in detail under Section 3.2 of the IMR.

5.3 No Build Alternative – Future Traffic Forecast

The development of the travel demand forecast for the No Build Alternative is documented in detail in the *I-95 PD&E, Peak Hour Traffic Forecast, Technical Memorandum, January 23, 2017*. This Technical Memorandum is attached as a companion reference document for the IMR. The memorandum contains details of the analytical procedures followed in developing AADTs and peak hour volumes for the existing year 2015, opening year 2020, and design year 2040. The memorandum was processed through the FDOT's document review procedures and the information contained therein was found to be acceptable by the FDOT for the purposes of this study. Figures 5-2 through 5-4 show the 2020 and 2040 peak hour traffic forecasts for the No Build Alternative.



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2020 No Build
AADTs and Peak Hour Volumes

Figure 5-2

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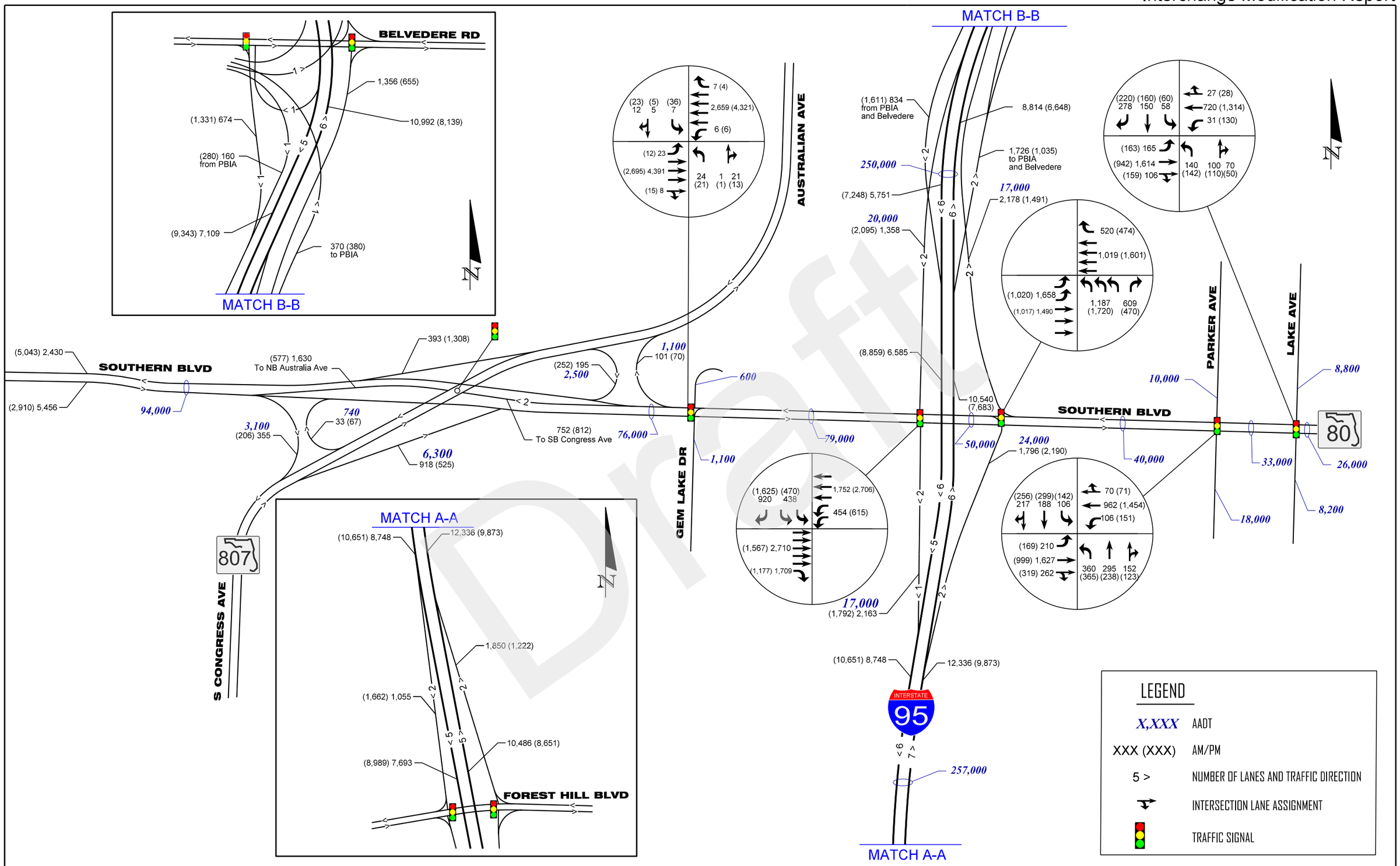

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2040 No Build
AADTs and Peak Hour Volumes

Figure 5-3

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5.4 No Build Alternative – Level of Service Analysis

Traffic operations analyses were conducted for the No Build Alternative for 2020 and 2040 conditions. The road network used for the No Build analysis was maintained consistent with the geometry presented under Section 3.2 for existing year (2015) conditions. Traffic volumes used for the analyses were consistent with the forecasted 2020 and 2040 peak hour volumes, per Section 5.3 of the IMR.

Level of Service analyses were conducted in accordance with procedures of the HCM, 2010 Edition. The HCS was used for performing calculations for freeway segments (mainline, merge and diverge segments). Synchro models were developed for performing the level of service analyses at the terminal intersections and other project intersections. Signal timings were optimized, as necessary, to improve operating level of service and a peak hour factor of 0.95 was used throughout for the analyses. Detailed output sheets from the level of service analyses are located in Appendix E. The results for I-95 freeway segments are summarized in Figure 5.4 while results for the signalized intersections are summarized in Table 5.1. Findings from the level of service analyses are discussed below.

No Build Alternative, Year 2020 Analysis: The following operating conditions are expected for the No Build Alternative in Year 2020.

- Freeway Segments: The LOS analyses for Year 2020 indicate that the following freeway segments will operate below the desired LOS D standard:
  - NB I-95 south of on-ramp from Forest Hill Boulevard (LOS F – AM peak)
  - NB I-95 north of on-ramp from Southern Boulevard (LOS F – AM peak)

- Intersections: The LOS analyses for Year 2020 indicate that the I-95 terminal intersections are expected to operate within LOS D standard or better. However some movements are expected to experience failing (LOS F) conditions. These include:
  - NB off-Ramp: northbound left turns (LOS F)

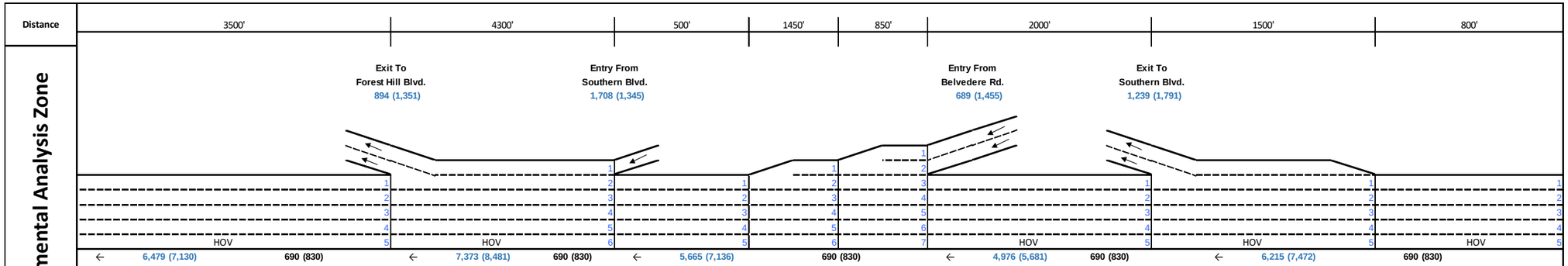
  In addition, the following project intersections will operate below the desired LOS D standard in year 2020:

- Southern Boulevard at Parker Avenue (LOS E – AM and PM peaks)

No Build Alternative, Year 2040 Analysis: The following operating conditions are expected for the No Build Alternative in Year 2040.

- Freeway Segments: The LOS analyses for Year 2040 indicate that the following freeway segments will operate below the desired LOS D standard:
  - NB I-95 south of on-ramp from Forest Hill Boulevard (LOS F – AM peak)
  - NB I-95 north of on-ramp from Southern Boulevard (LOS F – AM peak)
  - SB I-95 north of off-ramp to Southern Boulevard (LOS E – PM peak)
  - SB I-95 north of on-ramp from Southern Boulevard (LOS E – PM peak)
  - SB I-95 south of off-ramp to Forest Hill Boulevard (LOS E – PM peak)

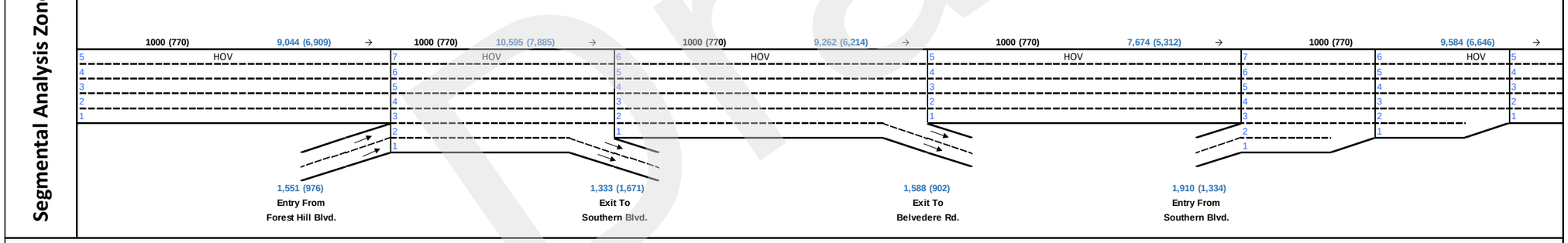
- Intersections: The LOS analyses for Year 2040 indicate that the following intersections are expected to operate below the desired LOS D standard:
  - I-95 NB Terminal Intersection (LOF F – PM peak)
  - I-95 SB Terminal Intersection (LOS E/F - AM/PM peak)
  - Southern Boulevard at Parker Avenue (LOS F/F – AM/PM peak)



← I-95 Southbound ←

GU Lane	Basic Freeway	Major Merge	Basic Freeway	Major Diverge	Basic Freeway	On Ramp	Basic Freeway	Off Ramp	Basic Freeway
LOS AM	C	UC	C	UC	C	A	C	B	C
LOS PM	D	UC	D	UC	D	B	C	C	D

HOV Lane	HOV Lane			
LOS AM	UC	UC	UC	UC
LOS PM	UC	UC	UC	UC



→ I-95 Northbound →

GU Lane	Basic Freeway	Major Merge	Basic Freeway	Major Diverge	Basic Freeway	Major Diverge	Basic Freeway	Major Merge	Basic Freeway	Basic Freeway
LOS AM	F	UC	D	UC	D	UC	D	UC	D	F
LOS PM	D	UC	C	UC	C	UC	C	UC	C	D

HOV Lane	HOV Lane			
LOS AM	UC	UC	UC	UC
LOS PM	UC	UC	UC	UC

LEGEND
X,XXX (X,XXX) = GU AM (PM) Peak Hour Volume (vph)
X,XXX (X,XXX) = HOV AM (PM) Peak Hour Volume (vph)

FDOT

SR 9/I-95 at SR 80/Southern Boulevard Interchange PD&E Study

FPID No.: 4355161-1-22-02 / ETDM No.: 14183

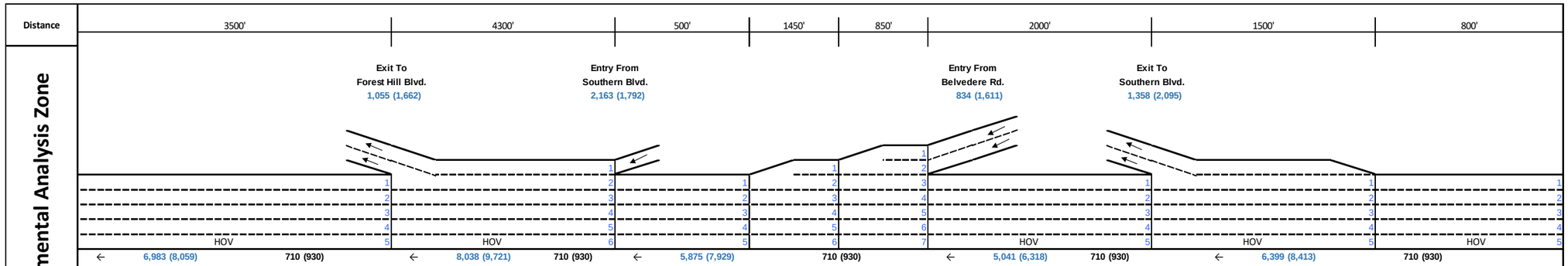
FDOT – District 4 / Palm Beach County

Title: I-95 LOS - 2020 No Build

Figure: 5-4

Table 5.1: 2020 No Build, Intersection LOS Analysis

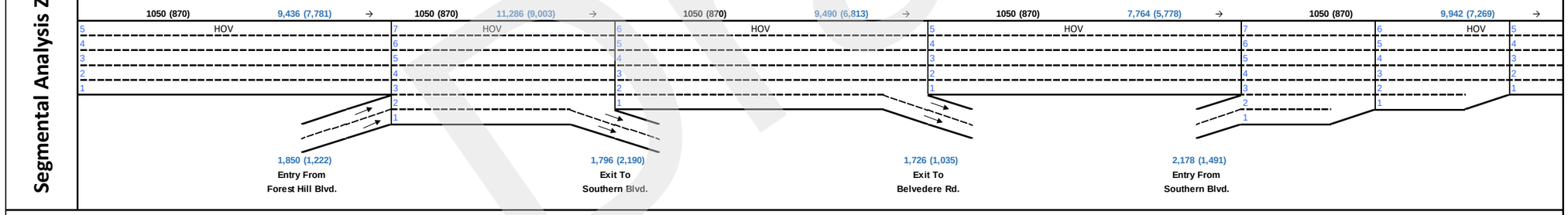
Intersection	Intersection Approach				Overall Intersection	
	Approach	Movement	Delay (sec)	LOS	Delay (sec)	LOS
			AM (PM)	AM (PM)	AM (PM)	AM (PM)
Southern Boulevard at Gem Lake Drive	Northbound	Left	60.9 (63.7)	**E (E)**	18.3 (14.9)	B (B)
		Thru/Right	58.9 (61.5)	**E (E)**		
	Southbound	Left	59.1 (65.6)	**E (E)**		
		Thru/Right	59 (61.7)	**E (E)**		
	Eastbound	Left	75.4 (63.8)	**E (E)**		
		Thru/Right	26.1 (18.3)	C (B)		
	Westbound	Left	80.3 (70.2)	**F (E)**		
		Thru	3.9 (11.4)	A (B)		
		Right	8.1 (10.9)	A (B)		
Southern Boulevard at I-95 SB Ramp Terminal	Southbound	Left	67.5(73.0)	**E (E)**	38.3 (52.0)	D (D)
		Right	1.6 (152.9)	A **(F)**		
	Eastbound	Thru	24.5 (39.3)	C (D)		
		Right	110.1 (1.4)	**F** (A)		
	Westbound	Left	1.1 (0.5)	A (A)		
		Thru	16.1 (24.4)	B (C)		
Southern Boulevard at I-95 NB Ramp Terminal	Northbound	Left	69.8 (117.5)	**E (F)**	32.3 (48.2)	C (D)
		Right	39.5 (22.8)	D (C)		
	Eastbound	Left	14.9 (9.9)	B (A)		
		Thru	2.9 (8.4)	A (A)		
	Westbound	Thru	52.8 (44.6)	D (D)		
		Right	53.3 (30)	D (C)		
Southern Boulevard at Parker Avenue	Northbound	Left	52.6 (80.9)	D **(F)**	66.9 (58.4)	**E (E)**
		Thru/Right	52.5 (51.1)	D (D)		
	Southbound	Left	48.3 (56.9)	D **(E)**		
		Thru/Right	61 (78.2)	E **(E)**		
	Eastbound	Left	40.3 (74.8)	D **(E)**		
		Thru/Right	93.8 (39.5)	**F** (D)		
	Westbound	Left	59.9 (36.8)	**E** (D)		
		Thru/Right	39.4 (64.8)	D **(E)**		
Southern Boulevard at Lake Avenue	Northbound	Left	52.3 (52)	D (D)	26.9 (38.2)	C (D)
		Thru/Right	55.1 (59)	**E (E)**		
	Southbound	Left	47.5 (55.1)	D **(E)**		
		Thru	54.5 (64.6)	D **(E)**		
		Right	58.1 (63.1)	**E (E)**		
	Eastbound	Left	3.9 (31.2)	A (C)		
		Thru/Right	17.8 (35.2)	B (D)		
	Westbound	Left	27.0 (19.2)	C (B)		
		Thru/Right	22.9 (32.7)	C (C)		



← I-95 Southbound ←

GU Lane	Basic Freeway				Basic Freeway	On Ramp	Basic Freeway	Off Ramp	Basic Freeway
LOS AM	D	Weave - D			C	A	C	B	C
LOS PM	E	Diverge - UC	Freeway - D	Merge - UC	E	B	C	C	E

HOV Lane	HOV Lane			
LOS AM	UC	UC	UC	UC
LOS PM	UC	UC	UC	UC



→ I-95 Northbound →

GU Lane	Basic Freeway				Basic Freeway	Major Diverge	Basic Freeway	Major Merge	Basic Freeway	Basic Freeway
LOS AM	F	Merge - UC	Freeway - D	Diverge - UC	D	UC	D	UC	E	F
LOS PM	D	Weave - D			C	UC	C	UC	C	D

HOV Lane	HOV Lane			
LOS AM	UC	UC	UC	UC
LOS PM	UC	UC	UC	UC

LEGEND
X,XXX (X,XXX) = GU AM (PM) Peak Hour Volume (vph)
X,XXX (X,XXX) = HOV AM (PM) Peak Hour Volume (vph)

SR 9/I-95 at SR 80/Southern Boulevard Interchange PD&E Study
FPID No.: 4355161-1-22-02 / ETDM No.: 14183
FDOT – District 4 / Palm Beach County

Title: I-95 LOS - 2040 No Build

Figure: 5-5

Table 5.2: 2040 No Build, Intersection LOS Analysis

Intersection	Intersection Approach				Overall Intersection	
	Approach	Movement	Delay (sec)	LOS	Delay (sec)	LOS
			AM (PM)	AM (PM)	AM (PM)	AM (PM)
Southern Boulevard at Gem Lake Drive	Northbound	Left	61.1 (63.8)	**E (E)**	43.6 (42.9)	D (D)
		Thru/Right	59 (61.5)	**E (E)**		
	Southbound	Left	59.3 (65.9)	**E (E)**		
		Thru/Right	59.1 (61.9)	**E (E)**		
	Eastbound	Left	76.0 (68.2)	**E (E)**		
		Thru/Right	67.2 (18.3)	**E** (B)		
	Westbound	Left	80.1 (73.2)	**F (E)**		
		Thru	3.8 (57.8)	A **(E)**		
		Right	8.2 (9.5)	A (A)		
Southern Boulevard at I-95 SB Ramp Terminal	Southbound	Left	68.1 (70.9)	E **(E)**	78.8 (90.4)	**E (F)**
		Right	1.8 (231.9)	A **(F)**		
	Eastbound	Thru	61.7 (48.9)	**E** (D)		
		Right	221.4 (3.2)	**F** (A)		
	Westbound	Left	2.1 (0.7)	A (A)		
		Thru	29.1 (91.0)	C **(F)**		
Southern Boulevard at I-95 NB Ramp Terminal	Northbound	Left	117.5 (291.7)	**F (F)**	54.7 (97.5)	D **(F)**
		Right	39.7 (24.3)	D (C)		
	Eastbound	Left	61.2 (14.6)	**E** (B)		
		Thru	3.4 (8)	A (A)		
	Westbound	Thru	56.0 (41.2)	**E** (D)		
		Right	52.4 (25.8)	D (C)		
Southern Boulevard at Parker Avenue	Northbound	Left	212.8 (162.2)	**F (F)**	82.0 (80.4)	**F (F)**
		Thru/Right	63.4 (52.5)	**E** (D)		
	Southbound	Left	62.5 (51.2)	**E** (D)		
		Thru/Right	77.6 (84.3)	**E (F)**		
	Eastbound	Left	38.1 (95.2)	D **(F)**		
		Thru/Right	101.4 (54.9)	**F** (D)		
	Westbound	Left	62.1 (64.7)	**E (E)**		
		Thru/Right	23.7 (90.7)	C **(F)**		
Southern Boulevard at Lake Avenue	Northbound	Left	58.6 (56.4)	**E (E)**	32.4 (41.8)	C (D)
		Thru/Right	59.7 (59.1)	**E (E)**		
	Southbound	Left	53.1 (54.7)	D (D)		
		Thru	61.9 (65.6)	**E (E)**		
		Right	73.7 (69.5)	**E (E)**		
	Eastbound	Left	5.4 (39.0)	A (D)		
		Thru/Right	24.0 (34.5)	C (C)		
	Westbound	Left	39.3 (23.6)	C (C)		
		Thru/Right	23.3 (38.4)	C (D)		

6.0 Build Alternatives

6.1 Considered Interchange Build Alternatives

Various potential modifications were considered for the I-95/SR 80 Southern Boulevard interchange to meet the forecasted future traffic demand along the corridor. The considered interchange modifications ranged from addition of turn lanes to addition of new flyover ramps and applying new innovative interchange configurations such as the Diverging Diamond Interchange (DDI). Due to the complexities of the interchange location (right-of-way constraints; geometric constraints; high approach speeds on cross street) it was recognized that configurations such as the DDI would not be favorable for the study location. Potential interchange modifications therefore focused on alternatives for adding ramps to the interchange to reduce demand at the terminal intersections and relieve congestion for the most critical movements. Following on this approach, four alternative design concepts were developed and evaluated for the study location. Concept plans for these alternatives are presented under Appendix F. Improvements incorporated in each alternative are discussed below.

Elements that are common and identical in each of the build alternatives include:

- Proposed signalization optimization at the ramp intersections and the downstream intersections east and west of the interchange (Gem Lake Drive and Parker Avenue);
- Gem Lake Drive remains a signalized, full median opening;
- The directional median opening to access Lang Road via westbound Southern Boulevard is proposed to be closed due to proposed flyover ramps in the median of Southern Boulevard. Minimal community impacts will result from this proposed median closure as alternative access is available via Gem Lake;
- The southbound I-95 exit ramp will provide three right turn lanes to westbound Southern Boulevard and two left turn lanes to eastbound Southern Boulevard; both of these movements will be signal controlled;
- The southbound I-95 entrance ramp will accommodate two eastbound right turn lanes and two westbound left turn lanes; both of these movements will be signal controlled;

- The northbound I-95 entrance ramp will retain the existing configuration of a single free-flow, right turn lane from westbound Southern Boulevard;
- The northbound I-95 exit ramp proposes to provide three at-grade, left turn lanes to westbound Southern Boulevard and two right turn lanes to the eastbound direction; these movements will be signal controlled;
- At the intersection with Parker Avenue, a dedicated, right turn lane will be added along eastbound Southern Boulevard, and the existing left turn lane storage will be increased. On the south leg of Parker Avenue, dual left turn lanes are proposed to westbound Southern Boulevard, along with one through lane and right turn lane;
- No right-of-way acquisition is proposed in the historic Vedado Hillcrest neighborhood, Dreher Park, or along Parker Avenue;
- In areas where alternatives are proposing reconstruction, seven-foot, buffered bike lanes are planned. Areas of resurfacing propose four-foot bike lanes where possible. The exception is along Parker Avenue, where sharrows are proposed due to right-of-way constraints and consistency with existing conditions. The implementation of green bike lane markings are also proposed where appropriate.
- As requested by the communities, special emphasis pavement markings have been proposed at pedestrian crossings at all cross walks.

Alternative 1: Northbound to Westbound Flyover

Alternative 1 consists of a single flyover ramp from northbound I-95 to westbound Southern Boulevard. The proposed single lane ramp exits I-95 from the east side of the highway, climbs to the third level, crosses over I-95, and turns to the west within the median of Southern Boulevard. The proposed flyover ramp bypasses the intersection of Lang Road, where the existing directional median opening is proposed to be closed due to the ramp structure, and elevation over Gem Lake Drive, which will remain open. The ramp continues over the existing, at-grade slip ramp that provides access to southbound Australian / Congress Avenue. The proposed ramp profile ties into the existing profile east of Australian Boulevard on the north side of the Southern Boulevard median, merging into the existing westbound Southern Boulevard. Along eastbound Southern Boulevard, three at-grade left turn lanes are proposed to access the northbound I-95 entrance ramp. The southbound I-95 entrance

and exit ramps, as well as the eastern portion of SR 80 and Parker Avenue, are proposed as listed above in the common elements.

Right-of-way acquisition is proposed for Alternative 1 west of I-95 along the north and south sides of SR 80. On the south side, between Gem Lake Drive and Lang Road, an additional right-of-way width of 0 to 22 feet is required for the proposed improvements. Between Lang Road and I-95, 0 to 30 feet of right-of-way is required. On the north side of Southern Boulevard, approximately 0 to 40 feet of additional right-of-way is required for the proposed improvements. Right-of-way in this area would be acquired from the County-owned parcel (currently accommodating County offices and parking) and largely consists of under-utilized parking areas.

Alternative 2: Northbound to Westbound Flyover (Fourth Level) & Eastbound to Northbound Flyover (Third Level)

Alternative 2, proposes dual flyovers at the interchange to accommodate the northbound I-95 to westbound SR 80, and eastbound SR 80 to northbound I-95 movements. The northbound-westbound flyover exits northbound I-95, climbs to the fourth level and ties into the existing profile east of Australian Avenue - similar to Alternative 1. The eastbound Southern Boulevard to northbound I-95 ramp develops east of the Gem Lake Drive intersection in the median of SR 80, climbs to the third level, and merges with the existing I-95 northbound ramp north of the interchange.

Alternative 3: Eastbound to Northbound Flyover

Alternative 3 consists of a single flyover ramp from eastbound Southern Boulevard to northbound I-95. The proposed single lane ramp develops in the median area of Southern Boulevard, east of the Gem Lake Drive intersection. The ramp then ascends to the third level, crosses over I-95 while turning to the north, and connects with the existing entrance ramp, prior to the braided ramps to the north of the interchange. For vehicles east of the Gem Lake Drive area (i.e.; Town of Cloud Lake) or motorists not wishing to utilize the flyover, two at-grade left turn lanes are proposed to access the northbound I-95 entrance ramp at the existing entrance ramp location. The southbound I-95 entrance and exit ramps, the northbound I-95 exit ramp, and the eastern portion of SR 80, and Parker Avenue are proposed as listed in the common elements.

Right-of-way acquisition associated with Alternative 3 occurs on the west side of I-95 along the south side of Southern Boulevard between Gem Lake Drive and I-95. Proposed improvements will require approximately 12 to 40 feet of additional right-of-way.

Alternative 4: Northbound to Westbound Flyover (Third Level) & Eastbound to Northbound Flyover (Third Level)

Alternative 4 essentially combines Alternatives 1 and 3 to provide dual third level flyovers: one from northbound I-95 to westbound Southern Boulevard, similar to Alternative 1, and one from eastbound Southern Boulevard to northbound I-95, similar to Alternative 3. Both flyover ramps consist of a single lane and are at the third level (unlike Alternative 2), thereby minimizing visual impacts, construction cost, and constructability issues. The method in which dual third level flyovers is accomplished is by shifting the Southern Boulevard alignment to the north and braiding the eastbound to northbound entrance under the elevated northbound to westbound ramp to begin its alignment (at-grade) at Gem Lake Drive. This entrance will essentially align beside the existing westbound slip ramp that provides access to southbound Congress Avenue.

The proposed northbound-to-westbound single lane flyover begins to develop on the east side of I-95 and ascends to the third level. The proposed ramp crosses I-95 and turns to the west along Southern Boulevard, bypassing the intersections of Lang Road and Gem Lake Drive. The ramp continues over the existing, at-grade slip ramp that accesses southbound Australian / Congress Avenue and the eastbound-to-northbound ramp entrance, eventually matching the existing profile east of Australian Boulevard and merging into the inside lane of westbound Southern Boulevard. Vehicles wishing to access the County property and the Towns of Glen Ridge and Cloud Lake will utilize the three at-grade, left turns proposed at the northbound I-95 exit ramp. Access to the Town Cloud Lake, formerly by way of Lang Road, would be via the intersection of Gem Lake Drive. Travelers could turn left into Gem Lake Drive, or a U-turn maneuver could be executed with eastbound access into Lang Road.

The second flyover proposed in Alternative 4 consists of a single lane flyover ramp from eastbound Southern Boulevard to northbound I-95. The proposed ramp braids under the northbound-to-westbound flyover and develops on the north side of the median of Southern

Boulevard, east of the Gem Lake Drive intersection and ascends to the third level, crosses over I-95 while turning to the north and connects with the existing northbound I-95 entrance ramp. As described above with Alternative 3, vehicles east of the Gem Lake Drive area (i.e., Town of Cloud Lake) or motorists not wishing to utilize the flyover, two at-grade left turn lanes are proposed to access the northbound I-95 entrance ramp at the existing entrance ramp location. The southbound I-95 entrance and exit ramps, the northbound I-95 exit ramp and the eastern portion of SR 80 and Parker Avenue, are proposed as listed in the common elements.

Alternative 4 requires additional right-of-way along both the north and south sides of SR 80 to the west of I-95. On the north side of SR 80, in the area of the County-owned parcel, approximately 0 to 56 feet of right-of-way would be required to accommodate the improvements. Right-of-way in this area consists of mostly underutilized parking areas for the County offices and existing hotel. On the south side of SR 80, between Gem Lake Drive and Lang Road, approximately 12 to 28 feet of additional right-of-way is needed. Parcels affected include one commercial property and three vacant parcels. Between Lang Road and the west ramp intersection, approximately 0 to 7 feet of right-of-way is required from two residential properties but would not result in any relocations

6.2 Level of Service Analysis for Interchange Alternatives

Level of service analyses were conducted for each alternative interchange concept in order to evaluate the expected traffic operating conditions in the design year 2040. The analyses included the I-95 freeway segments (mainline, merge, diverge and weaving segments) and operations at the terminal intersections. Level of service analyses were based on the HCM 2010 procedures, and intersections were analyzed using Synchro software. Ramp merge and diverge areas were analyzed using HCS software.

Operations analyses for all alternatives assumed traffic volumes per the No Build traffic forecast with traffic volumes reassigned, as necessary to match each design concept. In the case of Alternative 1 and Alternative 2, traffic assigned to the proposed NB to WB flyover was estimated at approximately 65% of the northbound left turn movement at the ramp

terminal intersection under No Build conditions. This estimated split in traffic was determined based on:

1. Review of Bluetooth origin-destination (O-D) data supplied by the FDOT (see Technical Memorandum under Appendix G.
2. Review of select link analysis data from the travel demand model, supplied by FDOT (see Technical Memorandum under Appendix G.
3. Field observations conducted during peak periods.

The Bluetooth O-D survey data yielded estimated splits of 32.9% AM and 30.7% PM for NB to WB trips with destinations west of Australian Avenue (potential users of the flyover). This split in traffic using the NB to WB ramp was determined to be low based on field observations. However, the relative consistency shown in the AM and PM results was consistent with field observations. The select link analysis yielded estimated splits of 46.8% AM and 65.9% PM for trips with destinations west of Australian Avenue. The wide variability in the splits resulting from the select link analysis was not consistent with field observations. However, the split reported for the PM peak (65.9%) was consistent with field observations which showed a clear majority of the traffic continuing west along SR 80. Based on these assessment, a split of 65% was assumed for the NB to WB flyover for both AM and PM peak periods.

Traffic assigned to the EB to NB flyover per Alternatives 2, 3 and 4 was estimated at approximately 80% of the No Build volume for the eastbound left turn movement at the ramp terminal intersection. This estimate was based on a nominal allowance for vehicles east of Gem Lake Drive and others who may choose not to use the flyover. The resulting network traffic assignments for each build alternative is depicted in the Figures 6.1 through 6.4. For analyses of the mainline freeway segments, traffic volumes on I-95 mainline were segregated into general use traffic and HOV traffic in accordance with the assumptions applied in the existing conditions analysis, discussed under Section 3.4 of the IMR.

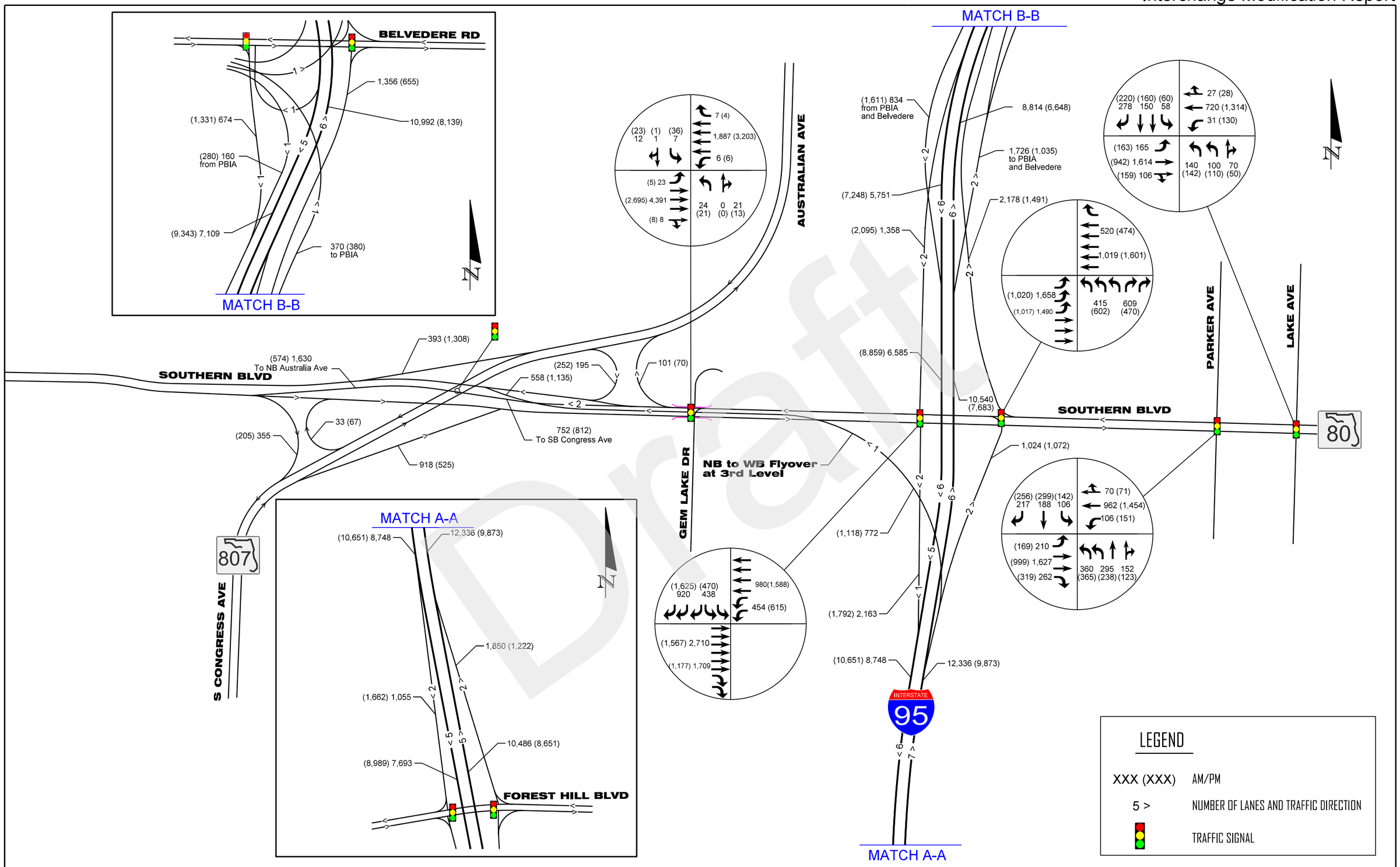
Detailed results from the interchange LOS analyses are presented under Appendix H. Results for I-95 segments are summarized in Figures 6.5 through 6.8 and results for the intersection LOS analyses are summarized in Table 6.1 and Table 6.2. As shown in Figures 6.5 through 6.8, the proposed Build Alternatives generate similar operating conditions along

I-95, with few exceptions. In addition, operations along I-95 are also similar to the 2040 No Build conditions described under Section 5 of the report. The following freeway segments are expected to operate below the desired LOS D standard for the Build Alternatives:

- NB I-95 south of on-ramp from Forest Hill Boulevard (LOS F – AM peak) – applies to No Build and all Build alternatives
- NB I-95 weaving segment between on-ramp from Forest Hill Boulevard and off-ramp to Southern Boulevard (LOS E – AM Peak) - applies to Alternative 1, 2 and 4. These alternatives perform at a lower standard than the No Build within this segment due to the southern shift (approximately 1050 feet for Alternatives 1 and 4; and 1580 feet for Alternative 2) of the off-ramp to Southern Boulevard which creates a weaving segment between the on-ramp from Forest Hill Boulevard and off-ramp to Southern Boulevard.
- NB I-95 north of on-ramp from Southern Boulevard (LOS F – AM peak) - applies to No Build and all Build Alternatives
- SB I-95 north of off-ramp to Southern Boulevard (LOS E – PM peak) - applies to No Build and all Build Alternatives
- SB I-95 north of on-ramp from Southern Boulevard (LOS E – PM peak) - applies to No Build and all Build Alternatives
- SB I-95 south of off-ramp to Forest Hill Boulevard (LOS E – PM peak) - applies to No Build and all Build Alternatives

Level of service results for the terminal intersections indicate that all the Build alternatives are expected to generate acceptable operating conditions (LOS D or better) at both the northbound and southbound terminal intersections during the AM and PM perk periods. In contrast the No Build Alternative, generates failing conditions (LOS F) at both terminal intersections. In addition, queue lengths at the off-ramps are substantial reduced under Alternatives 1, 2 and 4 when compared to the No Build condition. In the No Build condition and Build Alternative 3, the queues generated on the NB off-ramp may exceed the available storage (1540 feet) and risk spillback onto I-95 mainline. Hence, both the No Build condition and Build Alternative 3 are considered unacceptable from an operational and safety perspective due to the risk of queue spillback onto I-95 mainline. In Alternatives 1, 2 and 4,

the queue lengths at both terminal intersections are substantially below the available storage with no risk of spillback onto I-95 mainline. These results indicate that Alternatives 1, 2 and 4 will provide acceptable operating conditions at the interchange. However, in the case of Alternatives 2 and 4, an estimated 80% of the eastbound to northbound traffic (1,326 AM peak and 816 PM peak) bypass the interchange and experience no delays. Hence, Alternatives 2 and 4 would provide the most favorable operating conditions for the overall traffic using the interchange.



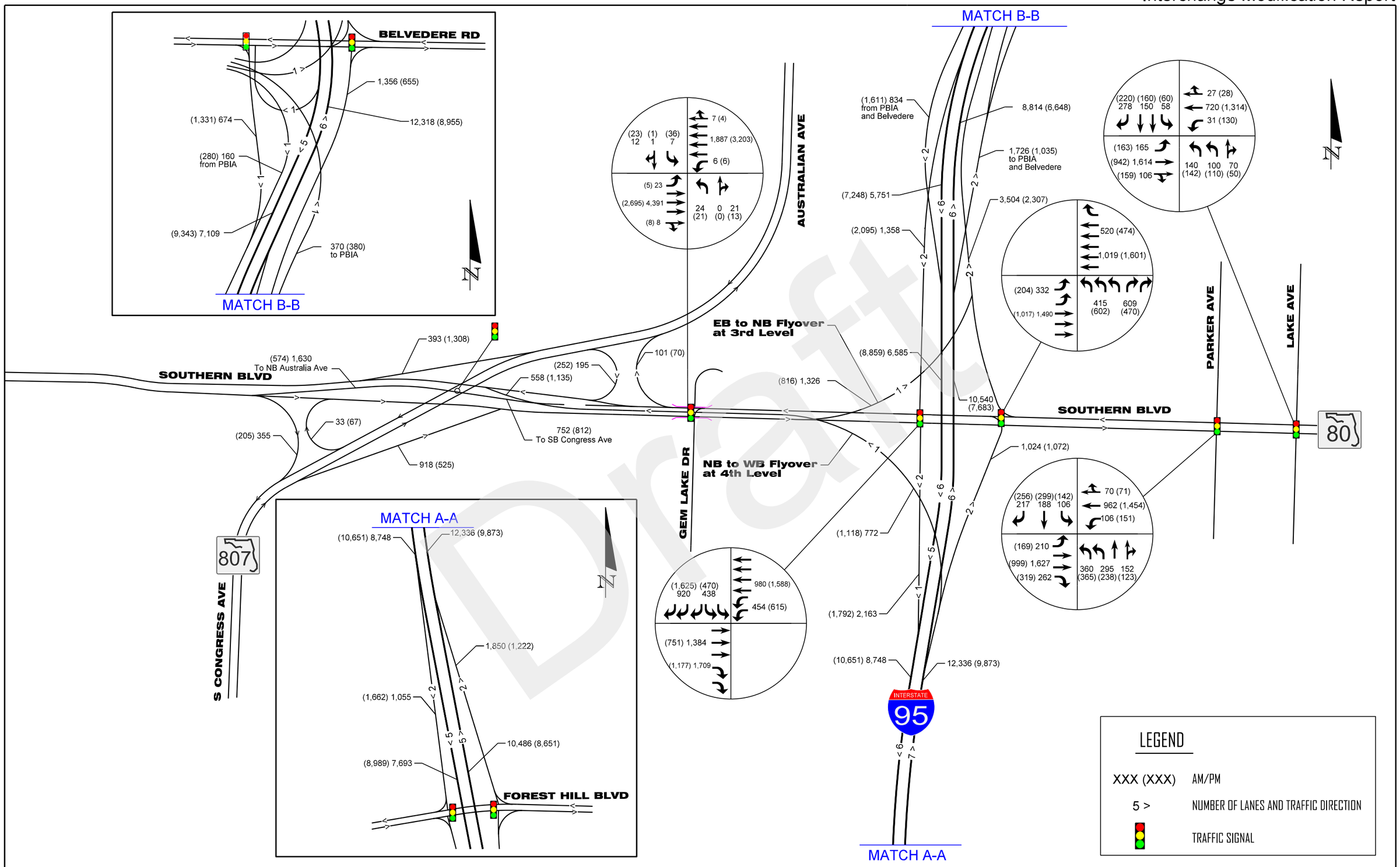
FDOT

SR 9/I-95 at SR 80/Southern Boulevard
Interchange PD&E Study
FPID No.:435516-1-22-02 | ETDM No.:14183
FDOT - District 4 | Palm Beach County

2040 Build Alternative 1
Peak Hour Volumes

Figure 6-1

klinea 4/18/2017 4:54:19 PM X:\P\I-95 SR 80 43551612202 Admin\traffic\CADD\2040 Buil



SR 9/I-95 at SR 80/Southern Boulevard
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2040 Build Alternative 2
Peak Hour Volumes

Figure 6-2

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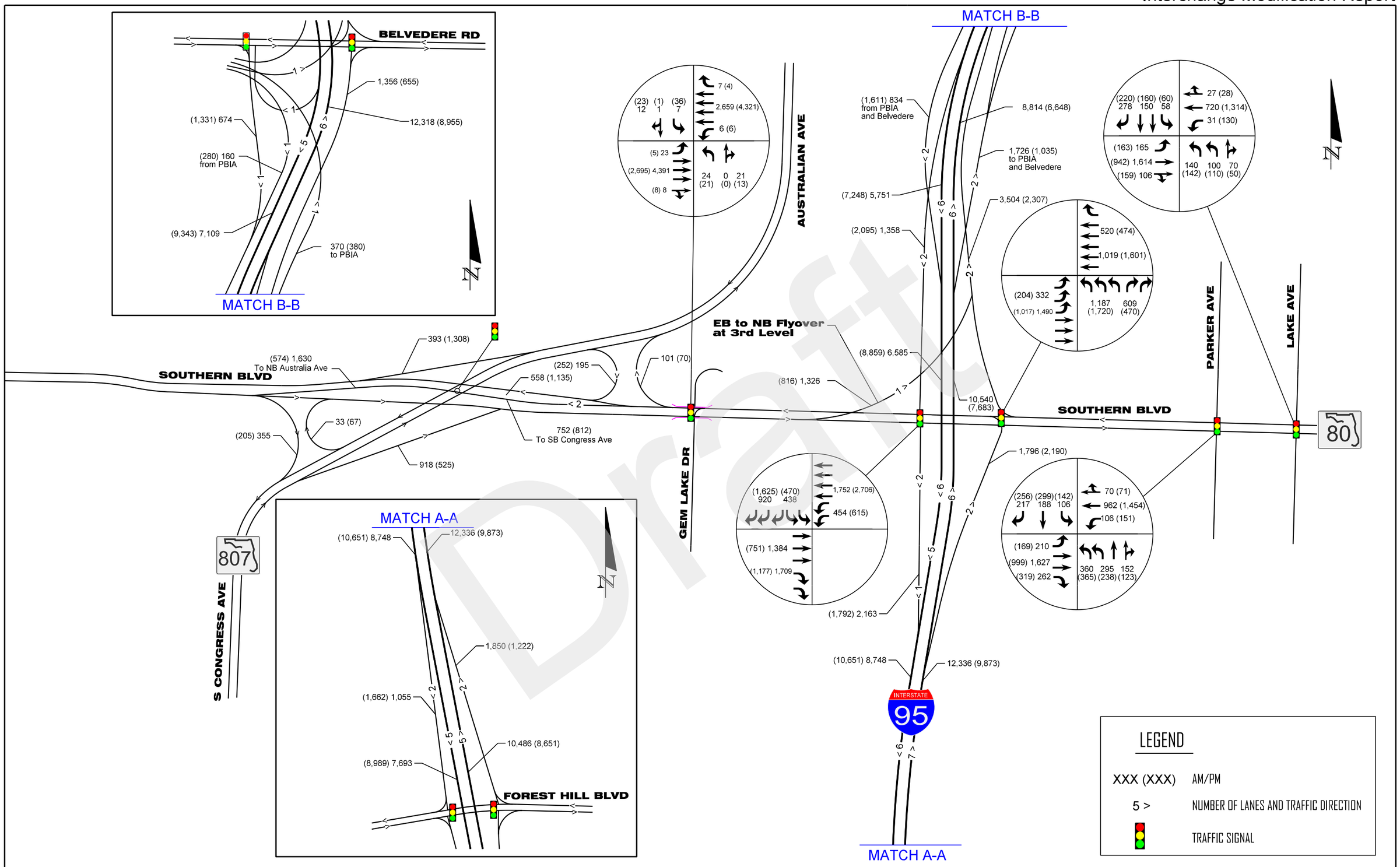

SR 9/I-95 at SR 80/Southern Boulevard
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2040 Build Alternative 3
Peak Hour Volumes

Figure 6-3

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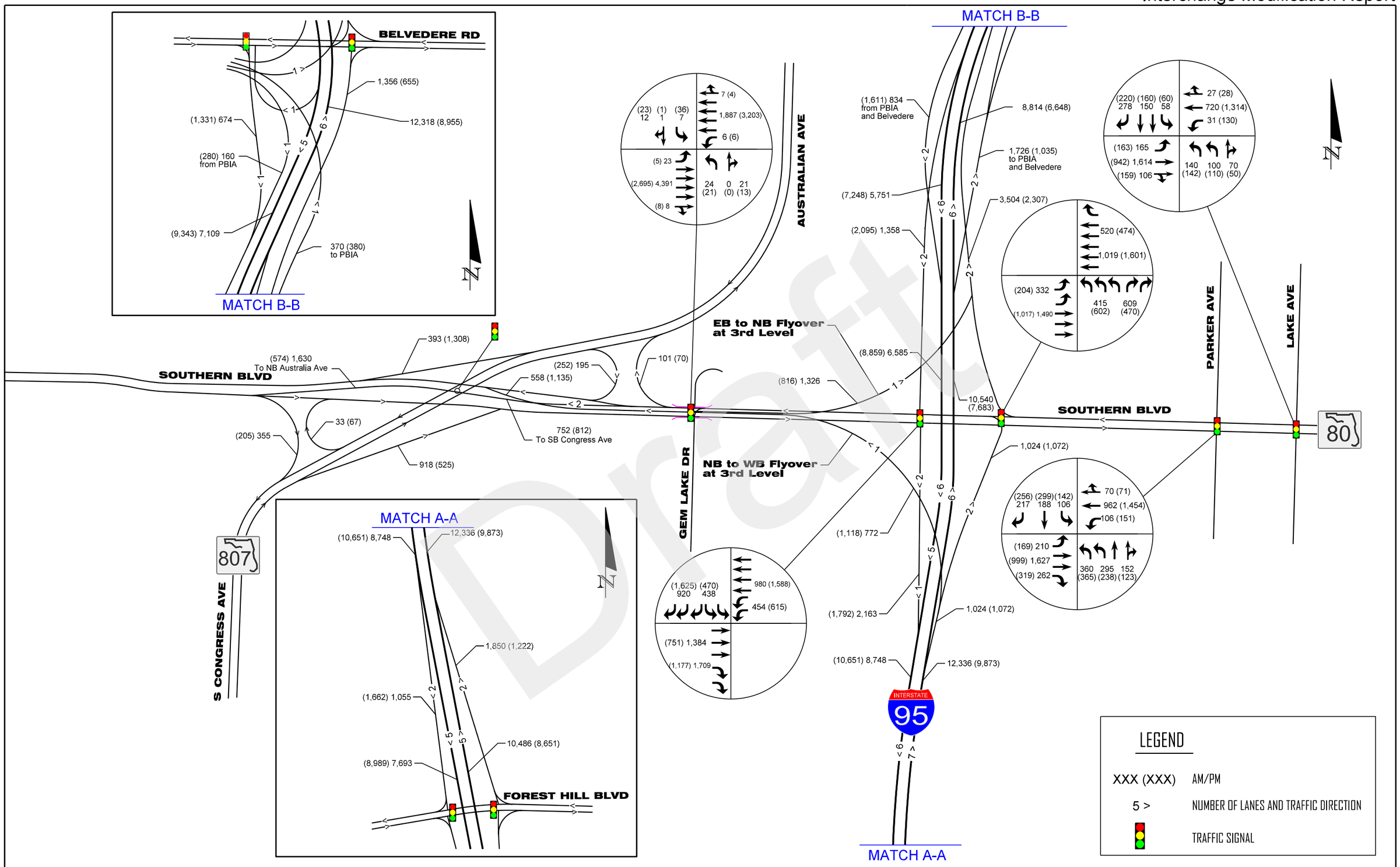

SR 9/I-95 at SR 80/Southern Boulevard
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2040 Build Alternative 4
Peak Hour Volumes

Figure 6-4

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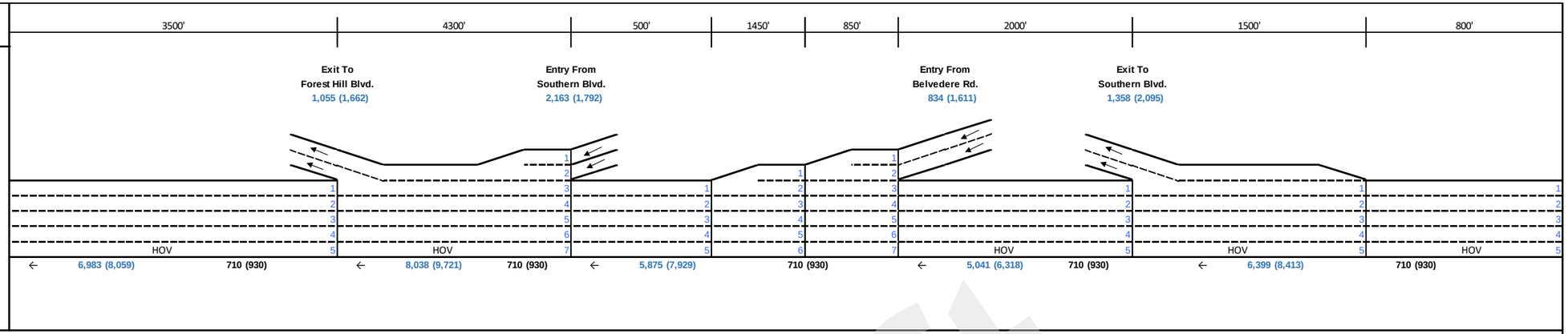
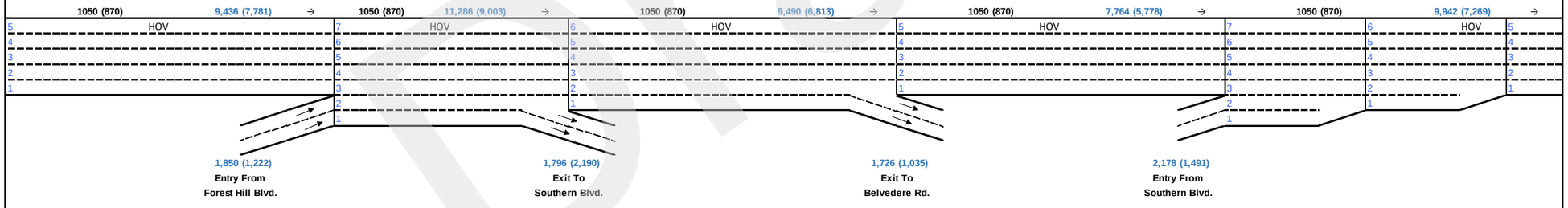


← I-95 Southbound ←

GU Lane	Basic Freeway				Basic Freeway	On Ramp	Basic Freeway	Off Ramp	Basic Freeway
LOS AM	D	Weave - D			C	A	C	B	C
LOS PM	E	Diverge - UC	Freeway - D	Merge - UC	E	B	C	C	E

HOV Lane	HOV Lane			
LOS AM	UC	UC	UC	UC
LOS PM	UC	UC	UC	UC



→ I-95 Northbound →

GU Lane	Basic Freeway	Weave	Basic Freeway	Major Diverge	Basic Freeway	Major Merge	Basic Freeway	Basic Freeway
LOS AM	F	E	D	UC	D	UC	E	F
LOS PM	D	D	C	UC	C	UC	C	D

HOV Lane	HOV Lane			
LOS AM	UC	UC	UC	UC
LOS PM	UC	UC	UC	UC

LEGEND
X,XXX (X,XXX) = GU AM (PM) Peak Hour Volume (vph)
X,XXX (X,XXX) = HOV AM (PM) Peak Hour Volume (vph)

SR 9/I-95 at SR 80/Southern Boulevard Interchange PD&E Study
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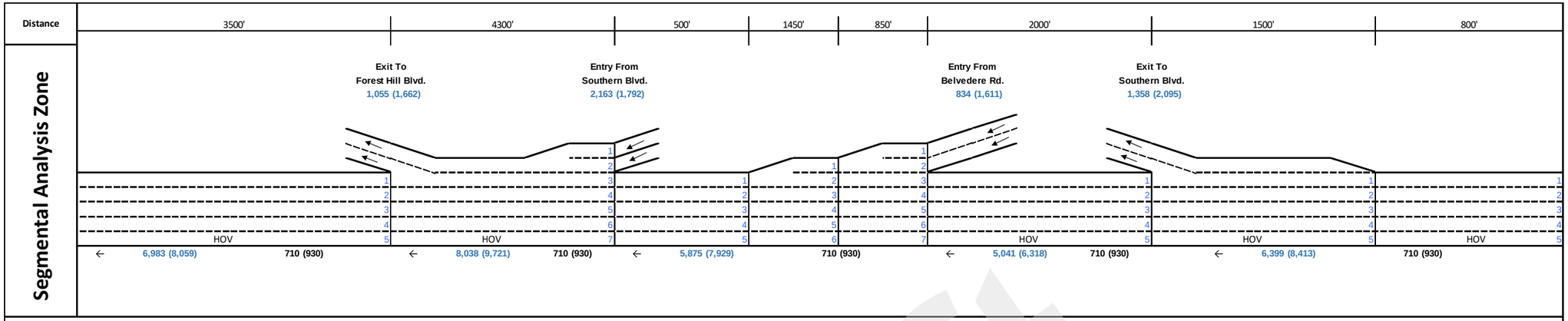
Title: I-95 LOS - 2040 Build Alternative 1

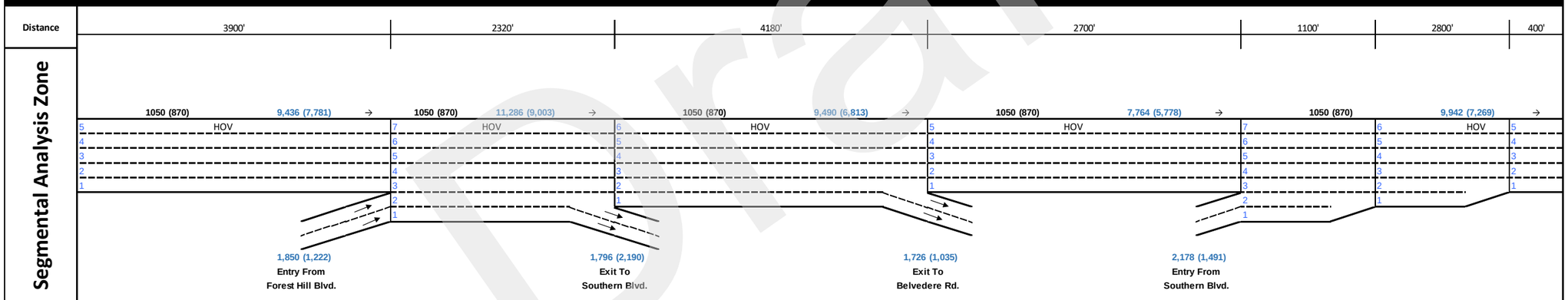
Figure: 6-5



← I-95 Southbound ←

GU Lane	Basic Freeway				Basic Freeway	On Ramp	Basic Freeway	Off Ramp	Basic Freeway
LOS AM	D	Weave - D			C	A	C	B	C
LOS PM	E	Diverge - UC	Freeway - D	Merge - UC	E	B	C	C	E

HOV Lane	HOV Lane			
LOS AM	UC	UC	UC	UC
LOS PM	UC	UC	UC	UC



→ I-95 Northbound →

GU Lane	Basic Freeway	Weave	Basic Freeway	Major Diverge	Basic Freeway	Major Merge	Basic Freeway	Basic Freeway
LOS AM	F	E	D	UC	D	UC	E	F
LOS PM	D	D	C	UC	C	UC	C	D

HOV Lane	HOV Lane			
LOS AM	UC	UC	UC	UC
LOS PM	UC	UC	UC	UC

LEGEND
X,XXX (X,XXX) = GU AM (PM) Peak Hour Volume (vph)
X,XXX (X,XXX) = HOV AM (PM) Peak Hour Volume (vph)

SR 9/I-95 at SR 80/Southern Boulevard Interchange PD&E Study
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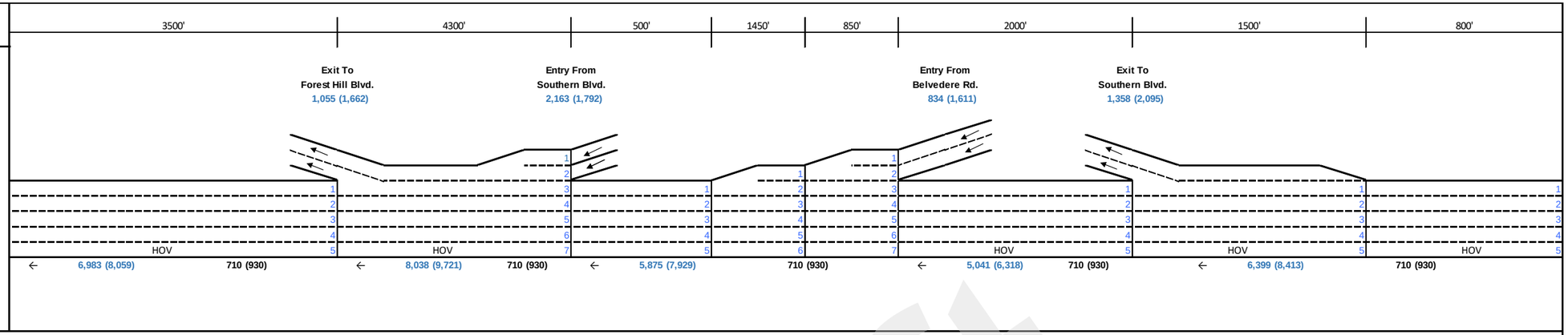
FDOT – District 4 / Palm Beach County

Title: I-95 LOS - 2040 Build Alternative 2

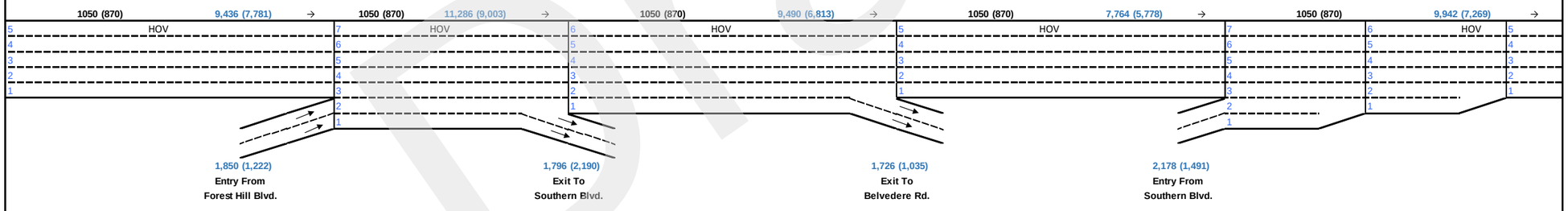
Figure: 6-6



← I-95 Southbound ←

GU Lane	Basic Freeway				Basic Freeway	On Ramp	Basic Freeway	Off Ramp	Basic Freeway
LOS AM	D	Weave - D			C	A	C	B	C
LOS PM	E	Diverge - UC	Freeway - D	Merge - UC	E	B	C	C	E

HOV Lane	HOV Lane			
LOS AM	UC	UC	UC	UC
LOS PM	UC	UC	UC	UC



→ I-95 Northbound →

GU Lane	Basic Freeway				Basic Freeway	Major Diverge	Basic Freeway	Major Merge	Basic Freeway	Basic Freeway
LOS AM	F	Merge - UC	Freeway - D	Diverge - UC	D	UC	D	UC	E	F
LOS PM	D	Weave - D			C	UC	C	UC	C	D

HOV Lane	HOV Lane			
LOS AM	UC	UC	UC	UC
LOS PM	UC	UC	UC	UC

LEGEND
X,XXX (X,XXX) = GU AM (PM) Peak Hour Volume (vph)
X,XXX (X,XXX) = HOV AM (PM) Peak Hour Volume (vph)

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SR 9/I-95 at SR 80/Southern Boulevard Interchange PD&E Study

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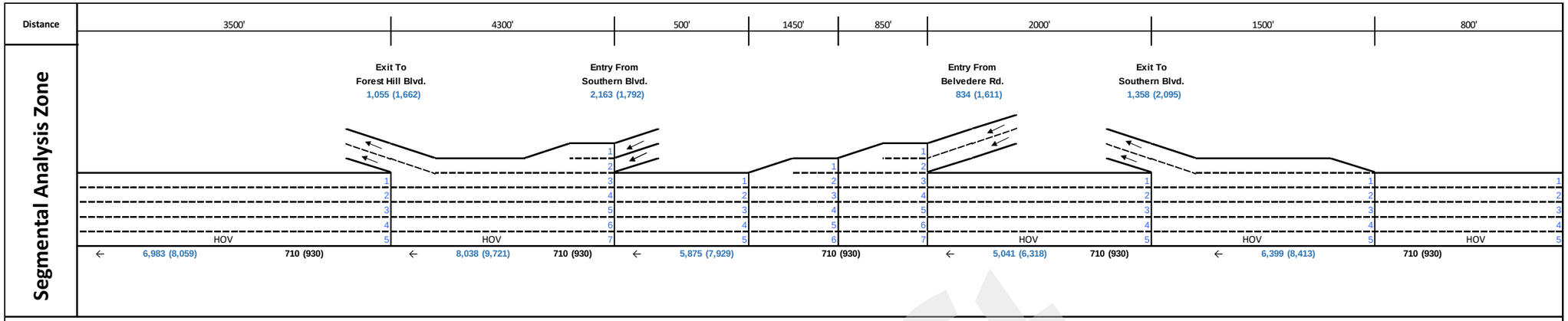
Title: I-95 LOS - 2040 Build Alternative 3

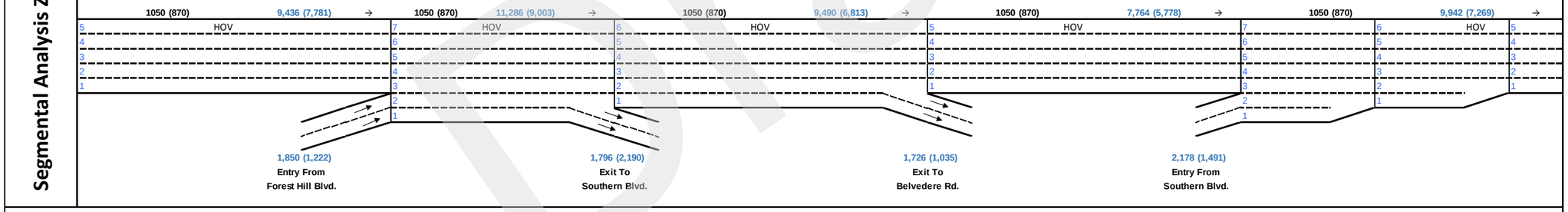
Figure: 6-7



← I-95 Southbound ←

GU Lane	Basic Freeway				Basic Freeway	On Ramp	Basic Freeway	Off Ramp	Basic Freeway
LOS AM	D	Weave - D			C	A	C	B	C
LOS PM	E	Diverge - UC	Freeway - D	Merge - UC	E	B	C	C	E

HOV Lane	HOV Lane			
LOS AM	UC	UC	UC	UC
LOS PM	UC	UC	UC	UC



→ I-95 Northbound →

GU Lane	Basic Freeway	Weave	Basic Freeway	Major Diverge	Basic Freeway	Major Merge	Basic Freeway	Basic Freeway
LOS AM	F	E	D	UC	D	UC	E	F
LOS PM	D	D	C	UC	C	UC	C	D

HOV Lane	HOV Lane			
LOS AM	UC	UC	UC	UC
LOS PM	UC	UC	UC	UC

LEGEND
X,XXX (X,XXX) = GU AM (PM) Peak Hour Volume (vph)
X,XXX (X,XXX) = HOV AM (PM) Peak Hour Volume (vph)

SR 9/I-95 at SR 80/Southern Boulevard Interchange PD&E Study
FPID No.: 4355161-1-22-02 / ETDM No.: 14183
FDOT – District 4 / Palm Beach County

Title: **I-95 LOS - 2040 Build Alternative 4 (Recommended Alternative)**

Figure: **6-8**

Table 6.1: Interchange Build Alternatives – 2040 LOS Analysis

2040 No Build						
Intersection	Intersection Approach				Overall Intersection	
	Approach	Movement	Delay (sec)	LOS	Delay (sec)	LOS
			AM (PM)	AM (PM)	AM (PM)	AM (PM)
Southern Boulevard at I-95 SB Ramp Terminal	Southbound	Left	68.1 (70.9)	**E (E)**	78.8 (90.4)	**E (F)**
		Right	1.8 (231.9)	A **(F)**		
	Eastbound	Thru	61.7 (48.9)	**E** (D)		
		Right	221.4 (3.2)	**F** (A)		
	Westbound	Left	2.1 (0.7)	A (A)		
		Thru	29.1 (91.0)	C **(F)**		
Southern Boulevard at I-95 NB Ramp Terminal	Northbound	Left	117.5 (291.7)	**F (F)**	54.7 (97.5)	D **(F)**
		Right	39.7 (24.3)	D (C)		
	Eastbound	Left	61.2 (14.6)	**E** (B)		
		Thru	3.4 (8)	A (A)		
	Westbound	Thru	56.0 (41.2)	**E** (D)		
		Right	52.4 (25.8)	D (C)		

2040 Build Alternative 1						
Intersection	Intersection Approach				Overall Intersection	
	Approach	Movement	Delay (sec)	LOS	Delay (sec)	LOS
			AM (PM)	AM (PM)	AM (PM)	AM (PM)
Southern Boulevard at I-95 SB Ramp Terminal	Southbound	Left	57.9 (55.6)	**E (E)**	52.9 (29.0)	D (C)
		Right	23.8 (38.1)	C (D)		
	Eastbound	Thru	73.8 (47.4)	**E** (D)		
		Right	76.4 (25.0)	**E** (C)		
	Westbound	Left	2.3 (1.2)	A (A)		
		Thru	3.1 (7.3)	A (A)		
Southern Boulevard at I-95 NB Ramp Terminal	Northbound	Left	51.0 (68.0)	D **(E)**	28.9 (44.1)	C (D)
		Right	44.5 (40.5)	D (D)		
	Eastbound	Left	3.3 (2.7)	A (A)		
		Thru	1.7 (2.4)	A (A)		
	Westbound	Thru	84.4 (90.2)	**F (F)**		
		Right	43.8 (40.5)	D (D)		

Table 6.1: Interchange Build Alternatives – 2040 LOS Analysis (Continued)

2040 Build Alternatives 2 and 4						
Intersection	Intersection Approach				Overall Intersection	
	Approach	Movement	Delay (sec) AM (PM)	LOS AM (PM)	Delay (sec) AM (PM)	LOS AM (PM)
Southern Boulevard at I-95 SB Ramp Terminal	Southbound	Left	72.5 (66.6)	**E (E)**	41.8 (31.9)	D (C)
		Right	23.1 (41.1)	C (D)		
	Eastbound	Thru	41.5 (58.5)	D **(E)**		
		Right	74.5 (36.4)	**E** (D)		
	Westbound	Left	2.1 (1.3)	A (A)		
		Thru	3.1 (8.2)	A (A)		
Southern Boulevard at I-95 NB Ramp Terminal	Northbound	Left	54.7 (69.9)	D **(E)**	33.7 (43.9)	C (D)
		Right	45.5 (38.8)	D (D)		
	Eastbound	Left	0.1 (0.2)	A (A)		
		Thru	4.2 (4.9)	A (A)		
	Westbound	Thru	75.4 (46.6)	**E** (D)		
		Right	26.7 (108.9)	C **(F)**		

2040 Build Alternative 3						
Intersection	Intersection Approach				Overall Intersection	
	Approach	Movement	Delay (sec) AM (PM)	LOS AM (PM)	Delay (sec) AM (PM)	LOS AM (PM)
Southern Boulevard at I-95 SB Ramp Terminal	Southbound	Left	68.1 (64.9)	**E (E)**	44.2 (53.8)	D (D)
		Right	25.1 (135.3)	C **(F)**		
	Eastbound	Thru	48.6 (60.8)	**D (E)**		
		Right	86 (56.6)	**F (E)**		
	Westbound	Left	2.2 (1.7)	A (A)		
		Thru	14.8 (11.7)	B (B)		
Southern Boulevard at I-95 NB Ramp Terminal	Northbound	Left	81.5 (110.9)	**F (F)**	44.8 (76.4)	D **(E)**
		Right	42.5 (24.5)	D (C)		
	Eastbound	Left	0.2 (0.3)	A (A)		
		Thru	3.7 (5.5)	A (A)		
	Westbound	Thru	84.4 (126.4)	**F (F)**		
		Right	32.4 (18.7)	C (B)		

Table 6.2: Interchange Build Alternatives – 2040 Queue Analysis

Interchange Alternatives	Peak Period	LOS Terminal Intersections							
		NB Terminal					SB Terminal		
		Delay (sec/veh)	LOS	Off-Ramp Queue Length (feet)	Off-Ramp Queue Storage (feet)	Delay (sec/veh)	LOS	Off-Ramp Queue Length (feet)	Off-Ramp Queue Storage (feet)
No Build	AM	54.7	D	#620	1,540	78.8	**E**	300	2,960
	PM	97.5	**F**	#1020		90.4	**F**	#1170	
Alternatives 1 NB to WB Flyover	AM	27.0	C	400	2,570	48.1	D	320	2,960
	PM	44.3	D	290		28.3	C	770	
Alternative 2 and 4 NB to WB and EB to NB Flyovers	AM	33.7	C	400	3,000	41.8	D	320	2,960
	PM	43.9	D	290		31.9	C	790	
Alternative 3 EB to NB Flyover	AM	44.8	D	#570	1,540	44.2	D	330	2,960
	PM	76.4	**E**	#850		53.8	D	#1,050	

Notes:
1. Queue lengths are the 95th percentile
2. # - 95th percentile volume exceeds capacity, queue may be longer. Queue shown is max after two cycles.

6.3 Screening of Interchange Alternatives

The build alternatives were screened in an evaluation matrix considering twelve performance criteria, under four categories: engineering, environmental and social impacts, right-of way and costs. Each alternative was assigned a relative ranking based on the collective assessment of various professionals from the project team and input gained from the public outreach conducted during the study period. The evaluation matrix includes a benefit/cost assessment for each alternative based on estimated construction cost and delay savings at the interchange. Calculations for the benefit/cost analysis are contained under Appendix I. The No Build alternative was taken as a natural bench mark for assessing the positive or negative impacts of each alternative. The ranking assigned to each alternative ranged from a low of -3 to a high of +3. The resulting evaluation matrix is shown in Table 6.3. As indicated in the evaluation matrix, Alternative 2 was determined to be fatally flawed and rejected from consideration due to public opinion of the fourth level bridge and, the Section 4(f) impacts to Dreher Park due to right-of-way needs for construction.

Based on the assessment presented in the evaluation matrix, Alternative 4 was determined to be the best design concept for the study location and the Recommended Alternative for moving forward. The following support this conclusion:

- Alternative 4 gained the highest cumulative score (+12) across all the considered evaluation criteria.
- Alternative 4 gained the highest ranking in nine of the thirteen evaluation criteria. This represents the highest across all alternatives.
- Alternative 4 fully address the purpose and need for the project.

Table 6.3: Evaluation Matrix, Build Alternatives

CATEGORY	CRITERIA	NO BUILD	BUILD ALTERNATIVES			
			1 (NB - WB)	2** 3rd / 4th	3 EB - NB	4 Dual 3rd Level
Engineering	Fully addresses Project Purpose and Need	0	1	3	1	3
	Addresses all major traffic movements at interchange	0	1	3	1	3
	Satisfies the LOS Criteria through the Design Year	0	3	3	1	3
	Improves Roadway / Interchange Operation / Safety	0	1	2	1	3
	Enhances SIS System Connectivity	0	2	3	2	3
Environmental and Social	Historic & Archaeological Resources	0	0	0	0	0
	Public Opinion	0	1	rejected	1	1
	Visual / Aesthetic Impacts	0	-1	-2	-1	-1
	Section 4(f) impacts (Dreher Park)	0 (no)	0 (no)	-3 (yes)	0 (no)	0 (no)
Right-of-Way	Total Right-of-Way Required (# of acres)	0	-1 (1.01)	-2 (1.87)	-1 (0.58)	-2 (1.78)
Estimated Costs	Construction (Cost)	0	-1 ($55.6M)	-2 ($72.8M)	-1 ($50.4M)	-2 ($66.2M)
	Right-of-way Cost	0	-1	-3	-1	-2
Benefit/Cost Analysis	Benefit/Cost (B/C) Ratio Net Present Value - NPV	0	3 B/C = 1.30 NPV = $16.6M	2 B/C = 1.16 NPV = $11.9M	0 B/C = 1.01 NPV = $0.7M	3 B/C = 1.28 NPV = $18.5M
Total All Categories		**0**	**8**	**N/A**	**3**	**12**

Notes: 1. Relative ranking of interchanges ranges from -3 (worst of all alternatives) to + 3 (best of all alternatives).
2. Benefit/Cost Analysis based on delay savings

7.0 Recommended Alternative

7.1 Recommended Alternative Road Network

Based on the analyses presented in the preceding sections of the report, Build Alternative 4 was determined to be the Recommended Alternative for the study corridor. The Recommended Alternative incorporates modifications to the I-95 at Southern Boulevard interchange, as well as modifications to the adjacent intersections to optimize safety and traffic operations at the interchange. These modifications are describe in detail under Section 6 and a summary of the significant network modifications are presented below.

- **I-95/Southern Boulevard Interchange**
  - Construct a new flyover for NB I-95 to WB Southern Boulevard. This proposed flyover elevates to the third level and serves NB to WB traffic with destinations west of Australian Avenue and South Congress Avenue.
  - Construction of a new flyover for EB Southern Boulevard to NB I-95. This proposed flyover elevates to the third level with access at Gem Lake Drive.
  - The southbound on-ramp from Southern Boulevard to I-95 is widened from one-lane to two lanes.
  - The existing NB terminal intersection is modified to accommodate: three northbound left turn lanes, two northbound right turn lanes, two eastbound left turn lanes, three eastbound through lanes, five westbound through lanes and one westbound right turn lane. All movements operate under signal control.
  - The existing southbound terminal intersection is modified to accommodate: two southbound left turn lanes, three southbound right turn lanes, three eastbound through lanes and two eastbound right turn lanes. All lanes operate under signal control.
- **Southern Boulevard at Gem Lake Drive**
  - The eastbound approach is modified to accommodate: one left turn lane, four through lanes, and one shared through/right turn lane.
  - The westbound approach is modified to accommodate: one left turn lane, four through lanes and one shared through/right lane

- **Southern Boulevard at Parker Avenue**
  - The northbound approach is modified to accommodate: two left turn lanes, one through lane, and one shared through/right lane
  - The eastbound approach is modified to accommodate one left turn lane, two through lanes and one right turn lane.

7.2 Recommended Alternative – Year 2040 Analysis

Year 2040 level of service analyses were conducted for the Recommended Alternative for the design year 2040 conditions. The analyses were performed using HCM 2010 procedures for I-95 freeway segments analyses and Synchro 9 for intersection analyses. Results of the analysis for I-95 freeway segments are presented under Section 6 of the IMR (Build Alternative 4). Results of the analyses for the study intersections are summarized in Table 7.1 – detailed output sheets are contained under Appendix H.

The analyses presented under Section 6 of the IMR demonstrated that operations along I-95 are expected to be similar in the Recommended Alternative and the No Build Alternative, except for the segment of I-95 between the on-ramp from Forest Hill Boulevard and the exit ramp to Southern Boulevard. Within this segment, the Recommended Alternative operates at LOS E whereas the No Build operates at LOS D. The Recommended Alternative operates at a lower standard than the No Build within this segment due to the proposed southern shift (approximately 1,050 feet) of the off-ramp to Southern Boulevard to accommodate the NB to WB flyover. This shift in the off-ramp creates a weaving segment (approximately 2,850 feet long) between the on-ramp from Forest Hill Boulevard and off-ramp to Southern Boulevard. Notwithstanding, the Recommended Alternative will is still considered to be more favorable for operations along I-95 as it eliminates the risk of queue spillback onto I-95 mainline, coming from the ramp terminal intersections. This is reflected in the results previously presented in Section 6, Table 6.1. The results indicate that the queues at the off-ramps are expected to exceed 1,000 feet under the No Build condition whereas under the Recommend Alternative these queues will be under 400 feet on the NB off-ramp and under 800 feet on the SB off-ramp. The Recommended Alternative also increases storage on the NB off-ramp from approximately 1,540 feet to 3,000 feet. Eliminating the risk of queue spillback onto I-

95 mainline is a major safety benefit of Recommended Alternative. This safety benefit is also a primary need for the proposed improvements. Other enhancements for improving safety and accommodations for pedestrians and bicyclists are discussed under Section 7.4. It should further be noted that the mainline weave condition can be eliminated with the option for implementing a median-to-median connection to/from I-95 mainline and Southern Boulevard. This variation on the Recommended Alternative is discussed further under Section 7.5 of the IMR.

As shown in Table 7.1, with the exception of Parker Avenue, all study intersections will operate al LOS D or better in the design year. Parker Avenue is expected to operate at LOS E. In comparison, results presented under Section 5 of the IMR indicate that the two terminal intersections and Parker Avenue will operate at LOS F under the No Build conditions. These results confirm that the Recommended Alternative provides better overall operating conditions when compared to the No Build Alternative.

A mitigation analysis was performed to assess what additional improvements would be needed, over and above the Recommended Alternative, in order to upgrade the level of service at Parker Avenue to be within the desired LOS D standard. The mitigation analysis was performed by implementing incremental improvements at the intersection and assessing the resulting level of service. Based on this analysis, the following intersection configuration would be needed in order to generate LOS D in the design year (LOS details under Appendix H and Summary in Table 7.2):

- Northbound Approach: 2 exclusive left turn lanes; 2 exclusive through lanes; 1 exclusive right turn lane.
- Southbound Approach: 1 exclusive left turn lane; 2 exclusive through lanes; one exclusive right turn lane
- Eastbound Approach: 1 exclusive left turn lane; 3 exclusive through lanes ; 1 exclusive right turn lane
- Westbound Approach: 1 exclusive left turn lane; 2 exclusive through lanes; 1 shared through + right turn lane.

Based on the public outreach conducted for the PD&E Study, it is understood that it is unacceptable to the community to implement additional widening of Southern Boulevard/Parker Avenue Intersection in order to accommodate the above intersection configuration. Hence, the above mitigation configuration is not proposed as a component of the Recommended Alternative.

Table 7.1: Intersection LOS Analysis, 2040 Recommended Alternative (Build 4)

Intersection	Intersection Approach				Overall Intersection	
	Approach	Movement	Delay (sec)	LOS	Delay (sec)	LOS
			AM (PM)	AM (PM)	AM (PM)	AM (PM)
Southern Boulevard at Gem Lake Drive	Northbound	Left	31.9 (28.2)	C (C)	28.4 (16.4)	C (B)
		Thru/Right	60.8 (55.4)	**E (E)**		
	Southbound	Left	4.7 (4.1)	A (A)		
		Thru/Right	71.5 (68.8)	**E (E)**		
	Eastbound	Left	72.5 (66.2)	**E (E)**		
		Thru/Right	12.3 (10.9)	B (B)		
	Westbound	Left	65.4 (63.8)	**E (E)**		
		Thru	8.3 (15.5)	A (B)		
		Right	5.5 (7.2)	A (A)		
Southern Boulevard at I-95 SB Ramp Terminal	Southbound	Left	72.5 (66.6)	**E (E)**	41.8 (31.9)	D (C)
		Right	23.1 (41.1)	C (D)		
	Eastbound	Thru	41.5 (58.5)	D **(E)**		
		Right	74.5 (36.4)	**E** (D)		
	Westbound	Left	2.1 (1.3)	A (A)		
		Thru	3.1 (8.2)	A (A)		
Southern Boulevard at I-95 NB Ramp Terminal	Northbound	Left	54.7 (69.9)	D **(E)**	33.7 (43.9)	C (D)
		Right	45.5 (38.8)	D (D)		
	Eastbound	Left	0.1 (0.2)	A (A)		
		Thru	4.2 (4.9)	A (A)		
	Westbound	Thru	75.4 (46.6)	**E** (D)		
		Right	26.7 (108.9)	C **(F)**		
Southern Boulevard at Parker Avenue	Northbound	Left	80.4 (81.2)	**F (F)**	50.4 (67.0)	D **(E)**
		Thru/Right	57.1 (57.5)	**E (E)**		
	Southbound	Left	51.8 (50.6)	D (D)		
		Thru	69.1 (107.5)	**E (F)**		
		Right	58.0 (65.4)	**E (E)**		
	Eastbound	Left	61.0 (85.8)	**E (F)**		
		Thru	54.1 (30.9)	D (C)		
		Right	4.6 (45.1)	A (D)		
	Westbound	Left	70.9 (39.8)	**E** (D)		
		Thru/Right	33.4 (88.5)	C **(F)**		
Southern Boulevard at Lake Avenue	Northbound	Left	63.1 (56.4)	**E (E)**	28.8 (42.6)	C (D)
		Thru/Right	52.9 (59.1)	D **(E)**		
	Southbound	Left	49.8 (54.7)	D (D)		
		Thru	58.3 (65.6)	**E (E)**		
		Right	67.4 (69.5)	**E (E)**		
	Eastbound	Left	5.6 (26.7)	A (C)		
		Thru/Right	18.6 (38.7)	B (D)		
	Westbound	Left	39.3 (23.7)	D (C)		
		Thru/Right	23.3 (38.4)	C (D)		

Table 7.2: Southern Boulevard at Parker Avenue 2040 Mitigation Analysis

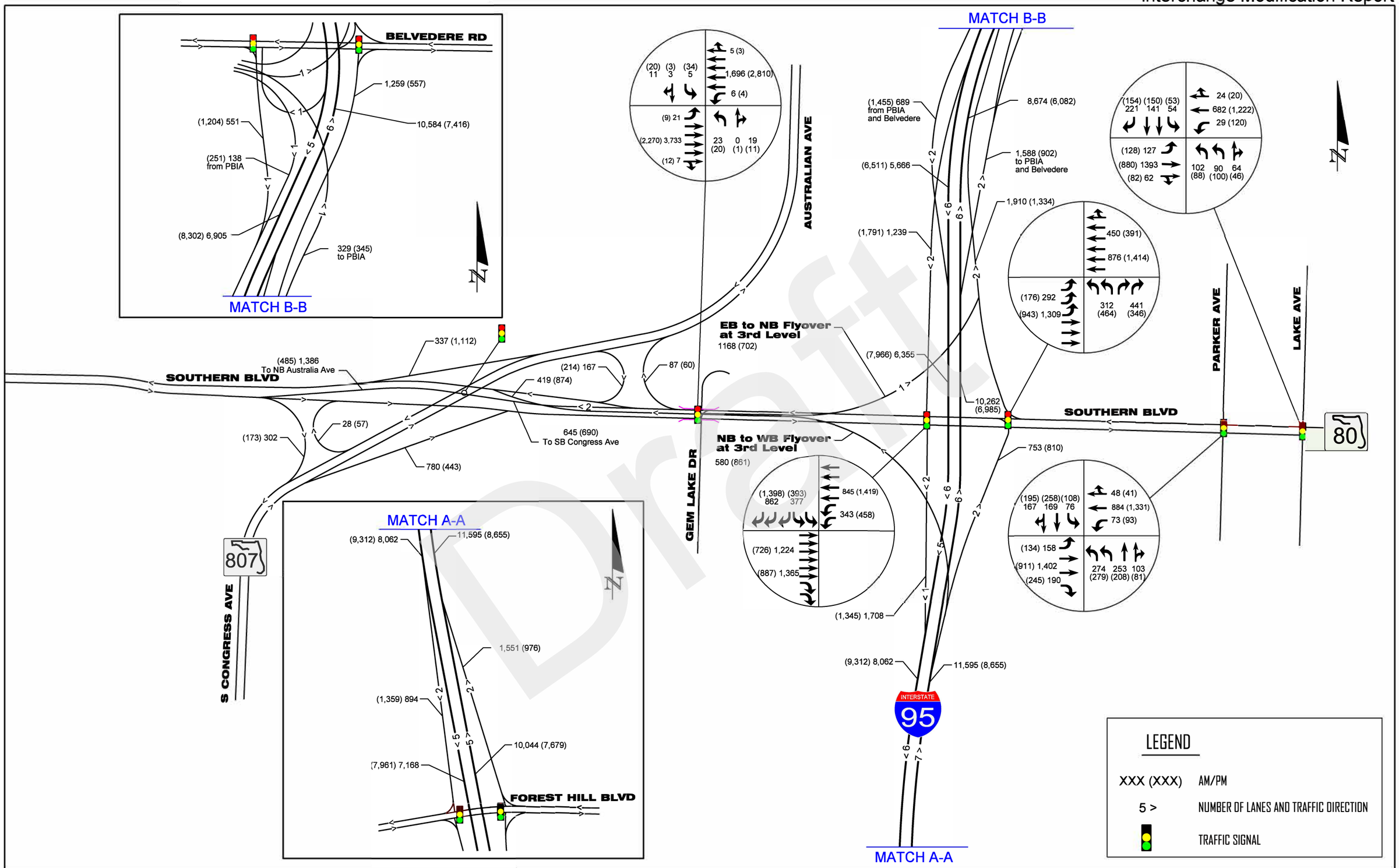
Intersection	Intersection Approach					Overall Intersection	
	Approach	Movement	Lanes	Delay (sec)	LOS	Delay (sec)	LOS
				AM (PM)	AM (PM)	AM (PM)	AM (PM)
Southern Boulevard at Parker Avenue	Northbound	Left	2	71.7 (72.1)	**E (E)**	40 (51.1)	D (D)
		Thru	2	46.1(48.4)	D (D)		
		Right	1	45.8 (48.2)	D (D)		
	Southbound	Left	1	53.5 (53.7)	D (D)		
		Thru	2	58.1 (62.7)	**E (E)**		
		Right	1	67.3 (74.3)	**E (E)**		
	Eastbound	Left	1	39.6 (52.6)	D (D)		
		Thru	3	35.6 (23.7)	D (C)		
		Right	1	6 (46.7)	A (D)		
	Westbound	Left	1	48.7 (31.6)	D (C)		
		Thru/Right	2 -Thru 1- Thru/Right	30.7 (60.9)	C **(E)**		

7.3 Recommended Alternative – Year 2020 Analysis

Level of service analysis were conducted to evaluate the performance of the Recommended Alternative in the anticipated opening year 2020. The analyses were performed consistent with the methodology presented under Section 2 of the IMR. Highway Capacity Manual (HCM) 2010 procedures were used for I-95 freeway segments analyses and Synchro 9 used for intersection analyses. Year 2020 peak hour volumes were estimated by interpolating between year 2040 traffic and existing year (2015) traffic. Figure 7.1 shows the Recommended Alternative network along with the estimated 2020 peak hour volumes used for the analyses. Results of the LOS analyses for the I-95 freeway segments are summarized in Figure 7.2 and level of service for the intersections are summarized in Table 7.3. Detailed output sheets for the 2020 analysis are contained under Appendix H.

As shown in Figure 7.2, traffic operations along the I-95 segment are similar to the No Build Alternative (presented under Section 5), except for the NB segment between the on-ramp from Forest Hill Boulevard and the off-ramp to Southern Boulevard. This segment operates at LOS E in the Recommended Alternative and LOS D in the No Build Condition. However, as previously explained above, the Recommend Alternative is still consider to be a more favorable condition due the elimination of the risk for queue spillback onto the mainline from the terminal intersections.

The results in Table 7.3 indicate that under the Recommended Alternative, all the project intersections, except for Parker Avenue, will operate at LOS D or better in year 2020. Parker Avenue is expected to operate at LOS E. These results are similar to those previously presented under Section 5 for the No Build Alternative. However, overall intersections delays are generally less under the Recommended Alternative when compared to the No Build Alternative.



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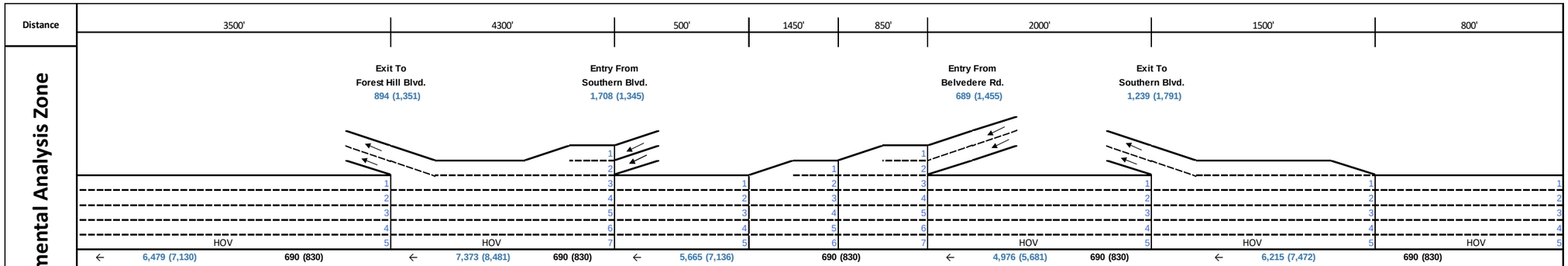
2020 Build Alternative
Peak Hour Volumes

Figure 7-1

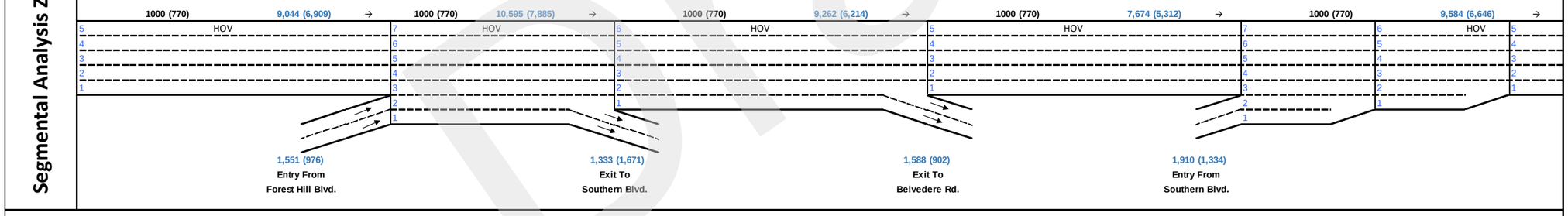
$USER$ $DATE$ $TIME$ $FILE$



← I-95 Southbound ←

GU Lane	Basic Freeway	Major Merge	Basic Freeway	Major Diverge	Basic Freeway	On Ramp	Basic Freeway	Off Ramp	Basic Freeway
LOS AM	C	UC	C	UC	C	A	C	B	C
LOS PM	D	UC	D	UC	D	B	C	C	D

HOV Lane	HOV Lane			
LOS AM	UC	UC	UC	UC
LOS PM	UC	UC	UC	UC



→ I-95 Northbound →

GU Lane	Basic Freeway	Weave	Basic Freeway	Major Diverge	Basic Freeway	Major Merge	Basic Freeway	Basic Freeway
LOS AM	F	E	D	UC	D	UC	D	F
LOS PM	D	C	C	UC	C	UC	C	D

HOV Lane	HOV Lane			
LOS AM	UC	UC	UC	UC
LOS PM	UC	UC	UC	UC

LEGEND
X,XXX (X,XXX) = GU AM (PM) Peak Hour Volume (vph)
X,XXX (X,XXX) = HOV AM (PM) Peak Hour Volume (vph)

SR 9/I-95 at SR 80/Southern Boulevard Interchange PD&E Study
FPID No.: 4355161-1-22-02 / ETDM No.: 14183
FDOT – District 4 / Palm Beach County

Title: **I-95 LOS - 2020 Build Alternative 4 (Recommended Alternative)**

Figure: **7-1**

Table 7.3: Intersection LOS Analysis, 2020 Recommended Alternative (Build 4)

Intersection	Intersection Approach				Overall Intersection	
	Approach	Movement	Delay (sec)	LOS	Delay (sec)	LOS
			AM (PM)	AM (PM)	AM (PM)	AM (PM)
Southern Boulevard at Gem Lake Drive	Northbound	Left	31.3 (23.1)	C (C)	17.1 (11.2)	B (B)
		Thru/Right	60.6 (58.8)	**E (E)**		
	Southbound	Left	4.7 (4.4)	A (A)		
		Thru/Right	71.4 (67.8)	**E (E)**		
	Eastbound	Left	72.1 (72.1)	**E (E)**		
		Thru/Right	10.2 (8.5)	B (A)		
	Westbound	Left	68.1 (71.6)	**E (E)**		
		Thru	8.2 (9.5)	A (A)		
		Right	5.5 (6.1)	A (A)		
Southern Boulevard at I-95 SB Ramp Terminal	Southbound	Left	67.5 (62.3)	**E (E)**	29.1 (25.9)	C (C)
		Right	22.5 (33.1)	C (C)		
	Eastbound	Thru	41.7 (56.5)	D **(E)**		
		Right	34.8 (21.8)	C (C)		
	Westbound	Left	1.1 (0.8)	A (A)		
		Thru	2.8 (3.6)	A (A)		
Southern Boulevard at I-95 NB Ramp Terminal	Northbound	Left	53 (64.4)	D **(E)**	31.7 (40.9)	C (D)
		Right	40.6 (36.2)	D (D)		
	Eastbound	Left	0.2 (0.2)	A (A)		
		Thru	2.8 (2.8)	A (A)		
	Westbound	Thru	70.9 (45.0)	D (D)		
		Right	36.7 (112.5)	D **(F)**		
Southern Boulevard at Parker Avenue	Northbound	Left	69 (82.2)	**E (F)**	37.7 (57.8)	D **(E)**
		Thru/Right	50.7 (52.8)	D (D)		
	Southbound	Left	51.2 (54.7)	D (D)		
		Thru	66.6 (85.3)	**E (F)**		
		Right	56.3 (57.9)	**E (E)**		
	Eastbound	Left	30.2 (67.3)	C **(E)**		
		Thru	33.7 (24.5)	C (C)		
		Right	1.3(42.8)	A (D)		
	Westbound	Left	57.4 (43)	**E** (D)		
		Thru/Right	26.8(73.8)	C **(E)**		
Southern Boulevard at Lake Avenue	Northbound	Left	47.5 (52)	D (D)	24.5 (39.5)	C (D)
		Thru/Right	50.1 (59)	D (D)		
	Southbound	Left	50.3 (55.1)	D **(E)**		
		Thru	58.8 (64.6)	**E (E)**		
		Right	63.1 (63.1)	**E (E)**		
	Eastbound	Left	4.9 (28.1)	A (C)		
		Thru/Right	12.4 (39.5)	B (D)		
	Westbound	Left	27.0 (19.1)	C (B)		
		Thru/Right	22.9 (32.7)	C (C)		

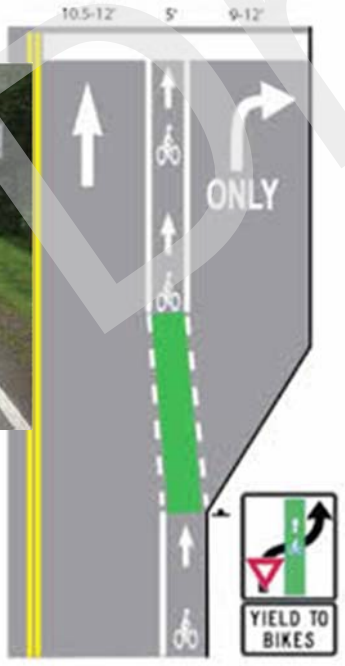
7.4 Pedestrian and Bicycle Accommodations

Throughout the project corridor, the Recommended Alternative will include improved and upgraded facilities to enhance safety and accommodations for pedestrians and bicyclists. These facilities include:

- In areas of roadway reconstruction, seven-foot, buffered bike lanes are planned.
- Areas of roadway resurfacing, four-foot bike lanes will be provided, where possible. The exception is along Parker Avenue, where sharrows are proposed due to right-of-way constraints and consistency with existing conditions. An example of sharrows is shown in Figure 7.3.
- The implementation of green bike lane markings are also proposed where appropriate as shown in Figure 7.4.
- As requested by the communities, special emphasis pavement markings are proposed at pedestrian crossings at all cross walks.

Figure 7.3: Bike Lane Marking

Figure 7.4: Bike Lane Marking



7.5 Recommended Alternative with Median-to-Median Option

At the time of this writing, the FDOT is actively conducting a master plan study for the segment of I-95 from south of Linton Boulevard to the Palm Beach/Martin County Line. This master plan study covers the I-95/Southern Boulevard Interchange which is the subject of this IMR. The I-95 Master Plan is examining options for improving traffic operations along I-95 to meet the long term transportation needs of the corridor. Options under consideration include the possibility of implementing express lanes throughout the limits of I-95 in Palm Beach County. In recognizing the future potential for express lanes along I-95, the FDOT determined that it would be prudent, at this time, to develop an alternative design concept for the I-95/Southern Boulevard Interchange that could accommodate direct connections to a future I-95 express lanes system. This design concept (Alternative 5) is included under Appendix F.

Alternative 5 includes all the design features of the Recommended Alternative but the proposed flyovers provide median-to-median connections from I-95 mainline to Southern Boulevard. Given the similarities, it is expected that Alternative 5 will generally generate similar operational benefits as the Recommended Alternative. One notable operational improvement resulting from Alternative 5 is the expansion of the ramp spacing between the NB on-ramp at Forest Hill Boulevard and the NB off-ramp at Southern Boulevard. Under Alternative 5 this ramp spacing is increased from approximately 2,850 feet (per the Recommended Alternative) to approximately 3,900 feet (Alternative 5). This increase in ramp spacing would alleviate the weave condition noted in the Recommended Alternative (discussed under Section 7.2) and will generate better operating conditions along I-95 within this segment.

Future traffic conditions under Alternative 5 are dependent on the outcome of the I-95 Master Plan. Hence verification of the anticipated operating conditions are not feasible at this time. If it is determined that a future express lanes system is the preferred alternative for I-95 mainline, then the operational benefits of Alternative 5 will be verified in a future interchange access request document.

8.0 Other Considerations

The following is a summary of the environmental activities and potential impacts associated with the I-95 at SR 80 / Southern Boulevard PD&E Study in Palm Beach County. The PD&E supporting technical documents can be referenced as a source for more details to the environmental considerations summarized below.

8.1 Project Constructability and Maintenance of Traffic

A Traffic Control Plan will be developed during the Final Design Phase and implemented in consultation with local jurisdictions and the FDOT. Measures to be considered for implementation in the Traffic Control Plan will include, but not be limited to:

- Advance public notification to motorists of the nature, extent, and duration of any street closing and possible detour routes, if needed;
- Detour signing placed in advance at strategic locations to notify motorists of alternate routing, if required;
- Use of warning signs and pavement markings;
- Construction during off-peak times, whenever feasible, to minimize disruption to the traveling public;
- Maintenance of at least one entrance to all adjacent properties;
- Coordination of construction activities with other proposed roadway improvements in the area;
- Concurrent utility relocations whenever possible to minimize disruptions, if required; and
- Inclusion of measures within the construction contract specifications and plans to encourage responsible construction practices by contractors to avoid or minimize impacts;

Construction of the proposed improvements will temporarily impact traffic movements. The extent of construction phase impacts will vary, depending upon whether the construction is at-grade along the SR 80 mainline, on the bridge structures at the overpasses, or on the flyover structures within the median areas or over the I-95 mainline highway.

Proper traffic control will be critical in order to minimize impacts to the commuters and construction cost. Care should be taken to ensure the safety of motorists and workers. The traffic control should be designed as per the FDOT design Standard Index 600 series.

Given the volume of traffic on the corridor and its importance to surrounding communities, every effort should be made during construction to maintain the existing number of travel lanes. In some locations, the construction's proximity to the roadway, the construction activity itself, or overhead construction may require temporary lane closures through the work zone. These lane closures should be limited to off-peak hours. Lane closure analyses will determine the feasibility of limited or extended lane closures along SR 80, I-95 and area roadways.

The traffic control plan for the construction on SR 80 mainline can be accomplished in two phases for each direction. Phase 1 features widening to the outside. Phase 2 features milling resurfacing and overbuild operations, after widening has been completed.

The traffic control plan for the widening of the bridges over the CSX tracks and I-95 can be accomplished in two phases; one for widening to each side of the bridge. It may be necessary to close one through lane either side of the bridge to allow space for construction equipment.

The interchange ramps improvements can be constructed after the mainline SR 80 and bridge widening improvements are in place. The ramps will provide improved interchange configuration and increase the number of lanes for turning movements at the terminal intersections. The maintenance of traffic during construction will vary in the number of phases for each ramp, and the specific schemes will be developed during the design phase. The phases will include a combination of temporary pavement, lane shifts, and potentially temporary ramp closures (made during off-peak hours) for flyover connections. Each interchange ramp should maintain the existing number of travel lanes through each construction phase.

Construction of the dual, third level flyover ramps will be accomplished within the median area of SR 80 for the most part. However, shifts or temporary lane closures in the inside through lanes of SR 80 may be required. The construction of the flyover ramps to their connections with I-95 will require specialized equipment and periodic lane closures for work over the highway mainline. This would be accomplished at off peak hours. Construction

phasing for the dual flyovers will be further developed during the final design phase when additional structural details are established.

8.2 Anticipated Design Exceptions and Variations

Implementation of the proposed flyovers is expected to involve the following design variations/exceptions:

Minimum Curve Length – The minimum curve length of 400 feet cannot be met at two locations and will require a design variation. This is due to the braiding of the EB – NB ramp entrance under the NB – WB flyover ramp, and the existing WB access to Congress Avenue that will be slightly reconfigured to allow the braided ramp. For the EB ramp entrance, a variation will be required from Sta. 3192+80.45 to Sta. 3195+46.86. The achievable curve lengths measure 210.5 and 59.7 feet, respectively, while FDOT standards requires 400 feet. However, these curves are in a location where vehicles are decelerating and maneuvering to enter a turn lane at a signal controlled intersection. For the WB access to Congress Avenue, a variation will be required between Sta. 3192+14.41 and Sta. 3196+65.82. The achievable curve lengths measure 175.8 and 282.8 feet, respectively, while FDOT standards requires 400 feet. These curves are also in an area where vehicles are entering a turn lane, approaching a signal controlled intersection.

Stopping Sight Distance – A design exception may be needed for the NB – WB flyover ramp between Sta. 103+99.07 and Sta. 116+05.67 (PC to PT). The minimum stopping sight distance provided is 285 feet while the FDOT Standard calls for 392 feet and AASHTO requires 393 feet. For the EB to NB flyover ramp, an exception may also be needed from Sta. 146+41.53 to Sta. 161+59.79 (PC to PT). The minimum stopping sight distance achievable is 300 feet; the FDOT Standard requires 392 feet and AASHTO requires 393 feet of stopping sight distance. This stopping sight distance issue is common on curved, single lane flyover ramps, such as are proposed, due to the shoulder width limitation on the structures as required by design standards. The need for a stopping sight distance design exception will be reevaluated further in final design as the concept is developed to a final design level of detail.

8.3 Safety

The conceptual design plans for the proposed I-95 corridor improvements were developed in accordance with the FDOT's Design Standards, Plans Preparation Manual and FHWA's Policy on Geometric Design of Highways and Streets. Adherence to these standards will facilitate safety and efficient traffic operations along the corridor. As discussed under Section 3.4 of the report, a large proportion of the crashes experienced along the existing I-95 interchange were associated with nighttime driving, wet road surface conditions, fixed objects and traffic congestion. Improvements considered to reduce these crash patterns include:

- Improving skid resistance for the pavement surface through reconstruction and/or replacement of existing pavement;
- Improve drainage to quickly remove surface run-off and standing water;
- Improve roadway lighting;
- Remove/relocate the fixed objects located within the clear zone.

In addition to the above safety considerations, the proposed improvements at the interchange will address future traffic demand needs along the corridor. This will alleviate traffic congestion which will yield a corresponding reduction in crash risk.

8.4 Transportation Systems Management and Operations (TSM&O)

The I-95 and SR 80 interchange has Intelligent Transportation Systems (ITS) monitored, analyzed, and managed from both the FDOT District Four SMART SunGuide Regional Transportation Management Center (RTMC) and the Palm Beach County Transportation Management Center (TMC). The FDOT has ongoing plans to upgrade/enhance these ITS systems which will be woven into the planned improvements for I-95 / Southern Boulevard Interchange. The following is a description of the existing ITS features within the project study area.

District Four Facilities

- **Pan-Tilt-Zoom (PTZ) Closed Circuit Television (CCTV) cameras:** The District Four RTMC operates four CCTV cameras.
    - CCTV-28 located 1000 feet north of SR 80 on the west side of I-95;
    - DMS verification CCTV 2300 feet south of SR 80 on the west side of I-95;
    - CCTV-29 located 5500 feet north of SR 80 on the west side of I-95;
    - CCTV-27 located 3600 feet south of SR 80 on the east side of I-95;
- **Dynamic Message Signs (DMS):** The District Four RTMC currently operates one freeway DMS and one arterial DMS both with verification cameras on separate poles.
    - DMS-8 located 2800 feet south of SR 80 for the southbound direction of travel on I-95;
    - ADMS with verification CCTV attached located 50 feet east of Paseo Alcala for the westbound direction of travel on SR 80;
- **Vehicle Detection System:** The District Four RTMC currently operates seven MVDS sensors along I-95.
    - MVDS-56 located 3600 feet south of SR 80 on the east side of I-95;
    - MVDS-56A located 3600 feet south of SR 80 on the east side of I-95;
    - MVDS-57 located 1500 feet south of SR 80 on the east side of I-95;
    - MVDS-58 & MVDS-58A located 1000 feet north of SR 80 on the west side of I-95;
    - MVDS-59 located 3000 feet north of SR 80 on the east side of I-95;
    - MVDS-60 located 5000 feet north of SR 80 in the center of I-95;
    - MVDS-60A located 5000 feet north of SR 80 in the center of I-95;
- **Highway Advisory Radio (HAR):** The District Four RTMC currently operates one HAR Beacon and one HAR Transmitter within the study limits.
    - Beacon located 850 feet south of SR 80 for the northbound direction of travel on I-95;
    - Transmitter located 200 feet north of SR 80 on the east side of I-95;
- **Generator:** The District Four RTMC currently operates one generator to power ITS devices in case of a power failure.
    - GEN-4 located 200 feet north of SR 80 on the east side of I-95;
- **Fiber Optic Communication System:** Fiber Optic (FO) infrastructure is already in place for the currently deployed ITS equipment. FDOT has a one hundred and forty

four strand FO backbone on I-95 within the study corridor. FDOT also has a twelve strand FO infrastructure connecting from the backbone on I-95 to the ITS devices on SR 80. FDOT typically provides a FO connection to their CCTV cameras, MVDS sensors and DMSs.

Palm Beach Facilities

- **Pan-Tilt-Zoom (PTZ) Closed Circuit Television (CCTV) cameras:** Within the study limits, the Palm Beach County TMC operates two CCTV cameras.
    - CCTV located at SR 80 and the I-95 southbound entrance ramp;
    - CCTV located at SR 80 and Parker Avenue on the mast arm in the northeast quadrant of the intersection;
- **Vehicle Detection System:** Palm Beach County TMC currently operates two MVDS sensors along SR 80. Palm Beach County also has inductive loops at each of the three signalized intersections within the study area.
    - MVDS located 500 feet east of Gem Lake Drive on the north side of SR 80 on a shared use pole;
    - MVDS located 250 feet east of Paseo Alcala on the north side of SR 80;
    - Stop bar inductive loop detectors located at SR 80 and Gem Lake Drive;
    - Stop bar inductive loop detectors located at SR 80 and I-95;
    - Stop bar inductive loop detectors located at SR 80 and Parker Avenue;

- **BlueTOAD:** BlueTOAD devices located in the study area are used by Palm Beach County to collect travel times and report travel time reliability.
    - BlueTOAD located 500 feet east of Gem Lake Drive on the north side of SR 80 on a shared use pole;
- **Fiber Optic Communication System:** FO infrastructure is already in place for the currently deployed ITS equipment. Palm Beach County provides a FO connection along the entire length of SR 80 within the study limits to connect their CCTV cameras, MVDS sensors, BlueTOADs, and traffic signals.

9.0 Justification for Project

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9.1 Assessment of FHWA's Policy on Access to Interstate System

The FHWA's Policy on Access to the Interstate System provides the requirements for the justification and documentation necessary to substantiate any proposed changes in access to the Interstate System. The policy is published under the Federal Register, Volume 74, Number 165, which was updated on May 22, 2017. The responses provided herein for both of the policy statements demonstrate compliance with these requirements and justification for the proposed interchange modifications at I-95 and SR 80 / Southern Boulevard in Palm Beach County Florida.

Policy:

It is in the national interest to preserve and enhance the Interstate System to meet the needs of the 21st Century by assuring that it provides the highest level of service in terms of safety and mobility. Full control of access along the Interstate mainline and ramps, along with control of access on the crossroad at interchanges, is critical to providing such service. Therefore, FHWA's decision to approve new or revised access points to the Interstate System under Title 23, United States Code (U.S.C.), Section 111, must be supported by substantiated information justifying and documenting that decision. The FHWA's decision to approve a request is dependent on the proposal satisfying and documenting the following requirements.

Considerations and Requirements:

1. ***An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis shall, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (23 CFR 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, shall be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access must include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute and accommodate traffic on the***

Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request must also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)).

The operational analysis conducted for the IMR confirmed that the proposed interchange modifications are not expected to have any significant adverse impacts on safety and operations on the interstate facility (I-95). The IMR demonstrated that operations along I-95 are expected to be similar in both the Recommended Alternative and the No Build Alternative, except for the segment of I-95 between the on-ramp from Forest Hill Boulevard and Southern Boulevard. Within this segment, the HCM analyses indicate that by year 2040 the Recommended Alternative will operate at LOS E whereas the No Build will operate at LOS D. Notwithstanding, the Recommended Alternative is still expected to provide more favorable traffic operating and safety conditions along NB I-95 as it addresses the potential for queue spillback onto the mainline which is a significant concern in the No Build Alternative. In the existing (2015) year conditions, queues at the NB Terminal spillback onto I-95 mainline during PM peak periods. This queue spillback onto the mainline creates safety and operational issues along NB I-95. The No Build Alternative offers no improvements to address this queueing condition along NB I-95. Hence, with the anticipated increase in traffic through 2040, safety and operational concerns along NB I-95 will further deteriorate under the No Build Alternative. The Recommended Alternative eliminates these safety and operational issues, as the proposed improvements generate relatively short queues (under 400 feet) and the storage distance available on the NB ramp is increased to approximately 3,000 feet. In addition the terminal intersections operate at acceptable conditions (LOS D or better) in the Recommend Alternative vs. LOS F in the No Build condition. Furthermore, pending the results from the FDOT's on-going I-95 Master Plan Study, the Recommended Alternative may be modified to include the option for median-to-median connections between Southern Boulevard and potential future express lanes on I-95. With this median-to-median option, the gore spacing between the on-ramp from Forest Hill Boulevard and the off-ramp to Southern Boulevard would be increased to approximately 3,900 feet, thereby, removing the aforementioned weaving condition.

The improvements in traffic operations resulting from the Recommended Alternative will also help to reduce congestion related crashes at the interchange. In addition, the Recommended Alternative will incorporate improvements to address the predominant crash patterns (nighttime crashes, wet conditions, fixed objects) at the interchange. These improvements include: improving roadway lighting; improving skid resistance of the road surface and improving drainage conditions to better facilitate quick surface run-off and eliminate standing water. Accommodations for pedestrians and bicyclists will also be enhanced with the

Recommended Alternative. These enhancements include buffered bike lanes and special emphasis pavement markings for pedestrian crossings.

The proposed interchange modifications will modify access to/from I-95 and necessitate changes to the current signing along I-95. A conceptual signing plan for the interchange modifications is presented and included under Appendix J. The signing plan will be fully coordinated with FHWA in advance of construction. Appendix J also contains conceptual signing plan for the design option with median-to-median connections.

2. ***The proposed access connects to a public road only and will provide for all traffic movements. Less than ``full interchanges'' may be considered on a case-by-case basis for applications requiring special access for managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)).***

The IMR proposes no new interchanges along I-95. The existing interchange provides access to public roads only. The improvements proposed at the interchange will maintain full access to Southern Boulevard and accommodate all movements.

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List of Appendices

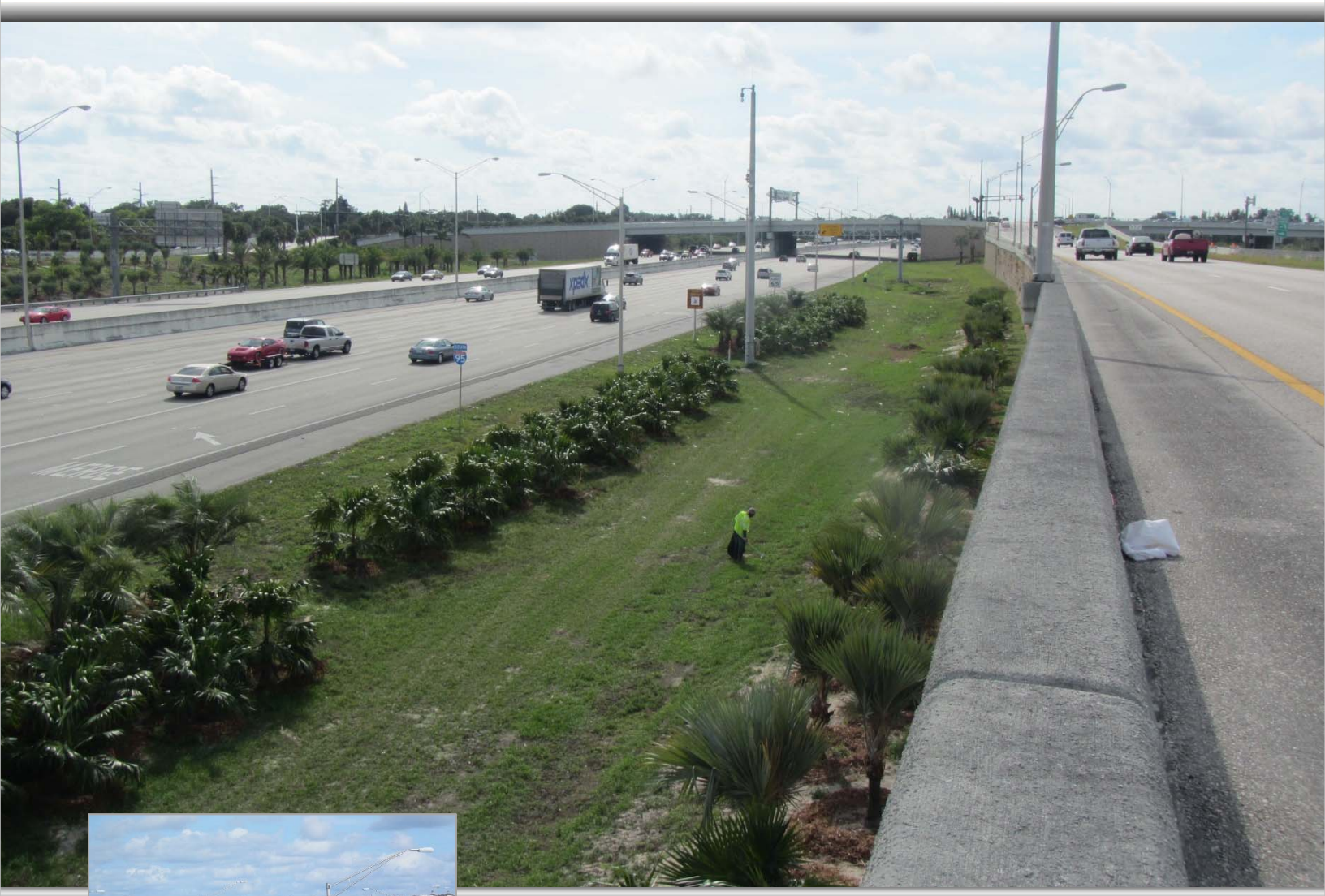
APPENDIX A

MLOU

SR 9/I-95 at SR 80/Southern Boulevard Interchange PD&E Study

FPID No.: 435516-1-22-02

Efficient Transportation Decision Making (ETDM) No.: 14183



Interchange Modification Report (IMR)
Methodology Letter of Understanding (MLOU)

March 1, 2016

FDOT District Four

Palm Beach County

Florida Department of Transportation Interchange Access Request Methodology Letter of Understanding (MLOU)

Type of request ☐ IJR ☒ IMR ☐ IOAR

Type of Process ☒ Programmatic ☐ Non-Programmatic

SR 9/I-95 at SR 80/Southern Boulevard Interchange, PD&E Study
FPID No.: 435516-1-22-02 / ETDM No.: 14183

Coordination of assumptions, procedures, data, networks, and outputs for project traffic review during the access request process will be maintained throughout the evaluation process.

Full compliance with all MLOU requirements does not obligate the Acceptance Authorities to accept the IAR.

The Requester shall inform the approval authorities of any changes to the approved methodology in the MLOU and an amendment shall be prepared if determined to be necessary.

Requestor	Anson Sonnett, P.E. *Project Manager*	1/21/16 *Date*
Interchange Review Coordinator	Steve Braun, P.E. District 4 Interchange Coordinator	1/25/16 *Date*
State Interchange Review Coordinator (if applicable)	Martha Hodgson *Systems Planning Office – Central Office*	3/7/2016 *Date*
Federal Highway Administration	Chad Thompson, P.E. *Program Operations Engineer*	*Date*

1.0 Project Description

Provide background or supporting information that explains the basis for the request.

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study for the SR 9/I-95 at SR 80/Southern Boulevard interchange, located in Palm Beach County, Florida. The FDOT proposes to implement improvements at the interchange to increase capacity and enhance safety conditions at the interchange. These proposed improvements follow from the I-95 Interchange Master Plan (IMP) Study which examined conceptual improvements for interchanges along I-95, throughout Palm Beach County. The Department has determined that the proposed improvements will warrant preparation of an Interchange Modification Report (IMR), in accordance with the criteria specified in the Interchange Access Request User's Guide, March 2015. It is anticipated that the IMR will be processed through the expedited programmatic approval process, as agreed upon in the Programmatic Agreement between the Federal Highway Administration (FHWA), Florida Division and FDOT, dated April 2, 2015. This document serves as the Methodology Letter of Understanding (MLOU) that outlines the criteria, assumptions, processes (analyses), and documentation requirements for preparation of the I-95 at Southern Boulevard IMR. The IMR will serve as the traffic operations analysis document for the related National Environmental Policy Act (NEPA) study for the interchange.

A. Purpose and Need Statement

Provide the Purpose, the Need, and the Goals and Objectives.

Purpose: The purpose of the proposed interchange improvements is to modify the existing service interchange at I-95 and Southern Boulevard to provide increased capacity, improve connectivity between facilities and enhance safety conditions at the interchange. These improvements will meet the long term transportation needs at the interchange (through year 2040) and support anticipated population/employment growth and economic development within the region.

Need: The need for the project relates to:

- **Congestion Relief and Transportation Demand:** The existing I-95/SR 80 interchange operates at an overall acceptable level of service (LOS D or better) during AM and PM peaks. However, traffic congestion and long delays are experienced by movements to/from I-95 during AM and PM peak periods. Travel demand forecasts indicate that the interchange is expected to experience substantial traffic growth in future years. Based on the anticipated future growth in traffic, operating conditions at the interchange will further deteriorate with increased congestion and the on-set of failing conditions (LOS F) by year 2040. The proposed project will address these concerns by increasing capacity at the interchange and providing acceptable operating conditions (LOS D or better) through year 2040.
- **Growth and Economic Development:** Population within the vicinity of the interchange is anticipated to increase by approximately 12% from 2005 through

2035 with the majority of the growth occurring to the southeast of the interchange. Employment is expected to increase by approximately 784% from 2005 through 2035 with major increases in the areas located to the northeast and southwest of the interchange. The proposed project will be critical for supporting the anticipated growth in population and employment within the vicinity, promoting economic development and fulfilling the overall vision for Palm Beach County.

- **Safety:** The I-95 IMP Concept Development Report, identified I-95 / Southern Boulevard interchange as a high crash location. Predominant crash patterns experienced at the interchange include: rear-end collisions (31%) and fixed object collisions (22%). In addition, data from the I-95 IMP Report indicates that with no improvements, queues on the I-95 off-ramps could potentially spill back onto the mainline and further increase crash risk at the interchange. The proposed project will implement geometric improvements and provide additional capacity that will assist in alleviating these safety concerns at the interchange.
- **Emergency Evacuation**: As part of the emergency evacuation route network designated by the Florida Division of Emergency Management, both I-95 and SR 80/Southern Blvd. are critical in facilitating the movement of traffic during emergency evacuation periods. These facilities connect other major arterials and highways designated on the state evacuation route network within the region. The proposed project will allow for enhanced emergency access and incident response times.

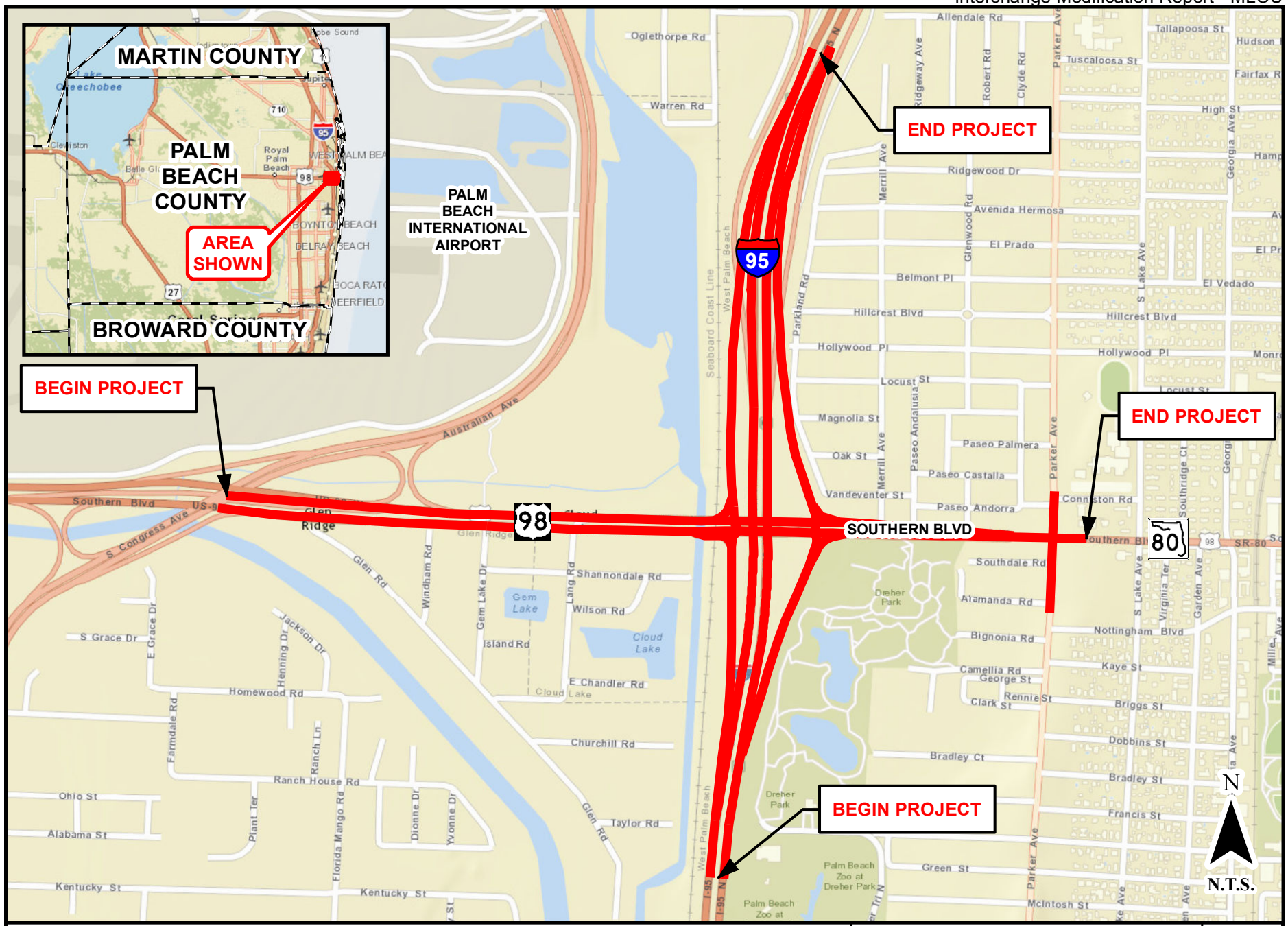
Objective: The overall objectives of this project include the following elements:

- Enhance safety, mobility and circulation
- Improve critical access to the Strategic Intermodal System (SIS) Facilities
- Address operational and physical deficiencies of the existing interchange
- Minimize environmental and social impacts

B. Project Location

Provide project description and a map of the IAR project location.

The interchange of I-95 at Southern Boulevard is located in eastern Palm Beach County within the proximity of several municipalities including the City of West Palm Beach, Town of Cloud Lake, Town of Glen Ridge, and unincorporated Palm Beach County. Adjacent I-95 service interchanges are located at Forest Hill Boulevard (1.45 miles to the south) and Belvedere Road (1.01 miles to the north). The South Florida Rail Corridor (SFRC)/CSX Railroad runs parallel along the west side of I-95 and crosses below an elevated section of Southern Boulevard. In addition, Palm Beach County International Airport is situated to the northwest in close proximity to the Southern Boulevard interchange. The project location is depicted in Figure 1.



SR 9/I-95 at SR 80/Southern Boulevard Interchange PD&E Study

FPID No.: 435516-1-22-02 | ETDM No.: 14183

FDOT - District 4 | Palm Beach County

Title: Project Location Map

Figure: 1

C. *Area of Influence*
Provide a description of the area of influence along the main line and cross streets.

The anticipated area of influence for the project is depicted in Figure 2. It incorporates the following roadway segments:

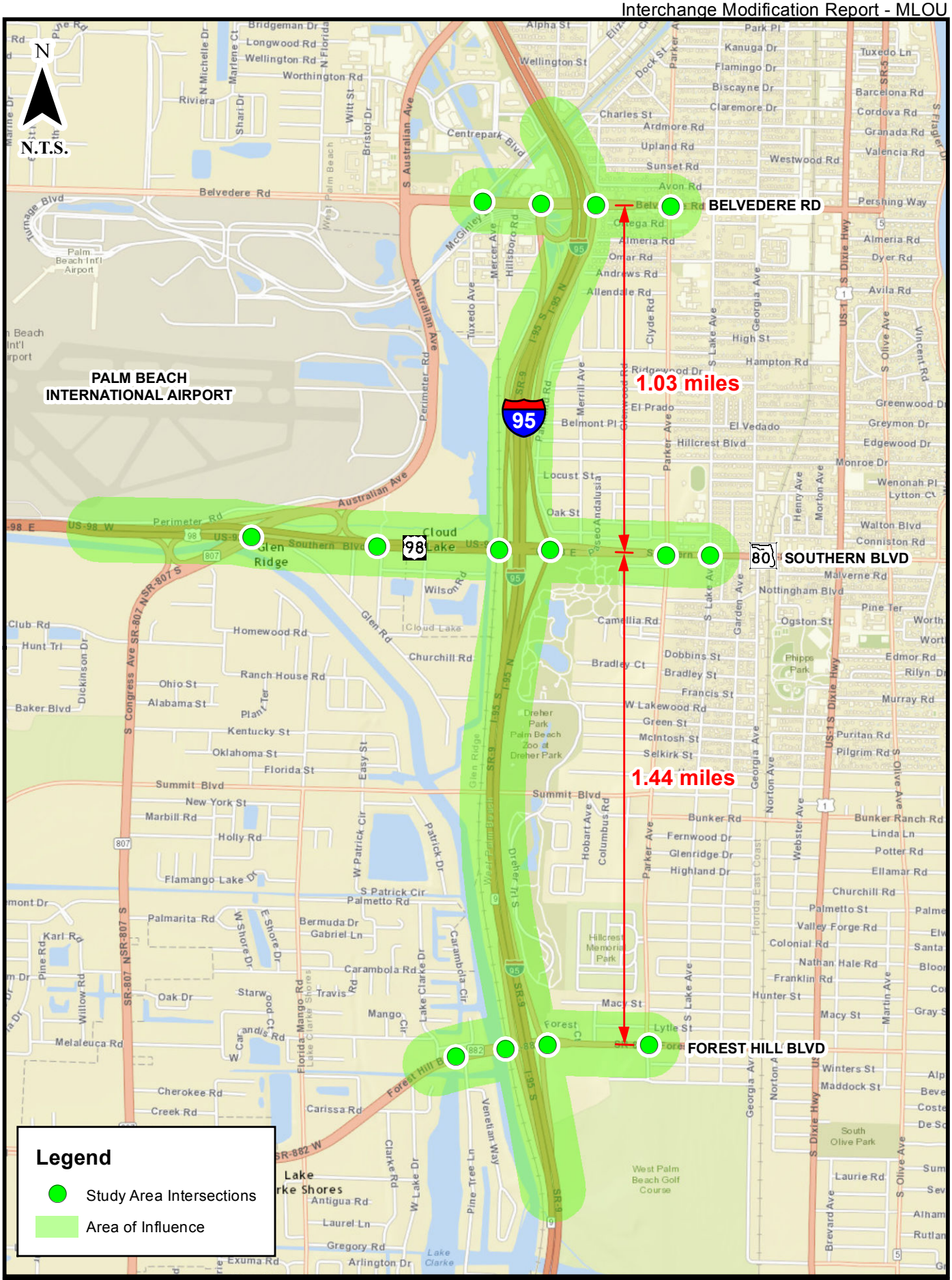
- I-95 mainline from south of Forest Hill Boulevard to north of Belvedere Road. This incorporates the interchanges at Forest Hill Boulevard, Southern Boulevard and Belvedere Road.
- Forest Hill Boulevard from Pine Tree Lane to Parker Avenue. This incorporates the following intersections:
  - Forest Hill Boulevard at Pine Tree Lane
  - Forest Hill Boulevard at I-95 SB Off-Ramp Terminal
  - Forest Hill Boulevard at I-95 NB Off-Ramp Terminal
  - Forest Hill Boulevard at Parker Avenue

- Southern Boulevard from Australian Avenue to Lake Avenue. This incorporates the following intersections:
  - Southern Boulevard at Australian Avenue (on and off ramps)
  - Southern Boulevard at Gem Lake Drive
  - Southern Boulevard at I-95 SB Off-Ramp Terminal
  - Southern Boulevard at I-95 NB Off-Ramp Terminal
  - Southern Boulevard at Parker Avenue
  - Southern Boulevard at Lake Avenue

- Belvedere Road from Mercer Avenue to Parker Avenue. This incorporates the following intersections:
  - Belvedere Road at Mercer Avenue
  - Belvedere Road at I-95 SB Off-Ramp Terminal
  - Belvedere Road at I-95 NB Off-Ramp Terminal
  - Belvedere Road at Parker Avenue

D. *Project Schedule*
Identify the schedule of production activities consistent with a proposed conceptual funding plan and opening year.

The proposed project is funded in FDOT's current Five-Year Work Program (2016 – 2020) for the PD&E phase. Location Design Concept Acceptance (LDCA) for the PD&E is expected circa March 2018. Funding is allocated in the SIS Second Five Year Plan (2021 – 2025), for design in 2021, and construction in 2024. If funding for later phases are advanced, the project could have an opening year of 2020.



SR 9/I-95 at SR 80/Southern Boulevard Interchange PD&E Study
FPID No.: 435516-1-22-02 | ETDM No.: 14183
FDOT - District 4 | Palm Beach County

Title: Area of Influence Map

Figure: 2

2.0 Analysis Years

A. Traffic Forecasting

- Base year 2010
- Horizon year 2040

B. Traffic Operational Analysis

- Existing year 2015 (No Build)
- Opening year 2020 (No Build + Recommended Build Alternative)
- Interim year 2030 (No Build + Recommended Build Alternative)
- Design year 2040 (No Build + All Build Alternative)

A year of failure analysis shall be performed for Preferred Alternative, in case a failing LOS is obtained in Design Year.

3.0 Alternatives

The No-Build and Build alternatives shall be analyzed in the IAR. Details of all reasonable build alternatives considered, including those eliminated from further considerations, shall be documented. The documentation for the alternatives eliminated can be minimal like a summary of what was considered, reasons for elimination etc. Build Alternatives meeting the purpose and need of the project shall have a more detailed description and be evaluated in the IAR.

The implementation of TSM&O alternative will be considered in the IAR.

The IMR will consider the following alternatives:

No Build: The No Build Alternative will include the existing year (2015) roadway conditions plus all funded or programmed projects that are scheduled to be completed and open to traffic during the analysis year being considered (2020, 2030 or 2040). The No Build Alternative will serve as a baseline for comparison against other Build Alternatives.

Transportation System Management and Operations (TSM&O): A TSM&O alternative will include implementation of non-capacity improvements to enhance safety and traffic flow through the interchange. These improvements include, but are not limited to: ramp metering, addition of auxiliary lanes/turn lanes, intelligent transportation systems (ITS) deployment and traffic signal optimization. These TSM&O improvements will be incorporated as a component of all the considered Build Alternatives.

Build Alternatives: Three Build Alternatives will be considered for the project. These include:

- The Recommend Alternative per the I-95 IMP, Concept Development Report.
- A modified version of the Recommend Alternative per the I-95 IMP, Concept Development Report.
- One additional Build Alternative that will be developed through the PD&E process.

All three build alternatives are expected to incorporate roadway improvements generating additional capacity through the interchange. In addition, the Build alternatives will

incorporate TSM&O improvements. Both I-95 and Southern Boulevard are listed on the state's Strategic Intermodal System (SIS) facilities and the Build Alternatives will accordingly consider SIS connector improvements needed within the project area. The Build Alternatives will also be developed consistent with plans for I-95 mainline, including the potential for the extension of I-95 Express lanes through Palm Beach County.

4.0 Data Collection

The type of data that may be used should be identified.

A. Transportation System Data

Transportation system data will be gathered from various sources, including the following:

- Field review conducted along the project corridor
- Review of aerial photographs
- Palm Beach County Traffic Division
- FDOT Roadway Characteristic Inventory Database
- FDOT Traffic Online
- FDOT Crash Analysis Reporting System (CARS)
- Prior studies conducted within the project area, most notably, the I-95 Interchange Master Plan, Interchange Conceptual Development Report.

B. Existing and Historical Traffic Data

Existing and historical traffic data will be gathered from the following sources:

- Field Traffic Counts. The FDOT has collected and provided existing year (2015) intersection turning movement counts, 72-hour continuous machine counts, vehicle classification counts and origin-destination counts for the study area associated with the proposed project. These data are documented in the report dated June 18, 2015, Traffic Data Collection and Traffic Projections for I-95 PD&E Studies.
- FDOT Traffic Information online website
- Florida's Statewide Transportation Engineering Warehouse for Archived Regional Data (STEWARD)
- Palm Beach County

C. Land Use Data

Existing and Future land use data will be gathered from Florida Geographic Data Library (FGDL), Palm Beach County MPO 2040 LRTP, local government comprehensive plans and any active development of regional impact (DRI) applications

D. Environmental Data

Environmental data will be gathered from the FGDL and through coordination with local, state and national agencies, these include:

- Palm Beach County
- Florida Department of Environmental Protection

- South Florida Water Management District
- US Army Corps of Engineers
- US Fish and Wildlife Service
- Florida Fish and Wild Life Commission
- US Environmental Protection Agency

E. Planned and Programmed Projects

Planned and programmed projects will be identified in consultation with the FDOT, Palm Beach County, other stakeholders and reviewing the following documents:

- Palm Beach MPO 2040 LRTP
- Palm Beach MPO TIP and Priority Projects
- Local government comprehensive plans
- Active DRI applications
- FDOT's Five Year Work Program
- FDOT's Strategic Intermodal System plans
- I-95 Master Plan, 2003
- I-95 Interchange Master Plan, 2014

The IMR will be prepared in coordination with planned and programed programmed projects for consistency.

5.0 Travel Demand Forecasting

A. *Selected Travel Demand Model(s)*

The Southeast Florida Regional Planning Model (SERPM), Version 7.0 will provide the basis for travel demand forecasting for the project. SERPM 7 is an activity based model, built on the Florida Standard Urban Transportation Model Structure (FSUTMS). It is the adopted travel demand forecasting tool for FDOT and regional MPOs.

B. Project Traffic Forecast Development Methodology

Describe the methodology and assumptions in developing the future year traffic volumes (AADT and DDHV)

The travel demand forecasting process will proceed as follows:

1. **Existing Year (2015) AADT, AM and PM Peak Hour Volumes**: Existing year AADTs and peak hour volumes (AM and PM) will be developed directly from 2015 field counts. Traffic volumes will be checked for reasonableness, adjusted and balanced across the network. The FDOT previously developed a preliminary set of existing year traffic (AADT, AM and PM volumes) for use in the IMR. These preliminary volumes will by further reviewed and adjusted, if necessary.
2. **Design Year (2040) AADTs:** SERPM 7 will be used to generate initial estimates of 2040 AADTs for the network. The AADTs generated by SERPM 7 will be checked for reasonableness and adjusted accordingly. Checks for reasonableness will include comparison of SERPM 7 forecasted volumes against

existing (2015) volumes and other traffic forecasts/growth rate estimates. These include: historical growth trends, traffic forecast from prior projects/travel demand models, and population and employment growth estimates. AADTs will be adjusted, as necessary, and balanced across the network. FDOT has provided a preliminary set of 2040 AADTs based on a validated SERPM 7 model with post processing adjustments for balancing and reasonableness checks. These preliminary AADTs will be further reviewed and adjusted, if necessary.

3. **Design Year (2040) AM and PM Hour Volumes:** Design Year (2040) AM and PM peak hour volumes will be developed using the TmTool. TmTool analysis will utilize existing year peak hour volumes from step 1 (above); 2040 AADTs from step 2 (above) and K-Factors and D-Factors from Table 1 in Section 5E on the following page. The peak four volumes generated by TmTool will be checked for reasonableness, adjusted and balanced across the network. Peak hour volumes for alternative design concepts will be developed by reassignment of traffic volumes based on change in interchange configuration and the associated traffic flow pattern.
4. **Interim Year (2030) AADT, AM and PM Peak Hour Volumes:** Interim year (2030) AADTs, AM and PM peak hour volumes will be interpolated from the 2015 and 2040 traffic volumes.
5. **Opening Year (2020) AADT, AM and PM Peak Hour Volumes:** Opening year (2020) AADTs, AM and PM peak hour volumes will be interpolated from the 2015 and 2040 traffic volumes.

C. *Validation Methodology*

Describe the validation methodology using current FDOT procedures and data collection procedure.

Identify how modifications to the travel demand forecasting model will be made, including modifications to the facility type and area type for links, modifications to socio-economic data and all input and output modeling files for review.

Travel demand forecasting will utilize the validated SERPM 7.0 models with base year 2010 and horizon year 2040. No modifications to the travel demand forecasting models are anticipated for this project.

D. *Adjustment Procedures*

Identify the process used to adjust modeled future year traffic to the defined analysis years. Discuss how trends/growth-rates will be factored into this, if applicable.

The project design year (2040) is consistent with SERPM 7 horizon year (2040). Hence, no adjustments are required for year 2040 forecasts, except for reasonableness checks and balancing. Year 2030 and 2020 volumes will be determined by interpolation between 2040 and 2015 volumes.

E. Traffic Factors

- Utilizing recommended ranges identified in the Project Traffic Forecasting Handbook and Procedure (525-030-120).
- Utilizing other factors, identified below

Table 1: Traffic Factors

Roadway	K(1)	D(2)	T(3)	T_f(4)	PHF(5)
I-95	8.0%	59.0	6.5	3.0	0.95
Forest Hill Blvd., West of I-95	9.0%	63.0	3.4	2.0	0.95
Forest Hill Blvd, East of I-95	9.0%	51.0	3.0	2.0	0.95
Southern Blvd., West of I-95	9.0%	62.0	7.5	3.5	0.95
Southern Blvd., East of I-95	9.0%	58.0	4.5	2.0	0.95
Belvedere Road, West of I-95	9.0%	55.0	8.5	4.0	0.95
Belvedere Road, East of I-95	9.0%	62.5	5.5	3.0	0.95
Other Arterials, West of I-95	9.0%	varies	6.5	3.0	0.95
Other Arterials, East of I-95	9.0%	varies	4.5	2.0	0.95

Notes:

(1) K-factors based on standard K, per FDOT Traffic Online

(2) D-factors based on measured 2015 peak hour traffic distribution, subject to FDOT's recommended maximum and minimums for facility type.

(3) T-factor (T_{24}) based on assessment of 5-year historical classification counts

(4) T_f (Design Hour Truck, DHT) estimated at approximately 50% of T-factor;

(5) PHF: Existing year per measured 2015 counts; Future years = 0.95.

6.0 Traffic Operational Analysis

The area type, traffic conditions, and analysis tools to be used are summarized in this section.

A. Existing Area Type/Traffic Conditions

Area Type	Conditions	
	Under Saturated	Saturated
Rural	☐	☐
Urban Area/Transitioning Area	☐	☒

B. Traffic Analysis Software Used

Software		System Component					
		Freeway				Crossroad	
Name	Version	Basic Segment	Weaving	Ramp Merge	Ramp Diverge	Arterials	Intersections
HCS HCM	2010	☒	☒	☒	☒	☐	☐
Synchro	9	☐	☐	☐	☐	☒	☒
SimTraffic	☐	☐	☐	☐	☐	☐	☐
CORSIM	☐	☐	☐	☐	☐	☐	☐
VISSIM	☐	☐	☐	☐	☐	☐	☐
Other	☐	☐	☐	☐	☐	☐	☐

Traffic microsimulation is not anticipated at this time. However, microsimulation (optional service) may be required, dependent on the complexity of the Recommended Alternative emerging from the PD&E Study. If microsimulation is required, VISSIM or CORSIM models will be used for analysis of freeway segments and crossroads, as necessary.

C. Calibration Methodology

- *Calibration methodology and parameters utilized will be documented.*
- *Calibration Measures of Effectiveness (MOEs) and calibration targets.*

Synchro models will be calibrated in accordance with guidelines provided in the FDOT's Traffic Analysis Handbook, March 2014. Specifically, the calibration process will involve the following:

- Lost time adjustment factor will be adjusted to replicate field observed queue lengths.
- In order to calculate reasonable queuing in the model, all link terminals will extend at least 1000 feet from the last node.
- 95th percentile queue lengths that are tagged with "#" or "m" will be examined for the extent of queuing problems.

The calibration process will be supported by observations and data gathered during field reviews. These include: typical queue lengths, delays, operating speeds, right turns on red, signal timings and pedestrian/bicycle activity.

D. Selection of Measures of Effectiveness (MOE)

- *The Level of Service criteria for each roadway classification, including mainline, ramps, ramp terminal intersections and the crossroads beyond the interchange ramp terminal intersections are identified below.*
- *In addition to the Level of Service criteria, state other operational MOEs to be utilized for the evaluation of alternatives.*

The following MOEs will be used to evaluate the performance of the considered alternatives and shall be reported as listed below:

- Synchro
  - Level of Service – Intersection LOS
  - Delay – Intersection control delay
  - Queue lengths – 95th percentile queues for all analyzed intersection movements.
- HCS
  - Basic Freeway Segments – Density and LOS
  - Freeway Merge and Diverge Segments – Density and LOS

7.0 Safety Analysis

A. Detailed crash data within the study area will be analyzed and documented.

Years: 2010 – 2014
Source: FDOT Safety Office

8.0 Consistency with Other Plans/Projects

A. The request will be reviewed for consistency with facility Master Plans, Actions Plans, SIS Plan, MPO Long Range Transportation Plans, Local Government Comprehensive Plans or development applications, etc.

B. Where the request is inconsistent with any plan, steps to bring the plan into consistency will be developed.

C. The operational relationship of this request to the other interchanges will be reviewed and documented. The following other IARs are located within the area of influence.

No other IARs are located within the project's area of influence.

9.0 Environmental Considerations

A. Status of Environmental Approval and permitting process.

An associated NEPA document will be prepared to support the recommended improvements. The status of the environmental approvals and permitting process will be documented in the IMR.

B. Identify the environmental considerations that could influence the outcome of the alternative development and selection process.

Environmental impacts are being evaluated for the PD&E study. Environmental issues, such as, socio-cultural features, contamination, natural resources, physical resources, and noise sensitive receptors, will be investigated and documented in detail in the associated environmental documents. A summary of key environmental findings from the PD&E will be incorporated in the IMR.

10.0 Coordination

Yes	No/NA	
☒	☐	An appropriate effort of coordination will be made with appropriate proposed developments in the area.
☒	☐	Request will identify and include (if applicable) a commitment to complete the other non-interchange/non-intersection improvements that are necessary for the interchange/intersection to function as proposed.
☒	☐	Request will document whether the project requires financial or infrastructure commitments from other agencies, organizations, or private entities.
☒	☐	Request will document any pre-condition contingencies required in regards to the timing of other improvements and their inclusion in a TIP/STIP/LRTP prior to the Interstate access acceptance (final approval of NEPA document).
☒	☐	Request will document the funding and phasing.

**Explain if No or Not Applicable (N/A) is checked*:

11.0 Anticipated Design Exceptions and Variations

☒ *Design exceptions/variations are not anticipated, but if an exception/variation should arise it will be processed per FHWA and FDOT standards.*

☐ *The following exceptions/variations to FDOT, AASHTO or FHWA rules, policies, standards, criteria or procedures have been identified:*

Design exceptions/variations are not anticipated at this time. However, should the need arise, they will be documented in the IMR.

12.0 Conceptual Signing Plan

A conceptual signing and marking plan shall be prepared and included in the access request.

13.0 Access Management Plan

☐ *Access management plan within the area of influence will not be changed by the proposed improvements to the interchange.*

☒ *The improvement will affect access management within the area of influence will be changed. An access management plan will be developed within the area of influence to complement the improvements to the interchange:*

It is anticipated that the interchange modifications will impact access to some properties within the area of influence. An access management plan will be prepared to compliment the improvements and this will be document in the IMR.

14.0 FHWA Policy Points

The FHWA eight policy points will be addressed within the access request.

APPENDIX B

Signal Timing Sheets

Southern Boulevard

At

I-95 Ramp Terminals

Palm Beach County **Signal Timing Sheet** **5/18/2016**

30890 : 2300 - Southern Bl and I-95 (Upload File)

Phase [1.1.1]

	1	2 (WT)	3 (NL)	4	5 (ET)	6 (SL)	7	8	9	10	11	12	13	14	15	16
Walk		5			5											
Ped Clearance		8			17											
Min Green	3	10	6	3	10	6			5	5	5	5	5	5	5	5
Passage		4	4		4	4			1	1	1	1	1	1	1	1
Max1	3	35	30	3	35	15			25	25	25	25	25	25	25	25
Max2									50	50	50	50	50	50	50	50
Yellow	4	4	4	4	5	4			3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Red	3.5	3	2.5	3.5	2	3			1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

Phase Option [1.1.2]

	1	2 (WT)	3 (NL)	4	5 (ET)	6 (SL)	7	8	9	10	11	12	13	14	15	16
Enable	ON	ON	ON	ON	ON	ON										
Auto Entry						ON										
Auto Exit		ON														
Non Act1																
Non Act2																
Lock Call	ON	ON	ON	ON	ON	ON			ON	ON	ON	ON	ON	ON	ON	ON
Min Recall					ON											
Max Recall																
Ped Recall																
Dual Entry																
Sim Gap Enable									ON	ON	ON	ON	ON	ON	ON	ON
Rest In Walk																

Detector, Vehicle Parameters 1-16 [5.1]

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Phase	2	2	5	5	5	5	5	5	5	6	6	6	2	3	5	
Switch Phase																
Delay Time																

Detector, Vehicle Parameters 17-32 [5.1]

	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Call Phase																
Switch Phase																
Delay Time																

Detector, Vehicle Parameters 33-48 [5.1]

	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Call Phase																
Switch Phase																
Delay Time																

Detector, Vehicle Parameters 49-64 [5.1]

	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
Call Phase	2	2	2	2			2	3	3	3	3	3	5	5	2	2
Switch Phase																
Delay Time																

Approved By: Carmen Li **Date:** _____

Palm Beach County **System Timing Sheet** **5/18/2016**

30890 : 2300 - Southern Bl and I-95 (Upload File)

TB Coor, Day Plan [4.4]

Day Plan Table 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		7	9	14	19											
Minute				30												
Action	100	2	1	3	4											

Day Plan Table 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		10	18	22												
Minute																
Action	100	6	5	100												

Day Plan Table 3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		10	18	22												
Minute																
Action	100	6	5	100												

Coordination, Pattern 1-16 [2.1]/Coordination, Alt Tables+[2.6]

Pattern	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Cycle Time	130	160	160	110	110	130							160			
Offset Time	73	81	61	51	51	73							27			
Split Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Seq Number	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ph Opt Alt																
Ph Time Alt																

Coordination, Splits [2.7.1]

Split Table 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	11	33	24	11	33	18										
Mode	NON	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph					ON											

Split Table 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	11	23	31	11	60	24										
Mode	NON	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph					ON											

Split Table 3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	11	40	37	11	39	22										
Mode	NON	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph					ON											

Split Table 4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	11	31	15	11	27	15										
Mode	NON	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph					ON											

Split Table 5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	11	31	15	11	27	15										
Mode	NON	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph					ON											

Split Table 6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	11	33	24	11	33	18										
Mode	NON	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph					ON											

Approved By: Carmen Li **Date:** _____

Palm Beach County **Preempt & Overlap Timing Sheet** **5/18/2016**

30890 : 2300 - Southern Bl and I-95 (Upload File)

Preemption Times[3.1]/Phases[3.2]/Options[3.3]

Channel	1	2	3	4	5	6
Lock Input	ON	ON	ON	ON	ON	ON
Override Flash		ON	ON	ON	ON	ON
Override Higher	ON	ON	ON	ON	ON	ON
Flash Dwell						
Link						
Delay						
Min Duration						
Min Green	5					
Min Walk						
Ped Clear						
Track Green						
Min Dwell						
Max Presence						
Track R1						
Track R2						
Track R3						
Track R4						
Dwell P1						
Dwell P2						
Dwell P3						
Dwell P4						
Dwell P5						
Dwell P6						
Dwell P7						
Dwell P8						
Dwell P9						
Dwell P10						
Dwell P11						
Dwell P12						
Dwell Ped1						
Dwell Ped2						
Dwell Ped3						
Dwell Ped4						
Dwell Ped5						
Dwell Ped6						
Dwell Ped7						
Dwell Ped8						
Exit R1						
Exit R2						
Exit R3						
Exit R4						

Preemption Times+[3.4]/Overlaps+[3.5]/Options+[3.6]

Preempt	1	2	3	4	5	6
Enable	ON	ON	ON	ON	ON	ON
Type	RAIL	EMERG	EMERG	EMERG	EMERG	EMERG
Skip Track						
Volt Mon Flash						
Coord in Preempt						
Max2	ON					
Return Max/Min	MAX	MAX	MAX	MAX	MAX	MAX
Extend Dwell						
Pattern						
Output Mode	TS2	TS2	TS2	TS2	TS2	TS2
Track Over 1						
Track Over 2						
Track Over 3						
Track Over 4						
Track Over 5						
Track Over 6						
Track Over 7						
Track Over 8						
Track Over 9						
Track Over 10						
Track Over 11						
Track Over 12						
Dwell Over 1						
Dwell Over 2						
Dwell Over 3						
Dwell Over 4						
Dwell Over 5						
Dwell Over 6						
Dwell Over 7						
Dwell Over 8						
Dwell Over 9						
Dwell Over 10						
Dwell Over 11						
Dwell Over 12						
Ped Clear						
Yellow	5					
Red	3					
Return Min/Max						
Delay Inh						
Exit Time						
All Red B4						

Overlap Program Parameters [1.5.2.1]

Overlap	Included Phases								Modifer Phases								Type	Green	Yellow	Red
Overlap 1	2	3															NORMAL		3.5	1.5
Overlap 2	1	2															NORMAL		3.5	1.5
Overlap 3	4	5															NORMAL		3.5	1.5
Overlap 4	3	4															NORMAL		3.5	1.5
Overlap 5	1	6															NORMAL		3.5	1.5
Overlap 6	2	3	4	5													NORMAL		3.5	1.5
Overlap 7	1	2	5	6													NORMAL		3.5	1.5
Overlap 8	5	6															NORMAL		3.5	1.5
Overlap 9																	NORMAL		3.5	1.5
Overlap 10																	NORMAL		3.5	1.5
Overlap 11																	NORMAL		3.5	1.5
Overlap 12																	NORMAL		3.5	1.5
Overlap 13																	NORMAL		3.5	1.5
Overlap 14																	NORMAL		3.5	1.5
Overlap 15																	NORMAL		3.5	1.5
Overlap 16																	NORMAL		3.5	1.5

Approved By: Carmen Li **Date:** _____

Palm Beach County **Alternate Timing Sheet** **5/18/2016**

30890 : 2300 - Southern Bl and I-95 (Upload File)

Alternate Phase Program 1, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1										
2										
3										
4										
5										
6										
7										
8										

Alternate Phase Program 2, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1										
2										
3										
4										
5										
6										
7										
8										

Alternate Phase Program 3, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1										
2										
3										
4										
5										
6										
7										
8										

Alternate Phase Program 4, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1										
2										
3										
4										
5										
6										
7										
8										

Alternate Phase Program 5, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1										
2										
3										
4										
5										
6										
7										
8										

TB Coor, Day Plan [4.4]

Day Plan Table 4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour																
Minute																
Action																

Day Plan Table 5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour																
Minute																
Action																

Day Plan Table 6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		6	9	14	18	22	23									
Minute		30		30	30		30									
Action	100	2	1	3	5	100	3									

Approved By: Carmen Li **Date:** _____

30890 : 2300 - Southern Bl and I-95 (Upload File)

Coordination, Splits [2.7.1]

Split Table 7	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 9	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 11	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 13	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	11	55	32	11	34	17										
Mode	NON	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph					ON											

Split Table 14	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Approved By: Carmen Li **Date:** _____

Southern Boulevard

At

Parker Avenue

Palm Beach County **Signal Timing Sheet** **5/18/2016**

30900 : 2305 - Southern Bl and Parker (Upload File)

Phase [1.1.1]

	1 (EL)	2 (WT)	3 (SL)	4 (NT)	5 (WL)	6 (ET)	7 (NL)	8 (ST)	9	10	11	12	13	14	15	16
Walk		7		7		7		7								
Ped Clearance		16		15		18		21								
Min Green	4	20	4	6	4	20	4	6	5	5	5	5	5	5	5	5
Passage	2	2	4	4	2	2	2	2	1	1	1	1	1	1	1	1
Max1	30	60	10	25	10	60	25	25	25	25	25	25	25	25	25	25
Max2									50	50	50	50	50	50	50	50
Yellow	4	4	4	4	4	4	4	4	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Red	2	2	2	2	2	2	2	2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

Phase Option [1.1.2]

	1 (EL)	2 (WT)	3 (SL)	4 (NT)	5 (WL)	6 (ET)	7 (NL)	8 (ST)	9	10	11	12	13	14	15	16
Enable	ON	ON	ON	ON	ON	ON	ON	ON								
Auto Entry				ON				ON								
Auto Exit		ON				ON										
Non Act1																
Non Act2																
Lock Call		ON				ON			ON	ON	ON	ON	ON	ON	ON	ON
Min Recall		ON				ON										
Max Recall																
Ped Recall																
Dual Entry		ON		ON		ON		ON								
Sim Gap Enable									ON	ON	ON	ON	ON	ON	ON	ON
Rest In Walk																

Detector, Vehicle Parameters 1-16 [5.1]

	1 (EBL1)	2 (WBT1)	3 (WBT2)	4 (SBL1)	5 (NBT1)	6 (NBT2)	7 (WBL1)	8 (EBT1)	9 (EBT2)	10 (EBT3)	11 (EBT4)	12 (NBL1)	13 (SBT1)	14 (SBT2)	15	16
Call Phase	1	2	2	3	4	4	5	6	6	6	6	7	8	8		
Switch Phase	6			8			2					4				
Delay Time																

Detector, Vehicle Parameters 17-32 [5.1]

	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Call Phase																
Switch Phase																
Delay Time																

Detector, Vehicle Parameters 33-48 [5.1]

	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Call Phase																
Switch Phase																
Delay Time																

Detector, Vehicle Parameters 49-64 [5.1]

	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
Call Phase																
Switch Phase																
Delay Time																

Approved By: Carmen Li **Date:** _____

Palm Beach County **System Timing Sheet** **5/18/2016**

30900 : 2305 - Southern Bl and Parker (Upload File)

TB Coor, Day Plan [4.4]

Day Plan Table 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		7	9	14	19											
Minute				30												
Action	100	2	1	3	4											

Day Plan Table 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		10	18	22												
Minute																
Action	100	6	5	100												

Day Plan Table 3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		10	18	22												
Minute																
Action	100	6	5	100												

Coordination, Pattern 1-16 [2.1]/Coordination, Alt Tables+[2.6]

Pattern	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Cycle Time	130	160	160	110	110	130						180	140	140		
Offset Time	8	131	30	5	5	8						47	29	47		
Split Number	1	2	3	4	5	6						12	13	14		
Seq Number	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ph Opt Alt																
Ph Time Alt	1	2	3	4								3				

Coordination, Splits [2.7.1]

Split Table 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	16	55	16	43	16	55	25	34								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	35	63	16	46	15	83	28	34								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	20	75	20	45	16	79	31	34								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	16	42	18	34	16	42	18	34								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	16	42	18	34	16	42	18	34								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	16	55	16	43	16	55	25	34								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Approved By: Carmen Li

Date: _____

Palm Beach County **Preempt & Overlap Timing Sheet** **5/18/2016**

30900 : 2305 - Southern Bl and Parker (Upload File)

Preemption Times[3.1]/Phases[3.2]/Options[3.3]

Channel	1	2	3	4	5	6
Lock Input			ON	ON	ON	ON
Override Flash						
Override Higher						
Flash Dwell						
Link						
Delay						
Min Duration						
Min Green			5	5	5	5
Min Walk			4	4	4	4
Ped Clear			21	21	21	21
Track Green						
Min Dwell			10	10	10	10
Max Presence			120	120	120	120
Track R1						
Track R2						
Track R3						
Track R4						
Dwell P1			2	2	4	4
Dwell P2			6	6	8	8
Dwell P3						
Dwell P4						
Dwell P5						
Dwell P6						
Dwell P7						
Dwell P8						
Dwell P9						
Dwell P10						
Dwell P11						
Dwell P12						
Dwell Ped1						
Dwell Ped2						
Dwell Ped3						
Dwell Ped4						
Dwell Ped5						
Dwell Ped6						
Dwell Ped7						
Dwell Ped8						
Exit R1			2	2	2	2
Exit R2			6	6	6	6
Exit R3						
Exit R4						

Preemption Times+[3.4]/Overlaps+[3.5]/Options+[3.6]

Preempt	1	2	3	4	5	6
Enable			ON	ON	ON	ON
Type	EMERG	EMERG	EMERG	EMERG	EMERG	EMERG
Skip Track						
Volt Mon Flash						
Coord in Preempt						
Max2						
Return Max/Min	MAX	MAX	MAX	MAX	MAX	MAX
Extend Dwell						
Pattern						
Output Mode	TS2	TS2	TS2	TS2	TS2	TS2
Track Over 1						
Track Over 2						
Track Over 3						
Track Over 4						
Track Over 5						
Track Over 6						
Track Over 7						
Track Over 8						
Track Over 9						
Track Over 10						
Track Over 11						
Track Over 12						
Dwell Over 1						
Dwell Over 2						
Dwell Over 3						
Dwell Over 4						
Dwell Over 5						
Dwell Over 6						
Dwell Over 7						
Dwell Over 8						
Dwell Over 9						
Dwell Over 10						
Dwell Over 11						
Dwell Over 12						
Ped Clear						
Yellow						
Red						
Return Min/Max						
Delay Inh						
Exit Time						
All Red B4						

Overlap Program Parameters [1.5.2.1]

Overlap	Included Phases								Modifer Phases								Type	Green	Yellow	Red
Overlap 1																	NORMAL		3.5	1.5
Overlap 2																	NORMAL		3.5	1.5
Overlap 3																	NORMAL		3.5	1.5
Overlap 4																	NORMAL		3.5	1.5
Overlap 5																	NORMAL		3.5	1.5
Overlap 6																	NORMAL		3.5	1.5
Overlap 7																	NORMAL		3.5	1.5
Overlap 8																	NORMAL		3.5	1.5
Overlap 9																	NORMAL		3.5	1.5
Overlap 10																	NORMAL		3.5	1.5
Overlap 11																	NORMAL		3.5	1.5
Overlap 12																	NORMAL		3.5	1.5
Overlap 13																	NORMAL		3.5	1.5
Overlap 14																	NORMAL		3.5	1.5
Overlap 15																	NORMAL		3.5	1.5
Overlap 16																	NORMAL		3.5	1.5

Approved By: Carmen Li **Date:** _____

Palm Beach County **Alternate Timing Sheet** **5/18/2016**

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Alternate Phase Program 1, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1			4	2	12	10	4	2	1	
2	7	16	20	2	60	45	4	2	2	
3			4	4	10	8	4	2	3	
4	7	15	6	4	25	14	4	2	4	
5			4	2	10	8	4	2	5	
6	7	18	20	2	60	45	4	2	6	
7			4	2	25	12	4	2	7	
8	7	21	6	2	25	13	4	2	8	

Alternate Phase Program 2, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1			4	2	30	13	4	2	1	
2	7	16	20	2	60	45	4	2	2	
3			4	4	10	10	4	2	3	
4	7	15	6	4	25	20	4	2	4	
5			4	2	10	10	4	2	5	
6	7	18	20	2	60	45	4	2	6	
7			4	2	25	13	4	2	7	
8	7	21	6	2	25	20	4	2	8	

Alternate Phase Program 3, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1			4	2	14	10	4	2	1	
2	7	16	20	2	60	45	4	2	2	
3			4	4	10	10	4	2	3	
4	7	15	6	4	25	20	4	2	4	
5			4	2	10	8	4	2	5	
6	7	18	20	2	60	45	4	2	6	
7			4	2	25	15	4	2	7	
8	7	21	6	2	25	20	4	2	8	

Alternate Phase Program 4, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1			4	2	30	10	4	2	1	
2	7	16	20	2	60	45	4	2	2	
3			4	4	10	8	4	2	3	
4	7	15	6	4	25	14	4	2	4	
5			4	2	10	8	4	2	5	
6	7	18	20	2	60	45	4	2	6	
7			4	2	25	10	4	2	7	
8	7	21	6	2	25	14	4	2	8	

Alternate Phase Program 5, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1										
2										
3										
4										
5										
6										
7										
8										

TB Coor, Day Plan [4.4]

Day Plan Table 4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour																
Minute																
Action																

Day Plan Table 5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour																
Minute																
Action																

Day Plan Table 6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		6	7	9	15	18	23									
Minute		30	30			30	30									
Action	100	1	12	1	13	5	13									

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Coordination, Splits [2.7.1]

Split Table 7	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph																

Split Table 8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph																

Split Table 9	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph																

Split Table 10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph																

Split Table 11	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph																

Split Table 12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	35	88	15	42	15	108	24	33								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 13	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	15	68	15	42	15	68	23	34								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 14	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	35	44	15	46	15	64	27	34								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph																

Split Table 16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph																

Approved By: Carmen Li **Date:** _____

Southern Boulevard

At

Lake Avenue

Palm Beach County **Signal Timing Sheet** **5/18/2016**

30905 : 2310 - Southern Bl and Lake Av (Upload File)

Phase [1.1.1]

	1 (EL)	2 (WT)	3 (SL)	4 (NT)	5 (WL)	6 (ET)	7 (NL)	8 (ST)	9	10	11	12	13	14	15	16
Walk		7		7		10		7								
Ped Clearance		16		19		13		19								
Min Green	4	20	4	6	4	20	4	6								
Passage	2	4	2	2	2	4	2	2								
Max1	10	50	10	20	10	50	10	20								
Max2	10	50	10	35	10	50	10	35								
Yellow	4	4	4	4	4	4	4	4								
Red	2	2	2	2	2	2	2	2								

Phase Option [1.1.2]

	1 (EL)	2 (WT)	3 (SL)	4 (NT)	5 (WL)	6 (ET)	7 (NL)	8 (ST)	9	10	11	12	13	14	15	16
Enable	ON	ON	ON	ON	ON	ON	ON	ON								
Auto Entry				ON				ON								
Auto Exit		ON				ON										
Non Act1																
Non Act2																
Lock Call		ON				ON										
Min Recall		ON				ON										
Max Recall		ON				ON										
Ped Recall																
Dual Entry		ON		ON		ON		ON								
Sim Gap Enable									ON	ON	ON	ON	ON	ON	ON	ON
Rest In Walk																

Detector, Vehicle Parameters 1-16 [5.1]

	1 (EBL1)	2 (WBT1)	3 (WBT2)	4 (SBL1)	5 (NBT1)	6 (WBL1)	7 (EBT1)	8 (EBT2)	9 (NBL1)	10 (SBT1)	11 (SBR1)	12	13	14	15	16
Call Phase	1	2	2	3	4	5	6	6	7	8	8					
Switch Phase	6			8		2			4							
Delay Time											10					

Detector, Vehicle Parameters 17-32 [5.1]

	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Call Phase																
Switch Phase																
Delay Time																

Detector, Vehicle Parameters 33-48 [5.1]

	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Call Phase																
Switch Phase																
Delay Time																

Detector, Vehicle Parameters 49-64 [5.1]

	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
Call Phase																
Switch Phase																
Delay Time																

Approved By: Carmen Li **Date:** _____

Palm Beach County **System Timing Sheet** **5/18/2016**

30905 : 2310 - Southern Bl and Lake Av (Upload File)

TB Coor, Day Plan [4.4]

Day Plan Table 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		7	9	14	19											
Minute				30												
Action	100	2	1	3	4											

Day Plan Table 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		10	18	22												
Minute																
Action	100	6	5	100												

Day Plan Table 3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		10	18	22												
Minute																
Action	100	6	5	100												

Coordination, Pattern 1-16 [2.1]/Coordination, Alt Tables+[2.6]

Pattern	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Cycle Time	130	160	160	110	110	130						180	140	140		
Offset Time	1	147	39	102	102	1						57	40	57		
Split Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Seq Number	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ph Opt Alt																
Ph Time Alt	1	2	3	4	4	2										

Coordination, Splits [2.7.1]

Split Table 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	16	66	16	32	16	66	16	32								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	20	92	16	32	16	96	16	32								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	22	88	18	32	18	92	18	32								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	16	46	16	32	16	46	16	32								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	16	46	16	32	16	46	16	32								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	16	66	16	32	16	66	16	32								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Approved By: Carmen Li **Date:** _____

Palm Beach County **Preempt & Overlap Timing Sheet** **5/18/2016**

30905 : 2310 - Southern Bl and Lake Av (Upload File)

Preemption Times[3.1]/Phases[3.2]/Options[3.3]

Channel	1	2	3	4	5	6
Lock Input			ON	ON	ON	ON
Override Flash						
Override Higher						
Flash Dwell						
Link						
Delay						
Min Duration						
Min Green			5	5	5	5
Min Walk			4	4	4	4
Ped Clear			19	19	19	19
Track Green						
Min Dwell			10	10	10	10
Max Presence			120	120	120	120
Track R1						
Track R2						
Track R3						
Track R4						
Dwell P1			2	2	4	4
Dwell P2			6	6	8	8
Dwell P3						
Dwell P4						
Dwell P5						
Dwell P6						
Dwell P7						
Dwell P8						
Dwell P9						
Dwell P10						
Dwell P11						
Dwell P12						
Dwell Ped1						
Dwell Ped2						
Dwell Ped3						
Dwell Ped4						
Dwell Ped5						
Dwell Ped6						
Dwell Ped7						
Dwell Ped8						
Exit R1			2	2	2	2
Exit R2			6	6	6	6
Exit R3						
Exit R4						

Preemption Times+[3.4]/Overlaps+[3.5]/Options+[3.6]

Preempt	1	2	3	4	5	6
Enable			ON	ON	ON	ON
Type	EMERG	EMERG	EMERG	EMERG	EMERG	EMERG
Skip Track						
Volt Mon Flash						
Coord in Preempt						
Max2						
Return Max/Min	MAX	MAX	MAX	MAX	MAX	MAX
Extend Dwell						
Pattern						
Output Mode	TS2	TS2	TS2	TS2	TS2	TS2
Track Over 1						
Track Over 2						
Track Over 3						
Track Over 4						
Track Over 5						
Track Over 6						
Track Over 7						
Track Over 8						
Track Over 9						
Track Over 10						
Track Over 11						
Track Over 12						
Dwell Over 1						
Dwell Over 2						
Dwell Over 3						
Dwell Over 4						
Dwell Over 5						
Dwell Over 6						
Dwell Over 7						
Dwell Over 8						
Dwell Over 9						
Dwell Over 10						
Dwell Over 11						
Dwell Over 12						
Ped Clear						
Yellow						
Red						
Return Min/Max						
Delay Inh						
Exit Time						
All Red B4						

Overlap Program Parameters [1.5.2.1]

Overlap	Included Phases								Modifer Phases								Type	Green	Yellow	Red
Overlap 1																	NORMAL		3.5	1.5
Overlap 2																	NORMAL		3.5	1.5
Overlap 3																	NORMAL		3.5	1.5
Overlap 4																	NORMAL		3.5	1.5
Overlap 5																	NORMAL		3.5	1.5
Overlap 6																	NORMAL		3.5	1.5
Overlap 7																	NORMAL		3.5	1.5
Overlap 8																	NORMAL		3.5	1.5
Overlap 9																	NORMAL		3.5	1.5
Overlap 10																	NORMAL		3.5	1.5
Overlap 11																	NORMAL		3.5	1.5
Overlap 12																	NORMAL		3.5	1.5
Overlap 13																	NORMAL		3.5	1.5
Overlap 14																	NORMAL		3.5	1.5
Overlap 15																	NORMAL		3.5	1.5
Overlap 16																	NORMAL		3.5	1.5

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Alternate Phase Program 1, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1			4	2	10	10	4	2	1	
2	7	16	20	4	50	45	4	2	2	
3			4	2	10	8	4	2	3	
4	7	19	6	2	20	18	4	2	4	
5			4	2	10	8	4	2	5	
6	10	13	20	4	50	45	4	2	6	
7			4	2	10	10	4	2	7	
8	7	19	6	2	20	18	4	2	8	

Alternate Phase Program 2, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1			4	2	10	8	4	2	1	
2	7	16	20	4	50	45	4	2	2	
3			4	2	10	10	4	2	3	
4	7	19	6	2	20	15	4	2	4	
5			4	2	10	8	4	2	5	
6	10	13	20	4	50	45	4	2	6	
7			4	2	10	10	4	2	7	
8	7	19	6	2	20	15	4	2	8	

Alternate Phase Program 3, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1			4	2	10	10	4	2	1	
2	7	16	20	4	50	45	4	2	2	
3			4	2	10	8	4	2	3	
4	7	19	6	2	20	15	4	2	4	
5			4	2	10	10	4	2	5	
6	10	13	20	4	50	45	4	2	6	
7			4	2	10	10	4	2	7	
8	7	19	6	2	20	15	4	2	8	

Alternate Phase Program 4, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1			4	2	10	8	4	2	1	
2	7	16	20	4	50	45	4	2	2	
3			4	2	10	8	4	2	3	
4	7	19	6	2	20	12	4	2	4	
5			4	2	10	8	4	2	5	
6	10	13	20	4	50	45	4	2	6	
7			4	2	10	8	4	2	7	
8	7	19	6	2	20	12	4	2	8	

Alternate Phase Program 5, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1										
2										
3										
4										
5										
6										
7										
8										

TB Coor, Day Plan [4.4]

Day Plan Table 4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour																
Minute																
Action																

Day Plan Table 5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour																
Minute																
Action																

Day Plan Table 6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		6	7	9	15	18	23									
Minute		30	30			30	30									
Action	100	1	12	1	13	5	13									

Approved By: Carmen Li **Date:** _____

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Coordination, Splits [2.7.1]

Split Table 7	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 9	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 11	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	17	106	17	40	17	106	17	40								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 13	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	15	79	15	31	15	79	15	31								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 14	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	15	79	15	31	15	79	15	31								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Approved By: Carmen Li **Date:** _____

Southern Boulevard

At

Gem Lake Drive

Palm Beach County **Signal Timing Sheet** **5/18/2016**

30880 : 2282 - Southern Blvd and Gem Lake (Upload File)

Phase [1.1.1]

	1 (EL)	2 (WT)	3	4 (NT)	5 (WL)	6 (ET)	7	8 (ST)	9	10	11	12	13	14	15	16
Walk		7		7		7		7								
Ped Clearance		16		43		11		43								
Min Green	4	20		6	4	20		6								
Passage	2	4		2	2	4		2								
Max1	15	45		25	20	45		25								
Max2																
Yellow	4	4		4	4	4		4								
Red	2	2		5	2	2		5								

Phase Option [1.1.2]

	1 (EL)	2 (WT)	3	4 (NT)	5 (WL)	6 (ET)	7	8 (ST)	9	10	11	12	13	14	15	16
Enable	ON	ON		ON	ON	ON		ON								
Auto Entry				ON				ON								
Auto Exit		ON				ON										
Non Act1																
Non Act2																
Lock Call		ON				ON										
Min Recall		ON				ON										
Max Recall		ON				ON										
Ped Recall																
Dual Entry		ON		ON		ON		ON								
Sim Gap Enable									ON	ON	ON	ON	ON	ON	ON	ON
Rest In Walk																

Detector, Vehicle Parameters 1-16 [5.1]

	1 (EBL1)	2 (WBT1)	3 (WBT2)	4 (WBT3)	5 (WBT4)	6 (WBT5)	7 (WBT6)	8 (NBL1)	9 (NBT1)	10 (WBL1)	11 (EBT1)	12 (EBT2)	13 (EBT3)	14 (EBT4)	15 (EBT5)	16 (EBT6)
Call Phase	1	2	2	2	2	2	2	4	4	5	6	6	6	6	6	6
Switch Phase																
Delay Time																

Detector, Vehicle Parameters 17-32 [5.1]

	17 (SBL1)	18 (SBT1)	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Call Phase	8	8														
Switch Phase																
Delay Time																

Detector, Vehicle Parameters 33-48 [5.1]

	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Call Phase																
Switch Phase																
Delay Time																

Detector, Vehicle Parameters 49-64 [5.1]

	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
Call Phase																
Switch Phase																
Delay Time																

Approved By: Carmen Li **Date:** _____

Palm Beach County **System Timing Sheet** **5/18/2016**

30880 : 2282 - Southern Blvd and Gem Lake (Upload File)

TB Coor, Day Plan [4.4]

Day Plan Table 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		7	9	14	19											
Minute				30												
Action	100	2	1	3	4											

Day Plan Table 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		10	18	22												
Minute																
Action	100	6	5	100												

Day Plan Table 3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		10	18	22												
Minute																
Action	100	6	5	100												

Coordination, Pattern 1-16 [2.1]/Coordination, Alt Tables+[2.6]

Pattern	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Cycle Time	130	160	160	110	110	130										
Offset Time	80	74	63	63	63	80										
Split Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Seq Number	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ph Opt Alt																
Ph Time Alt	1	2	3	4	4	1										

Coordination, Splits [2.7.1]

Split Table 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	16	55		59	16	55		59								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	16	85		59	16	85		59								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	20	81		59	20	81		59								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	16	64		30	16	64		30								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	16	64		30	16	64		30								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	16	55		59	16	55		59								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Approved By: Carmen Li **Date:** _____

Palm Beach County **Preempt & Overlap Timing Sheet** **5/18/2016**

30880 : 2282 - Southern Blvd and Gem Lake (Upload File)

Preemption Times[3.1]/Phases[3.2]/Options[3.3]

Channel	1	2	3	4	5	6
Lock Input			ON	ON	ON	ON
Override Flash						
Override Higher						
Flash Dwell						
Link						
Delay						
Min Duration						
Min Green			5	5	5	5
Min Walk			4	4	4	4
Ped Clear			43	43	43	43
Track Green						
Min Dwell			10	10	10	10
Max Presence			120	120	120	120
Track R1						
Track R2						
Track R3						
Track R4						
Dwell P1			1	2	4	4
Dwell P2			6	5	8	8
Dwell P3						
Dwell P4						
Dwell P5						
Dwell P6						
Dwell P7						
Dwell P8						
Dwell P9						
Dwell P10						
Dwell P11						
Dwell P12						
Dwell Ped1						
Dwell Ped2						
Dwell Ped3						
Dwell Ped4						
Dwell Ped5						
Dwell Ped6						
Dwell Ped7						
Dwell Ped8						
Exit R1			2	2	2	2
Exit R2			6	6	6	6
Exit R3						
Exit R4						

Preemption Times+[3.4]/Overlaps+[3.5]/Options+[3.6]

Preempt	1	2	3	4	5	6
Enable			ON	ON	ON	ON
Type	EMERG	EMERG	EMERG	EMERG	EMERG	EMERG
Skip Track						
Volt Mon Flash						
Coord in Preempt						
Max2						
Return Max/Min	MAX	MAX	MAX	MAX	MAX	MAX
Extend Dwell						
Pattern						
Output Mode	TS2	TS2	TS2	TS2	TS2	TS2
Track Over 1						
Track Over 2						
Track Over 3						
Track Over 4						
Track Over 5						
Track Over 6						
Track Over 7						
Track Over 8						
Track Over 9						
Track Over 10						
Track Over 11						
Track Over 12						
Dwell Over 1						
Dwell Over 2						
Dwell Over 3						
Dwell Over 4						
Dwell Over 5						
Dwell Over 6						
Dwell Over 7						
Dwell Over 8						
Dwell Over 9						
Dwell Over 10						
Dwell Over 11						
Dwell Over 12						
Ped Clear						
Yellow						
Red						
Return Min/Max						
Delay Inh						
Exit Time						
All Red B4						

Overlap Program Parameters [1.5.2.1]

Overlap	Included Phases								Modifer Phases								Type	Green	Yellow	Red
Overlap 1																	NORMAL		3.5	1.5
Overlap 2																	NORMAL		3.5	1.5
Overlap 3																	NORMAL		3.5	1.5
Overlap 4																	NORMAL		3.5	1.5
Overlap 5																	NORMAL		3.5	1.5
Overlap 6																	NORMAL		3.5	1.5
Overlap 7																	NORMAL		3.5	1.5
Overlap 8																	NORMAL		3.5	1.5
Overlap 9																	NORMAL		3.5	1.5
Overlap 10																	NORMAL		3.5	1.5
Overlap 11																	NORMAL		3.5	1.5
Overlap 12																	NORMAL		3.5	1.5
Overlap 13																	NORMAL		3.5	1.5
Overlap 14																	NORMAL		3.5	1.5
Overlap 15																	NORMAL		3.5	1.5
Overlap 16																	NORMAL		3.5	1.5

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30880 : 2282 - Southern Blvd and Gem Lake (Upload File)

Alternate Phase Program 1, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1			4	2	15	8	4	2	1	
2	7	16	20	4	45	45	4	2	2	
3										
4	7	43	6	2	25	10	4	5	4	
5			4	2	20	10	4	2	5	
6	7	11	20	4	45	45	4	2	6	
7										
8	7	43	6	2	25	10	4	5	8	

Alternate Phase Program 2, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1			4	2	15	8	4	2	1	
2	7	16	20	4	45	45	4	2	2	
3										
4	7	43	6	2	25	10	4	5	4	
5			4	2	20	8	4	2	5	
6	7	11	20	4	45	45	4	2	6	
7										
8	7	43	6	2	25	10	4	5	8	

Alternate Phase Program 3, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1			4	2	15	8	4	2	1	
2	7	16	20	4	45	45	4	2	2	
3										
4	7	43	6	2	25	10	4	5	4	
5			4	2	20	8	4	2	5	
6	7	11	20	4	45	45	4	2	6	
7										
8	7	43	6	2	25	10	4	5	8	

Alternate Phase Program 4, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1			4	2	15	8	4	2	1	
2	7	16	20	4	45	45	4	2	2	
3										
4	7	43	6	2	25	8	4	5	4	
5			4	2	20	10	4	2	5	
6	7	11	20	4	45	45	4	2	6	
7										
8	7	43	6	2	25	8	4	5	8	

Alternate Phase Program 5, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1										
2										
3										
4										
5										
6										
7										
8										

TB Coor, Day Plan [4.4]

Day Plan Table 4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		6	9	11	14	18	22									
Minute		30			30	30										
Action	100	2	4	1	3	5	100									

Day Plan Table 5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour																
Minute																
Action																

Day Plan Table 6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour																
Minute																
Action																

Approved By: Carmen Li **Date:** _____

30880 : 2282 - Southern Blvd and Gem Lake (Upload File)

Coordination, Splits [2.7.1]

Split Table 7	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 9	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 11	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 13	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	36	62	30	22	20	78	30	22								
Mode	NON	MAX	NON	NON	MAX	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 14	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Approved By: Carmen Li **Date:** _____

APPENDIX C

Extract from 2014 I-95 Managed Lanes Monitoring Report

Table 2.2 Volume Comparison: *A.M. Peak Hour – 2012 and 2014*

I-95 Segments		2012			2014			Difference 2012 to 2014		% Change 2012 to 2014	
		AM Peak	GPL	ML	AM Peak	GPL	ML	AM Peak	ML	AM Peak	ML
Northbound											
Indiantown Rd - Okeechobee Blvd	North of Northlake Blvd	5,084	4,892	192	6,133	5,876	257	1,049	65	20.6%	33.9%
	South of Palm Beach Lakes Blvd	7,216	6,839	377	8,121	7,469	652	905	275	12.5%	72.9%
Okeechobee Blvd - Glades Rd	North of Gateway Blvd	6,169	5,812	357	6,998	6,465	533	829	176	13.4%	49.3%
	North of Glades Rd*	7,145	6,203	942	6,082	4,503	1579	-1063	637	-14.9%	67.6%
Glades Rd - Broward Blvd	South of Hillsboro Blvd	7,344	6,147	1,197	7,305	5,736	1,569	-39	372	-0.5%	31.1%
	South of Atlantic Blvd	7,586	6,535	1,051	9,023	7,829	1194	1,437	143	18.9%	13.6%
	South of Sunrise Blvd	10,650	9,199	1,451	9,305	8,000	1,305	-1,345	-146	-12.6%	-10.1%
Broward Blvd – GGI**	South of Stirling Rd	10,457	9,234	1,223	10,457	9,234	1,223	0	0	0.0%	0.0%
	South of Hollywood Blvd	8,244	7,366	878	8,244	7,366	878	0	0	0.0%	0.0%
	South of Ives Dairy Rd	6,094	5,191	903	6,094	5,191	903	0	0	0.0%	0.0%
GGI - EL southern terminus	South of GGI	8,491	6,833	1,658	8,140	6,102	2,038	-351	380	-4.1%	22.9%
	South of NW 65th St	7,591	5,717	1,874	7,497	4,427	3,070	-94	1196	-1.2%	63.8%
Southbound											
Indiantown Rd - Okeechobee Blvd	North of Northlake Blvd	6,672	6,418	254	7,902	7,679	223	1,230	-31	18.4%	-12%
	South of Palm Beach Lakes Blvd	6,805	6,501	304	7,794	7,428	366	989	62	14.5%	20.4%
Okeechobee Blvd - Glades Rd	North of Gateway Blvd	9,018	8,395	623	8,966	8,054	912	-52	289	-0.6%	46.4%
	North of Glades Rd*	6,947	5,973	974	3,286	2,157	1,129	-3,661	155	-52.7%	15.9%
Glades Rd - Broward Blvd	South of Hillsboro Blvd	7,182	5,740	1,442	7,143	5,700	1,443	-39	1	-0.5%	0.1%
	South of Atlantic Blvd	8,128	6,757	1,371	8,508	6,994	1,514	380	143	4.7%	10.4%
	South of Sunrise Blvd	10,382	8,990	1,392	10,867	9,402	1,465	485	73	4.7%	5.2%
Broward Blvd – GGI**	South of Stirling Rd	8,998	7,915	1,083	8,998	7,915	1083	0	0	0.0%	0.0%
	South of Hollywood Blvd	8,383	7,488	895	8,383	7,488	895	0	0	0.0%	0.0%
	South of Ives Dairy Rd	6,506	4,945	1,561	6,506	4,945	1,561	0	0	0.0%	0.0%
GGI - EL southern terminus	South of GGI	9,389	5,960	3,429	8,630	5,123	3,507	-759	78	-8.1%	2.3%
	South of NW 65th St	10,827	7,577	3,250	10,146	6,627	3,519	-681	269	-6.3%	8.3%

Note: * Traffic counts were collected in May, when Summer semester had started at FAU. Traffic counts in early April should be higher than May and traffic pattern was probably different.
** 2012 data were used in place of 2014 data for this segment due to construction.

Table 2.3 Volume Comparison: *P.M. Peak Hour – 2012 and 2014*

I-95 Segments		2012			2014			Difference 2012 to 2014		% Change 2012 to 2014	
		PM Peak	GPL	ML	PM Peak	GPL	ML	PM Peak	ML	PM Peak	ML
Northbound											
Indiantown Rd - Okeechobee Blvd	North of Northlake Blvd	7,539	7,009	530	8,350	7,811	539	811	9	10.8%	1.7%
	South of Palm Beach Lakes Blvd	7,625	7,114	511	7,200	6,707	493	-425	-18	-5.6%	-3.5%
Okeechobee Blvd - Glades Rd	North of Gateway Blvd	8,954	7,985	969	9,328	8,051	1,277	374	308	4.2%	31.8%
	North of Glades Rd*	7,266	5,636	1,630	5,988	4,490	1,498	-1278	-132	-17.6%	-8.1%
Glades Rd - Broward Blvd	South of Hillsboro Blvd	7,471	5,745	1,726	7,004	5,707	1,297	-467	-429	-6.3%	-24.9%
	South of Atlantic Blvd	8,470	6,866	1,604	8,842	7,103	1,739	372	135	4.4%	8.4%
	South of Sunrise Blvd	10,541	8,819	1,722	8,600	6,990	1,610	-1,941	-112	-18.4%	-6.5%
Broward Blvd – GGI**	South of Stirling Rd	10,475	9,177	1,298	10,475	9,177	1,298	0	0	0.0%	0.0%
	South of Hollywood Blvd	8,459	7,147	1312	8,459	7,147	1312	0	0	0.0%	0.0%
	South of Ives Dairy Rd	6,849	5,286	1563	6,849	5,286	1563	0	0	0.0%	0.0%
GGI - EL southern terminus	South of GGI	9,552	6,862	2,690	8,768	5,928	2,840	-784	150	-8.2%	5.6%
	South of NW 65th St	9,517	6,598	2,919	9,202	5,923	3,279	-315	360	-3.3%	12.3%
Southbound											
Indiantown Rd - Okeechobee Blvd	North of Northlake Blvd	5,620	5,418	202	5,865	5,632	233	245	31	4.4%	15.3%
	South of Palm Beach Lakes Blvd	8,184	7,665	519	7,908	7,290	618	-276	99	-3.4%	19.1%
Okeechobee Blvd - Glades Rd	North of Gateway Blvd	7,929	7,250	679	7,389	6,624	765	-540	86	-6.8%	12.7%
	North of Glades Rd*	7,176	5,788	1,388	3,475	1,743	1,732	-3701	344	-51.6%	24.8%
Glades Rd - Broward Blvd	South of Hillsboro Blvd	7,648	5,982	1,666	7,177	5,592	1,585	-471	-81	-6.2%	-4.9%
	South of Atlantic Blvd	8,294	6,702	1,592	7,870	6,295	1,575	-424	-17	-5.1%	-1.1%
	South of Sunrise Blvd	10,759	9,421	1,338	10,739	9,418	1,321	-20	-17	-0.2%	-1.3%
Broward Blvd – GGI**	South of Stirling Rd	9,965	8,558	1,407	9,965	8,558	1,407	0	0	0.0%	0.0%
	South of Hollywood Blvd	8,267	7,146	1,121	8,267	7,146	1,121	0	0	0.0%	0.0%
	South of Ives Dairy Rd	5,796	4,508	1,288	5,796	4,508	1,288	0	0	0.0%	0.0%
GGI - EL southern terminus	South of GGI	8,315	6,664	1,651	8,164	6,306	1,858	-151	207	-1.8%	12.5%
	South of NW 65th St	7,929	6,016	1,913	7,919	5,947	1,972	-10	59	-0.1%	3.1%

Note: * Traffic counts were collected in May, when Summer semester had started at FAU. Traffic counts in early April should be higher than May and traffic pattern was probably different.
** 2012 data were used in place of 2014 data for this segment due to construction.

APPENDIX D

LOS Analysis – Existing Conditions

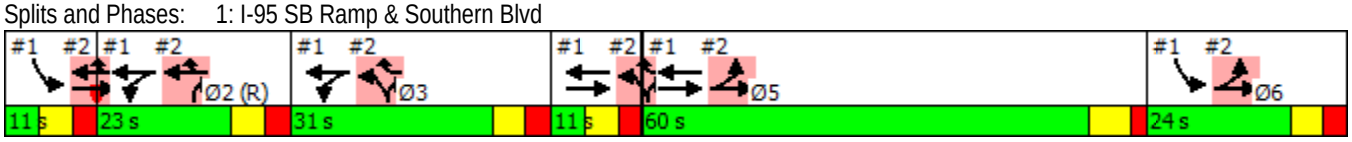
Synchro

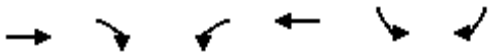
Intersection Analyses

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	2312	1279	315	1343	362	847						
Future Volume (vph)	2312	1279	315	1343	362	847						
Turn Type	NA	Free	Prot	NA	Prot	Free						
Protected Phases	4 5		2 3	2 3 4 5	1 6		1	2	3	4	5	6
Permitted Phases		Free				Free						
Detector Phase	4 5		2 3	2 3 4 5	1 6							
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	23.0	31.0	11.0	60.0	24.0
Total Split (%)							7%	14%	19%	7%	38%	15%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	64.0	160.0	47.0	118.0	28.0	160.0						
Actuated g/C Ratio	0.40	1.00	0.29	0.74	0.18	1.00						
v/c Ratio	0.85	1.01	0.35	0.40	0.66	0.59						
Control Delay	25.5	47.0	0.9	0.5	67.6	1.6						
Queue Delay	1.2	0.0	0.0	0.5	0.0	0.0						
Total Delay	26.7	47.0	0.9	1.0	67.6	1.6						
LOS	C	D	A	A	E	A						
Approach Delay	33.9			1.0								
Approach LOS	C			A								

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 81 (51%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 105	
Control Type: Pretimed	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay: 23.1	Intersection LOS: C
Intersection Capacity Utilization 95.8%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd



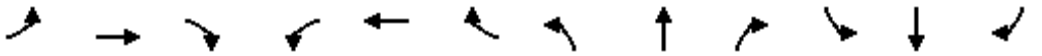


Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	2513	1390	342	1460	393	921
v/c Ratio	0.85	1.01	0.35	0.40	0.66	0.59
Control Delay	25.5	47.0	0.9	0.5	67.6	1.6
Queue Delay	1.2	0.0	0.0	0.5	0.0	0.0
Total Delay	26.7	47.0	0.9	1.0	67.6	1.6
Queue Length 50th (ft)	500	~1093	0	0	200	0
Queue Length 95th (ft)	533	#1230	0	0	260	0
Internal Link Dist (ft)	1137			569		
Turn Bay Length (ft)		450			250	
Base Capacity (vph)	2959	1370	989	3678	595	1568
Starvation Cap Reductn	0	0	0	1579	0	0
Spillback Cap Reductn	231	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.92	1.01	0.35	0.70	0.66	0.59

Intersection Summary

~ 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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2312	1279	315	1343	0	0	0	0	362	0	847
Future Volume (vph)	0	2312	1279	315	1343	0	0	0	0	362	0	847
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	4.0	7.0	7.0					7.0		4.0
Lane Util. Factor		0.81	1.00	0.97	0.91					0.97		1.00
Frt		1.00	0.75	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		7399	1370	3367	4988					3400		1568
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		7399	1370	3367	4988					3400		1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2513	1390	342	1460	0	0	0	0	393	0	921
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2513	1390	342	1460	0	0	0	0	393	0	921
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	Free	Prot	NA					Prot		Free
Protected Phases		4 5		2 3	2 3 4 5					1 6		
Permitted Phases			Free									Free
Actuated Green, G (s)		64.0	160.0	47.0	118.0					28.0		160.0
Effective Green, g (s)		64.0	160.0	47.0	118.0					28.0		160.0
Actuated g/C Ratio		0.40	1.00	0.29	0.74					0.18		1.00
Clearance Time (s)												
Lane Grp Cap (vph)		2959	1370	989	3678					595		1568
v/s Ratio Prot		0.34		0.10	0.29					0.12		
v/s Ratio Perm			c1.01									0.59
v/c Ratio		0.85	1.01	0.35	0.40					0.66		0.59
Uniform Delay, d1		43.6	80.0	44.4	7.8					61.6		0.0
Progression Factor		0.55	1.00	0.01	0.04					1.00		1.00
Incremental Delay, d2		1.4	19.3	0.7	0.2					5.7		1.6
Delay (s)		25.4	99.3	0.9	0.5					67.2		1.6
Level of Service		C	F	A	A					E		A
Approach Delay (s)		51.7			0.6			0.0			21.2	
Approach LOS		D			A			A			C	

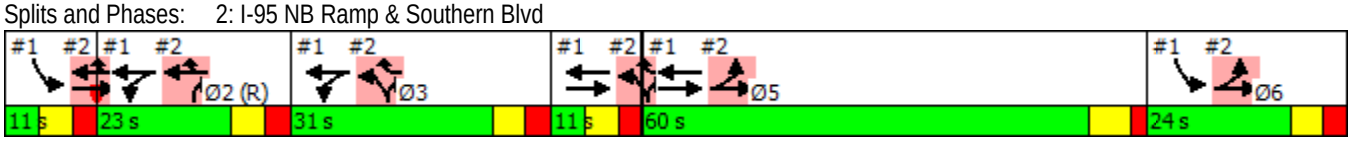
Intersection Summary			
HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	95.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	1410	1264	840	432	818	399						
Future Volume (vph)	1410	1264	840	432	818	399						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	23.0	31.0	11.0	60.0	24.0
Total Split (%)							7%	14%	19%	7%	38%	15%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	77.0	88.0	27.0	69.0	35.0	58.0						
Actuated g/C Ratio	0.48	0.55	0.17	0.43	0.22	0.36						
v/c Ratio	0.93	0.49	0.72	0.65	0.82	0.58						
Control Delay	15.4	2.8	53.3	43.7	66.9	16.5						
Queue Delay	45.3	0.3	0.0	0.0	0.0	0.0						
Total Delay	60.7	3.1	53.3	43.7	66.9	16.5						
LOS	E	A	D	D	E	B						
Approach Delay		33.5	50.0									
Approach LOS		C	D									

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 81 (51%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 105	
Control Type: Pretimed	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay: 41.5	Intersection LOS: D
Intersection Capacity Utilization 95.8%	ICU Level of Service F
Analysis Period (min) 15	

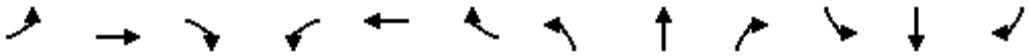
Splits and Phases: 2: I-95 NB Ramp & Southern Blvd



Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1533	1374	913	470	889	434
v/c Ratio	0.93	0.49	0.72	0.65	0.82	0.58
Control Delay	15.4	2.8	53.3	43.7	66.9	16.5
Queue Delay	45.3	0.3	0.0	0.0	0.0	0.0
Total Delay	60.7	3.1	53.3	43.7	66.9	16.5
Queue Length 50th (ft)	877	9	234	464	317	121
Queue Length 95th (ft)	#946	43	268	560	372	238
Internal Link Dist (ft)		569	795			
Turn Bay Length (ft)				270	700	700
Base Capacity (vph)	1652	2796	1273	725	1081	750
Starvation Cap Reductn	304	646	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.14	0.64	0.72	0.65	0.82	0.58

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1410	1264	0	0	840	432	818	0	399	0	0	0
Future Volume (vph)	1410	1264	0	0	840	432	818	0	399	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.94		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	5085			7544	1583	4942		1568			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	5085			7544	1583	4942		1568			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1533	1374	0	0	913	470	889	0	434	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	182	0	0	0
Lane Group Flow (vph)	1533	1374	0	0	913	427	889	0	252	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	77.0	88.0			27.0	69.0	35.0		58.0			
Effective Green, g (s)	77.0	88.0			27.0	69.0	35.0		58.0			
Actuated g/C Ratio	0.48	0.55			0.17	0.43	0.22		0.36			
Clearance Time (s)												
Lane Grp Cap (vph)	1652	2796			1273	682	1081		568			
v/s Ratio Prot	c0.45	0.27			c0.12	c0.27	c0.18		0.16			
v/s Ratio Perm												
v/c Ratio	0.93	0.49			0.72	0.63	0.82		0.44			
Uniform Delay, d1	38.9	22.2			62.9	35.5	59.5		38.8			
Progression Factor	0.22	0.11			0.81	1.36	1.00		1.00			
Incremental Delay, d2	5.9	0.4			2.2	2.7	7.1		2.5			
Delay (s)	14.7	2.8			53.2	50.8	66.6		41.3			
Level of Service	B	A			D	D	E		D			
Approach Delay (s)		9.1			52.4			58.3			0.0	
Approach LOS		A			D			E			A	

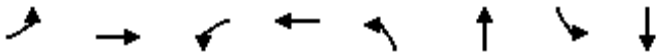
Intersection Summary			
HCM 2000 Control Delay	31.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	95.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	145	1346	65	865	253	243	69	164
Future Volume (vph)	145	1346	65	865	253	243	69	164
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6	5	2	7	4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	5	2	7	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	20.0	4.0	20.0	4.0	6.0	4.0	6.0
Minimum Split (s)	10.0	31.0	10.0	29.0	10.0	28.0	10.0	34.0
Total Split (s)	35.0	83.0	15.0	63.0	28.0	46.0	16.0	34.0
Total Split (%)	21.9%	51.9%	9.4%	39.4%	17.5%	28.8%	10.0%	21.3%
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	0.0
Total Lost Time (s)	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
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	92.0	77.0	66.0	57.0	56.0	40.0	38.0	28.0
Actuated g/C Ratio	0.58	0.48	0.41	0.36	0.35	0.25	0.24	0.18
v/c Ratio	0.43	1.01	0.50	0.81	0.79	0.43	0.28	0.52
Control Delay	33.9	86.1	42.8	39.1	57.4	47.7	39.2	40.4
Queue Delay	0.0	32.9	0.0	0.7	0.0	0.0	0.0	0.0
Total Delay	33.9	119.0	42.8	39.8	57.4	47.7	39.2	40.4
LOS	C	F	D	D	E	D	D	D
Approach Delay		111.6		40.0		51.9		40.2
Approach LOS		F		D		D		D

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 131 (82%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 125	
Control Type: Pretimed	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay: 74.9	Intersection LOS: E
Intersection Capacity Utilization 89.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: Parker Ave & Southern Blvd



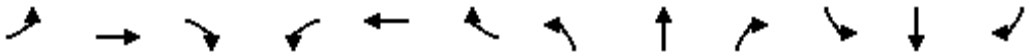
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	163	1705	73	1019	284	375	78	357
v/c Ratio	0.43	1.01	0.50	0.81	0.79	0.43	0.28	0.52
Control Delay	33.9	86.1	42.8	39.1	57.4	47.7	39.2	40.4
Queue Delay	0.0	32.9	0.0	0.7	0.0	0.0	0.0	0.0
Total Delay	33.9	119.0	42.8	39.8	57.4	47.7	39.2	40.4
Queue Length 50th (ft)	122	~931	34	330	230	160	56	113
Queue Length 95th (ft)	194	#1060	m79	370	#329	210	96	166
Internal Link Dist (ft)		825		582		421		217
Turn Bay Length (ft)	230		150		240		120	
Base Capacity (vph)	383	1680	145	1253	360	872	283	682
Starvation Cap Reductn	0	0	0	58	0	0	0	0
Spillback Cap Reductn	0	244	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	1.19	0.50	0.85	0.79	0.43	0.28	0.52

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	1346	172	65	865	42	253	243	91	69	164	154
Future Volume (vph)	145	1346	172	65	865	42	253	243	91	69	164	154
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		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.99		1.00	0.96		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3479		1770	3515		1770	3395		1770	3282	
Flt Permitted	0.09	1.00		0.07	1.00		0.29	1.00		0.53	1.00	
Satd. Flow (perm)	160	3479		131	3515		549	3395		985	3282	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	163	1512	193	73	972	47	284	273	102	78	184	173
RTOR Reduction (vph)	0	6	0	0	2	0	0	24	0	0	108	0
Lane Group Flow (vph)	163	1699	0	73	1017	0	284	351	0	78	249	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	92.0	77.0		66.0	57.0		56.0	40.0		38.0	28.0	
Effective Green, g (s)	92.0	77.0		66.0	57.0		56.0	40.0		38.0	28.0	
Actuated g/C Ratio	0.58	0.48		0.41	0.36		0.35	0.25		0.24	0.18	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	383	1674		146	1252		360	848		283	574	
v/s Ratio Prot	c0.08	c0.49		0.03	0.29		c0.11	0.10		0.02	0.08	
v/s Ratio Perm	0.17			0.18			c0.17			0.05		
v/c Ratio	0.43	1.01		0.50	0.81		0.79	0.41		0.28	0.43	
Uniform Delay, d1	25.1	41.5		37.9	46.7		41.3	50.2		48.7	58.9	
Progression Factor	1.37	1.57		1.18	0.72		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.0	24.4		10.9	5.4		16.0	1.5		2.4	2.4	
Delay (s)	37.5	89.5		55.8	38.8		57.3	51.7		51.1	61.3	
Level of Service	D	F		E	D		E	D		D	E	
Approach Delay (s)		85.0			40.0			54.1			59.5	
Approach LOS		F			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	65.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	117	1338	28	673	92	87	53	139	207
Future Volume (vph)	117	1338	28	673	92	87	53	139	207
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	7	4	3	8	
Permitted Phases	6		2		4		8		8
Detector Phase	1	6	5	2	7	4	3	8	8
Switch Phase									
Minimum Initial (s)	4.0	20.0	4.0	20.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	10.0	32.0	10.0	32.0	32.0
Total Split (s)	20.0	96.0	16.0	92.0	16.0	32.0	16.0	32.0	32.0
Total Split (%)	12.5%	60.0%	10.0%	57.5%	10.0%	20.0%	10.0%	20.0%	20.0%
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?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	104.0	90.0	96.0	86.0	36.0	26.0	36.0	26.0	26.0
Actuated g/C Ratio	0.65	0.56	0.60	0.54	0.22	0.16	0.22	0.16	0.16
v/c Ratio	0.26	0.74	0.14	0.39	0.36	0.53	0.22	0.48	0.67
Control Delay	2.3	15.9	11.2	22.3	50.7	60.9	47.5	67.0	51.1
Queue Delay	0.0	48.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.3	64.3	11.2	22.3	50.7	60.9	47.5	67.0	51.1
LOS	A	E	B	C	D	E	D	E	D
Approach Delay		59.5		21.8		57.1		56.1	
Approach LOS		E		C		E		E	

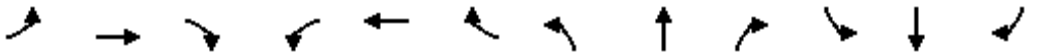
Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 147 (92%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 49.3	Intersection LOS: D
Intersection Capacity Utilization 74.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Lake Ave & Southern Blvd

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	123	1462	29	732	97	158	56	146	218
v/c Ratio	0.26	0.74	0.14	0.39	0.36	0.53	0.22	0.48	0.67
Control Delay	2.3	15.9	11.2	22.3	50.7	60.9	47.5	67.0	51.1
Queue Delay	0.0	48.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.3	64.3	11.2	22.3	50.7	60.9	47.5	67.0	51.1
Queue Length 50th (ft)	5	706	10	228	80	135	45	141	140
Queue Length 95th (ft)	m7	m727	22	276	134	215	85	217	238
Internal Link Dist (ft)		582		533		366		472	
Turn Bay Length (ft)	140		140		100		120		120
Base Capacity (vph)	467	1980	202	1894	266	299	256	302	323
Starvation Cap Reductn	0	671	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	7	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	1.12	0.14	0.39	0.36	0.53	0.22	0.48	0.67

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	1338	51	28	673	23	92	87	63	53	139	207
Future Volume (vph)	117	1338	51	28	673	23	92	87	63	53	139	207
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		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3520		1770	3522		1770	1746		1770	1863	1583
Flt Permitted	0.30	1.00		0.09	1.00		0.52	1.00		0.48	1.00	1.00
Satd. Flow (perm)	555	3520		171	3522		960	1746		899	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	123	1408	54	29	708	24	97	92	66	56	146	218
RTOR Reduction (vph)	0	2	0	0	1	0	0	16	0	0	0	66
Lane Group Flow (vph)	123	1460	0	29	731	0	97	142	0	56	146	152
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		8
Actuated Green, G (s)	104.0	90.0		96.0	86.0		36.0	26.0		36.0	26.0	26.0
Effective Green, g (s)	104.0	90.0		96.0	86.0		36.0	26.0		36.0	26.0	26.0
Actuated g/C Ratio	0.65	0.56		0.60	0.54		0.22	0.16		0.22	0.16	0.16
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	467	1980		202	1893		266	283		256	302	257
v/s Ratio Prot	c0.02	c0.41		0.01	0.21		c0.02	0.08		0.01	0.08	
v/s Ratio Perm	0.15			0.08			0.06			0.04		c0.10
v/c Ratio	0.26	0.74		0.14	0.39		0.36	0.50		0.22	0.48	0.59
Uniform Delay, d1	11.8	26.2		19.1	21.6		51.0	61.1		49.8	60.9	62.1
Progression Factor	0.19	0.57		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	0.8		1.5	0.6		3.8	6.2		2.0	5.5	9.6
Delay (s)	2.7	15.7		20.6	22.2		54.8	67.3		51.7	66.3	71.7
Level of Service	A	B		C	C		D	E		D	E	E
Approach Delay (s)		14.7			22.1			62.6			67.2	
Approach LOS		B			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	20	3568	6	2180	4	23	0	5	2
Future Volume (vph)	20	3568	6	2180	4	23	0	5	2
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	1	6	5	2			4		8
Permitted Phases					2	4		8	
Detector Phase	1	6	5	2	2	4	4	8	8
Switch Phase									
Minimum Initial (s)	4.0	20.0	4.0	20.0	20.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.0	26.0	10.0	29.0	29.0	15.0	15.0	15.0	15.0
Total Split (s)	16.0	115.0	16.0	115.0	115.0	29.0	29.0	29.0	29.0
Total Split (%)	10.0%	71.9%	10.0%	71.9%	71.9%	18.1%	18.1%	18.1%	18.1%
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	5.0	5.0	5.0	5.0
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	9.0	9.0	9.0	9.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	10.0	109.0	10.0	109.0	109.0	20.0	20.0	20.0	20.0
Actuated g/C Ratio	0.06	0.68	0.06	0.68	0.68	0.12	0.12	0.12	0.12
v/c Ratio	0.20	0.91	0.06	0.55	0.00	0.15	0.07	0.03	0.07
Control Delay	76.0	25.5	71.7	4.8	4.2	64.8	0.5	62.2	30.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.0	25.5	71.7	4.8	4.2	64.8	0.5	62.2	30.5
LOS	E	C	E	A	A	E	A	E	C
Approach Delay		25.8		5.0			36.2		38.8
Approach LOS		C		A			D		D

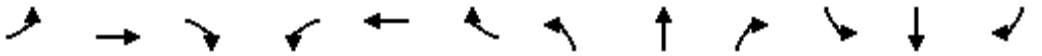
Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 74 (46%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 80	
Control Type: Pretimed	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 18.1	Intersection LOS: B
Intersection Capacity Utilization 72.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Gem Lake Dr & Southern Blvd

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	22	3886	7	2370	4	25	20	5	14
v/c Ratio	0.20	0.91	0.06	0.55	0.00	0.15	0.07	0.03	0.07
Control Delay	76.0	25.5	71.7	4.8	4.2	64.8	0.5	62.2	30.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.0	25.5	71.7	4.8	4.2	64.8	0.5	62.2	30.5
Queue Length 50th (ft)	22	925	8	103	1	24	0	5	2
Queue Length 95th (ft)	55	956	m17	126	m1	56	0	19	26
Internal Link Dist (ft)		843		595			340		400
Turn Bay Length (ft)	700		180		450	120		120	
Base Capacity (vph)	108	4281	108	4281	1057	172	276	171	211
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.91	0.06	0.55	0.00	0.15	0.07	0.03	0.07

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	3568	7	6	2180	4	23	0	18	5	2	11
Future Volume (vph)	20	3568	7	6	2180	4	23	0	18	5	2	11
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	9.0	9.0		9.0	9.0	
Lane Util. Factor	1.00	0.86		1.00	0.86	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.85		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	6283		1736	6285	1553	1752	1568		1752	1607	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.75	1.00		0.74	1.00	
Satd. Flow (perm)	1736	6283		1736	6285	1553	1380	1568		1373	1607	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	3878	8	7	2370	4	25	0	20	5	2	12
RTOR Reduction (vph)	0	0	0	0	0	0	0	18	0	0	11	0
Lane Group Flow (vph)	22	3886	0	7	2370	4	25	3	0	5	4	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases						2	4			8		
Actuated Green, G (s)	10.0	109.0		10.0	109.0	109.0	20.0	20.0		20.0	20.0	
Effective Green, g (s)	10.0	109.0		10.0	109.0	109.0	20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.06	0.68		0.06	0.68	0.68	0.12	0.12		0.12	0.12	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	9.0	9.0		9.0	9.0	
Lane Grp Cap (vph)	108	4280		108	4281	1057	172	196		171	200	
v/s Ratio Prot	c0.01	c0.62		0.00	0.38			0.00			0.00	
v/s Ratio Perm						0.00	c0.02			0.00		
v/c Ratio	0.20	0.91		0.06	0.55	0.00	0.15	0.01		0.03	0.02	
Uniform Delay, d1	71.2	21.3		70.6	13.0	8.1	62.4	61.3		61.5	61.4	
Progression Factor	1.00	1.00		0.99	0.33	0.51	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.2	3.8		1.0	0.5	0.0	1.8	0.1		0.3	0.2	
Delay (s)	75.4	25.1		71.2	4.7	4.2	64.2	61.5		61.8	61.5	
Level of Service	E	C		E	A	A	E	E		E	E	
Approach Delay (s)		25.4			4.9			63.0			61.6	
Approach LOS		C			A			E			E	

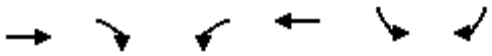
Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	1393	815	419	2174	374	1341						
Future Volume (vph)	1393	815	419	2174	374	1341						
Turn Type	NA	Free	Prot	NA	Prot	Free						
Protected Phases	4 5		2 3	2 3 4	1 6		1	2	3	4	5	6
Permitted Phases		Free				Free						
Detector Phase	4 5		2 3	2 3 4	1 6							
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	40.0	37.0	11.0	39.0	22.0
Total Split (%)							7%	25%	23%	7%	24%	14%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	43.0	160.0	70.0	81.0	26.0	160.0						
Actuated g/C Ratio	0.27	1.00	0.44	0.51	0.16	1.00						
v/c Ratio	0.75	0.56	0.31	0.93	0.73	1.12						
Control Delay	42.1	8.3	1.0	20.5	72.2	69.9						
Queue Delay	0.1	0.0	0.0	1.9	0.0	0.0						
Total Delay	42.3	8.3	1.0	22.4	72.2	69.9						
LOS	D	A	A	C	E	E						
Approach Delay	29.7			18.9								
Approach LOS	C			B								

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 105	
Control Type: Pretimed	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 36.1	Intersection LOS: D
Intersection Capacity Utilization 80.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd



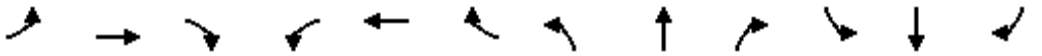
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1498	876	451	2338	402	1442
v/c Ratio	0.75	0.56	0.31	0.93	0.73	1.12
Control Delay	42.1	8.3	1.0	20.5	72.2	69.9
Queue Delay	0.1	0.0	0.0	1.9	0.0	0.0
Total Delay	42.3	8.3	1.0	22.4	72.2	69.9
Queue Length 50th (ft)	358	305	2	506	208	~327
Queue Length 95th (ft)	396	475	3	m501	270	#592
Internal Link Dist (ft)	1135			569		
Turn Bay Length (ft)		450			250	
Base Capacity (vph)	1988	1553	1473	2525	552	1291
Starvation Cap Reductn	0	0	0	93	0	0
Spillback Cap Reductn	53	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.56	0.31	0.96	0.73	1.12

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1393	815	419	2174	0	0	0	0	374	0	1341
Future Volume (vph)	0	1393	815	419	2174	0	0	0	0	374	0	1341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	4.0	7.0	7.0					7.0		4.0
Lane Util. Factor		0.81	1.00	0.97	0.91					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.70
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		7399	1553	3367	4988					3400		1291
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		7399	1553	3367	4988					3400		1291
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	1498	876	451	2338	0	0	0	0	402	0	1442
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1498	876	451	2338	0	0	0	0	402	0	1442
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	Free	Prot	NA					Prot		Free
Protected Phases		4 5		2 3	2 3 4					1 6		
Permitted Phases			Free									Free
Actuated Green, G (s)		43.0	160.0	70.0	81.0					26.0		160.0
Effective Green, g (s)		43.0	160.0	70.0	81.0					26.0		160.0
Actuated g/C Ratio		0.27	1.00	0.44	0.51					0.16		1.00
Clearance Time (s)												
Lane Grp Cap (vph)		1988	1553	1473	2525					552		1291
v/s Ratio Prot		0.20		0.13	0.47					0.12		
v/s Ratio Perm			0.56									c1.12
v/c Ratio		0.75	0.56	0.31	0.93					0.73		1.12
Uniform Delay, d1		53.6	0.0	29.2	36.7					63.6		80.0
Progression Factor		0.74	1.00	0.02	0.45					1.00		1.00
Incremental Delay, d2		2.3	1.3	0.4	3.7					8.2		63.6
Delay (s)		42.0	1.3	1.0	20.2					71.8		143.6
Level of Service		D	A	A	C					E		F
Approach Delay (s)		27.0			17.1			0.0			128.0	
Approach LOS		C			B			A			F	

Intersection Summary			
HCM 2000 Control Delay	49.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.51		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	842	925	1367	370	1226	315						
Future Volume (vph)	842	925	1367	370	1226	315						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	40.0	37.0	11.0	39.0	22.0
Total Split (%)							7%	25%	23%	7%	24%	14%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	54.0	65.0	44.0	92.0	41.0	81.0						
Actuated g/C Ratio	0.34	0.41	0.28	0.58	0.26	0.51						
v/c Ratio	0.77	0.48	0.70	0.42	1.03	0.35						
Control Delay	9.0	7.6	57.8	7.2	90.5	3.0						
Queue Delay	3.2	0.0	0.2	0.0	0.0	0.0						
Total Delay	12.1	7.6	57.9	7.2	90.5	3.0						
LOS	B	A	E	A	F	A						
Approach Delay		9.8	47.1									
Approach LOS		A	D									

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 105	
Control Type: Pretimed	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 41.8	Intersection LOS: D
Intersection Capacity Utilization 80.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: I-95 NB Ramp & Southern Blvd

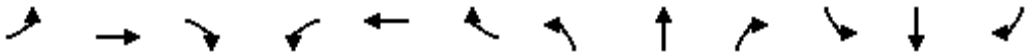
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	896	984	1454	394	1304	335
v/c Ratio	0.77	0.48	0.70	0.42	1.03	0.35
Control Delay	9.0	7.6	57.8	7.2	90.5	3.0
Queue Delay	3.2	0.0	0.2	0.0	0.0	0.0
Total Delay	12.1	7.6	57.9	7.2	90.5	3.0
Queue Length 50th (ft)	487	22	270	61	~515	0
Queue Length 95th (ft)	580	61	m310	m79	#609	51
Internal Link Dist (ft)		569	715			
Turn Bay Length (ft)				270	700	700
Base Capacity (vph)	1158	2065	2074	942	1266	959
Starvation Cap Reductn	169	0	0	0	0	0
Spillback Cap Reductn	0	0	114	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.48	0.74	0.42	1.03	0.35

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	842	925	0	0	1367	370	1226	0	315	0	0	0
Future Volume (vph)	842	925	0	0	1367	370	1226	0	315	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.94		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	5085			7544	1583	4942		1568			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	5085			7544	1583	4942		1568			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	896	984	0	0	1454	394	1304	0	335	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	32	0	0	165	0	0	0
Lane Group Flow (vph)	896	984	0	0	1454	362	1304	0	170	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	54.0	65.0			44.0	92.0	41.0		81.0			
Effective Green, g (s)	54.0	65.0			44.0	92.0	41.0		81.0			
Actuated g/C Ratio	0.34	0.41			0.28	0.58	0.26		0.51			
Clearance Time (s)												
Lane Grp Cap (vph)	1158	2065			2074	910	1266		793			
v/s Ratio Prot	c0.26	0.19			c0.19	0.23	c0.26		0.11			
v/s Ratio Perm												
v/c Ratio	0.77	0.48			0.70	0.40	1.03		0.21			
Uniform Delay, d1	47.5	35.0			52.1	18.7	59.5		21.9			
Progression Factor	0.12	0.20			1.09	0.43	1.00		1.00			
Incremental Delay, d2	3.3	0.5			1.0	0.6	33.3		0.6			
Delay (s)	8.9	7.6			57.6	8.8	92.8		22.5			
Level of Service	A	A			E	A	F		C			
Approach Delay (s)		8.2			47.2			78.4			0.0	
Approach LOS		A			D			E			A	

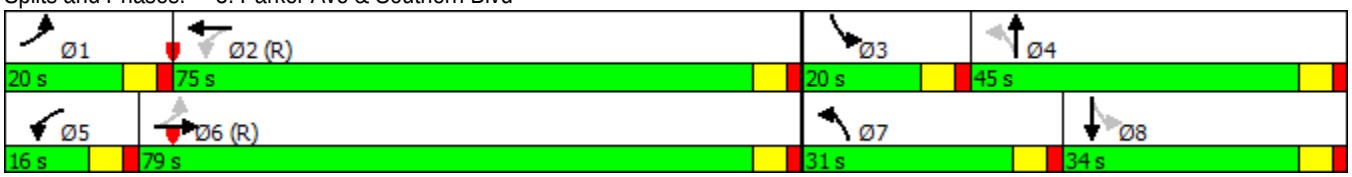
Intersection Summary			
HCM 2000 Control Delay	43.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

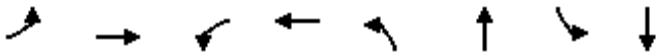
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	125	889	78	1300	257	200	99	248
Future Volume (vph)	125	889	78	1300	257	200	99	248
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6	5	2	7	4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	5	2	7	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	20.0	4.0	20.0	4.0	6.0	4.0	6.0
Minimum Split (s)	10.0	31.0	10.0	29.0	10.0	28.0	10.0	34.0
Total Split (s)	20.0	79.0	16.0	75.0	31.0	45.0	20.0	34.0
Total Split (%)	12.5%	49.4%	10.0%	46.9%	19.4%	28.1%	12.5%	21.3%
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	0.0
Total Lost Time (s)	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
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	87.0	73.0	79.0	69.0	59.0	39.0	42.0	28.0
Actuated g/C Ratio	0.54	0.46	0.49	0.43	0.37	0.24	0.26	0.18
v/c Ratio	0.66	0.74	0.40	0.92	0.76	0.34	0.30	0.68
Control Delay	83.3	14.9	24.4	33.3	52.5	45.9	37.5	53.7
Queue Delay	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0
Total Delay	83.3	14.9	24.4	34.2	52.5	45.9	37.5	53.7
LOS	F	B	C	C	D	D	D	D
Approach Delay		21.8		33.7		49.1		50.6
Approach LOS		C		C		D		D

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 30 (19%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 34.3	Intersection LOS: C
Intersection Capacity Utilization 90.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: Parker Ave & Southern Blvd

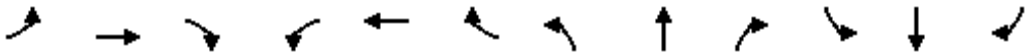




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	132	1174	82	1403	271	286	104	450
v/c Ratio	0.66	0.74	0.40	0.92	0.76	0.34	0.30	0.68
Control Delay	83.3	14.9	24.4	33.3	52.5	45.9	37.5	53.7
Queue Delay	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0
Total Delay	83.3	14.9	24.4	34.2	52.5	45.9	37.5	53.7
Queue Length 50th (ft)	85	433	28	264	211	117	73	184
Queue Length 95th (ft)	168	558	m56	#392	#300	163	121	248
Internal Link Dist (ft)		905		579		424		214
Turn Bay Length (ft)	230		150		240		120	
Base Capacity (vph)	201	1580	204	1521	356	850	342	661
Starvation Cap Reductn	0	0	0	27	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.74	0.40	0.94	0.76	0.34	0.30	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	889	226	78	1300	33	257	200	71	99	248	180
Future Volume (vph)	125	889	226	78	1300	33	257	200	71	99	248	180
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		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	1.00		1.00	0.96		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3432		1770	3526		1770	3400		1770	3316	
Flt Permitted	0.05	1.00		0.12	1.00		0.20	1.00		0.58	1.00	
Satd. Flow (perm)	102	3432		218	3526		377	3400		1074	3316	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	132	936	238	82	1368	35	271	211	75	104	261	189
RTOR Reduction (vph)	0	14	0	0	1	0	0	22	0	0	82	0
Lane Group Flow (vph)	132	1160	0	82	1402	0	271	264	0	104	368	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	87.0	73.0		79.0	69.0		59.0	39.0		42.0	28.0	
Effective Green, g (s)	87.0	73.0		79.0	69.0		59.0	39.0		42.0	28.0	
Actuated g/C Ratio	0.54	0.46		0.49	0.43		0.37	0.24		0.26	0.18	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	201	1565		204	1520		356	828		342	580	
v/s Ratio Prot	c0.06	c0.34		0.03	c0.40		c0.12	0.08		0.03	0.11	
v/s Ratio Perm	0.30			0.17			c0.16			0.05		
v/c Ratio	0.66	0.74		0.40	0.92		0.76	0.32		0.30	0.64	
Uniform Delay, d1	40.8	35.7		26.3	43.0		39.4	49.6		46.2	61.3	
Progression Factor	2.01	0.34		1.16	0.57		1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.3	2.9		4.3	8.4		14.2	1.0		2.3	5.2	
Delay (s)	96.5	15.1		34.8	32.8		53.7	50.6		48.5	66.5	
Level of Service	F	B		C	C		D	D		D	E	
Approach Delay (s)		23.3			32.9			52.1			63.1	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	119	865	117	1199	75	97	51	148	137
Future Volume (vph)	119	865	117	1199	75	97	51	148	137
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	7	4	3	8	
Permitted Phases	6		2		4		8		8
Detector Phase	1	6	5	2	7	4	3	8	8
Switch Phase									
Minimum Initial (s)	4.0	20.0	4.0	20.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	10.0	32.0	10.0	32.0	32.0
Total Split (s)	22.0	92.0	18.0	88.0	18.0	32.0	18.0	32.0	32.0
Total Split (%)	13.8%	57.5%	11.3%	55.0%	11.3%	20.0%	11.3%	20.0%	20.0%
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?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	102.0	86.0	94.0	82.0	38.0	26.0	38.0	26.0	26.0
Actuated g/C Ratio	0.64	0.54	0.59	0.51	0.24	0.16	0.24	0.16	0.16
v/c Ratio	0.44	0.53	0.36	0.71	0.28	0.50	0.19	0.52	0.48
Control Delay	31.6	7.8	14.1	32.5	47.1	62.5	45.4	68.1	43.8
Queue Delay	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	31.6	8.2	14.1	32.6	47.1	62.5	45.4	68.1	43.8
LOS	C	A	B	C	D	E	D	E	D
Approach Delay		10.8		31.0		57.2		54.8	
Approach LOS		B		C		E		D	

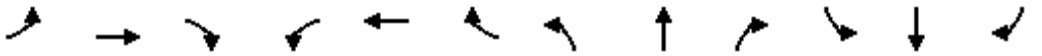
Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 39 (24%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 85	
Control Type: Pretimed	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 28.4	Intersection LOS: C
Intersection Capacity Utilization 72.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: Lake Ave & Southern Blvd

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	125	990	123	1281	79	149	54	156	144
v/c Ratio	0.44	0.53	0.36	0.71	0.28	0.50	0.19	0.52	0.48
Control Delay	31.6	7.8	14.1	32.5	47.1	62.5	45.4	68.1	43.8
Queue Delay	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	31.6	8.2	14.1	32.6	47.1	62.5	45.4	68.1	43.8
Queue Length 50th (ft)	27	75	46	528	63	132	43	151	87
Queue Length 95th (ft)	m80	92	73	613	110	211	81	231	163
Internal Link Dist (ft)		579		615		308		516	
Turn Bay Length (ft)	140		140		100		120		120
Base Capacity (vph)	281	1883	340	1810	280	298	286	302	301
Starvation Cap Reductn	0	374	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	50	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.66	0.36	0.73	0.28	0.50	0.19	0.52	0.48

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	865	75	117	1199	18	75	97	45	51	148	137
Future Volume (vph)	119	865	75	117	1199	18	75	97	45	51	148	137
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		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3497		1770	3531		1770	1775		1770	1863	1583
Flt Permitted	0.10	1.00		0.22	1.00		0.49	1.00		0.51	1.00	1.00
Satd. Flow (perm)	193	3497		407	3531		909	1775		944	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	911	79	123	1262	19	79	102	47	54	156	144
RTOR Reduction (vph)	0	4	0	0	0	0	0	10	0	0	0	44
Lane Group Flow (vph)	125	986	0	123	1281	0	79	139	0	54	156	100
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		8
Actuated Green, G (s)	102.0	86.0		94.0	82.0		38.0	26.0		38.0	26.0	26.0
Effective Green, g (s)	102.0	86.0		94.0	82.0		38.0	26.0		38.0	26.0	26.0
Actuated g/C Ratio	0.64	0.54		0.59	0.51		0.24	0.16		0.24	0.16	0.16
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	280	1879		341	1809		280	288		286	302	257
v/s Ratio Prot	c0.04	c0.28		0.03	c0.36		c0.02	0.08		0.01	c0.08	
v/s Ratio Perm	0.24			0.18			0.05			0.03		0.06
v/c Ratio	0.45	0.52		0.36	0.71		0.28	0.48		0.19	0.52	0.39
Uniform Delay, d1	20.4	23.8		16.3	29.8		48.8	60.9		48.1	61.3	59.9
Progression Factor	2.50	0.30		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.7	0.8		2.9	2.4		2.5	5.7		1.5	6.2	4.4
Delay (s)	54.6	7.8		19.2	32.2		51.3	66.6		49.6	67.4	64.2
Level of Service	D	A		B	C		D	E		D	E	E
Approach Delay (s)		13.1			31.1			61.3			63.4	
Approach LOS		B			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	8	2164	4	3508	3	20	1	33	2
Future Volume (vph)	8	2164	4	3508	3	20	1	33	2
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	1	6	5	2			4		8
Permitted Phases					2	4		8	
Detector Phase	1	6	5	2	2	4	4	8	8
Switch Phase									
Minimum Initial (s)	4.0	18.0	4.0	20.0	20.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.0	24.0	10.0	29.0	29.0	15.0	15.0	15.0	15.0
Total Split (s)	20.0	111.0	20.0	111.0	111.0	29.0	29.0	29.0	29.0
Total Split (%)	12.5%	69.4%	12.5%	69.4%	69.4%	18.1%	18.1%	18.1%	18.1%
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	5.0	5.0	5.0	5.0
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	9.0	9.0	9.0	9.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	14.0	105.0	14.0	105.0	105.0	20.0	20.0	20.0	20.0
Actuated g/C Ratio	0.09	0.66	0.09	0.66	0.66	0.12	0.12	0.12	0.12
v/c Ratio	0.06	0.56	0.03	0.90	0.00	0.12	0.06	0.20	0.10
Control Delay	68.1	15.6	70.5	11.0	7.0	64.3	29.0	66.3	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	15.6	70.5	11.0	7.0	64.3	29.0	66.3	26.0
LOS	E	B	E	B	A	E	C	E	C
Approach Delay		15.8		11.1			50.8		50.7
Approach LOS		B		B			D		D

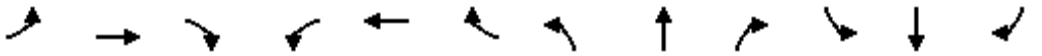
Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 63 (39%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 80	
Control Type: Pretimed	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 13.5	Intersection LOS: B
Intersection Capacity Utilization 71.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Gem Lake Dr & Southern Blvd

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	9	2314	4	3732	3	21	13	35	22
v/c Ratio	0.06	0.56	0.03	0.90	0.00	0.12	0.06	0.20	0.10
Control Delay	68.1	15.6	70.5	11.0	7.0	64.3	29.0	66.3	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	15.6	70.5	11.0	7.0	64.3	29.0	66.3	26.0
Queue Length 50th (ft)	9	362	5	278	1	20	1	33	2
Queue Length 95th (ft)	29	389	m5	m253	m1	49	24	72	31
Internal Link Dist (ft)		843		597			340		400
Turn Bay Length (ft)	700		180		450	120		120	
Base Capacity (vph)	151	4120	151	4124	1019	171	209	172	216
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.56	0.03	0.90	0.00	0.12	0.06	0.20	0.10

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	2164	11	4	3508	3	20	1	11	33	2	19
Future Volume (vph)	8	2164	11	4	3508	3	20	1	11	33	2	19
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	9.0	9.0		9.0	9.0	
Lane Util. Factor	1.00	0.86		1.00	0.86	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	6280		1736	6285	1553	1752	1589		1752	1593	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.74	1.00		0.75	1.00	
Satd. Flow (perm)	1736	6280		1736	6285	1553	1371	1589		1382	1593	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	2302	12	4	3732	3	21	1	12	35	2	20
RTOR Reduction (vph)	0	0	0	0	0	0	0	11	0	0	18	0
Lane Group Flow (vph)	9	2314	0	4	3732	3	21	3	0	35	5	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases						2	4			8		
Actuated Green, G (s)	14.0	105.0		14.0	105.0	105.0	20.0	20.0		20.0	20.0	
Effective Green, g (s)	14.0	105.0		14.0	105.0	105.0	20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.09	0.66		0.09	0.66	0.66	0.12	0.12		0.12	0.12	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	9.0	9.0		9.0	9.0	
Lane Grp Cap (vph)	151	4121		151	4124	1019	171	198		172	199	
v/s Ratio Prot	c0.01	0.37		0.00	c0.59			0.00			0.00	
v/s Ratio Perm						0.00	0.02			c0.03		
v/c Ratio	0.06	0.56		0.03	0.90	0.00	0.12	0.01		0.20	0.02	
Uniform Delay, d1	67.0	15.0		66.8	23.3	9.5	62.2	61.3		62.8	61.4	
Progression Factor	1.00	1.00		1.05	0.43	0.72	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.6		0.1	0.9	0.0	1.5	0.1		2.7	0.2	
Delay (s)	67.7	15.5		70.2	10.9	6.8	63.7	61.5		65.5	61.6	
Level of Service	E	B		E	B	A	E	E		E	E	
Approach Delay (s)		15.7			10.9			62.8			64.0	
Approach LOS		B			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCS

Freeway Analyses

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	0_South of Forest Ent
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	8944	veh/h
Peak-hour factor, PHF	0.96	
Peak 15-min volume, v15	2329	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2364	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2364	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	54.3	mi/h
Number of lanes, N	4	
Density, D	43.5	pc/mi/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	0_South of Forest Ent
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6697	veh/h
Peak-hour factor, PHF	0.97	
Peak 15-min volume, v15	1726	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1752	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1752	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	66.5	mi/h
Number of lanes, N	4	
Density, D	26.4	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	1_Forest Ent_Southern Ext
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	10420	veh/h
Peak-hour factor, PHF	0.96	
Peak 15-min volume, v15	2714	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1836	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	6	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1836	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	65.3	mi/h
Number of lanes, N	6	
Density, D	28.1	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	1_Forest Ent_Southern Ext
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	7611	veh/h
Peak-hour factor, PHF	0.97	
Peak 15-min volume, v15	1962	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1327	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	6	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1327	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.8	mi/h
Number of lanes, N	6	
Density, D	19.0	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	2_Exit to Southern/Exit to Bel
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	9203	veh/h
Peak-hour factor, PHF	0.96	
Peak 15-min volume, v15	2397	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1946	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1946	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	63.5	mi/h
Number of lanes, N	5	
Density, D	30.6	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	2_Exit to Southern/Exit to Bel
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6070	veh/h
Peak-hour factor, PHF	0.97	
Peak 15-min volume, v15	1564	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1270	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1270	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.9	mi/h
Number of lanes, N	5	
Density, D	18.2	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	4_Ext to Bel/Ent from Southern
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	7660	veh/h
Peak-hour factor, PHF	0.96	
Peak 15-min volume, v15	1995	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2025	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2025	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	62.1	mi/h
Number of lanes, N	4	
Density, D	32.6	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	4_Ext to Bel/Ent from Southern
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	5202	veh/h
Peak-hour factor, PHF	0.97	
Peak 15-min volume, v15	1341	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1361	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1361	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.7	mi/h
Number of lanes, N	4	
Density, D	19.5	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	6_Ent frm Southern/Ent frm Bel
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	9502	veh/h
Peak-hour factor, PHF	0.96	
Peak 15-min volume, v15	2474	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2009	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2009	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	62.4	mi/h
Number of lanes, N	5	
Density, D	32.2	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	6_Ent frm Southern/Ent frm Bel
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6414	veh/h
Peak-hour factor, PHF	0.97	
Peak 15-min volume, v15	1653	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1342	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1342	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.8	mi/h
Number of lanes, N	5	
Density, D	19.2	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	6b_Entfrm Southern/Ent frm Bel
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	9502	veh/h
Peak-hour factor, PHF	0.96	
Peak 15-min volume, v15	2474	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2512	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2512	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	50.0	mi/h
Number of lanes, N	4	
Density, D	50.2	pc/mi/ln
Level of service, LOS	F	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	6b_Entfrm Southern/Ent frm Bel
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6414	veh/h
Peak-hour factor, PHF	0.97	
Peak 15-min volume, v15	1653	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1678	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1678	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	67.3	mi/h
Number of lanes, N	4	
Density, D	24.9	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Southbound
From/To:	7_Exit to Bel/Exit to Southern
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6057	veh/h
Peak-hour factor, PHF	0.96	
Peak 15-min volume, v15	1577	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1601	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1601	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	68.1	mi/h
Number of lanes, N	4	
Density, D	23.5	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Southbound
From/To:	7_Exit to Bel/Exit to Southern
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	7242	veh/h
Peak-hour factor, PHF	0.97	
Peak 15-min volume, v15	1866	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1894	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1894	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	64.4	mi/h
Number of lanes, N	4	
Density, D	29.4	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Southbound
From/To:	9_Exit to Southern_Ent frm Bel
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	4848	veh/h
Peak-hour factor, PHF	0.96	
Peak 15-min volume, v15	1263	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1281	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1281	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.9	mi/h
Number of lanes, N	4	
Density, D	18.3	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Southbound
From/To:	9_Exit to Southern_Ent frm Bel
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	5527	veh/h
Peak-hour factor, PHF	0.97	
Peak 15-min volume, v15	1424	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1446	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1446	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.3	mi/h
Number of lanes, N	4	
Density, D	20.9	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Southbound
From/To:	11_Ent frm Bel_Entfrm Southern
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	5627	veh/h
Peak-hour factor, PHF	0.96	
Peak 15-min volume, v15	1465	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1487	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1487	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.0	mi/h
Number of lanes, N	4	
Density, D	21.5	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Southbound
From/To:	11_Ent frm Bel_Entfrm Southern
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6943	veh/h
Peak-hour factor, PHF	0.97	
Peak 15-min volume, v15	1789	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1816	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1816	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	65.6	mi/h
Number of lanes, N	4	
Density, D	27.7	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Southbound
From/To:	13_Ent frm South_Exit to Fores
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	7221	veh/h
Peak-hour factor, PHF	0.96	
Peak 15-min volume, v15	1880	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1527	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1527	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	68.8	mi/h
Number of lanes, N	5	
Density, D	22.2	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Southbound
From/To:	13_Ent frm South_Exit to Fores
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	8177	veh/h
Peak-hour factor, PHF	0.97	
Peak 15-min volume, v15	2107	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1711	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1711	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	67.0	mi/h
Number of lanes, N	5	
Density, D	25.5	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Southbound
From/To:	14_South of Forest Exit
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6367	veh/h
Peak-hour factor, PHF	0.96	
Peak 15-min volume, v15	1658	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1683	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1683	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	67.3	mi/h
Number of lanes, N	4	
Density, D	25.0	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Southbound
From/To:	14_South of Forest Exit
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6904	veh/h
Peak-hour factor, PHF	0.97	
Peak 15-min volume, v15	1779	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1806	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1806	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	65.7	mi/h
Number of lanes, N	4	
Density, D	27.5	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date performed:	11/21/2016
Analysis time period:	AM Peak
Freeway/Dir of Travel:	I-95 Southbound
Junction:	Exit to Southern Blvd
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.4	mph
Volume on freeway	6057	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1209	vph
Length of first accel/decel lane	0	ft
Length of second accel/decel lane	1500	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6057	1209		vph
Peak-hour factor, PHF	0.96	0.96		
Peak 15-min volume, v15	1577	315		v
Trucks and buses	3	3		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.985	0.985	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6404	1278	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.260 Using Equation 0

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2611 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6404	9600	No
$v_{FO} = v_F - v_R$	5126	9600	No
v_R	1278	4000	No
v_3 or v_{av34}	1896 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2611 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2611	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v_R - 0.009 L_{12}$ = 13.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	D_S = 0.543	
Space mean speed in ramp influence area,	S_R = 55.0	mph
Space mean speed in outer lanes,	S_0 = 73.7	mph
Space mean speed for all vehicles,	S = 64.7	mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date performed:	11/21/2016
Analysis time period:	PM Peak
Freeway/Dir of Travel:	I-95 Southbound
Junction:	Exit to Southern Blvd
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV

Description: I-95 at SR 80/Southern Blvd Interchange PD&E Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.4	mph
Volume on freeway	7242	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1715	vph
Length of first accel/decel lane	0	ft
Length of second accel/decel lane	1500	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7242	1715		vph
Peak-hour factor, PHF	0.97	0.97		
Peak 15-min volume, v15	1866	442		v
Trucks and buses	3	3		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.985	0.985	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7578	1795	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.260 Using Equation 0

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3299 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	7578	9600	No
$v_{FO} = v_F - v_R$	5783	9600	No
v_R	1795	4000	No
v_3 or v_{av34}	2139 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 3299 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3299	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v_R - 0.009 L_{12}$ = 19.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D_S = 0.590

Space mean speed in ramp influence area, S_R = 53.7 mph

Space mean speed in outer lanes, S_0 = 72.8 mph

Space mean speed for all vehicles, S = 63.0 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date performed:	11/21/2016
Analysis time period:	AM Peak
Freeway/Dir of Travel:	I-95 Southbound
Junction:	Entrance from Belvedere Rd
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.4	mph
Volume on freeway	4848	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	2	
Free-flow speed on ramp	45.0	mph
Volume on ramp	779	vph
Length of first accel/decel lane	850	ft
Length of second accel/decel lane	1450	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4848	779		vph
Peak-hour factor, PHF	0.96	0.96		
Peak 15-min volume, v15	1263	203		v
Trucks and buses	3	3		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.985	0.985	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5126	824	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 0.209 Using Equation 0

$v_{12} = v_F (P_{FM})$ = 1071 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	5950	9600	No
v_3 or v_{av34}	2027 pc/h	(Equation 13-14 or 13-17)	

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12} /2 Yes

If yes, v_{12A} = 2050 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{12A}	2874	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 7.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence A

Speed Estimation

Intermediate speed variable,	M_S = 0.107	
Space mean speed in ramp influence area,	S_R = 67.4	mph
Space mean speed in outer lanes,	S_0 = 66.7	mph
Space mean speed for all vehicles,	S = 67.0	mph

HCS 2010: Freeway Merge and Diverge Segments Release 6.90

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date performed:	11/21/2016
Analysis time period:	PM Peak
Freeway/Dir of Travel:	I-95 Southbound
Junction:	Entrance from Belvedere Rd
Jurisdiction:	
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.4	mph
Volume on freeway	5527	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	2	
Free-flow speed on ramp	45.0	mph
Volume on ramp	1416	vph
Length of first accel/decel lane	850	ft
Length of second accel/decel lane	1450	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5527	1416		vph
Peak-hour factor, PHF	0.97	0.97		
Peak 15-min volume, v15	1424	365		v
Trucks and buses	3	3		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.985	0.985	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5783	1482	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 0.209 Using Equation 0

$v_{12} = v_F (P_{FM})$ = 1209 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	7265	9600	No
v_3 or v_{av34}	2287 pc/h	(Equation 13-14 or 13-17)	

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12} /2 Yes

If yes, v_{12A} = 2313 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{12A}	3795	4600	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, v_{12} - 0.00627\, L_A$ = 14.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.211	
Space mean speed in ramp influence area,	S_R = 64.4	mph
Space mean speed in outer lanes,	S_0 = 66.0	mph
Space mean speed for all vehicles,	S = 65.1	mph

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	I-95 Northbound
Weaving Location:	Btwn Forest Hill and Southern
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	6	ln
Weaving segment length, LS	3900	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	7887	1316	1057	160	veh/h
Peak hour factor, PHF	0.96	0.96	0.96	0.96	
Peak 15-min volume, v15	2054	343	275	42	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	8339	1391	1118	169	pc/h

Volume ratio, VR 0.228

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	1118	lc/h
Weaving lane changes, LCW		lc/h
Non-weaving vehicle index, INW		
Non-weaving lane change, LCNW		lc/h
Total lane changes, LCALL		lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	
Average weaving speed, SW	mi/h
Average non-weaving speed, SNW	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	mi/h
Weaving segment density, D	pc/mi/ln
Level of service, LOS	
Weaving segment v/c ratio	
Weaving segment flow rate, v	veh/h
Weaving segment capacity, cW	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	3256	3900	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400		c
		Maximum	Analyzed	
v/c ratio		1.00		d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	I-95 Northbound
Weaving Location:	Btwn Forest Hill and Southern
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	6	ln
Weaving segment length, LS	3900	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	5326	744	1371	170	veh/h
Peak hour factor, PHF	0.97	0.97	0.97	0.97	
Peak 15-min volume, v15	1373	192	353	44	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	5573	779	1435	178	pc/h

Volume ratio, VR 0.278

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	1435	lc/h
Weaving lane changes, LCW		lc/h
Non-weaving vehicle index, INW		
Non-weaving lane change, LCNW		lc/h
Total lane changes, LCALL		lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	
Average weaving speed, SW	mi/h
Average non-weaving speed, SNW	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	mi/h
Weaving segment density, D	pc/mi/ln
Level of service, LOS	
Weaving segment v/c ratio	
Weaving segment flow rate, v	veh/h
Weaving segment capacity, cW	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	3783	3900	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400		c
		Maximum	Analyzed	
v/c ratio		1.00		d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	I-95 Southbound
Weaving Location:	Btwn Southern/Forest Hill
Analysis Year:	Existing 2015 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	5	ln
Weaving segment length, LS	4300	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	4943	1424	684	170	veh/h
Peak hour factor, PHF	0.96	0.96	0.96	0.96	
Peak 15-min volume, v15	1287	371	178	44	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	5226	1506	723	180	pc/h

Volume ratio, VR	0.292	

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	723	lc/h
Weaving lane changes, LCW		lc/h
Non-weaving vehicle index, INW		
Non-weaving lane change, LCNW		lc/h
Total lane changes, LCALL		lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	
Average weaving speed, SW	mi/h
Average non-weaving speed, SNW	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	mi/h
Weaving segment density, D	pc/mi/ln
Level of service, LOS	
Weaving segment v/c ratio	
Weaving segment flow rate, v	veh/h
Weaving segment capacity, cW	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	3932	4300	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400		c
		Maximum	Analyzed	
v/c ratio		1.00		d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	I-95 Southbound
Weaving Location:	Btwn Southern/Forest Hill
Analysis Year:	Existing 2015
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	5	ln
Weaving segment length, LS	4300	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	5840	1064	1103	170	veh/h
Peak hour factor, PHF	0.97	0.97	0.97	0.97	
Peak 15-min volume, v15	1505	274	284	44	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	6111	1113	1154	178	pc/h

Volume ratio, VR 0.265

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	1154	lc/h
Weaving lane changes, LCW		lc/h
Non-weaving vehicle index, INW		
Non-weaving lane change, LCNW		lc/h
Total lane changes, LCALL		lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	
Average weaving speed, SW	mi/h
Average non-weaving speed, SNW	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	mi/h
Weaving segment density, D	pc/mi/ln
Level of service, LOS	
Weaving segment v/c ratio	
Weaving segment flow rate, v	veh/h
Weaving segment capacity, cW	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	3645	4300	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400		c
		Maximum	Analyzed	
v/c ratio		1.00		d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

Capacity Check for Major Merge:

I-95 Northbound Entrance from Forest Hill Blvd

Assumed Major Diverge Capacity per Freeway Segment (based on HCM 2010 Exhibit 13-8):

Freeway Segment Free-Flow Speed (mph)	Capacity (pc/h)				
	2-Lanes	3-Lanes	4-Lanes	5-Lanes	6-Lanes
≥ 70	4800	7200	9600	12000	14400
65	4700	7050	9400	11750	14100
60	4600	6900	9200	11500	13800
55	4500	6750	9000	11250	13500

Assumed Major Diverge Capacity per Ramp Segment (based on HCM 2010 Exhibit 13-10):

Ramp Free-Flow Speed (mph)	Capacity of Ramp Roadway	
	Single Lane Ramp	Two-Lane Ramp
>50	2200	4400
>40-50	2100	4200
>30-40	2000	4000
≥ 20-30	1900	3800
<20	1800	3600

Existing 2015 AM

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	8944	70.4	4	3.0%	0.96	1.5	0.985	1.00	9459	9600	No	0.99
Merging[2]	1476	45	2	3.0%	0.96	1.5	0.985	1.00	1561	4200	No	0.37
Downstream[1]	10420	70.4	6	3.0%	0.96	1.5	0.985	1.00	11020	14400	No	0.77

Existing 2015 PM

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	6679	70.4	4	3.0%	0.97	1.5	0.985	1.00	6991	9600	No	0.73
Merging[2]	914	45	2	3.0%	0.97	1.5	0.985	1.00	957	4200	No	0.23
Downstream[1]	7611	70.4	6	3.0%	0.97	1.5	0.985	1.00	7966	14400	No	0.55

[1]Capacity based on Exhibit 13-8 (HCM 2010)
[2]Capacity based on Exhibit 13-10 (HCM 2010)

Capacity Check for Major Diverge:

I-95 Northbound Exit Ramp to Southern Blvd

Assumed Major Diverge Capacity per Freeway Segment (based on HCM 2010 Exhibit 13-8):

Freeway Segment Free-Flow Speed (mph)	Capacity (pc/h)				
	2-Lanes	3-Lanes	4-Lanes	5-Lanes	6-Lanes
≥ 70	4800	7200	9600	12000	14400
65	4700	7050	9400	11750	14100
60	4600	6900	9200	11500	13800
55	4500	6750	9000	11250	13500

Assumed Major Diverge Capacity per Ramp Segment (based on HCM 2010 Exhibit 13-10):

Ramp Free-Flow Speed (mph)	Capacity of Ramp Roadway	
	Single Lane Ramp	Two-Lane Ramp
>50	2200	4400
>40-50	2100	4200
>30-40	2000	4000
≥ 20-30	1900	3800
<20	1800	3600

Existing 2015 AM

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	10420	70.4	6	3.0%	0.96	1.5	0.985	1.00	11020	14400	No	0.77
Diverging[2]	1217	35	2	3.0%	0.96	1.5	0.985	1.00	1288	4000	No	0.32
Downstream[1]	9203	70.4	5	3.0%	0.96	1.5	0.985	1.00	9733	12000	No	0.81

Existing 2015 PM

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	7611	70.4	6	3.0%	0.97	1.5	0.985	1.00	7966	14400	No	0.55
Diverging[2]	1541	35	2	3.0%	0.97	1.5	0.985	1.00	1613	4000	No	0.40
Downstream[1]	6070	70.4	5	3.0%	0.97	1.5	0.985	1.00	6354	12000	No	0.53

[1]Capacity based on Exhibit 13-8 (HCM 2010)
[2]Capacity based on Exhibit 13-10 (HCM 2010)

Capacity Check for Major Diverge:

I-95 Northbound Exit Ramp to Belvedere Road

Assumed Major Diverge Capacity per Freeway Segment (based on HCM 2010 Exhibit 13-8):

Freeway Segment Free-Flow Speed (mph)	Capacity (pc/h)				
	2-Lanes	3-Lanes	4-Lanes	5-Lanes	6-Lanes
≥ 70	4800	7200	9600	12000	14400
65	4700	7050	9400	11750	14100
60	4600	6900	9200	11500	13800
55	4500	6750	9000	11250	13500

Assumed Major Diverge Capacity per Ramp Segment (based on HCM 2010 Exhibit 13-10):

Ramp Free-Flow Speed (mph)	Capacity of Ramp Roadway	
	Single Lane Ramp	Two-Lane Ramp
>50	2200	4400
>40-50	2100	4200
>30-40	2000	4000
≥ 20-30	1900	3800
<20	1800	3600

Existing 2015 AM

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	9203	70.4	5	3.0%	0.96	1.5	0.985	1.00	9733	12000	No	0.81
Diverging[2]	1543	40	2	3.0%	0.96	1.5	0.985	1.00	1632	4000	No	0.41
Downstream[1]	7660	70.4	4	3.0%	0.96	1.5	0.985	1.00	8101	9600	No	0.84

Existing 2015 PM

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	6070	70.4	5	3.0%	0.97	1.5	0.985	1.00	6354	12000	No	0.53
Diverging[2]	868	40	2	3.0%	0.97	1.5	0.985	1.00	909	4000	No	0.23
Downstream[1]	5202	70.4	4	3.0%	0.97	1.5	0.985	1.00	5445	9600	No	0.57

[1]Capacity based on Exhibit 13-8 (HCM 2010)

[2]Capacity based on Exhibit 13-10 (HCM 2010)

Capacity Check for Major Merge:

I-95 Northbound Entrance from Southern Blvd

Assumed Major Diverge Capacity per Freeway Segment (based on HCM 2010 Exhibit 13-8):

Freeway Segment Free-Flow Speed (mph)	Capacity (pc/h)				
	2-Lanes	3-Lanes	4-Lanes	5-Lanes	6-Lanes
≥ 70	4800	7200	9600	12000	14400
65	4700	7050	9400	11750	14100
60	4600	6900	9200	11500	13800
55	4500	6750	9000	11250	13500

Assumed Major Diverge Capacity per Ramp Segment (based on HCM 2010 Exhibit 13-10):

Ramp Free-Flow Speed (mph)	Capacity of Ramp Roadway	
	Single Lane Ramp	Two-Lane Ramp
>50	2200	4400
>40-50	2100	4200
>30-40	2000	4000
≥ 20-30	1900	3800
<20	1800	3600

Existing 2015 AM

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	7660	70.4	4	3.0%	0.96	1.5	0.985	1.00	8101	9600	No	0.84
Merging[2]	1842	40	2	3.0%	0.96	1.5	0.985	1.00	1948	4000	No	0.49
Downstream[1]	9502	70.4	4	3.0%	0.96	1.5	0.985	1.00	10049	9600	Yes	1.05

Existing 2015 PM

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	5202	70.4	4	3.0%	0.97	1.5	0.985	1.00	5445	9600	No	0.57
Merging[2]	1212	40	2	3.0%	0.97	1.5	0.985	1.00	1269	4000	No	0.32
Downstream[1]	6414	70.4	4	3.0%	0.97	1.5	0.985	1.00	6714	9600	No	0.70

[1]Capacity based on Exhibit 13-8 (HCM 2010)

[2]Capacity based on Exhibit 13-10 (HCM 2010)

Capacity Check for Major Merge:

I-95 Southbound Entrance from Southern Blvd

Assumed Major Diverge Capacity per Freeway Segment (based on HCM 2010 Exhibit 13-8):

Freeway Segment Free-Flow Speed (mph)	Capacity (pc/h)				
	2-Lanes	3-Lanes	4-Lanes	5-Lanes	6-Lanes
≥ 70	4800	7200	9600	12000	14400
65	4700	7050	9400	11750	14100
60	4600	6900	9200	11500	13800
55	4500	6750	9000	11250	13500

Assumed Major Diverge Capacity per Ramp Segment (based on HCM 2010 Exhibit 13-10):

Ramp Free-Flow Speed (mph)	Capacity of Ramp Roadway	
	Single Lane Ramp	Two-Lane Ramp
>50	2200	4400
>40-50	2100	4200
>30-40	2000	4000
≥ 20-30	1900	3800
<20	1800	3600

Existing 2015 AM

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	5627	70.4	4	3.0%	0.96	1.5	0.985	1.00	5951	9600	No	0.62
Merging[2]	1594	45	1	3.0%	0.96	1.5	0.985	1.00	1686	2100	No	0.80
Downstream[1]	7221	70.4	5	3.0%	0.96	1.5	0.985	1.00	7637	12000	No	0.64

Existing 2015 PM

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	6943	70.4	4	3.0%	0.97	1.5	0.985	1.00	7267	9600	No	0.76
Merging[2]	1234	45	1	3.0%	0.97	1.5	0.985	1.00	1292	2100	No	0.62
Downstream[1]	8177	70.4	5	3.0%	0.97	1.5	0.985	1.00	8559	12000	No	0.71

Capacity Check for Major Diverge:

I-95 Southbound Exit Ramp to Forest Hill Blvd

Assumed Major Diverge Capacity per Freeway Segment (based on HCM 2010 Exhibit 13-8):

Freeway Segment Free-Flow Speed (mph)	Capacity (pc/h)				
	2-Lanes	3-Lanes	4-Lanes	5-Lanes	6-Lanes
≥ 70	4800	7200	9600	12000	14400
65	4700	7050	9400	11750	14100
60	4600	6900	9200	11500	13800
55	4500	6750	9000	11250	13500

Assumed Major Diverge Capacity per Ramp Segment (based on HCM 2010 Exhibit 13-10):

Ramp Free-Flow Speed (mph)	Capacity of Ramp Roadway	
	Single Lane Ramp	Two-Lane Ramp
>50	2200	4400
>40-50	2100	4200
>30-40	2000	4000
≥ 20-30	1900	3800
<20	1800	3600

Existing 2015 AM

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	7221	70.4	5	3.0%	0.96	1.5	0.985	1.00	7637	12000	No	0.64
Diverging[2]	854	35	2	3.0%	0.96	1.5	0.985	1.00	904	4000	No	0.23
Downstream[1]	6367	70.4	4	3.0%	0.96	1.5	0.985	1.00	6734	9600	No	0.70

Existing 2015 PM

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	8177	70.4	5	3.0%	0.97	1.5	0.985	1.00	8559	12000	No	0.71
Diverging[2]	1273	35	2	3.0%	0.97	1.5	0.985	1.00	1333	4000	No	0.33
Downstream[1]	6904	70.4	4	3.0%	0.97	1.5	0.985	1.00	7226	9600	No	0.75

[1]Capacity based on Exhibit 13-8 (HCM 2010)

[2]Capacity based on Exhibit 13-10 (HCM 2010)

APPENDIX E

LOS Analyses – No Build Alternative

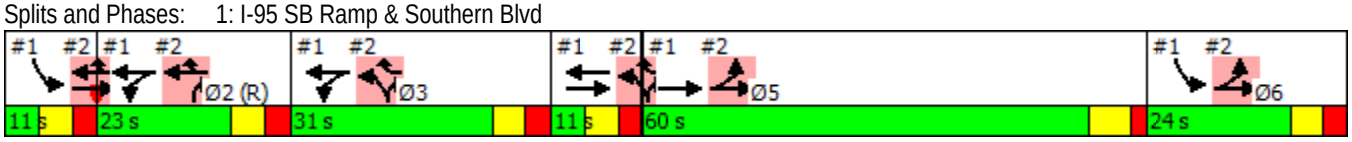
Synchro

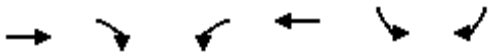
Intersection Analyses

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	2392	1365	343	1425	377	862						
Future Volume (vph)	2392	1365	343	1425	377	862						
Turn Type	NA	Free	Prot	NA	Prot	Free						
Protected Phases	4 5		2 3	2 3 4	1 6		1	2	3	4	5	6
Permitted Phases		Free				Free						
Detector Phase	4 5		2 3	2 3 4	1 6							
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	23.0	31.0	11.0	60.0	24.0
Total Split (%)							7%	14%	19%	7%	38%	15%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	64.0	160.0	47.0	58.0	28.0	160.0						
Actuated g/C Ratio	0.40	1.00	0.29	0.36	0.18	1.00						
v/c Ratio	0.85	1.05	0.37	0.83	0.67	0.58						
Control Delay	24.6	57.9	1.1	16.2	67.9	1.6						
Queue Delay	1.2	0.0	0.0	0.0	0.0	0.0						
Total Delay	25.8	57.9	1.1	16.2	67.9	1.6						
LOS	C	E	A	B	E	A						
Approach Delay	37.5			13.3								
Approach LOS	D			B								

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 81 (51%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 105	
Control Type: Pretimed	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 28.3	Intersection LOS: C
Intersection Capacity Utilization 100.7%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd



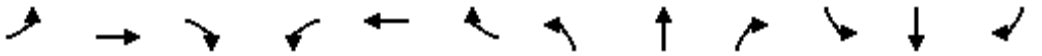


Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	2518	1437	361	1500	397	907
v/c Ratio	0.85	1.05	0.37	0.83	0.67	0.58
Control Delay	24.6	57.9	1.1	16.2	67.9	1.6
Queue Delay	1.2	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	57.9	1.1	16.2	67.9	1.6
Queue Length 50th (ft)	520	~1149	0	128	202	0
Queue Length 95th (ft)	537	#1368	0	356	262	0
Internal Link Dist (ft)	1135			569		
Turn Bay Length (ft)						250
Base Capacity (vph)	2959	1370	989	1808	595	1568
Starvation Cap Reductn	0	0	0	7	0	0
Spillback Cap Reductn	232	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.92	1.05	0.37	0.83	0.67	0.58

Intersection Summary

~ 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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2392	1365	343	1425	0	0	0	0	377	0	862
Future Volume (vph)	0	2392	1365	343	1425	0	0	0	0	377	0	862
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	4.0	7.0	7.0					7.0		4.0
Lane Util. Factor		0.81	1.00	0.97	0.91					0.97		1.00
Frt		1.00	0.75	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		7399	1370	3367	4988					3400		1568
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		7399	1370	3367	4988					3400		1568
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2518	1437	361	1500	0	0	0	0	397	0	907
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2518	1437	361	1500	0	0	0	0	397	0	907
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	Free	Prot	NA					Prot		Free
Protected Phases		4 5		2 3	2 3 4					1 6		
Permitted Phases			Free									Free
Actuated Green, G (s)		64.0	160.0	47.0	58.0					28.0		160.0
Effective Green, g (s)		64.0	160.0	47.0	58.0					28.0		160.0
Actuated g/C Ratio		0.40	1.00	0.29	0.36					0.18		1.00
Clearance Time (s)												
Lane Grp Cap (vph)		2959	1370	989	1808					595		1568
v/s Ratio Prot		0.34		0.11	0.30					0.12		
v/s Ratio Perm			c1.05									0.58
v/c Ratio		0.85	1.05	0.37	0.83					0.67		0.58
Uniform Delay, d1		43.7	80.0	44.7	46.5					61.6		0.0
Progression Factor		0.53	1.00	0.01	0.29					1.00		1.00
Incremental Delay, d2		1.3	30.1	0.7	2.6					5.8		1.6
Delay (s)		24.5	110.1	1.1	16.1					67.5		1.6
Level of Service		C	F	A	B					E		A
Approach Delay (s)		55.6			13.2			0.0			21.6	
Approach LOS		E			B			A			C	

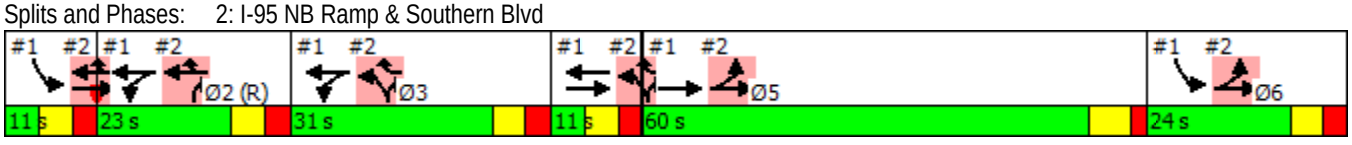
Intersection Summary			
HCM 2000 Control Delay	38.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	100.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	1460	1309	876	450	892	441						
Future Volume (vph)	1460	1309	876	450	892	441						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	23.0	31.0	11.0	60.0	24.0
Total Split (%)							7%	14%	19%	7%	38%	15%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	77.0	88.0	27.0	69.0	35.0	58.0						
Actuated g/C Ratio	0.48	0.55	0.17	0.43	0.22	0.36						
v/c Ratio	0.93	0.49	0.72	0.65	0.87	0.57						
Control Delay	15.7	2.9	52.9	45.9	69.9	9.4						
Queue Delay	45.2	0.3	0.0	0.0	0.0	0.0						
Total Delay	60.8	3.2	52.9	45.9	69.9	9.4						
LOS	E	A	D	D	E	A						
Approach Delay		33.6	50.5									
Approach LOS		C	D									

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 81 (51%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 105	
Control Type: Pretimed	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 41.7	Intersection LOS: D
Intersection Capacity Utilization 100.7%	ICU Level of Service G
Analysis Period (min) 15	

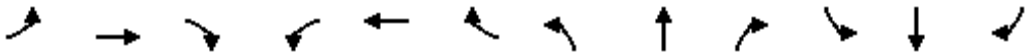
Splits and Phases: 2: I-95 NB Ramp & Southern Blvd



Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1537	1378	922	474	939	464
v/c Ratio	0.93	0.49	0.72	0.65	0.87	0.57
Control Delay	15.7	2.9	52.9	45.9	69.9	9.4
Queue Delay	45.2	0.3	0.0	0.0	0.0	0.0
Total Delay	60.8	3.2	52.9	45.9	69.9	9.4
Queue Length 50th (ft)	880	9	240	468	339	49
Queue Length 95th (ft)	#954	44	271	554	395	157
Internal Link Dist (ft)		569	651			
Turn Bay Length (ft)				300	600	600
Base Capacity (vph)	1652	2796	1273	725	1081	819
Starvation Cap Reductn	304	646	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.14	0.64	0.72	0.65	0.87	0.57

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1460	1309	0	0	876	450	892	0	441	0	0	0
Future Volume (vph)	1460	1309	0	0	876	450	892	0	441	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.94		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	5085			7544	1583	4942		1568			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	5085			7544	1583	4942		1568			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1537	1378	0	0	922	474	939	0	464	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	251	0	0	0
Lane Group Flow (vph)	1537	1378	0	0	922	431	939	0	213	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	77.0	88.0			27.0	69.0	35.0		58.0			
Effective Green, g (s)	77.0	88.0			27.0	69.0	35.0		58.0			
Actuated g/C Ratio	0.48	0.55			0.17	0.43	0.22		0.36			
Clearance Time (s)												
Lane Grp Cap (vph)	1652	2796			1273	682	1081		568			
v/s Ratio Prot	c0.45	0.27			c0.12	c0.27	c0.19		0.14			
v/s Ratio Perm												
v/c Ratio	0.93	0.49			0.72	0.63	0.87		0.37			
Uniform Delay, d1	39.0	22.2			63.0	35.6	60.3		37.6			
Progression Factor	0.23	0.11			0.80	1.42	1.00		1.00			
Incremental Delay, d2	6.1	0.4			2.3	2.8	9.5		1.9			
Delay (s)	14.9	2.9			52.8	53.3	69.8		39.5			
Level of Service	B	A			D	D	E		D			
Approach Delay (s)		9.2			52.9			59.8			0.0	
Approach LOS		A			D			E			A	

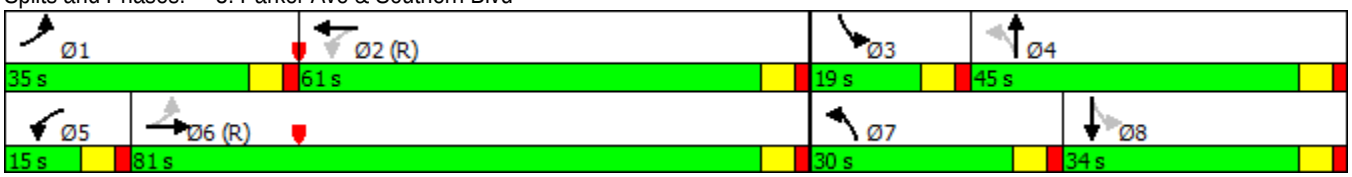
Intersection Summary			
HCM 2000 Control Delay	32.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	100.7%	ICU Level of Service	G
Analysis Period (min)	15		

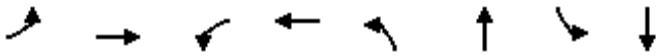
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	158	1402	73	884	274	253	76	169
Future Volume (vph)	158	1402	73	884	274	253	76	169
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6	5	2	7	4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	5	2	7	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	20.0	4.0	20.0	4.0	6.0	4.0	6.0
Minimum Split (s)	10.0	31.0	10.0	29.0	10.0	28.0	10.0	34.0
Total Split (s)	35.0	81.0	15.0	61.0	30.0	45.0	19.0	34.0
Total Split (%)	21.9%	50.6%	9.4%	38.1%	18.8%	28.1%	11.9%	21.3%
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	0.0
Total Lost Time (s)	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
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	90.0	75.0	64.0	55.0	58.0	39.0	41.0	28.0
Actuated g/C Ratio	0.56	0.47	0.40	0.34	0.36	0.24	0.26	0.18
v/c Ratio	0.43	1.03	0.53	0.81	0.75	0.44	0.25	0.52
Control Delay	37.0	89.9	46.2	39.6	52.5	47.9	37.3	39.0
Queue Delay	0.0	29.9	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	37.0	119.8	46.2	40.1	52.5	47.9	37.3	39.0
LOS	D	F	D	D	D	D	D	D
Approach Delay		112.3		40.6		49.9		38.7
Approach LOS		F		D		D		D

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 131 (82%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 115	
Control Type: Pretimed	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 75.0	Intersection LOS: E
Intersection Capacity Utilization 94.1%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Parker Ave & Southern Blvd



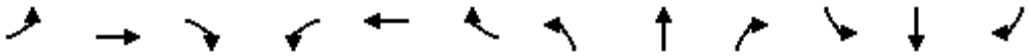


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	166	1676	77	982	288	374	80	354
v/c Ratio	0.43	1.03	0.53	0.81	0.75	0.44	0.25	0.52
Control Delay	37.0	89.9	46.2	39.6	52.5	47.9	37.3	39.0
Queue Delay	0.0	29.9	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	37.0	119.8	46.2	40.1	52.5	47.9	37.3	39.0
Queue Length 50th (ft)	138	~913	39	317	229	158	56	108
Queue Length 95th (ft)	215	#1074	89	361	320	212	97	164
Internal Link Dist (ft)		966		580		435		391
Turn Bay Length (ft)	230		150		240		120	
Base Capacity (vph)	384	1635	146	1209	383	852	316	685
Starvation Cap Reductn	0	0	0	46	0	0	0	0
Spillback Cap Reductn	0	317	0	0	0	1	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	1.27	0.53	0.84	0.75	0.44	0.25	0.52

Intersection Summary

~ 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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	1402	190	73	884	48	274	253	103	76	169	167
Future Volume (vph)	158	1402	190	73	884	48	274	253	103	76	169	167
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		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.99		1.00	0.96		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3476		1770	3512		1770	3386		1770	3275	
Flt Permitted	0.09	1.00		0.07	1.00		0.30	1.00		0.53	1.00	
Satd. Flow (perm)	167	3476		135	3512		555	3386		986	3275	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	166	1476	200	77	931	51	288	266	108	80	178	176
RTOR Reduction (vph)	0	6	0	0	3	0	0	27	0	0	113	0
Lane Group Flow (vph)	166	1670	0	77	979	0	288	347	0	80	241	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	90.0	75.0		64.0	55.0		58.0	39.0		41.0	28.0	
Effective Green, g (s)	90.0	75.0		64.0	55.0		58.0	39.0		41.0	28.0	
Actuated g/C Ratio	0.56	0.47		0.40	0.34		0.36	0.24		0.26	0.18	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	384	1629		145	1207		383	825		316	573	
v/s Ratio Prot	c0.08	c0.48		0.03	0.28		c0.11	0.10		0.02	0.07	
v/s Ratio Perm	0.16			0.18			c0.16			0.04		
v/c Ratio	0.43	1.02		0.53	0.81		0.75	0.42		0.25	0.42	
Uniform Delay, d1	24.9	42.5		38.6	47.8		39.8	51.0		46.3	58.8	
Progression Factor	1.49	1.56		1.23	0.71		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	27.4		12.2	5.5		12.8	1.6		1.9	2.3	
Delay (s)	40.3	93.8		59.9	39.4		52.6	52.5		48.3	61.0	
Level of Service	D	F		E	D		D	D		D	E	
Approach Delay (s)		89.0			40.9			52.6			58.7	
Approach LOS		F			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	66.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	127	1393	29	682	102	90	54	141	221
Future Volume (vph)	127	1393	29	682	102	90	54	141	221
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	7	4	3	8	
Permitted Phases	6		2		4		8		8
Detector Phase	1	6	5	2	7	4	3	8	8
Switch Phase									
Minimum Initial (s)	4.0	20.0	4.0	20.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	10.0	32.0	10.0	32.0	32.0
Total Split (s)	16.0	96.0	11.0	91.0	11.0	42.0	11.0	42.0	42.0
Total Split (%)	10.0%	60.0%	6.9%	56.9%	6.9%	26.3%	6.9%	26.3%	26.3%
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?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	100.0	90.0	90.0	85.0	41.0	36.0	41.0	36.0	36.0
Actuated g/C Ratio	0.62	0.56	0.56	0.53	0.26	0.22	0.26	0.22	0.22
v/c Ratio	0.33	0.77	0.23	0.40	0.37	0.40	0.20	0.35	0.55
Control Delay	3.5	18.0	15.9	23.0	48.9	49.4	43.9	55.1	39.7
Queue Delay	0.0	48.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.5	66.2	15.9	23.0	48.9	49.4	43.9	55.1	39.7
LOS	A	E	B	C	D	D	D	E	D
Approach Delay		61.2		22.7		49.2		45.5	
Approach LOS		E		C		D		D	

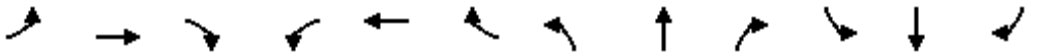
Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 147 (92%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 48.5	Intersection LOS: D
Intersection Capacity Utilization 76.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Lake Ave & Southern Blvd

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	134	1531	31	743	107	162	57	148	233
v/c Ratio	0.33	0.77	0.23	0.40	0.37	0.40	0.20	0.35	0.55
Control Delay	3.5	18.0	15.9	23.0	48.9	49.4	43.9	55.1	39.7
Queue Delay	0.0	48.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.5	66.2	15.9	23.0	48.9	49.4	43.9	55.1	39.7
Queue Length 50th (ft)	11	834	12	236	85	127	44	132	138
Queue Length 95th (ft)	m13	m831	26	285	139	203	82	203	233
Internal Link Dist (ft)		580		482		349		415	
Turn Bay Length (ft)	140		140		100		120		120
Base Capacity (vph)	412	1981	132	1872	293	408	282	419	422
Starvation Cap Reductn	0	668	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	1.17	0.23	0.40	0.37	0.40	0.20	0.35	0.55

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	1393	62	29	682	24	102	90	64	54	141	221
Future Volume (vph)	127	1393	62	29	682	24	102	90	64	54	141	221
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		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3517		1770	3521		1770	1747		1770	1863	1583
Flt Permitted	0.29	1.00		0.08	1.00		0.57	1.00		0.54	1.00	1.00
Satd. Flow (perm)	537	3517		145	3521		1059	1747		1007	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	134	1466	65	31	718	25	107	95	67	57	148	233
RTOR Reduction (vph)	0	2	0	0	1	0	0	16	0	0	0	66
Lane Group Flow (vph)	134	1529	0	31	742	0	107	147	0	57	148	167
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		8
Actuated Green, G (s)	100.0	90.0		90.0	85.0		41.0	36.0		41.0	36.0	36.0
Effective Green, g (s)	100.0	90.0		90.0	85.0		41.0	36.0		41.0	36.0	36.0
Actuated g/C Ratio	0.62	0.56		0.56	0.53		0.26	0.22		0.26	0.22	0.22
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	412	1978		132	1870		293	393		281	419	356
v/s Ratio Prot	c0.02	c0.43		0.01	0.21		c0.01	0.08		0.01	0.08	
v/s Ratio Perm	0.18			0.12			0.08			0.05		c0.11
v/c Ratio	0.33	0.77		0.23	0.40		0.37	0.37		0.20	0.35	0.47
Uniform Delay, d1	13.7	27.1		22.8	22.3		48.8	52.4		45.9	52.2	53.7
Progression Factor	0.23	0.62		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	1.0		4.1	0.6		3.5	2.7		1.6	2.3	4.4
Delay (s)	3.9	17.8		27.0	22.9		52.3	55.1		47.5	54.5	58.1
Level of Service	A	B		C	C		D	E		D	D	E
Approach Delay (s)		16.7			23.1			54.0			55.5	
Approach LOS		B			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	26.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	21	3733	6	2276	5	23	0	5	3
Future Volume (vph)	21	3733	6	2276	5	23	0	5	3
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	1	6	5	2			4		8
Permitted Phases					2	4		8	
Detector Phase	1	6	5	2	2	4	4	8	8
Switch Phase									
Minimum Initial (s)	4.0	18.0	4.0	20.0	20.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.0	24.0	10.0	29.0	29.0	24.0	24.0	24.0	24.0
Total Split (s)	16.0	115.0	16.0	115.0	115.0	29.0	29.0	29.0	29.0
Total Split (%)	10.0%	71.9%	10.0%	71.9%	71.9%	18.1%	18.1%	18.1%	18.1%
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	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	10.0	109.0	10.0	109.0	109.0	23.0	23.0	23.0	23.0
Actuated g/C Ratio	0.06	0.68	0.06	0.68	0.68	0.14	0.14	0.14	0.14
v/c Ratio	0.20	0.92	0.06	0.56	0.00	0.12	0.07	0.03	0.06
Control Delay	76.0	26.4	80.7	3.9	0.0	61.6	0.4	59.4	30.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.0	26.4	80.7	3.9	0.0	61.6	0.4	59.4	30.9
LOS	E	C	F	A	A	E	A	E	C
Approach Delay		26.7		4.1			33.8		38.0
Approach LOS		C		A			C		D

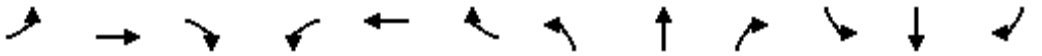
Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 74 (46%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 100	
Control Type: Pretimed	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 18.3	Intersection LOS: B
Intersection Capacity Utilization 72.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Gem Lake Dr & Southern Blvd

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	22	3936	6	2396	5	24	20	5	15
v/c Ratio	0.20	0.92	0.06	0.56	0.00	0.12	0.07	0.03	0.06
Control Delay	76.0	26.4	80.7	3.9	0.0	61.6	0.4	59.4	30.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.0	26.4	80.7	3.9	0.0	61.6	0.4	59.4	30.9
Queue Length 50th (ft)	22	957	6	95	0	22	0	5	3
Queue Length 95th (ft)	55	989	m9	100	m0	53	0	18	27
Internal Link Dist (ft)		851		589			338		406
Turn Bay Length (ft)	700		180		450	120		120	
Base Capacity (vph)	108	4281	108	4281	1077	198	304	197	243
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.92	0.06	0.56	0.00	0.12	0.07	0.03	0.06

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	3733	7	6	2276	5	23	0	19	5	3	11
Future Volume (vph)	21	3733	7	6	2276	5	23	0	19	5	3	11
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	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.86		1.00	0.86	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.85		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	6283		1736	6285	1553	1752	1568		1752	1623	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.75	1.00		0.74	1.00	
Satd. Flow (perm)	1736	6283		1736	6285	1553	1379	1568		1373	1623	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	22	3929	7	6	2396	5	24	0	20	5	3	12
RTOR Reduction (vph)	0	0	0	0	0	2	0	17	0	0	10	0
Lane Group Flow (vph)	22	3936	0	6	2396	3	24	3	0	5	5	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases						2	4			8		
Actuated Green, G (s)	10.0	109.0		10.0	109.0	109.0	23.0	23.0		23.0	23.0	
Effective Green, g (s)	10.0	109.0		10.0	109.0	109.0	23.0	23.0		23.0	23.0	
Actuated g/C Ratio	0.06	0.68		0.06	0.68	0.68	0.14	0.14		0.14	0.14	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	108	4280		108	4281	1057	198	225		197	233	
v/s Ratio Prot	c0.01	c0.63		0.00	0.38			0.00			0.00	
v/s Ratio Perm						0.00	c0.02			0.00		
v/c Ratio	0.20	0.92		0.06	0.56	0.00	0.12	0.01		0.03	0.02	
Uniform Delay, d1	71.2	21.8		70.6	13.1	8.1	59.7	58.8		58.9	58.8	
Progression Factor	1.00	1.00		1.13	0.27	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.2	4.3		0.6	0.4	0.0	1.2	0.1		0.2	0.2	
Delay (s)	75.4	26.1		80.3	3.9	8.1	60.9	58.9		59.1	59.0	
Level of Service	E	C		F	A	A	E	E		E	E	
Approach Delay (s)		26.3			4.1			60.0			59.0	
Approach LOS		C			A			E			E	

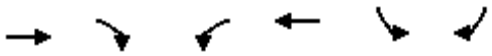
Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	1428	887	458	2280	393	1398						
Future Volume (vph)	1428	887	458	2280	393	1398						
Turn Type	NA	Free	Prot	NA	Prot	Free						
Protected Phases	4 5		2 3	2 3 4	1 6		1	2	3	4	5	6
Permitted Phases		Free				Free						
Detector Phase	4 5		2 3	2 3 4	1 6							
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	40.0	37.0	11.0	39.0	22.0
Total Split (%)							7%	25%	23%	7%	24%	14%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	43.0	160.0	70.0	81.0	26.0	160.0						
Actuated g/C Ratio	0.27	1.00	0.44	0.51	0.16	1.00						
v/c Ratio	0.76	0.60	0.33	0.95	0.75	1.14						
Control Delay	39.4	11.5	0.5	24.9	73.3	79.7						
Queue Delay	0.1	0.0	0.0	3.5	0.0	0.0						
Total Delay	39.6	11.5	0.5	28.4	73.3	79.7						
LOS	D	B	A	C	E	E						
Approach Delay	28.8			23.7								
Approach LOS	C			C								

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 115	
Control Type: Pretimed	
Maximum v/c Ratio: 1.14	
Intersection Signal Delay: 39.7	Intersection LOS: D
Intersection Capacity Utilization 84.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd



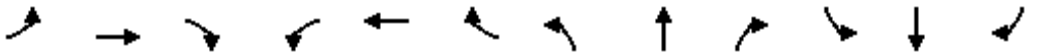
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1503	934	482	2400	414	1472
v/c Ratio	0.76	0.60	0.33	0.95	0.75	1.14
Control Delay	39.4	11.5	0.5	24.9	73.3	79.7
Queue Delay	0.1	0.0	0.0	3.5	0.0	0.0
Total Delay	39.6	11.5	0.5	28.4	73.3	79.7
Queue Length 50th (ft)	360	434	0	573	215	~392
Queue Length 95th (ft)	397	672	0	m534	278	#657
Internal Link Dist (ft)	1135			569		
Turn Bay Length (ft)		450			250	
Base Capacity (vph)	1988	1553	1473	2525	552	1291
Starvation Cap Reductn	0	0	0	88	0	0
Spillback Cap Reductn	57	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.60	0.33	0.98	0.75	1.14

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1428	887	458	2280	0	0	0	0	393	0	1398
Future Volume (vph)	0	1428	887	458	2280	0	0	0	0	393	0	1398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	4.0	7.0	7.0					7.0		4.0
Lane Util. Factor		0.81	1.00	0.97	0.91					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.70
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		7399	1553	3367	4988					3400		1291
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		7399	1553	3367	4988					3400		1291
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1503	934	482	2400	0	0	0	0	414	0	1472
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1503	934	482	2400	0	0	0	0	414	0	1472
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	Free	Prot	NA					Prot		Free
Protected Phases		4 5		2 3	2 3 4					1 6		
Permitted Phases			Free									Free
Actuated Green, G (s)		43.0	160.0	70.0	81.0					26.0		160.0
Effective Green, g (s)		43.0	160.0	70.0	81.0					26.0		160.0
Actuated g/C Ratio		0.27	1.00	0.44	0.51					0.16		1.00
Clearance Time (s)												
Lane Grp Cap (vph)		1988	1553	1473	2525					552		1291
v/s Ratio Prot		0.20		0.14	0.48					0.12		
v/s Ratio Perm			0.60									c1.14
v/c Ratio		0.76	0.60	0.33	0.95					0.75		1.14
Uniform Delay, d1		53.7	0.0	29.5	37.6					63.9		80.0
Progression Factor		0.69	1.00	0.00	0.54					1.00		1.00
Incremental Delay, d2		2.2	1.4	0.4	3.9					9.1		72.9
Delay (s)		39.3	1.4	0.5	24.4					73.0		152.9
Level of Service		D	A	A	C					E		F
Approach Delay (s)		24.8			20.4			0.0			135.4	
Approach LOS		C			C			A			F	

Intersection Summary			
HCM 2000 Control Delay	52.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.55		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	878	943	1414	391	1325	346						
Future Volume (vph)	878	943	1414	391	1325	346						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	40.0	37.0	11.0	39.0	22.0
Total Split (%)							7%	25%	23%	7%	24%	14%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	54.0	65.0	44.0	92.0	41.0	81.0						
Actuated g/C Ratio	0.34	0.41	0.28	0.58	0.26	0.51						
v/c Ratio	0.80	0.48	0.72	0.44	1.10	0.37						
Control Delay	10.0	8.5	44.8	24.8	111.8	3.0						
Queue Delay	4.6	0.0	0.3	0.0	0.0	0.0						
Total Delay	14.6	8.5	45.1	24.8	111.8	3.0						
LOS	B	A	D	C	F	A						
Approach Delay		11.4	40.7									
Approach LOS		B	D									

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 115	
Control Type: Pretimed	
Maximum v/c Ratio: 1.14	
Intersection Signal Delay: 45.9	Intersection LOS: D
Intersection Capacity Utilization 84.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: I-95 NB Ramp & Southern Blvd

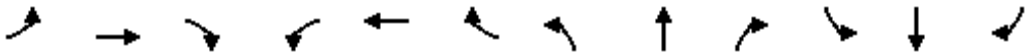
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	924	993	1488	412	1395	364
v/c Ratio	0.80	0.48	0.72	0.44	1.10	0.37
Control Delay	10.0	8.5	44.8	24.8	111.8	3.0
Queue Delay	4.6	0.0	0.3	0.0	0.0	0.0
Total Delay	14.6	8.5	45.1	24.8	111.8	3.0
Queue Length 50th (ft)	508	27	369	315	~585	0
Queue Length 95th (ft)	598	74	404	m375	#679	53
Internal Link Dist (ft)		569	715			
Turn Bay Length (ft)				300	600	600
Base Capacity (vph)	1158	2065	2074	942	1266	973
Starvation Cap Reductn	169	0	0	0	0	0
Spillback Cap Reductn	0	0	144	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.48	0.77	0.44	1.10	0.37

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	878	943	0	0	1414	391	1325	0	346	0	0	0
Future Volume (vph)	878	943	0	0	1414	391	1325	0	346	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.94		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	5085			7544	1583	4942		1568			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	5085			7544	1583	4942		1568			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	924	993	0	0	1488	412	1395	0	364	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	32	0	0	180	0	0	0
Lane Group Flow (vph)	924	993	0	0	1488	380	1395	0	184	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	54.0	65.0			44.0	92.0	41.0		81.0			
Effective Green, g (s)	54.0	65.0			44.0	92.0	41.0		81.0			
Actuated g/C Ratio	0.34	0.41			0.28	0.58	0.26		0.51			
Clearance Time (s)												
Lane Grp Cap (vph)	1158	2065			2074	910	1266		793			
v/s Ratio Prot	c0.27	0.20			c0.20	0.24	c0.28		0.12			
v/s Ratio Perm												
v/c Ratio	0.80	0.48			0.72	0.42	1.10		0.23			
Uniform Delay, d1	48.1	35.1			52.4	19.0	59.5		22.1			
Progression Factor	0.13	0.23			0.83	1.54	1.00		1.00			
Incremental Delay, d2	3.7	0.5			1.1	0.7	58.0		0.7			
Delay (s)	9.9	8.4			44.6	30.0	117.5		22.8			
Level of Service	A	A			D	C	F		C			
Approach Delay (s)		9.2			41.5			97.9			0.0	
Approach LOS		A			D			F			A	

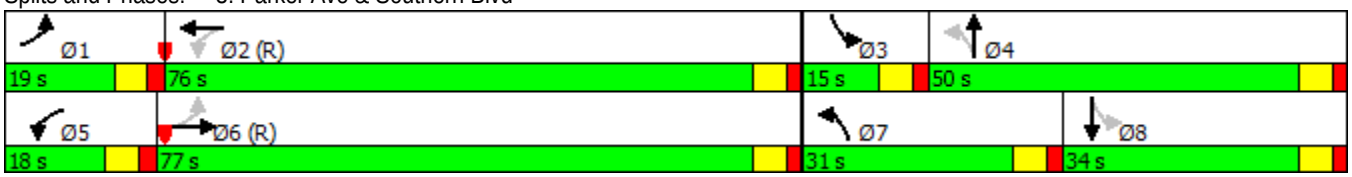
Intersection Summary			
HCM 2000 Control Delay	48.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		

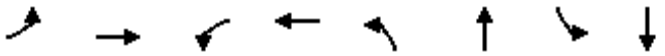
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	134	911	93	1331	279	208	108	258
Future Volume (vph)	134	911	93	1331	279	208	108	258
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6	5	2	7	4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	5	2	7	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	20.0	4.0	20.0	4.0	6.0	4.0	6.0
Minimum Split (s)	10.0	31.0	10.0	29.0	10.0	28.0	10.0	34.0
Total Split (s)	19.0	77.0	18.0	76.0	31.0	50.0	15.0	34.0
Total Split (%)	11.9%	48.1%	11.3%	47.5%	19.4%	31.3%	9.4%	21.3%
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	0.0
Total Lost Time (s)	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
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
Act Effct Green (s)	92.5	80.6	85.6	77.1	52.9	37.9	31.6	22.6
Actuated g/C Ratio	0.58	0.50	0.54	0.48	0.33	0.24	0.20	0.14
v/c Ratio	0.78	0.70	0.47	0.85	0.93	0.37	0.46	0.86
Control Delay	73.9	40.6	30.2	66.4	82.4	45.3	46.1	67.4
Queue Delay	0.0	0.0	0.0	47.7	0.0	0.0	0.4	0.0
Total Delay	73.9	40.6	30.2	114.1	82.4	45.3	46.5	67.4
LOS	E	D	C	F	F	D	D	E
Approach Delay		44.1		108.7		63.5		63.4
Approach LOS		D		F		E		E

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 131 (82%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 105	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 74.1	Intersection LOS: E
Intersection Capacity Utilization 94.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Parker Ave & Southern Blvd



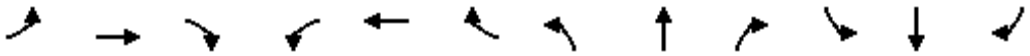


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	141	1217	98	1444	294	304	114	477
v/c Ratio	0.78	0.70	0.47	0.85	0.93	0.37	0.46	0.86
Control Delay	73.9	40.6	30.2	66.4	82.4	45.3	46.1	67.4
Queue Delay	0.0	0.0	0.0	47.7	0.0	0.0	0.4	0.0
Total Delay	73.9	40.6	30.2	114.1	82.4	45.3	46.5	67.4
Queue Length 50th (ft)	125	404	77	841	253	123	85	206
Queue Length 95th (ft)	#214	495	m117	#929	#414	163	130	264
Internal Link Dist (ft)		905		585		474		402
Turn Bay Length (ft)	230		150		240		120	
Base Capacity (vph)	197	1738	247	1699	322	957	248	665
Starvation Cap Reductn	0	0	0	482	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	19	16	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.70	0.40	1.19	0.91	0.32	0.49	0.72

Intersection Summary

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	911	245	93	1331	41	279	208	81	108	258	195
Future Volume (vph)	134	911	245	93	1331	41	279	208	81	108	258	195
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		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	1.00		1.00	0.96		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3427		1770	3523		1770	3391		1770	3311	
Flt Permitted	0.05	1.00		0.13	1.00		0.14	1.00		0.57	1.00	
Satd. Flow (perm)	96	3427		238	3523		261	3391		1055	3311	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	141	959	258	98	1401	43	294	219	85	114	272	205
RTOR Reduction (vph)	0	13	0	0	1	0	0	27	0	0	89	0
Lane Group Flow (vph)	141	1204	0	98	1443	0	294	277	0	114	388	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	92.6	80.6		85.6	77.1		52.9	37.9		31.6	22.6	
Effective Green, g (s)	92.6	80.6		85.6	77.1		52.9	37.9		31.6	22.6	
Actuated g/C Ratio	0.58	0.50		0.53	0.48		0.33	0.24		0.20	0.14	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	4.0		4.0	2.0	
Lane Grp Cap (vph)	181	1726		208	1697		315	803		248	467	
v/s Ratio Prot	c0.06	0.35		0.02	c0.41		c0.14	0.08		0.03	0.12	
v/s Ratio Perm	c0.39			0.23			c0.17			0.06		
v/c Ratio	0.78	0.70		0.47	0.85		0.93	0.35		0.46	0.83	
Uniform Delay, d1	44.0	30.4		23.1	36.4		47.7	50.7		55.1	66.8	
Progression Factor	1.34	1.23		1.57	1.67		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.9	2.1		0.4	4.1		33.2	0.4		1.8	11.4	
Delay (s)	74.8	39.5		36.8	64.8		80.9	51.1		56.9	78.2	
Level of Service	E	D		D	E		F	D		E	E	
Approach Delay (s)		43.2			63.0			65.7			74.1	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	58.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	160.0	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	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	128	880	120	1222	88	100	53	150	154
Future Volume (vph)	128	880	120	1222	88	100	53	150	154
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	3	8	7	4	
Permitted Phases	6		2		8		4		4
Detector Phase	1	6	5	2	3	8	7	4	4
Switch Phase									
Minimum Initial (s)	4.0	20.0	4.0	20.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	10.0	32.0	10.0	32.0	32.0
Total Split (s)	24.0	94.0	18.0	88.0	14.0	38.0	10.0	34.0	34.0
Total Split (%)	15.0%	58.8%	11.3%	55.0%	8.8%	23.8%	6.3%	21.3%	21.3%
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?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	106.0	88.0	94.0	82.0	40.0	32.0	32.0	28.0	28.0
Actuated g/C Ratio	0.66	0.55	0.59	0.51	0.25	0.20	0.20	0.18	0.18
v/c Ratio	0.46	0.53	0.37	0.72	0.37	0.42	0.23	0.48	0.50
Control Delay	20.1	35.1	13.8	33.0	50.9	55.0	49.9	65.2	43.2
Queue Delay	0.0	1.3	0.0	43.5	109.2	0.0	0.0	0.0	76.8
Total Delay	20.1	36.4	13.8	76.5	160.1	55.0	49.9	65.2	120.0
LOS	C	D	B	E	F	E	D	E	F
Approach Delay		34.5		71.0		94.7		86.5	
Approach LOS		C		E		F		F	

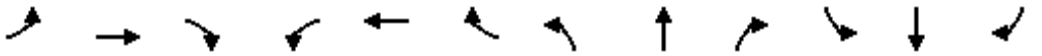
Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 39 (24%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 85	
Control Type: Pretimed	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 61.5	Intersection LOS: E
Intersection Capacity Utilization 74.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Lake Ave & Southern Blvd

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	135	1023	126	1307	93	153	56	158	162
v/c Ratio	0.46	0.53	0.37	0.72	0.37	0.42	0.23	0.48	0.50
Control Delay	20.1	35.1	13.8	33.0	50.9	55.0	49.9	65.2	43.2
Queue Delay	0.0	1.3	0.0	43.5	109.2	0.0	0.0	0.0	76.8
Total Delay	20.1	36.4	13.8	76.5	160.1	55.0	49.9	65.2	120.0
Queue Length 50th (ft)	74	535	45	545	76	129	45	151	98
Queue Length 95th (ft)	m91	588	72	632	128	205	85	230	178
Internal Link Dist (ft)		585		588		461		394	
Turn Bay Length (ft)	140		140		100		120		120
Base Capacity (vph)	296	1924	338	1810	251	365	244	326	325
Starvation Cap Reductn	0	644	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	608	214	0	0	0	223
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.80	0.37	1.09	2.51	0.42	0.23	0.48	1.59

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	880	92	120	1222	20	88	100	46	53	150	154
Future Volume (vph)	128	880	92	120	1222	20	88	100	46	53	150	154
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		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3489		1770	3531		1770	1775		1770	1863	1583
Flt Permitted	0.10	1.00		0.22	1.00		0.44	1.00		0.62	1.00	1.00
Satd. Flow (perm)	177	3489		403	3531		814	1775		1146	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	135	926	97	126	1286	21	93	105	48	56	158	162
RTOR Reduction (vph)	0	5	0	0	0	0	0	10	0	0	0	49
Lane Group Flow (vph)	135	1018	0	126	1307	0	93	143	0	56	158	113
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		4
Actuated Green, G (s)	106.0	88.0		94.0	82.0		40.0	32.0		32.0	28.0	28.0
Effective Green, g (s)	106.0	88.0		94.0	82.0		40.0	32.0		32.0	28.0	28.0
Actuated g/C Ratio	0.66	0.55		0.59	0.51		0.25	0.20		0.20	0.18	0.18
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	296	1918		339	1809		251	355		244	326	277
v/s Ratio Prot	c0.05	c0.29		0.03	c0.37		c0.02	c0.08		0.01	c0.08	
v/s Ratio Perm	0.25			0.19			0.07			0.04		0.07
v/c Ratio	0.46	0.53		0.37	0.72		0.37	0.40		0.23	0.48	0.41
Uniform Delay, d1	21.0	22.9		16.1	30.2		47.9	55.7		53.0	59.5	58.6
Progression Factor	1.31	1.50		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.8	0.8		3.1	2.5		4.2	3.4		2.2	5.1	4.4
Delay (s)	31.2	35.2		19.2	32.7		52.0	59.0		55.1	64.6	63.1
Level of Service	C	D		B	C		D	E		E	E	E
Approach Delay (s)		34.7			31.5			56.4			62.5	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	38.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	9	2270	4	3671	3	20	1	34	3
Future Volume (vph)	9	2270	4	3671	3	20	1	34	3
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	1	6	5	2			4		8
Permitted Phases					2	4		8	
Detector Phase	1	6	5	2	2	4	4	8	8
Switch Phase									
Minimum Initial (s)	4.0	18.0	3.0	20.0	20.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.0	24.0	10.0	29.0	29.0	15.0	15.0	15.0	15.0
Total Split (s)	24.0	107.0	24.0	107.0	107.0	29.0	29.0	29.0	29.0
Total Split (%)	15.0%	66.9%	15.0%	66.9%	66.9%	18.1%	18.1%	18.1%	18.1%
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	5.0	5.0	5.0	5.0
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	9.0	9.0	9.0	9.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	18.0	101.0	18.0	101.0	101.0	20.0	20.0	20.0	20.0
Actuated g/C Ratio	0.11	0.63	0.11	0.63	0.63	0.12	0.12	0.12	0.12
v/c Ratio	0.05	0.61	0.02	0.97	0.00	0.12	0.06	0.21	0.11
Control Delay	64.2	18.4	70.5	12.1	0.0	64.3	29.0	66.4	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.2	18.4	70.5	12.1	0.0	64.3	29.0	66.4	26.2
LOS	E	B	E	B	A	E	C	E	C
Approach Delay		18.6		12.2			50.8		50.3
Approach LOS		B		B			D		D

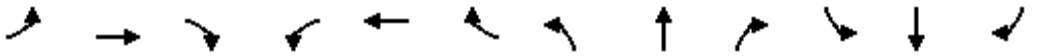
Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 63 (39%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 80	
Control Type: Pretimed	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 15.2	Intersection LOS: B
Intersection Capacity Utilization 74.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 5: Gem Lake Dr & Southern Blvd

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	9	2402	4	3864	3	21	13	36	24
v/c Ratio	0.05	0.61	0.02	0.97	0.00	0.12	0.06	0.21	0.11
Control Delay	64.2	18.4	70.5	12.1	0.0	64.3	29.0	66.4	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.2	18.4	70.5	12.1	0.0	64.3	29.0	66.4	26.2
Queue Length 50th (ft)	9	416	5	289	0	20	1	34	3
Queue Length 95th (ft)	28	446	m5	m261	m0	49	24	74	33
Internal Link Dist (ft)		842		597			340		410
Turn Bay Length (ft)	700		180		450	120		120	
Base Capacity (vph)	195	3963	195	3967	1010	171	209	172	218
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.61	0.02	0.97	0.00	0.12	0.06	0.21	0.11

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	2270	12	4	3671	3	20	1	11	34	3	20
Future Volume (vph)	9	2270	12	4	3671	3	20	1	11	34	3	20
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	9.0	9.0		9.0	9.0	
Lane Util. Factor	1.00	0.86		1.00	0.86	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.86		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	6280		1736	6285	1553	1752	1589		1752	1603	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.74	1.00		0.75	1.00	
Satd. Flow (perm)	1736	6280		1736	6285	1553	1368	1589		1382	1603	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	9	2389	13	4	3864	3	21	1	12	36	3	21
RTOR Reduction (vph)	0	0	0	0	0	1	0	11	0	0	18	0
Lane Group Flow (vph)	9	2402	0	4	3864	2	21	3	0	36	6	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases						2	4			8		
Actuated Green, G (s)	18.0	101.0		18.0	101.0	101.0	20.0	20.0		20.0	20.0	
Effective Green, g (s)	18.0	101.0		18.0	101.0	101.0	20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.11	0.63		0.11	0.63	0.63	0.12	0.12		0.12	0.12	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	9.0	9.0		9.0	9.0	
Lane Grp Cap (vph)	195	3964		195	3967	980	171	198		172	200	
v/s Ratio Prot	c0.01	0.38		0.00	c0.61			0.00			0.00	
v/s Ratio Perm						0.00	0.02			c0.03		
v/c Ratio	0.05	0.61		0.02	0.97	0.00	0.12	0.01		0.21	0.03	
Uniform Delay, d1	63.3	17.6		63.2	28.2	10.9	62.2	61.3		62.9	61.5	
Progression Factor	1.00	1.00		1.11	0.36	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.7		0.0	1.4	0.0	1.5	0.1		2.7	0.3	
Delay (s)	63.8	18.3		70.2	11.4	10.9	63.7	61.5		65.6	61.7	
Level of Service	E	B		E	B	B	E	E		E	E	
Approach Delay (s)		18.5			11.5			62.8			64.1	
Approach LOS		B			B			E			E	

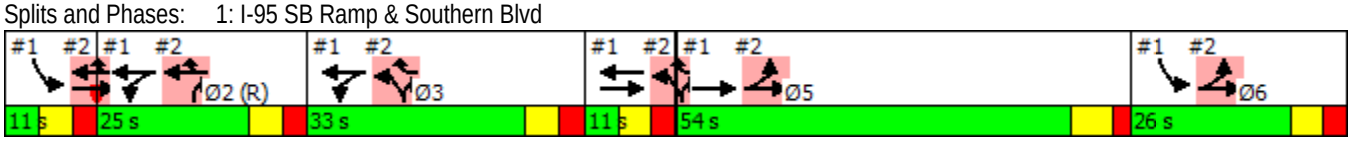
Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

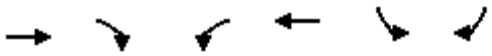
c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	2710	1709	454	1752	438	920						
Future Volume (vph)	2710	1709	454	1752	438	920						
Turn Type	NA	Free	Prot	NA	Prot	Free						
Protected Phases	4 5		2 3	2 3 4	1 6		1	2	3	4	5	6
Permitted Phases		Free				Free						
Detector Phase	4 5		2 3	2 3 4	1 6							
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	25.0	33.0	11.0	54.0	26.0
Total Split (%)							7%	16%	21%	7%	34%	16%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	58.0	160.0	51.0	62.0	30.0	160.0						
Actuated g/C Ratio	0.36	1.00	0.32	0.39	0.19	1.00						
v/c Ratio	1.06	1.31	0.45	0.95	0.72	0.62						
Control Delay	61.5	167.1	2.1	29.6	68.5	1.8						
Queue Delay	15.6	0.0	0.0	0.3	0.0	0.0						
Total Delay	77.1	167.1	2.1	29.9	68.5	1.8						
LOS	E	F	A	C	E	A						
Approach Delay	111.9			24.2								
Approach LOS	F			C								

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 81 (51%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 145	
Control Type: Pretimed	
Maximum v/c Ratio: 1.31	
Intersection Signal Delay: 72.6	Intersection LOS: E
Intersection Capacity Utilization 119.6%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd





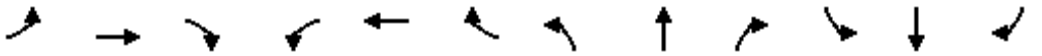
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	2853	1799	478	1844	461	968
v/c Ratio	1.06	1.31	0.45	0.95	0.72	0.62
Control Delay	61.5	167.1	2.1	29.6	68.5	1.8
Queue Delay	15.6	0.0	0.0	0.3	0.0	0.0
Total Delay	77.1	167.1	2.1	29.9	68.5	1.8
Queue Length 50th (ft)	~801	~1891	0	402	236	0
Queue Length 95th (ft)	m629	m#1599	0	m331	301	0
Internal Link Dist (ft)	1135			569		
Turn Bay Length (ft)						250
Base Capacity (vph)	2682	1370	1073	1932	637	1568
Starvation Cap Reductn	0	0	0	7	0	0
Spillback Cap Reductn	292	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.19	1.31	0.45	0.96	0.72	0.62

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2710	1709	454	1752	0	0	0	0	438	0	920
Future Volume (vph)	0	2710	1709	454	1752	0	0	0	0	438	0	920
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	4.0	7.0	7.0					7.0		4.0
Lane Util. Factor		0.81	1.00	0.97	0.91					0.97		1.00
Frt		1.00	0.75	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		7399	1370	3367	4988					3400		1568
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		7399	1370	3367	4988					3400		1568
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2853	1799	478	1844	0	0	0	0	461	0	968
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2853	1799	478	1844	0	0	0	0	461	0	968
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	Free	Prot	NA					Prot		Free
Protected Phases		4 5		2 3	2 3 4					1 6		
Permitted Phases			Free									Free
Actuated Green, G (s)		58.0	160.0	51.0	62.0					30.0		160.0
Effective Green, g (s)		58.0	160.0	51.0	62.0					30.0		160.0
Actuated g/C Ratio		0.36	1.00	0.32	0.39					0.19		1.00
Clearance Time (s)												
Lane Grp Cap (vph)		2682	1370	1073	1932					637		1568
v/s Ratio Prot		0.39		0.14	0.37					0.14		
v/s Ratio Perm			c1.31									0.62
v/c Ratio		1.06	1.31	0.45	0.95					0.72		0.62
Uniform Delay, d1		51.0	80.0	43.3	47.6					61.1		0.0
Progression Factor		0.63	1.00	0.03	0.53					1.00		1.00
Incremental Delay, d2		29.7	141.4	0.8	3.9					7.0		1.8
Delay (s)		61.7	221.4	2.1	29.1					68.1		1.8
Level of Service		E	F	A	C					E		A
Approach Delay (s)		123.5			23.5			0.0			23.2	
Approach LOS		F			C			A			C	

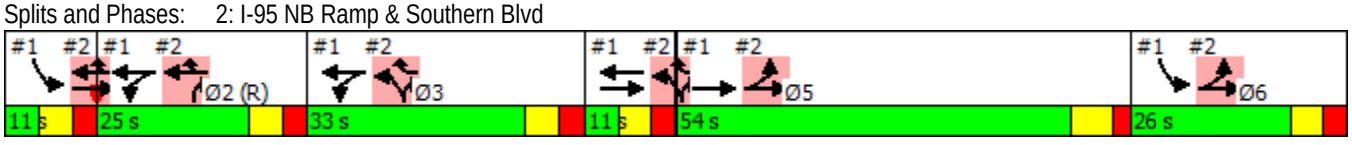
Intersection Summary			
HCM 2000 Control Delay	78.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.78		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	119.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	1658	1490	1019	520	1187	609						
Future Volume (vph)	1658	1490	1019	520	1187	609						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	25.0	33.0	11.0	54.0	26.0
Total Split (%)							7%	16%	21%	7%	34%	16%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	73.0	84.0	29.0	73.0	37.0	62.0						
Actuated g/C Ratio	0.46	0.52	0.18	0.46	0.23	0.39						
v/c Ratio	1.11	0.59	0.78	0.72	1.09	0.67						
Control Delay	65.3	3.4	56.1	46.5	111.8	8.9						
Queue Delay	0.9	0.5	0.0	0.0	0.0	0.0						
Total Delay	66.3	3.9	56.1	46.5	111.8	8.9						
LOS	E	A	E	D	F	A						
Approach Delay		36.8	52.9									
Approach LOS		D	D									

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 81 (51%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 145	
Control Type: Pretimed	
Maximum v/c Ratio: 1.31	
Intersection Signal Delay: 51.7	Intersection LOS: D
Intersection Capacity Utilization 119.6%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 2: I-95 NB Ramp & Southern Blvd



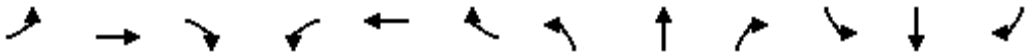
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1745	1568	1073	547	1249	641
v/c Ratio	1.11	0.59	0.78	0.72	1.09	0.67
Control Delay	65.3	3.4	56.1	46.5	111.8	8.9
Queue Delay	0.9	0.5	0.0	0.0	0.0	0.0
Total Delay	66.3	3.9	56.1	46.5	111.8	8.9
Queue Length 50th (ft)	~1102	12	270	528	~520	50
Queue Length 95th (ft)	m#981	m50	m286	m596	#615	188
Internal Link Dist (ft)		569	651			
Turn Bay Length (ft)				300	600	600
Base Capacity (vph)	1566	2669	1367	763	1142	954
Starvation Cap Reductn	348	588	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.43	0.75	0.78	0.72	1.09	0.67

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1658	1490	0	0	1019	520	1187	0	609	0	0	0
Future Volume (vph)	1658	1490	0	0	1019	520	1187	0	609	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.94		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	5085			7544	1583	4942		1568			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	5085			7544	1583	4942		1568			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1745	1568	0	0	1073	547	1249	0	641	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	41	0	0	347	0	0	0
Lane Group Flow (vph)	1745	1568	0	0	1073	506	1249	0	294	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	73.0	84.0			29.0	73.0	37.0		62.0			
Effective Green, g (s)	73.0	84.0			29.0	73.0	37.0		62.0			
Actuated g/C Ratio	0.46	0.52			0.18	0.46	0.23		0.39			
Clearance Time (s)												
Lane Grp Cap (vph)	1566	2669			1367	722	1142		607			
v/s Ratio Prot	c0.51	0.31			c0.14	c0.32	c0.25		0.19			
v/s Ratio Perm												
v/c Ratio	1.11	0.59			0.78	0.70	1.09		0.48			
Uniform Delay, d1	43.5	26.1			62.5	34.8	61.5		37.0			
Progression Factor	0.20	0.12			0.85	1.41	1.00		1.00			
Incremental Delay, d2	52.4	0.3			2.7	3.3	56.0		2.8			
Delay (s)	61.2	3.4			56.0	52.4	117.5		39.7			
Level of Service	E	A			E	D	F		D			
Approach Delay (s)		33.8			54.8			91.1			0.0	
Approach LOS		C			D			F			A	

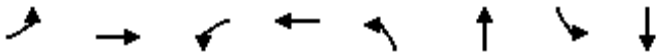
Intersection Summary			
HCM 2000 Control Delay	54.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	119.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	210	1627	106	962	360	295	106	188
Future Volume (vph)	210	1627	106	962	360	295	106	188
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6	5	2	7	4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	5	2	7	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	20.0	4.0	20.0	4.0	6.0	4.0	6.0
Minimum Split (s)	10.0	31.0	10.0	29.0	10.0	28.0	10.0	34.0
Total Split (s)	35.0	83.0	15.0	63.0	28.0	46.0	16.0	34.0
Total Split (%)	21.9%	51.9%	9.4%	39.4%	17.5%	28.8%	10.0%	21.3%
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	0.0
Total Lost Time (s)	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
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max	None	C-Max	None	None	None	None
Act Effct Green (s)	101.6	86.1	86.2	76.5	46.2	30.2	28.1	18.2
Actuated g/C Ratio	0.64	0.54	0.54	0.48	0.29	0.19	0.18	0.11
v/c Ratio	0.64	1.06	0.73	0.65	1.31	0.69	0.57	0.84
Control Delay	33.1	94.3	67.1	25.1	201.3	58.6	55.9	57.5
Queue Delay	0.0	16.2	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	33.1	110.5	67.1	25.3	201.3	58.6	55.9	57.5
LOS	C	F	E	C	F	E	E	E
Approach Delay		102.8		29.2		122.2		57.2
Approach LOS		F		C		F		E

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 131 (82%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.31	
Intersection Signal Delay: 82.7	Intersection LOS: F
Intersection Capacity Utilization 111.3%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 3: Parker Ave & Southern Blvd



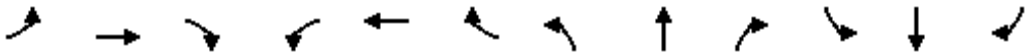
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	221	1989	112	1087	379	471	112	426
v/c Ratio	0.64	1.06	0.73	0.65	1.31	0.69	0.57	0.84
Control Delay	33.1	94.3	67.1	25.1	201.3	58.6	55.9	57.5
Queue Delay	0.0	16.2	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	33.1	110.5	67.1	25.3	201.3	58.6	55.9	57.5
Queue Length 50th (ft)	159	~1162	67	355	~458	217	89	148
Queue Length 95th (ft)	269	#1417	m142	407	#648	268	138	204
Internal Link Dist (ft)		966		580		435		391
Turn Bay Length (ft)	230		150		240		120	
Base Capacity (vph)	438	1871	161	1677	289	881	197	700
Starvation Cap Reductn	0	0	0	139	0	0	0	0
Spillback Cap Reductn	0	442	0	0	0	3	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	1.39	0.70	0.71	1.31	0.54	0.57	0.61

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	1627	262	106	962	70	360	295	152	106	188	217
Future Volume (vph)	210	1627	262	106	962	70	360	295	152	106	188	217
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		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.99		1.00	0.95		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3466		1770	3503		1770	3359		1770	3255	
Flt Permitted	0.14	1.00		0.05	1.00		0.17	1.00		0.41	1.00	
Satd. Flow (perm)	259	3466		97	3503		308	3359		763	3255	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	221	1713	276	112	1013	74	379	311	160	112	198	228
RTOR Reduction (vph)	0	7	0	0	3	0	0	45	0	0	141	0
Lane Group Flow (vph)	221	1982	0	112	1084	0	379	426	0	112	285	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	101.8	86.1		86.2	76.5		46.2	30.2		28.2	18.2	
Effective Green, g (s)	101.8	86.1		86.2	76.5		46.2	30.2		28.2	18.2	
Actuated g/C Ratio	0.64	0.54		0.54	0.48		0.29	0.19		0.18	0.11	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	4.0		4.0	2.0	
Lane Grp Cap (vph)	347	1865		153	1674		289	634		197	370	
v/s Ratio Prot	c0.08	c0.57		0.04	0.31		c0.18	0.13		0.04	0.09	
v/s Ratio Perm	0.33			0.35			c0.20			0.06		
v/c Ratio	0.64	1.06		0.73	0.65		1.31	0.67		0.57	0.77	
Uniform Delay, d1	20.7	37.0		40.6	31.6		50.0	60.3		58.0	68.9	
Progression Factor	1.73	1.72		1.22	0.70		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	37.8		12.6	1.7		162.7	3.1		4.5	8.7	
Delay (s)	38.1	101.4		62.1	23.7		212.8	63.4		62.5	77.6	
Level of Service	D	F		E	C		F	E		E	E	
Approach Delay (s)		95.0			27.3			130.0			74.5	
Approach LOS		F			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	82.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	111.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	165	1614	31	720	140	100	58	150	278
Future Volume (vph)	165	1614	31	720	140	100	58	150	278
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	7	4	3	8	
Permitted Phases	6		2		4		8		8
Detector Phase	1	6	5	2	7	4	3	8	8
Switch Phase									
Minimum Initial (s)	4.0	20.0	4.0	20.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	10.0	32.0	10.0	32.0	32.0
Total Split (s)	19.0	100.0	10.0	91.0	14.0	39.0	11.0	36.0	36.0
Total Split (%)	11.9%	62.5%	6.3%	56.9%	8.8%	24.4%	6.9%	22.5%	22.5%
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?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	104.0	94.0	89.0	85.0	41.0	33.0	35.0	30.0	30.0
Actuated g/C Ratio	0.65	0.59	0.56	0.53	0.26	0.21	0.22	0.19	0.19
v/c Ratio	0.41	0.88	0.36	0.42	0.55	0.48	0.25	0.45	0.77
Control Delay	4.6	24.3	22.9	23.4	56.0	54.2	47.9	62.5	53.0
Queue Delay	0.0	46.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.6	71.2	22.9	23.4	56.0	54.2	47.9	62.5	53.0
LOS	A	E	C	C	E	D	D	E	D
Approach Delay		65.4		23.4		55.0		55.3	
Approach LOS		E		C		E		E	

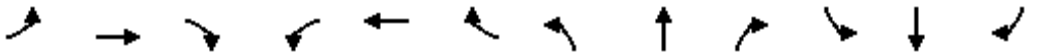
Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 147 (92%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 115	
Control Type: Pretimed	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 53.6	Intersection LOS: D
Intersection Capacity Utilization 87.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: Lake Ave & Southern Blvd

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	174	1811	33	786	147	179	61	158	293
v/c Ratio	0.41	0.88	0.36	0.42	0.55	0.48	0.25	0.45	0.77
Control Delay	4.6	24.3	22.9	23.4	56.0	54.2	47.9	62.5	53.0
Queue Delay	0.0	46.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.6	71.2	22.9	23.4	56.0	54.2	47.9	62.5	53.0
Queue Length 50th (ft)	30	987	12	254	123	148	48	149	192
Queue Length 95th (ft)	m14	m949	25	306	190	230	90	226	#312
Internal Link Dist (ft)		580		482		349		415	
Turn Bay Length (ft)	140		140		100		120		120
Base Capacity (vph)	426	2063	91	1872	268	376	242	349	382
Starvation Cap Reductn	0	603	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	1.24	0.36	0.42	0.55	0.48	0.25	0.45	0.77

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	1614	106	31	720	27	140	100	70	58	150	278
Future Volume (vph)	165	1614	106	31	720	27	140	100	70	58	150	278
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		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3506		1770	3520		1770	1747		1770	1863	1583
Flt Permitted	0.27	1.00		0.05	1.00		0.47	1.00		0.54	1.00	1.00
Satd. Flow (perm)	498	3506		88	3520		871	1747		999	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	174	1699	112	33	758	28	147	105	74	61	158	293
RTOR Reduction (vph)	0	3	0	0	1	0	0	16	0	0	0	86
Lane Group Flow (vph)	174	1808	0	33	785	0	147	163	0	61	158	207
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		8
Actuated Green, G (s)	104.0	94.0		89.0	85.0		41.0	33.0		35.0	30.0	30.0
Effective Green, g (s)	104.0	94.0		89.0	85.0		41.0	33.0		35.0	30.0	30.0
Actuated g/C Ratio	0.65	0.59		0.56	0.53		0.26	0.21		0.22	0.19	0.19
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	427	2059		91	1870		268	360		242	349	296
v/s Ratio Prot	c0.03	c0.52		0.01	0.22		c0.03	0.09		0.01	0.08	
v/s Ratio Perm	0.23			0.19			c0.11			0.05		c0.13
v/c Ratio	0.41	0.88		0.36	0.42		0.55	0.45		0.25	0.45	0.70
Uniform Delay, d1	13.0	28.1		28.4	22.6		50.8	55.6		50.7	57.7	60.8
Progression Factor	0.36	0.80		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	1.5		10.8	0.7		7.9	4.1		2.5	4.2	12.9
Delay (s)	5.4	24.0		39.3	23.3		58.6	59.7		53.1	61.9	73.7
Level of Service	A	C		D	C		E	E		D	E	E
Approach Delay (s)		22.3			24.0			59.2			67.6	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	23	4391	6	2659	7	24	1	7	5
Future Volume (vph)	23	4391	6	2659	7	24	1	7	5
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	1	6	5	2			4		8
Permitted Phases					2	4		8	
Detector Phase	1	6	5	2	2	4	4	8	8
Switch Phase									
Minimum Initial (s)	4.0	18.0	4.0	20.0	20.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.0	24.0	10.0	29.0	29.0	24.0	24.0	24.0	24.0
Total Split (s)	16.0	115.0	16.0	115.0	115.0	29.0	29.0	29.0	29.0
Total Split (%)	10.0%	71.9%	10.0%	71.9%	71.9%	18.1%	18.1%	18.1%	18.1%
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	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	10.0	109.0	10.0	109.0	109.0	23.0	23.0	23.0	23.0
Actuated g/C Ratio	0.06	0.68	0.06	0.68	0.68	0.14	0.14	0.14	0.14
v/c Ratio	0.22	1.08	0.06	0.65	0.01	0.13	0.09	0.04	0.07
Control Delay	76.6	67.5	80.5	3.8	0.0	61.7	22.4	59.7	32.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.6	67.5	80.5	3.8	0.0	61.7	22.4	59.7	32.1
LOS	E	E	F	A	A	E	C	E	C
Approach Delay		67.6		3.9			42.9		39.8
Approach LOS		E		A			D		D

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 74 (46%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 140	
Control Type: Pretimed	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 43.6	Intersection LOS: D
Intersection Capacity Utilization 81.8%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 5: Gem Lake Dr & Southern Blvd

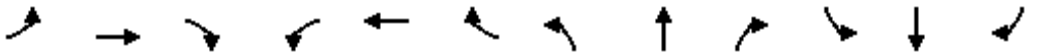
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	24	4630	6	2799	7	25	23	7	18
v/c Ratio	0.22	1.08	0.06	0.65	0.01	0.13	0.09	0.04	0.07
Control Delay	76.6	67.5	80.5	3.8	0.0	61.7	22.4	59.7	32.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.6	67.5	80.5	3.8	0.0	61.7	22.4	59.7	32.1
Queue Length 50th (ft)	24	~1568	7	103	0	23	1	6	5
Queue Length 95th (ft)	58	#1577	m7	107	m0	55	30	23	31
Internal Link Dist (ft)		851		589			338		406
Turn Bay Length (ft)	700		180		450	120		120	
Base Capacity (vph)	108	4281	108	4281	1077	197	246	196	247
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	1.08	0.06	0.65	0.01	0.13	0.09	0.04	0.07

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	4391	8	6	2659	7	24	1	21	7	5	12
Future Volume (vph)	23	4391	8	6	2659	7	24	1	21	7	5	12
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	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.86		1.00	0.86	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.86		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	6283		1736	6285	1553	1752	1580		1752	1645	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.75	1.00		0.74	1.00	
Satd. Flow (perm)	1736	6283		1736	6285	1553	1376	1580		1369	1645	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	24	4622	8	6	2799	7	25	1	22	7	5	13
RTOR Reduction (vph)	0	0	0	0	0	2	0	19	0	0	11	0
Lane Group Flow (vph)	24	4630	0	6	2799	5	25	4	0	7	7	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases						2	4			8		
Actuated Green, G (s)	10.0	109.0		10.0	109.0	109.0	23.0	23.0		23.0	23.0	
Effective Green, g (s)	10.0	109.0		10.0	109.0	109.0	23.0	23.0		23.0	23.0	
Actuated g/C Ratio	0.06	0.68		0.06	0.68	0.68	0.14	0.14		0.14	0.14	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	108	4280		108	4281	1057	197	227		196	236	
v/s Ratio Prot	c0.01	c0.74		0.00	0.45			0.00			0.00	
v/s Ratio Perm						0.00	c0.02			0.01		
v/c Ratio	0.22	1.08		0.06	0.65	0.00	0.13	0.02		0.04	0.03	
Uniform Delay, d1	71.3	25.5		70.6	14.7	8.2	59.7	58.8		59.0	58.9	
Progression Factor	1.00	1.00		1.13	0.23	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.7	41.7		0.5	0.4	0.0	1.3	0.1		0.3	0.2	
Delay (s)	76.0	67.2		80.1	3.8	8.2	61.1	59.0		59.3	59.1	
Level of Service	E	E		F	A	A	E	E		E	E	
Approach Delay (s)		67.3			3.9			60.1			59.2	
Approach LOS		E			A			E			E	

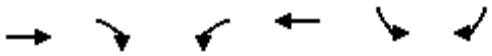
Intersection Summary			
HCM 2000 Control Delay	43.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	1567	1177	615	2706	470	1625						
Future Volume (vph)	1567	1177	615	2706	470	1625						
Turn Type	NA	Free	Prot	NA	Prot	Free						
Protected Phases	4 5		2 3	2 3 4	1 6		1	2	3	4	5	6
Permitted Phases		Free				Free						
Detector Phase	4 5		2 3	2 3 4	1 6							
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	42.0	35.0	11.0	35.0	26.0
Total Split (%)							7%	26%	22%	7%	22%	16%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	39.0	160.0	70.0	81.0	30.0	160.0						
Actuated g/C Ratio	0.24	1.00	0.44	0.51	0.19	1.00						
v/c Ratio	0.91	0.80	0.44	1.13	0.78	1.33						
Control Delay	49.0	24.4	0.7	90.0	71.2	163.0						
Queue Delay	6.0	0.0	0.0	0.1	0.0	0.0						
Total Delay	55.0	24.4	0.7	90.2	71.2	163.0						
LOS	E	C	A	F	E	F						
Approach Delay	41.9			73.6								
Approach LOS	D			E								

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 135	
Control Type: Pretimed	
Maximum v/c Ratio: 1.50	
Intersection Signal Delay: 80.6	Intersection LOS: F
Intersection Capacity Utilization 100.6%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd



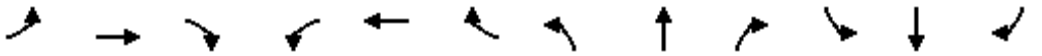
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1649	1239	647	2848	495	1711
v/c Ratio	0.91	0.80	0.44	1.13	0.78	1.33
Control Delay	49.0	24.4	0.7	90.0	71.2	163.0
Queue Delay	6.0	0.0	0.0	0.1	0.0	0.0
Total Delay	55.0	24.4	0.7	90.2	71.2	163.0
Queue Length 50th (ft)	419	882	0	~1218	257	~910
Queue Length 95th (ft)	459	907	0	m513	324	#1170
Internal Link Dist (ft)	1135			569		
Turn Bay Length (ft)						250
Base Capacity (vph)	1803	1553	1473	2525	637	1291
Starvation Cap Reductn	0	0	0	147	0	0
Spillback Cap Reductn	128	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.80	0.44	1.20	0.78	1.33

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1567	1177	615	2706	0	0	0	0	470	0	1625
Future Volume (vph)	0	1567	1177	615	2706	0	0	0	0	470	0	1625
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	4.0	7.0	7.0					7.0		4.0
Lane Util. Factor		0.81	1.00	0.97	0.91					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.70
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		7399	1553	3367	4988					3400		1291
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		7399	1553	3367	4988					3400		1291
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1649	1239	647	2848	0	0	0	0	495	0	1711
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1649	1239	647	2848	0	0	0	0	495	0	1711
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	Free	Prot	NA					Prot		Free
Protected Phases		4 5		2 3	2 3 4					1 6		
Permitted Phases			Free									Free
Actuated Green, G (s)		39.0	160.0	70.0	81.0					30.0		160.0
Effective Green, g (s)		39.0	160.0	70.0	81.0					30.0		160.0
Actuated g/C Ratio		0.24	1.00	0.44	0.51					0.19		1.00
Clearance Time (s)												
Lane Grp Cap (vph)		1803	1553	1473	2525					637		1291
v/s Ratio Prot		0.22		0.19	0.57					0.15		
v/s Ratio Perm			0.80									c1.33
v/c Ratio		0.91	0.80	0.44	1.13					0.78		1.33
Uniform Delay, d1		58.9	0.0	31.3	39.5					61.8		80.0
Progression Factor		0.72	1.00	0.01	0.83					1.00		1.00
Incremental Delay, d2		6.6	3.2	0.6	58.1					9.0		151.9
Delay (s)		48.9	3.2	0.7	91.0					70.9		231.9
Level of Service		D	A	A	F					E		F
Approach Delay (s)		29.3			74.3			0.0			195.7	
Approach LOS		C			E			A			F	

Intersection Summary			
HCM 2000 Control Delay	90.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.80		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	100.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	1020	1017	1601	474	1720	470						
Future Volume (vph)	1020	1017	1601	474	1720	470						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	42.0	35.0	11.0	35.0	26.0
Total Split (%)							7%	26%	22%	7%	22%	16%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	54.0	65.0	46.0	92.0	39.0	81.0						
Actuated g/C Ratio	0.34	0.41	0.29	0.58	0.24	0.51						
v/c Ratio	0.93	0.52	0.78	0.53	1.50	0.48						
Control Delay	15.7	8.1	41.4	22.1	271.3	3.2						
Queue Delay	39.5	0.0	35.7	0.0	0.0	0.0						
Total Delay	55.2	8.1	77.1	22.1	271.3	3.2						
LOS	E	A	E	C	F	A						
Approach Delay		31.7	64.5									
Approach LOS		C	E									

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 135	
Control Type: Pretimed	
Maximum v/c Ratio: 1.50	
Intersection Signal Delay: 105.8	Intersection LOS: F
Intersection Capacity Utilization 100.6%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 2: I-95 NB Ramp & Southern Blvd

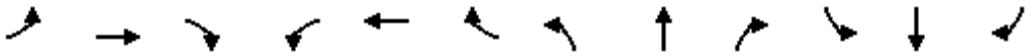
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1074	1071	1685	499	1811	495
v/c Ratio	0.93	0.52	0.78	0.53	1.50	0.48
Control Delay	15.7	8.1	41.4	22.1	271.3	3.2
Queue Delay	39.5	0.0	35.7	0.0	0.0	0.0
Total Delay	55.2	8.1	77.1	22.1	271.3	3.2
Queue Length 50th (ft)	614	26	408	372	~929	0
Queue Length 95th (ft)	m#680	m80	m394	m358	#1019	58
Internal Link Dist (ft)		569	715			
Turn Bay Length (ft)				300	600	600
Base Capacity (vph)	1158	2065	2168	942	1204	1038
Starvation Cap Reductn	169	0	0	0	0	0
Spillback Cap Reductn	0	0	595	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.09	0.52	1.07	0.53	1.50	0.48

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1020	1017	0	0	1601	474	1720	0	470	0	0	0
Future Volume (vph)	1020	1017	0	0	1601	474	1720	0	470	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.94		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	5085			7544	1583	4942		1568			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	5085			7544	1583	4942		1568			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1074	1071	0	0	1685	499	1811	0	495	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	32	0	0	244	0	0	0
Lane Group Flow (vph)	1074	1071	0	0	1685	467	1811	0	251	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	54.0	65.0			46.0	92.0	39.0		81.0			
Effective Green, g (s)	54.0	65.0			46.0	92.0	39.0		81.0			
Actuated g/C Ratio	0.34	0.41			0.29	0.58	0.24		0.51			
Clearance Time (s)												
Lane Grp Cap (vph)	1158	2065			2168	910	1204		793			
v/s Ratio Prot	c0.31	0.21			c0.22	0.30	c0.37		0.16			
v/s Ratio Perm												
v/c Ratio	0.93	0.52			0.78	0.51	1.50		0.32			
Uniform Delay, d1	51.1	35.7			52.3	20.5	60.5		23.2			
Progression Factor	0.16	0.21			0.78	1.25	1.00		1.00			
Incremental Delay, d2	6.5	0.5			0.3	0.2	231.2		1.0			
Delay (s)	14.6	8.0			41.2	25.8	291.7		24.3			
Level of Service	B	A			D	C	F		C			
Approach Delay (s)		11.3			37.7			234.3			0.0	
Approach LOS		B			D			F			A	

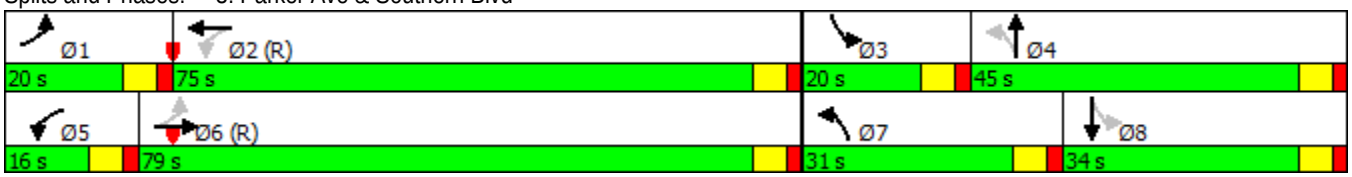
Intersection Summary			
HCM 2000 Control Delay	97.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	100.6%	ICU Level of Service	G
Analysis Period (min)	15		

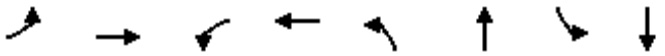
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	169	999	151	1454	365	238	142	299
Future Volume (vph)	169	999	151	1454	365	238	142	299
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6	5	2	7	4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	5	2	7	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	20.0	4.0	20.0	4.0	6.0	4.0	6.0
Minimum Split (s)	10.0	31.0	10.0	29.0	10.0	28.0	10.0	34.0
Total Split (s)	20.0	79.0	16.0	75.0	31.0	45.0	20.0	34.0
Total Split (%)	12.5%	49.4%	10.0%	46.9%	19.4%	28.1%	12.5%	21.3%
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	0.0
Total Lost Time (s)	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
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
Act Effct Green (s)	86.9	73.2	82.8	71.2	57.1	37.7	39.6	26.1
Actuated g/C Ratio	0.54	0.46	0.52	0.44	0.36	0.24	0.25	0.16
v/c Ratio	0.90	0.88	0.91	1.03	1.19	0.46	0.48	0.92
Control Delay	88.3	54.2	68.0	86.8	153.3	46.3	42.6	72.9
Queue Delay	0.0	0.3	0.0	30.1	0.0	0.0	1.1	0.0
Total Delay	88.3	54.5	68.0	116.9	153.3	46.3	43.6	72.9
LOS	F	D	E	F	F	D	D	E
Approach Delay		58.3		112.5		100.1		66.9
Approach LOS		E		F		F		E

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 131 (82%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.19	
Intersection Signal Delay: 86.1	Intersection LOS: F
Intersection Capacity Utilization 108.5%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 3: Parker Ave & Southern Blvd





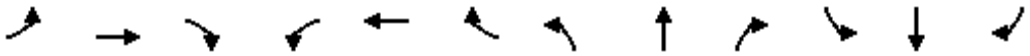
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	178	1388	159	1606	384	380	149	584
v/c Ratio	0.90	0.88	0.91	1.03	1.19	0.46	0.48	0.92
Control Delay	88.3	54.2	68.0	86.8	153.3	46.3	42.6	72.9
Queue Delay	0.0	0.3	0.0	30.1	0.0	0.0	1.1	0.0
Total Delay	88.3	54.5	68.0	116.9	153.3	46.3	43.6	72.9
Queue Length 50th (ft)	159	532	~134	~990	~426	153	107	258
Queue Length 95th (ft)	#286	611	m#219	#1132	#643	206	166	#354
Internal Link Dist (ft)		905		585		474		402
Turn Bay Length (ft)	230		150		240		120	
Base Capacity (vph)	204	1580	174	1566	323	859	315	672
Starvation Cap Reductn	0	0	0	436	0	0	0	0
Spillback Cap Reductn	0	19	0	0	0	11	51	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.89	0.91	1.42	1.19	0.45	0.56	0.87

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	999	319	151	1454	71	365	238	123	142	299	256
Future Volume (vph)	169	999	319	151	1454	71	365	238	123	142	299	256
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		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.99		1.00	0.95		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3411		1770	3514		1770	3359		1770	3295	
Flt Permitted	0.05	1.00		0.06	1.00		0.12	1.00		0.53	1.00	
Satd. Flow (perm)	102	3411		105	3514		232	3359		981	3295	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	178	1052	336	159	1531	75	384	251	129	149	315	269
RTOR Reduction (vph)	0	19	0	0	2	0	0	41	0	0	97	0
Lane Group Flow (vph)	178	1369	0	159	1604	0	384	339	0	149	487	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	86.9	73.3		82.9	71.3		57.1	37.7		39.5	26.1	
Effective Green, g (s)	86.9	73.3		82.9	71.3		57.1	37.7		39.5	26.1	
Actuated g/C Ratio	0.54	0.46		0.52	0.45		0.36	0.24		0.25	0.16	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	4.0		4.0	2.0	
Lane Grp Cap (vph)	197	1562		175	1565		323	791		308	537	
v/s Ratio Prot	c0.08	0.40		0.07	c0.46		c0.19	0.10		0.04	0.15	
v/s Ratio Perm	0.41			0.41			c0.24			0.08		
v/c Ratio	0.90	0.88		0.91	1.02		1.19	0.43		0.48	0.91	
Uniform Delay, d1	51.1	39.3		46.5	44.4		50.5	52.0		49.5	65.8	
Progression Factor	1.19	1.23		0.75	1.49		1.00	1.00		1.00	1.00	
Incremental Delay, d2	34.3	6.4		29.8	24.5		111.7	0.5		1.6	18.5	
Delay (s)	95.2	54.9		64.7	90.7		162.2	52.5		51.2	84.3	
Level of Service	F	D		E	F		F	D		D	F	
Approach Delay (s)		59.5			88.3			107.6			77.6	
Approach LOS		E			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	80.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	108.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	163	942	130	1314	142	110	60	160	220
Future Volume (vph)	163	942	130	1314	142	110	60	160	220
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	3	8	7	4	
Permitted Phases	6		2		8		4		4
Detector Phase	1	6	5	2	3	8	7	4	4
Switch Phase									
Minimum Initial (s)	4.0	20.0	4.0	20.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	10.0	32.0	10.0	32.0	32.0
Total Split (s)	25.0	90.0	20.0	85.0	16.0	39.0	11.0	34.0	34.0
Total Split (%)	15.6%	56.3%	12.5%	53.1%	10.0%	24.4%	6.9%	21.3%	21.3%
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?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	103.0	84.0	93.0	79.0	43.0	33.0	33.0	28.0	28.0
Actuated g/C Ratio	0.64	0.52	0.58	0.49	0.27	0.21	0.21	0.18	0.18
v/c Ratio	0.63	0.64	0.46	0.81	0.56	0.45	0.25	0.52	0.67
Control Delay	33.0	34.3	16.6	38.8	55.7	55.5	48.3	66.2	49.3
Queue Delay	0.0	1.6	0.0	48.4	159.9	0.0	0.0	0.0	84.3
Total Delay	33.0	36.0	16.6	87.2	215.6	55.5	48.3	66.2	133.7
LOS	C	D	B	F	F	E	D	E	F
Approach Delay		35.6		81.0		130.5		97.6	
Approach LOS		D		F		F		F	

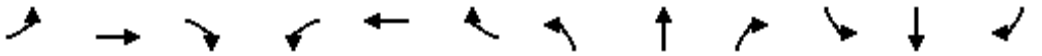
Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 39 (24%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 70.9	Intersection LOS: E
Intersection Capacity Utilization 82.5%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: Lake Ave & Southern Blvd

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	172	1159	137	1412	149	169	63	168	232
v/c Ratio	0.63	0.64	0.46	0.81	0.56	0.45	0.25	0.52	0.67
Control Delay	33.0	34.3	16.6	38.8	55.7	55.5	48.3	66.2	49.3
Queue Delay	0.0	1.6	0.0	48.4	159.9	0.0	0.0	0.0	84.3
Total Delay	33.0	36.0	16.6	87.2	215.6	55.5	48.3	66.2	133.7
Queue Length 50th (ft)	103	588	52	644	124	144	50	162	148
Queue Length 95th (ft)	m125	651	81	744	192	223	92	243	249
Internal Link Dist (ft)		585		588		461		394	
Turn Bay Length (ft)	140		140		100		120		120
Base Capacity (vph)	271	1825	300	1743	265	376	250	326	346
Starvation Cap Reductn	0	458	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	608	251	0	0	0	274
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.85	0.46	1.24	10.64	0.45	0.25	0.52	3.22

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	942	159	130	1314	28	142	110	50	60	160	220
Future Volume (vph)	163	942	159	130	1314	28	142	110	50	60	160	220
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		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3463		1770	3528		1770	1775		1770	1863	1583
Flt Permitted	0.06	1.00		0.16	1.00		0.40	1.00		0.60	1.00	1.00
Satd. Flow (perm)	118	3463		294	3528		750	1775		1118	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	172	992	167	137	1383	29	149	116	53	63	168	232
RTOR Reduction (vph)	0	9	0	0	1	0	0	10	0	0	0	69
Lane Group Flow (vph)	172	1150	0	137	1411	0	149	159	0	63	168	163
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		4
Actuated Green, G (s)	103.0	84.0		93.0	79.0		43.0	33.0		33.0	28.0	28.0
Effective Green, g (s)	103.0	84.0		93.0	79.0		43.0	33.0		33.0	28.0	28.0
Actuated g/C Ratio	0.64	0.52		0.58	0.49		0.27	0.21		0.21	0.18	0.18
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	272	1818		300	1741		265	366		250	326	277
v/s Ratio Prot	c0.08	c0.33		0.04	c0.40		c0.04	0.09		0.01	0.09	
v/s Ratio Perm	0.33			0.23			c0.12			0.04		0.10
v/c Ratio	0.63	0.63		0.46	0.81		0.56	0.43		0.25	0.52	0.59
Uniform Delay, d1	38.9	27.0		18.7	34.2		48.0	55.4		52.3	59.8	60.7
Progression Factor	0.84	1.24		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.4	1.0		4.9	4.2		8.4	3.7		2.4	5.7	8.8
Delay (s)	39.0	34.5		23.6	38.4		56.4	59.1		54.7	65.6	69.5
Level of Service	D	C		C	D		E	E		D	E	E
Approach Delay (s)		35.1			37.1			57.8			66.1	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	41.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	12	2695	6	4321	4	21	1	36	5
Future Volume (vph)	12	2695	6	4321	4	21	1	36	5
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	Perm	NA
Protected Phases	1	6	5	2			4		8
Permitted Phases					2	4		8	
Detector Phase	1	6	5	2	2	4	4	8	8
Switch Phase									
Minimum Initial (s)	4.0	18.0	3.0	20.0	20.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.0	24.0	10.0	29.0	29.0	15.0	15.0	15.0	15.0
Total Split (s)	20.0	111.0	20.0	111.0	111.0	29.0	29.0	29.0	29.0
Total Split (%)	12.5%	69.4%	12.5%	69.4%	69.4%	18.1%	18.1%	18.1%	18.1%
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	5.0	5.0	5.0	5.0
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	9.0	9.0	9.0	9.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	14.0	105.0	14.0	105.0	105.0	20.0	20.0	20.0	20.0
Actuated g/C Ratio	0.09	0.66	0.09	0.66	0.66	0.12	0.12	0.12	0.12
v/c Ratio	0.09	0.69	0.04	1.10	0.00	0.13	0.07	0.22	0.13
Control Delay	68.8	18.4	73.5	60.9	0.0	64.5	28.0	66.7	26.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.8	18.4	73.5	60.9	0.0	64.5	28.0	66.7	26.8
LOS	E	B	E	E	A	E	C	E	C
Approach Delay		18.7		60.9			49.7		49.4
Approach LOS		B		E			D		D

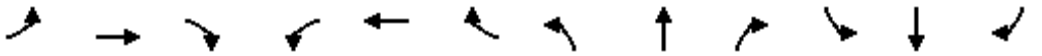
Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 63 (39%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 100	
Control Type: Pretimed	
Maximum v/c Ratio: 1.10	
Intersection Signal Delay: 44.7	Intersection LOS: D
Intersection Capacity Utilization 83.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 5: Gem Lake Dr & Southern Blvd

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	13	2853	6	4548	4	22	15	38	29
v/c Ratio	0.09	0.69	0.04	1.10	0.00	0.13	0.07	0.22	0.13
Control Delay	68.8	18.4	73.5	60.9	0.0	64.5	28.0	66.7	26.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.8	18.4	73.5	60.9	0.0	64.5	28.0	66.7	26.8
Queue Length 50th (ft)	13	517	6	~1547	0	21	1	36	5
Queue Length 95th (ft)	37	547	m5	m216	m0	51	26	76	38
Internal Link Dist (ft)		842		597			340		410
Turn Bay Length (ft)	700		180		450	120		120	
Base Capacity (vph)	151	4120	151	4124	1047	170	210	172	223
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.69	0.04	1.10	0.00	0.13	0.07	0.22	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	2695	15	6	4321	4	21	1	13	36	5	23
Future Volume (vph)	12	2695	15	6	4321	4	21	1	13	36	5	23
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	9.0	9.0		9.0	9.0	
Lane Util. Factor	1.00	0.86		1.00	0.86	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.86		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	6279		1736	6285	1553	1752	1586		1752	1616	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.74	1.00		0.75	1.00	
Satd. Flow (perm)	1736	6279		1736	6285	1553	1362	1586		1379	1616	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	13	2837	16	6	4548	4	22	1	14	38	5	24
RTOR Reduction (vph)	0	0	0	0	0	1	0	12	0	0	21	0
Lane Group Flow (vph)	13	2853	0	6	4548	3	22	3	0	38	8	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases						2	4			8		
Actuated Green, G (s)	14.0	105.0		14.0	105.0	105.0	20.0	20.0		20.0	20.0	
Effective Green, g (s)	14.0	105.0		14.0	105.0	105.0	20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.09	0.66		0.09	0.66	0.66	0.12	0.12		0.12	0.12	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	9.0	9.0		9.0	9.0	
Lane Grp Cap (vph)	151	4120		151	4124	1019	170	198		172	202	
v/s Ratio Prot	c0.01	0.45		0.00	c0.72			0.00			0.00	
v/s Ratio Perm						0.00	0.02			c0.03		
v/c Ratio	0.09	0.69		0.04	1.10	0.00	0.13	0.01		0.22	0.04	
Uniform Delay, d1	67.1	17.3		66.8	27.5	9.5	62.3	61.4		63.0	61.6	
Progression Factor	1.00	1.00		1.09	0.41	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	1.0		0.0	46.7	0.0	1.6	0.1		2.9	0.4	
Delay (s)	68.2	18.3		73.2	57.8	9.5	63.8	61.5		65.9	61.9	
Level of Service	E	B		E	E	A	E	E		E	E	
Approach Delay (s)		18.5			57.8			62.9			64.2	
Approach LOS		B			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCS

Freeway Analyses

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	0_South of Forest Ent
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	9044	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2380	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2416	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2416	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	52.8	mi/h
Number of lanes, N	4	
Density, D	45.7	pc/mi/ln
Level of service, LOS	F	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	0_South of Forest Ent
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6909	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1818	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1845	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1845	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	65.2	mi/h
Number of lanes, N	4	
Density, D	28.3	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	1_Forest Ent_Southern Ext
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	10595	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2788	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1887	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	6	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1887	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	64.5	mi/h
Number of lanes, N	6	
Density, D	29.2	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	1_Forest Ent_Southern Ext
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	7885	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2075	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1404	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	6	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1404	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.5	mi/h
Number of lanes, N	6	
Density, D	20.2	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	2_Exit to Southern/Exit to Bel
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	9262	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2437	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1979	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1979	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	63.0	mi/h
Number of lanes, N	5	
Density, D	31.4	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	2_Exit to Southern/Exit to Bel
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6214	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1635	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1328	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1328	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.8	mi/h
Number of lanes, N	5	
Density, D	19.0	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	4_Ext to Bel/Ent from Southern
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	7674	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2019	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2050	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2050	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	61.6	mi/h
Number of lanes, N	4	
Density, D	33.3	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	4_Ext to Bel/Ent from Southern
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	5312	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1398	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1419	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1419	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.4	mi/h
Number of lanes, N	4	
Density, D	20.4	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	6_Ent frm Southern/Ent frm Bel
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	9584	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2522	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2048	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2048	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	61.7	mi/h
Number of lanes, N	5	
Density, D	33.2	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	6_Ent frm Southern/Ent frm Bel
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6646	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1749	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1420	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1420	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.4	mi/h
Number of lanes, N	5	
Density, D	20.4	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	6b_Entfrm Southern/Ent frm Bel
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	9584	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2522	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2560	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2560	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	48.5	mi/h
Number of lanes, N	4	
Density, D	52.7	pc/mi/ln
Level of service, LOS	F	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	6b_Entfrm Southern/Ent frm Bel
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6646	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1749	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1775	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1775	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	66.2	mi/h
Number of lanes, N	4	
Density, D	26.8	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Southbound
From/To:	7_Exit to Bel/Exit to Southern
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6215	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1636	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1660	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1660	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	67.5	mi/h
Number of lanes, N	4	
Density, D	24.6	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Southbound
From/To:	7_Exit to Bel/Exit to Southern
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	7472	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1966	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1996	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1996	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	62.7	mi/h
Number of lanes, N	4	
Density, D	31.9	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Southbound
From/To:	9_Exit to Southern_Ent frm Bel
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	4976	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1309	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1329	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1329	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.8	mi/h
Number of lanes, N	4	
Density, D	19.0	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Southbound
From/To:	9_Exit to Southern_Ent frm Bel
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	5681	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1495	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1517	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1517	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	68.8	mi/h
Number of lanes, N	4	
Density, D	22.0	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Southbound
From/To:	11_Ent frm Bel_Entfrm Southern
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	5665	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1491	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1513	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1513	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	68.9	mi/h
Number of lanes, N	4	
Density, D	22.0	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Southbound
From/To:	11_Ent frm Bel_Entfrm Southern
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	7136	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1878	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1906	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1906	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	64.2	mi/h
Number of lanes, N	4	
Density, D	29.7	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Southbound
From/To:	13_Ent frm South_Exit to Fores
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	7373	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1940	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1575	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1575	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	68.4	mi/h
Number of lanes, N	5	
Density, D	23.0	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Southbound
From/To:	13_Ent frm South_Exit to Fores
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	8481	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2232	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1812	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1812	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	65.7	mi/h
Number of lanes, N	5	
Density, D	27.6	pc/mi/ln
Level of service, LOS	D	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Southbound
From/To:	14_South of Forest Exit
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV

Description: I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6479	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1705	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1731	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1731	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	66.7	mi/h
Number of lanes, N	4	
Density, D	25.9	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Southbound
From/To:	14_South of Forest Exit
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV

Description: I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	7130	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1876	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1904	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1904	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	64.3	mi/h
Number of lanes, N	4	
Density, D	29.6	pc/mi/ln
Level of service, LOS	D	

HCS 2010: Freeway Merge and Diverge Segments Release 6.90

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date performed:	2/8/17
Analysis time period:	AM Peak
Freeway/Dir of Travel:	I-95 Southbound
Junction:	Exit to Southern Blvd
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV

Description: I-95 at SR 80/Southern Blvd Interchange PD&E Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.4	mph
Volume on freeway	6215	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1239	vph
Length of first accel/decel lane	0	ft
Length of second accel/decel lane	1500	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	6215		1239			vph
Peak-hour factor, PHF	0.95		0.95			
Peak 15-min volume, v15	1636		326			v
Trucks and buses	3		3			%
Recreational vehicles	0		0			%
Terrain type:	Level		Level			
Grade	0.00	%	0.00	%		%
Length	0.00	mi	0.00	mi		mi
Trucks and buses PCE, ET	1.5		1.5			
Recreational vehicle PCE, ER	1.2		1.2			

Heavy vehicle adjustment, fHV	0.985	0.985	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6640	1324	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.260 Using Equation 0

$v_{12} = v_R + (v - v_F) P_{FD} = 2706$ pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6640	9600	No
$v_{FO} = v - v_R$	5316	9600	No
v_R	1324	4000	No
v_3 or v_{av34}	1967 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2706 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2706	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\ v_{12} - 0.009\ L_D$ = 14.0 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D_S = 0.547

Space mean speed in ramp influence area, S_R = 54.9 mph

Space mean speed in outer lanes, S_0 = 73.5 mph

Space mean speed for all vehicles, S = 64.5 mph

HCS 2010: Freeway Merge and Diverge Segments Release 6.90

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date performed:	2/8/17
Analysis time period:	PM Peak
Freeway/Dir of Travel:	I-95 Southbound
Junction:	Exit to Southern Blvd
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.4	mph
Volume on freeway	7472	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1791	vph
Length of first accel/decel lane	0	ft
Length of second accel/decel lane	1500	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	7472		1791			vph
Peak-hour factor, PHF	0.95		0.95			
Peak 15-min volume, v15	1966		471			v
Trucks and buses	3		3			%
Recreational vehicles	0		0			%
Terrain type:	Level		Level			
Grade	0.00	%	0.00	%		%
Length	0.00	mi	0.00	mi		mi
Trucks and buses PCE, ET	1.5		1.5			
Recreational vehicle PCE, ER	1.2		1.2			

Heavy vehicle adjustment, fHV	0.985	0.985	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	7983	1914	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.260 Using Equation 0

$v_{12} = v_R + (v - v_F) P_{FD}$ = 3492 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	7983	9600	No
$v_{FO} = v - v_{FR}$	6069	9600	No
v_R	1914	4000	No
v_3 or v_{av34}	2245 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 3492 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3492	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\ v_{12} - 0.009\ L_D$ = 20.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.600

Space mean speed in ramp influence area, S_R = 53.4 mph

Space mean speed in outer lanes, S_0 = 72.4 mph

Space mean speed for all vehicles, S = 62.6 mph

HCS 2010: Freeway Merge and Diverge Segments Release 6.90

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date performed:	2/8/17
Analysis time period:	AM Peak
Freeway/Dir of Travel:	I-95 Southbound
Junction:	Entrance from Belvedere Rd
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.4	mph
Volume on freeway	4976	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	2	
Free-flow speed on ramp	45.0	mph
Volume on ramp	689	vph
Length of first accel/decel lane	850	ft
Length of second accel/decel lane	1450	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4976	689		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1309	181		v
Trucks and buses	3	3		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.985	0.985	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	5316	736	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 0.209 Using Equation 0

$v_{12} = v_F (P_{FM}) =$ 1111 pc/h

Capacity Checks

		Actual	Maximum	LOS F?
v_{FO}		6052	9600	No
v_3 or v_{av34}		2102 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or v_{av34}	> 2700 pc/h?		No	
Is v_3 or v_{av34}	> 1.5 v_{av34} / 12		Yes	
If yes, v_{12A}	= 2126		(Equation 13-15, 13-16, 13-18, or 13-19)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{12A}	2862	4600	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, v_{12} - 0.00627\, L_A =$ 7.7 pc/mi/ln

Level of service for ramp-freeway junction areas of influence A

Speed Estimation

Intermediate speed variable,	M_S = 0.106	
Space mean speed in ramp influence area,	S_R = 67.4	mph
Space mean speed in outer lanes,	S_0 = 66.5	mph
Space mean speed for all vehicles,	S = 66.9	mph

HCS 2010: Freeway Merge and Diverge Segments Release 6.90

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date performed:	2/8/17
Analysis time period:	PM Peak
Freeway/Dir of Travel:	I-95 Southbound
Junction:	Entrance from Belvedere Rd
Jurisdiction:	
Analysis Year:	No Build 2020 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.4	mph
Volume on freeway	5681	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	2	
Free-flow speed on ramp	45.0	mph
Volume on ramp	1455	vph
Length of first accel/decel lane	850	ft
Length of second accel/decel lane	1450	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5681	1455		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1495	383		v
Trucks and buses	3	3		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.985	0.985	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6070	1555	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 0.209 Using Equation 0

$v_{12} = v_{F}(P_{FM}) = 1269$ pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	7625	9600	No
v_3 or v_{av34}	2400 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	Yes	

If yes, v_{12A} = 2428 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{12A}	3983	4600	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_{12} + 0.0078\, v_{R} - 0.00627\, L_{A} = 16.1$ pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.247	
Space mean speed in ramp influence area,	S_R = 63.4	mph
Space mean speed in outer lanes,	S_0 = 65.6	mph
Space mean speed for all vehicles,	S = 64.4	mph

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	I-95 Northbound
Weaving Location:	Btwn Foreest Hill and Southern
Analysis Year:	No Build 2040
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	6	ln
Weaving segment length, LS	3900	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	6927	1850	1796	0	veh/h
Peak hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	1823	487	473	0	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	7401	1977	1919	0	pc/h
Volume ratio, VR		0.345			

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN		lc/h
Weaving lane changes, LCW		lc/h
Non-weaving vehicle index, INW		
Non-weaving lane change, LCNW		lc/h
Total lane changes, LCALL		lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W		
Average weaving speed, SW		mi/h
Average non-weaving speed, SNW		mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S		mi/h
Weaving segment density, D		pc/mi/ln
Level of service, LOS	F	
Weaving segment v/c ratio	1.113	
Weaving segment flow rate, v	11130	veh/h
Weaving segment capacity, cW	9999	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4504	3900	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400	2354	c
		Maximum	Analyzed	
v/c ratio		1.00	1.113	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	I-95 Northbound
Weaving Location:	Btwn Foreest Hill and Southern
Analysis Year:	No Build 2040
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	6	ln
Weaving segment length, LS	3900	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	5050	1222	2190	0	veh/h
Peak hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	1329	322	576	0	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	5396	1306	2340	0	pc/h
Volume ratio, VR		0.403			

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN		lc/h
Weaving lane changes, LCW		lc/h
Non-weaving vehicle index, INW		
Non-weaving lane change, LCNW		lc/h
Total lane changes, LCALL		lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W		
Average weaving speed, SW		mi/h
Average non-weaving speed, SNW		mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S		mi/h
Weaving segment density, D		pc/mi/ln
Level of service, LOS	F	
Weaving segment v/c ratio	1.042	
Weaving segment flow rate, v	8908	veh/h
Weaving segment capacity, cW	8552	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	5151	3900	a,b
		Maximum	Analyzed	
Density-based capacity, cIWL (pc/h/ln)		2400	2304	c
		Maximum	Analyzed	
v/c ratio		1.00	1.042	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

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Phone: Fax:
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Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	I-95 Southbound
Weaving Location:	Btwn Southern/Forest Hill
Analysis Year:	No Build 2040
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	6	ln
Weaving segment length, LS	4300	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	5530	2163	1055	0	veh/h
Peak hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	1455	569	278	0	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	5908	2311	1127	0	pc/h
Volume ratio, VR		0.368			

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	1127	lc/h
Weaving lane changes, LCW	2796	lc/h
Non-weaving vehicle index, INW	3049	
Non-weaving lane change, LCNW	3006	lc/h
Total lane changes, LCALL	5802	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.286	
Average weaving speed, SW	57.8	mi/h
Average non-weaving speed, SNW	54.4	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	55.6	mi/h
Weaving segment density, D	28.0+	pc/mi/ln
Level of service, LOS	D	
Weaving segment v/c ratio	0.982	
Weaving segment flow rate, v	9209	veh/h
Weaving segment capacity, cW	9374	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4757	4300	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400	2365	c
		Maximum	Analyzed	
v/c ratio		1.00	0.982	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	I-95 Southbound
Weaving Location:	Btwn Southern/Forest Hill
Analysis Year:	No Build 2040
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	6	ln
Weaving segment length, LS	4300	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	7197	1792	1662	0	veh/h
Peak hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	1894	472	437	0	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	7689	1915	1776	0	pc/h
Volume ratio, VR		0.324			

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	1776	lc/h
Weaving lane changes, LCW		lc/h
Non-weaving vehicle index, INW		
Non-weaving lane change, LCNW		lc/h
Total lane changes, LCALL		lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	
Average weaving speed, SW	mi/h
Average non-weaving speed, SNW	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	mi/h
Weaving segment density, D	pc/mi/ln
Level of service, LOS	
Weaving segment v/c ratio	
Weaving segment flow rate, v	veh/h
Weaving segment capacity, cW	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4280	4300	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400		c
		Maximum	Analyzed	
v/c ratio		1.00		d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	0_South of Forest Ent
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	9436	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2483	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2520	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2520	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	49.8	mi/h
Number of lanes, N	4	
Density, D	50.6	pc/mi/ln
Level of service, LOS	F	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	0_South of Forest Ent
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	7781	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2048	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2078	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2078	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	61.1	mi/h
Number of lanes, N	4	
Density, D	34.0	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	1_Forest Ent_Southern Ext
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	11286	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2970	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2010	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	6	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2010	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	62.4	mi/h
Number of lanes, N	6	
Density, D	32.2	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	1_Forest Ent_Southern Ext
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	9003	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2369	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1603	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	6	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1603	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	68.1	mi/h
Number of lanes, N	6	
Density, D	23.5	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	2_Exit to Southern/Exit to Bel
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	9490	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2497	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2028	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2028	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	62.0	mi/h
Number of lanes, N	5	
Density, D	32.7	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	2_Exit to Southern/Exit to Bel
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6813	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1793	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1456	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1456	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.2	mi/h
Number of lanes, N	5	
Density, D	21.0	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	4_Ext to Bel/Ent from Southern
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	7764	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2043	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2074	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2074	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	61.1	mi/h
Number of lanes, N	4	
Density, D	33.9	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	4_Ext to Bel/Ent from Southern
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	5778	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1521	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1543	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1543	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	68.6	mi/h
Number of lanes, N	4	
Density, D	22.5	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	6_Ent frm Southern/Ent frm Bel
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	9942	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2616	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2124	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2124	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	60.1	mi/h
Number of lanes, N	5	
Density, D	35.3	pc/mi/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	6_Ent frm Southern/Ent frm Bel
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	7269	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1913	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1553	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1553	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	68.6	mi/h
Number of lanes, N	5	
Density, D	22.7	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Northbound
From/To:	6b_Entfrm Southern/Ent frm Bel
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	9942	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2616	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2656	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2656	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	45.4	mi/h
Number of lanes, N	4	
Density, D	58.5	pc/mi/ln
Level of service, LOS	F	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Northbound
From/To:	6b_Entfrm Southern/Ent frm Bel
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	7269	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1913	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1942	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1942	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	63.6	mi/h
Number of lanes, N	4	
Density, D	30.5	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Southbound
From/To:	7_Exit to Bel/Exit to Southern
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6399	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1684	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1709	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1709	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	67.0	mi/h
Number of lanes, N	4	
Density, D	25.5	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Southbound
From/To:	7_Exit to Bel/Exit to Southern
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	8413	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2214	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2247	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2247	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	57.3	mi/h
Number of lanes, N	4	
Density, D	39.2	pc/mi/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Southbound
From/To:	9_Exit to Southern_Ent frm Bel
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	5041	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1327	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1346	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1346	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	69.8	mi/h
Number of lanes, N	4	
Density, D	19.3	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Southbound
From/To:	9_Exit to Southern_Ent frm Bel
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6318	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1663	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1688	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1688	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	67.2	mi/h
Number of lanes, N	4	
Density, D	25.1	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Southbound
From/To:	11_Ent frm Bel_Entfrm Southern
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	5875	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1546	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1569	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1569	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	68.4	mi/h
Number of lanes, N	4	
Density, D	22.9	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Southbound
From/To:	11_Ent frm Bel_Entfrm Southern
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	7929	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2087	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2118	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2118	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	60.2	mi/h
Number of lanes, N	4	
Density, D	35.2	pc/mi/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Southbound
From/To:	13_Ent frm South_Exit to Fores
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV

Description: I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	8038	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2115	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1718	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1718	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	66.9	mi/h
Number of lanes, N	5	
Density, D	25.7	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Southbound
From/To:	13_Ent frm South_Exit to Fores
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV

Description: I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	9721	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2558	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2077	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	5	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2077	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	61.1	mi/h
Number of lanes, N	5	
Density, D	34.0	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Direction:	I-95 Southbound
From/To:	14_South of Forest Exit
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	6983	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1838	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	1865	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	1865	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	64.9	mi/h
Number of lanes, N	4	
Density, D	28.7	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency or Company:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Direction:	I-95 Southbound
From/To:	14_South of Forest Exit
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Flow Inputs and Adjustments

Volume, V	8059	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	2121	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	1.00	
Flow rate, vp	2153	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.67	ramps/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	5.0	mi/h
Free-flow speed, FFS	70.4	mi/h

LOS and Performance Measures

Flow rate, vp	2153	pc/h/ln
Free-flow speed, FFS	70.4	mi/h
Average passenger-car speed, S	59.5	mi/h
Number of lanes, N	4	
Density, D	36.2	pc/mi/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date performed:	11/21/2016
Analysis time period:	AM Peak
Freeway/Dir of Travel:	I-95 Southbound
Junction:	Exit to Southern Blvd
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV

Description: I-95 at SR 80/Southern Blvd Interchange PD&E Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.4	mph
Volume on freeway	6399	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1358	vph
Length of first accel/decel lane	0	ft
Length of second accel/decel lane	1500	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6399	1358		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1684	357		v
Trucks and buses	3	3		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.985	0.985	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6837	1451	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.260 Using Equation 0

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2851 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6837	9600	No
$v_{FO} = v_F - v_R$	5386	9600	No
v_R	1451	4000	No
v_3 or v_{av34}	1993 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 2851 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2851	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v_R - 0.009 L_D$ = 15.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D_S = 0.559

Space mean speed in ramp influence area, S_R = 54.5 mph

Space mean speed in outer lanes, S_0 = 73.4 mph

Space mean speed for all vehicles, S = 64.1 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date performed:	11/21/2016
Analysis time period:	PM Peak
Freeway/Dir of Travel:	I-95 Southbound
Junction:	Exit to Southern Blvd
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.4	mph
Volume on freeway	8413	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	2095	vph
Length of first accel/decel lane	0	ft
Length of second accel/decel lane	1500	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8413	2095		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	2214	551		v
Trucks and buses	3	3		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.985	0.985	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8989	2238	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.260 Using Equation 0

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3993 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	8989	9600	No
$v_{FO} = v_F - v_R$	6751	9600	No
v_R	2238	4000	No
v_3 or v_{av34}	2498 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or v_{av34}	> 2700 pc/h?	No	
Is v_3 or v_{av34}	> 1.5 v_{12} /2	No	

If yes, v_{12A} = 3993 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3993	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_D$ = 25.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.629

Space mean speed in ramp influence area, S_R = 52.5 mph

Space mean speed in outer lanes, S_0 = 71.4 mph

Space mean speed for all vehicles, S = 61.6 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date performed:	11/21/2016
Analysis time period:	AM Peak
Freeway/Dir of Travel:	I-95 Southbound
Junction:	Entrance from Belvedere Rd
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.4	mph
Volume on freeway	5875	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	2	
Free-flow speed on ramp	45.0	mph
Volume on ramp	834	vph
Length of first accel/decel lane	850	ft
Length of second accel/decel lane	1450	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5875	834		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1546	219		v
Trucks and buses	3	3		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.985	0.985	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	6277	891	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 0.209 Using Equation 0

$v_{12} = v_F (P_{FM})$ = 1312 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	7168	9600	No
v_3 or v_{av34}	2482 pc/h	(Equation 13-14 or 13-17)	

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12} /2 Yes

If yes, v_{12A} = 2510 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{12A}	3401	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 11.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.154	
Space mean speed in ramp influence area,	S_R = 66.0	mph
Space mean speed in outer lanes,	S_0 = 65.4	mph
Space mean speed for all vehicles,	S = 65.7	mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date performed:	11/21/2016
Analysis time period:	PM Peak
Freeway/Dir of Travel:	I-95 Southbound
Junction:	Entrance from Belvedere Rd
Jurisdiction:	
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.4	mph
Volume on freeway	7929	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	2	
Free-flow speed on ramp	45.0	mph
Volume on ramp	1611	vph
Length of first accel/decel lane	850	ft
Length of second accel/decel lane	1450	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	7929	1611		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	2087	424		v
Trucks and buses	3	3		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.985	0.985	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	8472	1721	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 0.209 Using Equation 0

$v_{12} = v_F (P_{FM})$ = 1771 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	10193	9600	Yes
v_3 or v_{av34}	3350 pc/h	(Equation 13-14 or 13-17)	

Is v_3 or v_{av34} > 2700 pc/h? Yes

Is v_3 or v_{av34} > 1.5 v_{12} /2 Yes

If yes, v_{12A} = 3388 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{12A}	5109	4600	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, v_{12} - 0.00627\, L_A$ = 24.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence F

Speed Estimation

Intermediate speed variable,	M_S = 0.683	
Space mean speed in ramp influence area,	S_R = 51.0	mph
Space mean speed in outer lanes,	S_0 = 62.4	mph
Space mean speed for all vehicles,	S = 56.1	mph

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Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	I-95 Northbound
Weaving Location:	Btwn Forest Hill and Southern
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	6	ln
Weaving segment length, LS	3900	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	7910	1580	1526	270	veh/h
Peak hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	2082	416	402	71	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	8451	1688	1630	288	pc/h
Volume ratio, VR		0.275			

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	1630	lc/h
Weaving lane changes, LCW		lc/h
Non-weaving vehicle index, INW		
Non-weaving lane change, LCNW		lc/h
Total lane changes, LCALL		lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W

Average weaving speed, SW	mi/h
Average non-weaving speed, SNW	mi/h

_____Weaving Segment Speed, Density, Level of Service and Capacity_____

Weaving segment speed, S	mi/h
Weaving segment density, D	pc/mi/ln
Level of service, LOS	
Weaving segment v/c ratio	
Weaving segment flow rate, v	veh/h
Weaving segment capacity, cW	veh/h

_____Limitations on Weaving Segments_____

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	3753	3900	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400		c
		Maximum	Analyzed	
v/c ratio		1.00		d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	I-95 Northbound
Weaving Location:	Btwn Forest Hill and Southern
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	6	ln
Weaving segment length, LS	3900	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	5861	952	1920	270	veh/h
Peak hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	1542	251	505	71	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	6262	1017	2051	288	pc/h

Volume ratio, VR 0.319

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	2051	lc/h
Weaving lane changes, LCW	3634	lc/h
Non-weaving vehicle index, INW	3065	
Non-weaving lane change, LCNW	3150	lc/h
Total lane changes, LCALL	6784	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.350	
Average weaving speed, SW	55.7	mi/h
Average non-weaving speed, SNW	47.5	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	49.9	mi/h
Weaving segment density, D	32.1	pc/mi/ln
Level of service, LOS	D	
Weaving segment v/c ratio	0.877	
Weaving segment flow rate, v	9477	veh/h
Weaving segment capacity, cW	10810	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4222	3900	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400	2375	c
		Maximum	Analyzed	
v/c ratio		1.00	0.877	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	I-95 Southbound
Weaving Location:	Btwn Southern/Forest Hill
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	5	ln
Weaving segment length, LS	4300	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	5080	1903	795	260	veh/h
Peak hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	1337	501	209	68	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	5428	2033	849	278	pc/h
Volume ratio, VR		0.336			

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	849	lc/h
Weaving lane changes, LCW	2008	lc/h
Non-weaving vehicle index, INW	2944	
Non-weaving lane change, LCNW	2961	lc/h
Total lane changes, LCALL	4969	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.253	
Average weaving speed, SW	58.9	mi/h
Average non-weaving speed, SNW	55.6	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	56.7	mi/h
Weaving segment density, D	30.3	pc/mi/ln
Level of service, LOS	D	
Weaving segment v/c ratio	0.823	
Weaving segment flow rate, v	8462	veh/h
Weaving segment capacity, cW	10275	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4403	4300	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400	2392	c
		Maximum	Analyzed	
v/c ratio		1.00	0.823	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	I-95 Southbound
Weaving Location:	Btwn Southern/Forest Hill
Analysis Year:	No Build 2040 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	5	ln
Weaving segment length, LS	4300	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	6547	1512	1382	280	veh/h
Peak hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	1723	398	364	74	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	6995	1615	1477	299	pc/h

Volume ratio, VR 0.298

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	1477	lc/h
Weaving lane changes, LCW		lc/h
Non-weaving vehicle index, INW		
Non-weaving lane change, LCNW		lc/h
Total lane changes, LCALL		lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	
Average weaving speed, SW	mi/h
Average non-weaving speed, SNW	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	mi/h
Weaving segment density, D	pc/mi/ln
Level of service, LOS	
Weaving segment v/c ratio	
Weaving segment flow rate, v	veh/h
Weaving segment capacity, cW	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	3993	4300	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400		c
		Maximum	Analyzed	
v/c ratio		1.00		d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

Capacity Check for Major Merge:

I-95 Northbound Entrance from Forest Hill Blvd

Assumed Major Diverge Capacity per Freeway Segment (based on HCM 2010 Exhibit 13-8):

Freeway Segment Free-Flow Speed (mph)	Capacity (pc/h)				
	2-Lanes	3-Lanes	4-Lanes	5-Lanes	6-Lanes
≥ 70	4800	7200	9600	12000	14400
65	4700	7050	9400	11750	14100
60	4600	6900	9200	11500	13800
55	4500	6750	9000	11250	13500

Assumed Major Diverge Capacity per Ramp Segment (based on HCM 2010 Exhibit 13-10):

Ramp Free-Flow Speed (mph)	Capacity of Ramp Roadway	
	Single Lane Ramp	Two-Lane Ramp
>50	2200	4400
>40-50	2100	4200
>30-40	2000	4000
≥ 20-30	1900	3800
<20	1800	3600

2020 AM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	9044	70.4	4	3.0%	0.95	1.5	0.985	1.00	9665	9600	Yes	1.01
Merging[2]	1551	45	2	3.0%	0.95	1.5	0.985	1.00	1658	4200	No	0.39
Downstream[1]	10595	70.4	6	3.0%	0.95	1.5	0.985	1.00	11323	14400	No	0.79

2020 PM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	6909	70.4	4	3.0%	0.95	1.5	0.985	1.00	7384	9600	No	0.77
Merging[2]	976	45	2	3.0%	0.95	1.5	0.985	1.00	1044	4200	No	0.25
Downstream[1]	7885	70.4	6	3.0%	0.95	1.5	0.985	1.00	8427	14400	No	0.59

2040 AM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	9436	70.4	4	3.0%	0.95	1.5	0.985	1.00	10084	9600	Yes	1.05
Merging[2]	1850	45	2	3.0%	0.95	1.5	0.985	1.00	1978	4200	No	0.47
Downstream[1]	11286	70.4	6	3.0%	0.95	1.5	0.985	1.00	12061	14400	No	0.84

2040 PM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	7781	70.4	4	3.0%	0.95	1.5	0.985	1.00	8316	9600	No	0.87
Merging[2]	1222	45	2	3.0%	0.95	1.5	0.985	1.00	1306	4200	No	0.31
Downstream[1]	9003	70.4	6	3.0%	0.95	1.5	0.985	1.00	9622	14400	No	0.67

[1]Capacity based on Exhibit 13-8 (HCM 2010)

[2]Capacity based on Exhibit 13-10 (HCM 2010)

Capacity Check for Major Diverge:

I-95 Northbound Exit Ramp to Southern Blvd

Assumed Major Diverge Capacity per Freeway Segment (based on HCM 2010 Exhibit 13-8):

Freeway Segment Free-Flow Speed (mph)	Capacity (pc/h)				
	2-Lanes	3-Lanes	4-Lanes	5-Lanes	6-Lanes
≥ 70	4800	7200	9600	12000	14400
65	4700	7050	9400	11750	14100
60	4600	6900	9200	11500	13800
55	4500	6750	9000	11250	13500

Assumed Major Diverge Capacity per Ramp Segment (based on HCM 2010 Exhibit 13-10):

Ramp Free-Flow Speed (mph)	Capacity of Ramp Roadway	
	Single Lane Ramp	Two-Lane Ramp
>50	2200	4400
>40-50	2100	4200
>30-40	2000	4000
≥ 20-30	1900	3800
<20	1800	3600

2020 AM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	10595	70.4	6	3.0%	0.95	1.5	0.985	1.00	11323	14400	No	0.79
Diverging[2]	1333	35	2	3.0%	0.95	1.5	0.985	1.00	1425	4000	No	0.36
Downstream[1]	9262	70.4	5	3.0%	0.95	1.5	0.985	1.00	9898	12000	No	0.82

2020 PM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	7885	70.4	6	3.0%	0.95	1.5	0.985	1.00	8427	14400	No	0.59
Diverging[2]	1671	35	2	3.0%	0.95	1.5	0.985	1.00	1786	4000	No	0.45
Downstream[1]	6214	70.4	5	3.0%	0.95	1.5	0.985	1.00	6641	12000	No	0.55

2040 AM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	11286	70.4	6	3.0%	0.95	1.5	0.985	1.00	12061	14400	No	0.84
Diverging[2]	1796	35	2	3.0%	0.95	1.5	0.985	1.00	1920	4000	No	0.48
Downstream[1]	9490	70.4	5	3.0%	0.95	1.5	0.985	1.00	10142	12000	No	0.85

2040 PM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	9003	70.4	6	3.0%	0.95	1.5	0.985	1.00	9622	14400	No	0.67
Diverging[2]	2190	35	2	3.0%	0.95	1.5	0.985	1.00	2341	4000	No	0.59
Downstream[1]	6813	70.4	5	3.0%	0.95	1.5	0.985	1.00	7281	12000	No	0.61

[1]Capacity based on Exhibit 13-8 (HCM 2010)

[2]Capacity based on Exhibit 13-10 (HCM 2010)

Capacity Check for Major Diverge:

I-95 Northbound Exit Ramp to Belvedere Road

Assumed Major Diverge Capacity per Freeway Segment (based on HCM 2010 Exhibit 13-8):

Freeway Segment Free-Flow Speed (mph)	Capacity (pc/h)				
	2-Lanes	3-Lanes	4-Lanes	5-Lanes	6-Lanes
≥ 70	4800	7200	9600	12000	14400
65	4700	7050	9400	11750	14100
60	4600	6900	9200	11500	13800
55	4500	6750	9000	11250	13500

Assumed Major Diverge Capacity per Ramp Segment (based on HCM 2010 Exhibit 13-10):

Ramp Free-Flow Speed (mph)	Capacity of Ramp Roadway	
	Single Lane Ramp	Two-Lane Ramp
>50	2200	4400
>40-50	2100	4200
>30-40	2000	4000
≥ 20-30	1900	3800
<20	1800	3600

2020 AM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	9262	70.4	5	3.0%	0.95	1.5	0.985	1.00	9898	12000	No	0.82
Diverging[2]	1588	40	2	3.0%	0.95	1.5	0.985	1.00	1698	4000	No	0.42
Downstream[1]	7674	70.4	4	3.0%	0.95	1.5	0.985	1.00	8201	9600	No	0.85

2020 PM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	6214	70.4	5	3.0%	0.95	1.5	0.985	1.00	6641	12000	No	0.55
Diverging[2]	902	40	2	3.0%	0.95	1.5	0.985	1.00	964	4000	No	0.24
Downstream[1]	5312	70.4	4	3.0%	0.95	1.5	0.985	1.00	5677	9600	No	0.59

2040 AM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	9490	70.4	5	3.0%	0.95	1.5	0.985	1.00	10142	12000	No	0.85
Diverging[2]	1726	40	2	3.0%	0.95	1.5	0.985	1.00	1845	4000	No	0.46
Downstream[1]	7764	70.4	4	3.0%	0.95	1.5	0.985	1.00	8298	9600	No	0.86

2040 PM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	6813	70.4	5	3.0%	0.95	1.5	0.985	1.00	7281	12000	No	0.61
Diverging[2]	1035	40	2	3.0%	0.95	1.5	0.985	1.00	1107	4000	No	0.28
Downstream[1]	5778	70.4	4	3.0%	0.95	1.5	0.985	1.00	6175	9600	No	0.64

[1]Capacity based on Exhibit 13-8 (HCM 2010)
[2]Capacity based on Exhibit 13-10 (HCM 2010)

Capacity Check for Major Merge:

I-95 Northbound Entrance from Southern Blvd

Assumed Major Diverge Capacity per Freeway Segment (based on HCM 2010 Exhibit 13-8):

Freeway Segment Free-Flow Speed (mph)	Capacity (pc/h)				
	2-Lanes	3-Lanes	4-Lanes	5-Lanes	6-Lanes
≥ 70	4800	7200	9600	12000	14400
65	4700	7050	9400	11750	14100
60	4600	6900	9200	11500	13800
55	4500	6750	9000	11250	13500

Assumed Major Diverge Capacity per Ramp Segment (based on HCM 2010 Exhibit 13-10):

Ramp Free-Flow Speed (mph)	Capacity of Ramp Roadway	
	Single Lane Ramp	Two-Lane Ramp
>50	2200	4400
>40-50	2100	4200
>30-40	2000	4000
≥ 20-30	1900	3800
<20	1800	3600

2020 AM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	7674	70.4	4	3.0%	0.95	1.5	0.985	1.00	8201	9600	No	0.85
Merging[2]	1910	40	2	3.0%	0.95	1.5	0.985	1.00	2042	4000	No	0.51
Downstream[1]	9584	70.4	4	3.0%	0.95	1.5	0.985	1.00	10243	9600	Yes	1.07

2020 PM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	5312	70.4	4	3.0%	0.95	1.5	0.985	1.00	5677	9600	No	0.59
Merging[2]	1334	40	2	3.0%	0.95	1.5	0.985	1.00	1426	4000	No	0.36
Downstream[1]	6646	70.4	4	3.0%	0.95	1.5	0.985	1.00	7103	9600	No	0.74

2040 AM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	7764	70.4	4	3.0%	0.95	1.5	0.985	1.00	8298	9600	No	0.86
Merging[2]	2178	40	2	3.0%	0.95	1.5	0.985	1.00	2328	4000	No	0.58
Downstream[1]	9942	70.4	4	3.0%	0.95	1.5	0.985	1.00	10625	9600	Yes	1.11

2040 PM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	5778	70.4	4	3.0%	0.95	1.5	0.985	1.00	6175	9600	No	0.64
Merging[2]	1491	40	2	3.0%	0.95	1.5	0.985	1.00	1594	4000	No	0.40
Downstream[1]	7269	70.4	4	3.0%	0.95	1.5	0.985	1.00	7769	9600	No	0.81

[1]Capacity based on Exhibit 13-8 (HCM 2010)
[2]Capacity based on Exhibit 13-10 (HCM 2010)

Capacity Check for Major Merge:

I-95 Southbound Entrance from Southern Blvd

Assumed Major Diverge Capacity per Freeway Segment (based on HCM 2010 Exhibit 13-8):

Freeway Segment Free-Flow Speed (mph)	Capacity (pc/h)				
	2-Lanes	3-Lanes	4-Lanes	5-Lanes	6-Lanes
≥ 70	4800	7200	9600	12000	14400
65	4700	7050	9400	11750	14100
60	4600	6900	9200	11500	13800
55	4500	6750	9000	11250	13500

Assumed Major Diverge Capacity per Ramp Segment (based on HCM 2010 Exhibit 13-10):

Ramp Free-Flow Speed (mph)	Capacity of Ramp Roadway	
	Single Lane Ramp	Two-Lane Ramp
>50	2200	4400
>40-50	2100	4200
>30-40	2000	4000
≥ 20-30	1900	3800
<20	1800	3600

2020 AM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	5665	70.4	4	3.0%	0.95	1.5	0.985	1.00	6054	9600	No	0.63
Merging[2]	1708	45	1	3.0%	0.95	1.5	0.985	1.00	1826	2100	No	0.87
Downstream[1]	7373	70.4	5	3.0%	0.95	1.5	0.985	1.00	7880	12000	No	0.66

2020 PM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	7136	70.4	4	3.0%	0.95	1.5	0.985	1.00	7626	9600	No	0.79
Merging[2]	1345	45	1	3.0%	0.95	1.5	0.985	1.00	1438	2100	No	0.68
Downstream[1]	8481	70.4	5	3.0%	0.95	1.5	0.985	1.00	9064	12000	No	0.76

2040 AM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	5875	70.4	4	3.0%	0.95	1.5	0.985	1.00	6279	9600	No	0.65
Merging[2]	2163	45	1	3.0%	0.95	1.5	0.985	1.00	2312	2100	Yes	1.10
Downstream[1]	8038	70.4	5	3.0%	0.95	1.5	0.985	1.00	8590	12000	No	0.72

2040 PM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	7929	70.4	4	3.0%	0.95	1.5	0.985	1.00	8474	9600	No	0.88
Merging[2]	1792	45	1	3.0%	0.95	1.5	0.985	1.00	1916	2100	No	0.91
Downstream[1]	9721	70.4	5	3.0%	0.95	1.5	0.985	1.00	10389	12000	No	0.87

[1]Capacity based on Exhibit 13-8 (HCM 2010)

[2]Capacity based on Exhibit 13-10 (HCM 2010)

Capacity Check for Major Diverge:

I-95 Southbound Exit Ramp to Forest Hill Blvd

Assumed Major Diverge Capacity per Freeway Segment (based on HCM 2010 Exhibit 13-8):

Freeway Segment Free-Flow Speed (mph)	Capacity (pc/h)				
	2-Lanes	3-Lanes	4-Lanes	5-Lanes	6-Lanes
≥ 70	4800	7200	9600	12000	14400
65	4700	7050	9400	11750	14100
60	4600	6900	9200	11500	13800
55	4500	6750	9000	11250	13500

Assumed Major Diverge Capacity per Ramp Segment (based on HCM 2010 Exhibit 13-10):

Ramp Free-Flow Speed (mph)	Capacity of Ramp Roadway	
	Single Lane Ramp	Two-Lane Ramp
>50	2200	4400
>40-50	2100	4200
>30-40	2000	4000
≥ 20-30	1900	3800
<20	1800	3600

2020 AM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	7373	70.4	5	3.0%	0.95	1.5	0.985	1.00	7880	12000	No	0.66
Diverging[2]	894	35	2	3.0%	0.95	1.5	0.985	1.00	956	4000	No	0.24
Downstream[1]	6479	70.4	4	3.0%	0.95	1.5	0.985	1.00	6924	9600	No	0.72

2020 PM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	8481	70.4	5	3.0%	0.95	1.5	0.985	1.00	9064	12000	No	0.76
Diverging[2]	1351	35	2	3.0%	0.95	1.5	0.985	1.00	1444	4000	No	0.36
Downstream[1]	7130	70.4	4	3.0%	0.95	1.5	0.985	1.00	7620	9600	No	0.79

2040 AM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	8038	70.4	5	3.0%	0.95	1.5	0.985	1.00	8590	12000	No	0.72
Diverging[2]	1055	35	2	3.0%	0.95	1.5	0.985	1.00	1128	4000	No	0.28
Downstream[1]	6983	70.4	4	3.0%	0.95	1.5	0.985	1.00	7463	9600	No	0.78

2040 PM No Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	9721	70.4	5	3.0%	0.95	1.5	0.985	1.00	10389	12000	No	0.87
Diverging[2]	1662	35	2	3.0%	0.95	1.5	0.985	1.00	1777	4000	No	0.44
Downstream[1]	8059	70.4	4	3.0%	0.95	1.5	0.985	1.00	8613	9600	No	0.90

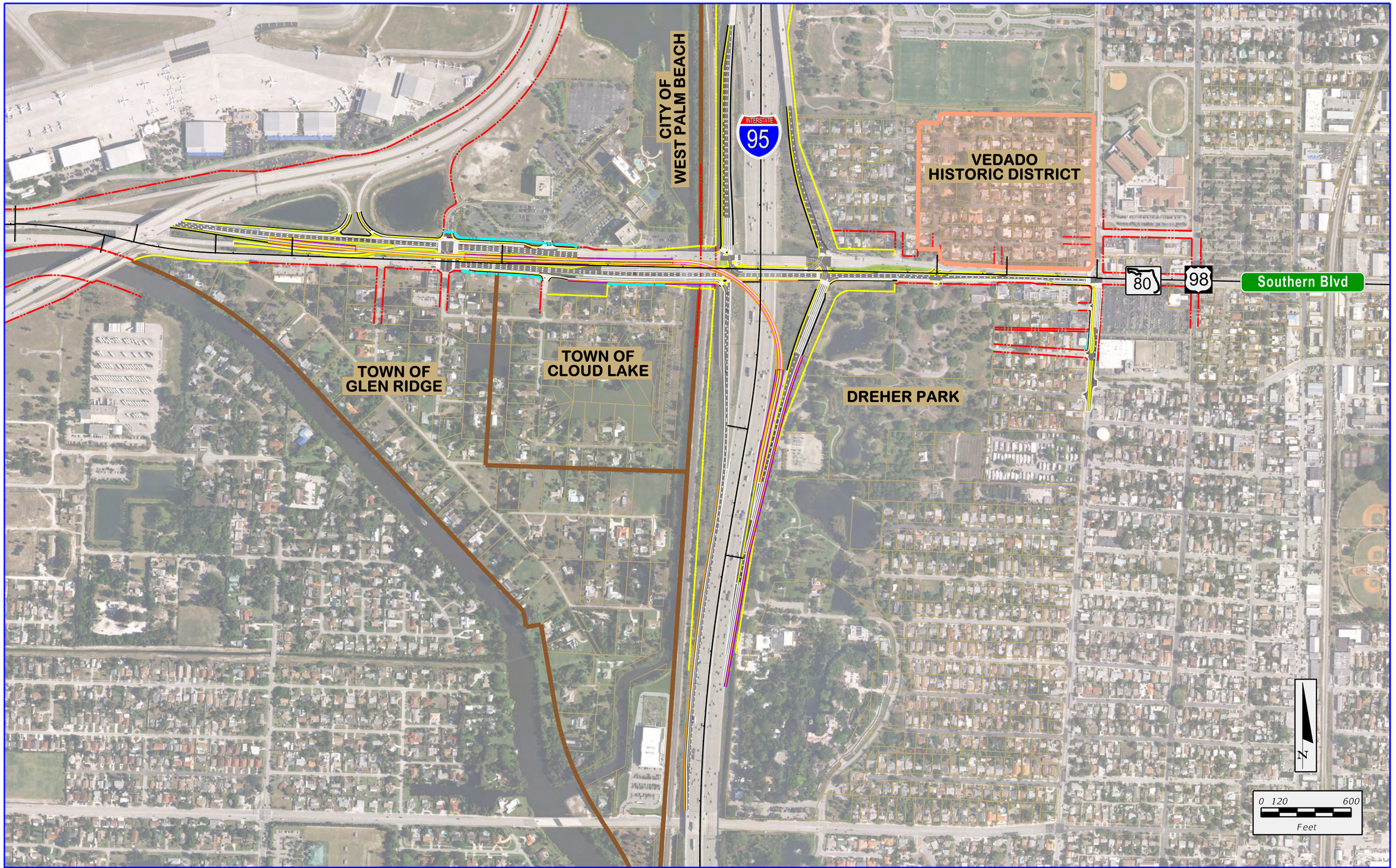
[1]Capacity based on Exhibit 13-8 (HCM 2010)
[2]Capacity based on Exhibit 13-10 (HCM 2010)

APPENDIX F

Build Alternatives – Concept Plans

Alternative 1

NB to WB Flyover



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SR 9 / I-95 AT SR 80 / SOUTHERN BOULEVARD
INTERCHANGE PD&E STUDY
FPID: 435516-1-22-02; ETDM No: 14183

Existing ROW	City / Town Limits	3rd Level Bridge
Existing Limited Access ROW	Property Line	Special Bicycle Lane Treatment
Proposed ROW	Pavement	Sidewalk
Proposed Limited Access ROW	2nd Level Bridge	Retaining Wall

FIGURE 6.6.1:
ALTERNATIVE 1 -
NB - WB FLYOVER

SHEET NO.
6-7

Alternative 2

NB to WB & EB to NB Flyovers

(4th Level)

CITY OF WEST PALM BEACH

INTERSTATE 95

VEDADO HISTORIC DISTRICT

80

98

Southern Blvd

TOWN OF GLEN RIDGE

TOWN OF CLOUD LAKE

DREHER PARK

N

0 120 600

Feet

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FDOT

SR 9 / I-95 AT SR 80 / SOUTHERN BOULEVARD
INTERCHANGE PD&E STUDY
FPID: 435516-1-22-02; ETDM No: 14183

Existing ROW
Existing Limited Access ROW
Proposed ROW
Proposed Limited Access ROW
City / Town Limits
Property Line
Pavement
2nd Level Bridge
3rd Level Bridge
Special Bicycle Lane Treatment
Sidewalk
Retaining Wall

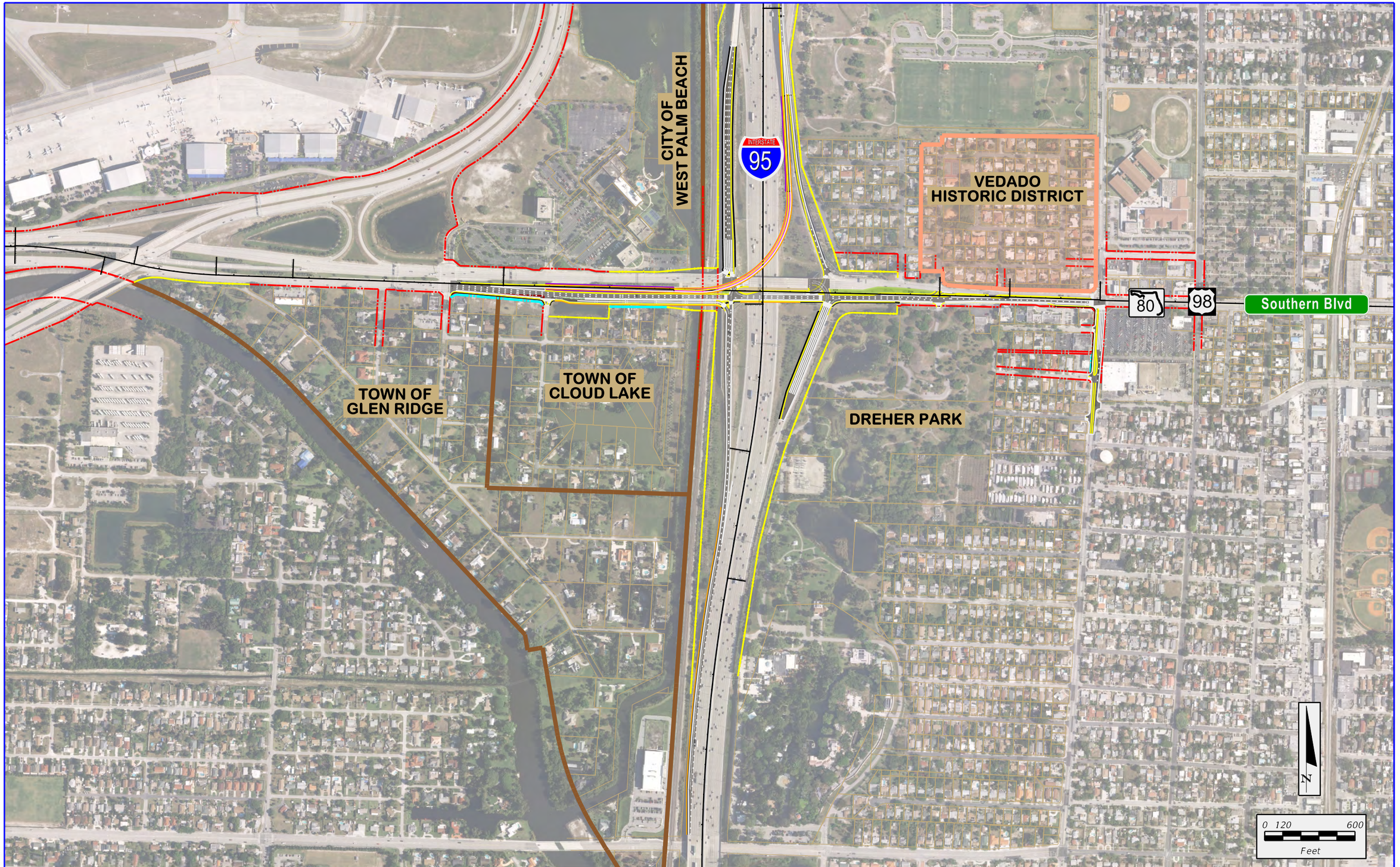
FIGURE 6.7.1:
ALTERNATIVE 2 -
NB - WB & EB - NB
FLYOVER (4th LEVEL)

SHEET NO.

6-8

Alternative 3

EB to NB Flyover



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FDOT

SR 9 / I-95 AT SR 80 / SOUTHERN BOULEVARD
INTERCHANGE PD&E STUDY
FPID: 435516-1-22-02; ETDM No: 14183

Existing ROW	City / Town Limits	3rd Level Bridge
Existing Limited Access ROW	Property Line	Special Bicycle Lane Treatment
Proposed ROW	Pavement	Sidewalk
Proposed Limited Access ROW	2nd Level Bridge	Retaining Wall

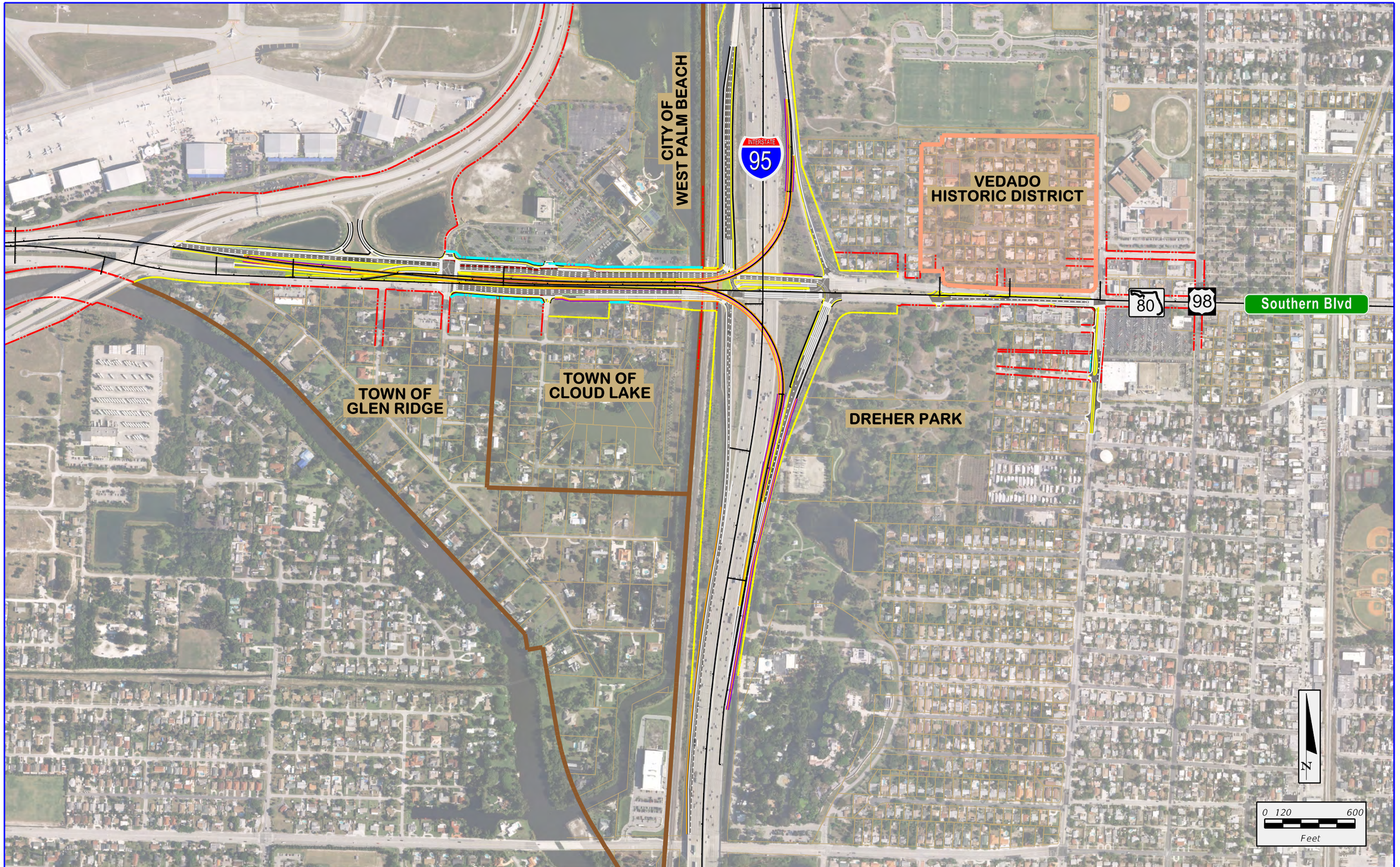
FIGURE 6.8.1:
ALTERNATIVE 3 -
EB - NB FLYOVER

SHEET NO.
6-12

Alternative 4

NB to WB & EB to NB Flyovers

(3rd Level)



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FDOT

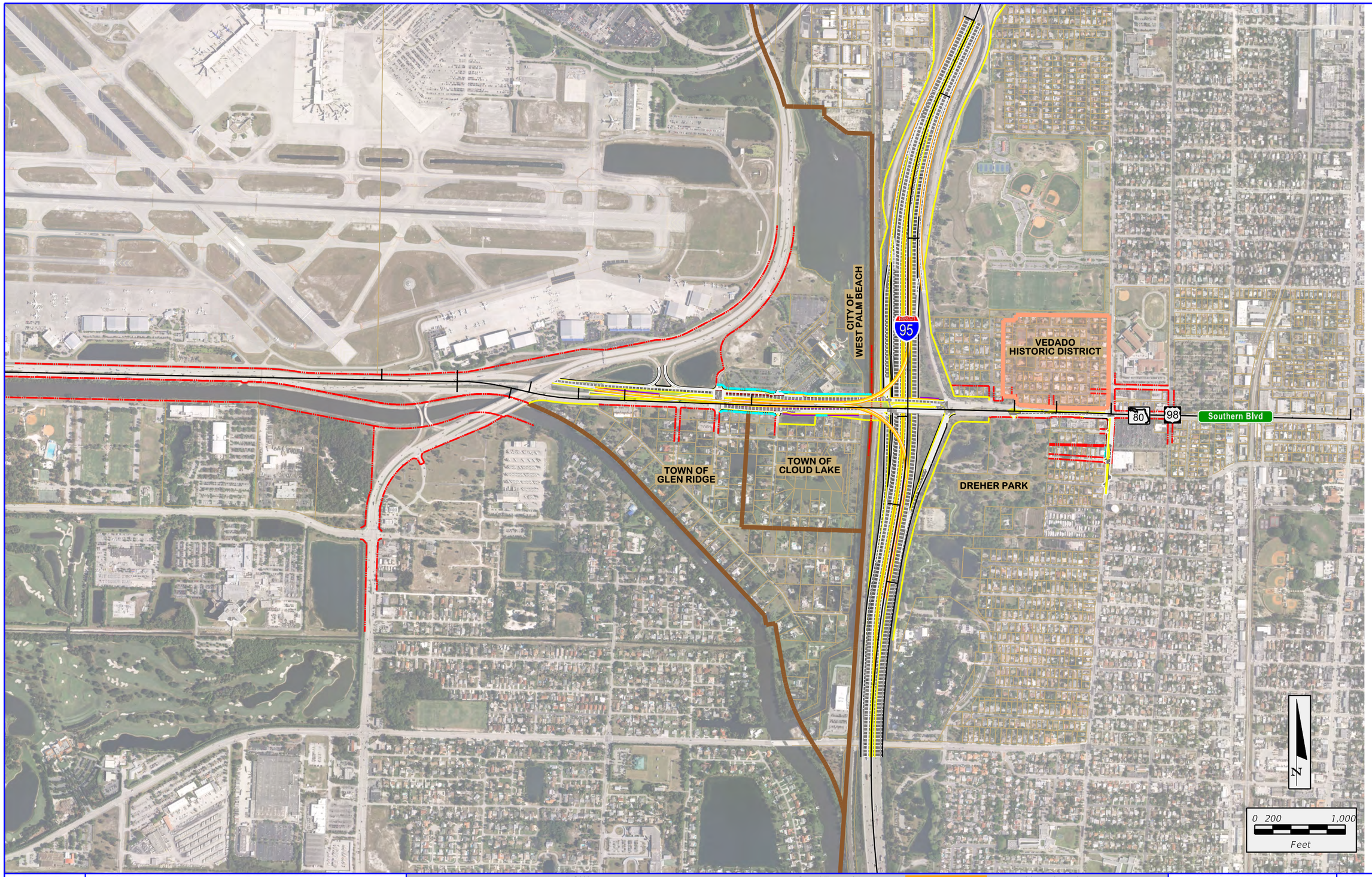
SR 9 / I-95 AT SR 80 / SOUTHERN BOULEVARD
INTERCHANGE PD&E STUDY
FPID: 435516-1-22-02; ETDM No: 14183

Existing ROW	City / Town Limits	3rd Level Bridge
Existing Limited Access ROW	Property Line	Special Bicycle Lane Treatment
Proposed ROW	Pavement	Sidewalk
Proposed Limited Access ROW	2nd Level Bridge	Retaining Wall

FIGURE 6.9.1:
ALTERNATIVE 4 -
NB - WB & EB - NB
DUAL 3rd-LEVEL FLYOVERS

SHEET NO.
6-13

Alternative 5
NB to WB 7 EB to NB Flyovers (3rd Level)
With
Median-to-Median Connection



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FDOT

SR 9 / I-95 AT SR 80 / SOUTHERN BOULEVARD
INTERCHANGE PD&E STUDY
FPID: 435516-1-22-02; ETDM No: 14183

Existing ROW	City / Town Limits	3rd Level Bridge
Existing Limited Access ROW	Property Line	Special Bicycle Lane Treatment
Proposed ROW	Pavement	Sidewalk
Proposed Limited Access ROW	2nd Level Bridge	Retaining Wall

FIGURE 6.10.1:
ALTERNATIVE 5 - EB - NB &
NB - WB DUAL 3rd LEVEL
FLYOVERS W/ EXPRESS LANES

SHEET NO.
6-17

APPENDIX G

Origin-Destination Data

&

Select Link Analysis

Origin-Destination Data

MEMORANDUM

Date: April 6, 2016

To: Florida Department of Transportation District IV

From: Sheng Yang, P.E., PTOE, CTS Engineering, Inc.

Fengxuan Hu CTS Engineering, Inc.

Project: TWO 23 - I-95 at SR 80 Interchanges Origin-Destination Data Collection

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Origin-Destination Data Collection

Florida Department of Transportation (FDOT) is programmed to conduct PD&E studies for I-95 interchange improvements at SR 80. CTS Engineering, Inc. was retained by FDOT to collect Origin-Destination (OD) data for the Palm Beach County I-95 interchanges at SR 80 northbound off-ramp left turn movements. The data will help the Department to understand the traffic patterns for vehicles leaving the interchange and turning into downstream intersections. BlueTOAD Bluetooth equipment was deployed in this study to capture vehicle OD patterns by detecting anonymous MAC addresses. This wireless identification number is used to connect Bluetooth technologies between mobile devices and vehicles.

Previous OD data was collected in March 2015. In order to verify traffic pattern based on the collected OD data in 2015, the data collection was performed one more day on Thursday, March 31 2016 for I-95 at SR 80 interchange. The movements includes:

- I-95 at SR 80: Northbound Off-Ramp left turn movement

The Bluetooth device for the OD studies at these two interchanges are shown in **Figure 1**.

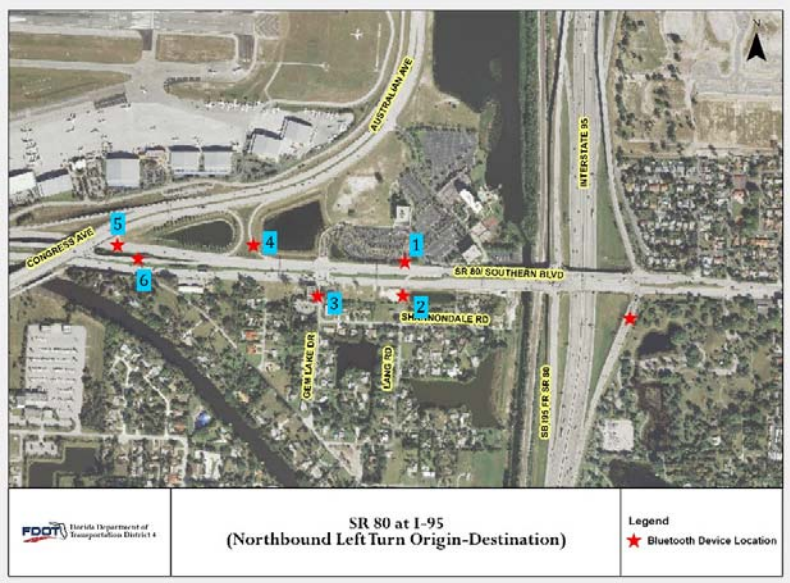

Figure 1 I-95 at SR 80 Bluetooth Device Location

Origin-Destination Data Summary

The Origin-Destination data collected was summarized by daily, and morning and evening peak periods. The daily Origin-Destination data are shown in **Table 1**. The Origin-Destination data during peak periods (7-9 AM for AM peak period and 4-6 PM for PM Peak period) are shown in **Table 2**.

Table 1 Origin-Destination of I-95 Northbound to SR 80 Westbound (Daily Summary)

Date	Volume	To Gem Lake Drive North of SR 80 (1)	To Lang Road (2)	To Gem Lake Drive South of SR 80 (3)	To Ramp from SR 80 WB Australian Avenue NB (4)	To SR 80 Westbound (5)	To Congress Avenue Southbound (6)
3/31/2016	Volume	650	29	282	533	955	455
	%	22.4%	1.0%	9.7%	18.4%	32.9%	15.7%

Table 2 Origin-Destination of I-95 Northbound to SR 80 Westbound (Peak Periods Summary)

Date	Peak Period		To Gem Lake Drive North of SR 80 (1)	To Lang Road (2)	To Gem Lake Drive South of SR 80 (3)	To Ramp from SR 80 WB Australian Avenue NB (4)	To SR 80 Westbound (5)	To Congress Avenue Southbound (6)
3/24/2015	AM	Volume	79	3	25	64	117	64
		%	22.4%	0.9%	7.1%	18.2%	33.2%	18.2%
	PM	Volume	18	3	5	19	27	16
		%	20.5%	3.4%	5.7%	21.6%	30.7%	18.2%

Select Link Analysis

MEMORANDUM

Date: April 12, 2016

To: Florida Department of Transportation District IV

From: Sheng Yang, P.E., PTOE, CTS Engineering, Inc.

Shanshan Yang, Ph.D., CTS Engineering, Inc.

Project: TWO 05 - I-95 at SR-80 Interchange Origin-Destination Model Assessment

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Origin-Destination Data Collection

Florida Department of Transportation (FDOT) is programmed to conduct PD&E study for I-95 interchange improvements at SR-80. CTS Engineering, Inc. was retained by FDOT to perform select link analysis to assess the 2040 Origin-Destination (OD) patterns at the study interchange. The select link analysis will help the study Team to understand the traffic patterns for vehicles exiting the interchange and turning into downstream arterials by the year 2040.

Select link analysis was conducted to retrieve the traffic from two off ramps, the model links are:

- I-95 at SR-80 Northbound Off-Ramp: 17243-14701
- I-95 at SR-80 Southbound Off-Ramp: 17241-14695

The downstream traffic was tracking at the following links:

- To Gem Lake Drive North of SR 80: 12740-237 (Centroid link)
- To Lang Road / Gem Lake Drive South of SR 80: 14693-269 (Centroid link)
- To Ramp from SR 80 WB to Australian Avenue NB: 12516-12506
- To SR 80 Westbound: 12518-12512
- To Congress Avenue Southbound: 12390-12530
- To east of I-95: 14701-14703

The two selected links and the downstream links for traffic assessment were shown in **Figure 1**.

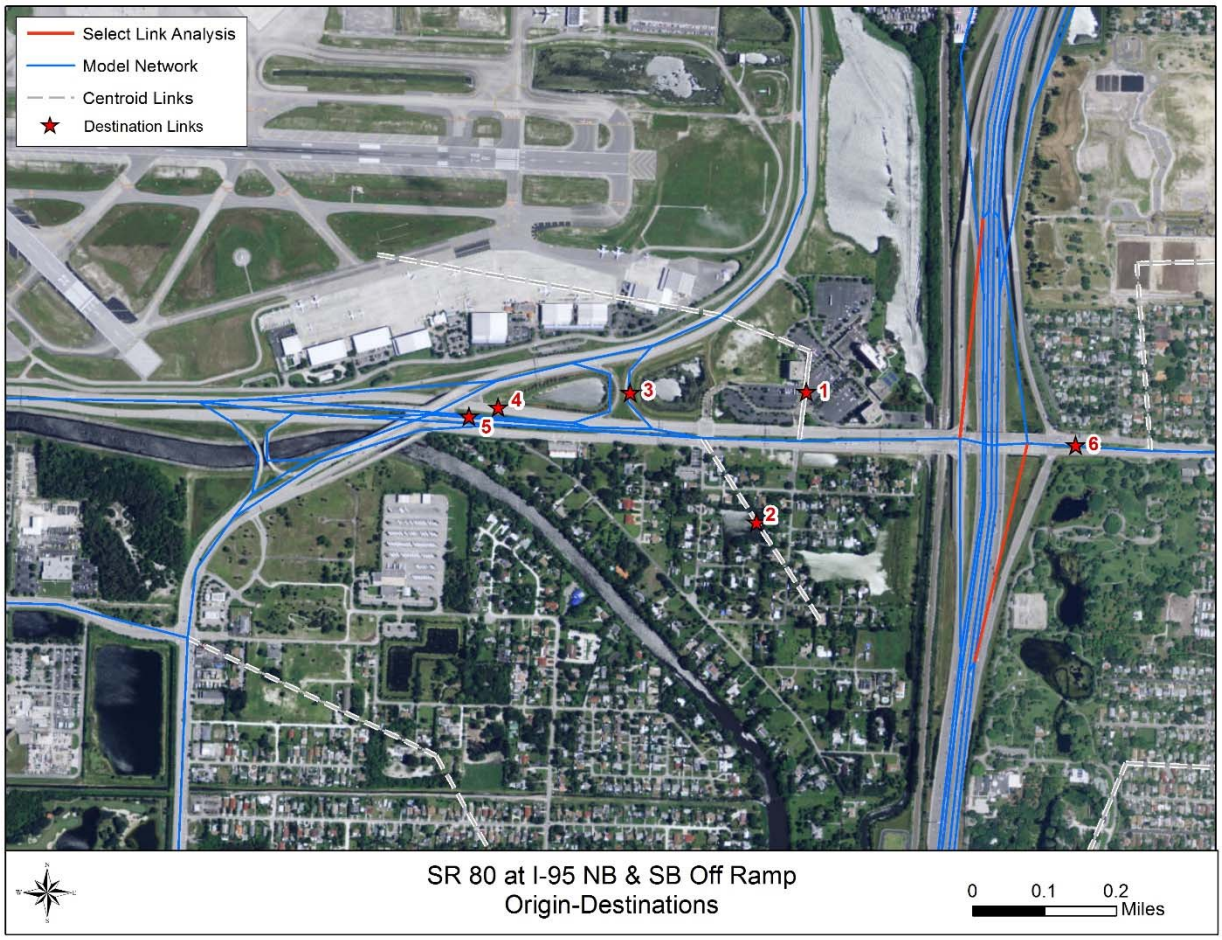


Figure 1 I-95 at SR 80 Select Link Analysis

Origin-Destination Data Summary

The Origin-Destination data was summarized by daily, and morning and evening peak periods. For SERPM 7 model, the AM Peak periods is from 6:00 AM to 9:00 AM, and the PM Peak is between 3:00 PM and 7:00 PM. **Tables 1** and **2** shows the daily and peak periods Origin-Destination data for northbound off ramp. The traffic distribution for the NB select link is shown in **Figure 2**.

Table 1 OD Data of I-95 at SR-80 Interchange NB Off Ramp (Daily Summary)

Volume	SR-80 West of NB Off Ramp @ I-95 (6)	To Gem Lake Drive North of SR 80 (1)	To Lang Road / Gem Lake Drive South of SR 80 (2)	To Ramp from SR 80 WB Australian Avenue NB (3)	To SR 80 Westbound (4)	To Congress Avenue Southbound (5)
Daily	7,571	292	178	235	12,364	838
%	35.3%	1.4%	0.8%	1.1%	57.6%	3.9%

Table 2 OD Data of I-95 at SR-80 Interchange NB Off Ramp (Peak Periods Summary)

Volume		SR-80 West of NB Off Ramp @ I-95 (6)	To Gem Lake Drive North of SR 80 (1)	To Lang Road / Gem Lake Drive South of SR 80 (2)	To Ramp from SR 80 WB Australian Avenue NB (3)	To SR 80 Westbound (4)	To Congress Avenue Southbound (5)
AM	Volume	1,871	86	25	81	2,088	308
	%	42.0%	1.9%	0.6%	1.8%	46.8%	6.9%
PM	Volume	1,709	64	44	40	3,858	139
	%	29.2%	1.1%	0.8%	0.7%	65.9%	2.4%
Peak Hours	Volume	3,580	150	69	121	5,946	447
	%	34.7%	1.5%	0.7%	1.2%	57.7%	4.3%

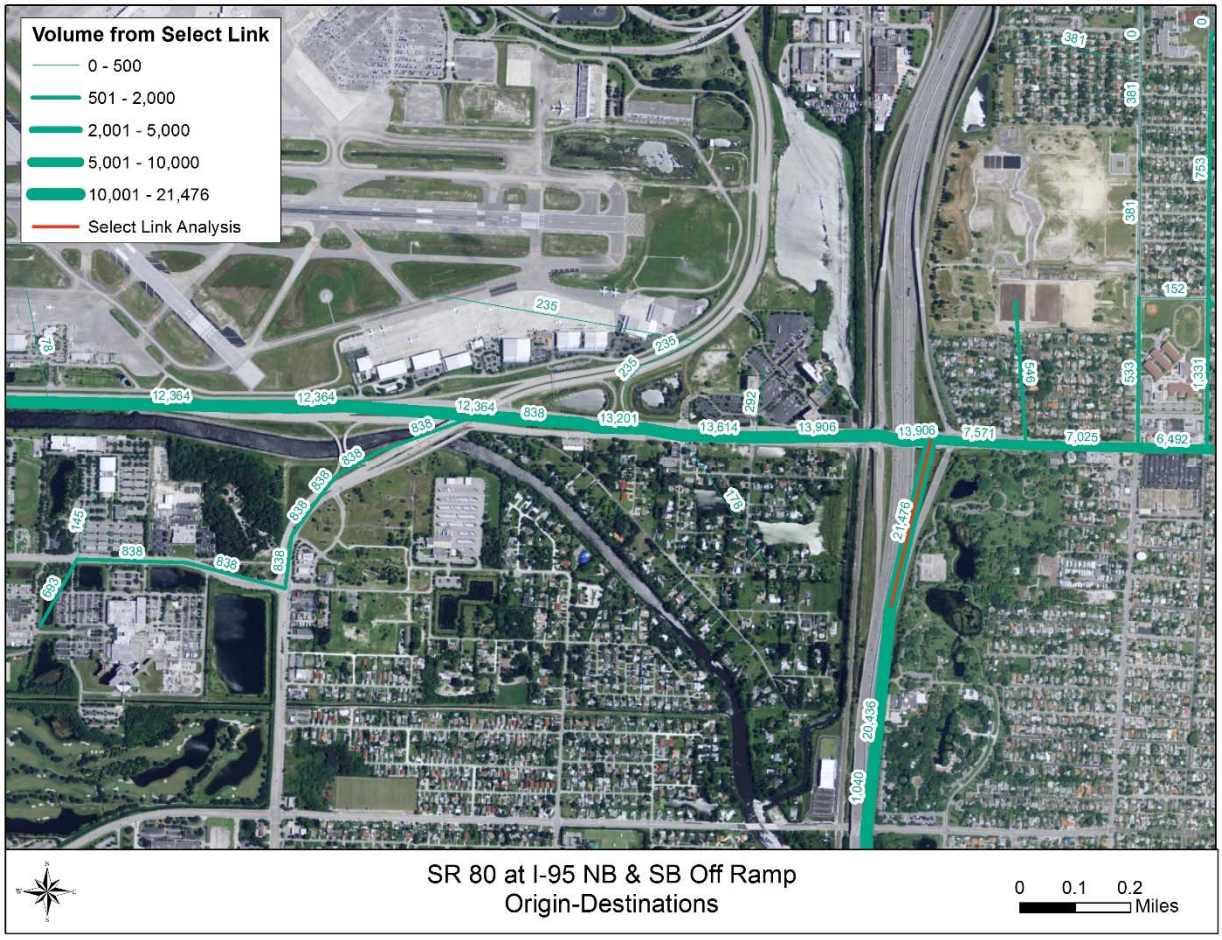


Figure 2 Traffic Distribution of Select Link at I-95 at SR 80 NB Off Ramp

Tables 3 and **4** shows the daily and peak periods Origin-Destination data for southbound off ramp. The traffic distribution for the SB select link is shown in **Figure 3**.

Table 3 OD Data of I-95 at SR-80 Interchange SB Off Ramp (Daily Summary)

Volume	SR-80 West of NB Off Ramp @ I-95 (6)	To Gem Lake Drive North of SR 80 (1)	To Lang Road / Gem Lake Drive South of SR 80 (2)	To Ramp from SR 80 WB Australian Avenue NB (3)	To SR 80 Westbound (4)	To Congress Avenue Southbound (5)
Daily	3,492	199	221	162	1,860	3,000
%	39.1%	2.2%	2.5%	1.8%	20.8%	33.6%

Table 4 OD Data of I-95 at SR-80 Interchange SB Off Ramp (Peak Periods Summary)

Volume		SR-80 West of NB Off Ramp @ I-95 (6)	To Gem Lake Drive North of SR 80 (1)	To Lang Road / Gem Lake Drive South of SR 80 (2)	To Ramp from SR 80 WB Australian Avenue NB (3)	To SR 80 Westbound (4)	To Congress Avenue Southbound (5)
AM	Volume	636	55	45	62	67	703
	%	40.6%	3.5%	2.9%	4.0%	4.3%	44.8%
PM	Volume	1,004	34	314	35	1,495	1,070
	%	26.9%	0.9%	8.4%	0.9%	40.1%	28.7%
Peak Hours	Volume	1,640	89	359	97	1,562	1,773
	%	31.0%	1.7%	6.8%	1.8%	29.5%	33.5%

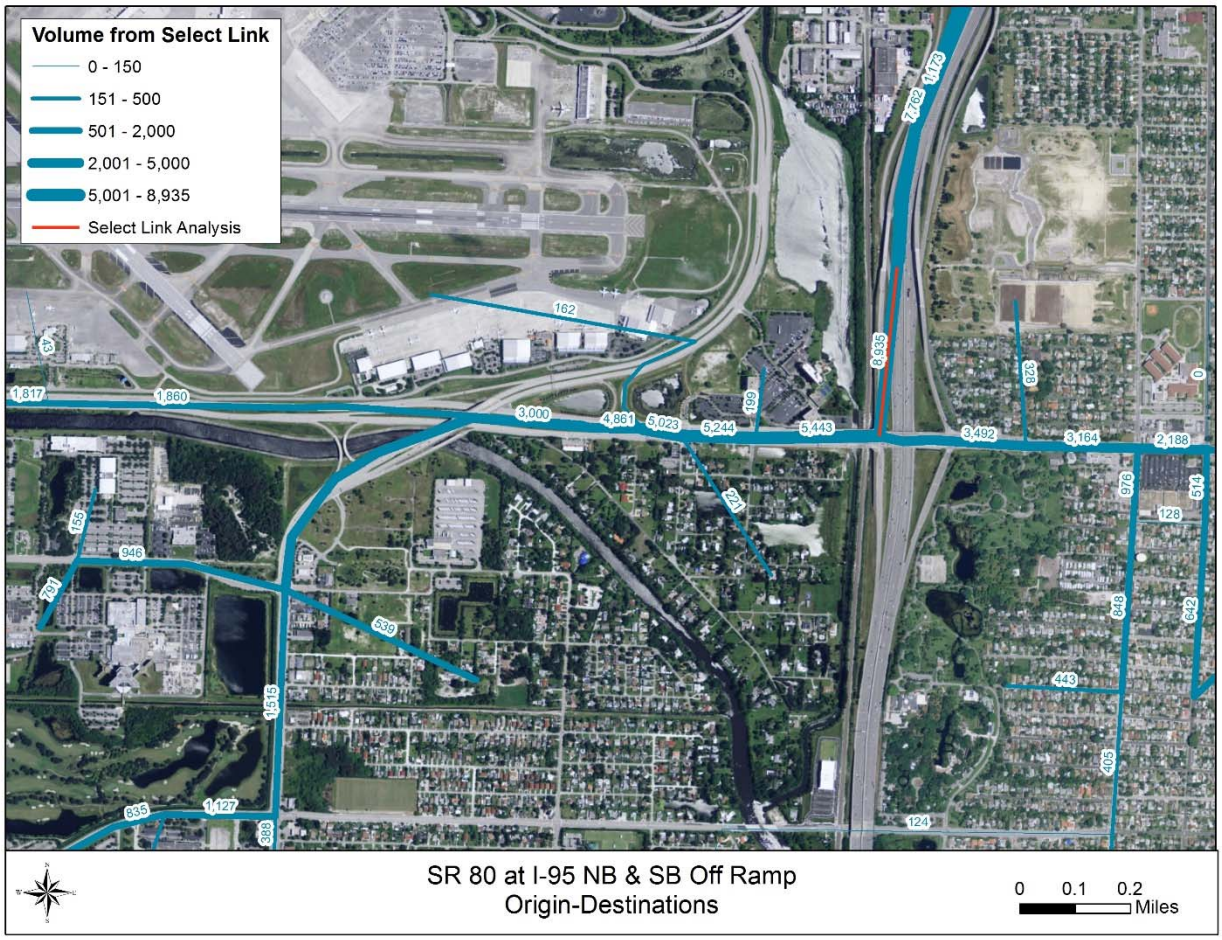


Figure 3 Traffic Distribution of Select Link at I-95 at SR 80 SB Off Ramp

APPENDIX H

LOS Analysis – Build Alternatives

Synchro

Intersection Analyses

Build Alternatives

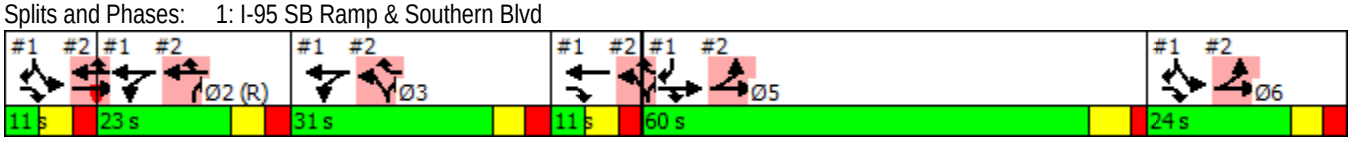
2020 Alternative 2/4

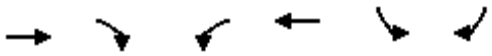
2040 Alternative 2/4

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø6
Lane Configurations											
Traffic Volume (vph)	1224	1365	343	845	377	862					
Future Volume (vph)	1224	1365	343	845	377	862					
Turn Type	NA	custom	Prot	NA	Prot	custom					
Protected Phases	5	1 4 5 6	2 3	2 3 4	1 6	1 5 6	1	2	3	4	6
Permitted Phases											
Detector Phase	5	1 4 5 6	2 3	2 3 4	1 6	1 5 6					
Switch Phase											
Minimum Initial (s)	10.0						3.0	10.0	6.0	3.0	6.0
Minimum Split (s)	29.0						10.0	20.0	13.0	10.0	13.0
Total Split (s)	60.0						11.0	23.0	31.0	11.0	24.0
Total Split (%)	37.5%						7%	14%	19%	7%	15%
Yellow Time (s)	5.0						4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0						3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0										
Total Lost Time (s)	7.0										
Lead/Lag	Lead						Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes						Yes	Yes	Yes	Yes	Yes
Recall Mode	Max						Max	Max	Max	Max	Max
Act Effct Green (s)	53.0	99.0	47.0	58.0	28.0	88.0					
Actuated g/C Ratio	0.33	0.62	0.29	0.36	0.18	0.55					
v/c Ratio	0.78	0.85	0.37	0.39	0.67	0.46					
Control Delay	41.9	35.7	1.1	2.8	67.9	22.7					
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0					
Total Delay	41.9	35.7	1.1	2.8	67.9	22.7					
LOS	D	D	A	A	E	C					
Approach Delay	38.6			2.3							
Approach LOS	D			A							

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 11 (7%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 29.5	Intersection LOS: C
Intersection Capacity Utilization 85.8%	ICU Level of Service E
Analysis Period (min) 15	

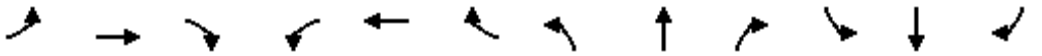
Splits and Phases: 1: I-95 SB Ramp & Southern Blvd





Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1288	1437	361	889	397	907
v/c Ratio	0.78	0.85	0.37	0.39	0.67	0.46
Control Delay	41.9	35.7	1.1	2.8	67.9	22.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.9	35.7	1.1	2.8	67.9	22.7
Queue Length 50th (ft)	446	861	0	6	202	244
Queue Length 95th (ft)	505	984	0	7	262	289
Internal Link Dist (ft)	832			569		
Turn Bay Length (ft)		450			250	250
Base Capacity (vph)	1652	1691	989	2278	595	1966
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.85	0.37	0.39	0.67	0.46

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1224	1365	343	845	0	0	0	0	377	0	862
Future Volume (vph)	0	1224	1365	343	845	0	0	0	0	377	0	862
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	7.0	7.0					7.0		7.0
Lane Util. Factor		0.91	0.88	0.97	0.86					0.97		0.76
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		4988	2733	3367	6285					3400		3575
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		4988	2733	3367	6285					3400		3575
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1288	1437	361	889	0	0	0	0	397	0	907
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1288	1437	361	889	0	0	0	0	397	0	907
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	custom	Prot	NA					Prot		custom
Protected Phases		5	1 4 5 6	2 3	2 3 4					1 6		1 5 6
Permitted Phases												
Actuated Green, G (s)		53.0	99.0	47.0	58.0					28.0		88.0
Effective Green, g (s)		53.0	99.0	47.0	58.0					28.0		88.0
Actuated g/C Ratio		0.33	0.62	0.29	0.36					0.18		0.55
Clearance Time (s)		7.0										
Lane Grp Cap (vph)		1652	1691	989	2278					595		1966
v/s Ratio Prot		0.26	c0.53	0.11	c0.14					0.12		0.25
v/s Ratio Perm												
v/c Ratio		0.78	0.85	0.37	0.39					0.67		0.46
Uniform Delay, d1		48.2	24.5	44.7	37.9					61.6		21.7
Progression Factor		0.80	1.23	0.01	0.06					1.00		1.00
Incremental Delay, d2		3.1	4.6	0.7	0.4					5.8		0.8
Delay (s)		41.7	34.8	1.1	2.8					67.5		22.5
Level of Service		D	C	A	A					E		C
Approach Delay (s)		38.1			2.3			0.0			36.2	
Approach LOS		D			A			A			D	

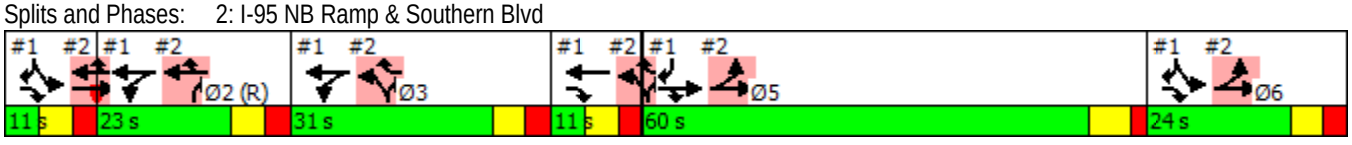
Intersection Summary			
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	292	1309	876	450	312	441						
Future Volume (vph)	292	1309	876	450	312	441						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	23.0	31.0	11.0	60.0	24.0
Total Split (%)							7%	14%	19%	7%	38%	15%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	77.0	88.0	27.0	69.0	35.0	58.0						
Actuated g/C Ratio	0.48	0.55	0.17	0.43	0.22	0.36						
v/c Ratio	0.19	0.49	0.72	0.50	0.30	0.46						
Control Delay	0.2	2.8	71.1	4.2	53.2	41.0						
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0						
Total Delay	0.2	3.0	71.1	4.2	53.2	41.0						
LOS	A	A	E	A	D	D						
Approach Delay		2.5	48.4									
Approach LOS		A	D									

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 11 (7%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 27.9	Intersection LOS: C
Intersection Capacity Utilization 85.8%	ICU Level of Service E
Analysis Period (min) 15	

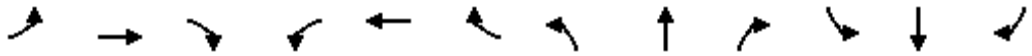
Splits and Phases: 2: I-95 NB Ramp & Southern Blvd



Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	307	1378	922	474	328	464
v/c Ratio	0.19	0.49	0.72	0.50	0.30	0.46
Control Delay	0.2	2.8	71.1	4.2	53.2	41.0
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	0.2	3.0	71.1	4.2	53.2	41.0
Queue Length 50th (ft)	0	9	192	65	102	211
Queue Length 95th (ft)	m0	44	229	79	135	271
Internal Link Dist (ft)		569	667			
Turn Bay Length (ft)	500			300	600	600
Base Capacity (vph)	1652	2796	1273	952	1081	1000
Starvation Cap Reductn	0	557	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.62	0.72	0.50	0.30	0.46

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	292	1309	0	0	876	450	312	0	441	0	0	0
Future Volume (vph)	292	1309	0	0	876	450	312	0	441	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.94		0.88			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	5085			7544	1583	4942		2760			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	5085			7544	1583	4942		2760			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	307	1378	0	0	922	474	328	0	464	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	270	0	0	0	0	0	0
Lane Group Flow (vph)	307	1378	0	0	922	204	328	0	464	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	77.0	88.0			27.0	69.0	35.0		58.0			
Effective Green, g (s)	77.0	88.0			27.0	69.0	35.0		58.0			
Actuated g/C Ratio	0.48	0.55			0.17	0.43	0.22		0.36			
Clearance Time (s)												
Lane Grp Cap (vph)	1652	2796			1273	682	1081		1000			
v/s Ratio Prot	0.09	c0.27			c0.12	0.13	0.07		c0.17			
v/s Ratio Perm												
v/c Ratio	0.19	0.49			0.72	0.30	0.30		0.46			
Uniform Delay, d1	23.6	22.2			63.0	29.7	52.3		39.1			
Progression Factor	0.00	0.11			1.08	1.20	1.00		1.00			
Incremental Delay, d2	0.2	0.4			2.9	0.9	0.7		1.5			
Delay (s)	0.2	2.8			70.9	36.7	53.0		40.6			
Level of Service	A	A			E	D	D		D			
Approach Delay (s)		2.3			59.3			45.8			0.0	
Approach LOS		A			E			D			A	

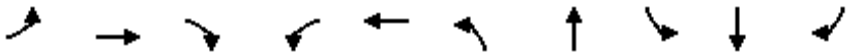
Intersection Summary			
HCM 2000 Control Delay	31.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	158	1402	190	73	884	274	253	76	169	167
Future Volume (vph)	158	1402	190	73	884	274	253	76	169	167
Turn Type	pm+pt	NA	custom	pm+pt	NA	Prot	NA	pm+pt	NA	Perm
Protected Phases	1	6	6 7	5	2	7	4	3	8	
Permitted Phases	6		6	2				8		8
Detector Phase	1	6	6 7	5	2	7	4	3	8	8
Switch Phase										
Minimum Initial (s)	4.0	20.0		4.0	20.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	31.0		10.0	29.0	10.0	28.0	10.0	34.0	34.0
Total Split (s)	21.0	83.0		14.0	76.0	29.0	47.0	16.0	34.0	34.0
Total Split (%)	13.1%	51.9%		8.8%	47.5%	18.1%	29.4%	10.0%	21.3%	21.3%
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?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max		Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	91.0	77.0	106.0	78.0	70.0	23.0	41.0	38.0	28.0	28.0
Actuated g/C Ratio	0.57	0.48	0.66	0.49	0.44	0.14	0.26	0.24	0.18	0.18
v/c Ratio	0.55	0.87	0.18	0.57	0.64	0.58	0.42	0.28	0.55	0.41
Control Delay	24.0	34.1	0.5	49.4	26.9	69.4	46.1	38.8	67.3	9.2
Queue Delay	0.0	4.7	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	38.8	0.5	49.4	27.3	69.4	46.1	38.8	67.3	9.2
LOS	C	D	A	D	C	E	D	D	E	A
Approach Delay		33.3			28.9		56.2		38.5	
Approach LOS		C			C		E		D	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 131 (82%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 105	
Control Type: Pretimed	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 36.5	Intersection LOS: D
Intersection Capacity Utilization 79.5%	ICU Level of Service D
Analysis Period (min) 15	

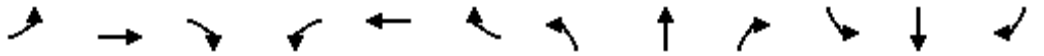
Splits and Phases: 3: Southern Blvd & Parker Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	166	1476	200	77	982	288	374	80	178	176
v/c Ratio	0.55	0.87	0.18	0.57	0.64	0.58	0.42	0.28	0.55	0.41
Control Delay	24.0	34.1	0.5	49.4	26.9	69.4	46.1	38.8	67.3	9.2
Queue Delay	0.0	4.7	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	38.8	0.5	49.4	27.3	69.4	46.1	38.8	67.3	9.2
Queue Length 50th (ft)	47	681	0	40	275	147	155	56	172	0
Queue Length 95th (ft)	92	784	0	m91	314	199	208	98	258	62
Internal Link Dist (ft)		954			568		468		609	
Turn Bay Length (ft)	230		200	150		240		120		
Base Capacity (vph)	301	1703	1111	134	1538	493	895	283	326	428
Starvation Cap Reductn	0	0	0	0	147	0	0	0	0	0
Spillback Cap Reductn	0	172	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	0.55	0.96	0.18	0.57	0.71	0.58	0.42	0.28	0.55	0.41

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	1402	190	73	884	48	274	253	103	76	169	167
Future Volume (vph)	158	1402	190	73	884	48	274	253	103	76	169	167
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	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95		1.00	1.00	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	3539	1583	1770	3512		3433	3386		1770	1863	1583
Flt Permitted	0.15	1.00	1.00	0.06	1.00		0.95	1.00		0.53	1.00	1.00
Satd. Flow (perm)	284	3539	1583	106	3512		3433	3386		986	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	166	1476	200	77	931	51	288	266	108	80	178	176
RTOR Reduction (vph)	0	0	62	0	2	0	0	28	0	0	0	145
Lane Group Flow (vph)	166	1476	138	77	980	0	288	346	0	80	178	31
Turn Type	pm+pt	NA	custom	pm+pt	NA		Prot	NA		pm+pt	NA	Perm
Protected Phases	1	6	6 7	5	2		7	4		3	8	
Permitted Phases	6		6	2						8		8
Actuated Green, G (s)	91.0	77.0	106.0	78.0	70.0		23.0	41.0		38.0	28.0	28.0
Effective Green, g (s)	91.0	77.0	106.0	78.0	70.0		23.0	41.0		38.0	28.0	28.0
Actuated g/C Ratio	0.57	0.48	0.66	0.49	0.44		0.14	0.26		0.24	0.18	0.18
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	300	1703	1048	134	1536		493	867		283	326	277
v/s Ratio Prot	c0.05	c0.42	0.09	0.03	0.28		c0.08	0.10		0.02	c0.10	
v/s Ratio Perm	0.26			0.25						0.05		0.02
v/c Ratio	0.55	0.87	0.13	0.57	0.64		0.58	0.40		0.28	0.55	0.11
Uniform Delay, d1	22.3	36.9	10.0	31.8	35.1		64.0	49.3		48.7	60.2	55.5
Progression Factor	1.06	0.76	0.10	1.32	0.71		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.4	5.6	0.2	15.4	1.9		5.0	1.4		2.5	6.4	0.8
Delay (s)	30.2	33.7	1.3	57.4	26.8		69.0	50.7		51.2	66.6	56.3
Level of Service	C	C	A	E	C		E	D		D	E	E
Approach Delay (s)		29.9			29.0			58.7			59.6	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	37.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	127	1393	29	682	102	90	54	141	221
Future Volume (vph)	127	1393	29	682	102	90	54	141	221
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	7	4	3	8	
Permitted Phases	6		2		4		8		8
Detector Phase	1	6	5	2	7	4	3	8	8
Switch Phase									
Minimum Initial (s)	4.0	20.0	4.0	20.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	10.0	32.0	10.0	32.0	32.0
Total Split (s)	16.0	96.0	11.0	91.0	15.0	42.0	11.0	38.0	38.0
Total Split (%)	10.0%	60.0%	6.9%	56.9%	9.4%	26.3%	6.9%	23.8%	23.8%
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?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	100.0	90.0	90.0	85.0	45.0	36.0	37.0	32.0	32.0
Actuated g/C Ratio	0.62	0.56	0.56	0.53	0.28	0.22	0.23	0.20	0.20
v/c Ratio	0.33	0.77	0.23	0.40	0.35	0.20	0.19	0.40	0.61
Control Delay	4.4	12.6	15.9	23.0	46.4	29.9	44.3	59.4	43.5
Queue Delay	0.0	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	18.2	15.9	23.0	46.4	29.9	44.3	59.4	43.5
LOS	A	B	B	C	D	C	D	E	D
Approach Delay		17.1		22.7		36.4		49.0	
Approach LOS		B		C		D		D	

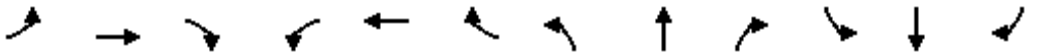
Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 147 (92%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 24.6	Intersection LOS: C
Intersection Capacity Utilization 76.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: Southern Blvd & Lake Ave

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	134	1531	31	743	107	162	57	148	233
v/c Ratio	0.33	0.77	0.23	0.40	0.35	0.20	0.19	0.40	0.61
Control Delay	4.4	12.6	15.9	23.0	46.4	29.9	44.3	59.4	43.5
Queue Delay	0.0	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	18.2	15.9	23.0	46.4	29.9	44.3	59.4	43.5
Queue Length 50th (ft)	11	701	12	236	85	42	44	136	142
Queue Length 95th (ft)	m14	505	26	285	139	76	82	210	240
Internal Link Dist (ft)		568		627		595		783	
Turn Bay Length (ft)	140		140		100		120		120
Base Capacity (vph)	412	1981	132	1872	304	798	297	372	385
Starvation Cap Reductn	0	394	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.96	0.23	0.40	0.35	0.20	0.19	0.40	0.61

Intersection Summary

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



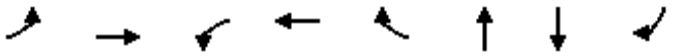
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	1393	62	29	682	24	102	90	64	54	141	221
Future Volume (vph)	127	1393	62	29	682	24	102	90	64	54	141	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3517		1770	3521		1770	3320		1770	1863	1583
Flt Permitted	0.29	1.00		0.08	1.00		0.49	1.00		0.65	1.00	1.00
Satd. Flow (perm)	537	3517		145	3521		910	3320		1210	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	134	1466	65	31	718	25	107	95	67	57	148	233
RTOR Reduction (vph)	0	2	0	0	1	0	0	52	0	0	0	69
Lane Group Flow (vph)	134	1529	0	31	742	0	107	110	0	57	148	164
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		8
Actuated Green, G (s)	100.0	90.0		90.0	85.0		45.0	36.0		37.0	32.0	32.0
Effective Green, g (s)	100.0	90.0		90.0	85.0		45.0	36.0		37.0	32.0	32.0
Actuated g/C Ratio	0.62	0.56		0.56	0.53		0.28	0.22		0.23	0.20	0.20
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	412	1978		132	1870		304	747		297	372	316
v/s Ratio Prot	c0.02	c0.43		0.01	0.21		c0.02	0.03		0.01	0.08	
v/s Ratio Perm	0.18			0.12			0.08			0.04		c0.10
v/c Ratio	0.33	0.77		0.23	0.40		0.35	0.15		0.19	0.40	0.52
Uniform Delay, d1	13.7	27.1		22.8	22.3		44.3	49.7		48.9	55.6	57.1
Progression Factor	0.27	0.40		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	1.7		4.1	0.6		3.2	0.4		1.4	3.2	6.0
Delay (s)	4.9	12.4		27.0	22.9		47.5	50.1		50.3	58.8	63.1
Level of Service	A	B		C	C		D	D		D	E	E
Approach Delay (s)		11.8			23.1			49.1			60.0	
Approach LOS		B			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	21	1168	6	1696	5	23	0	8	11
Future Volume (vph)	21	1168	6	1696	5	23	0	8	11
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	NA	Perm
Protected Phases	1	2	1	2			3	3	
Permitted Phases					2	3			3
Detector Phase	1	2	1	2	2	3	3	3	3
Switch Phase									
Minimum Initial (s)	4.0	20.0	4.0	20.0	20.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	29.0	15.0	15.0	15.0	15.0
Total Split (s)	18.0	124.0	18.0	124.0	124.0	18.0	18.0	18.0	18.0
Total Split (%)	11.3%	77.5%	11.3%	77.5%	77.5%	11.3%	11.3%	11.3%	11.3%
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	5.0	5.0	5.0	5.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		9.0	9.0	9.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	12.0	118.0	12.0	118.0	118.0		9.0	9.0	9.0
Actuated g/C Ratio	0.08	0.74	0.08	0.74	0.74		0.06	0.06	0.06
v/c Ratio	0.17	0.91	0.05	0.39	0.00		0.31	0.08	0.08
Control Delay	72.7	28.8	68.7	8.2	0.0		31.3	73.4	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	72.7	28.8	68.7	8.2	0.0		31.3	73.4	1.1
LOS	E	C	E	A	A		C	E	A
Approach Delay		29.6		8.4			31.3	30.0	
Approach LOS		C		A			C	C	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:, Start of Green	
Natural Cycle: 90	
Control Type: Pretimed	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 17.3	Intersection LOS: B
Intersection Capacity Utilization 81.9%	ICU Level of Service D
Analysis Period (min) 15	

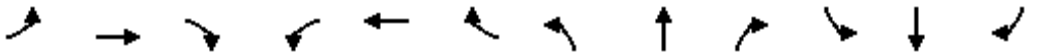
Splits and Phases: 5: Southern Blvd & Gem Lake Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	22	1229	6	1785	5	24	8	12
v/c Ratio	0.17	0.91	0.05	0.39	0.00	0.31	0.08	0.08
Control Delay	72.7	28.8	68.7	8.2	0.0	31.3	73.4	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.7	28.8	68.7	8.2	0.0	31.3	73.4	1.1
Queue Length 50th (ft)	22	939	6	146	0	4	8	0
Queue Length 95th (ft)	54	#1326	m16	178	m0	9	28	0
Internal Link Dist (ft)		1282		391		20	441	
Turn Bay Length (ft)	120		180		350			
Base Capacity (vph)	130	1347	130	4635	1166	78	103	145
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.91	0.05	0.39	0.00	0.31	0.08	0.08

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1168	0	6	1696	5	23	0	0	0	8	11
Future Volume (vph)	21	1168	0	6	1696	5	23	0	0	0	8	11
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		9.0			9.0	9.0
Lane Util. Factor	1.00	1.00		1.00	0.86	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95			1.00	1.00
Satd. Flow (prot)	1736	1827		1736	6285	1553		1752			1845	1568
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.75			1.00	1.00
Satd. Flow (perm)	1736	1827		1736	6285	1553		1388			1845	1568
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	22	1229	0	6	1785	5	24	0	0	0	8	12
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	0	0	0	11
Lane Group Flow (vph)	22	1229	0	6	1785	4	0	24	0	0	8	1
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA			NA	Perm
Protected Phases	1	2		1	2			3			3	
Permitted Phases						2	3					3
Actuated Green, G (s)	12.0	118.0		12.0	118.0	118.0		9.0			9.0	9.0
Effective Green, g (s)	12.0	118.0		12.0	118.0	118.0		9.0			9.0	9.0
Actuated g/C Ratio	0.08	0.74		0.08	0.74	0.74		0.06			0.06	0.06
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		9.0			9.0	9.0
Lane Grp Cap (vph)	130	1347		130	4635	1145		78			103	88
v/s Ratio Prot	c0.01	c0.67		0.00	0.28						0.00	
v/s Ratio Perm						0.00		c0.02				0.00
v/c Ratio	0.17	0.91		0.05	0.39	0.00		0.31			0.08	0.01
Uniform Delay, d1	69.3	16.9		68.7	7.7	5.5		72.5			71.6	71.3
Progression Factor	1.00	1.00		0.99	1.03	1.00		0.29			1.00	1.00
Incremental Delay, d2	2.8	10.9		0.6	0.2	0.0		9.9			1.5	0.2
Delay (s)	72.1	27.8		68.3	8.2	5.5		31.1			73.0	71.4
Level of Service	E	C		E	A	A		C			E	E
Approach Delay (s)		28.5			8.4			31.1			72.1	
Approach LOS		C			A			C			E	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

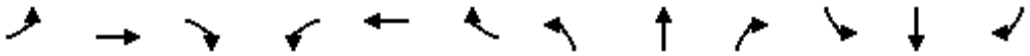
Lane Group	EBT	NBT	NBR	SBL	SBT	Ø1	Ø3
Lane Configurations							
Traffic Volume (vph)	2565	23	19	5	9		
Future Volume (vph)	2565	23	19	5	9		
Turn Type	NA	NA	custom	Perm	NA		
Protected Phases	2	1 3	1 3		1 3	1	3
Permitted Phases			1 3	1 3			
Detector Phase	2	1 3	1 3	1 3	1 3		
Switch Phase							
Minimum Initial (s)	20.0					4.0	6.0
Minimum Split (s)	29.0					10.0	15.0
Total Split (s)	124.0					18.0	18.0
Total Split (%)	77.5%					11%	11%
Yellow Time (s)	4.0					4.0	4.0
All-Red Time (s)	2.0					2.0	5.0
Lost Time Adjust (s)	0.0						
Total Lost Time (s)	6.0						
Lead/Lag	Lag					Lead	
Lead-Lag Optimize?	Yes					Yes	
Recall Mode	Max					Max	Max
Act Effct Green (s)	118.0	30.0	30.0		30.0		
Actuated g/C Ratio	0.74	0.19	0.19		0.19		
v/c Ratio	0.58	0.07	0.06		0.04		
Control Delay	10.3	54.3	19.4		4.0		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	10.3	54.3	19.4		4.0		
LOS	B	D	B		A		
Approach Delay	10.3	38.5			4.0		
Approach LOS	B	D			A		

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:, Start of Green	
Natural Cycle: 90	
Control Type: Pretimed	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 10.7	Intersection LOS: B
Intersection Capacity Utilization 59.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: Gem Lake Dr & Southern Blvd

Lane Group	EBT	NBT	NBR	SBT
Lane Group Flow (vph)	2707	24	20	14
v/c Ratio	0.58	0.07	0.06	0.04
Control Delay	10.3	54.3	19.4	4.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.3	54.3	19.4	4.0
Queue Length 50th (ft)	345	21	0	1
Queue Length 95th (ft)	367	50	26	0
Internal Link Dist (ft)	715	205		20
Turn Bay Length (ft)				
Base Capacity (vph)	4635	345	310	334
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.58	0.07	0.06	0.04

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2565	7	0	0	0	0	23	19	5	9	0
Future Volume (vph)	0	2565	7	0	0	0	0	23	19	5	9	0
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	
Lane Util. Factor		0.86						1.00	1.00		1.00	
Frt		1.00						1.00	0.85		1.00	
Flt Protected		1.00						1.00	1.00		0.98	
Satd. Flow (prot)		6282						1845	1568		1812	
Flt Permitted		1.00						1.00	1.00		0.97	
Satd. Flow (perm)		6282						1845	1568		1783	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2700	7	0	0	0	0	24	20	5	9	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	17	0	0	0
Lane Group Flow (vph)	0	2707	0	0	0	0	0	24	3	0	14	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA						NA	custom	Perm	NA	
Protected Phases		2						1 3	1 3		1 3	
Permitted Phases									1 3	1 3		
Actuated Green, G (s)		118.0						30.0	30.0		30.0	
Effective Green, g (s)		118.0						21.0	21.0		21.0	
Actuated g/C Ratio		0.74						0.13	0.13		0.13	
Clearance Time (s)		6.0										
Lane Grp Cap (vph)		4632						242	205		234	
v/s Ratio Prot		c0.43						c0.01	0.00			
v/s Ratio Perm											0.01	
v/c Ratio		0.58						0.10	0.01		0.06	
Uniform Delay, d1		9.7						61.2	60.5		60.9	
Progression Factor		1.00						1.00	1.00		0.07	
Incremental Delay, d2		0.5						0.8	0.1		0.5	
Delay (s)		10.2						62.0	60.6		4.7	
Level of Service		B						E	E		A	
Approach Delay (s)		10.2			0.0			61.4			4.7	
Approach LOS		B			A			E			A	

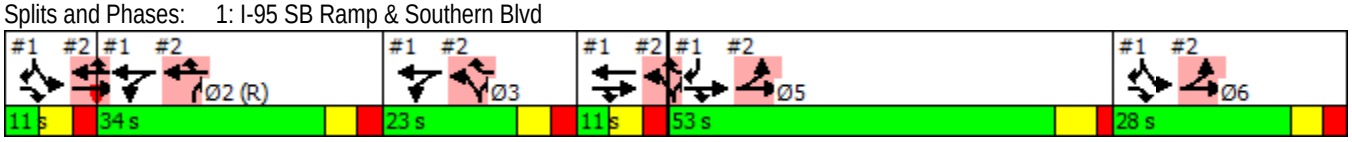
Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

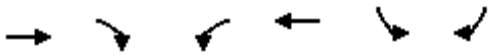
c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	726	887	458	1419	393	1398						
Future Volume (vph)	726	887	458	1419	393	1398						
Turn Type	NA	custom	Prot	NA	Prot	custom						
Protected Phases	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6	1	2	3	4	5	6
Permitted Phases		4 5										
Detector Phase	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	34.0	23.0	11.0	53.0	28.0
Total Split (%)							7%	21%	14%	7%	33%	18%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	57.0	96.0	50.0	61.0	32.0	85.0						
Actuated g/C Ratio	0.36	0.60	0.31	0.38	0.20	0.53						
v/c Ratio	0.43	0.57	0.46	0.62	0.61	0.78						
Control Delay	56.8	22.1	0.8	3.6	62.7	33.5						
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0						
Total Delay	56.8	22.1	0.8	3.6	62.7	33.5						
LOS	E	C	A	A	E	C						
Approach Delay	37.7			2.9								
Approach LOS	D			A								

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 26.1	Intersection LOS: C
Intersection Capacity Utilization 72.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd

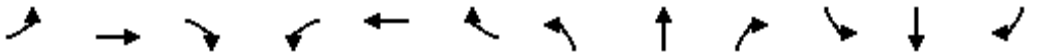




Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	764	934	482	1494	414	1472
v/c Ratio	0.43	0.57	0.46	0.62	0.61	0.78
Control Delay	56.8	22.1	0.8	3.6	62.7	33.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	22.1	0.8	3.6	62.7	33.5
Queue Length 50th (ft)	0	315	0	9	206	526
Queue Length 95th (ft)	0	377	m0	24	265	604
Internal Link Dist (ft)	832			569		
Turn Bay Length (ft)		450			250	250
Base Capacity (vph)	1776	1639	1052	2396	680	1899
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.57	0.46	0.62	0.61	0.78

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	726	887	458	1419	0	0	0	0	393	0	1398
Future Volume (vph)	0	726	887	458	1419	0	0	0	0	393	0	1398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	7.0	7.0					7.0		7.0
Lane Util. Factor		0.91	0.88	0.97	0.86					0.97		0.76
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		4988	2733	3367	6285					3400		3575
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		4988	2733	3367	6285					3400		3575
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	764	934	482	1494	0	0	0	0	414	0	1472
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	764	934	482	1494	0	0	0	0	414	0	1472
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	custom	Prot	NA					Prot		custom
Protected Phases		4 5	1 4 5 6	2 3	2 3 4					1 6		1 5 6
Permitted Phases			4 5									
Actuated Green, G (s)		57.0	96.0	50.0	61.0					32.0		85.0
Effective Green, g (s)		57.0	96.0	50.0	61.0					32.0		85.0
Actuated g/C Ratio		0.36	0.60	0.31	0.38					0.20		0.53
Clearance Time (s)												
Lane Grp Cap (vph)		1776	1639	1052	2396					680		1899
v/s Ratio Prot		0.15	c0.34	0.14	c0.24					0.12		c0.41
v/s Ratio Perm												
v/c Ratio		0.43	0.57	0.46	0.62					0.61		0.78
Uniform Delay, d1		39.2	19.5	44.1	40.2					58.3		29.9
Progression Factor		1.42	1.05	0.00	0.07					1.00		1.00
Incremental Delay, d2		0.7	1.4	0.8	0.8					4.0		3.2
Delay (s)		56.5	21.8	0.8	3.6					62.3		33.1
Level of Service		E	C	A	A					E		C
Approach Delay (s)		37.4			2.9			0.0			39.5	
Approach LOS		D			A			A			D	

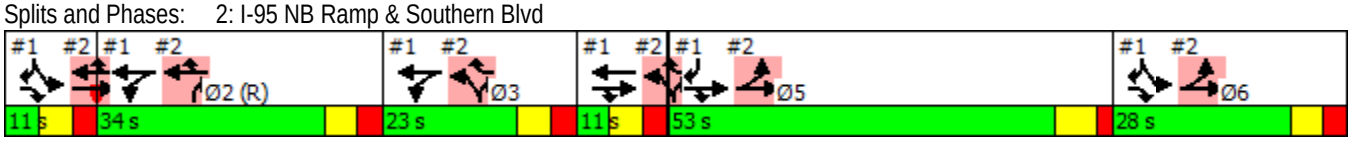
Intersection Summary			
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	176	943	1414	391	464	346						
Future Volume (vph)	176	943	1414	391	464	346						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	34.0	23.0	11.0	53.0	28.0
Total Split (%)							7%	21%	14%	7%	33%	18%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	74.0	85.0	38.0	72.0	27.0	61.0						
Actuated g/C Ratio	0.46	0.53	0.24	0.45	0.17	0.38						
v/c Ratio	0.12	0.37	0.83	0.44	0.59	0.35						
Control Delay	0.2	2.8	45.1	10.0	64.6	36.5						
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0						
Total Delay	0.2	2.8	45.1	10.0	64.6	36.5						
LOS	A	A	D	A	E	D						
Approach Delay		2.4	37.5									
Approach LOS		A	D									

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 30.2	Intersection LOS: C
Intersection Capacity Utilization 72.8%	ICU Level of Service C
Analysis Period (min) 15	

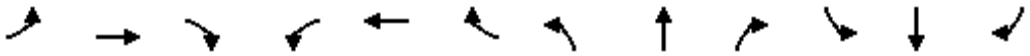
Splits and Phases: 2: I-95 NB Ramp & Southern Blvd



Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	185	993	1488	412	488	364
v/c Ratio	0.12	0.37	0.83	0.44	0.59	0.35
Control Delay	0.2	2.8	45.1	10.0	64.6	36.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.2	2.8	45.1	10.0	64.6	36.5
Queue Length 50th (ft)	0	10	383	177	169	153
Queue Length 95th (ft)	0	23	418	m186	211	203
Internal Link Dist (ft)		569	659			
Turn Bay Length (ft)	500			300	600	600
Base Capacity (vph)	1587	2701	1791	938	833	1052
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.37	0.83	0.44	0.59	0.35

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	943	0	0	1414	391	464	0	346	0	0	0
Future Volume (vph)	176	943	0	0	1414	391	464	0	346	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.94		0.88			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	5085			7544	1583	4942		2760			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	5085			7544	1583	4942		2760			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	185	993	0	0	1488	412	488	0	364	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	227	0	0	0	0	0	0
Lane Group Flow (vph)	185	993	0	0	1488	185	488	0	364	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	74.0	85.0			38.0	72.0	27.0		61.0			
Effective Green, g (s)	74.0	85.0			38.0	72.0	27.0		61.0			
Actuated g/C Ratio	0.46	0.53			0.24	0.45	0.17		0.38			
Clearance Time (s)												
Lane Grp Cap (vph)	1587	2701			1791	712	833		1052			
v/s Ratio Prot	0.05	c0.20			c0.20	0.12	c0.10		0.13			
v/s Ratio Perm												
v/c Ratio	0.12	0.37			0.83	0.26	0.59		0.35			
Uniform Delay, d1	24.4	21.8			57.9	27.4	61.3		35.3			
Progression Factor	0.00	0.11			0.73	4.08	1.00		1.00			
Incremental Delay, d2	0.1	0.3			2.6	0.5	3.0		0.9			
Delay (s)	0.2	2.8			45.0	112.5	64.4		36.2			
Level of Service	A	A			D	F	E		D			
Approach Delay (s)		2.4			59.6			52.3			0.0	
Approach LOS		A			E			D			A	

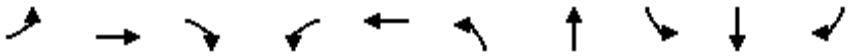
Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	134	911	245	93	1331	279	208	108	258	195
Future Volume (vph)	134	911	245	93	1331	279	208	108	258	195
Turn Type	pm+pt	NA	custom	pm+pt	NA	Prot	NA	pm+pt	NA	Perm
Protected Phases	1	6	6 7	5	2	7	4	3	8	
Permitted Phases	6		6	2				8		8
Detector Phase	1	6	6 7	5	2	7	4	3	8	8
Switch Phase										
Minimum Initial (s)	4.0	20.0		4.0	20.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	31.0		10.0	29.0	10.0	28.0	10.0	34.0	34.0
Total Split (s)	21.0	88.0		14.0	81.0	24.0	43.0	15.0	34.0	34.0
Total Split (%)	13.1%	55.0%		8.8%	50.6%	15.0%	26.9%	9.4%	21.3%	21.3%
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?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max		Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	96.0	82.0	106.0	83.0	75.0	18.0	37.0	37.0	28.0	28.0
Actuated g/C Ratio	0.60	0.51	0.66	0.52	0.47	0.11	0.23	0.23	0.18	0.18
v/c Ratio	0.67	0.53	0.23	0.34	0.87	0.76	0.38	0.40	0.83	0.48
Control Delay	58.3	24.7	7.4	30.6	74.2	82.4	47.5	45.5	85.3	14.3
Queue Delay	0.0	0.0	0.0	0.0	47.8	0.0	0.0	0.0	0.0	0.0
Total Delay	58.3	24.7	7.4	30.6	122.1	82.4	47.5	45.5	85.3	14.3
LOS	E	C	A	C	F	F	D	D	F	B
Approach Delay		24.9			116.3		64.6		53.0	
Approach LOS		C			F		E		D	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 131 (82%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 105	
Control Type: Pretimed	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 69.2	Intersection LOS: E
Intersection Capacity Utilization 87.1%	ICU Level of Service E
Analysis Period (min) 15	

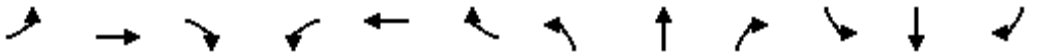
Splits and Phases: 3: Parker Ave & Southern Blvd



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	141	959	258	98	1444	294	304	114	272	205
v/c Ratio	0.67	0.53	0.23	0.34	0.87	0.76	0.38	0.40	0.83	0.48
Control Delay	58.3	24.7	7.4	30.6	74.2	82.4	47.5	45.5	85.3	14.3
Queue Delay	0.0	0.0	0.0	0.0	47.8	0.0	0.0	0.0	0.0	0.0
Total Delay	58.3	24.7	7.4	30.6	122.1	82.4	47.5	45.5	85.3	14.3
Queue Length 50th (ft)	119	296	51	79	841	156	126	86	279	19
Queue Length 95th (ft)	193	325	90	m115	914	211	174	139	#429	98
Internal Link Dist (ft)		961			574		435		537	
Turn Bay Length (ft)	530		200	250		350		150		200
Base Capacity (vph)	212	1813	1126	288	1653	386	809	284	326	428
Starvation Cap Reductn	0	0	0	0	586	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	0.67	0.53	0.23	0.34	1.35	0.76	0.38	0.40	0.83	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	911	245	93	1331	41	279	208	81	108	258	195
Future Volume (vph)	134	911	245	93	1331	41	279	208	81	108	258	195
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	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		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	3539	1583	1770	3523		3433	3391		1770	1863	1583
Flt Permitted	0.05	1.00	1.00	0.23	1.00		0.95	1.00		0.57	1.00	1.00
Satd. Flow (perm)	92	3539	1583	427	3523		3433	3391		1055	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	141	959	258	98	1401	43	294	219	85	114	272	205
RTOR Reduction (vph)	0	0	78	0	2	0	0	25	0	0	0	152
Lane Group Flow (vph)	141	959	180	98	1442	0	294	279	0	114	272	53
Turn Type	pm+pt	NA	custom	pm+pt	NA		Prot	NA		pm+pt	NA	Perm
Protected Phases	1	6	6 7	5	2		7	4		3	8	
Permitted Phases	6		6	2						8		8
Actuated Green, G (s)	96.0	82.0	106.0	83.0	75.0		18.0	37.0		37.0	28.0	28.0
Effective Green, g (s)	96.0	82.0	106.0	83.0	75.0		18.0	37.0		37.0	28.0	28.0
Actuated g/C Ratio	0.60	0.51	0.66	0.52	0.47		0.11	0.23		0.23	0.18	0.18
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	212	1813	1048	288	1651		386	784		284	326	277
v/s Ratio Prot	c0.06	0.27	0.11	0.02	c0.41		c0.09	0.08		0.02	c0.15	
v/s Ratio Perm	0.34			0.16						0.07		0.03
v/c Ratio	0.67	0.53	0.17	0.34	0.87		0.76	0.36		0.40	0.83	0.19
Uniform Delay, d1	43.7	26.1	10.3	20.8	38.2		68.9	51.5		50.5	63.8	56.3
Progression Factor	1.20	0.90	4.13	1.96	1.80		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	14.6	1.1	0.3	2.3	5.0		13.3	1.3		4.2	21.6	1.5
Delay (s)	67.3	24.5	42.8	43.0	73.8		82.2	52.8		54.7	85.3	57.9
Level of Service	E	C	D	D	E		F	D		D	F	E
Approach Delay (s)		32.4			71.8			67.2			69.9	
Approach LOS		C			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	57.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	128	880	120	1222	88	100	53	150	154
Future Volume (vph)	128	880	120	1222	88	100	53	150	154
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	3	8	7	4	
Permitted Phases	6		2		8		4		4
Detector Phase	1	6	5	2	3	8	7	4	4
Switch Phase									
Minimum Initial (s)	4.0	20.0	4.0	20.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	10.0	32.0	10.0	32.0	32.0
Total Split (s)	24.0	94.0	18.0	88.0	14.0	38.0	10.0	34.0	34.0
Total Split (%)	15.0%	58.8%	11.3%	55.0%	8.8%	23.8%	6.3%	21.3%	21.3%
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?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	106.0	88.0	94.0	82.0	40.0	32.0	32.0	28.0	28.0
Actuated g/C Ratio	0.66	0.55	0.59	0.51	0.25	0.20	0.20	0.18	0.18
v/c Ratio	0.46	0.53	0.37	0.72	0.37	0.42	0.23	0.48	0.50
Control Delay	18.5	39.5	13.7	33.0	50.9	55.0	49.9	65.2	43.2
Queue Delay	0.0	1.5	0.0	49.1	118.3	0.0	0.0	0.0	80.7
Total Delay	18.5	41.0	13.7	82.1	169.2	55.0	49.9	65.2	123.9
LOS	B	D	B	F	F	E	D	E	F
Approach Delay		38.3		76.1		98.2		88.2	
Approach LOS		D		E		F		F	

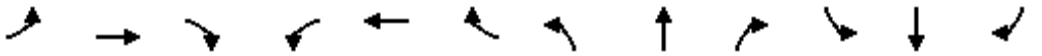
Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 39 (24%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 85
Control Type: Pretimed
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 65.7 — Intersection LOS: E
Intersection Capacity Utilization 74.3% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 4: Lake Ave & Southern Blvd

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	135	1012	126	1307	93	153	56	158	162
v/c Ratio	0.46	0.53	0.37	0.72	0.37	0.42	0.23	0.48	0.50
Control Delay	18.5	39.5	13.7	33.0	50.9	55.0	49.9	65.2	43.2
Queue Delay	0.0	1.5	0.0	49.1	118.3	0.0	0.0	0.0	80.7
Total Delay	18.5	41.0	13.7	82.1	169.2	55.0	49.9	65.2	123.9
Queue Length 50th (ft)	69	486	45	545	76	129	45	151	98
Queue Length 95th (ft)	105	545	72	632	128	205	85	230	178
Internal Link Dist (ft)		574		557		367		375	
Turn Bay Length (ft)	140		140		100		120		120
Base Capacity (vph)	296	1925	342	1810	251	365	244	326	325
Starvation Cap Reductn	0	674	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	703	221	0	0	0	238
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.81	0.37	1.18	3.10	0.42	0.23	0.48	1.86

Intersection Summary



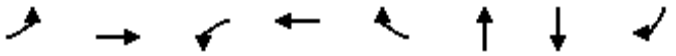
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	880	82	120	1222	20	88	100	46	53	150	154
Future Volume (vph)	128	880	82	120	1222	20	88	100	46	53	150	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3494		1770	3531		1770	1775		1770	1863	1583
Flt Permitted	0.10	1.00		0.22	1.00		0.44	1.00		0.62	1.00	1.00
Satd. Flow (perm)	177	3494		410	3531		814	1775		1146	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	135	926	86	126	1286	21	93	105	48	56	158	162
RTOR Reduction (vph)	0	5	0	0	0	0	0	10	0	0	0	49
Lane Group Flow (vph)	135	1008	0	126	1307	0	93	143	0	56	158	113
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		4
Actuated Green, G (s)	106.0	88.0		94.0	82.0		40.0	32.0		32.0	28.0	28.0
Effective Green, g (s)	106.0	88.0		94.0	82.0		40.0	32.0		32.0	28.0	28.0
Actuated g/C Ratio	0.66	0.55		0.59	0.51		0.25	0.20		0.20	0.18	0.18
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	296	1921		342	1809		251	355		244	326	277
v/s Ratio Prot	c0.05	c0.29		0.03	c0.37		c0.02	c0.08		0.01	c0.08	
v/s Ratio Perm	0.25			0.19			0.07			0.04		0.07
v/c Ratio	0.46	0.52		0.37	0.72		0.37	0.40		0.23	0.48	0.41
Uniform Delay, d1	21.0	22.8		16.0	30.2		47.9	55.7		53.0	59.5	58.6
Progression Factor	1.13	1.70		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.4	0.9		3.0	2.5		4.2	3.4		2.2	5.1	4.4
Delay (s)	28.1	39.5		19.1	32.7		52.0	59.0		55.1	64.6	63.1
Level of Service	C	D		B	C		D	E		E	E	E
Approach Delay (s)		38.2			31.5			56.4			62.5	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	39.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	9	702	4	2810	3	20	0	37	20
Future Volume (vph)	9	702	4	2810	3	20	0	37	20
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	NA	Perm
Protected Phases	1	2	1	2			3	3	
Permitted Phases					2	3			3
Detector Phase	1	2	1	2	2	3	3	3	3
Switch Phase									
Minimum Initial (s)	4.0	20.0	4.0	20.0	20.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	29.0	15.0	15.0	15.0	15.0
Total Split (s)	16.0	122.0	16.0	122.0	122.0	22.0	22.0	22.0	22.0
Total Split (%)	10.0%	76.3%	10.0%	76.3%	76.3%	13.8%	13.8%	13.8%	13.8%
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	5.0	5.0	5.0	5.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		9.0	9.0	9.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	10.0	116.0	10.0	116.0	116.0		13.0	13.0	13.0
Actuated g/C Ratio	0.06	0.72	0.06	0.72	0.72		0.08	0.08	0.08
v/c Ratio	0.08	0.56	0.04	0.65	0.00		0.19	0.26	0.11
Control Delay	72.7	12.1	72.0	9.6	0.0		23.3	73.9	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	72.7	12.1	72.0	9.6	0.0		23.3	73.9	1.2
LOS	E	B	E	A	A		C	E	A
Approach Delay		12.9		9.7			23.3	48.5	
Approach LOS		B		A			C	D	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:, Start of Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 70.7%	ICU Level of Service C
Analysis Period (min) 15	

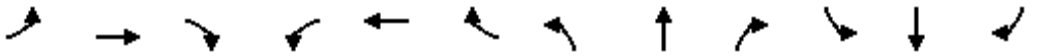
Splits and Phases: 5: Southern Bvld & Gem Lake Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	9	739	4	2958	3	21	39	21
v/c Ratio	0.08	0.56	0.04	0.65	0.00	0.19	0.26	0.11
Control Delay	72.7	12.1	72.0	9.6	0.0	23.3	73.9	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.7	12.1	72.0	9.6	0.0	23.3	73.9	1.2
Queue Length 50th (ft)	9	328	4	377	0	3	39	0
Queue Length 95th (ft)	30	425	m6	398	m0	8	81	0
Internal Link Dist (ft)		1282		391		20	441	
Turn Bay Length (ft)	120		180		350			
Base Capacity (vph)	108	1324	108	4556	1148	109	149	183
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.56	0.04	0.65	0.00	0.19	0.26	0.11

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	702	0	4	2810	3	20	0	0	0	37	20
Future Volume (vph)	9	702	0	4	2810	3	20	0	0	0	37	20
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		9.0			9.0	9.0
Lane Util. Factor	1.00	1.00		1.00	0.86	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95			1.00	1.00
Satd. Flow (prot)	1736	1827		1736	6285	1553		1752			1845	1568
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.73			1.00	1.00
Satd. Flow (perm)	1736	1827		1736	6285	1553		1350			1845	1568
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	9	739	0	4	2958	3	21	0	0	0	39	21
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	0	0	0	19
Lane Group Flow (vph)	9	739	0	4	2958	2	0	21	0	0	39	2
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA			NA	Perm
Protected Phases	1	2		1	2			3			3	
Permitted Phases						2	3					3
Actuated Green, G (s)	10.0	116.0		10.0	116.0	116.0		13.0			13.0	13.0
Effective Green, g (s)	10.0	116.0		10.0	116.0	116.0		13.0			13.0	13.0
Actuated g/C Ratio	0.06	0.72		0.06	0.72	0.72		0.08			0.08	0.08
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		9.0			9.0	9.0
Lane Grp Cap (vph)	108	1324		108	4556	1125		109			149	127
v/s Ratio Prot	c0.01	0.40		0.00	c0.47						c0.02	
v/s Ratio Perm						0.00		0.02				0.00
v/c Ratio	0.08	0.56		0.04	0.65	0.00		0.19			0.26	0.01
Uniform Delay, d1	70.7	10.2		70.5	11.4	6.1		68.6			69.0	67.6
Progression Factor	1.00	1.00		1.01	0.79	1.00		0.28			1.00	1.00
Incremental Delay, d2	1.5	1.7		0.5	0.5	0.0		3.9			4.2	0.2
Delay (s)	72.2	11.9		71.6	9.5	6.1		23.1			73.2	67.8
Level of Service	E	B		E	A	A		C			E	E
Approach Delay (s)		12.6			9.6			23.1			71.3	
Approach LOS		B			A			C			E	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

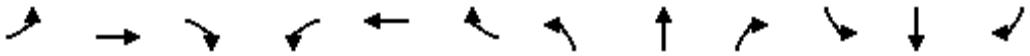
Lane Group	EBT	NBT	NBR	SBL	SBT	Ø1	Ø3
Lane Configurations							
Traffic Volume (vph)	1568	20	11	34	7		
Future Volume (vph)	1568	20	11	34	7		
Turn Type	NA	NA	custom	Perm	NA		
Protected Phases	2	1 3	1 3		1 3	1	3
Permitted Phases			1 3	1 3			
Detector Phase	2	1 3	1 3	1 3	1 3		
Switch Phase							
Minimum Initial (s)	20.0					4.0	6.0
Minimum Split (s)	29.0					10.0	15.0
Total Split (s)	122.0					16.0	22.0
Total Split (%)	76.3%					10%	14%
Yellow Time (s)	4.0					4.0	4.0
All-Red Time (s)	2.0					2.0	5.0
Lost Time Adjust (s)	0.0						
Total Lost Time (s)	6.0						
Lead/Lag	Lag					Lead	
Lead-Lag Optimize?	Yes					Yes	
Recall Mode	Max					Max	Max
Act Effct Green (s)	116.0	32.0	32.0		32.0		
Actuated g/C Ratio	0.72	0.20	0.20		0.20		
v/c Ratio	0.37	0.06	0.04		0.15		
Control Delay	8.5	52.5	10.6		3.0		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	8.5	52.5	10.6		3.0		
LOS	A	D	B		A		
Approach Delay	8.5	37.2			3.0		
Approach LOS	A	D			A		

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:, Start of Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 8.9	Intersection LOS: A
Intersection Capacity Utilization 44.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Gem Lake Dr & Southern Blvd

Lane Group	EBT	NBT	NBR	SBT
Lane Group Flow (vph)	1664	21	12	43
v/c Ratio	0.37	0.06	0.04	0.15
Control Delay	8.5	52.5	10.6	3.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.5	52.5	10.6	3.0
Queue Length 50th (ft)	173	18	0	0
Queue Length 95th (ft)	190	44	13	2
Internal Link Dist (ft)	715	205		20
Turn Bay Length (ft)				
Base Capacity (vph)	4552	369	329	291
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.37	0.06	0.04	0.15

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1568	12	0	0	0	0	20	11	34	7	0
Future Volume (vph)	0	1568	12	0	0	0	0	20	11	34	7	0
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	
Lane Util. Factor		0.86						1.00	1.00		1.00	
Frt		1.00						1.00	0.85		1.00	
Flt Protected		1.00						1.00	1.00		0.96	
Satd. Flow (prot)		6277						1845	1568		1771	
Flt Permitted		1.00						1.00	1.00		0.79	
Satd. Flow (perm)		6277						1845	1568		1459	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1651	13	0	0	0	0	21	12	36	7	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	10	0	0	0
Lane Group Flow (vph)	0	1663	0	0	0	0	0	21	2	0	43	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA						NA	custom	Perm	NA	
Protected Phases		2						1 3	1 3		1 3	
Permitted Phases									1 3	1 3		
Actuated Green, G (s)		116.0						32.0	32.0		32.0	
Effective Green, g (s)		116.0						23.0	23.0		23.0	
Actuated g/C Ratio		0.72						0.14	0.14		0.14	
Clearance Time (s)		6.0										
Lane Grp Cap (vph)		4550						265	225		209	
v/s Ratio Prot		c0.26						0.01	0.00			
v/s Ratio Perm											c0.03	
v/c Ratio		0.37						0.08	0.01		0.21	
Uniform Delay, d1		8.2						59.3	58.7		60.4	
Progression Factor		1.00						1.00	1.00		0.04	
Incremental Delay, d2		0.2						0.6	0.1		2.2	
Delay (s)		8.5						59.9	58.8		4.4	
Level of Service		A						E	E		A	
Approach Delay (s)		8.5			0.0			59.5			4.4	
Approach LOS		A			A			E			A	

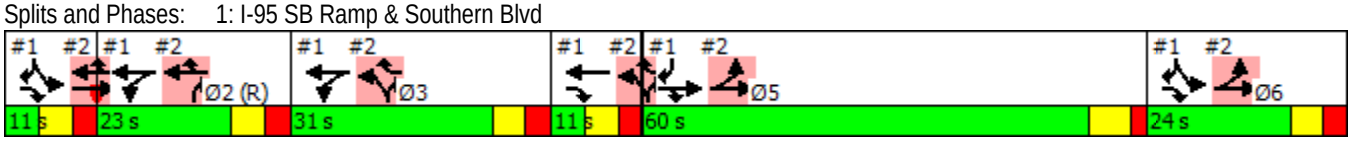
Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

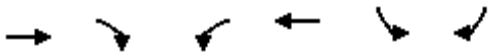
c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø6
Lane Configurations											
Traffic Volume (vph)	1384	1709	454	980	438	920					
Future Volume (vph)	1384	1709	454	980	438	920					
Turn Type	NA	custom	Prot	NA	Prot	custom					
Protected Phases	5	1 4 5 6	2 3	2 3 4	1 6	1 5 6	1	2	3	4	6
Permitted Phases											
Detector Phase	5	1 4 5 6	2 3	2 3 4	1 6	1 5 6					
Switch Phase											
Minimum Initial (s)	10.0						3.0	10.0	6.0	3.0	6.0
Minimum Split (s)	29.0						10.0	20.0	13.0	10.0	13.0
Total Split (s)	60.0						11.0	23.0	31.0	11.0	24.0
Total Split (%)	37.5%						7%	14%	19%	7%	15%
Yellow Time (s)	5.0						4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0						3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0										
Total Lost Time (s)	7.0										
Lead/Lag	Lead						Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes						Yes	Yes	Yes	Yes	Yes
Recall Mode	Max						Max	Max	Max	Max	Max
Act Effct Green (s)	53.0	99.0	47.0	58.0	28.0	88.0					
Actuated g/C Ratio	0.33	0.62	0.29	0.36	0.18	0.55					
v/c Ratio	0.88	1.06	0.48	0.45	0.77	0.49					
Control Delay	44.7	73.3	2.1	3.2	72.9	23.3					
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0					
Total Delay	44.7	73.3	2.1	3.2	72.9	23.3					
LOS	D	E	A	A	E	C					
Approach Delay	60.5			2.8							
Approach LOS	E			A							

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 11 (7%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 125	
Control Type: Pretimed	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay: 41.6	Intersection LOS: D
Intersection Capacity Utilization 102.7%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd





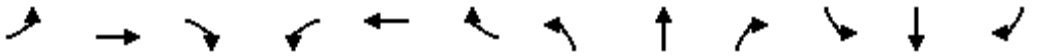
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1457	1799	478	1032	461	968
v/c Ratio	0.88	1.06	0.48	0.45	0.77	0.49
Control Delay	44.7	73.3	2.1	3.2	72.9	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.7	73.3	2.1	3.2	72.9	23.3
Queue Length 50th (ft)	528	~1205	0	8	240	267
Queue Length 95th (ft)	594	#1353	m0	9	306	315
Internal Link Dist (ft)	832			569		
Turn Bay Length (ft)		450			250	250
Base Capacity (vph)	1652	1691	989	2278	595	1966
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.88	1.06	0.48	0.45	0.77	0.49

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1384	1709	454	980	0	0	0	0	438	0	920
Future Volume (vph)	0	1384	1709	454	980	0	0	0	0	438	0	920
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	7.0	7.0					7.0		7.0
Lane Util. Factor		0.91	0.88	0.97	0.86					0.97		0.76
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		4988	2733	3367	6285					3400		3575
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		4988	2733	3367	6285					3400		3575
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1457	1799	478	1032	0	0	0	0	461	0	968
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1457	1799	478	1032	0	0	0	0	461	0	968
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	custom	Prot	NA					Prot		custom
Protected Phases		5	1 4 5 6	2 3	2 3 4					1 6		1 5 6
Permitted Phases												
Actuated Green, G (s)		53.0	99.0	47.0	58.0					28.0		88.0
Effective Green, g (s)		53.0	99.0	47.0	58.0					28.0		88.0
Actuated g/C Ratio		0.33	0.62	0.29	0.36					0.18		0.55
Clearance Time (s)		7.0										
Lane Grp Cap (vph)		1652	1691	989	2278					595		1966
v/s Ratio Prot		0.29	c0.66	c0.14	c0.16					0.14		0.27
v/s Ratio Perm												
v/c Ratio		0.88	1.06	0.48	0.45					0.77		0.49
Uniform Delay, d1		50.5	30.5	46.5	38.9					63.0		22.2
Progression Factor		0.78	1.19	0.03	0.07					1.00		1.00
Incremental Delay, d2		5.3	38.2	0.9	0.5					9.5		0.9
Delay (s)		44.5	74.5	2.1	3.1					72.5		23.1
Level of Service		D	E	A	A					E		C
Approach Delay (s)		61.1			2.8			0.0			39.0	
Approach LOS		E			A			A			D	

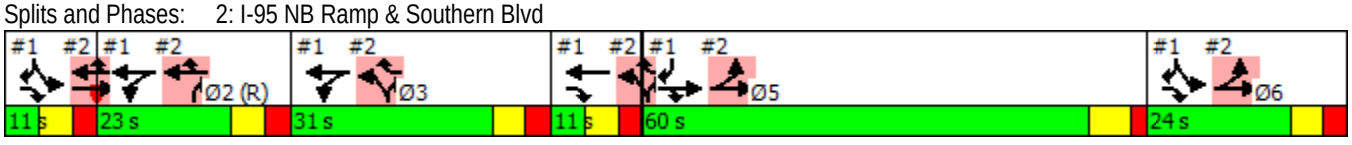
Intersection Summary			
HCM 2000 Control Delay	41.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	332	1490	1019	520	415	609						
Future Volume (vph)	332	1490	1019	520	415	609						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	23.0	31.0	11.0	60.0	24.0
Total Split (%)							7%	14%	19%	7%	38%	15%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	77.0	88.0	27.0	69.0	35.0	58.0						
Actuated g/C Ratio	0.48	0.55	0.17	0.43	0.22	0.36						
v/c Ratio	0.21	0.56	0.84	0.59	0.40	0.64						
Control Delay	0.1	4.2	75.6	7.4	54.9	45.9						
Queue Delay	0.0	0.3	0.0	0.0	0.0	0.0						
Total Delay	0.1	4.6	75.6	7.4	54.9	45.9						
LOS	A	A	E	A	D	D						
Approach Delay		3.8	52.6									
Approach LOS		A	D									

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 11 (7%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 125	
Control Type: Pretimed	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay: 31.6	Intersection LOS: C
Intersection Capacity Utilization 102.7%	ICU Level of Service G
Analysis Period (min) 15	

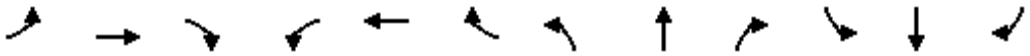
Splits and Phases: 2: I-95 NB Ramp & Southern Blvd



Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	349	1568	1073	547	437	641
v/c Ratio	0.21	0.56	0.84	0.59	0.40	0.64
Control Delay	0.1	4.2	75.6	7.4	54.9	45.9
Queue Delay	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	0.1	4.6	75.6	7.4	54.9	45.9
Queue Length 50th (ft)	0	30	237	100	140	316
Queue Length 95th (ft)	m0	69	288	117	177	393
Internal Link Dist (ft)		569	667			
Turn Bay Length (ft)	500			300	600	600
Base Capacity (vph)	1652	2796	1273	926	1081	1000
Starvation Cap Reductn	0	557	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.70	0.84	0.59	0.40	0.64

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	332	1490	0	0	1019	520	415	0	609	0	0	0
Future Volume (vph)	332	1490	0	0	1019	520	415	0	609	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.94		0.88			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	5085			7544	1583	4942		2760			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	5085			7544	1583	4942		2760			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	349	1568	0	0	1073	547	437	0	641	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	243	0	0	0	0	0	0
Lane Group Flow (vph)	349	1568	0	0	1073	304	437	0	641	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	77.0	88.0			27.0	69.0	35.0		58.0			
Effective Green, g (s)	77.0	88.0			27.0	69.0	35.0		58.0			
Actuated g/C Ratio	0.48	0.55			0.17	0.43	0.22		0.36			
Clearance Time (s)												
Lane Grp Cap (vph)	1652	2796			1273	682	1081		1000			
v/s Ratio Prot	0.10	c0.31			c0.14	0.19	0.09		c0.23			
v/s Ratio Perm												
v/c Ratio	0.21	0.56			0.84	0.45	0.40		0.64			
Uniform Delay, d1	24.0	23.4			64.4	32.0	53.6		42.4			
Progression Factor	0.00	0.16			1.10	0.79	1.00		1.00			
Incremental Delay, d2	0.1	0.4			4.6	1.4	1.1		3.2			
Delay (s)	0.1	4.2			75.4	26.7	54.7		45.5			
Level of Service	A	A			E	C	D		D			
Approach Delay (s)		3.5			59.0			49.2			0.0	
Approach LOS		A			E			D			A	

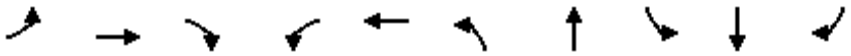
Intersection Summary			
HCM 2000 Control Delay	33.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	210	1627	262	106	962	360	295	106	188	217
Future Volume (vph)	210	1627	262	106	962	360	295	106	188	217
Turn Type	pm+pt	NA	custom	pm+pt	NA	Prot	NA	pm+pt	NA	Perm
Protected Phases	1	6	6 7	5	2	7	4	3	8	
Permitted Phases	6		6	2				8		8
Detector Phase	1	6	6 7	5	2	7	4	3	8	8
Switch Phase										
Minimum Initial (s)	4.0	20.0		4.0	20.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	31.0		10.0	29.0	10.0	28.0	10.0	34.0	34.0
Total Split (s)	28.0	83.0		15.0	70.0	28.0	43.0	19.0	34.0	34.0
Total Split (%)	17.5%	51.9%		9.4%	43.8%	17.5%	26.9%	11.9%	21.3%	21.3%
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?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max		Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	92.0	77.0	105.0	73.0	64.0	22.0	37.0	41.0	28.0	28.0
Actuated g/C Ratio	0.58	0.48	0.66	0.46	0.40	0.14	0.23	0.26	0.18	0.18
v/c Ratio	0.69	1.01	0.25	0.77	0.77	0.80	0.58	0.41	0.61	0.51
Control Delay	53.3	54.2	1.1	67.9	33.5	80.5	51.3	41.8	69.8	13.4
Queue Delay	0.0	35.5	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
Total Delay	53.3	89.7	1.1	67.9	34.2	80.5	51.3	41.8	69.8	13.4
LOS	D	F	A	E	C	F	D	D	E	B
Approach Delay		75.0			37.4		64.4		40.1	
Approach LOS		E			D		E		D	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 131 (82%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 135	
Control Type: Pretimed	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay: 59.8	Intersection LOS: E
Intersection Capacity Utilization 91.0%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Southern Blvd & Parker Ave



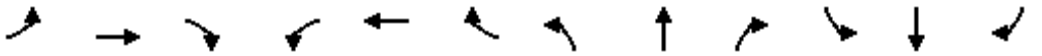
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	221	1713	276	112	1087	379	471	112	198	228
v/c Ratio	0.69	1.01	0.25	0.77	0.77	0.80	0.58	0.41	0.61	0.51
Control Delay	53.3	54.2	1.1	67.9	33.5	80.5	51.3	41.8	69.8	13.4
Queue Delay	0.0	35.5	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
Total Delay	53.3	89.7	1.1	67.9	34.2	80.5	51.3	41.8	69.8	13.4
Queue Length 50th (ft)	139	~867	6	64	342	201	206	81	194	16
Queue Length 95th (ft)	235	#1115	17	m#159	386	#266	268	133	285	99
Internal Link Dist (ft)		954			568		468		609	
Turn Bay Length (ft)	230		200	150		240		120		
Base Capacity (vph)	320	1703	1123	145	1405	472	817	274	326	450
Starvation Cap Reductn	0	0	0	0	100	0	0	0	0	0
Spillback Cap Reductn	0	310	0	0	0	0	1	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	1.23	0.25	0.77	0.83	0.80	0.58	0.41	0.61	0.51

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	1627	262	106	962	70	360	295	152	106	188	217
Future Volume (vph)	210	1627	262	106	962	70	360	295	152	106	188	217
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	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.95		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	3539	1583	1770	3503		3433	3359		1770	1863	1583
Flt Permitted	0.09	1.00	1.00	0.06	1.00		0.95	1.00		0.40	1.00	1.00
Satd. Flow (perm)	177	3539	1583	116	3503		3433	3359		749	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	221	1713	276	112	1013	74	379	311	160	112	198	228
RTOR Reduction (vph)	0	0	84	0	4	0	0	41	0	0	0	173
Lane Group Flow (vph)	221	1713	192	112	1083	0	379	430	0	112	198	55
Turn Type	pm+pt	NA	custom	pm+pt	NA		Prot	NA		pm+pt	NA	Perm
Protected Phases	1	6	6 7	5	2		7	4		3	8	
Permitted Phases	6		6	2						8		8
Actuated Green, G (s)	92.0	77.0	105.0	73.0	64.0		22.0	37.0		41.0	28.0	28.0
Effective Green, g (s)	92.0	77.0	105.0	73.0	64.0		22.0	37.0		41.0	28.0	28.0
Actuated g/C Ratio	0.58	0.48	0.66	0.46	0.40		0.14	0.23		0.26	0.18	0.18
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	320	1703	1038	145	1401		472	776		274	326	277
v/s Ratio Prot	c0.09	c0.48	0.12	0.04	0.31		c0.11	0.13		0.03	c0.11	
v/s Ratio Perm	0.30			0.31						0.07		0.03
v/c Ratio	0.69	1.01	0.18	0.77	0.77		0.80	0.55		0.41	0.61	0.20
Uniform Delay, d1	34.3	41.5	10.8	37.2	41.7		66.9	54.2		47.3	60.9	56.4
Progression Factor	1.50	0.80	0.40	1.13	0.71		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.6	21.1	0.3	28.7	3.7		13.5	2.8		4.5	8.2	1.6
Delay (s)	61.0	54.1	4.6	70.9	33.4		80.4	57.1		51.8	69.1	58.0
Level of Service	E	D	A	E	C		F	E		D	E	E
Approach Delay (s)		48.6			36.9			67.5			60.8	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	50.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	165	1614	31	720	140	100	58	150	278
Future Volume (vph)	165	1614	31	720	140	100	58	150	278
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	7	4	3	8	
Permitted Phases	6		2		4		8		8
Detector Phase	1	6	5	2	7	4	3	8	8
Switch Phase									
Minimum Initial (s)	4.0	20.0	4.0	20.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	10.0	32.0	10.0	32.0	32.0
Total Split (s)	19.0	100.0	10.0	91.0	11.0	39.0	11.0	39.0	39.0
Total Split (%)	11.9%	62.5%	6.3%	56.9%	6.9%	24.4%	6.9%	24.4%	24.4%
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?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	104.0	94.0	89.0	85.0	38.0	33.0	38.0	33.0	33.0
Actuated g/C Ratio	0.65	0.59	0.56	0.53	0.24	0.21	0.24	0.21	0.21
v/c Ratio	0.41	0.88	0.36	0.42	0.57	0.24	0.21	0.41	0.71
Control Delay	4.9	18.9	22.9	23.4	59.5	31.6	46.5	58.9	47.9
Queue Delay	0.0	46.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.9	65.5	22.9	23.4	59.5	31.6	46.5	58.9	47.9
LOS	A	E	C	C	E	C	D	E	D
Approach Delay		60.2		23.4		44.2		51.1	
Approach LOS		E		C		D		D	

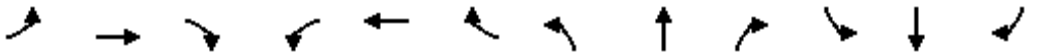
Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 147 (92%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 115	
Control Type: Pretimed	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 49.2	Intersection LOS: D
Intersection Capacity Utilization 87.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: Southern Blvd & Lake Ave

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	174	1811	33	786	147	179	61	158	293
v/c Ratio	0.41	0.88	0.36	0.42	0.57	0.24	0.21	0.41	0.71
Control Delay	4.9	18.9	22.9	23.4	59.5	31.6	46.5	58.9	47.9
Queue Delay	0.0	46.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.9	65.5	22.9	23.4	59.5	31.6	46.5	58.9	47.9
Queue Length 50th (ft)	17	1012	12	254	123	47	48	145	187
Queue Length 95th (ft)	m0	m1016	25	306	190	84	90	221	303
Internal Link Dist (ft)		568		627		595		783	
Turn Bay Length (ft)	140		140		100		120		120
Base Capacity (vph)	426	2063	91	1872	260	743	293	384	410
Starvation Cap Reductn	0	475	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	13	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	1.14	0.36	0.42	0.57	0.24	0.21	0.41	0.71

Intersection Summary

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



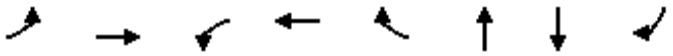
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	1614	106	31	720	27	140	100	70	58	150	278
Future Volume (vph)	165	1614	106	31	720	27	140	100	70	58	150	278
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3506		1770	3520		1770	3320		1770	1863	1583
Flt Permitted	0.27	1.00		0.05	1.00		0.53	1.00		0.62	1.00	1.00
Satd. Flow (perm)	498	3506		88	3520		993	3320		1154	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	174	1699	112	33	758	28	147	105	74	61	158	293
RTOR Reduction (vph)	0	3	0	0	1	0	0	59	0	0	0	84
Lane Group Flow (vph)	174	1808	0	33	785	0	147	120	0	61	158	209
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		8
Actuated Green, G (s)	104.0	94.0		89.0	85.0		38.0	33.0		38.0	33.0	33.0
Effective Green, g (s)	104.0	94.0		89.0	85.0		38.0	33.0		38.0	33.0	33.0
Actuated g/C Ratio	0.65	0.59		0.56	0.53		0.24	0.21		0.24	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
Lane Grp Cap (vph)	427	2059		91	1870		260	684		293	384	326
v/s Ratio Prot	c0.03	c0.52		0.01	0.22		c0.02	0.04		0.01	0.08	
v/s Ratio Perm	0.23			0.19			0.12			0.04		c0.13
v/c Ratio	0.41	0.88		0.36	0.42		0.57	0.18		0.21	0.41	0.64
Uniform Delay, d1	13.0	28.1		28.4	22.6		54.5	52.3		48.2	55.1	58.1
Progression Factor	0.35	0.59		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.0	2.1		10.8	0.7		8.6	0.6		1.6	3.2	9.3
Delay (s)	5.6	18.6		39.3	23.3		63.1	52.9		49.8	58.3	67.4
Level of Service	A	B		D	C		E	D		D	E	E
Approach Delay (s)		17.5			24.0			57.5			62.5	
Approach LOS		B			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	23	1326	6	1887	7	24	0	8	12
Future Volume (vph)	23	1326	6	1887	7	24	0	8	12
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	NA	Perm
Protected Phases	1	2	1	2			3	3	
Permitted Phases					2	3			3
Detector Phase	1	2	1	2	2	3	3	3	3
Switch Phase									
Minimum Initial (s)	4.0	20.0	4.0	20.0	20.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	29.0	15.0	15.0	15.0	15.0
Total Split (s)	18.0	124.0	18.0	124.0	124.0	18.0	18.0	18.0	18.0
Total Split (%)	11.3%	77.5%	11.3%	77.5%	77.5%	11.3%	11.3%	11.3%	11.3%
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	5.0	5.0	5.0	5.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		9.0	9.0	9.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	12.0	118.0	12.0	118.0	118.0		9.0	9.0	9.0
Actuated g/C Ratio	0.08	0.74	0.08	0.74	0.74		0.06	0.06	0.06
v/c Ratio	0.18	1.04	0.05	0.43	0.01		0.32	0.08	0.09
Control Delay	73.1	56.0	65.7	8.4	0.0		32.1	73.4	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	73.1	56.0	65.7	8.4	0.0		32.1	73.4	1.2
LOS	E	E	E	A	A		C	E	A
Approach Delay		56.3		8.5			32.1	28.7	
Approach LOS		E		A			C	C	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:, Start of Green	
Natural Cycle: 120	
Control Type: Pretimed	
Maximum v/c Ratio: 1.04	
Intersection Signal Delay: 28.4	Intersection LOS: C
Intersection Capacity Utilization 90.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 5: Southern Blvd & Gem Lake Dr



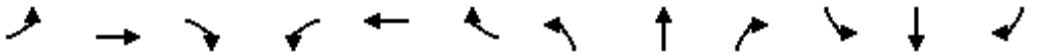
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	24	1396	6	1986	7	25	8	13
v/c Ratio	0.18	1.04	0.05	0.43	0.01	0.32	0.08	0.09
Control Delay	73.1	56.0	65.7	8.4	0.0	32.1	73.4	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.1	56.0	65.7	8.4	0.0	32.1	73.4	1.2
Queue Length 50th (ft)	24	~1566	6	165	0	4	8	0
Queue Length 95th (ft)	57	#1832	m13	196	m0	10	28	0
Internal Link Dist (ft)		1282		391		20	441	
Turn Bay Length (ft)	120		180		350			
Base Capacity (vph)	130	1347	130	4635	1166	78	103	145
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	1.04	0.05	0.43	0.01	0.32	0.08	0.09

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	1326	0	6	1887	7	24	0	0	0	8	12
Future Volume (vph)	23	1326	0	6	1887	7	24	0	0	0	8	12
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		9.0			9.0	9.0
Lane Util. Factor	1.00	1.00		1.00	0.86	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95			1.00	1.00
Satd. Flow (prot)	1736	1827		1736	6285	1553		1752			1845	1568
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.75			1.00	1.00
Satd. Flow (perm)	1736	1827		1736	6285	1553		1388			1845	1568
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	24	1396	0	6	1986	7	25	0	0	0	8	13
RTOR Reduction (vph)	0	0	0	0	0	2	0	0	0	0	0	12
Lane Group Flow (vph)	24	1396	0	6	1986	5	0	25	0	0	8	1
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA			NA	Perm
Protected Phases	1	2		1	2			3			3	
Permitted Phases						2	3					3
Actuated Green, G (s)	12.0	118.0		12.0	118.0	118.0		9.0			9.0	9.0
Effective Green, g (s)	12.0	118.0		12.0	118.0	118.0		9.0			9.0	9.0
Actuated g/C Ratio	0.08	0.74		0.08	0.74	0.74		0.06			0.06	0.06
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		9.0			9.0	9.0
Lane Grp Cap (vph)	130	1347		130	4635	1145		78			103	88
v/s Ratio Prot	c0.01	c0.76		0.00	0.32						0.00	
v/s Ratio Perm						0.00		c0.02				0.00
v/c Ratio	0.18	1.04		0.05	0.43	0.00		0.32			0.08	0.01
Uniform Delay, d1	69.4	21.0		68.7	8.1	5.5		72.6			71.6	71.3
Progression Factor	1.00	1.00		0.94	1.00	1.00		0.29			1.00	1.00
Incremental Delay, d2	3.1	34.5		0.6	0.3	0.0		10.5			1.5	0.2
Delay (s)	72.5	55.5		65.4	8.3	5.5		31.9			73.0	71.5
Level of Service	E	E		E	A	A		C			E	E
Approach Delay (s)		55.7			8.5			31.9			72.1	
Approach LOS		E			A			C			E	

Intersection Summary			
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

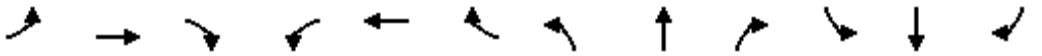
Lane Group	EBT	NBT	NBR	SBL	SBT	Ø1	Ø3
Lane Configurations							
Traffic Volume (vph)	3065	24	21	7	7		
Future Volume (vph)	3065	24	21	7	7		
Turn Type	NA	NA	custom	Perm	NA		
Protected Phases	2	1 3	1 3		1 3	1	3
Permitted Phases			1 3	1 3			
Detector Phase	2	1 3	1 3	1 3	1 3		
Switch Phase							
Minimum Initial (s)	20.0					4.0	6.0
Minimum Split (s)	29.0					10.0	15.0
Total Split (s)	124.0					18.0	18.0
Total Split (%)	77.5%					11%	11%
Yellow Time (s)	4.0					4.0	4.0
All-Red Time (s)	2.0					2.0	5.0
Lost Time Adjust (s)	0.0						
Total Lost Time (s)	6.0						
Lead/Lag	Lag					Lead	
Lead-Lag Optimize?	Yes					Yes	
Recall Mode	Max					Max	Max
Act Effct Green (s)	118.0	30.0	30.0		30.0		
Actuated g/C Ratio	0.74	0.19	0.19		0.19		
v/c Ratio	0.70	0.07	0.07		0.04		
Control Delay	12.4	54.4	22.0		4.0		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	12.4	54.4	22.0		4.0		
LOS	B	D	C		A		
Approach Delay	12.4	39.2			4.0		
Approach LOS	B	D			A		

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:, Start of Green	
Natural Cycle: 120	
Control Type: Pretimed	
Maximum v/c Ratio: 1.04	
Intersection Signal Delay: 12.7	Intersection LOS: B
Intersection Capacity Utilization 66.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 6: Gem Lake Dr & Southern Blvd

Lane Group	EBT	NBT	NBR	SBT
Lane Group Flow (vph)	3234	25	22	14
v/c Ratio	0.70	0.07	0.07	0.04
Control Delay	12.4	54.4	22.0	4.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.4	54.4	22.0	4.0
Queue Length 50th (ft)	484	22	2	1
Queue Length 95th (ft)	508	52	29	0
Internal Link Dist (ft)	715	205		20
Turn Bay Length (ft)				
Base Capacity (vph)	4635	345	310	325
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.70	0.07	0.07	0.04

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	3065	8	0	0	0	0	24	21	7	7	0
Future Volume (vph)	0	3065	8	0	0	0	0	24	21	7	7	0
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	
Lane Util. Factor		0.86						1.00	1.00		1.00	
Frt		1.00						1.00	0.85		1.00	
Flt Protected		1.00						1.00	1.00		0.98	
Satd. Flow (prot)		6282						1845	1568		1800	
Flt Permitted		1.00						1.00	1.00		0.94	
Satd. Flow (perm)		6282						1845	1568		1737	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	3226	8	0	0	0	0	25	22	7	7	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	17	0	0	0
Lane Group Flow (vph)	0	3234	0	0	0	0	0	25	5	0	14	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA						NA	custom	Perm	NA	
Protected Phases		2						1 3	1 3		1 3	
Permitted Phases									1 3	1 3		
Actuated Green, G (s)		118.0						30.0	30.0		30.0	
Effective Green, g (s)		118.0						21.0	21.0		21.0	
Actuated g/C Ratio		0.74						0.13	0.13		0.13	
Clearance Time (s)		6.0										
Lane Grp Cap (vph)		4632						242	205		227	
v/s Ratio Prot		c0.51						c0.01	0.00			
v/s Ratio Perm											0.01	
v/c Ratio		0.70						0.10	0.02		0.06	
Uniform Delay, d1		11.4						61.2	60.6		60.9	
Progression Factor		1.00						1.00	1.00		0.07	
Incremental Delay, d2		0.9						0.9	0.2		0.5	
Delay (s)		12.3						62.1	60.8		4.7	
Level of Service		B						E	E		A	
Approach Delay (s)		12.3			0.0			61.5			4.7	
Approach LOS		B			A			E			A	

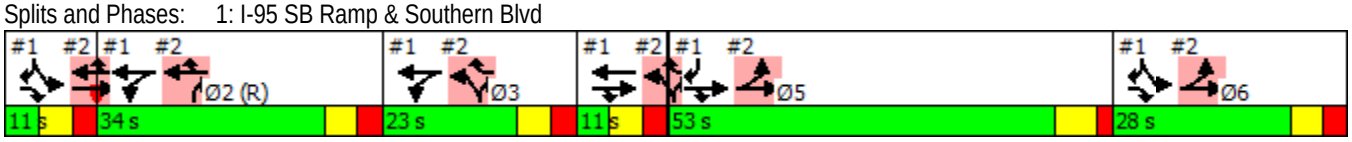
Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

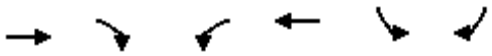
c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	751	1177	615	1588	470	1625						
Future Volume (vph)	751	1177	615	1588	470	1625						
Turn Type	NA	custom	Prot	NA	Prot	custom						
Protected Phases	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6	1	2	3	4	5	6
Permitted Phases												
Detector Phase	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	34.0	23.0	11.0	53.0	28.0
Total Split (%)							7%	21%	14%	7%	33%	18%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	57.0	96.0	50.0	61.0	32.0	85.0						
Actuated g/C Ratio	0.36	0.60	0.31	0.38	0.20	0.53						
v/c Ratio	0.45	0.76	0.62	0.70	0.73	0.90						
Control Delay	58.8	37.1	1.3	8.2	67.0	41.5						
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0						
Total Delay	58.8	37.1	1.3	8.3	67.0	41.5						
LOS	E	D	A	A	E	D						
Approach Delay	45.6			6.4								
Approach LOS	D			A								

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 32.3	Intersection LOS: C
Intersection Capacity Utilization 89.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd

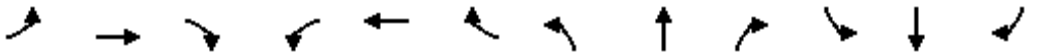




Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	791	1239	647	1672	495	1711
v/c Ratio	0.45	0.76	0.62	0.70	0.73	0.90
Control Delay	58.8	37.1	1.3	8.2	67.0	41.5
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	58.8	37.1	1.3	8.3	67.0	41.5
Queue Length 50th (ft)	306	506	0	32	253	690
Queue Length 95th (ft)	361	585	m0	m101	319	789
Internal Link Dist (ft)	832			569		
Turn Bay Length (ft)		450			250	250
Base Capacity (vph)	1776	1639	1052	2396	680	1899
Starvation Cap Reductn	0	0	0	97	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.76	0.62	0.73	0.73	0.90

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	751	1177	615	1588	0	0	0	0	470	0	1625
Future Volume (vph)	0	751	1177	615	1588	0	0	0	0	470	0	1625
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	7.0	7.0					7.0		7.0
Lane Util. Factor		0.91	0.88	0.97	0.86					0.97		0.76
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		4988	2733	3367	6285					3400		3575
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		4988	2733	3367	6285					3400		3575
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	791	1239	647	1672	0	0	0	0	495	0	1711
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	791	1239	647	1672	0	0	0	0	495	0	1711
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	custom	Prot	NA					Prot		custom
Protected Phases		4 5	1 4 5 6	2 3	2 3 4					1 6		1 5 6
Permitted Phases												
Actuated Green, G (s)		57.0	96.0	50.0	61.0					32.0		85.0
Effective Green, g (s)		57.0	96.0	50.0	61.0					32.0		85.0
Actuated g/C Ratio		0.36	0.60	0.31	0.38					0.20		0.53
Clearance Time (s)												
Lane Grp Cap (vph)		1776	1639	1052	2396					680		1899
v/s Ratio Prot		0.16	c0.45	0.19	c0.27					0.15		c0.48
v/s Ratio Perm												
v/c Ratio		0.45	0.76	0.62	0.70					0.73		0.90
Uniform Delay, d1		39.4	23.4	46.8	41.7					59.9		33.7
Progression Factor		1.47	1.43	0.01	0.18					1.00		1.00
Incremental Delay, d2		0.7	3.0	0.9	0.8					6.7		7.4
Delay (s)		58.5	36.4	1.3	8.2					66.6		41.1
Level of Service		E	D	A	A					E		D
Approach Delay (s)		45.1			6.3			0.0			46.8	
Approach LOS		D			A			A			D	

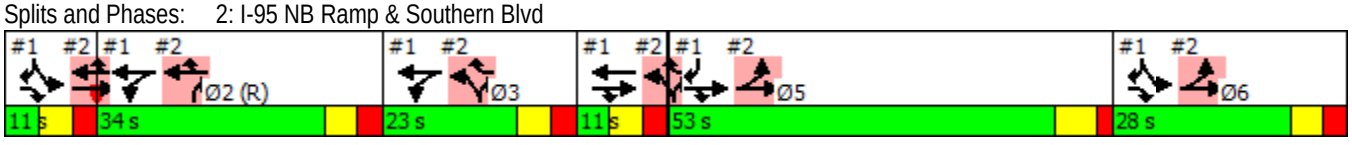
Intersection Summary			
HCM 2000 Control Delay	31.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	204	1017	1601	474	602	470						
Future Volume (vph)	204	1017	1601	474	602	470						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	34.0	23.0	11.0	53.0	28.0
Total Split (%)							7%	21%	14%	7%	33%	18%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	74.0	85.0	38.0	72.0	27.0	61.0						
Actuated g/C Ratio	0.46	0.53	0.24	0.45	0.17	0.38						
v/c Ratio	0.14	0.40	0.94	0.51	0.76	0.47						
Control Delay	0.2	4.9	46.8	8.7	70.2	39.2						
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0						
Total Delay	0.2	4.9	46.8	8.7	70.2	39.2						
LOS	A	A	D	A	E	D						
Approach Delay		4.1	38.1									
Approach LOS		A	D									

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 33.1	Intersection LOS: C
Intersection Capacity Utilization 89.6%	ICU Level of Service E
Analysis Period (min) 15	

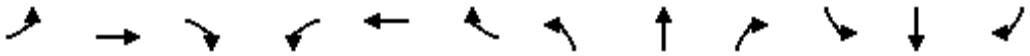
Splits and Phases: 2: I-95 NB Ramp & Southern Blvd



Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	215	1071	1685	499	634	495
v/c Ratio	0.14	0.40	0.94	0.51	0.76	0.47
Control Delay	0.2	4.9	46.8	8.7	70.2	39.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.2	4.9	46.8	8.7	70.2	39.2
Queue Length 50th (ft)	0	12	416	154	227	221
Queue Length 95th (ft)	0	56	m430	m185	275	282
Internal Link Dist (ft)		569	659			
Turn Bay Length (ft)	500			300	600	600
Base Capacity (vph)	1587	2701	1791	986	833	1052
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.40	0.94	0.51	0.76	0.47

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	1017	0	0	1601	474	602	0	470	0	0	0
Future Volume (vph)	204	1017	0	0	1601	474	602	0	470	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.94		0.88			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	5085			7544	1583	4942		2760			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	5085			7544	1583	4942		2760			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	215	1071	0	0	1685	499	634	0	495	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	274	0	0	0	0	0	0
Lane Group Flow (vph)	215	1071	0	0	1685	225	634	0	495	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	74.0	85.0			38.0	72.0	27.0		61.0			
Effective Green, g (s)	74.0	85.0			38.0	72.0	27.0		61.0			
Actuated g/C Ratio	0.46	0.53			0.24	0.45	0.17		0.38			
Clearance Time (s)												
Lane Grp Cap (vph)	1587	2701			1791	712	833		1052			
v/s Ratio Prot	0.06	c0.21			c0.22	0.14	c0.13		0.18			
v/s Ratio Perm												
v/c Ratio	0.14	0.40			0.94	0.32	0.76		0.47			
Uniform Delay, d1	24.7	22.3			59.9	28.2	63.4		37.3			
Progression Factor	0.00	0.20			0.70	3.85	1.00		1.00			
Incremental Delay, d2	0.2	0.4			4.8	0.4	6.5		1.5			
Delay (s)	0.2	4.9			46.6	108.9	69.9		38.8			
Level of Service	A	A			D	F	E		D			
Approach Delay (s)		4.1			60.8			56.3			0.0	
Approach LOS		A			E			E			A	

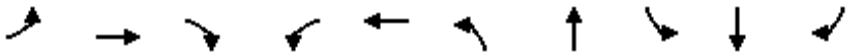
Intersection Summary			
HCM 2000 Control Delay	43.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	169	999	319	151	1454	365	238	142	299	256
Future Volume (vph)	169	999	319	151	1454	365	238	142	299	256
Turn Type	pm+pt	NA	custom	pm+pt	NA	Prot	NA	pm+pt	NA	Perm
Protected Phases	1	6	6 7	5	2	7	4	3	8	
Permitted Phases	6		6	2				8		8
Detector Phase	1	6	6 7	5	2	7	4	3	8	8
Switch Phase										
Minimum Initial (s)	4.0	20.0		4.0	20.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	31.0		10.0	29.0	10.0	28.0	10.0	34.0	34.0
Total Split (s)	20.0	76.0		22.0	78.0	28.0	40.0	22.0	34.0	34.0
Total Split (%)	12.5%	47.5%		13.8%	48.8%	17.5%	25.0%	13.8%	21.3%	21.3%
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?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max		Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	84.0	70.0	98.0	88.0	72.0	22.0	34.0	44.0	28.0	28.0
Actuated g/C Ratio	0.52	0.44	0.61	0.55	0.45	0.14	0.21	0.28	0.18	0.18
v/c Ratio	0.89	0.68	0.31	0.55	1.01	0.81	0.50	0.46	0.97	0.65
Control Delay	78.8	31.1	10.9	28.9	85.4	81.3	50.3	42.5	106.4	31.6
Queue Delay	0.0	0.4	0.0	0.0	33.8	0.0	0.0	5.7	0.0	0.0
Total Delay	78.8	31.5	10.9	28.9	119.2	81.3	50.3	48.2	106.4	31.6
LOS	E	C	B	C	F	F	D	D	F	C
Approach Delay		32.5			111.0		65.9		67.1	
Approach LOS		C			F		E		E	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 131 (82%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 145	
Control Type: Pretimed	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay: 71.7	Intersection LOS: E
Intersection Capacity Utilization 98.0%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Parker Ave & Southern Blvd



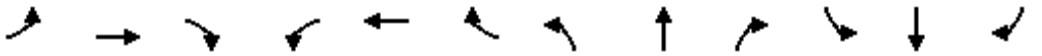
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	178	1052	336	159	1606	384	380	149	315	269
v/c Ratio	0.89	0.68	0.31	0.55	1.01	0.81	0.50	0.46	0.97	0.65
Control Delay	78.8	31.1	10.9	28.9	85.4	81.3	50.3	42.5	106.4	31.6
Queue Delay	0.0	0.4	0.0	0.0	33.8	0.0	0.0	5.7	0.0	0.0
Total Delay	78.8	31.5	10.9	28.9	119.2	81.3	50.3	48.2	106.4	31.6
Queue Length 50th (ft)	151	374	102	128	~951	204	161	111	332	103
Queue Length 95th (ft)	#280	377	125	m156	#1093	#275	216	171	#531	209
Internal Link Dist (ft)		961			574		435		537	
Turn Bay Length (ft)	530		200	250		350		150		200
Base Capacity (vph)	201	1548	1071	290	1583	472	754	325	326	412
Starvation Cap Reductn	0	0	0	0	499	0	0	0	0	0
Spillback Cap Reductn	0	133	0	0	0	0	3	123	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.74	0.31	0.55	1.48	0.81	0.51	0.74	0.97	0.65

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	999	319	151	1454	71	365	238	123	142	299	256
Future Volume (vph)	169	999	319	151	1454	71	365	238	123	142	299	256
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	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.95		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	3539	1583	1770	3514		3433	3359		1770	1863	1583
Flt Permitted	0.06	1.00	1.00	0.14	1.00		0.95	1.00		0.46	1.00	1.00
Satd. Flow (perm)	106	3539	1583	254	3514		3433	3359		849	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	178	1052	336	159	1531	75	384	251	129	149	315	269
RTOR Reduction (vph)	0	0	102	0	2	0	0	41	0	0	0	135
Lane Group Flow (vph)	178	1052	234	159	1604	0	384	339	0	149	315	134
Turn Type	pm+pt	NA	custom	pm+pt	NA		Prot	NA		pm+pt	NA	Perm
Protected Phases	1	6	6 7	5	2		7	4		3	8	
Permitted Phases	6		6	2						8		8
Actuated Green, G (s)	84.0	70.0	98.0	88.0	72.0		22.0	34.0		44.0	28.0	28.0
Effective Green, g (s)	84.0	70.0	98.0	88.0	72.0		22.0	34.0		44.0	28.0	28.0
Actuated g/C Ratio	0.52	0.44	0.61	0.55	0.45		0.14	0.21		0.28	0.18	0.18
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	201	1548	969	291	1581		472	713		325	326	277
v/s Ratio Prot	c0.08	0.30	0.15	0.05	c0.46		c0.11	c0.10		0.05	c0.17	
v/s Ratio Perm	0.39			0.25						0.08		0.08
v/c Ratio	0.89	0.68	0.24	0.55	1.01		0.81	0.48		0.46	0.97	0.48
Uniform Delay, d1	50.0	36.0	14.1	23.7	44.0		67.0	55.2		46.0	65.5	59.5
Progression Factor	0.97	0.79	3.16	1.49	1.53		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	37.2	2.2	0.5	4.5	21.4		14.2	2.3		4.6	42.0	5.9
Delay (s)	85.8	30.9	45.1	39.8	88.5		81.2	57.5		50.6	107.5	65.4
Level of Service	F	C	D	D	F		F	E		D	F	E
Approach Delay (s)		40.2			84.1			69.4			80.5	
Approach LOS		D			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	67.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	98.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

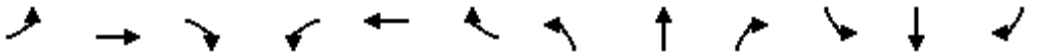
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	163	942	130	1314	142	110	60	160	220
Future Volume (vph)	163	942	130	1314	142	110	60	160	220
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	1	6	5	2	3	8	7	4	
Permitted Phases	6		2		8		4		4
Detector Phase	1	6	5	2	3	8	7	4	4
Switch Phase									
Minimum Initial (s)	4.0	20.0	4.0	20.0	4.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	10.0	32.0	10.0	32.0	32.0
Total Split (s)	25.0	90.0	20.0	85.0	16.0	39.0	11.0	34.0	34.0
Total Split (%)	15.6%	56.3%	12.5%	53.1%	10.0%	24.4%	6.9%	21.3%	21.3%
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?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	103.0	84.0	93.0	79.0	43.0	33.0	33.0	28.0	28.0
Actuated g/C Ratio	0.64	0.52	0.58	0.49	0.27	0.21	0.21	0.18	0.18
v/c Ratio	0.63	0.64	0.46	0.81	0.56	0.45	0.25	0.52	0.67
Control Delay	23.4	38.5	16.6	38.8	55.7	55.5	48.3	66.2	49.3
Queue Delay	0.0	2.4	0.0	48.6	115.5	0.0	0.0	0.0	74.0
Total Delay	23.4	40.9	16.6	87.4	171.1	55.5	48.3	66.2	123.3
LOS	C	D	B	F	F	E	D	E	F
Approach Delay		38.6		81.1		109.7		92.4	
Approach LOS		D		F		F		F	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 39 (24%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 69.6	Intersection LOS: E
Intersection Capacity Utilization 82.5%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: Lake Ave & Southern Blvd

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	172	1159	137	1412	149	169	63	168	232
v/c Ratio	0.63	0.64	0.46	0.81	0.56	0.45	0.25	0.52	0.67
Control Delay	23.4	38.5	16.6	38.8	55.7	55.5	48.3	66.2	49.3
Queue Delay	0.0	2.4	0.0	48.6	115.5	0.0	0.0	0.0	74.0
Total Delay	23.4	40.9	16.6	87.4	171.1	55.5	48.3	66.2	123.3
Queue Length 50th (ft)	93	537	52	644	124	144	50	162	148
Queue Length 95th (ft)	163	594	81	744	192	223	92	243	249
Internal Link Dist (ft)		574		557		367		375	
Turn Bay Length (ft)	140		140		100		120		120
Base Capacity (vph)	271	1825	300	1743	265	376	250	326	346
Starvation Cap Reductn	0	511	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	657	234	0	0	0	238
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.88	0.46	1.30	4.81	0.45	0.25	0.52	2.15

Intersection Summary



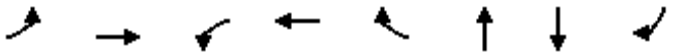
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	942	159	130	1314	28	142	110	50	60	160	220
Future Volume (vph)	163	942	159	130	1314	28	142	110	50	60	160	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3463		1770	3528		1770	1775		1770	1863	1583
Flt Permitted	0.06	1.00		0.16	1.00		0.40	1.00		0.60	1.00	1.00
Satd. Flow (perm)	118	3463		294	3528		750	1775		1118	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	172	992	167	137	1383	29	149	116	53	63	168	232
RTOR Reduction (vph)	0	9	0	0	1	0	0	10	0	0	0	69
Lane Group Flow (vph)	172	1150	0	137	1411	0	149	159	0	63	168	163
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		4
Actuated Green, G (s)	103.0	84.0		93.0	79.0		43.0	33.0		33.0	28.0	28.0
Effective Green, g (s)	103.0	84.0		93.0	79.0		43.0	33.0		33.0	28.0	28.0
Actuated g/C Ratio	0.64	0.52		0.58	0.49		0.27	0.21		0.21	0.18	0.18
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	272	1818		300	1741		265	366		250	326	277
v/s Ratio Prot	c0.08	c0.33		0.04	c0.40		c0.04	0.09		0.01	0.09	
v/s Ratio Perm	0.33			0.23			c0.12			0.04		0.10
v/c Ratio	0.63	0.63		0.46	0.81		0.56	0.43		0.25	0.52	0.59
Uniform Delay, d1	38.9	27.0		18.7	34.2		48.0	55.4		52.3	59.8	60.7
Progression Factor	0.47	1.38		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.3	1.3		4.9	4.2		8.4	3.7		2.4	5.7	8.8
Delay (s)	26.7	38.7		23.6	38.4		56.4	59.1		54.7	65.6	69.5
Level of Service	C	D		C	D		E	E		D	E	E
Approach Delay (s)		37.2			37.1			57.8			66.1	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	42.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	5	816	6	3203	4	21	0	37	23
Future Volume (vph)	5	816	6	3203	4	21	0	37	23
Turn Type	Prot	NA	Prot	NA	Perm	Perm	NA	NA	Perm
Protected Phases	1	2	1	2			3	3	
Permitted Phases					2	3			3
Detector Phase	1	2	1	2	2	3	3	3	3
Switch Phase									
Minimum Initial (s)	4.0	20.0	4.0	20.0	20.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.0	29.0	10.0	29.0	29.0	15.0	15.0	15.0	15.0
Total Split (s)	21.0	118.0	21.0	118.0	118.0	21.0	21.0	21.0	21.0
Total Split (%)	13.1%	73.8%	13.1%	73.8%	73.8%	13.1%	13.1%	13.1%	13.1%
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	5.0	5.0	5.0	5.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		9.0	9.0	9.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	15.0	112.0	15.0	112.0	112.0		12.0	12.0	12.0
Actuated g/C Ratio	0.09	0.70	0.09	0.70	0.70		0.08	0.08	0.08
v/c Ratio	0.03	0.67	0.04	0.77	0.00		0.22	0.28	0.14
Control Delay	66.6	16.9	64.2	15.7	0.0		28.5	75.6	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	66.6	16.9	64.2	15.7	0.0		28.5	75.6	1.7
LOS	E	B	E	B	A		C	E	A
Approach Delay		17.2		15.8			28.5	47.5	
Approach LOS		B		B			C	D	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:, Start of Green	
Natural Cycle: 70	
Control Type: Pretimed	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 16.6	Intersection LOS: B
Intersection Capacity Utilization 76.4%	ICU Level of Service D
Analysis Period (min) 15	

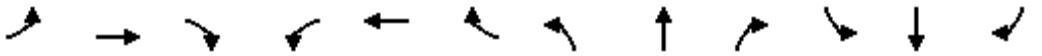
Splits and Phases: 5: Southern Bvld & Gem Lake Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	5	859	6	3372	4	22	39	24
v/c Ratio	0.03	0.67	0.04	0.77	0.00	0.22	0.28	0.14
Control Delay	66.6	16.9	64.2	15.7	0.0	28.5	75.6	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.6	16.9	64.2	15.7	0.0	28.5	75.6	1.7
Queue Length 50th (ft)	5	473	5	600	0	4	39	0
Queue Length 95th (ft)	20	616	m7	575	m0	10	81	0
Internal Link Dist (ft)		1282		391		20	441	
Turn Bay Length (ft)	120		180		350			
Base Capacity (vph)	162	1278	162	4399	1111	101	138	174
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.67	0.04	0.77	0.00	0.22	0.28	0.14

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	816	0	6	3203	4	21	0	0	0	37	23
Future Volume (vph)	5	816	0	6	3203	4	21	0	0	0	37	23
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		9.0			9.0	9.0
Lane Util. Factor	1.00	1.00		1.00	0.86	1.00		1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95			1.00	1.00
Satd. Flow (prot)	1736	1827		1736	6285	1553		1752			1845	1568
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.73			1.00	1.00
Satd. Flow (perm)	1736	1827		1736	6285	1553		1350			1845	1568
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	859	0	6	3372	4	22	0	0	0	39	24
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	0	0	0	22
Lane Group Flow (vph)	5	859	0	6	3372	3	0	22	0	0	39	2
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA			NA	Perm
Protected Phases	1	2		1	2			3			3	
Permitted Phases						2	3					3
Actuated Green, G (s)	15.0	112.0		15.0	112.0	112.0		12.0			12.0	12.0
Effective Green, g (s)	15.0	112.0		15.0	112.0	112.0		12.0			12.0	12.0
Actuated g/C Ratio	0.09	0.70		0.09	0.70	0.70		0.08			0.08	0.08
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0		9.0			9.0	9.0
Lane Grp Cap (vph)	162	1278		162	4399	1087		101			138	117
v/s Ratio Prot	0.00	0.47		c0.00	c0.54						c0.02	
v/s Ratio Perm						0.00		0.02				0.00
v/c Ratio	0.03	0.67		0.04	0.77	0.00		0.22			0.28	0.02
Uniform Delay, d1	65.9	13.6		65.9	15.5	7.2		69.6			69.9	68.5
Progression Factor	1.00	1.00		0.96	0.95	1.00		0.34			1.00	1.00
Incremental Delay, d2	0.4	2.8		0.2	0.8	0.0		4.9			5.1	0.2
Delay (s)	66.2	16.4		63.8	15.5	7.2		28.2			75.0	68.8
Level of Service	E	B		E	B	A		C			E	E
Approach Delay (s)		16.7			15.6			28.2			72.6	
Approach LOS		B			B			C			E	

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

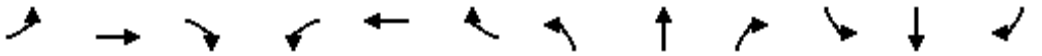
Lane Group	EBT	NBT	NBR	SBL	SBT	Ø1	Ø3
Lane Configurations							
Traffic Volume (vph)	1879	21	13	36	7		
Future Volume (vph)	1879	21	13	36	7		
Turn Type	NA	NA	custom	Perm	NA		
Protected Phases	2	1 3	1 3		1 3	1	3
Permitted Phases			1 3	1 3			
Detector Phase	2	1 3	1 3	1 3	1 3		
Switch Phase							
Minimum Initial (s)	20.0					4.0	6.0
Minimum Split (s)	29.0					10.0	15.0
Total Split (s)	118.0					21.0	21.0
Total Split (%)	73.8%					13%	13%
Yellow Time (s)	4.0					4.0	4.0
All-Red Time (s)	2.0					2.0	5.0
Lost Time Adjust (s)	0.0						
Total Lost Time (s)	6.0						
Lead/Lag	Lag					Lead	
Lead-Lag Optimize?	Yes					Yes	
Recall Mode	Max					Max	Max
Act Effct Green (s)	112.0	36.0	36.0		36.0		
Actuated g/C Ratio	0.70	0.22	0.22		0.22		
v/c Ratio	0.45	0.05	0.04		0.14		
Control Delay	10.9	49.3	12.5		3.0		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	10.9	49.3	12.5		3.0		
LOS	B	D	B		A		
Approach Delay	10.9	35.0			3.0		
Approach LOS	B	C			A		

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:, Start of Green	
Natural Cycle: 70	
Control Type: Pretimed	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 11.2	Intersection LOS: B
Intersection Capacity Utilization 49.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Gem Lake Dr & Southern Blvd

Lane Group	EBT	NBT	NBR	SBT
Lane Group Flow (vph)	1986	22	14	45
v/c Ratio	0.45	0.05	0.04	0.14
Control Delay	10.9	49.3	12.5	3.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.9	49.3	12.5	3.0
Queue Length 50th (ft)	246	18	0	0
Queue Length 95th (ft)	267	45	16	1
Internal Link Dist (ft)	715	205		20
Turn Bay Length (ft)				
Base Capacity (vph)	4394	415	368	327
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.45	0.05	0.04	0.14

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1879	8	0	0	0	0	21	13	36	7	0
Future Volume (vph)	0	1879	8	0	0	0	0	21	13	36	7	0
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	
Lane Util. Factor		0.86						1.00	1.00		1.00	
Frt		1.00						1.00	0.85		1.00	
Flt Protected		1.00						1.00	1.00		0.96	
Satd. Flow (prot)		6281						1845	1568		1770	
Flt Permitted		1.00						1.00	1.00		0.79	
Satd. Flow (perm)		6281						1845	1568		1458	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1978	8	0	0	0	0	22	14	38	7	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	12	0	0	0
Lane Group Flow (vph)	0	1986	0	0	0	0	0	22	2	0	45	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA						NA	custom	Perm	NA	
Protected Phases		2						1 3	1 3		1 3	
Permitted Phases									1 3	1 3		
Actuated Green, G (s)		112.0						36.0	36.0		36.0	
Effective Green, g (s)		112.0						27.0	27.0		27.0	
Actuated g/C Ratio		0.70						0.17	0.17		0.17	
Clearance Time (s)		6.0										
Lane Grp Cap (vph)		4396						311	264		246	
v/s Ratio Prot		c0.32						0.01	0.00			
v/s Ratio Perm											c0.03	
v/c Ratio		0.45						0.07	0.01		0.18	
Uniform Delay, d1		10.5						55.9	55.4		57.0	
Progression Factor		1.00						1.00	1.00		0.04	
Incremental Delay, d2		0.3						0.4	0.1		1.6	
Delay (s)		10.9						56.4	55.4		4.1	
Level of Service		B						E	E		A	
Approach Delay (s)		10.9			0.0			56.0			4.1	
Approach LOS		B			A			E			A	

Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Interchange Build Alternatives

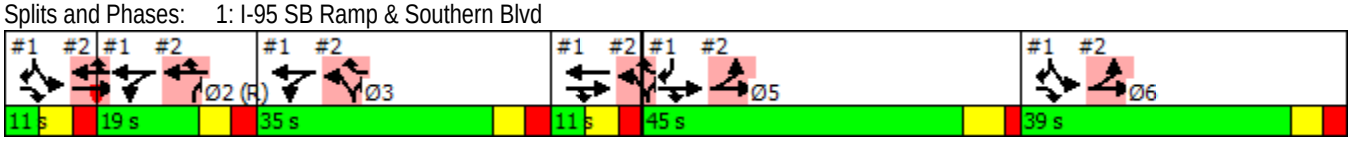
2020 Alternatives 1 & 3

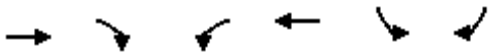
2040 Alternatives 1 & 3

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	2392	1365	343	845	377	862						
Future Volume (vph)	2392	1365	343	845	377	862						
Turn Type	NA	custom	Prot	NA	Prot	custom						
Protected Phases	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6	1	2	3	4	5	6
Permitted Phases												
Detector Phase	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	19.0	35.0	11.0	45.0	39.0
Total Split (%)							7%	12%	22%	7%	28%	24%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	49.0	99.0	47.0	58.0	43.0	88.0						
Actuated g/C Ratio	0.31	0.62	0.29	0.36	0.27	0.55						
v/c Ratio	0.99	0.85	0.37	0.39	0.43	0.46						
Control Delay	69.8	30.8	1.0	2.8	50.2	22.7						
Queue Delay	11.2	0.0	0.0	0.0	0.0	0.0						
Total Delay	81.0	30.8	1.0	2.8	50.2	22.7						
LOS	F	C	A	A	D	C						
Approach Delay	62.7			2.3								
Approach LOS	E			A								

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 81 (51%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 44.8	Intersection LOS: D
Intersection Capacity Utilization 85.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd

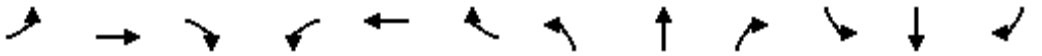




Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	2518	1437	361	889	397	907
v/c Ratio	0.99	0.85	0.37	0.39	0.43	0.46
Control Delay	69.8	30.8	1.0	2.8	50.2	22.7
Queue Delay	11.2	0.0	0.0	0.0	0.0	0.0
Total Delay	81.0	30.8	1.0	2.8	50.2	22.7
Queue Length 50th (ft)	576	657	0	6	178	244
Queue Length 95th (ft)	#638	789	m0	7	231	289
Internal Link Dist (ft)	2348			569		
Turn Bay Length (ft)		450			250	250
Base Capacity (vph)	2551	1691	989	2278	913	1966
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	103	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.85	0.37	0.39	0.43	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		6										
Traffic Volume (vph)	0	2392	1365	343	845	0	0	0	0	377	0	862
Future Volume (vph)	0	2392	1365	343	845	0	0	0	0	377	0	862
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	7.0	7.0					7.0		7.0
Lane Util. Factor		0.76	0.88	0.97	0.86					0.97		0.76
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		8331	2733	3367	6285					3400		3575
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		8331	2733	3367	6285					3400		3575
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2518	1437	361	889	0	0	0	0	397	0	907
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2518	1437	361	889	0	0	0	0	397	0	907
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	custom	Prot	NA					Prot		custom
Protected Phases		4 5	1 4 5 6	2 3	2 3 4					1 6		1 5 6
Permitted Phases												
Actuated Green, G (s)		49.0	99.0	47.0	58.0					43.0		88.0
Effective Green, g (s)		49.0	99.0	47.0	58.0					43.0		88.0
Actuated g/C Ratio		0.31	0.62	0.29	0.36					0.27		0.55
Clearance Time (s)												
Lane Grp Cap (vph)		2551	1691	989	2278					913		1966
v/s Ratio Prot		c0.30	c0.53	0.11	c0.14					0.12		0.25
v/s Ratio Perm												
v/c Ratio		0.99	0.85	0.37	0.39					0.43		0.46
Uniform Delay, d1		55.2	24.5	44.7	37.9					48.4		21.7
Progression Factor		1.00	1.00	0.01	0.06					1.00		1.00
Incremental Delay, d2		15.0	5.6	0.5	0.4					1.5		0.8
Delay (s)		70.2	30.1	1.0	2.8					49.9		22.5
Level of Service		E	C	A	A					D		C
Approach Delay (s)		55.6			2.3			0.0			30.8	
Approach LOS		E			A			A			C	

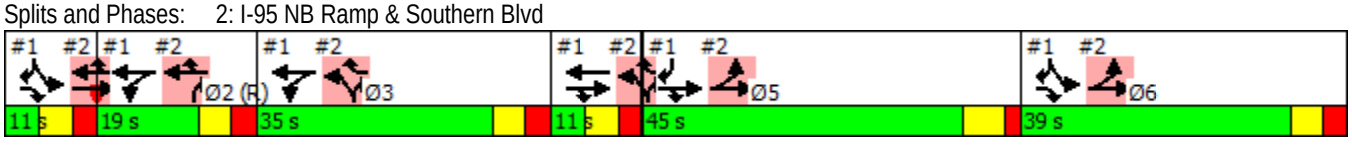
Intersection Summary			
HCM 2000 Control Delay	40.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	1460	1309	876	450	312	441						
Future Volume (vph)	1460	1309	876	450	312	441						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	19.0	35.0	11.0	45.0	39.0
Total Split (%)							7%	12%	22%	7%	28%	24%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	77.0	88.0	23.0	69.0	39.0	58.0						
Actuated g/C Ratio	0.48	0.55	0.14	0.43	0.24	0.36						
v/c Ratio	0.64	0.49	0.85	0.65	0.27	0.46						
Control Delay	2.9	1.6	75.3	34.9	49.7	41.0						
Queue Delay	21.2	0.3	0.0	0.0	0.0	0.0						
Total Delay	24.1	1.9	75.3	34.9	49.7	41.0						
LOS	C	A	E	C	D	D						
Approach Delay		13.6	61.6									
Approach LOS		B	E									

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 81 (51%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 31.5	Intersection LOS: C
Intersection Capacity Utilization 85.8%	ICU Level of Service E
Analysis Period (min) 15	

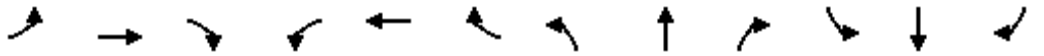
Splits and Phases: 2: I-95 NB Ramp & Southern Blvd



Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1537	1378	922	474	328	464
v/c Ratio	0.64	0.49	0.85	0.65	0.27	0.46
Control Delay	2.9	1.6	75.3	34.9	49.7	41.0
Queue Delay	21.2	0.3	0.0	0.0	0.0	0.0
Total Delay	24.1	1.9	75.3	34.9	49.7	41.0
Queue Length 50th (ft)	0	9	236	332	99	211
Queue Length 95th (ft)	m0	m10	271	466	130	271
Internal Link Dist (ft)		569	1251			
Turn Bay Length (ft)				300	600	600
Base Capacity (vph)	2401	2796	1084	725	1204	1000
Starvation Cap Reductn	910	699	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.66	0.85	0.65	0.27	0.46

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1460	1309	0	0	876	450	312	0	441	0	0	0
Future Volume (vph)	1460	1309	0	0	876	450	312	0	441	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.94	0.91			0.81	1.00	0.94		0.88			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	4990	5085			7544	1583	4942		2760			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	4990	5085			7544	1583	4942		2760			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1537	1378	0	0	922	474	328	0	464	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	0	0
Lane Group Flow (vph)	1537	1378	0	0	922	431	328	0	464	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	77.0	88.0			23.0	69.0	39.0		58.0			
Effective Green, g (s)	77.0	88.0			23.0	69.0	39.0		58.0			
Actuated g/C Ratio	0.48	0.55			0.14	0.43	0.24		0.36			
Clearance Time (s)												
Lane Grp Cap (vph)	2401	2796			1084	682	1204		1000			
v/s Ratio Prot	c0.31	0.27			c0.12	c0.27	0.07		0.17			
v/s Ratio Perm												
v/c Ratio	0.64	0.49			0.85	0.63	0.27		0.46			
Uniform Delay, d1	31.1	22.2			66.8	35.6	49.0		39.1			
Progression Factor	0.08	0.06			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.3	0.3			8.4	4.4	0.6		1.5			
Delay (s)	2.9	1.6			75.2	40.0	49.6		40.6			
Level of Service	A	A			E	D	D		D			
Approach Delay (s)		2.3			63.3			44.3			0.0	
Approach LOS		A			E			D			A	

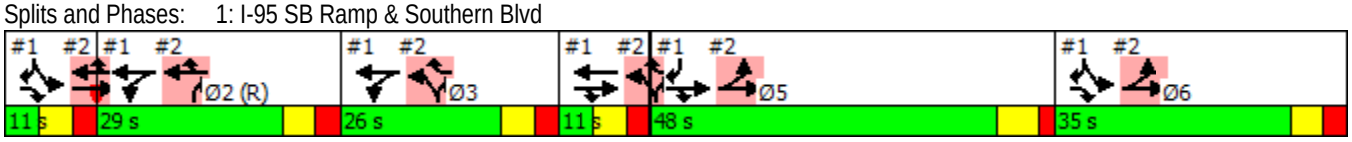
Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		

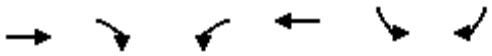
c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	1428	887	458	1419	393	1398						
Future Volume (vph)	1428	887	458	1419	393	1398						
Turn Type	NA	custom	Prot	NA	Prot	custom						
Protected Phases	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6	1	2	3	4	5	6
Permitted Phases												
Detector Phase	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	29.0	26.0	11.0	48.0	35.0
Total Split (%)							7%	18%	16%	7%	30%	22%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	52.0	98.0	48.0	59.0	39.0	87.0						
Actuated g/C Ratio	0.32	0.61	0.30	0.37	0.24	0.54						
v/c Ratio	0.56	0.56	0.48	0.64	0.50	0.76						
Control Delay	45.4	19.9	0.6	3.0	54.6	31.5						
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0						
Total Delay	45.4	19.9	0.6	3.0	54.6	31.5						
LOS	D	B	A	A	D	C						
Approach Delay	35.6			2.4								
Approach LOS	D			A								

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 25.5	Intersection LOS: C
Intersection Capacity Utilization 72.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd

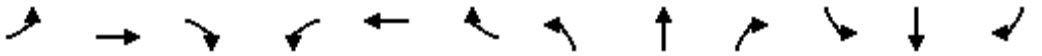




Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1503	934	482	1494	414	1472
v/c Ratio	0.56	0.56	0.48	0.64	0.50	0.76
Control Delay	45.4	19.9	0.6	3.0	54.6	31.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	19.9	0.6	3.0	54.6	31.5
Queue Length 50th (ft)	284	313	0	9	194	510
Queue Length 95th (ft)	313	380	m0	m10	250	587
Internal Link Dist (ft)	2248			569		
Turn Bay Length (ft)		450			250	250
Base Capacity (vph)	2707	1673	1010	2317	828	1943
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.56	0.48	0.64	0.50	0.76

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		6										
Traffic Volume (vph)	0	1428	887	458	1419	0	0	0	0	393	0	1398
Future Volume (vph)	0	1428	887	458	1419	0	0	0	0	393	0	1398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	7.0	7.0					7.0		7.0
Lane Util. Factor		0.76	0.88	0.97	0.86					0.97		0.76
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		8331	2733	3367	6285					3400		3575
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		8331	2733	3367	6285					3400		3575
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1503	934	482	1494	0	0	0	0	414	0	1472
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1503	934	482	1494	0	0	0	0	414	0	1472
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	custom	Prot	NA					Prot		custom
Protected Phases		4 5	1 4 5 6	2 3	2 3 4					1 6		1 5 6
Permitted Phases												
Actuated Green, G (s)		52.0	98.0	48.0	59.0					39.0		87.0
Effective Green, g (s)		52.0	98.0	48.0	59.0					39.0		87.0
Actuated g/C Ratio		0.32	0.61	0.30	0.37					0.24		0.54
Clearance Time (s)												
Lane Grp Cap (vph)		2707	1673	1010	2317					828		1943
v/s Ratio Prot		0.18	c0.34	0.14	c0.24					0.12		c0.41
v/s Ratio Perm												
v/c Ratio		0.56	0.56	0.48	0.64					0.50		0.76
Uniform Delay, d1		44.5	18.3	45.7	41.8					52.1		28.3
Progression Factor		1.00	1.00	0.00	0.05					1.00		1.00
Incremental Delay, d2		0.8	1.4	0.5	0.8					2.2		2.8
Delay (s)		45.3	19.6	0.6	3.0					54.3		31.1
Level of Service		D	B	A	A					D		C
Approach Delay (s)		35.5			2.4			0.0			36.2	
Approach LOS		D			A			A			D	

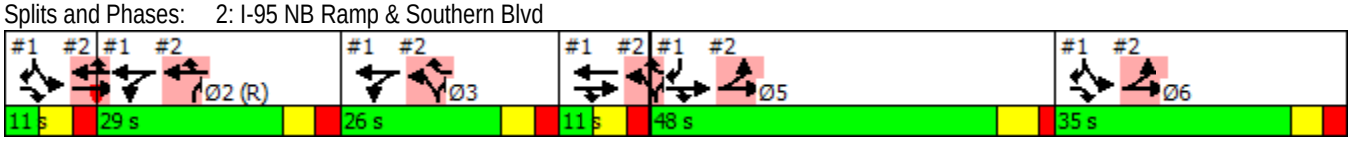
Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	878	943	1414	391	464	346						
Future Volume (vph)	878	943	1414	391	464	346						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	29.0	26.0	11.0	48.0	35.0
Total Split (%)							7%	18%	16%	7%	30%	22%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	76.0	87.0	33.0	70.0	30.0	59.0						
Actuated g/C Ratio	0.48	0.54	0.21	0.44	0.19	0.37						
v/c Ratio	0.39	0.36	0.96	0.56	0.53	0.36						
Control Delay	1.8	2.2	77.1	29.6	61.0	38.0						
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0						
Total Delay	1.8	2.2	77.1	29.6	61.0	38.0						
LOS	A	A	E	C	E	D						
Approach Delay		2.0	66.8									
Approach LOS		A	E									

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 37.3	Intersection LOS: D
Intersection Capacity Utilization 72.8%	ICU Level of Service C
Analysis Period (min) 15	

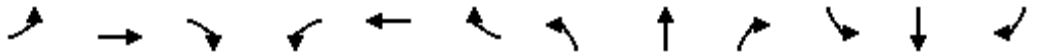
Splits and Phases: 2: I-95 NB Ramp & Southern Blvd



Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	924	993	1488	412	488	364
v/c Ratio	0.39	0.36	0.96	0.56	0.53	0.36
Control Delay	1.8	2.2	77.1	29.6	61.0	38.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.8	2.2	77.1	29.6	61.0	38.0
Queue Length 50th (ft)	0	10	384	256	165	157
Queue Length 95th (ft)	0	11	#445	367	206	207
Internal Link Dist (ft)		569	2177			
Turn Bay Length (ft)				300	600	600
Base Capacity (vph)	2370	2764	1555	738	926	1017
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.36	0.96	0.56	0.53	0.36

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	878	943	0	0	1414	391	464	0	346	0	0	0
Future Volume (vph)	878	943	0	0	1414	391	464	0	346	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.94	0.91			0.81	1.00	0.94		0.88			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	4990	5085			7544	1583	4942		2760			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	4990	5085			7544	1583	4942		2760			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	924	993	0	0	1488	412	488	0	364	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	46	0	0	0	0	0	0
Lane Group Flow (vph)	924	993	0	0	1488	366	488	0	364	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	76.0	87.0			33.0	70.0	30.0		59.0			
Effective Green, g (s)	76.0	87.0			33.0	70.0	30.0		59.0			
Actuated g/C Ratio	0.48	0.54			0.21	0.44	0.19		0.37			
Clearance Time (s)												
Lane Grp Cap (vph)	2370	2764			1555	692	926		1017			
v/s Ratio Prot	c0.19	c0.20			c0.20	c0.23	0.10		0.13			
v/s Ratio Perm												
v/c Ratio	0.39	0.36			0.96	0.53	0.53		0.36			
Uniform Delay, d1	27.1	20.7			62.8	32.9	58.6		36.7			
Progression Factor	0.05	0.09			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.4	0.3			14.6	2.9	2.1		1.0			
Delay (s)	1.8	2.2			77.4	35.8	60.7		37.7			
Level of Service	A	A			E	D	E		D			
Approach Delay (s)		2.0			68.4			50.9			0.0	
Approach LOS		A			E			D			A	

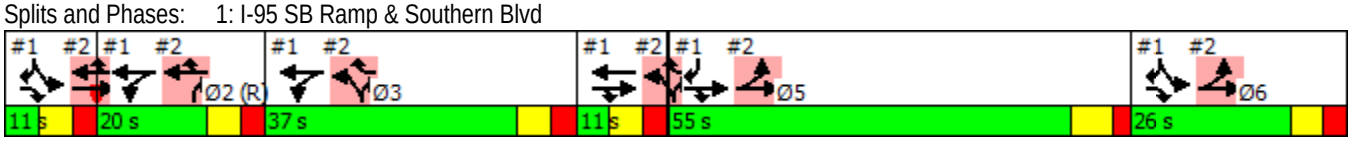
Intersection Summary			
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

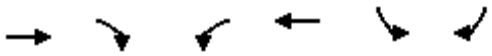
c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	1224	1365	343	1425	377	862						
Future Volume (vph)	1224	1365	343	1425	377	862						
Turn Type	NA	custom	Prot	NA	Prot	custom						
Protected Phases	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6	1	2	3	4	5	6
Permitted Phases												
Detector Phase	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	20.0	37.0	11.0	55.0	26.0
Total Split (%)							7%	13%	23%	7%	34%	16%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	59.0	96.0	50.0	61.0	30.0	85.0						
Actuated g/C Ratio	0.37	0.60	0.31	0.38	0.19	0.53						
v/c Ratio	0.70	0.88	0.34	0.63	0.62	0.48						
Control Delay	45.5	34.6	0.9	5.8	64.7	24.6						
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0						
Total Delay	45.5	34.6	0.9	5.8	64.7	24.6						
LOS	D	C	A	A	E	C						
Approach Delay	39.8			4.9								
Approach LOS	D			A								

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 81 (51%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 28.1	Intersection LOS: C
Intersection Capacity Utilization 85.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd

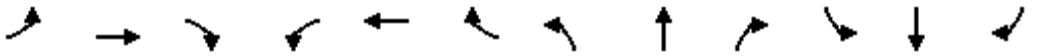




Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1288	1437	361	1500	397	907
v/c Ratio	0.70	0.88	0.34	0.63	0.62	0.48
Control Delay	45.5	34.6	0.9	5.8	64.7	24.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.5	34.6	0.9	5.8	64.7	24.6
Queue Length 50th (ft)	419	693	0	18	199	255
Queue Length 95th (ft)	475	832	m0	43	258	303
Internal Link Dist (ft)	2040			569		
Turn Bay Length (ft)		450			250	250
Base Capacity (vph)	1839	1639	1052	2396	637	1899
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.88	0.34	0.63	0.62	0.48

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1224	1365	343	1425	0	0	0	0	377	0	862
Future Volume (vph)	0	1224	1365	343	1425	0	0	0	0	377	0	862
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	7.0	7.0					7.0		7.0
Lane Util. Factor		0.91	0.88	0.97	0.86					0.97		0.76
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		4988	2733	3367	6285					3400		3575
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		4988	2733	3367	6285					3400		3575
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1288	1437	361	1500	0	0	0	0	397	0	907
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1288	1437	361	1500	0	0	0	0	397	0	907
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	custom	Prot	NA					Prot		custom
Protected Phases		4 5	1 4 5 6	2 3	2 3 4					1 6		1 5 6
Permitted Phases												
Actuated Green, G (s)		59.0	96.0	50.0	61.0					30.0		85.0
Effective Green, g (s)		59.0	96.0	50.0	61.0					30.0		85.0
Actuated g/C Ratio		0.37	0.60	0.31	0.38					0.19		0.53
Clearance Time (s)												
Lane Grp Cap (vph)		1839	1639	1052	2396					637		1899
v/s Ratio Prot		0.26	c0.53	0.11	c0.24					0.12		0.25
v/s Ratio Perm												
v/c Ratio		0.70	0.88	0.34	0.63					0.62		0.48
Uniform Delay, d1		43.0	27.0	42.4	40.2					59.8		23.6
Progression Factor		1.00	1.00	0.01	0.13					1.00		1.00
Incremental Delay, d2		2.3	6.9	0.5	0.8					4.6		0.9
Delay (s)		45.2	34.0	0.9	5.8					64.4		24.4
Level of Service		D	C	A	A					E		C
Approach Delay (s)		39.3			4.9			0.0			36.6	
Approach LOS		D			A			A			D	

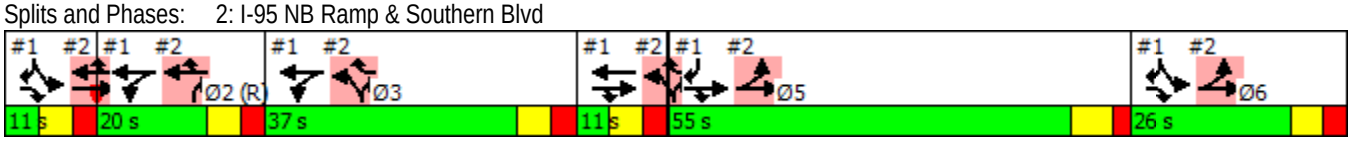
Intersection Summary			
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	292	1309	876	450	892	441						
Future Volume (vph)	292	1309	876	450	892	441						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	20.0	37.0	11.0	55.0	26.0
Total Split (%)							7%	13%	23%	7%	34%	16%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	74.0	85.0	24.0	72.0	41.0	61.0						
Actuated g/C Ratio	0.46	0.53	0.15	0.45	0.26	0.38						
v/c Ratio	0.19	0.51	0.82	0.49	0.73	0.44						
Control Delay	0.2	2.5	72.5	4.2	58.6	38.4						
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0						
Total Delay	0.2	2.7	72.5	4.2	58.6	38.4						
LOS	A	A	E	A	E	D						
Approach Delay		2.3	49.3									
Approach LOS		A	D									

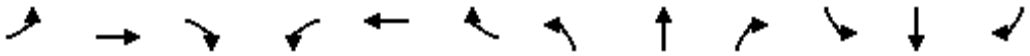
Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 81 (51%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 32.4	Intersection LOS: C
Intersection Capacity Utilization 85.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: I-95 NB Ramp & Southern Blvd



Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	307	1378	922	474	939	464
v/c Ratio	0.19	0.51	0.82	0.49	0.73	0.44
Control Delay	0.2	2.5	72.5	4.2	58.6	38.4
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	0.2	2.7	72.5	4.2	58.6	38.4
Queue Length 50th (ft)	0	9	234	6	321	203
Queue Length 95th (ft)	0	30	269	74	374	262
Internal Link Dist (ft)		569	1654			
Turn Bay Length (ft)	500			300	600	600
Base Capacity (vph)	1587	2701	1131	967	1278	1062
Starvation Cap Reductn	0	540	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.64	0.82	0.49	0.73	0.44

Intersection Summary



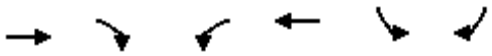
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	292	1309	0	0	876	450	892	0	441	0	0	0
Future Volume (vph)	292	1309	0	0	876	450	892	0	441	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.94		0.88			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	5085			7544	1583	4990		2787			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	5085			7544	1583	4990		2787			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	307	1378	0	0	922	474	939	0	464	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	255	0	0	0	0	0	0
Lane Group Flow (vph)	307	1378	0	0	922	219	939	0	464	0	0	0
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	74.0	85.0			24.0	72.0	41.0		61.0			
Effective Green, g (s)	74.0	85.0			24.0	72.0	41.0		61.0			
Actuated g/C Ratio	0.46	0.53			0.15	0.45	0.26		0.38			
Clearance Time (s)												
Lane Grp Cap (vph)	1587	2701			1131	712	1278		1062			
v/s Ratio Prot	0.09	c0.27			c0.12	0.14	c0.19		0.17			
v/s Ratio Perm												
v/c Ratio	0.19	0.51			0.82	0.31	0.73		0.44			
Uniform Delay, d1	25.4	24.1			65.9	28.1	54.5		36.7			
Progression Factor	0.00	0.08			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.2	0.5			6.5	1.1	3.8		1.3			
Delay (s)	0.2	2.5			72.4	29.2	58.3		38.1			
Level of Service	A	A			E	C	E		D			
Approach Delay (s)		2.1			57.7			51.6			0.0	
Approach LOS		A			E			D			A	

Intersection Summary			
HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	726	887	458	2280	393	1398						
Future Volume (vph)	726	887	458	2280	393	1398						
Turn Type	NA	custom	Prot	NA	Prot	custom						
Protected Phases	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6	1	2	3	4	5	6
Permitted Phases												
Detector Phase	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	28.0	49.0	11.0	32.0	29.0
Total Split (%)							7%	18%	31%	7%	20%	18%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	36.0	76.0	70.0	81.0	33.0	65.0						
Actuated g/C Ratio	0.22	0.48	0.44	0.51	0.21	0.41						
v/c Ratio	0.68	0.72	0.33	0.75	0.59	1.01						
Control Delay	60.3	37.4	0.3	6.1	61.4	73.5						
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0						
Total Delay	60.3	37.4	0.3	6.4	61.4	73.5						
LOS	E	D	A	A	E	E						
Approach Delay	47.7			5.4								
Approach LOS	D			A								

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 115	
Control Type: Pretimed	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay: 35.6	Intersection LOS: D
Intersection Capacity Utilization 77.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd



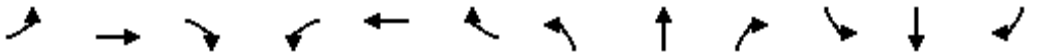
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	764	934	482	2400	414	1472
v/c Ratio	0.68	0.72	0.33	0.75	0.59	1.01
Control Delay	60.3	37.4	0.3	6.1	61.4	73.5
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	60.3	37.4	0.3	6.4	61.4	73.5
Queue Length 50th (ft)	270	436	0	27	204	~708
Queue Length 95th (ft)	321	529	m0	m187	263	#825
Internal Link Dist (ft)	2500			569		
Turn Bay Length (ft)		450			250	250
Base Capacity (vph)	1122	1298	1473	3181	701	1452
Starvation Cap Reductn	0	0	0	267	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.72	0.33	0.82	0.59	1.01

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	726	887	458	2280	0	0	0	0	393	0	1398
Future Volume (vph)	0	726	887	458	2280	0	0	0	0	393	0	1398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	7.0	7.0					7.0		7.0
Lane Util. Factor		0.91	0.88	0.97	0.86					0.97		0.76
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		4988	2733	3367	6285					3400		3575
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		4988	2733	3367	6285					3400		3575
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	764	934	482	2400	0	0	0	0	414	0	1472
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	764	934	482	2400	0	0	0	0	414	0	1472
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	custom	Prot	NA					Prot		custom
Protected Phases		4 5	1 4 5 6	2 3	2 3 4					1 6		1 5 6
Permitted Phases												
Actuated Green, G (s)		36.0	76.0	70.0	81.0					33.0		65.0
Effective Green, g (s)		36.0	76.0	70.0	81.0					33.0		65.0
Actuated g/C Ratio		0.22	0.48	0.44	0.51					0.21		0.41
Clearance Time (s)												
Lane Grp Cap (vph)		1122	1298	1473	3181					701		1452
v/s Ratio Prot		0.15	c0.34	0.14	c0.38					0.12		c0.41
v/s Ratio Perm												
v/c Ratio		0.68	0.72	0.33	0.75					0.59		1.01
Uniform Delay, d1		56.7	33.5	29.5	31.6					57.4		47.5
Progression Factor		1.00	1.00	0.00	0.17					1.00		1.00
Incremental Delay, d2		3.3	3.5	0.2	0.7					3.6		27.1
Delay (s)		60.1	37.0	0.3	6.0					61.0		74.6
Level of Service		E	D	A	A					E		E
Approach Delay (s)		47.4			5.1			0.0			71.6	
Approach LOS		D			A			A			E	

Intersection Summary			
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	176	943	1414	391	1325	346						
Future Volume (vph)	176	943	1414	391	1325	346						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	28.0	49.0	11.0	32.0	29.0
Total Split (%)							7%	18%	31%	7%	20%	18%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	54.0	65.0	32.0	92.0	53.0	81.0						
Actuated g/C Ratio	0.34	0.41	0.20	0.58	0.33	0.51						
v/c Ratio	0.16	0.48	0.99	0.38	0.85	0.26						
Control Delay	0.3	3.3	83.3	2.3	56.0	23.1						
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0						
Total Delay	0.3	3.3	83.3	2.3	56.0	23.1						
LOS	A	A	F	A	E	C						
Approach Delay		2.8	65.8									
Approach LOS		A	E									

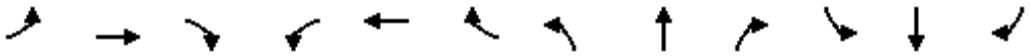
Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 115	
Control Type: Pretimed	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay: 44.4	Intersection LOS: D
Intersection Capacity Utilization 77.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: I-95 NB Ramp & Southern Blvd

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	185	993	1488	412	1395	364
v/c Ratio	0.16	0.48	0.99	0.38	0.85	0.26
Control Delay	0.3	3.3	83.3	2.3	56.0	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.3	3.3	83.3	2.3	56.0	23.1
Queue Length 50th (ft)	0	10	387	0	483	121
Queue Length 95th (ft)	0	15	#457	47	544	159
Internal Link Dist (ft)		569	2274			
Turn Bay Length (ft)	500			300	600	600
Base Capacity (vph)	1158	2065	1508	1085	1637	1397
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.48	0.99	0.38	0.85	0.26

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	943	0	0	1414	391	1325	0	346	0	0	0
Future Volume (vph)	176	943	0	0	1414	391	1325	0	346	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.94		0.88			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	5085			7544	1583	4942		2760			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	5085			7544	1583	4942		2760			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	185	993	0	0	1488	412	1395	0	364	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	175	0	0	0	0	0	0
Lane Group Flow (vph)	185	993	0	0	1488	237	1395	0	364	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	54.0	65.0			32.0	92.0	53.0		81.0			
Effective Green, g (s)	54.0	65.0			32.0	92.0	53.0		81.0			
Actuated g/C Ratio	0.34	0.41			0.20	0.58	0.33		0.51			
Clearance Time (s)												
Lane Grp Cap (vph)	1158	2065			1508	910	1637		1397			
v/s Ratio Prot	0.05	c0.20			c0.20	0.15	c0.28		0.13			
v/s Ratio Perm												
v/c Ratio	0.16	0.48			0.99	0.26	0.85		0.26			
Uniform Delay, d1	37.1	35.1			63.8	17.0	49.8		22.5			
Progression Factor	0.00	0.08			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.2	0.6			20.2	0.7	5.8		0.5			
Delay (s)	0.3	3.3			84.0	17.7	55.7		22.9			
Level of Service	A	A			F	B	E		C			
Approach Delay (s)		2.8			69.6			48.9			0.0	
Approach LOS		A			E			D			A	

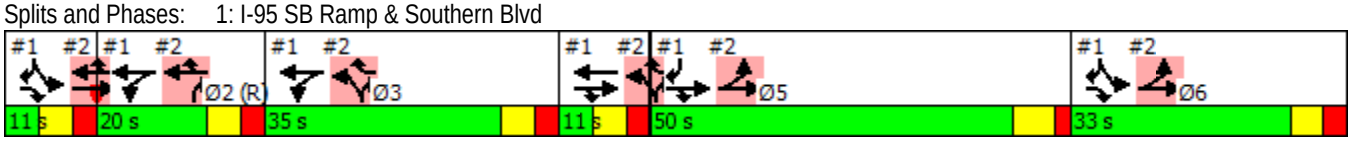
Intersection Summary			
HCM 2000 Control Delay	45.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		

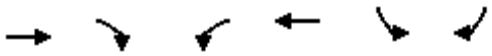
c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	2710	1709	454	980	438	920						
Future Volume (vph)	2710	1709	454	980	438	920						
Turn Type	NA	custom	Prot	NA	Prot	custom						
Protected Phases	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6	1	2	3	4	5	6
Permitted Phases												
Detector Phase	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	20.0	35.0	11.0	50.0	33.0
Total Split (%)							7%	13%	22%	7%	31%	21%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	54.0	98.0	48.0	59.0	37.0	87.0						
Actuated g/C Ratio	0.34	0.61	0.30	0.37	0.23	0.54						
v/c Ratio	1.01	1.08	0.47	0.45	0.59	0.50						
Control Delay	72.6	75.9	2.3	3.1	58.2	24.0						
Queue Delay	17.8	0.0	0.0	0.0	0.0	0.0						
Total Delay	90.4	75.9	2.3	3.1	58.2	24.0						
LOS	F	E	A	A	E	C						
Approach Delay	84.8			2.8								
Approach LOS	F			A								

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 81 (51%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 59.1	Intersection LOS: E
Intersection Capacity Utilization 102.7%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd





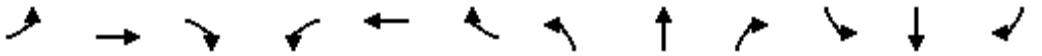
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	2853	1799	478	1032	461	968
v/c Ratio	1.01	1.08	0.47	0.45	0.59	0.50
Control Delay	72.6	75.9	2.3	3.1	58.2	24.0
Queue Delay	17.8	0.0	0.0	0.0	0.0	0.0
Total Delay	90.4	75.9	2.3	3.1	58.2	24.0
Queue Length 50th (ft)	~687	~1184	0	8	223	271
Queue Length 95th (ft)	#730	#1330	m0	m9	284	320
Internal Link Dist (ft)	2348			569		
Turn Bay Length (ft)		450			250	250
Base Capacity (vph)	2811	1673	1010	2317	786	1943
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	125	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.06	1.08	0.47	0.45	0.59	0.50

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		6										
Traffic Volume (vph)	0	2710	1709	454	980	0	0	0	0	438	0	920
Future Volume (vph)	0	2710	1709	454	980	0	0	0	0	438	0	920
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	7.0	7.0					7.0		7.0
Lane Util. Factor		0.76	0.88	0.97	0.86					0.97		0.76
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		8331	2733	3367	6285					3400		3575
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		8331	2733	3367	6285					3400		3575
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	2853	1799	478	1032	0	0	0	0	461	0	968
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2853	1799	478	1032	0	0	0	0	461	0	968
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	custom	Prot	NA					Prot		custom
Protected Phases		4 5	1 4 5 6	2 3	2 3 4					1 6		1 5 6
Permitted Phases												
Actuated Green, G (s)		54.0	98.0	48.0	59.0					37.0		87.0
Effective Green, g (s)		54.0	98.0	48.0	59.0					37.0		87.0
Actuated g/C Ratio		0.34	0.61	0.30	0.37					0.23		0.54
Clearance Time (s)												
Lane Grp Cap (vph)		2811	1673	1010	2317					786		1943
v/s Ratio Prot		0.34	c0.66	c0.14	c0.16					0.14		0.27
v/s Ratio Perm												
v/c Ratio		1.01	1.08	0.47	0.45					0.59		0.50
Uniform Delay, d1		53.0	31.0	45.7	38.1					54.7		22.8
Progression Factor		1.00	1.00	0.04	0.07					1.00		1.00
Incremental Delay, d2		20.8	45.4	0.5	0.4					3.2		0.9
Delay (s)		73.8	76.4	2.3	3.1					57.9		23.8
Level of Service		E	E	A	A					E		C
Approach Delay (s)		74.8			2.8			0.0			34.8	
Approach LOS		E			A			A			C	

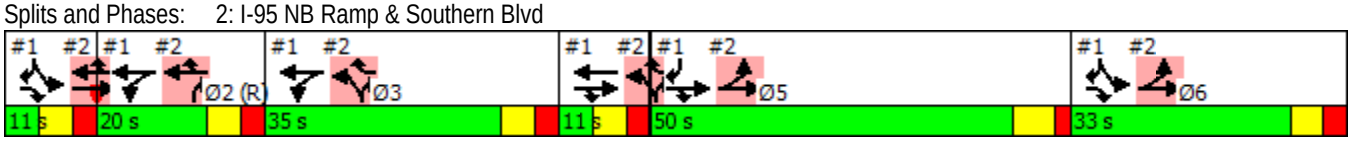
Intersection Summary			
HCM 2000 Control Delay	52.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	1658	1490	1019	520	415	609						
Future Volume (vph)	1658	1490	1019	520	415	609						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	20.0	35.0	11.0	50.0	33.0
Total Split (%)							7%	13%	22%	7%	31%	21%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	76.0	87.0	24.0	70.0	39.0	59.0						
Actuated g/C Ratio	0.48	0.54	0.15	0.44	0.24	0.37						
v/c Ratio	0.74	0.57	0.95	0.75	0.36	0.63						
Control Delay	3.3	1.7	83.9	39.5	51.2	44.9						
Queue Delay	31.1	0.4	0.0	0.0	0.0	0.0						
Total Delay	34.4	2.1	83.9	39.5	51.2	44.9						
LOS	C	A	F	D	D	D						
Approach Delay		19.1	68.9									
Approach LOS		B	E									

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 81 (51%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 37.6	Intersection LOS: D
Intersection Capacity Utilization 102.7%	ICU Level of Service G
Analysis Period (min) 15	

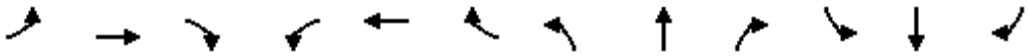
Splits and Phases: 2: I-95 NB Ramp & Southern Blvd



Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1745	1568	1073	547	437	641
v/c Ratio	0.74	0.57	0.95	0.75	0.36	0.63
Control Delay	3.3	1.7	83.9	39.5	51.2	44.9
Queue Delay	31.1	0.4	0.0	0.0	0.0	0.0
Total Delay	34.4	2.1	83.9	39.5	51.2	44.9
Queue Length 50th (ft)	0	11	278	416	135	313
Queue Length 95th (ft)	m0	m11	#337	574	171	389
Internal Link Dist (ft)		569	1251			
Turn Bay Length (ft)				300	600	600
Base Capacity (vph)	2370	2764	1131	734	1204	1017
Starvation Cap Reductn	723	598	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.72	0.95	0.75	0.36	0.63

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1658	1490	0	0	1019	520	415	0	609	0	0	0
Future Volume (vph)	1658	1490	0	0	1019	520	415	0	609	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.94	0.91			0.81	1.00	0.94		0.88			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	4990	5085			7544	1583	4942		2760			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	4990	5085			7544	1583	4942		2760			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1745	1568	0	0	1073	547	437	0	641	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	0	0
Lane Group Flow (vph)	1745	1568	0	0	1073	505	437	0	641	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	76.0	87.0			24.0	70.0	39.0		59.0			
Effective Green, g (s)	76.0	87.0			24.0	70.0	39.0		59.0			
Actuated g/C Ratio	0.48	0.54			0.15	0.44	0.24		0.37			
Clearance Time (s)												
Lane Grp Cap (vph)	2370	2764			1131	692	1204		1017			
v/s Ratio Prot	c0.35	0.31			c0.14	c0.32	0.09		0.23			
v/s Ratio Perm												
v/c Ratio	0.74	0.57			0.95	0.73	0.36		0.63			
Uniform Delay, d1	33.9	24.1			67.4	37.2	50.2		41.5			
Progression Factor	0.09	0.05			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.2	0.4			17.0	6.7	0.8		3.0			
Delay (s)	3.3	1.7			84.4	43.8	51.0		44.5			
Level of Service	A	A			F	D	D		D			
Approach Delay (s)		2.5			70.7			47.1			0.0	
Approach LOS		A			E			D			A	

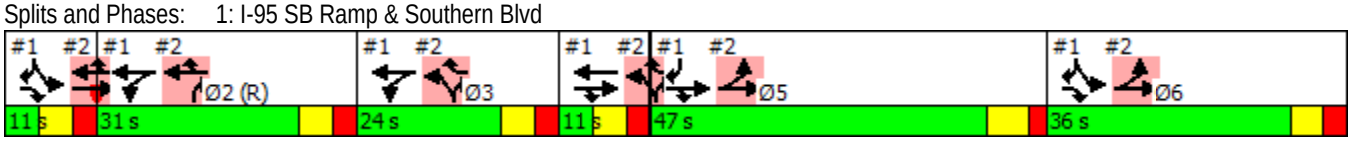
Intersection Summary			
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

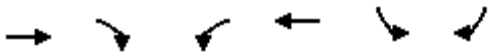
c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	1567	1177	615	1588	470	1625						
Future Volume (vph)	1567	1177	615	1588	470	1625						
Turn Type	NA	custom	Prot	NA	Prot	custom						
Protected Phases	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6	1	2	3	4	5	6
Permitted Phases												
Detector Phase	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	31.0	24.0	11.0	47.0	36.0
Total Split (%)							7%	19%	15%	7%	29%	23%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	51.0	98.0	48.0	59.0	40.0	87.0						
Actuated g/C Ratio	0.32	0.61	0.30	0.37	0.25	0.54						
v/c Ratio	0.62	0.74	0.64	0.72	0.58	0.88						
Control Delay	47.5	25.4	1.2	7.4	55.9	38.6						
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0						
Total Delay	47.5	25.4	1.2	7.5	55.9	38.6						
LOS	D	C	A	A	E	D						
Approach Delay	38.0			5.7								
Approach LOS	D			A								

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 29.3	Intersection LOS: C
Intersection Capacity Utilization 89.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd

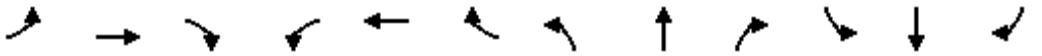




Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1649	1239	647	1672	495	1711
v/c Ratio	0.62	0.74	0.64	0.72	0.58	0.88
Control Delay	47.5	25.4	1.2	7.4	55.9	38.6
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	47.5	25.4	1.2	7.5	55.9	38.6
Queue Length 50th (ft)	322	501	0	22	236	670
Queue Length 95th (ft)	352	601	m0	m59	298	766
Internal Link Dist (ft)	2248			569		
Turn Bay Length (ft)		450			250	250
Base Capacity (vph)	2655	1673	1010	2317	850	1943
Starvation Cap Reductn	0	0	0	78	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.74	0.64	0.75	0.58	0.88

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		6										
Traffic Volume (vph)	0	1567	1177	615	1588	0	0	0	0	470	0	1625
Future Volume (vph)	0	1567	1177	615	1588	0	0	0	0	470	0	1625
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	7.0	7.0					7.0		7.0
Lane Util. Factor		0.76	0.88	0.97	0.86					0.97		0.76
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		8331	2733	3367	6285					3400		3575
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		8331	2733	3367	6285					3400		3575
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1649	1239	647	1672	0	0	0	0	495	0	1711
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1649	1239	647	1672	0	0	0	0	495	0	1711
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	custom	Prot	NA					Prot		custom
Protected Phases		4 5	1 4 5 6	2 3	2 3 4					1 6		1 5 6
Permitted Phases												
Actuated Green, G (s)		51.0	98.0	48.0	59.0					40.0		87.0
Effective Green, g (s)		51.0	98.0	48.0	59.0					40.0		87.0
Actuated g/C Ratio		0.32	0.61	0.30	0.37					0.25		0.54
Clearance Time (s)												
Lane Grp Cap (vph)		2655	1673	1010	2317					850		1943
v/s Ratio Prot		0.20	c0.45	0.19	c0.27					0.15		c0.48
v/s Ratio Perm												
v/c Ratio		0.62	0.74	0.64	0.72					0.58		0.88
Uniform Delay, d1		46.3	22.0	48.5	43.4					52.7		32.0
Progression Factor		1.00	1.00	0.02	0.15					1.00		1.00
Incremental Delay, d2		1.1	3.0	0.3	0.8					2.9		6.1
Delay (s)		47.4	25.0	1.2	7.3					55.6		38.1
Level of Service		D	C	A	A					E		D
Approach Delay (s)		37.8			5.6			0.0			42.0	
Approach LOS		D			A			A			D	

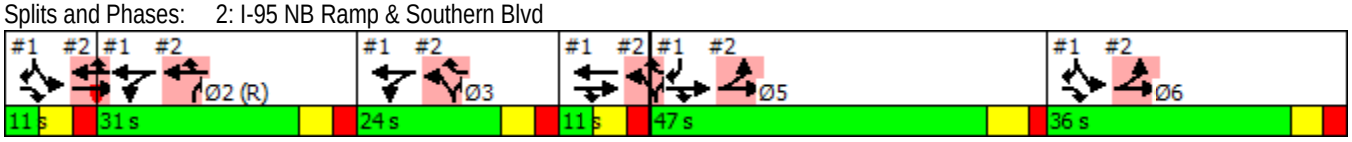
Intersection Summary			
HCM 2000 Control Delay	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	1020	1017	1601	474	602	470						
Future Volume (vph)	1020	1017	1601	474	602	470						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	31.0	24.0	11.0	47.0	36.0
Total Split (%)							7%	19%	15%	7%	29%	23%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	76.0	87.0	35.0	70.0	28.0	59.0						
Actuated g/C Ratio	0.48	0.54	0.22	0.44	0.18	0.37						
v/c Ratio	0.45	0.39	1.02	0.68	0.73	0.49						
Control Delay	2.7	2.4	88.2	35.7	68.2	40.9						
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0						
Total Delay	2.7	2.4	88.2	35.7	68.2	40.9						
LOS	A	A	F	D	E	D						
Approach Delay		2.5	76.2									
Approach LOS		A	E									

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 43.1	Intersection LOS: D
Intersection Capacity Utilization 89.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: I-95 NB Ramp & Southern Blvd



Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1074	1071	1685	499	634	495
v/c Ratio	0.45	0.39	1.02	0.68	0.73	0.49
Control Delay	2.7	2.4	88.2	35.7	68.2	40.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.7	2.4	88.2	35.7	68.2	40.9
Queue Length 50th (ft)	0	12	~460	357	225	226
Queue Length 95th (ft)	0	13	#524	497	273	288
Internal Link Dist (ft)		569	2177			
Turn Bay Length (ft)				300	600	600
Base Capacity (vph)	2370	2764	1650	734	864	1017
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.39	1.02	0.68	0.73	0.49

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1020	1017	0	0	1601	474	602	0	470	0	0	0
Future Volume (vph)	1020	1017	0	0	1601	474	602	0	470	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.94	0.91			0.81	1.00	0.94		0.88			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	4990	5085			7544	1583	4942		2760			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	4990	5085			7544	1583	4942		2760			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1074	1071	0	0	1685	499	634	0	495	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	0	0
Lane Group Flow (vph)	1074	1071	0	0	1685	457	634	0	495	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	76.0	87.0			35.0	70.0	28.0		59.0			
Effective Green, g (s)	76.0	87.0			35.0	70.0	28.0		59.0			
Actuated g/C Ratio	0.48	0.54			0.22	0.44	0.18		0.37			
Clearance Time (s)												
Lane Grp Cap (vph)	2370	2764			1650	692	864		1017			
v/s Ratio Prot	c0.22	0.21			c0.22	c0.29	c0.13		0.18			
v/s Ratio Perm												
v/c Ratio	0.45	0.39			1.02	0.66	0.73		0.49			
Uniform Delay, d1	28.1	21.1			62.5	35.6	62.5		38.9			
Progression Factor	0.08	0.10			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.5	0.3			27.7	4.9	5.5		1.7			
Delay (s)	2.7	2.4			90.2	40.5	68.0		40.5			
Level of Service	A	A			F	D	E		D			
Approach Delay (s)		2.5			78.8			55.9			0.0	
Approach LOS		A			E			E			A	

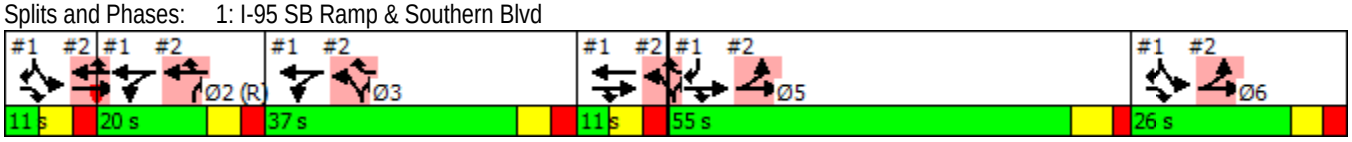
Intersection Summary			
HCM 2000 Control Delay	44.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

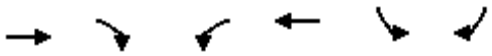
c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	1384	1709	454	1752	438	920						
Future Volume (vph)	1384	1709	454	1752	438	920						
Turn Type	NA	custom	Prot	NA	Prot	custom						
Protected Phases	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6	1	2	3	4	5	6
Permitted Phases												
Detector Phase	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	20.0	37.0	11.0	55.0	26.0
Total Split (%)							7%	13%	23%	7%	34%	16%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	59.0	96.0	50.0	61.0	30.0	85.0						
Actuated g/C Ratio	0.37	0.60	0.31	0.38	0.19	0.53						
v/c Ratio	0.79	1.10	0.45	0.77	0.72	0.51						
Control Delay	48.9	85.2	2.2	14.9	68.5	25.3						
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0						
Total Delay	48.9	85.2	2.2	15.1	68.5	25.3						
LOS	D	F	A	B	E	C						
Approach Delay	69.0			12.4								
Approach LOS	E			B								

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 81 (51%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 125	
Control Type: Pretimed	
Maximum v/c Ratio: 1.10	
Intersection Signal Delay: 44.2	Intersection LOS: D
Intersection Capacity Utilization 102.7%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd





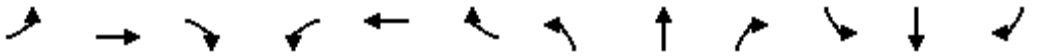
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1457	1799	478	1844	461	968
v/c Ratio	0.79	1.10	0.45	0.77	0.72	0.51
Control Delay	48.9	85.2	2.2	14.9	68.5	25.3
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	48.9	85.2	2.2	15.1	68.5	25.3
Queue Length 50th (ft)	497	~1205	0	156	236	278
Queue Length 95th (ft)	558	#1351	m0	m170	301	329
Internal Link Dist (ft)	2040			569		
Turn Bay Length (ft)		450			250	250
Base Capacity (vph)	1839	1639	1052	2396	637	1899
Starvation Cap Reductn	0	0	0	92	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.79	1.10	0.45	0.80	0.72	0.51

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1384	1709	454	1752	0	0	0	0	438	0	920
Future Volume (vph)	0	1384	1709	454	1752	0	0	0	0	438	0	920
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	7.0	7.0					7.0		7.0
Lane Util. Factor		0.91	0.88	0.97	0.86					0.97		0.76
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		4988	2733	3367	6285					3400		3575
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		4988	2733	3367	6285					3400		3575
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1457	1799	478	1844	0	0	0	0	461	0	968
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1457	1799	478	1844	0	0	0	0	461	0	968
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	custom	Prot	NA					Prot		custom
Protected Phases		4 5	1 4 5 6	2 3	2 3 4					1 6		1 5 6
Permitted Phases												
Actuated Green, G (s)		59.0	96.0	50.0	61.0					30.0		85.0
Effective Green, g (s)		59.0	96.0	50.0	61.0					30.0		85.0
Actuated g/C Ratio		0.37	0.60	0.31	0.38					0.19		0.53
Clearance Time (s)												
Lane Grp Cap (vph)		1839	1639	1052	2396					637		1899
v/s Ratio Prot		0.29	c0.66	0.14	c0.29					0.14		0.27
v/s Ratio Perm												
v/c Ratio		0.79	1.10	0.45	0.77					0.72		0.51
Uniform Delay, d1		45.0	32.0	44.1	43.3					61.1		24.1
Progression Factor		1.00	1.00	0.04	0.33					1.00		1.00
Incremental Delay, d2		3.6	54.0	0.5	0.7					7.0		1.0
Delay (s)		48.6	86.0	2.2	14.8					68.1		25.1
Level of Service		D	F	A	B					E		C
Approach Delay (s)		69.3			12.2			0.0			39.0	
Approach LOS		E			B			A			D	

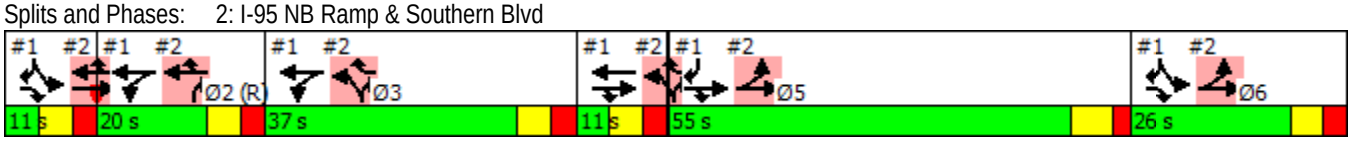
Intersection Summary			
HCM 2000 Control Delay	44.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	332	1490	1019	520	1187	609						
Future Volume (vph)	332	1490	1019	520	1187	609						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	20.0	37.0	11.0	55.0	26.0
Total Split (%)							7%	13%	23%	7%	34%	16%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	74.0	85.0	24.0	72.0	41.0	61.0						
Actuated g/C Ratio	0.46	0.53	0.15	0.45	0.26	0.38						
v/c Ratio	0.22	0.58	0.95	0.58	0.99	0.61						
Control Delay	0.2	3.8	83.9	10.0	80.8	42.9						
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0						
Total Delay	0.2	4.1	83.9	10.0	80.8	42.9						
LOS	A	A	F	A	F	D						
Approach Delay		3.4	58.9									
Approach LOS		A	E									

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 81 (51%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 125	
Control Type: Pretimed	
Maximum v/c Ratio: 1.10	
Intersection Signal Delay: 42.5	Intersection LOS: D
Intersection Capacity Utilization 102.7%	ICU Level of Service G
Analysis Period (min) 15	

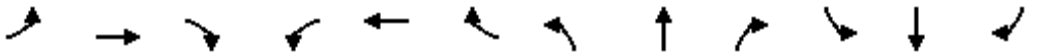
Splits and Phases: 2: I-95 NB Ramp & Southern Blvd



Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	349	1568	1073	547	1249	641
v/c Ratio	0.22	0.58	0.95	0.58	0.99	0.61
Control Delay	0.2	3.8	83.9	10.0	80.8	42.9
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0
Total Delay	0.2	4.1	83.9	10.0	80.8	42.9
Queue Length 50th (ft)	0	12	278	91	465	306
Queue Length 95th (ft)	m0	55	#337	208	#568	381
Internal Link Dist (ft)		569	1654			
Turn Bay Length (ft)	500			300	600	600
Base Capacity (vph)	1587	2701	1131	938	1266	1052
Starvation Cap Reductn	0	540	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.73	0.95	0.58	0.99	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	332	1490	0	0	1019	520	1187	0	609	0	0	0
Future Volume (vph)	332	1490	0	0	1019	520	1187	0	609	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.94		0.88			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	5085			7544	1583	4942		2760			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	5085			7544	1583	4942		2760			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	349	1568	0	0	1073	547	1249	0	641	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	227	0	0	0	0	0	0
Lane Group Flow (vph)	349	1568	0	0	1073	320	1249	0	641	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	74.0	85.0			24.0	72.0	41.0		61.0			
Effective Green, g (s)	74.0	85.0			24.0	72.0	41.0		61.0			
Actuated g/C Ratio	0.46	0.53			0.15	0.45	0.26		0.38			
Clearance Time (s)												
Lane Grp Cap (vph)	1587	2701			1131	712	1266		1052			
v/s Ratio Prot	0.10	c0.31			c0.14	0.20	c0.25		0.23			
v/s Ratio Perm												
v/c Ratio	0.22	0.58			0.95	0.45	0.99		0.61			
Uniform Delay, d1	25.7	25.4			67.4	30.3	59.2		39.9			
Progression Factor	0.00	0.13			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.2	0.6			17.0	2.1	22.3		2.6			
Delay (s)	0.2	3.7			84.4	32.4	81.5		42.5			
Level of Service	A	A			F	C	F		D			
Approach Delay (s)		3.1			66.8			68.3			0.0	
Approach LOS		A			E			E			A	

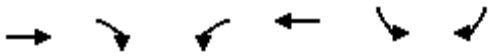
Intersection Summary			
HCM 2000 Control Delay	44.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	751	1177	615	2706	470	1625						
Future Volume (vph)	751	1177	615	2706	470	1625						
Turn Type	NA	custom	Prot	NA	Prot	custom						
Protected Phases	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6	1	2	3	4	5	6
Permitted Phases												
Detector Phase	4 5	1 4 5 6	2 3	2 3 4	1 6	1 5 6						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	28.0	49.0	11.0	32.0	29.0
Total Split (%)							7%	18%	31%	7%	20%	18%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	36.0	76.0	70.0	81.0	33.0	65.0						
Actuated g/C Ratio	0.22	0.48	0.44	0.51	0.21	0.41						
v/c Ratio	0.70	0.95	0.44	0.90	0.71	1.18						
Control Delay	61.1	56.6	1.7	11.8	65.3	129.7						
Queue Delay	0.0	0.0	0.0	3.8	0.0	0.0						
Total Delay	61.1	56.6	1.7	15.6	65.3	129.7						
LOS	E	E	A	B	E	F						
Approach Delay	58.3			13.0								
Approach LOS	E			B								

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 145	
Control Type: Pretimed	
Maximum v/c Ratio: 1.18	
Intersection Signal Delay: 54.1	Intersection LOS: D
Intersection Capacity Utilization 89.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: I-95 SB Ramp & Southern Blvd



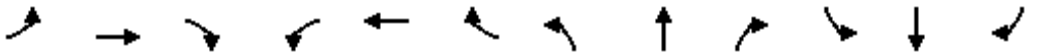
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	791	1239	647	2848	495	1711
v/c Ratio	0.70	0.95	0.44	0.90	0.71	1.18
Control Delay	61.1	56.6	1.7	11.8	65.3	129.7
Queue Delay	0.0	0.0	0.0	3.8	0.0	0.0
Total Delay	61.1	56.6	1.7	15.6	65.3	129.7
Queue Length 50th (ft)	282	697	0	334	251	~935
Queue Length 95th (ft)	333	#878	m0	m204	317	#1050
Internal Link Dist (ft)	2500			569		
Turn Bay Length (ft)		450			250	250
Base Capacity (vph)	1122	1298	1473	3181	701	1452
Starvation Cap Reductn	0	0	0	266	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.95	0.44	0.98	0.71	1.18

Intersection Summary

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

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	751	1177	615	2706	0	0	0	0	470	0	1625
Future Volume (vph)	0	751	1177	615	2706	0	0	0	0	470	0	1625
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	7.0	7.0					7.0		7.0
Lane Util. Factor		0.91	0.88	0.97	0.86					0.97		0.76
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		4988	2733	3367	6285					3400		3575
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		4988	2733	3367	6285					3400		3575
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	791	1239	647	2848	0	0	0	0	495	0	1711
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	791	1239	647	2848	0	0	0	0	495	0	1711
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type		NA	custom	Prot	NA					Prot		custom
Protected Phases		4 5	1 4 5 6	2 3	2 3 4					1 6		1 5 6
Permitted Phases												
Actuated Green, G (s)		36.0	76.0	70.0	81.0					33.0		65.0
Effective Green, g (s)		36.0	76.0	70.0	81.0					33.0		65.0
Actuated g/C Ratio		0.22	0.48	0.44	0.51					0.21		0.41
Clearance Time (s)												
Lane Grp Cap (vph)		1122	1298	1473	3181					701		1452
v/s Ratio Prot		0.16	c0.45	0.19	c0.45					0.15		c0.48
v/s Ratio Perm												
v/c Ratio		0.70	0.95	0.44	0.90					0.71		1.18
Uniform Delay, d1		57.1	40.3	31.3	35.7					59.0		47.5
Progression Factor		1.00	1.00	0.05	0.32					1.00		1.00
Incremental Delay, d2		3.7	16.2	0.1	0.4					5.9		87.8
Delay (s)		60.8	56.6	1.7	11.7					64.9		135.3
Level of Service		E	E	A	B					E		F
Approach Delay (s)		58.2			9.8			0.0			119.5	
Approach LOS		E			A			A			F	

Intersection Summary			
HCM 2000 Control Delay	53.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6
Lane Configurations												
Traffic Volume (vph)	204	1017	1601	474	1720	470						
Future Volume (vph)	204	1017	1601	474	1720	470						
Turn Type	Prot	NA	NA	custom	Prot	custom						
Protected Phases	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4	1	2	3	4	5	6
Permitted Phases												
Detector Phase	5 6	1 5 6	1 2	1 2 3 4	3 4	2 3 4						
Switch Phase												
Minimum Initial (s)							3.0	10.0	6.0	3.0	10.0	6.0
Minimum Split (s)							10.0	20.0	13.0	10.0	29.0	13.0
Total Split (s)							11.0	28.0	49.0	11.0	32.0	29.0
Total Split (%)							7%	18%	31%	7%	20%	18%
Yellow Time (s)							4.0	4.0	4.0	4.0	5.0	4.0
All-Red Time (s)							3.0	3.0	3.0	3.0	2.0	3.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag							Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode							Max	Max	Max	Max	Max	Max
Act Effct Green (s)	54.0	65.0	32.0	92.0	53.0	81.0						
Actuated g/C Ratio	0.34	0.41	0.20	0.58	0.33	0.51						
v/c Ratio	0.19	0.52	1.12	0.45	1.11	0.35						
Control Delay	0.3	5.6	119.2	2.9	106.1	24.7						
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0						
Total Delay	0.3	5.6	119.2	2.9	106.1	24.7						
LOS	A	A	F	A	F	C						
Approach Delay		4.7	92.6									
Approach LOS		A	F									

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 61 (38%), Referenced to phase 2:WBTL, Start of Green	
Natural Cycle: 145	
Control Type: Pretimed	
Maximum v/c Ratio: 1.18	
Intersection Signal Delay: 71.4	Intersection LOS: E
Intersection Capacity Utilization 89.6%	ICU Level of Service E
Analysis Period (min) 15	

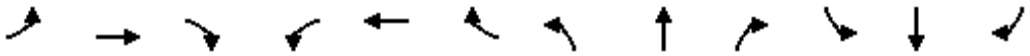
Splits and Phases: 2: I-95 NB Ramp & Southern Blvd

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	215	1071	1685	499	1811	495
v/c Ratio	0.19	0.52	1.12	0.45	1.11	0.35
Control Delay	0.3	5.6	119.2	2.9	106.1	24.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.3	5.6	119.2	2.9	106.1	24.7
Queue Length 50th (ft)	0	12	~498	8	~762	173
Queue Length 95th (ft)	0	48	#562	58	#853	221
Internal Link Dist (ft)		569	2274			
Turn Bay Length (ft)	500			300	600	600
Base Capacity (vph)	1158	2065	1508	1114	1637	1397
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	5	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.52	1.12	0.45	1.11	0.35

Intersection Summary

~ 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.



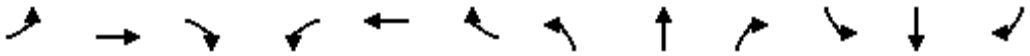
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	1017	0	0	1601	474	1720	0	470	0	0	0
Future Volume (vph)	204	1017	0	0	1601	474	1720	0	470	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0			7.0	7.0	7.0		7.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.94		0.88			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	5085			7544	1583	4942		2760			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	5085			7544	1583	4942		2760			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	215	1071	0	0	1685	499	1811	0	495	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	204	0	0	0	0	0	0
Lane Group Flow (vph)	215	1071	0	0	1685	295	1811	0	495	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	custom	Prot		custom			
Protected Phases	5 6	1 5 6			1 2	1 2 3 4	3 4		2 3 4			
Permitted Phases												
Actuated Green, G (s)	54.0	65.0			32.0	92.0	53.0		81.0			
Effective Green, g (s)	54.0	65.0			32.0	92.0	53.0		81.0			
Actuated g/C Ratio	0.34	0.41			0.20	0.58	0.33		0.51			
Clearance Time (s)												
Lane Grp Cap (vph)	1158	2065			1508	910	1637		1397			
v/s Ratio Prot	0.06	c0.21			c0.22	0.19	c0.37		0.18			
v/s Ratio Perm												
v/c Ratio	0.19	0.52			1.12	0.32	1.11		0.35			
Uniform Delay, d1	37.5	35.7			64.0	17.8	53.5		23.8			
Progression Factor	0.00	0.14			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.2	0.6			62.4	0.9	57.4		0.7			
Delay (s)	0.3	5.5			126.4	18.7	110.9		24.5			
Level of Service	A	A			F	B	F		C			
Approach Delay (s)		4.7			101.8			92.3			0.0	
Approach LOS		A			F			F			A	

Intersection Summary			
HCM 2000 Control Delay	76.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	42.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

2040 Mitigation Analysis

Southern Boulevard at Parker Avenue



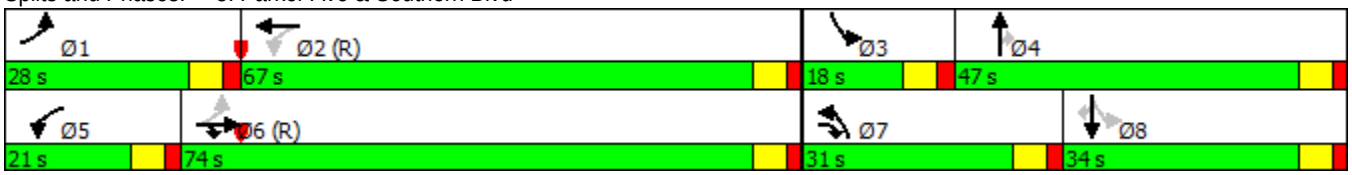
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	169	999	319	151	1454	71	365	238	123	142	299	256
Future Volume (vph)	169	999	319	151	1454	71	365	238	123	142	299	256
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	178	1052	336	159	1531	75	384	251	129	149	315	269
Shared Lane Traffic (%)												
Lane Group Flow (vph)	178	1052	336	159	1606	0	384	251	129	149	315	269

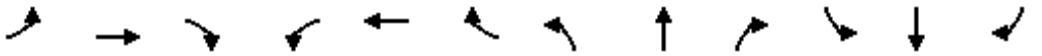
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	169	999	319	151	1454	365	238	123	142	299	256
Future Volume (vph)	169	999	319	151	1454	365	238	123	142	299	256
Turn Type	pm+pt	NA	custom	pm+pt	NA	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6	6 7	5	2	7	4		3	8	
Permitted Phases	6		6	2				4	8		8
Detector Phase	1	6	6 7	5	2	7	4	4	3	8	8
Switch Phase											
Minimum Initial (s)	4.0	20.0		4.0	20.0	4.0	6.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	31.0		10.0	29.0	10.0	28.0	28.0	10.0	34.0	34.0
Total Split (s)	28.0	74.0		21.0	67.0	31.0	47.0	47.0	18.0	34.0	34.0
Total Split (%)	17.5%	46.3%		13.1%	41.9%	19.4%	29.4%	29.4%	11.3%	21.3%	21.3%
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
Total Lost Time (s)	6.0	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	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max		Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	89.0	68.0	99.0	76.0	61.0	25.0	41.0	41.0	40.0	28.0	28.0
Actuated g/C Ratio	0.56	0.42	0.62	0.48	0.38	0.16	0.26	0.26	0.25	0.18	0.18
v/c Ratio	0.61	0.49	0.31	0.51	0.83	0.72	0.28	0.29	0.46	0.51	0.75
Control Delay	47.2	23.8	10.8	24.4	61.1	72.5	48.6	30.0	41.9	63.1	53.2
Queue Delay	0.0	0.0	0.0	0.0	27.9	0.0	0.0	0.6	2.5	0.0	0.0
Total Delay	47.2	23.9	10.8	24.4	89.1	72.5	48.6	30.6	44.3	63.1	53.2
LOS	D	C	B	C	F	E	D	C	D	E	D
Approach Delay		23.7			83.3		57.6			55.6	
Approach LOS		C			F		E			E	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 131 (82%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 55.7	Intersection LOS: E
Intersection Capacity Utilization 77.7%	ICU Level of Service D
Analysis Period (min) 15	

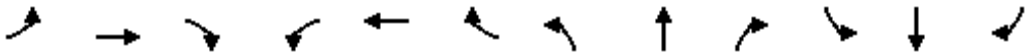
Splits and Phases: 3: Parker Ave & Southern Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	999	319	151	1454	71	365	238	123	142	299	256
Future Volume (vph)	169	999	319	151	1454	71	365	238	123	142	299	256
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	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5050		3433	3539	1583	1770	3539	1583
Flt Permitted	0.06	1.00	1.00	0.21	1.00		0.95	1.00	1.00	0.60	1.00	1.00
Satd. Flow (perm)	111	5085	1583	388	5050		3433	3539	1583	1111	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	178	1052	336	159	1531	75	384	251	129	149	315	269
RTOR Reduction (vph)	0	0	102	0	3	0	0	0	39	0	0	82
Lane Group Flow (vph)	178	1052	234	159	1603	0	384	251	90	149	315	187
Turn Type	pm+pt	NA	custom	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6	6 7	5	2		7	4		3	8	
Permitted Phases	6		6	2					4	8		8
Actuated Green, G (s)	89.0	68.0	99.0	76.0	61.0		25.0	41.0	41.0	40.0	28.0	28.0
Effective Green, g (s)	89.0	68.0	99.0	76.0	61.0		25.0	41.0	41.0	40.0	28.0	28.0
Actuated g/C Ratio	0.56	0.42	0.62	0.48	0.38		0.16	0.26	0.26	0.25	0.18	0.18
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Grp Cap (vph)	289	2161	979	313	1925		536	906	405	327	619	277
v/s Ratio Prot	c0.08	0.21	0.15	0.05	c0.32		c0.11	0.07		0.03	0.09	
v/s Ratio Perm	0.26			0.19					0.06	0.08		c0.12
v/c Ratio	0.62	0.49	0.24	0.51	0.83		0.72	0.28	0.22	0.46	0.51	0.68
Uniform Delay, d1	41.7	33.3	13.6	24.9	44.9		64.1	47.6	46.9	49.1	59.8	61.8
Progression Factor	1.05	0.69	3.38	1.12	1.30		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.8	0.7	0.5	3.6	2.8		8.0	0.8	1.3	4.5	3.0	12.5
Delay (s)	52.6	23.7	46.7	31.6	60.9		72.1	48.4	48.2	53.7	62.7	74.3
Level of Service	D	C	D	C	E		E	D	D	D	E	E
Approach Delay (s)		31.9			58.3			60.3			65.1	
Approach LOS		C			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	51.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



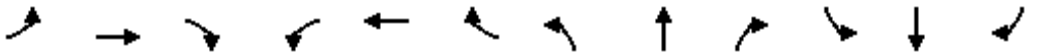
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	210	1627	262	106	962	70	360	295	152	106	188	217
Future Volume (vph)	210	1627	262	106	962	70	360	295	152	106	188	217
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	221	1713	276	112	1013	74	379	311	160	112	198	228
Shared Lane Traffic (%)												
Lane Group Flow (vph)	221	1713	276	112	1087	0	379	311	160	112	198	228

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	210	1627	262	106	962	360	295	152	106	188	217
Future Volume (vph)	210	1627	262	106	962	360	295	152	106	188	217
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6	7	5	2	7	4		3	8	
Permitted Phases	6		6	2				4	8		8
Detector Phase	1	6	7	5	2	7	4	4	3	8	8
Switch Phase											
Minimum Initial (s)	4.0	20.0	4.0	4.0	20.0	4.0	6.0	6.0	4.0	6.0	6.0
Minimum Split (s)	10.0	31.0	10.0	10.0	29.0	10.0	28.0	28.0	10.0	34.0	34.0
Total Split (s)	26.0	74.0	31.0	20.0	68.0	31.0	51.0	51.0	15.0	35.0	35.0
Total Split (%)	16.3%	46.3%	19.4%	12.5%	42.5%	19.4%	31.9%	31.9%	9.4%	21.9%	21.9%
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	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	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	88.0	68.0	99.0	76.0	62.0	25.0	45.0	45.0	38.0	29.0	29.0
Actuated g/C Ratio	0.55	0.42	0.62	0.48	0.39	0.16	0.28	0.28	0.24	0.18	0.18
v/c Ratio	0.65	0.79	0.26	0.56	0.56	0.71	0.31	0.32	0.39	0.31	0.64
Control Delay	35.8	35.8	1.8	49.5	30.6	72.1	46.4	27.6	40.3	58.4	46.9
Queue Delay	0.0	47.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.8	83.5	1.8	49.5	30.6	72.1	46.4	27.6	40.3	58.4	46.9
LOS	D	F	A	D	C	E	D	C	D	E	D
Approach Delay		68.6			32.4		54.3			49.8	
Approach LOS		E			C		D			D	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 131 (82%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 95	
Control Type: Pretimed	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 54.9	Intersection LOS: D
Intersection Capacity Utilization 72.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: Southern Blvd & Parker Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	1627	262	106	962	70	360	295	152	106	188	217
Future Volume (vph)	210	1627	262	106	962	70	360	295	152	106	188	217
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	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5033		3433	3539	1583	1770	3539	1583
Flt Permitted	0.15	1.00	1.00	0.06	1.00		0.95	1.00	1.00	0.56	1.00	1.00
Satd. Flow (perm)	276	5085	1583	120	5033		3433	3539	1583	1048	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	221	1713	276	112	1013	74	379	311	160	112	198	228
RTOR Reduction (vph)	0	0	84	0	5	0	0	0	49	0	0	69
Lane Group Flow (vph)	221	1713	192	112	1082	0	379	311	111	112	198	159
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases	6		6	2					4	8		8
Actuated Green, G (s)	88.0	68.0	93.0	76.0	62.0		25.0	45.0	45.0	38.0	29.0	29.0
Effective Green, g (s)	88.0	68.0	93.0	76.0	62.0		25.0	45.0	45.0	38.0	29.0	29.0
Actuated g/C Ratio	0.55	0.42	0.58	0.48	0.39		0.16	0.28	0.28	0.24	0.18	0.18
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Grp Cap (vph)	338	2161	979	201	1950		536	995	445	289	641	286
v/s Ratio Prot	c0.08	c0.34	0.03	0.05	0.21		c0.11	0.09		0.02	0.06	
v/s Ratio Perm	0.28		0.09	0.22					0.07	0.07		c0.10
v/c Ratio	0.65	0.79	0.20	0.56	0.55		0.71	0.31	0.25	0.39	0.31	0.56
Uniform Delay, d1	23.1	39.9	15.8	30.4	38.2		64.0	45.3	44.5	49.7	56.8	59.6
Progression Factor	1.37	0.83	0.36	1.28	0.78		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.8	2.5	0.4	9.6	1.0		7.7	0.8	1.3	3.9	1.3	7.6
Delay (s)	39.6	35.6	6.0	48.7	30.7		71.7	46.1	45.8	53.5	58.1	67.3
Level of Service	D	D	A	D	C		E	D	D	D	E	E
Approach Delay (s)		32.3			32.4			57.5			61.0	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	40.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCS

Freeway Analyses

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	I-95 Northbound
Weaving Location:	Btwn Forest Hill and Southern
Analysis Year:	2020 Build Alt 4 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	6	ln
Weaving segment length, LS	2850	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	7891	1371	1153	180	veh/h
Peak hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	2077	361	303	47	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	8431	1465	1232	192	pc/h

Volume ratio, VR 0.238

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	1232	lc/h
Weaving lane changes, LCW	2564	lc/h
Non-weaving vehicle index, INW	2949	
Non-weaving lane change, LCNW	3612	lc/h
Total lane changes, LCALL	6176	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.416	
Average weaving speed, SW	53.8	mi/h
Average non-weaving speed, SNW	52.1	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	52.5	mi/h
Weaving segment density, D	35.9	pc/mi/ln
Level of service, LOS	E	
Weaving segment v/c ratio	0.799	
Weaving segment flow rate, v	11153	veh/h
Weaving segment capacity, cW	13957	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	3365	2850	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400	2361	c
		Maximum	Analyzed	
v/c ratio		1.00	0.799	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	2/8/17
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	I-95 Northbound
Weaving Location:	Btwn Forest Hill and Southern
Analysis Year:	2020 Build Alt 4 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	6	ln
Weaving segment length, LS	2850	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400*	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	5428	786	1481	190	veh/h
Peak hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	1428	207	390	50	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	5799	840	1582	203	pc/h

Volume ratio, VR 0.288

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	1582	lc/h
Weaving lane changes, LCW	2914	lc/h
Non-weaving vehicle index, INW	2053	
Non-weaving lane change, LCNW	3027	lc/h
Total lane changes, LCALL	5941	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.403	
Average weaving speed, SW	54.2	mi/h
Average non-weaving speed, SNW	51.9	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	52.5	mi/h
Weaving segment density, D	26.7	pc/mi/ln
Level of service, LOS	C	
Weaving segment v/c ratio	0.692	
Weaving segment flow rate, v	8300	veh/h
Weaving segment capacity, cW	11994	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	3884	2850	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400*	2321	c
		Maximum	Analyzed	
v/c ratio		1.00	0.692	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

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Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	I-95 Northbound
Weaving Location:	Btwn Forest Hill and Southern
Analysis Year:	2040 Build Alt 1 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	6	ln
Weaving segment length, LS	2850	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	7910	1580	1526	270	veh/h
Peak hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	2082	416	402	71	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	8451	1688	1630	288	pc/h

Volume ratio, VR	0.275	

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	1630	lc/h
Weaving lane changes, LCW	2962	lc/h
Non-weaving vehicle index, INW	2989	
Non-weaving lane change, LCNW	3638	lc/h
Total lane changes, LCALL	6600	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.438

Average weaving speed, SW	53.2	mi/h
Average non-weaving speed, SNW	48.6	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	49.8	mi/h
Weaving segment density, D	40.3	pc/mi/ln
Level of service, LOS	E	
Weaving segment v/c ratio	0.948	
Weaving segment flow rate, v	11880	veh/h
Weaving segment capacity, cW	12530	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	3753	2850	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400	2331	c
		Maximum	Analyzed	
v/c ratio		1.00	0.948	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	I-95 Northbound
Weaving Location:	Btwn Forest Hill and Southern
Analysis Year:	2040 Build Alt 1 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	6	ln
Weaving segment length, LS	2850	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400*	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	5861	952	1920	270	veh/h
Peak hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	1542	251	505	71	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	6262	1017	2051	288	pc/h

Volume ratio, VR 0.319

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	2051	lc/h
Weaving lane changes, LCW	3383	lc/h
Non-weaving vehicle index, INW	2240	
Non-weaving lane change, LCNW	3150	lc/h
Total lane changes, LCALL	6533	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.435	
Average weaving speed, SW	53.3	mi/h
Average non-weaving speed, SNW	47.5	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	49.2	mi/h
Weaving segment density, D	32.6	pc/mi/ln
Level of service, LOS	D	
Weaving segment v/c ratio	0.877	
Weaving segment flow rate, v	9477	veh/h
Weaving segment capacity, cW	10810	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4222	2850	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400*	2295	c
		Maximum	Analyzed	
v/c ratio		1.00	0.877	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	I-95 Northbound
Weaving Location:	Btwn Forest Hill and Southern
Analysis Year:	2040 Build Alt 2 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	6	ln
Weaving segment length, LS	2320	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	7910	1580	1526	270	veh/h
Peak hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	2082	416	402	71	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	8451	1688	1630	288	pc/h
Volume ratio, VR		0.275			

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	1630	lc/h
Weaving lane changes, LCW	2816	lc/h
Non-weaving vehicle index, INW	2433	
Non-weaving lane change, LCNW	3638	lc/h
Total lane changes, LCALL	6454	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.507

Average weaving speed, SW	51.5	mi/h
Average non-weaving speed, SNW	48.6	mi/h

_____Weaving Segment Speed, Density, Level of Service and Capacity_____

Weaving segment speed, S	49.4	mi/h
Weaving segment density, D	40.7	pc/mi/ln
Level of service, LOS	E	
Weaving segment v/c ratio	0.948	
Weaving segment flow rate, v	11880	veh/h
Weaving segment capacity, cW	12530	veh/h

_____Limitations on Weaving Segments_____

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	3753	2320	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400	2290	c
		Maximum	Analyzed	
v/c ratio		1.00	0.948	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	I-95 Northbound
Weaving Location:	Btwn Forest Hill and Southern
Analysis Year:	2040 Build Alt 2 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	6	ln
Weaving segment length, LS	2320	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400*	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	5861	952	1920	270	veh/h
Peak hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	1542	251	505	71	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	6262	1017	2051	288	pc/h
Volume ratio, VR		0.319			

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	2051	lc/h
Weaving lane changes, LCW	3237	lc/h
Non-weaving vehicle index, INW	1824	
Non-weaving lane change, LCNW	2819	lc/h
Total lane changes, LCALL	6056	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.482

Average weaving speed, SW	52.1	mi/h
Average non-weaving speed, SNW	47.5	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	48.9	mi/h
Weaving segment density, D	32.8	pc/mi/ln
Level of service, LOS	D	
Weaving segment v/c ratio	0.877	
Weaving segment flow rate, v	9477	veh/h
Weaving segment capacity, cW	10810	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4222	2320	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400*	2254	c
		Maximum	Analyzed	
v/c ratio		1.00	0.877	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	I-95 Northbound
Weaving Location:	Btwn Forest Hill and Southern
Analysis Year:	2040 Build Alt 4 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	6	ln
Weaving segment length, LS	2850	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	7910	1580	1526	270	veh/h
Peak hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	2082	416	402	71	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	8451	1688	1630	288	pc/h

Volume ratio, VR	0.275	

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	1630	lc/h
Weaving lane changes, LCW	2962	lc/h
Non-weaving vehicle index, INW	2989	
Non-weaving lane change, LCNW	3638	lc/h
Total lane changes, LCALL	6600	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.438

Average weaving speed, SW	53.2	mi/h
Average non-weaving speed, SNW	48.6	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	49.8	mi/h
Weaving segment density, D	40.3	pc/mi/ln
Level of service, LOS	E	
Weaving segment v/c ratio	0.948	
Weaving segment flow rate, v	11880	veh/h
Weaving segment capacity, cW	12530	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	3753	2850	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400	2331	c
		Maximum	Analyzed	
v/c ratio		1.00	0.948	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.90

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	RS&H
Agency/Co.:	RS&H
Date Performed:	11/21/2016
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	I-95 Northbound
Weaving Location:	Btwn Forest Hill and Southern
Analysis Year:	2040 Build Alt 4 w/o HOV
Description:	I-95 at SR 80/Southern Blvd Interchange PD&E Study

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	6	ln
Weaving segment length, LS	2850	ft
Freeway free-flow speed, FFS	70	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2400*	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	5861	952	1920	270	veh/h
Peak hour factor, PHF	0.95	0.95	0.95	0.95	
Peak 15-min volume, v15	1542	251	505	71	
Trucks and buses	3	3	3	3	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.985	0.985	0.985	0.985	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	6262	1017	2051	288	pc/h

Volume ratio, VR 0.319

Configuration Characteristics

Number of maneuver lanes, NWL	3	ln
Interchange density, ID	1.2	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	1	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	2051	lc/h
Weaving lane changes, LCW	3383	lc/h
Non-weaving vehicle index, INW	2240	
Non-weaving lane change, LCNW	3150	lc/h
Total lane changes, LCALL	6533	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.435	
Average weaving speed, SW	53.3	mi/h
Average non-weaving speed, SNW	47.5	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	49.2	mi/h
Weaving segment density, D	32.6	pc/mi/ln
Level of service, LOS	D	
Weaving segment v/c ratio	0.877	
Weaving segment flow rate, v	9477	veh/h
Weaving segment capacity, cW	10810	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4222	2850	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2400*	2295	c
		Maximum	Analyzed	
v/c ratio		1.00	0.877	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

Capacity Check for Major Merge:

I-95 Southbound Entrance from Southern Blvd

Assumed Major Diverge Capacity per Freeway Segment (based on HCM 2010 Exhibit 13-8):

Freeway Segment Free-Flow Speed (mph)	Capacity (pc/h)				
	2-Lanes	3-Lanes	4-Lanes	5-Lanes	6-Lanes
≥ 70	4800	7200	9600	12000	14400
65	4700	7050	9400	11750	14100
60	4600	6900	9200	11500	13800
55	4500	6750	9000	11250	13500

Assumed Major Diverge Capacity per Ramp Segment (based on HCM 2010 Exhibit 13-10):

Ramp Free-Flow Speed (mph)	Capacity of Ramp Roadway	
	Single Lane Ramp	Two-Lane Ramp
>50	2200	4400
>40-50	2100	4200
>30-40	2000	4000
≥ 20-30	1900	3800
<20	1800	3600

2020 AM Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	5665	70.4	4	3.0%	0.95	1.5	0.985	1.00	6054	9600	No	0.63
Merging[2]	1708	45	2	3.0%	0.95	1.5	0.985	1.00	1826	4200	No	0.43
Downstream[1]	7373	70.4	5	3.0%	0.95	1.5	0.985	1.00	7880	12000	No	0.66

2020 PM Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	7136	70.4	4	3.0%	0.95	1.5	0.985	1.00	7626	9600	No	0.79
Merging[2]	1345	45	2	3.0%	0.95	1.5	0.985	1.00	1438	4200	No	0.34
Downstream[1]	8481	70.4	5	3.0%	0.95	1.5	0.985	1.00	9064	12000	No	0.76

2040 AM Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	5875	70.4	4	3.0%	0.95	1.5	0.985	1.00	6279	9600	No	0.65
Merging[2]	2163	45	2	3.0%	0.95	1.5	0.985	1.00	2312	4200	No	0.55
Downstream[1]	8038	70.4	5	3.0%	0.95	1.5	0.985	1.00	8590	12000	No	0.72

2040 PM Build

Location	Volume (veh/h)	FFS (mph)	# of Lanes	% Trucks	PHF	ET	fHV	fP	Flow Rate (pc/h)	Capacity (pc/h)*	Over Capacity?	v/c
Upstream[1]	7929	70.4	4	3.0%	0.95	1.5	0.985	1.00	8474	9600	No	0.88
Merging[2]	1792	45	2	3.0%	0.95	1.5	0.985	1.00	1916	4200	No	0.46
Downstream[1]	9721	70.4	5	3.0%	0.95	1.5	0.985	1.00	10389	12000	No	0.87

[1]Capacity based on Exhibit 13-8 (HCM 2010)

[2]Capacity based on Exhibit 13-10 (HCM 2010)

APPENDIX I

Build Alternatives – Benefit/Cost Analysis

Delay Benefit

OPERATIONAL BENEFITS for PROPOSED IMPROVEMENT PROJECT (2040)

I-95 at SR 80 - Alternative 1: NB to WB Flyover

PEAK TRAFFIC VOLUMES

2040 VOLUMES

Peak Period	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM PEAK	1187	0	609	438	0	920	1658	1052	1709	454	565	520
PM PEAK	1720	0	470	470	0	1625	1020	547	1177	615	986	474
24 Hour Total	**24000**			**20000**			**79000**			**40000**		

ALTERNATIVES	Peak Hour Delay (V-H)		Daily Delay Cost
	AM	PM	
No Build	133.50	187.90	$48,315.86
Build Alternative 1	75.26	64.33	$20,983.58

DELAY COST

No Build	D1 =	$48,315.86
Build Alternative	D2 =	$20,983.58

Project Operational Benefit:		**Daily**	**Yearly**
Proposed Improvement Project	D1 - D2 =	$27,332.29	$9,976,285

Note:

1. Synchro Output was used for determination of Peak-Hour Delay for the Proposed Improvement Project. Synshro reported delays were proportionately adjust to account for free flowing traffic using proposed flyovers.
2. Daily Delay = [Peak Hour Delay (AM + PM) x AADT]/Peak Hour Volumes (AM + PM)
3. Daily Delay Cost = Daily Delay (V-H) x 1 x $16.80/V-H
4. Value of delay is assumed to be $16.80 per vehicle-hour

OPERATIONAL BENEFITS for PROPOSED IMPROVEMENT PROJECT (2040)

I-95 at SR 80 - Alternative 2 and Alternative 4: NB to WB Flyover and EB to SB Flyover

PEAK TRAFFIC VOLUMES

2040 VOLUMES

Peak Period	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM PEAK	1187	0	609	438	0	920	1658	1052	1709	454	565	520
PM PEAK	1720	0	470	470	0	1625	1020	547	1177	615	986	474
24 Hour Total	**24000**			**20000**			**79000**			**40000**		

ALTERNATIVES	Peak Hour Delay (V-H)		Daily Delay Cost
	AM	PM	
No Build	133.50	187.90	$48,315.86
Build Alternatives 2 and 4	58.14	59.88	$17,741.42

DELAY COST

No Build	D1 =	$48,315.86
Build Alternative	D2 =	$17,741.42

Project Operational Benefit:		**Daily**	**Yearly**
Proposed Improvement Project	D1 - D2 =	$30,574.44	$11,159,671

Note:

1. Synchro Output was used for determination of Peak-Hour Delay for the Proposed Improvement Project. Synshro reported delays were proportionately adjust to account for free flowing traffic using proposed flyovers.
2. Daily Delay = [Peak Hour Delay (AM + PM) x AADT]/Peak Hour Volumes (AM + PM)
3. Daily Delay Cost = Daily Delay (V-H) x 1 x $16.80/V-H
4. Value of delay is assumed to be $16.80 per vehicle-hour

OPERATIONAL BENEFITS for PROPOSED IMPROVEMENT PROJECT (2040)

I-95 at SR 80 - Alternative 3: EB to SB Flyover

PEAK TRAFFIC VOLUMES

2040 VOLUMES

Peak Period	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM PEAK	1187	0	609	438	0	920	1658	1052	1709	454	565	520
PM PEAK	1720	0	470	470	0	1625	1020	547	1177	615	986	474
24 Hour Total	**24000**			**20000**			**79000**			**40000**		

ALTERNATIVES	Peak Hour Delay (V-H)		Daily Delay Cost
	AM	PM	
No Build	133.50	187.90	$48,315.86
Build Alternative 3	75.65	118.48	$29,183.74

DELAY COST

No Build	D1 =	$48,315.86
Build Alternative	D2 =	$29,183.74

Project Operational Benefit:		**Daily**	**Yearly**
Proposed Improvement Project	D1 - D2 =	$19,132.12	$6,983,224

Note:

1. Synchro Output was used for determination of Peak-Hour Delay for the Proposed Improvement Project. Synshro reported delays were proportionately adjust to account for free flowing traffic using proposed flyovers.
2. Daily Delay = [Peak Hour Delay (AM + PM) x AADT]/Peak Hour Volumes (AM + PM)
3. Daily Delay Cost = Daily Delay (V-H) x 1 x $16.80/V-H
4. Value of delay is assumed to be $16.80 per vehicle-hour

OPERATIONAL BENEFITS for PROPOSED IMPROVEMENT PROJECT (2020)

I-95 at SR 80 - Alternative 1: NB to WB Flyover

PEAK TRAFFIC VOLUMES

2020 VOLUMES

Peak Period	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM PEAK	892	0	441	377	0	862	1460	932	1365	343	533	450
PM PEAK	1325	0	346	393	0	1398	878	550	887	458	956	391
24 Hour Total	**21000**			**17000**			**65000**			**36000**		

ALTERNATIVES	Peak Hour Delay (V-H)		Daily Delay Cost
	AM	PM	
No Build	70.60	100.20	$26,176.55
Build Alternative 1	60.63	55.62	$17,815.38

DELAY COST

No Build	D1 =	$26,176.55
Build Alternative	D2 =	$17,815.38

Project Operational Benefit:		**Daily**	**Yearly**
Proposed Improvement Project	D1 - D2 =	$8,361.17	$3,051,828

Note:

1. Synchro Output was used for determination of Peak-Hour Delay for the Proposed Improvement Project. Synshro reported delays were proportionately adjust to account for free flowing traffic using proposed flyovers.
2. Daily Delay = [Peak Hour Delay (AM + PM) x AADT]/Peak Hour Volumes (AM + PM) `
3. Daily Delay Cost = Daily Delay (V-H) x 1 x $16.80/V-H
4. Value of delay is assumed to be $16.80 per vehicle-hour

OPERATIONAL BENEFITS for PROPOSED IMPROVEMENT PROJECT (2020)

I-95 at SR 80 - Alternative 2 and Alternative 4: NB to WB Flyover and EB to SB Flyover

PEAK TRAFFIC VOLUMES

2020 VOLUMES

Peak Period	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM PEAK	892	0	441	377	0	862	1460	932	1365	343	533	450
PM PEAK	1325	0	346	393	0	1398	878	550	887	458	956	391
24 Hour Total	**21000**			**17000**			**65000**			**36000**		

ALTERNATIVES	Peak Hour Delay (V-H)		Daily Delay Cost
	AM	PM	
No Build	70.60	100.20	$26,176.55
Build Alternative	46.82	52.77	$15,262.71

DELAY COST

No Build	D1 =	$26,176.55
Build Alternative	D2 =	$15,262.71

Project Operational Benefit:		**Daily**	**Yearly**
Proposed Improvement Project	D1 - D2 =	$10,913.85	$3,983,554

Note:

1. Synchro Output was used for determination of Peak-Hour Delay for the Proposed Improvement Project. Synshro reported delays were proportionately adjust to account for free flowing traffic using proposed flyovers.
2. Daily Delay = [Peak Hour Delay (AM + PM) x AADT]/Peak Hour Volumes (AM + PM)
3. Daily Delay Cost = Daily Delay (V-H) x 1 x $16.80/V-H
4. Value of delay is assumed to be $16.80 per vehicle-hour

OPERATIONAL BENEFITS for PROPOSED IMPROVEMENT PROJECT (2020)

I-95 at SR 80 - Alternative 3: EB to SB Flyover

PEAK TRAFFIC VOLUMES

2020 VOLUMES

Peak Period	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM PEAK	892	0	441	377	0	862	1460	932	1365	343	533	450
PM PEAK	1325	0	346	393	0	1398	878	550	887	458	956	391
24 Hour Total	**21000**			**17000**			**65000**			**36000**		

ALTERNATIVES	Peak Hour Delay (V-H)		Daily Delay Cost
	AM	PM	
No Build	70.60	100.20	$26,176.55
Build Alternative	57.06	74.07	$20,096.94

DELAY COST

No Build	D1 =	$26,176.55
Build Alternative	D2 =	$20,096.94

Project Operational Benefit:		**Daily**	**Yearly**
Proposed Improvement Project	D1 - D2 =	$6,079.61	$2,219,058

Note:

1. Synchro Output was used for determination of Peak-Hour Delay for the Proposed Improvement Project. Synshro reported delays were proportionately adjust to account for free flowing traffic using proposed flyovers.
2. Daily Delay = [Peak Hour Delay (AM + PM) x AADT]/Peak Hour Volumes (AM + PM)
3. Daily Delay Cost = Daily Delay (V-H) x 1 x $16.80/V-H
4. Value of delay is assumed to be $16.80 per vehicle-hour

NPV Calculations

NET PRESENT VALUE ANALYSIS

I-95 at SR 80 - Alternative 1: NB to WB Flyover

NET PRESENT VALUE (Benefits)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	*Discount Rate*
$72,213,436	$0	$0	$0	$0	$3,051,828	$3,398,050	$3,744,273	$4,090,496	$4,436,719	$4,782,942	$5,129,165	$5,475,388	$5,821,610	$6,167,833	$6,514,056	4%

	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
	$6,860,279	$7,206,502	$7,552,725	$7,898,948	$8,245,170	$8,591,393	$8,937,616	$9,283,839	$9,630,062	$9,976,285

NET PRESENT VALUE (Costs)
$55,600,000

NET PRESENT VALUE	= NPV (Benefits) - NPV (Costs)	BENEFIT / COST RATIO
	$16,613,436	**1.30**

Assume 2020 as Opening Year of project
Calculated Present Value of 2040 benefits for 2020 assuming 4% CGR
Assume linear increase of delay benefits between 2020 and 2040

NET PRESENT VALUE ANALYSIS

I-95 at SR 80 - Alternative 2: NB to WB Flyover and EB to SB Flyover (4th Level)

NET PRESENT VALUE (Benefits)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	*Discount Rate*
$84,704,245	$0	$0	$0	$0	$3,986,910	$4,345,548	$4,704,186	$5,062,824	$5,421,462	$5,780,100	$6,138,738	$6,497,376	$6,856,014	$7,214,652	$7,573,290	4%

2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
$7,931,928	$8,290,566	$8,649,204	$9,007,843	$9,366,481	$9,725,119	$10,083,757	$10,442,395	$10,801,033	$11,159,671

NET PRESENT VALUE (Costs)
$72,800,000

NET PRESENT VALUE	= NPV (Benefits) - NPV (Costs)	BENEFIT / COST RATIO
	$11,904,245	**1.16**

Assume 2020 as Opening Year of project
Calculated Present Value of 2040 benefits for 2020 assuming 4% CGR
Assume linear increase of delay benefits between 2020 and 2040

NET PRESENT VALUE ANALYSIS

I-95 at SR 80 - Alternative 3: EB to SB Flyover

NET PRESENT VALUE (Benefits)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	*Discount Rate*
$51,115,437	$0	$0	$0	$0	$2,219,058	$2,457,267	$2,695,475	$2,933,683	$3,171,891	$3,410,100	$3,648,308	$3,886,516	$4,124,725	$4,362,933	$4,601,141	4%

	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
	$4,839,349	$5,077,558	$5,315,766	$5,553,974	$5,792,182	$6,030,391	$6,268,599	$6,506,807	$6,745,015	$6,983,224

NET PRESENT VALUE (Costs)
$50,400,000

NET PRESENT VALUE	= NPV (Benefits) - NPV (Costs)	BENEFIT / COST RATIO
	$715,437	1.01

Assume 2020 as Opening Year of project
Calculated Present Value of 2040 benefits for 2020 assuming 4% CGR
Assume linear increase of delay benefits between 2020 and 2040

NET PRESENT VALUE ANALYSIS

I-95 at SR 80 - Alternative 4: NB to WB Flyover (3rd level)

NET PRESENT VALUE (Benefits)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	*Discount Rate*
$84,681,258	$0	$0	$0	$0	$3,983,554	$4,342,359	$4,701,165	$5,059,971	$5,418,777	$5,777,583	$6,136,389	$6,495,195	$6,854,000	$7,212,806	$7,571,612	4%
						2031	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	
						$7,930,418	$8,289,224	$8,648,030	$9,006,836	$9,365,641	$9,724,447	$10,083,253	$10,442,059	$10,800,865	$11,159,671	

NET PRESENT VALUE (Costs)
$66,200,000

NET PRESENT VALUE	= NPV (Benefits) - NPV (Costs)	BENEFIT / COST RATIO
	$18,481,258	**1.28**

Assume 2020 as Opening Year of project
Calculated Present Value of 2040 benefits for 2020 assuming 4% CGR
Assume linear increase of delay benefits between 2020 and 2040

APPENDIX J

Signing Concept Plans

- Recommended Alternative (Alternative 4)
- Recommended Alternative with Median-to-Median Option (Alternative 5)

Recommended Alternative
(Alternative 4)

0 300' 600'
Scale: 1" = 300'

N

STA. 1324+72
EXIT ONLY
Southern Blvd
98 80
EXIT 68

STA. 1341+53
Southern Blvd
TO I 1
EAST 98 80 EAST

Southern Blvd
TO
WEST 98 80 WEST

STA. 3196+99
Australian Ave
Palm Beach Int'l Airport

WEST 98 80 WEST
Southern Blvd

Australian Ave
Palm Beach Int'l Airport
SECOND RIGHT

TO South Congress Ave
SECOND LEFT

Palm Beach International Airport
South Congress Ave

STA. 3204+48
Gem Lake Dr
NEXT SIGNAL

Australian Ave

Palm Beach County Offices
TO 95 NORTH

STA. 3187+48
Gem Lake Dr
NEXT SIGNAL
TO 95 SOUTH

Southern Blvd

S Congress Ave

Edward Rankin Memorial Trail Historic Marker

Hawthorne

Law Offices

Peterson Berman Attorneys at Law

Specialty Shops

W Palm Beach
KEEP LEFT
TO 95 NORTH

Miami
95
RAMP ONLY
SOUTH

STA. 3207+48

TOWN OF GLEN RIDGE

Shamrondale Rd

TOWN OF CLOUD LAKE

STA. 3220+92

West Palm Beach
95
RAMP ONLY
NORTH

Wilson Palm Beach Attorneys

Airport Center Company

County Offices

CITY OF WEST PALM BEACH

95

MARSHALL AND VERA LEA BOWLES ATHLETIC CAMPUS

EXIT 69
Belvedere Rd
Palm Beach Int'l Airport
EXIT ONLY
STA. 1339+82

Dog Track
EXIT 69
STA. 1337+18

Vandyke St

South Miami 95 RAMP ONLY
West

Dixie Highway

North W Palm Bch 95
2 LEFT LANES

STA. 3220+16

VEDADO HISTORIC DISTRICT

STA. 3227+00

Edgewood Dr

Fern Rd

Ivanhoe

Ivy Famous Avenue

Palm Aire

Cole Haven

Palm Aire

Cloverleaf Dr

Dixie Hwy

Southern Blvd

DREHER PARK

Dixie Hwy

Vacant

Pine Grove Cemetery

Holy Cross Episcopal Church

Dog Park and Shelter

Park

Nottingham Blvd

Ave Semmes

Cemetery

DOG

EXIT 69
Belvedere Rd
Palm Beach Int'l Airport
EXIT ONLY
STA. 1326+61

WEST 98 80 WEST
Southern Blvd
TO Congress Ave

EAST 98 80 EAST
Southern Blvd
TO I 1

STA. 1326+30

Forest Hill Blvd
1 MILE
EXIT 66
STA. 1314+55

WEST 98 WEST
Southern Blvd
TO Kirk Rd

98 80
Southern Blvd
TO I 1
TO Congress Ave

STA. 1314+55

EXIT 69
Belvedere Rd
Palm Beach Int'l Airport
½ MILE

EXIT 68
98 80
Southern Blvd
WEST TO Kirk Rd
TO I 1 TO Congress Ave
EXIT ONLY

STA. 1302+15

XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
EXISTING DMS
STA. 1302+75

Summit Blvd

EXIT 68
98 80
Southern Blvd
WEST TO Kirk Rd
TO I 1 TO Congress Ave
EXIT ONLY

STA. 1292+25

XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXX
EXISTING DMS
STA. 1277+48

Palmetto Xg

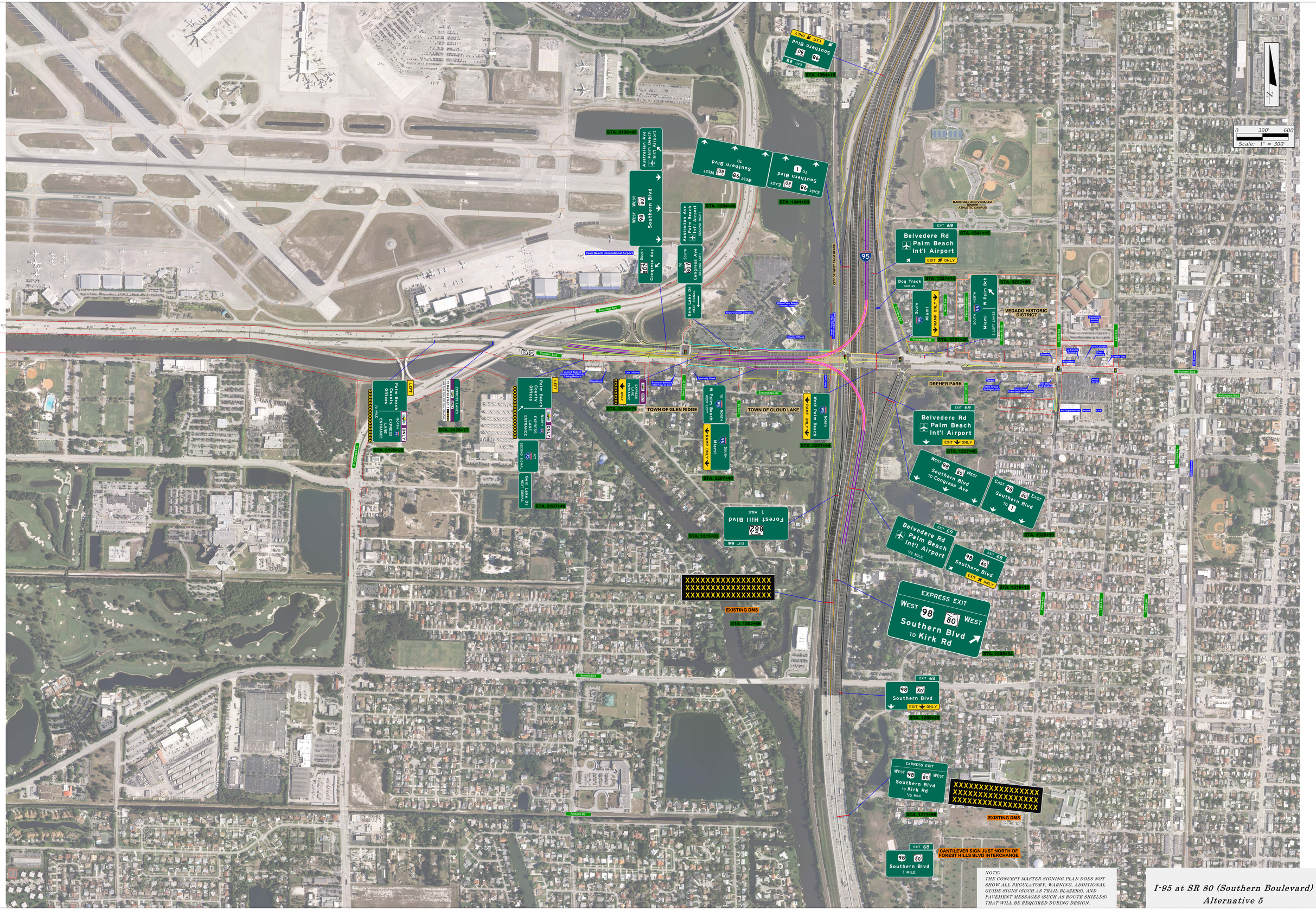
EXIT 68
98 80
Southern Blvd
1 MILE

CANTILEVER SIGN JUST NORTH OF FOREST HILLS BLVD INTERCHANGE

NOTE:
THE CONCEPT MASTER SIGNING PLAN DOES NOT SHOW ALL REGULATORY, WARNING, ADDITIONAL GUIDE SIGNS (SUCH AS TRAIL BLAZERS), AND PAVEMENT MESSAGES (SUCH AS ROUTE SHIELDS) THAT WILL BE REQUIRED DURING DESIGN.

I-95 at SR 80 (Southern Boulevard)
Alternative 4

Recommended Alternative With Median-to-Median Connection (Alternative 5)



NOTE:
THE CONCEPT MASTER SIGNING PLAN DOES NOT SHOW ALL REGULATORY, WARNING, ADDITIONAL GUIDE SIGNS (SUCH AS TRAIL BLAZERS), AND PAVEMENT MESSAGES (SUCH AS ROUTE SHIELDS) THAT WILL BE REQUIRED DURING DESIGN.

I-95 at SR 80 (Southern Boulevard)
Alternative 5