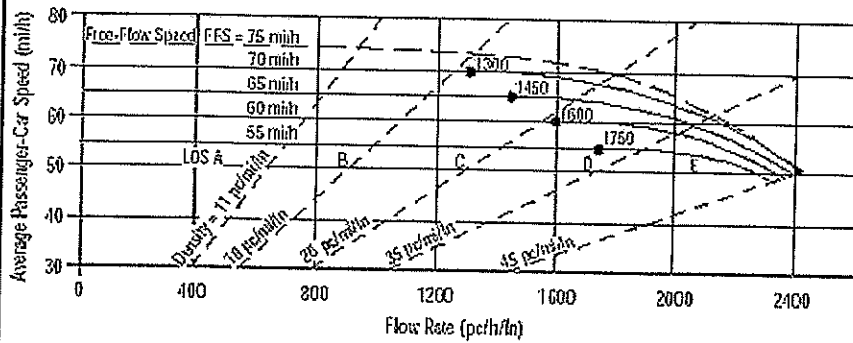


2032 No Build

## BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, $v_p$	LOS, S, D
Design (N)	FFS, LOS, $v_p$	N, S, D
Design ( $v_p$ )	FFS, LOS, N	$v_p$ , S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning ( $v_p$ )	FFS, LOS, N	$v_p$ , S, D

### General Information

Analyst: *KNM*  
 Agency or Company: *HNTB*  
 Date Performed: *3/25/2008*  
 Analysis Time Period: *Peak*  
 Project Description: *Wekiva Parkway PD&E*

### Site Information

Highway/Direction of Travel: *I-4/Eastbound*  
 From/To: *Lake Mary Blvd /CR 46A/SR417*  
 Jurisdiction:  
 Analysis Year: *2032 No Build*

Oper. (LOS)

Des. (N)

Planning Data

### Flow Inputs

Volume, V	<i>6720</i>	veh/h	Peak-Hour Factor, PHF	<i>0.95</i>
AAADT		veh/day	% Trucks and Buses, $P_T$	<i>9</i>
Peak-Hr Prop. of AAADT, K			% RVs, $P_R$	<i>0</i>
Peak-Hr Direction Prop, D			General Terrain:	<i>Level</i>
DDHV = AAADT x K x D		veh/h	Grade %	<i>mi</i>
Driver type adjustment	<i>1.00</i>		Up/Down %	

### Calculate Flow Adjustments

$f_p$	<i>1.00</i>	$E_R$	<i>1.2</i>
$E_T$	<i>1.5</i>	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	<i>0.957</i>

### Speed Inputs

Lane Width	<i>12.0</i>	ft
Rt-Shoulder Lat. Clearance	<i>6.0</i>	ft
Interchange Density	<i>0.45</i>	l/mi
Number of Lanes, N	<i>3</i>	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	<i>70.0</i>	mi/h

### Calc Speed Adj and FFS

$f_{LW}$	<i>0.0</i>	mi/h
$f_{LC}$	<i>0.0</i>	mi/h
$f_{ID}$	<i>0.0</i>	mi/h
$f_N$	<i>3.0</i>	mi/h
FFS	<i>67.0</i>	mi/h

### LOS and Performance Measures

Operational (LOS)  
 $v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p) 2464$  pc/h/ln  
 S mi/h  
 $D = v_p / S$  pc/mi/ln  
 LOS *F*

### Design (N)

Design (N)  
 Design LOS  
 $v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$  pc/h  
 S mi/h  
 $D = v_p / S$  pc/mi/ln  
 Required Number of Lanes, N

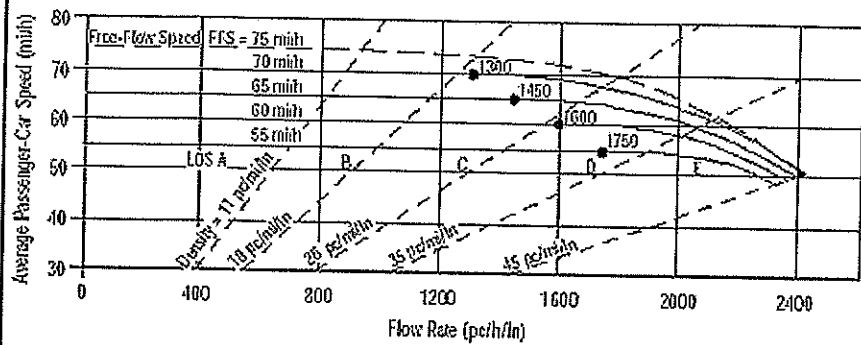
### Glossary

N - Number of lanes      S - Speed  
 V - Hourly volume      D - Density  
 $v_p$  - Flow rate      FFS - Free-flow speed  
 LOS - Level of service      BFFS - Base free-flow speed  
 DDHV - Directional design hour volume

### Factor Location

$E_R$  - Exhibits 23-8, 23-10       $f_{LW}$  - Exhibit 23-4  
 $E_T$  - Exhibits 23-8, 23-10, 23-11       $f_{LC}$  - Exhibit 23-5  
 $f_p$  - Page 23-12       $f_N$  - Exhibit 23-6  
 LOS, S, FFS,  $v_p$  - Exhibits 23-2, 23-3       $f_{ID}$  - Exhibit 23-7

# BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, $v_p$	LOS, S, D
Design (N)	FFS, LOS, $v_p$	N, S, D
Design ( $v_p$ )	FFS, LOS, N	$v_p$ , S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning ( $v_p$ )	FFS, LOS, N	$v_p$ , S, D

General Information		Site Information	
Analyst	KNM	Highway/Direction of Travel	I-4/Eastbound
Agency or Company	HNTB	From/To	CR 46A/SR 417/SR 46
Date Performed	3/25/2008	Jurisdiction	
Analysis Time Period	Peak	Analysis Year	2032 No Build
Project Description: Wekiva Parkway PD&E			

<input checked="" type="checkbox"/> Oper. (LOS)	<input type="checkbox"/> Des. (N)	<input type="checkbox"/> Planning Data
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Flow Inputs			
Volume, V	5340	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	% Trucks and Buses, $P_T$
Peak-Hr Prop. of AADT, K			% RVs, $P_R$
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
Driver type adjustment	1.00		Up/Down %

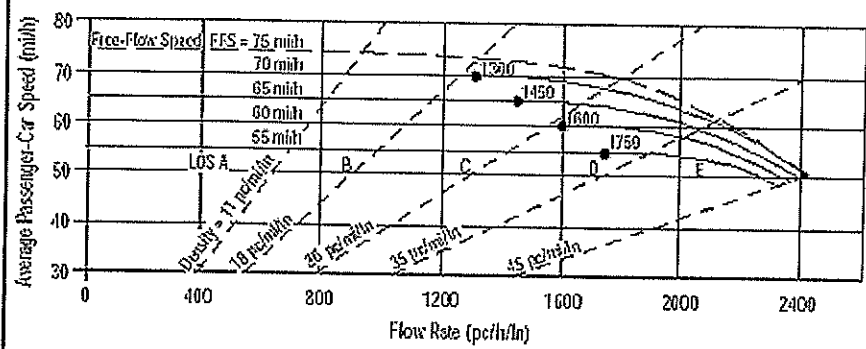
Calculate Flow Adjustments			
$f_p$	1.00	$E_R$	1.2
$E_T$	1.5	$f_{HV} = 1/[1+P_T(E_T-1) + P_R(E_R-1)]$	0.957

Speed Inputs		Calc Speed Adj and FFS	
Lane Width	12.0 ft	$f_{LW}$	0.0 mi/h
Rt-Shoulder Lat. Clearance	6.0 ft	$f_{LC}$	0.0 mi/h
Interchange Density	0.54 l/mi	$f_{ID}$	0.2 mi/h
Number of Lanes, N	3	$f_N$	3.0 mi/h
FFS (measured)		FFS	66.8 mi/h
Base free-flow Speed, BFFS	70.0 mi/h		

LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$	1958 pc/h/ln	Design LOS	
S	63.4 mi/h	$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$	pc/h
$D = v_p / S$	30.9 pc/mi/ln	S	mi/h
LOS	D	$D = v_p / S$	pc/mi/ln
		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	$E_R$ - Exhibits 23-8, 23-10	$f_{LW}$ - Exhibit 23-4
V - Hourly volume	D - Density	$E_T$ - Exhibits 23-8, 23-10, 23-11	$f_{LC}$ - Exhibit 23-5
$v_p$ - Flow rate	FFS - Free-flow speed	$f_p$ - Page 23-12	$f_N$ - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3	$f_{ID}$ - Exhibit 23-7
DDHV - Directional design hour volume			

# BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, $v_p$	LOS, S, D
Design (N)	FFS, LOS, $v_p$	N, S, D
Design ( $v_p$ )	FFS, LOS, N	$v_p$ , S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning ( $v_p$ )	FFS, LOS, N	$v_p$ , S, D

General Information		Site Information	
Analyst	KNM	Highway/Direction of Travel	I-4/Eastbound
Agency or Company	HNTB	From/To	SR 46/US17/92
Date Performed	3/25/2008	Jurisdiction	
Analysis Time Period	Peak	Analysis Year	2032 No Build
Project Description: Wekiva Parkway PD&E			

<input checked="" type="checkbox"/> Oper. (LOS)	<input checked="" type="checkbox"/> Des. (N)	<input type="checkbox"/> Planning Data
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Flow Inputs			
Volume, V	6830	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	% Trucks and Buses, $P_T$
Peak-Hr Prop. of AADT, K			% RVs, $P_R$
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
Driver type adjustment	1.00		Up/Down %

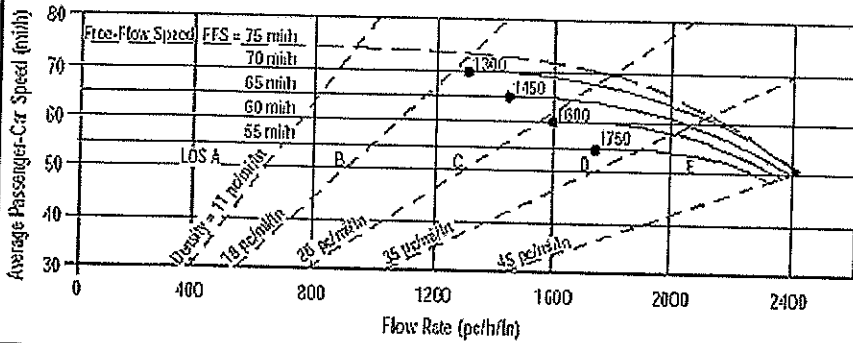
Calculate Flow Adjustments			
$f_p$	1.00	$E_R$	1.2
$E_T$	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.957

Speed Inputs		Calc Speed Adj and FFS	
Lane Width	12.0 ft	$f_{LW}$	0.0 mi/h
Rt-Shoulder Lat. Clearance	6.0 ft	$f_{LC}$	0.0 mi/h
Interchange Density	0.67 l/mi	$f_{ID}$	0.9 mi/h
Number of Lanes, N	4	$f_N$	1.5 mi/h
FFS (measured)		FFS	67.6 mi/h
Base free-flow Speed, BFFS	70.0 mi/h		

LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$	1878 pc/h/ln	Design LOS	
S	65.1 mi/h	$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$	pc/h
$D = v_p / S$	28.8 pc/mi/ln	S	mi/h
LOS	D	$D = v_p / S$	pc/mi/ln
		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	$E_R$ - Exhibits 23-8, 23-10	$f_{LW}$ - Exhibit 23-4
V - Hourly volume	D - Density	$E_T$ - Exhibits 23-8, 23-10, 23-11	$f_{LC}$ - Exhibit 23-5
$v_p$ - Flow rate	FFS - Free-flow speed	$f_p$ - Page 23-12	$f_N$ - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3	$f_{ID}$ - Exhibit 23-7
DDHV - Directional design hour volume			

# BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, $v_p$	LOS, S, D
Design (N)	FFS, LOS, $v_p$	N, S, D
Design ( $v_p$ )	FFS, LOS, N	$v_p$ , S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning ( $v_p$ )	FFS, LOS, N	$v_p$ , S, D

## General Information

Analyst: *KNM*  
 Agency or Company: *HNTB*  
 Date Performed: *3/25/2008*  
 Analysis Time Period: *Peak*  
 Project Description: *Wekiva Parkway PD&E*

## Site Information

Highway/Direction of Travel: *I-4/Eastbound*  
 From/To: *Us17/92 to Volusia County Line*  
 Jurisdiction:  
 Analysis Year: *2032 No Build*

Oper.(LOS)

Des.(N)

Planning Data

## Flow Inputs

Volume, V	6230	veh/h	Peak-Hour Factor, PHF	0.95
AAADT		veh/day	% Trucks and Buses, $P_T$	9
Peak-Hr Prop. of AAADT, K			% RVs, $P_R$	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AAADT x K x D		veh/h	Grade %	Length mi
Driver type adjustment	1.00		Up/Down %	

## Calculate Flow Adjustments

$f_p$	1.00	$E_R$	1.2
$E_T$	1.5	$f_{HV} = 1/(1+P_T(E_T-1) + P_R(E_R-1))$	0.957

## Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	2.00	l/mi
Number of Lanes, N	3	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

## Calc Speed Adj and FFS

$f_{LW}$	0.0	mi/h
$f_{LC}$	0.0	mi/h
$f_{ID}$	7.5	mi/h
$f_N$	3.0	mi/h
FFS	59.5	mi/h

## LOS and Performance Measures

Operational (LOS)

$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$	2284	pc/h/ln
S	51.4	mi/h
$D = v_p / S$	44.5	pc/mi/ln
LOS	E	

## Design (N)

Design (N)

Design LOS	
$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$	pc/h
S	mi/h
$D = v_p / S$	pc/mi/ln
Required Number of Lanes, N	

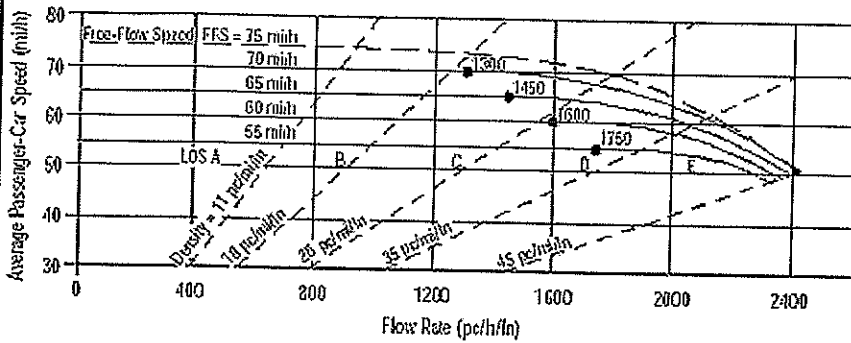
## Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
$v_p$ - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

## Factor Location

$E_R$ - Exhibits 23-8, 23-10	$f_{LW}$ - Exhibit 23-4
$E_T$ - Exhibits 23-8, 23-10, 23-11	$f_{LC}$ - Exhibit 23-5
$f_p$ - Page 23-12	$f_N$ - Exhibit 23-6
LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3	$f_{ID}$ - Exhibit 23-7

# BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, $v_p$	LOS, S, D
Design (N)	FFS, LOS, $v_p$	N, S, D
Design ( $v_p$ )	FFS, LOS, N	$v_p$ , S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning ( $v_p$ )	FFS, LOS, N	$v_p$ , S, D

## General Information

Analyst: *KNM*  
 Agency or Company: *HNTB*  
 Date Performed: *3/25/2008*  
 Analysis Time Period: *Peak*

## Site Information

Highway/Direction of Travel: *SR 417/Westbound*  
 From/To: *North of Rinehart Rd/Rinehart*  
 Jurisdiction:  
 Analysis Year: *2032 No Build*

Project Description: *Wekiva Parkway PD&E*

Oper. (LOS)       Des. (N)       Planning Data

## Flow Inputs

Volume, V	<i>4530</i>	veh/h	Peak-Hour Factor, PHF	<i>0.95</i>
AADT		veh/day	% Trucks and Buses, $P_T$	<i>10</i>
Peak-Hr Prop. of AADT, K			% RVs, $P_R$	<i>0</i>
Peak-Hr Direction Prop, D			General Terrain:	<i>Level</i>
DDHV = AADT x K x D		veh/h	Grade %    Length	<i>mi</i>
Driver type adjustment	<i>1.00</i>		Up/Down %	

## Calculate Flow Adjustments

$f_p$	<i>1.00</i>	$E_R$	<i>1.2</i>
$E_T$	<i>1.5</i>	$f_{HV} = 1 / [1 + P_T(E_T - 1) + P_R(E_R - 1)]$	<i>0.952</i>

## Speed Inputs

Lane Width	<i>12.0</i>	ft
Rt-Shoulder Lat. Clearance	<i>6.0</i>	ft
Interchange Density	<i>0.40</i>	l/mi
Number of Lanes, N	<i>3</i>	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	<i>70.0</i>	mi/h

## Calc Speed Adj and FFS

$f_{LW}$	<i>0.0</i>	mi/h
$f_{LC}$	<i>0.0</i>	mi/h
$f_{ID}$	<i>0.0</i>	mi/h
$f_N$	<i>3.0</i>	mi/h
FFS	<i>67.0</i>	mi/h

## LOS and Performance Measures

Operational (LOS)	
$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$	<i>1669</i> pc/h/ln
S	<i>66.5</i> mi/h
$D = v_p / S$	<i>25.1</i> pc/mi/ln
LOS	<i>C</i>

## Design (N)

Design (N)	
Design LOS	
$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$	pc/h
S	mi/h
$D = v_p / S$	pc/mi/ln
Required Number of Lanes, N	

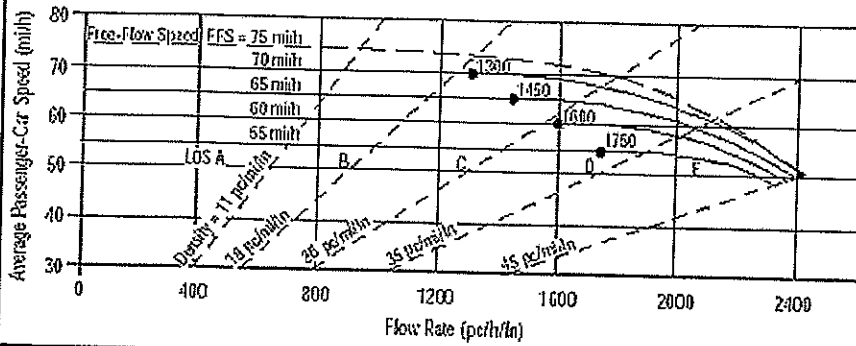
## Glossary

N - Number of lanes      S - Speed  
 V - Hourly volume      D - Density  
 $v_p$  - Flow rate      FFS - Free-flow speed  
 LOS - Level of service      BFFS - Base free-flow speed  
 DDHV - Directional design hour volume

## Factor Location

$E_R$  - Exhibits 23-8, 23-10       $f_{LW}$  - Exhibit 23-4  
 $E_T$  - Exhibits 23-8, 23-10, 23-11       $f_{LC}$  - Exhibit 23-5  
 $f_p$  - Page 23-12       $f_N$  - Exhibit 23-6  
 LOS, S, FFS,  $v_p$  - Exhibits 23-2, 23-3       $f_{ID}$  - Exhibit 23-7

# BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, $v_p$	LOS, S, D
Design (N)	FFS, LOS, $v_p$	N, S, D
Design ( $v_p$ )	FFS, LOS, N	$v_p$ , S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning ( $v_p$ )	FFS, LOS, N	$v_p$ , S, D

General Information		Site Information	
Analyst	KNM	Highway/Direction of Travel	SR 417/Westbound
Agency or Company	HNTB	From/To	Rinehart Rd to I-4
Date Performed	3/25/2008	Jurisdiction	
Analysis Time Period	Peak	Analysis Year	2032 No Build
Project Description: Wekiva Parkway PD&E			

<input checked="" type="checkbox"/> Oper. (LOS)	<input type="checkbox"/> Des. (N)	<input type="checkbox"/> Planning Data
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Flow Inputs		Calculate Flow Adjustments	
Volume, V	3360 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	% Trucks and Buses, $P_T$	10
Peak-Hr Prop. of AADT, K		% RVs, $P_R$	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D		Grade %	Length mi
Driver type adjustment	1.00	Up/Down %	

$f_p$	1.00	$E_R$	1.2
$E_T$	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.952

Speed Inputs		Calc Speed Adj and FFS	
Lane Width	12.0 ft	$f_{LW}$	0.0 mi/h
Rt-Shoulder Lat. Clearance	6.0 ft	$f_{LC}$	0.0 mi/h
Interchange Density	2.00 1/mi	$f_{ID}$	7.5 mi/h
Number of Lanes, N	3	$f_N$	3.0 mi/h
FFS (measured)	mi/h	FFS	59.5 mi/h
Base free-flow Speed, BFFS	70.0 mi/h		

LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$	1238 pc/h/ln	Design LOS	
S	59.5 mi/h	$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$	pc/h
$D = v_p / S$	20.8 pc/mi/ln	S	mi/h
LOS	C	$D = v_p / S$	pc/mi/ln
		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	$E_R$ - Exhibits 23-8, 23-10	$f_{LW}$ - Exhibit 23-4
V - Hourly volume	D - Density	$E_T$ - Exhibits 23-8, 23-10, 23-11	$f_{LC}$ - Exhibit 23-5
$v_p$ - Flow rate	FFS - Free-flow speed	$f_p$ - Page 23-12	$f_N$ - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3	$f_{ID}$ - Exhibit 23-7
DDHV - Directional design hour volume			

SR 417WB on Ramp from Rinehart.txt  
HCS+: Ramps and Ramp Junctions Release 5.4

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
E-mail: \_\_\_\_\_

Merge Analysis

---

Analyst: CTR  
Agency/Co.: HNTB  
Date performed: 08/05/2010  
Analysis time period: No Build  
Freeway/Dir of Travel: SR 417 WB  
Junction: On Ramp from Rinehart Rd  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

---

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2980	vph

On Ramp Data

---

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	380	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

---

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	1630	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	off	
Distance to adjacent Ramp	1700	ft

Conversion to pc/h Under Base Conditions

---

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2980	380	1630	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	810	103	443	v
Trucks and buses	10	10	10	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	
Driver population factor, fP	1.00	1.00	1.00	



Flow rate, vp SR 417WB on Ramp from Rinehart.txt 3401 434 1860 pcph

Estimation of V12 Merge Areas

$$L = 470.89 \text{ (Equation 25-2 or 25-3)}$$
$$P = 0.591 \text{ Using Equation 1}$$
$$v_{12} = v_F (P_{FM}) = 2012 \text{ pc/h}$$

Capacity Checks

	Actual	Maximum	LOS F?
$v_{FO}$	3835	6750	No
$v_{3 \text{ or } av34}$	1389 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34} > 2700$ pc/h?		No	
Is $v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2012$		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
$v_{R12}$	2012	4600	No

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 21.2$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,  $M = 0.331$   
Space mean speed in ramp influence area,  $S_R = 50.7$  mph  
Space mean speed in outer lanes,  $S_0 = 51.8$  mph  
Space mean speed for all vehicles,  $S = 51.1$  mph

SR 417EB off to Rinehart Rd.txt  
HCS+: Ramps and Ramp Junctions Release 5.4

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
E-mail: \_\_\_\_\_

-----Diverge Analysis-----

Analyst: CTR  
Agency/Co.: HNTB  
Date performed: 08/05/2010  
Analysis time period: No Build  
Freeway/Dir of Travel: SR 417 EB  
Junction: Off Ramp to Rinehart Rd  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: wekiva Parkway Project Development & Environment Study

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3360	vph

-----Off Ramp Data-----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	380	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	1400	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	2400	ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3360	380	1400	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	913	103	380	v
Trucks and buses	10	10	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00	0.00	0.00	%
Length	0.00	0.00	0.00	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.957	
Driver population factor, fP	1.00	1.00	1.00	

SR 417EB off to Rinehart Rd.txt  
 Flow rate, vp                      3835                      434                      1590                      pcph

Estimation of V12 Diverge Areas

L = 0.00 (Equation 25-8 or 25-9)  
 EQ  
 P = 0.644 Using Equation 5  
 FD  
 $V_{12} = V_R + (V_F - V_R) P = 2625$  pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{Fi} = V_F$	3835	6750	No
$V_{FO} = V_F - V_R$	3401	6750	No
$V_R$	434	2000	No
$V_{3 \text{ or } av34}$	1210 pc/h	(Equation 25-15 or 25-16)	
Is $V_{3 \text{ or } av34} > 2700$ pc/h?		No	
Is $V_{3 \text{ or } av34} > 1.5 V_{12} / 2$		No	
If yes, $V_{12A} = 2625$		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$V_{12}$	2625	4400	No

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 V_{12} - 0.009 L_D = 22.3$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	$D = 0.467$	
Space mean speed in ramp influence area,	$S_S = 48.9$	mph
Space mean speed in outer lanes,	$S_R = 59.5$	mph
Space mean speed for all vehicles,	$S_0 = 51.8$	mph

SR 417EB on Ramp from Rinehart.txt  
HCS+: Ramps and Ramp Junctions Release 5.4

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
E-mail: \_\_\_\_\_

Merge Analysis

Analyst: CTR  
Agency/Co.: HNTB  
Date performed: 08/05/2010  
Analysis time period: No Build  
Freeway/Dir of Travel: SR 417 EB  
Junction: On Ramp from Rinehart Rd  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2980	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1400	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	380	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	off	
Distance to adjacent Ramp	2400	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2980	1400	380	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	810	380	103	v
Trucks and buses	10	10	10	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	
Driver population factor, fP	1.00	1.00	1.00	



SR 417WB off to Rinehart Rd.txt  
HCS+: Ramps and Ramp Junctions Release 5.4

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
E-mail: \_\_\_\_\_

\_\_\_\_\_Diverge Analysis\_\_\_\_\_

Analyst: CTR  
Agency/Co.: HNTB  
Date performed: 08/05/2010  
Analysis time period: No Build  
Freeway/Dir of Travel: SR 417 WB  
Junction: Off Ramp to Rinehart Rd  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: Wekiva Parkway Project Development & Environment Study

\_\_\_\_\_Freeway Data\_\_\_\_\_

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	4530	vph

\_\_\_\_\_Off Ramp Data\_\_\_\_\_

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1630	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

\_\_\_\_\_Adjacent Ramp Data (if one exists)\_\_\_\_\_

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	380	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1700	ft

\_\_\_\_\_Conversion to pc/h Under Base Conditions\_\_\_\_\_

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4530	1630	380	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1231	443	103	v
Trucks and buses	10	10	10	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	
Driver population factor, fP	1.00	1.00	1.00	

Flow rate, vp SR 417WB off to Rinehart Rd.txt 434 pcph  
5170 1860

Estimation of V12 Diverge Areas

$L = 0.00$  (Equation 25-8 or 25-9)  
 $P = 0.545$  Using Equation 5  
 $V_{12} = V_R + (V_F - V_R) P = 3665$  pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{12} = V_{12}$	5170	6750	No
$V_{FO} = V_F - V_R$	3310	6750	No
$V_R$	1860	2000	No
$V_{3 or av34}$	1505 pc/h	(Equation 25-15 or 25-16)	
Is $V_{3 or av34} > 2700$ pc/h?		No	
Is $V_{3 or av34} > 1.5 V_{12} / 2$		No	
If yes, $V_{12A} = 3665$		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$V_{12}$	3665	4400	No

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 V_{12} - 0.009 L_D = 31.3$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	$D = 0.595$	
Space mean speed in ramp influence area,	$S = 47.3$ mph	
Space mean speed in outer lanes,	$S = 58.4$ mph	
Space mean speed for all vehicles,	$S = 50.0$ mph	

Phone: Fax:  
 E-mail:

Diverge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 08/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: Frontage Rd (East of I-4) EB  
 Junction: Off Ramp to SR 417 EB  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1800 ✓	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	510 ✓	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		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)	1800	510		vph
Peak-hour factor, PHF	0.92 ✓	0.92		
Peak 15-min volume, v15	489	139		v
Trucks and buses	9 ✓	9		%
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	0.957	0.957	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2045	579	pcph

Estimation of V12 Diverge Areas

L = (Equation 25-8 or 25-9)  
 EQ  
 P = 1.000 Using Equation 0  
 FD  
 $v_{12R} = v_F + (v_R - v_F) P_{FD} = 2045 \text{ pc/h}$

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2045	4500	No
$v_{FO} = v_F - v_R$	1466	4500	No
$v_R$	579	2000	No
$v_{3 \text{ or } av34}$	0 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34} > 2700 \text{ pc/h?}$		No	
Is $v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2045$		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	2045	4400	No

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 17.3 \text{ pc/mi/ln}$   
 Level of service for ramp-freeway junction areas of influence B ✓

Speed Estimation

Intermediate speed variable,	D = 0.480	
Space mean speed in ramp influence area,	S = 48.8	mph
Space mean speed in outer lanes,	S = N/A	mph
Space mean speed for all vehicles,	S = 48.8	mph

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

Merge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 8/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: Frontage Rd (West of I-4) WB  
 Junction: On Ramp from SR 46 EB  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	55.0	mph
Volume on freeway	850 ✓	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	860 ✓	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes ✓	
Volume on adjacent Ramp	2270 ✓	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	4005	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	850 ✓	860	2270	vph
Peak-hour factor, PHF	0.92 ✓	0.92	0.92	
Peak 15-min volume, v15	231 ✓	234	617	v
Trucks and buses	9 ✓	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	965	977	2578	pcph

Estimation of V12 Merge Areas

---

L = (Equation 25-2 or 25-3)  
EQ  
P = 1.000 Using Equation 0  
FM  
 $v_{12} = v_F (P_{FM}) = 965 \text{ pc/h}$

Capacity Checks

---

v	Actual	Maximum	LOS F?
FO	1942	4500	No
v	v	0 pc/h	(Equation 25-4 or 25-5)
3 or av34			
Is v	v	> 2700 pc/h?	No
3 or av34			
Is v	v	> 1.5 v / 2	No
3 or av34	12		
If yes, v	= 965	(Equation 25-8)	
12A			

Flow Entering Merge Influence Area

---

v	Actual	Max Desirable	Violation?
R12	965	4600	No

Level of Service Determination (if not F)

---

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 17.0 \text{ pc/mi/ln}$   
Level of service for ramp-freeway junction areas of influence B ✓

Speed Estimation

---

Intermediate speed variable,	M = 0.313	
Space mean speed in ramp influence area,	S = 50.9	mph
Space mean speed in outer lanes,	S = N/A	mph
Space mean speed for all vehicles,	S = 50.9	mph

---

I-4 EB On Ramp from SR 46.txt  
HCS+: Ramps and Ramp Junctions Release 5.4

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
E-mail: \_\_\_\_\_

\_\_\_\_\_Merge Analysis\_\_\_\_\_

Analyst: CTR  
Agency/Co.: HNTB  
Date performed: 08/05/2010  
Analysis time period: No Build  
Freeway/Dir of Travel: I-4 EB  
Junction: On Ramp from SR 46  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: Wekiva Parkway Project Development & Environment Study

\_\_\_\_\_Freeway Data\_\_\_\_\_

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5340	vph

\_\_\_\_\_On Ramp Data\_\_\_\_\_

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1490	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

\_\_\_\_\_Adjacent Ramp Data (if one exists)\_\_\_\_\_

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	1450	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	5148	ft

\_\_\_\_\_Conversion to pc/h Under Base Conditions\_\_\_\_\_

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5340	1490	1450	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1451	405	394	v
Trucks and buses	9	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	

Flow rate,  $v_p$  I-4 EB On Ramp from SR 46.txt  
 6066 1692 1647 pcph

Estimation of V12 Merge Areas

$$L = \frac{EQ}{P} \quad (\text{Equation 25-2 or 25-3})$$

$$P = 0.591 \quad \text{Using Equation 1}$$

$$v_{12} = v_F(P) = 3588 \quad \text{pc/h}$$

Capacity Checks

	Actual	Maximum	LOS F?
$v_{FO}$	7758	6750	Yes
$v_{3 \text{ or } av34}$	2478 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34} > 2700 \text{ pc/h?}$		No	
Is $v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3588$		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
$v_{R12}$	3588	4600	Yes

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 42.7 \text{ pc/mi/ln}$   
 Level of service for ramp-freeway junction areas of influence F

Speed Estimation

Intermediate speed variable,  $M = 1.052$   
 Space mean speed in ramp influence area,  $S_S = 41.3 \text{ mph}$   
 Space mean speed in outer lanes,  $S_R = 47.4 \text{ mph}$   
 Space mean speed for all vehicles,  $S_O = 43.1 \text{ mph}$

HCS+: Ramps and Ramp Junctions Release 5.21

Phone: Fax:  
E-mail:

Diverge Analysis

Analyst: Cristina Torres-Reyes  
Agency/Co.: HNTB  
Date performed: 3/09/2007  
Analysis time period: No Build  
Freeway/Dir of Travel: I-4 NB  
Junction: Off Ramp to SR 46  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	6320	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	1490	vph
Length of first accel/decel lane	1000	ft
Length of second accel/decel lane	1000	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	2270	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	Off	
Distance to adjacent ramp	6098	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6320	1490	2270	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1756	414	631	v
Trucks and buses	0	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	1.000	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	7022	1656	2522	pcph

Estimation of V12 Diverge Areas

$$L = \text{(Equation 25-8 or 25-9)}$$

$$P = 0.450 \text{ Using Equation 0}$$

$$v_{12} = v_R + (v_F - v_R) P = 4071 \text{ pc/h}$$

Capacity Checks

	Actual	Maximum	LOS F?
$v_F = v_F$	7022	6750	Yes
$v_{FO} = v_F - v_R$	5366	6750	No
$v_R$	1656	3800	No
$v_{3 \text{ or } av34}$	2951 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34} > 2700 \text{ pc/h?}$		Yes	
Is $v_{3 \text{ or } av34} > 1.5 v_R / 2$		No	

3 or av34 12  
 If yes,  $v_{12A} = 4322$

(Equation 25-18)

	Flow Entering Diverge Influence Area		Violation?
$v_{12A}$	Actual	Max Desirable	No
	4322	4600	No

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 14.4$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence F

Speed Estimation

Intermediate speed variable,	$D = 0.577$	
Space mean speed in ramp influence area,	$S_R = 47.5$	mph
Space mean speed in outer lanes,	$S_0 = 53.7$	mph
Space mean speed for all vehicles,	$S = 49.7$	mph

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

Merge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 8/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: SR 417 EB  
 Junction: On Ramp from I-4 EB  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2850 ✓	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	510 ✓	vph
Length of first accel/decel lane	1500 ✓	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes ✓	
Volume on adjacent Ramp	1760 ✓	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	2584	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2850 ↓	510	1760	vph
Peak-hour factor, PHF	0.92 ↓	0.92	0.92	
Peak 15-min volume, v15	774 ↓	139	478	v
Trucks and buses	10 ↓	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	



Heavy vehicle adjustment, fHV	0.952	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3253	579	1999	pcph

Estimation of V12 Merge Areas

---

L = (Equation 25-2 or 25-3)  
EQ  
P = 1.000 Using Equation 0  
FM  
 $v_{12} = v_F (P_{FM}) = 3253 \text{ pc/h}$

Capacity Checks

---

	Actual	Maximum	LOS F?
v <sub>FO</sub>	3832	4500	No
v <sub>3 or av34</sub>	0 pc/h	(Equation 25-4 or 25-5)	
Is v <sub>3 or av34</sub> > 2700 pc/h?		No	
Is v <sub>3 or av34</sub> > 1.5 v <sub>12</sub> / 2		No	
If yes, v <sub>12A</sub> = 3253		(Equation 25-8)	

Flow Entering Merge Influence Area

---

	Actual	Max Desirable	Violation?
v <sub>R12</sub>	3253	4600	No

Level of Service Determination (if not F)

---

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 25.7 \text{ pc/mi/ln}$   
Level of service for ramp-freeway junction areas of influence C ✓

Speed Estimation

---

Intermediate speed variable,	M = 0.396	
Space mean speed in ramp influence area,	S = 49.9	mph
Space mean speed in outer lanes,	S = N/A	mph
Space mean speed for all vehicles,	S = 49.9	mph

---

Phone:  
E-mail:

Fax:

---

Merge Analysis

---

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 08/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: I-4 EB  
 Junction: On Ramp from SR 417 WB  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

---

Freeway Data

---

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3890	vph

---

On Ramp Data

---

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1450	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

---

Adjacent Ramp Data (if one exists)

---

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	1490	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	5148	ft

---

Conversion to pc/h Under Base Conditions

---

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3890	1450	1490	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1057	394	405	v
Trucks and buses	9	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	

Flow rate, vp                                      4419                                      1647                                      1692                                      pcph

Estimation of V12 Merge Areas

$$L = \text{EQ} \quad (\text{Equation 25-2 or 25-3})$$

$$P = 0.591 \quad \text{Using Equation 1}$$

$$v_{12} = v_F (P_{FM}) = 2614 \quad \text{pc/h}$$

Capacity Checks

		Actual	Maximum	LOS F?
	$v_{FO}$	6066	6750	No
	$v_{3 \text{ or } av34}$	1805 pc/h	(Equation 25-4 or 25-5)	
Is	$v_{3 \text{ or } av34} > 2700 \text{ pc/h?}$		No	
Is	$v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes,	$v_{12A} = 2614$		(Equation 25-8)	

Flow Entering Merge Influence Area

		Actual	Max Desirable	Violation?
	$v_{R12}$	2614	4600	No

Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 34.8 \quad \text{pc/mi/ln}$$

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

Speed Estimation

Intermediate speed variable,	$M = 0.562$	
Space mean speed in ramp influence area,	$S^S = 47.7$	mph
Space mean speed in outer lanes,	$S^R = 50.3$	mph
Space mean speed for all vehicles,	$S^O = 48.4$	mph

Phone:  
E-mail:

Fax:

---

Merge Analysis

---

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 08/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: I-4 EB  
 Junction: On Ramp from SR 417 WB  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

---

Freeway Data

---

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	55.0	mph	
Volume on freeway	3890	vph	

---

On Ramp Data

---

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	1450	vph	
Length of first accel/decel lane	500	ft	
Length of second accel/decel lane		ft	

---

Adjacent Ramp Data (if one exists)

---

Does adjacent ramp exist?	Yes		
Volume on adjacent Ramp	810	vph	
Position of adjacent Ramp	Upstream		
Type of adjacent Ramp	On		
Distance to adjacent Ramp	4826	ft	

---

Conversion to pc/h Under Base Conditions

---

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3890	1450	810	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1057	394	220	v
Trucks and buses	9	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.957	0.957	0.957	
Driver population factor, FP	1.00	1.00	1.00	

I-4 EB On Ramp from SR 417 NB\_Upstream.txt  
 Flow rate, vp                                      4419                                      1647                                      920                                      pcph

Estimation of V12 Merge Areas

$$L = \frac{EQ}{P} \quad (\text{Equation 25-2 or 25-3})$$

$$P = 0.591 \quad \text{Using Equation 1}$$

$$v_{12} = v_F \left( \frac{P}{P_{FM}} \right) = 2614 \quad \text{pc/h}$$

Capacity Checks

		Actual	Maximum	LOS F?
	$v_{FO}$	6066	6750	No
	$v_3$ or $v_{av34}$	1805 pc/h	(Equation 25-4 or 25-5)	
Is	$v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is	$v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes,	$v_{12A} = 2614$		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
$v_{R12}$	2614	4600	No

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 34.8 \quad \text{pc/mi/ln}$   
 Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,                                       $M = 0.562$   
 Space mean speed in ramp influence area,                                       $S_S = 47.7 \quad \text{mph}$   
 Space mean speed in outer lanes,                                       $S_R = 50.3 \quad \text{mph}$   
 Space mean speed for all vehicles,                                       $S_0 = 48.4 \quad \text{mph}$

SR 417 WB Off Ramp to I-4 WB.txt  
HCS+: Ramps and Ramp Junctions Release 5.4

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
E-mail: \_\_\_\_\_

Diverge Analysis

Analyst: CTR  
Agency/Co.: HNTB  
Date performed: 8/05/2010  
Analysis time period: No Build  
Freeway/Dir of Travel: SR 417 WB  
Junction: Off Ramp to I-4 WB  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1910	vph

Off Ramp Data

Side of freeway	Left	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	510	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	1450	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	Off	
Distance to adjacent ramp	3070	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1910	510	1450	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	519	139	394	v
Trucks and buses	10	10	10	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	
Driver population factor, fP	1.00	1.00	1.00	

Flow rate, vp SR 417 WB Off Ramp to I-4 WB.txt 1655 pcph  
2180 582

---

Estimation of V12 Diverge Areas

---

$$L = \text{EQ} \quad (\text{Equation 25-8 or 25-9})$$

$$P = 1.000 \quad \text{Using Equation 0}$$

$$v_{12} = v_R + (v_F - v_R) P = 2180 \quad \text{pc/h}$$

Capacity Checks

---

	Actual	Maximum	LOS F?
$v_{12} = v_F$	2180	4500	No
$v_{FO} = v_F - v_R$	1598	4500	No
$v_R$	582	2000	No
$v_{3 \text{ or } av34}$	0 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34} > 2700$ pc/h?		No	
Is $v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2180$		(Equation 25-18)	

---

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	2180	4400	No

---

Level of Service Determination (if not F)

---

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 9.5$  pc/mi/l\_n  
Level of service for ramp-freeway junction areas of influence A

---

Speed Estimation

---

Intermediate speed variable,	$D = 0.480$	
Space mean speed in ramp influence area,	$S_R = 48.8$	mph
Space mean speed in outer lanes,	$S_0 = \text{N/A}$	mph
Space mean speed for all vehicles,	$S = 48.8$	mph

---

Phone: Fax:  
E-mail:

Merge Analysis

Analyst: Cristina Torres-Reyes  
Agency/Co.: HNTB  
Date performed: 10/22/2006  
Analysis time period: No Build  
Freeway/Dir of Travel: I-4 NB  
Junction: On Ramp from SR 417 WB  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3890	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1450	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	810	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	4826	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, v (vph)	3890	1450	810	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1081	403	225	v
Trucks and buses	0	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	1.000	1.000	1.000	
Driver population factor, FP	1.00	1.00	1.00	
Flow rate, vp	4322	1611	900	pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)  
EQ  
P = 0.176 Using Equation 4  
FM  
 $v_{12} = v_{F} (P_{FM}) = 759 \text{ pc/h}$

Capacity Checks

v	Actual	Maximum	LOS F?
FO	5933	9000	No
v	1781 pc/h	(Equation 25-4 or 25-5)	
3 or av34			
Is v > 2700 pc/h?		No	
3 or av34			
Is v > 1.5 v <sub>12</sub> / 2		Yes	
3 or av34			
If yes, v <sub>12A</sub> = 1728		(Equation 25-8)	



Flow Entering Merge Influence Area			
	Actual	Max Desirable	Violation?
v 12A	1728	4400	No
Level of Service Determination (if not F)			

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 27.6$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation	
Intermediate speed variable,	M = 0.396
Space mean speed in ramp influence area,	$S^S = 49.9$ mph
Space mean speed in outer lanes,	$S^R = 52.1$ mph
Space mean speed for all vehicles,	$S^O = 50.8$ mph

Phone: Fax:  
E-mail:

Diverge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 8/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: SR 417 WB  
 Junction: Off Ramp to I-4 EB  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	✓
Free-flow speed on freeway	55.0	mph
Volume on freeway	3360	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	1450	vph ✓
Length of first accel/decel lane	600	ft
Length of second accel/decel lane	600	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	510	vph ✓
Position of adjacent ramp	Downstream	
Type of adjacent ramp	Off	
Distance to adjacent ramp	3070	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3360	1450	510	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	913	394	139	v
Trucks and buses	10	10	10	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.952	0.952	0.952	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3835	1655	582	pcph

Estimation of V12 Diverge Areas

---

$$L = \text{EQ} \quad (\text{Equation 25-8 or 25-9})$$

$$P = 0.450 \quad \text{Using Equation 0}$$

$$v_{12R} = v_F + (v_F - v_R) P_{FD} = 2636 \text{ pc/h}$$

Capacity Checks

---

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3835	6750	No
$v_{FO} = v_F - v_R$	2180	6750	No
$v_R$	1655	3800	No
$v_{3 \text{ or } 34}$	1199 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } 34} > 2700 \text{ pc/h?}$		No	
Is $v_{3 \text{ or } 34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2636$		(Equation 25-18)	

Flow Entering Diverge Influence Area

---

	Actual	Max Desirable	Violation?
$v_{12}$	2636	4400	No

Level of Service Determination (if not F)

---

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 10.7 \text{ pc/mi/ln}$

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

Speed Estimation

---

Intermediate speed variable,	$D = 0.577$	
Space mean speed in ramp influence area,	$S = 47.5$	mph
Space mean speed in outer lanes,	$S = 59.6$	mph
Space mean speed for all vehicles,	$S = 50.7$	mph

---

SR 417 EB On Ramp from I-4 WB.txt  
HCS+: Ramps and Ramp Junctions Release 5.4

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
E-mail: \_\_\_\_\_

Merge Analysis

---

Analyst: CTR  
Agency/Co.: HNTB  
Date performed: 08/05/2010  
Analysis time period: No Build  
Freeway/Dir of Travel: SR 417 EB  
Junction: On Ramp from I-4 WB  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

---

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1090	vph

On Ramp Data

---

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1760	vph
Length of first accel/decel lane	750	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

---

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	510	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	2584	ft

Conversion to pc/h Under Base Conditions

---

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1090	1760	510	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	296	478	139	v
Trucks and buses	10	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	

Flow rate, vp SR 417 EB On Ramp from I-4 WB.txt  
1244 1999 579 pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)  
 EQ  
 P = 1.000 Using Equation 0  
 FM  
 $v_{12} = v_F (P_{FM}) = 1244 \text{ pc/h}$

Capacity Checks

	Actual	Maximum	LOS F?
v <sub>FO</sub>	3243	4500	No
v <sub>3 or av34</sub>	0 pc/h	(Equation 25-4 or 25-5)	
Is v <sub>3 or av34</sub> > 2700 pc/h?		No	
Is v <sub>3 or av34</sub> > 1.5 v <sub>12</sub> /2		No	
If yes, v <sub>12A</sub> = 1244		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v <sub>R12</sub>	1244	4600	No

Level of Service Determination (if not F)

Density,  $D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 25.1 \text{ pc/mi/ln}$   
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M = 0.368
Space mean speed in ramp influence area,	S <sub>S</sub> = 50.2 mph
Space mean speed in outer lanes,	S <sub>R</sub> = N/A mph
Space mean speed for all vehicles,	S <sub>O</sub> = 50.2 mph

Phone: Fax:  
 E-mail:

Diverge Analysis

---

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 8/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: Frontage Rd (West of I-4) WB  
 Junction: Off Ramp to SR 417 EB  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

---

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3980 ✓	vph

Off Ramp Data

---

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1760 ✓✓	vph
Length of first accel/decel lane	500 ✓	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

---

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	930 ✓	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	Off	
Distance to adjacent ramp	4594	ft

Conversion to pc/h Under Base Conditions

---

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3980 ✓	1760	930	vph
Peak-hour factor, PHF	0.92 ✓	0.92	0.92	
Peak 15-min volume, v15	1082 ✓	478	253	v
Trucks and buses	9	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4521	1999	1056	pcph

Estimation of V12 Diverge Areas

---

$$L = \text{EQ} \quad (\text{Equation 25-8 or 25-9})$$

$$P = 1.000 \quad \text{Using Equation 0}$$

$$v_{12R} = v_{FR} + (v_{FR} - v_{FD}) P = 4521 \quad \text{pc/h}$$

Capacity Checks

---

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4521	4500	Yes
$v_{FO} = v_F - v_R$	2522	4500	No
$v_R$	1999	2000	No
$v_{3 \text{ or } av34}$	0 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34} > 2700$ pc/h?		No	
Is $v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4521$		(Equation 25-18)	

Flow Entering Diverge Influence Area

---

	Actual	Max Desirable	Violation?
$v_{12}$	4521	4400	Yes

Level of Service Determination (if not F)

---

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 38.6$  pc/mi/ln

Level of service for ramp-freeway junction areas of influence F ✓

Speed Estimation

---

Intermediate speed variable,	$D = 0.608$	
Space mean speed in ramp influence area,	$S = 47.1$	mph
Space mean speed in outer lanes,	$S = N/A$	mph
Space mean speed for all vehicles,	$S = 47.1$	mph

---

Phone: Fax:  
E-mail:

Diverge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 8/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: Frontage Rd (West of I-4) WB  
 Junction: Off Ramp to SR 417 EB  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3980 ✓	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0 ✓	mph
Volume on ramp	1760 ✓	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes ✓	
Volume on adjacent ramp	2270 ✓	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1954	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3980 ✓	1760	2270	vph
Peak-hour factor, PHF	0.92 ✓	0.92	0.92	
Peak 15-min volume, v15	1082 ✓	478	617	v
Trucks and buses	9 ✓	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	



Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4521	1999	2578	pcph

Estimation of V12 Diverge Areas

---

$$L = \text{(Equation 25-8 or 25-9)}$$

$$EQ$$

$$P = 1.000 \text{ Using Equation } 0$$

$$FD$$

$$v_{12R} = v_F + (v_F - v_R) P_{FD} = 4521 \text{ pc/h}$$

Capacity Checks

---

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4521	4500	Yes
$v_{FO} = v_F - v_R$	2522	4500	No
$v_R$	1999	2000	No
$v_{3 \text{ or } av34}$	0 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34} > 2700 \text{ pc/h?}$		No	
Is $v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4521$		(Equation 25-18)	

Flow Entering Diverge Influence Area

---

	Actual	Max Desirable	Violation?
$v_{12}$	4521	4400	Yes

Level of Service Determination (if not F)

---

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 38.6 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence F ✓

Speed Estimation

---

Intermediate speed variable,	$D = 0.608$	
Space mean speed in ramp influence area,	$S_R = 47.1$	mph
Space mean speed in outer lanes,	$S_0 = \text{N/A}$	mph
Space mean speed for all vehicles,	$S = 47.1$	mph

---

Phone: Fax:  
 E-mail:

Diverge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 08/06/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: I-4 EB  
 Junction: Off Ramp to CR 46A  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	55.0	mph
Volume on freeway	6720	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	1840	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?	Yes	
Volume on adjacent ramp	1800	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	Off	
Distance to adjacent ramp	1906	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6720	1840	1800	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1826	500	489	v
Trucks and buses	9	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	7633	2090	2045	pcph

Estimation of V12 Diverge Areas

---

$$L = \text{(Equation 25-8 or 25-9)}$$

$$EQ$$

$$P = 0.260 \text{ Using Equation } 0$$

$$FD$$

$$v_{12R} = v_F + (v_F - v_R) P = 3531 \text{ pc/h}$$

Capacity Checks

---

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	7633	9000	No
$v_{FO} = v_F - v_R$	5543	9000	No
$v_R$	2090	3800	No
$v_{3 \text{ or } av34}$	2051 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34} > 2700 \text{ pc/h?}$		No	
Is $v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3531$		(Equation 25-18)	

Flow Entering Diverge Influence Area

---

	Actual	Max Desirable	Violation?
$v_{12}$	3531	4400	No

Level of Service Determination (if not F)

---

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 21.1 \text{ pc/mi/ln}$

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

Speed Estimation

---

Intermediate speed variable,	$D = 0.616$	
Space mean speed in ramp influence area,	$S = 47.0$	mph
Space mean speed in outer lanes,	$S = 56.2$	mph
Space mean speed for all vehicles,	$S = 51.5$	mph

---

Phone: Fax:  
E-mail:

Merge Analysis

Analyst: Cristina Torres-Reyes  
Agency/Co.: HNTB  
Date performed: 3/09/2007  
Analysis time period: No Build  
Freeway/Dir of Travel: Frontage Rd (West of I-4) SB  
Junction: On Ramp from SR 46 EB  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1290	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1840	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	930	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1320	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, v (vph)	1290	1840	930	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	358	511	258	v
Trucks and buses	0	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	1.000	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	1433	2044	1033	pcph

Estimation of v12 Merge Areas

L = (Equation 25-2 or 25-3)  
EQ  
P = 1.000 Using Equation 0  
FM  
 $v_{12} = v_{FO} (P_{FM}) = 1433 \text{ pc/h}$

Capacity Checks

	Actual	Maximum	LOS F?
v <sub>FO</sub>	3477	4500	No
v <sub>3</sub> or v <sub>av34</sub>	0	pc/h	(Equation 25-4 or 25-5)
Is v <sub>3</sub> or v <sub>av34</sub> > 2700 pc/h?		No	
Is v <sub>3</sub> or v <sub>av34</sub> > 1.5 v <sub>12</sub> / 2		No	
If yes, v <sub>12A</sub> =		(Equation 25-8)	

	Flow Entering Merge Influence Area		
	Actual	Max Desirable	Violation?
$v_{12}$	1433	4400	No

Level of service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 28.5 \text{ pc/mi/ln}$$

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

Speed Estimation

Intermediate speed variable,	$M_S = 0.412$	
Space mean speed in ramp influence area,	$S_R = 49.6$	mph
Space mean speed in outer lanes,	$S_0 = \text{N/A}$	mph
Space mean speed for all vehicles,	$S = 49.6$	mph

Phone: Fax:  
E-mail:

Merge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 08/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: I-4 EB  
 Junction: On Ramp from CR 46A  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3 ✓	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3080 ✓	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	810 ✓	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes ✓	
Volume on adjacent Ramp	1450 ✓	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	4826	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3080 ✓	810	1450	vph
Peak-hour factor, PHF	0.92 ✓	0.92	0.92	
Peak 15-min volume, v15	837	220	394	v
Trucks and buses	9 ✓	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3498	920	1647	pcph

Estimation of V12 Merge Areas

$$L = \text{(Equation 25-2 or 25-3)}$$

$$EQ$$

$$P = 0.619 \text{ Using Equation 1}$$

$$FM$$

$$v_{12} = v_F (P_{FM}) = 2167 \text{ pc/h}$$

Capacity Checks

	v	Actual	Maximum	LOS F?
	FO	4418	6750	No
	v <sub>3</sub> or v <sub>av34</sub>	1331 pc/h	(Equation 25-4 or 25-5)	
Is	v <sub>3</sub> or v <sub>av34</sub>	> 2700 pc/h?	No	
Is	v <sub>3</sub> or v <sub>av34</sub>	> 1.5 v <sub>12</sub> / 2	No	
If yes,	v <sub>12A</sub>	= 2167	(Equation 25-8)	

Flow Entering Merge Influence Area

	v	Actual	Max Desirable	Violation?
	R12	2167	4600	No

Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 19.7 \text{ pc/mi/ln}$$

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

Speed Estimation

Intermediate speed variable,	M = 0.301	
	S	
Space mean speed in ramp influence area,	S = 51.1	mph
	R	
Space mean speed in outer lanes,	S = 52.0	mph
	O	
Space mean speed for all vehicles,	S = 51.4	mph

Phone: Fax:  
E-mail:

Merge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 08/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: I-4 EB  
 Junction: On Ramp from CR 46A  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3080 ✓	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0 ✓	mph
Volume on ramp	810 ✓	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes ✓	
Volume on adjacent Ramp	1800 ✓	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	5418	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3080 ✓	810	1800	vph
Peak-hour factor, PHF	0.92 ✓	0.92	0.92	
Peak 15-min volume, v15	837 ✓	220	489	v
Trucks and buses	9	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	



Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3498	920	2045	pcph

Estimation of V12 Merge Areas

$$L = 1039.65 \text{ (Equation 25-2 or 25-3)}$$

$$EQ$$

$$P = 0.619 \text{ Using Equation 1}$$

$$FM$$

$$v_{12} = v_F (P_{FM}) = 2167 \text{ pc/h}$$

Capacity Checks

	Actual	Maximum	LOS F?
v <sub>FO</sub>	4418	6750	No
v <sub>3 or av34</sub>	1331 pc/h	(Equation 25-4 or 25-5)	
Is v <sub>3 or av34</sub> > 2700 pc/h?		No	
Is v <sub>3 or av34</sub> > 1.5 v <sub>12</sub> / 2		No	
If yes, v <sub>12A</sub> = 2167		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v <sub>R12</sub>	2167	4600	No

Level of Service Determination (if not F)

$$Density, D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 19.7 \text{ pc/mi/ln}$$

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

Speed Estimation

Intermediate speed variable,	M = 0.301	
Space mean speed in ramp influence area,	S = 51.1	mph
Space mean speed in outer lanes,	S = 52.0	mph
Space mean speed for all vehicles,	S = 51.4	mph

Phone: Fax:  
E-mail:

Merge Analysis

Analyst: Cristina Torres-Reyes  
Agency/Co.: HNTB  
Date performed: 3/09/2007  
Analysis time period: No Build  
Freeway/Dir of Travel: Frontage Rd (west of I-4) SB  
Junction: On Ramp from SR 46 EB  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1290	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1840	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	930	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1320	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1290	1840	930	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	358	511	258	v
Trucks and buses	0	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	1.000	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	1433	2044	1033	pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)  
EQ  
P = 1.000 Using Equation 0  
FM  
 $v_{12} = v \left( \frac{P}{F} \right) = 1433 \text{ pc/h}$

Capacity Checks

	Actual	Maximum	LOS F?
$v_{FO}$	3477	4500	No
$v_{3 \text{ or } av34}$	0 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34} > 2700 \text{ pc/h?}$		No	
Is $v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} =$		(Equation 25-8)	

Flow Entering Merge Influence Area			
	Actual	Max Desirable	Violation?
v <sub>12</sub>	1433	4400	No

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 28.5$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M = 0.412	
Space mean speed in ramp influence area,	S <sub>S</sub> = 49.6	mph
Space mean speed in outer lanes,	S <sub>R</sub> = N/A	mph
Space mean speed for all vehicles,	S <sub>0</sub> = 49.6	mph

Phone:  
E-mail:

Fax:

Diverge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 8/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: Frontage Rd (West of I-4) WB  
 Junction: Off Ramp to CR 46A  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2 ✓	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2220 ✓	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0 ✓	mph
Volume on ramp	930 ✓	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes ✓	
Volume on adjacent ramp	1840 ✓	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1320	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2220 ✓	930	1840	vph
Peak-hour factor, PHF	0.92 ✓	0.92	0.92	
Peak 15-min volume, v15	603 ✓	253	500	v
Trucks and buses	9 ✓	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2522	1056	2090	pcph

Estimation of V12 Diverge Areas

---

L = (Equation 25-8 or 25-9)  
EQ  
P = 1.000 Using Equation 0  
FD  
 $v_{12} = v_R + (v_F - v_R) P = 2522$  pc/h

Capacity Checks

---

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2522	4500	No
$v_{FO} = v_F - v_R$	1466	4500	No
$v_R$	1056	2000	No
$v_{3 \text{ or } av34}$	0 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34} > 2700$ pc/h?		No	
Is $v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2522$		(Equation 25-18)	

Flow Entering Diverge Influence Area

---

	Actual	Max Desirable	Violation?
$v_{12}$	2522	4400	No

Level of Service Determination (if not F)

---

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 21.4$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence C ✓

Speed Estimation

---

Intermediate speed variable,	D = 0.523	
Space mean speed in ramp influence area,	S = 48.2	mph
Space mean speed in outer lanes,	S = N/A	mph
Space mean speed for all vehicles,	S = 48.2	mph

---

Phone:  
E-mail:

Fax:

Diverge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 8/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: Frontage Rd (West of I-4) WB  
 Junction: Off Ramp to CR 46A  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	55.0	mph
Volume on freeway	2220 ✓	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	930 ✓✓	vph
Length of first accel/decel lane	500 ✓✓	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes ✓	
Volume on adjacent ramp	1760 ✓	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	Off	
Distance to adjacent ramp	4594	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2220 ✓	930	1760	vph
Peak-hour factor, PHF	0.92 ✓	0.92	0.92	
Peak 15-min volume, v15	603	253	478	v
Trucks and buses	9 ✓	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2522	1056	1999	pcph

Estimation of V12 Diverge Areas

$$L = \frac{EQ}{P} \quad \text{(Equation 25-8 or 25-9)}$$

$$P = 1.000 \quad \text{Using Equation 0}$$

$$v_{12R} = v_{12F} + (v_{12R} - v_{12F}) P = 2522 \quad \text{pc/h}$$

Capacity Checks

	Actual	Maximum	LOS F?
$v_{12F}$	2522	4500	No
$v_{12R}$	1466	4500	No
$v_{12}$	1056	2000	No
$v_{12}$	0 pc/h	(Equation 25-15 or 25-16)	
Is $v_{12} > 2700$ pc/h?		No	
Is $v_{12} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2522$		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	2522	4400	No

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_{12} = 21.4$  pc/mi/ln

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

Speed Estimation

Intermediate speed variable,	$D = 0.523$	
Space mean speed in ramp influence area,	$S_R = 48.2$	mph
Space mean speed in outer lanes,	$S_O = N/A$	mph
Space mean speed for all vehicles,	$S = 48.2$	mph

Phone: Fax:  
E-mail:

Diverge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 08/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: I-4 EB  
 Junction: Off Ramp to SR 417 EB & SR 46  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0 ✓	mph
Volume on freeway	4880 ✓	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	1800 ✓	vph
Length of first accel/decel lane	575	ft
Length of second accel/decel lane	575	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	1840	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	Off	
Distance to adjacent ramp	1906	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4880 ✓	1800	1840	vph
Peak-hour factor, PHF	0.92 ✓	0.92	0.92	
Peak 15-min volume, v15	1326	489	500	v
Trucks and buses	9 ✓	9	9	%
Recreational vehicles	0 ✓	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	



Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5543	2045	2090	pcph

Estimation of V12 Diverge Areas

---

$$L = \text{(Equation 25-8 or 25-9)}$$

$$EQ$$

$$P = 0.450 \text{ Using Equation 0}$$

$$FD$$

$$v_{12R} = v_F + (v_R - v_F) P = 3619 \text{ pc/h}$$

Capacity Checks

---

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5543	6750	No
$v_{FO} = v_F - v_R$	3498	6750	No
$v_R$	2045	3800	No
$v_{3 \text{ or } av34}$	1924 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34} > 2700 \text{ pc/h?}$		No	
Is $v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3619$		(Equation 25-18)	

Flow Entering Diverge Influence Area

---

	Actual	Max Desirable	Violation?
$v_{12}$	3619	4400	No

Level of Service Determination (if not F)

---

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 19.9 \text{ pc/mi/ln}$

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

Speed Estimation

---

Intermediate speed variable,	$D = 0.612$	
Space mean speed in ramp influence area,	$S_R = 47.0$	mph
Space mean speed in outer lanes,	$S_O = 56.7$	mph
Space mean speed for all vehicles,	$S = 50.0$	mph

---

Phone: Fax:  
E-mail:

Diverge Analysis

Analyst: Cristina Torres-Reyes  
Agency/Co.: HNTB  
Date performed: 3/09/2007  
Analysis time period: No Build  
Freeway/Dir of Travel: I-4 NB  
Junction: Off Ramp to SR 417 EB & CR 46A  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis Diverge  
Number of lanes in freeway 3  
Free-flow speed on freeway 55.0 mph  
Volume on freeway 4830 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 2270 vph  
Length of first accel/decel lane 500 ft  
Length of second accel/decel lane 500 ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes  
Volume on adjacent ramp 1490 vph  
Position of adjacent ramp Upstream  
Type of adjacent ramp Off  
Distance to adjacent ramp 6098 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4830	2270	1490	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1342	631	414	v
Trucks and buses	0	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	1.000	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5367	2522	1656	pcph

Estimation of V12 Diverge Areas

L = (Equation 25-8 or 25-9)  
EQ  
P = 0.450 Using Equation 0  
FD  
$$V_{12} = V_R + \frac{(V_F - V_R)}{F} P = 3802 \text{ pc/h}$$

Capacity Checks

	Actual	Maximum	LOS F?
$v = v_{Fi}$	5367	6750	No
$v = v_F - v_{FO}$	2845	6750	No
$v_R$	2522	3800	No
$v_{3 \text{ or } av34}$	1565 pc/h	(Equation 25-15 or 25-16)	
Is $v > 2700 \text{ pc/h?}$		No	
Is $v > 1.5 v / 2$		No	

3 or av34  
 If yes, v<sub>12A</sub> =

12

(Equation 25-18)

Flow Entering Diverge Influence Area			
v <sub>12</sub>	Actual	Max Desirable	Violation?
	3802	4600	No
Level of Service Determination (if not F)			

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 23.4$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation	
Intermediate speed variable,	D = 0.655
Space mean speed in ramp influence area,	S <sub>R</sub> = 46.5 mph
Space mean speed in outer lanes,	S <sub>O</sub> = 58.1 mph
Space mean speed for all vehicles,	S = 49.4 mph

Phone: Fax:  
E-mail:

Merge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 8/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: Frontage Rd (West of I-4) WB  
 Junction: On Ramp from I-4 WB  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1710	vph

On Ramp Data

Side of freeway	Left	
Number of lanes in ramp	2	
Free-flow speed on ramp	35.0	mph
Volume on ramp	2270	vph
Length of first accel/decel lane	1300	ft
Length of second accel/decel lane	1300	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	860	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	4005	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1710	2270	860	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	465	617	234	v
Trucks and buses	9	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade				%
Length				mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	

Flow rate, vp      CD Rd WB On Ramp from I-4 WB\_Upstream.txt      1942      2578      977      pcph

Estimation of V12 Merge Areas

$$L = \text{EQ} \quad (\text{Equation 25-2 or 25-3})$$

$$P = 1.000 \quad \text{Using Equation 0}$$

$$v_{12} = v_{F \text{ FM}} (P) = 1942 \quad \text{pc/h}$$

Capacity Checks

		Actual	Maximum	LOS F?
		4520	4500	Yes
	$v_{FO}$			
	$v_{3 \text{ or } av34}$	0 pc/h	(Equation 25-4 or 25-5)	
Is	$v_{3 \text{ or } av34} > 2700$		No	
Is	$v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes,	$v_{12A} = 1942$		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
$v_{R12}$	1942	4600	Yes

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 15.1 \quad \text{pc/mi/ln}$   
 Level of service for ramp-freeway junction areas of influence F

Speed Estimation

Intermediate speed variable,	$M = 0.500$	
Space mean speed in ramp influence area,	$S_S = 48.5$	mph
Space mean speed in outer lanes,	$S_R = N/A$	mph
Space mean speed for all vehicles,	$S_O = 48.5$	mph

Phone: Fax:  
E-mail:

Merge Analysis

Analyst: Cristina Torres-Reyes  
Agency/Co.: HNTB  
Date performed: 3/09/2007  
Analysis time period: No Build  
Freeway/Dir of Travel: I-4 NB  
Junction: On Ramp from SR 46 & CR 46A  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3070	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	2	
Free-flow speed on ramp	35.0	mph
Volume on ramp	3130	vph
Length of first accel/decel lane	750	ft
Length of second accel/decel lane	750	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	510	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	3654	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3070	3130	510	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	853	869	142	v
Trucks and buses	0	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	1.000	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3411	3478	567	pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)  
EQ  
P = 0.209 Using Equation 0  
FM  
 $v_{12} = v_F (P_{FM}) = 713 \text{ pc/h}$

Capacity Checks

v <sub>F0</sub>	Actual	Maximum	LOS F?
	6889	9000	No
v <sub>3</sub> or v <sub>av34</sub>	1349 pc/h	(Equation 25-4 or 25-5)	
Is v <sub>3</sub> or v <sub>av34</sub> > 2700 pc/h?		No	
Is v <sub>3</sub> or v <sub>av34</sub> > 1.5 v <sub>12</sub> / 2		Yes	
If yes, v <sub>12A</sub> = 1364		(Equation 25-8)	

Flow Entering Merge Influence Area			
	Actual	Max Desirable	Violation?
v <sub>12A</sub>	1364	4400	No

Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 27.5 \text{ pc/mi/ln}$$

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

Speed Estimation		
Intermediate speed variable,	M	= 0.658
Space mean speed in ramp influence area,	S <sub>R</sub>	= 46.4 mph
Space mean speed in outer lanes,	S <sub>0</sub>	= 53.1 mph
Space mean speed for all vehicles,	S	= 48.2 mph

Phone:  
E-mail:

Fax:

Diverge Analysis

Analyst: Cristina Torres-Reyes  
 Agency/Co.: HNTB  
 Date performed: 3/09/2007  
 Analysis time period: No Build  
 Freeway/Dir of Travel: SR 417 WB  
 Junction: Off Ramp to I-4 SB  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1830	vph

Off Ramp Data

Side of freeway	Left	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	510	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	1450	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	Off	
Distance to adjacent ramp	3070	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1830	510	1450	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	508	142	403	v
Trucks and buses	0	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00	0.00	0.00	%
Length	0.00	0.00	0.00	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	1.000	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2033	567	1611	pcph

Estimation of V12 Diverge Areas

L = (Equation 25-8 or 25-9)  
 EQ  
 P = 1.000 Using Equation 0  
 FD  

$$v_{12} = v_R + (v_F - v_R) P = 2033 \text{ pc/h}$$

Capacity Checks

	Actual	Maximum	LOS F?
$v = v_{Fi}$	2033	4500	No
$v = v_{FO} - v_{FR}$	1466	4500	No
$v_R$	567	2000	No
$v_{3 \text{ or } av34}$	0 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34} > 2700 \text{ pc/h?}$		No	
Is $v_{3 \text{ or } av34} > 1.5 v / 2$		No	



3 or av34  
 if yes, v<sub>12A</sub> =

12

(Equation 25-18)

v <sub>12</sub>	Flow Entering Diverge Influence Area		Violation? No
	Actual	Max Desirable	
	2033	4600	
Level of Service Determination (if not F)			

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = 8.2$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence A

Speed Estimation	
Intermediate speed variable,	D = 0.479
Space mean speed in ramp influence area,	S <sub>R</sub> = 48.8 mph
Space mean speed in outer lanes,	S <sub>0</sub> = N/A mph
Space mean speed for all vehicles,	S = 48.8 mph

Phone: Fax:  
E-mail:

Merge Analysis

Analyst: Cristina Torres-Reyes  
Agency/Co.: HNTB  
Date performed: 10/22/2006  
Analysis time period: No Build  
Freeway/Dir of Travel: SR 417 EB  
Junction: On Ramp from I-4 SB  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1090	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1760	vph
Length of first accel/decel lane	750	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	510	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	2584	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, v (vph)	1090	1760	510	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	303	489	142	v
Trucks and buses	0	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fhv	1.000	1.000	1.000	
Driver population factor, fp	1.00	1.00	1.00	
Flow rate, vp	1211	1956	567	pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)  
EQ  
P = 1.000 Using Equation 0  
FM  
 $v_{12} = v_F (P_{FM}) = 1211 \text{ pc/h}$

Capacity Checks

v <sub>FO</sub>	Actual	Maximum	LOS F?
	3167	4500	No
v <sub>3 or av34</sub>	0 pc/h	(Equation 25-4 or 25-5)	
Is v <sub>3 or av34</sub> > 2700 pc/h?		No	
Is v <sub>3 or av34</sub> > 1.5 v <sub>12</sub> / 2		No	
If yes, v <sub>12A</sub> =		(Equation 25-8)	

Flow Entering Merge Influence Area			
	Actual	Max Desirable	Violation?
v 12	1211	4400	No

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 24.6$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M = 0.361	
Space mean speed in ramp influence area,	S <sub>R</sub> = 50.3	mph
Space mean speed in outer lanes,	S <sub>0</sub> = N/A	mph
Space mean speed for all vehicles,	S = 50.3	mph

Phone: Fax:  
 E-mail:

Diverge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 08/05/10  
 Analysis time period: No Build  
 Freeway/Dir of Travel: I-4 EB  
 Junction: Off Ramp to US 17/92  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4 ✓	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6830 ✓	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1040 ✓	vph
Length of first accel/decel lane	1045	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	440 ✓	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1948	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	6830 ✓		1040		440	vph
Peak-hour factor, PHF	0.92 ✓		0.92		0.92	
Peak 15-min volume, v15	1856 ✓		283		120	v
Trucks and buses	9 ✓		9		9	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	7758	1181	500	pcph

Estimation of V12 Diverge Areas

---

$$L = \frac{EQ}{P} \quad (\text{Equation 25-8 or 25-9})$$

$$P = 0.436 \quad \text{Using Equation 8}$$

$$v_{12} = v_R + (v_F - v_R) P = 4049 \quad \text{pc/h}$$

Capacity Checks

---

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	7758	9600	No
$v_{FO} = v_F - v_R$	6577	9600	No
$v_R$	1181	2000	No
$v_{3 \text{ or } av34}$	1854 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34} > 2700$ pc/h?		No	
Is $v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4049$		(Equation 25-18)	

Flow Entering Diverge Influence Area

---

	Actual	Max Desirable	Violation?
$v_{12}$	4049	4400	No

Level of Service Determination (if not F)

---

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 29.7 \quad \text{pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence D ✓

Speed Estimation

---

Intermediate speed variable,	$D = 0.534$	
Space mean speed in ramp influence area,	$S = 55.0$	mph
Space mean speed in outer lanes,	$S = 73.5$	mph
Space mean speed for all vehicles,	$S = 62.5$	mph

---

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

Merge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 08/05/10  
 Analysis time period: No Build  
 Freeway/Dir of Travel: I-4 EB  
 Junction: On Ramp from US 1792  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5790	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	440	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	1040	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1948	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5790	440	1040	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1573	120	283	v
Trucks and buses	9	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6577	500	1181	pcph

Estimation of V12 Merge Areas

$$L = 1164.68 \text{ (Equation 25-2 or 25-3)}$$

$$EQ$$

$$P = 0.591 \text{ Using Equation 1}$$

$$FM$$

$$v_{12} = v_{F, FM} (P) = 3890 \text{ pc/h}$$

Capacity Checks

	Actual	Maximum	LOS F?
v <sub>FO</sub>	7077	7200	No
v <sub>3 or av34</sub>	2687 pc/h	(Equation 25-4 or 25-5)	
Is v <sub>3 or av34</sub> > 2700 pc/h?		No	
Is v <sub>3 or av34</sub> > 1.5 v <sub>12</sub> / 2		No	
If yes, v <sub>12A</sub> = 3890		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v <sub>R12</sub>	3890	4600	No

Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 36.4 \text{ pc/mi/ln}$$

Level of service for ramp-freeway junction areas of influence E ✓

Speed Estimation

Intermediate speed variable,	M = 0.600	
	S	
Space mean speed in ramp influence area,	S = 53.2	mph
	R	
Space mean speed in outer lanes,	S = 61.1	mph
	O	
Space mean speed for all vehicles,	S = 56.0	mph

Phone: Fax:  
E-mail:

Diverge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 08/05/10  
 Analysis time period: No Build  
 Freeway/Dir of Travel: I-4 WB  
 Junction: Off Ramp to US 1792  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6230 ✓	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0 ✓	mph
Volume on ramp	440 ✓	vph
Length of first accel/decel lane	600	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes ✓	
Volume on adjacent ramp	1040 ✓	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1948	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6230 ✓	440	1040	vph
Peak-hour factor, PHF	0.92 ✓	0.92	0.92	
Peak 15-min volume, v15	1693 ✓	120	283	v
Trucks and buses	9 ✓	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	



Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	7076	500	1181	pcph

Estimation of V12 Diverge Areas

---

$$L = \text{(Equation 25-8 or 25-9)}$$

$$EQ$$

$$P = 0.560 \quad \text{Using Equation 5}$$

$$FD$$

$$v_{12R} = v_F + (v_F - v_R) P = 4183 \quad \text{pc/h}$$

Capacity Checks

---

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	7076	7200	No
$v_{FO} = v_F - v_R$	6576	7200	No
$v_R$	500	2000	No
$v_{3 \text{ or } av34}$	2893 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34} > 2700 \text{ pc/h?}$		Yes	
Is $v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4376$		(Equation 25-18)	

Flow Entering Diverge Influence Area

---

	Actual	Max Desirable	Violation?
$v_{12A}$	4376	4400	No

Level of Service Determination (if not F)

---

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 36.5 \quad \text{pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence E ✓

Speed Estimation

---

Intermediate speed variable,	$D = 0.473$	
Space mean speed in ramp influence area,	$S_R = 56.8$	mph
Space mean speed in outer lanes,	$S_O = 70.2$	mph
Space mean speed for all vehicles,	$S = 61.2$	mph

---

Phone: Fax:  
 E-mail:

Merge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 08/05/10  
 Analysis time period: No Build  
 Freeway/Dir of Travel: I-4 WB  
 Junction: On Ramp from US 1792  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	70.0	mph
Volume on freeway	5790 ✓	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1040 ✓	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes ✓	
Volume on adjacent Ramp	440 ✓	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1948	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5790 ✓	1040	440	vph
Peak-hour factor, PHF	0.92 ✓	0.92	0.92	
Peak 15-min volume, v15	1573	283	120	v
Trucks and buses	9 ✓	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6577	1181	500	pcph

Estimation of V12 Merge Areas

$$L = \text{(Equation 25-2 or 25-3)}$$

$$EQ$$

$$P = 0.070 \text{ Using Equation 4}$$

$$FM$$

$$v_{12} = v_F (P_{FM}) = 462 \text{ pc/h}$$

Capacity Checks

		Actual	Maximum	LOS F?
v		7758	9600	No
FO				
v	v	3057 pc/h	(Equation 25-4 or 25-5)	
3 or	av34			
Is v	v	> 2700 pc/h?	Yes	
3 or	av34			
Is v	v	> 1.5 v / 2	Yes	
3 or	av34	12		
If yes, v	= 2630		(Equation 25-8)	
12A				

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	2630	4600	No
12A			

Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 31.5 \text{ pc/mi/ln}$$

Level of service for ramp-freeway junction areas of influence D ✓

Speed Estimation

Intermediate speed variable,	M = 0.462	
	S	
Space mean speed in ramp influence area,	S = 57.1	mph
	R	
Space mean speed in outer lanes,	S = 64.7	mph
	O	
Space mean speed for all vehicles,	S = 60.7	mph

Phone: Fax:  
 E-mail:

Merge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 8/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: Frontage Rd (West of I-4) WB  
 Junction: On Ramp from CR 46A  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	55.0	mph
Volume on freeway	1290 ✓	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	1840 ✓	vph
Length of first accel/decel lane	500 ✓	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes ✓	
Volume on adjacent Ramp	930 ✓	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1320	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1290 ✓	1840	930	vph
Peak-hour factor, PHF	0.92 ✓	0.92	0.92	
Peak 15-min volume, v15	351 ✓	500	253	v
Trucks and buses	9 ✓	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	1465	2090	1056	pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)  
 EQ  
 P = 1.000 Using Equation 0  
 FM  
 $v_{12} = v_{F, FM} = 1465$  pc/h

Capacity Checks

v	Actual	Maximum	LOS F?
FO	3555	4500	No
v	0 pc/h	(Equation 25-4 or 25-5)	
3 or av34			
Is v > 2700 pc/h?		No	
3 or av34			
Is v > 1.5 v / 2		No	
3 or av34	12		
If yes, v = 1465		(Equation 25-8)	
12A			

Flow Entering Merge Influence Area

v	Actual	Max Desirable	Violation?
R12	1465	4600	No

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 29.1$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence D ✓

Speed Estimation

Intermediate speed variable,	M = 0.422	
Space mean speed in ramp influence area,	S = 49.5	mph
Space mean speed in outer lanes,	S = N/A	mph
Space mean speed for all vehicles,	S = 49.5	mph

I-4 WB On Ramp from CR 46A & SR 46.txt  
HCS+: Ramps and Ramp Junctions Release 5.4

Phone: Fax:  
E-mail:

Merge Analysis

Analyst: CTR  
Agency/Co.: HNTB  
Date performed: 8/05/2010  
Analysis time period: No Build  
Freeway/Dir of Travel: I-4 WB  
Junction: On Ramp from SR 46 & CR 46A  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3590	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	2	
Free-flow speed on ramp	35.0	mph
Volume on ramp	3130	vph
Length of first accel/decel lane	750	ft
Length of second accel/decel lane	750	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	510	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	3654	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3590	3130	510	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	976	851	139	v
Trucks and buses	9	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	



Phone: Fax:  
E-mail:

Merge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 8/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: I-4 WB  
 Junction: On Ramp from SR 417 WB  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3070	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	510	vph
Length of first accel/decel lane	900	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	3130	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	3654	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3070	510	3130	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	834	139	851	v
Trucks and buses	9	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	



I-4 WB On Ramp from SR 417 NB\_Downstream.txt  
Flow rate, vp                                    3487                                    579                                    3555                                    pcph

Estimation of V12 Merge Areas

$L =$                                     (Equation 25-2 or 25-3)  
 $P_{EQ} =$                                     0.603    Using Equation 1  
 $v_{12} = v_F (P_{FM}) = 2102$     pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{FO}$	4066	6750	No
$v_{3 \text{ or } av34}$	1385 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34} > 2700$ pc/h?		No	
Is $v_{3 \text{ or } av34} > 1.5 v_{12}/2$		No	
If yes, $v_{12A} = 2102$		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
$v_{R12}$	2102	4600	No

Level of Service Determination (if not F)

Density,  $D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 20.5$     pc/mi/ln  
Level of service for ramp-freeway junction areas of influence    C

Speed Estimation

Intermediate speed variable,	$M = 0.315$	
Space mean speed in ramp influence area,	$S_R = 50.9$	mph
Space mean speed in outer lanes,	$S_0 = 51.8$	mph
Space mean speed for all vehicles,	$S = 51.2$	mph

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

\_\_\_\_\_Merge Analysis\_\_\_\_\_

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 8/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: I-4 WB  
 Junction: On Ramp from SR 417 WB  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

\_\_\_\_\_Freeway Data\_\_\_\_\_

Type of analysis	Merge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3070	vph

\_\_\_\_\_On Ramp Data\_\_\_\_\_

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	510	vph
Length of first accel/decel lane	900	ft
Length of second accel/decel lane		ft

\_\_\_\_\_Adjacent Ramp Data (if one exists)\_\_\_\_\_

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	2270	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	3490	ft

\_\_\_\_\_Conversion to pc/h Under Base Conditions\_\_\_\_\_

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3070	510	2270	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	834	139	617	v
Trucks and buses	9	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	

Flow rate, vp

pcph

Estimation of V12 Merge Areas

$$L = 697.92 \text{ (Equation 25-2 or 25-3)}$$

$$P = 0.603 \text{ Using Equation 1}$$

$$v_{12} = v_F (P_{FM}) = 2102 \text{ pc/h}$$

Capacity Checks

	Actual	Maximum	LOS F?
$v_{FO}$	4066	6750	No
$v_{3 \text{ or } av34}$	1385 pc/h	(Equation 25-4 or 25-5)	
Is $v_{3 \text{ or } av34} > 2700 \text{ pc/h?}$		No	
Is $v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2102$		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
$v_{R12}$	2102	4600	No

Level of Service Determination (if not F)

Density,  $D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 20.5 \text{ pc/mi/ln}$   
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	$M = 0.315$	
Space mean speed in ramp influence area,	$S_S = 50.9$	mph
Space mean speed in outer lanes,	$S_R = 51.8$	mph
Space mean speed for all vehicles,	$S_O = 51.2$	mph

Phone:  
E-mail:

Fax:

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Diverge Analysis

---

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 8/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: I-4 WB  
 Junction: Off Ramp to SR 417 EB & CR 46A  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

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Freeway Data

---

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5340	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	2270	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane	500	ft

---

Adjacent Ramp Data (if one exists)

---

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	1490	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	Off	
Distance to adjacent ramp	6098	ft

---

Conversion to pc/h Under Base Conditions

---

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	5340	2270	1490	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1451	617	405	v
Trucks and buses	9	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	

Flow rate, vp I-4 WB Off Ramp to SR 417 SB & CR 46A\_Upstream.txt  
 6066 2578 1692 pcph

Estimation of V12 Diverge Areas

L = (Equation 25-8 or 25-9)  
 EQ  
 P = 0.450 Using Equation 0  
 FD  
 $v_{12} = v_R + (v_F - v_R) P_{FD} = 4148 \text{ pc/h}$

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	6066	6750	No
$v_{FO} = v_F - v_R$	3488	6750	No
$v_R$	2578	3800	No
$v_{3 \text{ or } av34}$	1918 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34} > 2700 \text{ pc/h?}$		No	
Is $v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4148$		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	4148	4400	No

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 26.4 \text{ pc/mi/ln}$   
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,  $D = 0.660$   
 Space mean speed in ramp influence area,  $S_R = 46.4 \text{ mph}$   
 Space mean speed in outer lanes,  $S_O = 56.8 \text{ mph}$   
 Space mean speed for all vehicles,  $S = 49.3 \text{ mph}$

Phone: Fax:  
E-mail:

Diverge Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date performed: 08/05/2010  
 Analysis time period: No Build  
 Freeway/Dir of Travel: I-4 WB  
 Junction: Off Ramp to SR 46  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	4	
Free-flow speed on freeway	55.0	mph
Volume on freeway	6830	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	1490	vph
Length of first accel/decel lane	0	ft
Length of second accel/decel lane	500	ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	2270	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	Off	
Distance to adjacent ramp	6098	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6830	1490	2270	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1856	405	617	v
Trucks and buses	9	9	9	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	

Flow rate,  $v_p$  I-4 WB Off Ramp to SR 46.txt 2578 pcph  
7758 1692

Estimation of V12 Diverge Areas

$L =$  (Equation 25-8 or 25-9)  
 $P = 0.260$  Using Equation 0  
 $v_{12} = v_R + (v_F - v_R) P = 3269$  pc/h  
FD

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	7758	9000	No
$v_{FO} = v_F - v_R$	6066	9000	No
$v_R$	1692	3800	No
$v_{3 \text{ or } av34}$	2244 pc/h	(Equation 25-15 or 25-16)	
Is $v_{3 \text{ or } av34} > 2700$ pc/h?		No	
Is $v_{3 \text{ or } av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3269$		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	3269	4400	No

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 27.9$  pc/mi/ln  
Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,  $D = 0.580$   
Space mean speed in ramp influence area,  $S_R = 47.5$  mph  
Space mean speed in outer lanes,  $S_0 = 55.5$  mph  
Space mean speed for all vehicles,  $S = 51.8$  mph

I-4 WB On Ramp from CR 46A & SR 46.txt  
HCS+: Basic Freeway Segments Release 5.4

Phone: Fax:  
E-mail:

Operational Analysis

Analyst: CTR  
Agency or Company: HNTB  
Date Performed: 8/10/2010  
Analysis Time Period: No-Build  
Freeway/Direction: I-4 WB  
From/To: On Ramp from CR 46A & SR 46  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: Wekiva Parkway PD&E

Flow Inputs and Adjustments

Volume, v	6720	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	1826	v
Trucks and buses	9	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fhv	0.957	
Driver population factor, fp	1.00	
Flow rate, vp	1908	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-shoulder lateral clearance	6.0	ft
Interchange density	0.90	interchange/mi
Number of lanes, N	4	
Free-flow speed:	Base	
FFS or BFFS	70.0	mi/h
Lane width adjustment, flw	0.0	mi/h
Lateral clearance adjustment, flc	0.0	mi/h
Interchange density adjustment, fid	2.0	mi/h
Number of lanes adjustment, fn	1.5	mi/h
Free-flow speed, FFS	66.5	mi/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1908	pc/h/ln
Free-flow speed, FFS	66.5	mi/h
Average passenger-car speed, S	63.9	mi/h
Number of lanes, N	4	
Density, D	29.9	pc/mi/ln
Level of service, LOS	D	



I-4 WB On Ramp from CR 46A & SR 46.txt  
Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:  
E-mail:

Operational Analysis

Analyst: Cristina Torres-Reyes  
Agency/Co.: HNTB  
Date Performed: 3/09/2007  
Analysis Time Period: No-Build  
Freeway/Dir of Travel: I-4 WB  
Weaving Location: I-4 WB CD Road  
Jurisdiction: Seminole County  
Analysis Year: 2032  
Description: Wekiva Parkway PD&E

Inputs

Freeway free-flow speed, SFF 65 mph  
Weaving number of lanes, N 3  
Weaving segment length, L 1954 ft  
Terrain type Level  
Grade %  
Length mi  
Weaving type B Multilane or C-D  
Volume ratio, VR 0.72  
Weaving ratio, R 0.49

Conversion to pc/h Under Base Conditions

	Non-weaving		Weaving		
	V	V	V	V	
Volume, V	810	300	1460	1410	veh/h
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	225	83	406	392	v
Trucks and buses	0	0	0	0	%
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	1.000	1.000	1.000	1.000	
Driver population adjustment, fp	1.00	1.00	1.00	1.00	
Flow rate, v	900	333	1622	1566	pc/h

Weaving and Non-weaving Speeds

	Weaving	Non-weaving
a (Exhibit 24-6)	0.08	0.0020
b (Exhibit 24-6)	2.20	6.00
c (Exhibit 24-6)	0.70	1.00
d (Exhibit 24-6)	0.50	0.50
Weaving intensity factor, wi	0.99	1.73
Weaving and non-weaving speeds, si	42.68	35.12
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		2.54
Maximum number of lanes, Nw (max) (Exhibit 24-7)		3.50
Type of operation is		Unconstrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S 40.26 mph  
Weaving segment density, D 36.60 pc/mi/ln  
Level of service, LOS E  
Capacity of base condition, cb 5021 pc/h  
Capacity as a 15-minute flow rate, c 5021 pc/h  
Capacity as a full-hour volume, ch 4519 pc/h

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	3188	4000	a
Average flow rate (pcphpl)	1473	2350	b
Volume ratio, VR	0.72	0.80	c
Weaving ratio, R	0.49	N/A	d
Weaving length (ft)	1954	2500	e

- Notes:
- Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
  - Capacity constrained by basic freeway capacity.

- c. Capacity occurs under constrained operating conditions.
- d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

Phone:  
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Operational Analysis

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Analyst: Cristina Torres-Reyes  
 Agency/Co.: HNTB  
 Date Performed: 10/22/2006  
 Analysis Time Period: No-Build  
 Freeway/Dir of Travel: I-4 WB  
 Weaving Location: I-4 WB CD Road  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway PD&E

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Inputs

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Freeway free-flow speed, SFF	65	mph
Weaving number of lanes, N	4	
Weaving segment length, L	1954	ft
Terrain type	Level	
Grade		%
Length		mi
Weaving type	C	Multilane or C-D
Volume ratio, VR	0.55	
Weaving ratio, R	0.49	

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Conversion to pc/h Under Base Conditions

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	Non-Weaving		Weaving		
	V	V	V	V	
Volume, v	A-C	B-D	A-D	B-C	veh/h
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	275	192	297	283	v
Trucks and buses	0	0	0	0	%
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	1.000	1.000	1.000	1.000	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	1100	766	1188	1133	pc/h

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Weaving and Non-Weaving Speeds

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	Weaving	Non-weaving
a (Exhibit 24-6)	0.08	0.0020
b (Exhibit 24-6)	2.30	6.00
c (Exhibit 24-6)	0.80	1.10
d (Exhibit 24-6)	0.60	0.60
weaving intensity factor, wi	0.61	0.63
weaving and non-weaving speeds, si	49.17	48.80
Number of lanes required for unconstrained operation, Nw (Exhibit 24-7)		2.30
Maximum number of lanes, Nw (max) (Exhibit 24-7)		3.00
Type of operation is		Unconstrained

---

Weaving Segment Speed, Density, Level of Service and Capacity

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Weaving segment speed, S	49.00	mph
Weaving segment density, D	21.36	pc/mi/ln
Level of service, LOS	B	
Capacity of base condition, cb	7000	pc/h
Capacity as a 15-minute flow rate, c	7000	pc/h
Capacity as a full-hour volume, ch	6300	pc/h

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Limitations on Weaving Segments

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	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	2321	3500	a
Average flow rate (pcphpl)	1046	2350	b
Volume ratio, VR	0.55	0.50	c
Weaving ratio, R	0.49	0.40	d
weaving length (ft)	1954	2500	e

Notes:

- weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- Capacity constrained by basic freeway capacity.

- c. Capacity occurs under constrained operating conditions.
- d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

Phone:  
E-mail:

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Operational Analysis

Analyst: CTR  
 Agency/Co.: HNTB  
 Date Performed: 8/06/2010  
 Analysis Time Period: No-Build  
 Freeway/Dir of Travel: I-4 WB CD Rd  
 Weaving Location: SR 46 to SR 417  
 Jurisdiction: Seminole County  
 Analysis Year: 2032  
 Description: Wekiva Parkway PD&E

Inputs

Freeway free-flow speed, SFF	65	mph
Weaving number of lanes, N	3	
Weaving segment length, L	1954	ft
Terrain type	Level	
Grade		%
Length		mi
Weaving type	B	Multilane or C-D
Volume ratio, VR	0.72	
Weaving ratio, R	0.49	

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	V A-C	V B-D	V A-D	V B-C	
Volume, V	810	300	1460	1410	veh/h
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	
Peak 15-min volume, v15	220	82	397	383	v
Trucks and buses	9	9	9	9	%
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	0.957	0.957	0.957	0.957	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	920	340	1658	1601	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.08	0.0020
b (Exhibit 24-6)	2.20	6.00
c (Exhibit 24-6)	0.70	1.00
d (Exhibit 24-6)	0.50	0.50
Weaving intensity factor, Wi	1.00	1.77
Weaving and non-weaving speeds, Si	42.47	34.84
Number of lanes required for		

unconstrained operation, Nw (Exhibit 24-7)	2.55
Maximum number of lanes, Nw (max) (Exhibit 24-7)	3.50
Type of operation is	Unconstrained

\_\_\_\_\_ Weaving Segment Speed, Density, Level of Service and Capacity \_\_\_\_\_

Weaving segment speed, S	40.03	mph
Weaving segment density, D	37.63	pc/mi/ln
Level of service, LOS	E	
Capacity of base condition, cb	5021	pc/h
Capacity as a 15-minute flow rate, c	4805	pc/h
Capacity as a full-hour volume, ch	4421	pc/h

\_\_\_\_\_ Limitations on Weaving Segments \_\_\_\_\_

	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	3259	4000	a
Average flow rate (pcphpl)	1506	2350	b
Volume ratio, VR	0.72	0.80	c
Weaving ratio, R	0.49	N/A	d
Weaving length (ft)	1954	2500	e

Notes:

- a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- b. Capacity constrained by basic freeway capacity.
- c. Capacity occurs under constrained operating conditions.
- d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.





# RAMPS AND RAMP JUNCTIONS WORKSHEET

## General Information

## Site Information

Analyst	KNM	Freeway/Dir of Travel	I-4 WB
Agency or Company	HNTB	Junction	On Ramp from US 1792
Date Performed	03/24/08	Jurisdiction	Seminole County
Analysis Time Period	No Build	Analysis Year	2032
Project Description: <b>Wekiva Parkway Project Development &amp; Environment Study</b>			

## Inputs

Upstream Adj Ramp <input checked="" type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off L <sub>up</sub> = 1948 ft V <sub>u</sub> = 440 veh/h	Terrain: Level  S <sub>FF</sub> = 70.0 mph      S <sub>FR</sub> = 35.0 mph Sketch ( show lanes, L <sub>A</sub> , L <sub>D</sub> , V <sub>R</sub> , V <sub>F</sub> )	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Off L <sub>down</sub> = ft V <sub>D</sub> = veh/h
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## Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF × f <sub>HV</sub> × f <sub>p</sub>
Freeway	5320	0.95	Level	9	0	0.957	1.00	5852
Ramp	1040	0.95	Level	9	0	0.957	1.00	1144
UpStream	440	0.95	Level	9	0	0.957	1.00	484
DownStream								

### Merge Areas

### Diverge Areas

## Estimation of v<sub>12</sub>

## Estimation of v<sub>12</sub>

$V_{12} = V_F (P_{FM})$   
 (Equation 25-2 or 25-3)  
 L<sub>EQ</sub> =  
 P<sub>FM</sub> = 0.234 using Equation (Exhibit 25-5)  
 V<sub>12</sub> = 1370 pc/h  
 V<sub>3</sub> or V<sub>av34</sub> = 2241 pc/h (Equation 25-4 or 25-5)  
 Is V<sub>3</sub> or V<sub>av34</sub> > 2,700 pc/h?  Yes  No  
 Is V<sub>3</sub> or V<sub>av34</sub> > 1.5 \* V<sub>12</sub>/2  Yes  No  
 If Yes, V<sub>12a</sub> = 2340 pc/h (Equation 25-8)

$V_{12} = V_R + (V_F - V_R)P_{FD}$   
 (Equation 25-8 or 25-9)  
 L<sub>EQ</sub> =  
 P<sub>FD</sub> = using Equation (Exhibit 25-12)  
 V<sub>12</sub> = pc/h  
 V<sub>3</sub> or V<sub>av34</sub> = pc/h (Equation 25-15 or 25-16)  
 Is V<sub>3</sub> or V<sub>av34</sub> > 2,700 pc/h?  Yes  No  
 Is V<sub>3</sub> or V<sub>av34</sub> > 1.5 \* V<sub>12</sub>/2  Yes  No  
 If Yes, V<sub>12a</sub> = pc/h (Equation 25-18)

## Capacity Checks

## Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V <sub>FO</sub>	6996	Exhibit 25-7	No	V <sub>F</sub>		Exhibit 25-14	
				V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>		Exhibit 25-14	
				V <sub>R</sub>		Exhibit 25-3	

## Flow Entering Merge Influence Area

## Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V <sub>R12</sub>	3484	Exhibit 25-7 4600:All	No	V <sub>12</sub>		Exhibit 25-14	

## Level of Service Determination (if not F)

## Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 V_R + 0.0078 V_{12} - 0.00627 L_A$ D <sub>R</sub> = 29.0 (pc/mi/ln) LOS = D (Exhibit 25-4)	$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$ D <sub>R</sub> = (pc/mi/ln) LOS = (Exhibit 25-4)
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## Speed Determination

## Speed Determination

M <sub>S</sub> = 0.413 (Exhibit 25-19) S <sub>R</sub> = 58.4 mph (Exhibit 25-19)	D <sub>S</sub> = (Exhibit 25-19) S <sub>R</sub> = mph (Exhibit 25-19)
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## RAMPS AND RAMP JUNCTIONS WORKSHEET

### General Information

### Site Information

Analyst	KNM	Freeway/Dir of Travel	I-4 EB
Agency or Company	HNTB	Junction	Off Ramp to US 1792
Date Performed	03/24/08	Jurisdiction	Seminole County
Analysis Time Period	No Build	Analysis Year	2032

Project Description: Wekiva Parkway Project Development & Environment Study

### Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L <sub>up</sub> =        ft V <sub>u</sub> =        veh/h	Terrain: Level  S <sub>FF</sub> = 70.0 mph                      S <sub>FR</sub> = 35.0 mph Sketch ( show lanes, L <sub>A</sub> , L <sub>D</sub> , V <sub>R</sub> , V <sub>F</sub> )	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L <sub>down</sub> =    1948 ft V <sub>D</sub> =        440 veh/h
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### Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>
Freeway	6830	0.95	Level	9	0	0.957	1.00	7513
Ramp	1040	0.95	Level	9	0	0.957	1.00	1144
UpStream								
DownStream	440	0.95	Level	9	0	0.957	1.00	484

#### Merge Areas

#### Diverge Areas

### Estimation of v<sub>12</sub>

### Estimation of v<sub>12</sub>

$V_{12} = V_F (P_{FM})$   
 (Equation 25-2 or 25-3)  
 L<sub>EQ</sub> =                      using Equation (Exhibit 25-5)  
 P<sub>FM</sub> =                      pc/h  
 V<sub>12</sub> =                      pc/h (Equation 25-4 or 25-5)  
 V<sub>3</sub> or V<sub>av34</sub>                      pc/h (Equation 25-4 or 25-5)  
 Is V<sub>3</sub> or V<sub>av34</sub> > 2,700 pc/h?  Yes  No  
 Is V<sub>3</sub> or V<sub>av34</sub> > 1.5 \* V<sub>12</sub>/2  Yes  No  
 If Yes, V<sub>12a</sub> =                      pc/h (Equation 25-8)

$V_{12} = V_R + (V_F - V_R)P_{FD}$   
 (Equation 25-8 or 25-9)  
 L<sub>EQ</sub> =                      0.436 using Equation (Exhibit 25-12)  
 P<sub>FD</sub> =                      3921 pc/h  
 V<sub>12</sub> =                      1796 pc/h (Equation 25-15 or 25-16)  
 V<sub>3</sub> or V<sub>av34</sub>                      pc/h (Equation 25-15 or 25-16)  
 Is V<sub>3</sub> or V<sub>av34</sub> > 2,700 pc/h?  Yes  No  
 Is V<sub>3</sub> or V<sub>av34</sub> > 1.5 \* V<sub>12</sub>/2  Yes  No  
 If Yes, V<sub>12a</sub> =                      pc/h (Equation 25-18)

### Capacity Checks

### Capacity Checks

V <sub>FO</sub>	Actual	Capacity	LOS F?	V <sub>F</sub>	Actual	Capacity	LOS F?	
		Exhibit 25-7			V <sub>F</sub>	7513	Exhibit 25-14	9600
				V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	6369	Exhibit 25-14	9600	No
				V <sub>R</sub>	1144	Exhibit 25-3	2000	No

### Flow Entering Merge Influence Area

### Flow Entering Merge Influence Area

V <sub>R12</sub>	Actual	Max Desirable	Violation?	V <sub>12</sub>	Actual	Max Desirable	Violation?	
		Exhibit 25-7		V <sub>12</sub>	3921	Exhibit 25-14	4400:All	No

### Level of Service Determination (if not F)

### Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 V_R + 0.0078 V_{12} - 0.00627 L_A$   
 D<sub>R</sub> =        (pc/mi/ln)  
 LOS =        (Exhibit 25-4)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$   
 D<sub>R</sub> =        28.6 (pc/mi/ln)  
 LOS =        D (Exhibit 25-4)

### Speed Determination

### Speed Determination

M<sub>S</sub> =        (Exhibit 25-19)  
 S<sub>R</sub> =        mph (Exhibit 25-19)

D<sub>S</sub> =        0.531 (Exhibit 25-19)  
 S<sub>R</sub> =        55.1 mph (Exhibit 25-19)  
               73.7 mph (Exhibit 25-19)

# RAMPS AND RAMP JUNCTIONS WORKSHEET

## General Information

## Site Information

Analyst	KNM	Freeway/Dir of Travel	I-4 EB
Agency or Company	HNTB	Junction	On Ramp from US 1792
Date Performed	03/24/08	Jurisdiction	Seminole County
Analysis Time Period	No Build	Analysis Year	2032

Project Description: **Wekiva Parkway Project Development & Environment Study**

## Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off L <sub>up</sub> = 1948 ft V <sub>u</sub> = 1040 veh/h	Terrain: Level  <div style="display: flex; justify-content: space-around;"> <span>S<sub>FF</sub> = 70.0 mph</span> <span>S<sub>FR</sub> = 35.0 mph</span> </div> Sketch ( show lanes, L <sub>A</sub> , L <sub>D</sub> , V <sub>R</sub> , V <sub>f</sub> )	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Off L <sub>down</sub> = ft V <sub>D</sub> = veh/h
--	---	---

## Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>HV</sub> x f <sub>p</sub>
Freeway	5790	0.95	Level	9	0	0.957	1.00	6369
Ramp	440	0.95	Level	9	0	0.957	1.00	484
UpStream	1040	0.95	Level	9	0	0.957	1.00	1144
DownStream								

### Merge Areas

### Diverge Areas

## Estimation of v<sub>12</sub>

## Estimation of v<sub>12</sub>

$V_{12} = V_F (P_{FM})$   
 L<sub>EQ</sub> = 1116.74 (Equation 25-2 or 25-3)  
 P<sub>FM</sub> = 0.591 using Equation (Exhibit 25-5)  
 V<sub>12</sub> = 3767 pc/h  
 V<sub>3</sub> or V<sub>av34</sub> = 2602 pc/h (Equation 25-4 or 25-5)  
 Is V<sub>3</sub> or V<sub>av34</sub> > 2,700 pc/h?  Yes  No  
 Is V<sub>3</sub> or V<sub>av34</sub> > 1.5 \* V<sub>12</sub>/2  Yes  No  
 If Yes, V<sub>12a</sub> = pc/h (Equation 25-8)

$V_{12} = V_R + (V_F - V_R)P_{FD}$   
 L<sub>EQ</sub> = (Equation 25-8 or 25-9)  
 P<sub>FD</sub> = using Equation (Exhibit 25-12)  
 V<sub>12</sub> = pc/h  
 V<sub>3</sub> or V<sub>av34</sub> = pc/h (Equation 25-15 or 25-16)  
 Is V<sub>3</sub> or V<sub>av34</sub> > 2,700 pc/h?  Yes  No  
 Is V<sub>3</sub> or V<sub>av34</sub> > 1.5 \* V<sub>12</sub>/2  Yes  No  
 If Yes, V<sub>12a</sub> = pc/h (Equation 25-18)

## Capacity Checks

## Capacity Checks

V <sub>FO</sub>	Actual	Capacity		LOS F?	V <sub>F</sub>	Actual	Capacity		LOS F?
	6853	Exhibit 25-7		No			V <sub>FO</sub> = V <sub>F</sub> - V <sub>R</sub>	Exhibit 25-14	
					V <sub>R</sub>		Exhibit 25-3		

## Flow Entering Merge Influence Area

## Flow Entering Merge Influence Area

V <sub>R12</sub>	Actual	Max Desirable	Violation?	V <sub>12</sub>	Actual	Max Desirable	Violation?
	4251	Exhibit 25-7	4600:All	No		Exhibit 25-14	

## Level of Service Determination (if not F)

## Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 V_R + 0.0078 V_{12} - 0.00627 L_A$   
 D<sub>R</sub> = 35.3 (pc/mi/ln)  
 LOS = E (Exhibit 25-4)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$   
 D<sub>R</sub> = (pc/mi/ln)  
 LOS = (Exhibit 25-4)

## Speed Determination

## Speed Determination

M<sub>S</sub> = 0.560 (Exhibit 25-19)  
 S<sub>R</sub> = 54.3 mph (Exhibit 25-19)

D<sub>S</sub> = (Exhibit 25-19)  
 S<sub>R</sub> = mph (Exhibit 25-19)

## SHORT REPORT

General Information	Site Information
Analyst <i>KNM</i>	Intersection <i>US 441 at CR 437</i>
Agency or Co. <i>HNTB</i>	Area Type <i>All other areas</i>
Date Performed <i>9/14/07</i>	Jurisdiction <i>Orange County</i>
Time Period <i>No Build SR46 2-Lane Arterial</i>	Analysis Year <i>2032 No Build</i>

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	1	2			2	0				0		0
Lane Group	L	T			TR						LR	
Volume (vph)	341	1669			1755	495				457		62
% Heavy Vehicles	11	11			11	11				2		2
PHF	0.95	0.95			0.95	0.95				0.95		0.95
Pretimed/Actuated (P/A)	A	A			A	A				A		A
Startup Lost Time	2.0	2.0			2.0						2.0	
Extension of Effective Green	2.0	2.0			2.0						2.0	
Arrival Type	3	3			3						3	
Unit Extension	3.0	3.0			3.0						3.0	
Ped/Bike/RTOR Volume	0	0		0	0	0				0	0	0
Lane Width	12.0	12.0			12.0						12.0	
Parking/Grade/Parking	N	0	N	N	0	N				N	0	N
Parking/Hour												
Bus Stops/Hour	0	0			0						0	
Minimum Pedestrian Time		3.2			3.2						3.2	

Phasing	EB Only	EW Perm	03	04	SB Only	06	07	08
Timing	G = 15.0	G = 80.0	G =	G =	G = 35.0	G =	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 145.0		

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate	359	1757			2368						546	
Lane Group Capacity	218	2248			1739						424	
v/c Ratio	1.65	0.78			1.36						1.29	
Green Ratio	0.69	0.69			0.55						0.24	
Uniform Delay d <sub>1</sub>	53.2	15.1			32.5						55.0	
Delay Factor k	0.50	0.33			0.50						0.50	
Incremental Delay d <sub>2</sub>	310.7	1.9			166.6						146.3	
PF Factor	1.000	1.000			1.000						1.000	
Control Delay	364.0	17.0			199.1						201.3	
Lane Group LOS	F	B			F						F	
Approach Delay	75.9			199.1						201.3		
Approach LOS	E			F						F		
Intersection Delay	147.5			Intersection LOS						F		

SHORT REPORT												
General Information						Site Information						
Analyst <i>KNM</i> Agency or Co. <i>HNTB</i> Date Performed <i>09/28/07</i> Time Period <i>Build I-4 Connection @ SR417</i>						Intersection <i>US 441 West of WP Interchange</i> Area Type <i>All other areas</i> Jurisdiction <i>Orange County</i> Analysis Year <i>2032 No Build</i>						
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		2			2	1				1		2
Lane Group		T			T	R				L		R
Volume (vph)		1469			2309	122				249		2233
% Heavy Vehicles		10			10	10				2		2
PHF		0.95			0.95	0.95				0.95		0.95
Pretimed/Actuated (P/A)		A			A	A				A		A
Startup Lost Time		2.0			2.0	2.0				2.0		2.0
Extension of Effective Green		2.0			2.0	2.0				2.0		2.0
Arrival Type		3			3	3				3		3
Unit Extension		3.0			3.0	3.0				3.0		3.0
Ped/Bike/RTOR Volume	0	0		0	0	0	0	0		0	0	0
Lane Width		12.0			12.0	12.0				12.0		12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/Hour												
Bus Stops/Hour		0			0	0				0		0
Minimum Pedestrian Time		3.2			3.2			3.2			3.2	
Phasing	Thru & RT	02	03	04	SB Only	06	07	08				
Timing	G = 35.0	G =	G =	G =	G = 25.0	G =	G =	G =				
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 70.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate		1546			2431	128				262		2351
Lane Group Capacity		1645			1645	1468				632		2803
v/c Ratio		0.94			1.48	0.09				0.41		0.84
Green Ratio		0.50			0.50	1.00				0.36		1.00
Uniform Delay d <sub>1</sub>		16.5			17.5	0.0				17.0		0.0
Delay Factor k		0.45			0.50	0.11				0.11		0.37
Incremental Delay d <sub>2</sub>		11.0			218.3	0.0				0.4		2.4
PF Factor		1.000			1.000	0.950				1.000		0.950
Control Delay		27.5			235.8	0.0				17.4		2.4
Lane Group LOS		C			F	A				B		A
Approach Delay	27.5			224.1						3.9		
Approach LOS	C			F						A		
Intersection Delay	93.2			Intersection LOS						F		

SHORT REPORT												
General Information						Site Information						
Analyst <i>KNM</i> Agency or Co. <i>HNTB</i> Date Performed <i>9/14/07</i> Time Period <i>Build I-4 Connection @ SR 417</i>						Intersection <i>US 441 at Wekiva Parkway</i> Area Type <i>All other areas</i> Jurisdiction <i>Orange County</i> Analysis Year <i>2032 No Build</i>						
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		1	2	2	1		2		1			
Lane Group		T	R	L	T		L		R			
Volume (vph)		200	2700	1020	64		2418		1302			
% Heavy Vehicles		2	2	2	2		10		10			
PHF		0.95	0.95	0.95	0.95		0.95		0.95			
Pretimed/Actuated (P/A)		A	A	A	A		A		A			
Startup Lost Time		2.0	2.0	2.0	2.0		2.0		2.0			
Extension of Effective Green		2.0	2.0	2.0	2.0		2.0		2.0			
Arrival Type		3	3	3	3		3		3			
Unit Extension		3.0	3.0	3.0	3.0		3.0		3.0			
Ped/Bike/RTOR Volume	0	0	0	0	0		0	0	0	0	0	
Lane Width		12.0	12.0	12.0	12.0		12.0		12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/Hour												
Bus Stops/Hour		0	0	0	0		0		0			
Minimum Pedestrian Time		3.2			3.2			3.2			3.2	
Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08				
Timing	G = 35.0	G = 20.0	G =	G =	G = 50.0	G =	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 120.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate		211	2842	1074	67		2545		1371			
Lane Group Capacity		311	1752	1253	311		1328		1101			
v/c Ratio		0.68	1.62	0.86	0.22		1.92		1.25			
Green Ratio		0.17	0.63	0.50	0.17		0.42		0.75			
Uniform Delay d <sub>1</sub>		47.0	22.5	23.1	43.2		35.0		15.0			
Delay Factor k		0.25	0.50	0.39	0.11		0.50		0.50			
Incremental Delay d <sub>2</sub>		5.8	282.6	6.1	0.3		415.2		118.1			
PF Factor		1.000	1.000	1.000	1.000		1.000		1.000			
Control Delay		52.8	305.1	29.2	43.6		450.2		133.1			
Lane Group LOS		D	F	C	D		F		F			
Approach Delay	287.7			30.0			339.2					
Approach LOS	F			C			F					
Intersection Delay	276.3			Intersection LOS						F		

## SHORT REPORT

General Information				Site Information			
Analyst	KNM	Intersection	CR 437 East of WP	Agency or Co.	HNTB	Interchange	All other areas
Date Performed	9/14/07	Area Type	Orange County	Time Period	Build I-4 Connection @ SR417	Jurisdiction	2032 No Build
		Analysis Year					

Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	1		1				1	2			2	1
Lane Group	L		R				L	T			T	R
Volume (vph)	1424		75				48	896			444	1036
% Heavy Vehicles	2		2				2	2			2	2
PHF	0.95		0.95				0.95	0.95			0.95	0.95
Pretimed/Actuated (P/A)	A		A				A	A			A	A
Startup Lost Time	2.0		2.0				2.0	2.0			2.0	2.0
Extension of Effective Green	2.0		2.0				2.0	2.0			2.0	2.0
Arrival Type	3		3				3	3			3	3
Unit Extension	3.0		3.0				3.0	3.0			3.0	3.0
Ped/Bike/RTOR Volume	0	0	0				0	0		0	0	0
Lane Width	12.0		12.0				12.0	12.0			12.0	12.0
Parking/Grade/Parking	N	0	N				N	0	N	N	0	N
Parking/Hour												
Bus Stops/Hour	0		0				0	0			0	0
Minimum Pedestrian Time		3.2						3.2			3.2	
Phasing	EB Only	02	03	04	NS Perm	06	07	08				
Timing	G = 20.0	G =	G =	G =	G = 30.0	G =	G =	G =				
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 60.0						

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate	1499		79				51	943			467	1091
Lane Group Capacity	590		1583				451	1774			1774	1583
v/c Ratio	2.54		0.05				0.11	0.53			0.26	0.69
Green Ratio	0.33		1.00				0.50	0.50			0.50	1.00
Uniform Delay d <sub>1</sub>	20.0		0.0				7.9	10.2			8.6	0.0
Delay Factor k	0.50		0.11				0.11	0.13			0.11	0.26
Incremental Delay d <sub>2</sub>	698.3		0.0				0.1	0.3			0.1	1.3
PF Factor	1.000		0.950				1.000	1.000			1.000	0.950
Control Delay	718.3		0.0				8.1	10.5			8.7	1.3
Lane Group LOS	F		A				A	B			A	A
Approach Delay	682.3						10.4			3.5		
Approach LOS	F						B			A		
Intersection Delay	264.5			Intersection LOS						F		

## SHORT REPORT

General Information				Site Information			
Analyst	KNM			Intersection	CR 437 at Ponkan Road		
Agency or Co.	HNTB			Area Type	All other areas		
Date Performed	1/25/2007			Jurisdiction	Orange County		
Time Period	No Build SR46 2-Lane Arterial			Analysis Year	2032 No Build		

### Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	0	1	0	0	1	0	1	2	1	1	1	1
Lane Group	LTR			LTR			L	T	R	L	T	R
Volume (vph)	89	281	140	65	368	167	162	1956	62	94	542	54
% Heavy Vehicles	2	2	2	2	2	2	2	2	2	2	2	2
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
Pretimed/Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup Lost Time		2.0			2.0		2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green		2.0			2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival Type		3			3		3	3	3	3	3	3
Unit Extension		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width		12.0			12.0		12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/Hour												
Bus Stops/Hour		0			0		0	0	0	0	0	0
Minimum Pedestrian Time		3.2			3.2			3.2			3.2	
Phasing	EW Perm	02	03	04	Excl. Left	Thru & RT	07	08				
Timing	G = 55.0	G =	G =	G =	G = 15.0	G = 75.0	G =	G =				
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 160.0					

### Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB			
Adjusted Flow Rate		537			631		171	2059	65	99	571	57	
Lane Group Capacity		362			491		166	1663	742	166	873	742	
v/c Ratio		1.48			1.29		1.03	1.24	0.09	0.60	0.65	0.08	
Green Ratio		0.34			0.34		0.09	0.47	0.47	0.09	0.47	0.47	
Uniform Delay d <sub>1</sub>		52.5			52.5		72.5	42.5	23.5	69.6	32.6	23.4	
Delay Factor k		0.50			0.50		0.50	0.50	0.11	0.19	0.23	0.11	
Incremental Delay d <sub>2</sub>		231.9			143.1		78.0	112.5	0.1	5.8	1.8	0.0	
PF Factor		1.000			1.000		1.000	1.000	1.000	1.000	1.000	1.000	
Control Delay		284.4			195.6		150.5	155.0	23.6	75.3	34.3	23.5	
Lane Group LOS		F			F		F	F	C	E	C	C	
Approach Delay		284.4			195.6			151.0			39.1		
Approach LOS		F			F			F			D		
Intersection Delay		155.4			Intersection LOS						F		



## SHORT REPORT

General Information	Site Information
Analyst <i>KNM</i>	Intersection <i>CR 437 at Kelly Park Road</i> Area Type <i>All other areas</i> Jurisdiction <i>Orange County</i> Analysis Year <i>2032 No Build</i>
Agency or Co. <i>HNTB</i>	
Date Performed <i>1/25/2007</i>	
Time Period <i>No Build SR46 2-Lane Arterial</i>	

Volume and Timing Input													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0	
Lane Group		LTR			LTR			LTR			LTR		
Volume (vph)	123	281	86	151	203	206	64	868	138	168	551	41	
% Heavy Vehicles	2	2	2	2	2	2	2	2	2	2	2	2	
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	
Pretimed/Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A	
Startup Lost Time		2.0			2.0			2.0			2.0		
Extension of Effective Green		2.0			2.0			2.0			2.0		
Arrival Type		3			3			3			3		
Unit Extension		3.0			3.0			3.0			3.0		
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Width		12.0			12.0			12.0			12.0		
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N	
Parking/Hour													
Bus Stops/Hour		0			0			0			0		
Minimum Pedestrian Time		3.2			3.2			3.2			3.2		
Phasing	EW Perm	02		03		04		NS Perm	06		07		08
Timing	G = 30.0	G =	G =	G =	G =	G = 50.0	G =	G =	G =	G =	G =	G =	
	Y = 5	Y =	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =	Y =	Y =	Y =	
Duration of Analysis (hrs) = 0.25						Cycle Length C = 90.0							

Lane Group Capacity, Control Delay, and LOS Determination													
	EB			WB			NB			SB			
	Adjusted Flow Rate		516			590			1126			800	
Lane Group Capacity		393			380			932			523		
v/c Ratio		1.31			1.55			1.21			1.53		
Green Ratio		0.33			0.33			0.56			0.56		
Uniform Delay d <sub>1</sub>		30.0			30.0			20.0			20.0		
Delay Factor k		0.50			0.50			0.50			0.50		
Incremental Delay d <sub>2</sub>		158.0			261.3			103.8			247.9		
PF Factor		1.000			1.000			1.000			1.000		
Control Delay		188.0			291.3			123.8			267.9		
Lane Group LOS		F			F			F			F		
Approach Delay		188.0			291.3			123.8			267.9		
Approach LOS		F			F			F			F		
Intersection Delay		205.3			Intersection LOS						F		

SHORT REPORT												
General Information						Site Information						
Analyst <i>KNM</i> Agency or Co. <i>HNTB</i> Date Performed <i>1/25/2007</i> Time Period <i>No Build SR46 2-Lane Arterial</i>						Intersection <i>SR 46 and US 441 SB Ramps</i> Area Type <i>All other areas</i> Jurisdiction <i>Lake County</i> Analysis Year <i>2032 No Build</i>						
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		1	1	1	1					1		1
Lane Group		T	R	L	T					L		R
Volume (vph)		570	70	131	955					429		231
% Heavy Vehicles		11	11	11	11					10		10
PHF		0.95	0.95	0.95	0.95					0.95		0.95
Pretimed/Actuated (P/A)		A	A	A	A					A		A
Startup Lost Time		2.0	2.0	2.0	2.0					2.0		2.0
Extension of Effective Green		2.0	2.0	2.0	2.0					2.0		2.0
Arrival Type		3	3	3	3					3		3
Unit Extension		3.0	3.0	3.0	3.0					3.0		3.0
Ped/Bike/RTOR Volume	0	0	0	0	0		0	0		0	0	0
Lane Width		12.0	12.0	12.0	12.0					12.0		12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/Hour												
Bus Stops/Hour		0	0	0	0					0		0
Minimum Pedestrian Time		3.2			3.2			3.2			3.2	
Phasing	WB Only	EW Perm	03	04	SB Only	06	07	08				
Timing	G = 15.0	G = 50.0	G =	G =	G = 30.0	G =	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 110.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate		600	74	138	1005					452		243
Lane Group Capacity		778	1124	393	1089					448		1468
v/c Ratio		0.77	0.07	0.35	0.92					1.01		0.17
Green Ratio		0.45	0.77	0.64	0.64					0.27		1.00
Uniform Delay d <sub>1</sub>		25.2	3.0	13.0	17.6					40.0		0.0
Delay Factor k		0.32	0.11	0.11	0.44					0.50		0.11
Incremental Delay d <sub>2</sub>		4.8	0.0	0.5	12.7					44.8		0.1
PF Factor		1.000	1.000	1.000	1.000					1.000		0.950
Control Delay		30.0	3.0	13.5	30.3					84.8		0.1
Lane Group LOS		C	A	B	C					F		A
Approach Delay	27.0			28.3						55.1		
Approach LOS	C			C						E		
Intersection Delay	35.4			Intersection LOS						D		

SHORT REPORT												
General Information						Site Information						
Analyst	KNM					Intersection	SR 46 and US 441 NB					
Agency or Co.	HNTB					Ramps						
Date Performed	1/25/2007					Area Type	All other areas					
Time Period	No Build SR46 2-Lane Arterial					Jurisdiction	Lake County					
						Analysis Year	2032 No Build					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	1	1			1	1	1		1			
Lane Group	L	T			T	R	L		R			
Volume (vph)	120	879			805	515	281		159			
% Heavy Vehicles	11	11			11	11	10		10			
PHF	0.95	0.95			0.95	0.95	0.95		0.95			
Pretimed/Actuated (P/A)	A	A			A	A	A		A			
Startup Lost Time	2.0	2.0			2.0	2.0	2.0		2.0			
Extension of Effective Green	2.0	2.0			2.0	2.0	2.0		2.0			
Arrival Type	3	3			3	3	3		3			
Unit Extension	3.0	3.0			3.0	3.0	3.0		3.0			
Ped/Bike/RTOR Volume	0	0		0	0	0	0	0	0	0	0	
Lane Width	12.0	12.0			12.0	12.0	12.0		12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/Hour												
Bus Stops/Hour	0	0			0	0	0		0			
Minimum Pedestrian Time		3.2			3.2				3.2			3.2
Phasing	EB Only	EW Perm	03	04	NB Only	06	07	08				
Timing	G = 15.0	G = 60.0	G =	G =	G = 20.0	G =	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 110.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate	126	925			847	542	296		167			
Lane Group Capacity	333	1245			934	1124	298		1468			
v/c Ratio	0.38	0.74			0.91	0.48	0.99		0.11			
Green Ratio	0.73	0.73			0.55	0.77	0.18		1.00			
Uniform Delay d <sub>1</sub>	15.8	8.9			22.5	4.5	44.9		0.0			
Delay Factor k	0.11	0.30			0.43	0.11	0.49		0.11			
Incremental Delay d <sub>2</sub>	0.7	2.5			12.4	0.3	50.2		0.0			
PF Factor	1.000	1.000			1.000	1.000	1.000		0.950			
Control Delay	16.5	11.4			34.9	4.9	95.1		0.0			
Lane Group LOS	B	B			C	A	F		A			
Approach Delay	12.0			23.2			60.8					
Approach LOS	B			C			E					
Intersection Delay	25.1			Intersection LOS						C		

## SHORT REPORT

General Information				Site Information			
Analyst	KNM			Intersection	SR 46 at Round Lake Road		
Agency or Co.	HNTB			Area Type	All other areas		
Date Performed	1/25/2007			Jurisdiction	Lake County		
Time Period	No-Build SR46 2-Lane Arterial			Analysis Year	2032 No Build		

Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Lane Group	L	TR		L	T	R		LTR			LTR	
Volume (vph)	34	726	70	85	719	56	206	255	359	153	374	163
% Heavy Vehicles	11	11	11	11	11	11	2	2	2	2	2	2
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
Pretimed/Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup Lost Time	2.0	2.0		2.0	2.0	2.0		2.0			2.0	
Extension of Effective Green	2.0	2.0		2.0	2.0	2.0		2.0			2.0	
Arrival Type	3	3		3	3	3		3			3	
Unit Extension	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0		12.0	12.0	12.0		12.0			12.0	
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/Hour												
Bus Stops/Hour	0	0		0	0	0		0			0	
Minimum Pedestrian Time		3.2			3.2			3.2			3.2	
Phasing	EW Perm	02	03	04	NS Perm	06	07	08				
Timing	G = 50.0	G =	G =	G =	G = 67.0	G =	G =	G =				
	Y = 7	Y =	Y =	Y =	Y = 6	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 130.0					

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate	36	838		89	757	59		863			727	
Lane Group Capacity	55	650		55	658	560		577			599	
v/c Ratio	0.65	1.29		1.62	1.15	0.11		1.50			1.21	
Green Ratio	0.38	0.38		0.38	0.38	0.38		0.52			0.52	
Uniform Delay d <sub>1</sub>	32.9	40.0		40.0	40.0	25.7		31.5			31.5	
Delay Factor k	0.23	0.50		0.50	0.50	0.11		0.50			0.50	
Incremental Delay d <sub>2</sub>	24.7	141.5		346.9	84.5	0.1		232.1			111.0	
PF Factor	1.000	1.000		1.000	1.000	1.000		1.000			1.000	
Control Delay	57.6	181.5		386.9	124.5	25.7		263.6			142.5	
Lane Group LOS	E	F		F	F	C		F			F	
Approach Delay	176.4			143.8			263.6			142.5		
Approach LOS	F			F			F			F		
Intersection Delay	182.7			Intersection LOS						F		

## SHORT REPORT

General Information	Site Information
Analyst <i>KNM</i>	Intersection <i>SR 46 at CR 437</i> Area Type <i>All other areas</i> Jurisdiction <i>Lake County</i> Analysis Year <i>2032 No Build</i>
Agency or Co. <i>HNTB</i>	
Date Performed <i>1/25/2007</i>	
Time Period <i>No-Build SR46 2-Lane Arterial</i>	

Volume and Timing Input													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Number of Lanes	1	1	1	1	1	1	1	1	1	1	1	1	
Lane Group	L	T	R	L	T	R	L	T	R	L	T	R	
Volume (vph)	206	375	129	239	523	518	230	185	335	305	55	120	
% Heavy Vehicles	11	11	11	11	11	11	2	2	2	2	2	2	
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	
Pretimed/Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A	
Startup Lost Time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Extension of Effective Green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival Type	3	3	3	3	3	3	3	3	3	3	3	3	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N	
Parking/Hour													
Bus Stops/Hour	0	0	0	0	0	0	0	0	0	0	0	0	
Minimum Pedestrian Time		3.2			3.2			3.2			3.2		
Phasing	Excl. Left	Thru & RT	03			04			Excl. Left	Thru & RT	07		08
Timing	G = 15.0	G = 40.0	G =	G =			G = 15.0			G = 15.0	G =		
	Y = 5	Y = 5	Y =	Y =			Y = 5			Y = 5	Y =		
Duration of Analysis (hrs) = 0.25							Cycle Length C = 105.0						

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	Adjusted Flow Rate	217	395	136	252	551	545	242	195	353	321	58
Lane Group Capacity	232	652	831	232	652	554	253	266	528	253	266	528
v/c Ratio	0.94	0.61	0.16	1.09	0.85	0.98	0.96	0.73	0.67	1.27	0.22	0.24
Green Ratio	0.14	0.38	0.57	0.14	0.38	0.38	0.14	0.14	0.33	0.14	0.14	0.33
Uniform Delay d <sub>1</sub>	44.5	26.2	10.6	45.0	29.7	32.2	44.7	43.1	30.0	45.0	39.8	25.3
Delay Factor k	0.45	0.19	0.11	0.50	0.38	0.49	0.47	0.29	0.24	0.50	0.11	0.11
Incremental Delay d <sub>2</sub>	41.6	1.6	0.1	84.0	10.0	34.0	44.5	10.0	3.3	148.3	0.4	0.2
PF Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control Delay	86.1	27.8	10.7	129.0	39.7	66.1	89.2	53.1	33.3	193.3	40.2	25.6
Lane Group LOS	F	C	B	F	D	E	F	D	C	F	D	C
Approach Delay	41.6			67.1			55.3			133.9		
Approach LOS	D			E			E			F		
Intersection Delay	68.7			Intersection LOS						E		

## SHORT REPORT

General Information				Site Information			
Analyst	KNM			Intersection	SR 46 at CR 435		
Agency or Co.	HNTB			Area Type	All other areas		
Date Performed	1/25/2007			Jurisdiction	Lake County		
Time Period	No-Build SR46 2-Lane Arterial			Analysis Year	2032 No Build		

Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	1	1	0	1	1	0	0	1	1	1	1	0
Lane Group	L	TR		L	TR			LT	R	L	TR	
Volume (vph)	5	772	283	402	757	21	357	18	265	10	18	6
% Heavy Vehicles	11	11	11	11	11	11	2	2	2	2	2	2
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
Pretimed/Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup Lost Time	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0	
Extension of Effective Green	2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0	
Arrival Type	3	3		3	3			3	3	3	3	
Unit Extension	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0		12.0	12.0			12.0	12.0	12.0	12.0	
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/Hour												
Bus Stops/Hour	0	0		0	0			0	0	0	0	
Minimum Pedestrian Time		3.2			3.2			3.2			3.2	
Phasing	WB Only	EW Perm	03	04	NS Perm	06	07	08				
Timing	G = 20.0	G = 68.0	G =	G =	G = 25.0	G =	G =	G =				
	Y = 5.5	Y = 5.5	Y =	Y =	Y = 6.5	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 130.5					

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	Adjusted Flow Rate	5	1111		423	819			395	279	11	25
Lane Group Capacity	318	856		304	1222			256	625	57	344	
v/c Ratio	0.02	1.30		1.39	0.67			1.54	0.45	0.19	0.07	
Green Ratio	0.52	0.52		0.72	0.72			0.19	0.39	0.19	0.19	
Uniform Delay d <sub>1</sub>	15.1	31.3		46.9	10.1			52.8	29.0	44.3	43.2	
Delay Factor k	0.11	0.50		0.50	0.24			0.50	0.11	0.11	0.11	
Incremental Delay d <sub>2</sub>	0.0	142.7		195.1	1.4			262.9	0.5	1.7	0.1	
PF Factor	1.000	1.000		1.000	1.000			1.000	1.000	1.000	1.000	
Control Delay	15.1	173.9		242.0	11.5			315.7	29.5	45.9	43.3	
Lane Group LOS	B	F		F	B			F	C	D	D	
Approach Delay	173.2			90.0			197.2			44.1		
Approach LOS	F			F			F			D		
Intersection Delay	143.3			Intersection LOS						F		

## SHORT REPORT

General Information	Site Information
Analyst <i>KNM</i>	Intersection <i>SR 46 at CR 46A</i>
Agency or Co. <i>HNTB</i>	Area Type <i>All other areas</i>
Date Performed <i>01/25/2007</i>	Jurisdiction <i>Lake County</i>
Time Period <i>No Build SR46 2-Lane Arterial</i>	Analysis Year <i>2032 No Build</i>

Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	0	1			1	1				0		0
Lane Group		LT			T	R					LR	
Volume (vph)	6	974			1133	797				509		21
% Heavy Vehicles	11	11			11	11				2		2
PHF	0.95	0.95			0.95	0.95				0.95		0.95
Pretimed/Actuated (P/A)	A	A			A	A				A		A
Startup Lost Time		2.0			2.0	2.0					2.0	
Extension of Effective Green		2.0			2.0	2.0					2.0	
Arrival Type		3			3	3					3	
Unit Extension		3.0			3.0	3.0					3.0	
Ped/Bike/RTOR Volume	0	0		0	0	0				0	0	0
Lane Width		12.0			12.0	12.0					12.0	
Parking/Grade/Parking	N	0	N	N	0	N				N	0	N
Parking/Hour												
Bus Stops/Hour		0			0	0					0	
Minimum Pedestrian Time		3.2			3.2						3.2	
Phasing	EW Perm	02	03	04	SB Only	06	07	08				
Timing	G = 85.0	G =	G =	G =	G = 35.0	G =	G =	G =				
	Y = 7	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 132.0					

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate		1031			1193	839						558
Lane Group Capacity		1095			1102	1455						469
v/c Ratio		0.94			1.08	0.58						1.19
Green Ratio		0.64			0.64	1.00						0.27
Uniform Delay d <sub>1</sub>		21.3			23.5	0.0						48.5
Delay Factor k		0.45			0.50	0.17						0.50
Incremental Delay d <sub>2</sub>		15.2			52.4	0.6						105.0
PF Factor		1.000			1.000	0.950						1.000
Control Delay		36.5			75.9	0.6						153.5
Lane Group LOS		D			E	A						F
Approach Delay	36.5			44.8						153.5		
Approach LOS	D			D						F		
Intersection Delay	59.2			Intersection LOS						E		

## SHORT REPORT

General Information				Site Information			
Analyst	KNM			Intersection	SR 46 at Wekiva River Road		
Agency or Co.	HNTB			Area Type	All other areas		
Date Performed	1/25/2007			Jurisdiction	Lake County		
Time Period	No-Build SR46 2-Lane Arterial			Analysis Year	2032 No Build		

Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	1	1	1	1	1	1	0	1	1	0	1	0
Lane Group	L	T	R	L	T	R		LT	R		LTR	
Volume (vph)	2	1530	58	108	1820	2	24	0	66	1	0	1
% Heavy Vehicles	11	11	11	11	11	11	2	2	2	2	2	2
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
Pretimed/Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup Lost Time	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	
Extension of Effective Green	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	
Arrival Type	3	3	3	3	3	3		3	3		3	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/Hour												
Bus Stops/Hour	0	0	0	0	0	0		0	0		0	
Minimum Pedestrian Time		3.2			3.2			3.2			3.2	
Phasing	EW Perm	02	03	04	NS Perm	06	07	08				
Timing	G = 125.0	G =	G =	G =	G = 10.0	G =	G =	G =				
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 145.0					

Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	Adjusted Flow Rate	2	1611	61	114	1916	2		25	69		2
Lane Group Capacity	50	1476	1455	50	1476	1455		93	1583		108	
v/c Ratio	0.04	1.09	0.04	2.28	1.30	0.00		0.27	0.04		0.02	
Green Ratio	0.86	0.86	1.00	0.86	0.86	1.00		0.07	1.00		0.07	
Uniform Delay d <sub>1</sub>	1.4	10.0	0.0	10.0	10.0	0.0		64.0	0.0		62.9	
Delay Factor k	0.11	0.50	0.11	0.50	0.50	0.11		0.11	0.11		0.11	
Incremental Delay d <sub>2</sub>	0.3	52.6	0.0	634.2	139.3	0.0		1.6	0.0		0.1	
PF Factor	1.000	1.000	0.950	1.000	1.000	0.950		1.000	0.950		1.000	
Control Delay	1.8	62.6	0.0	644.2	149.3	0.0		65.6	0.0		63.0	
Lane Group LOS	A	E	A	F	F	A		E	A		E	
Approach Delay	60.2			176.9			17.5			63.0		
Approach LOS	E			F			B			E		
Intersection Delay	121.5			Intersection LOS						F		



## SHORT REPORT

### General Information

Analyst *KNM*  
 Agency or Co. *HNTB*  
 Date Performed *3/24/08*  
 Time Period *Build I-4 Connection @ SR 417*

### Site Information

Intersection *US 17/92 and I-4 WB Ramps*  
 Area Type *All other areas*  
 Jurisdiction *Seminole County*  
 Analysis Year *2032 No Build*

### Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	1		2				1	2			2	1
Lane Group	L		R				L	T			T	R
Volume (vph)	22		418				413	2121			603	627
% Heavy Vehicles	9		9				11	11			11	11
PHF	0.95		0.95				0.95	0.95			0.95	0.95
Pretimed/Actuated (P/A)	A		A				A	A			A	A
Startup Lost Time	2.0		2.0				2.0	2.0			2.0	2.0
Extension of Effective Green	2.0		2.0				2.0	2.0			2.0	2.0
Arrival Type	3		3				3	3			3	3
Unit Extension	3.0		3.0				3.0	3.0			3.0	3.0
Ped/Bike/RTOR Volume	0	0	40				0	0		0	0	0
Lane Width	12.0		12.0				12.0	12.0			12.0	12.0
Parking/Grade/Parking	N	0	N				N	0	N	N	0	N
Parking/Hour												
Bus Stops/Hour	0		0				0	0			0	0
Minimum Pedestrian Time		3.2						3.2			3.2	
Phasing	EB Only	02	03	04	NS Perm	06	07	08				
Timing	G = 20.0	G =	G =	G =	G = 90.0	G =	G =	G =				
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25										Cycle Length C = 120.0		

### Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	Adjusted Flow Rate	23		398				435	2233			635
Lane Group Capacity	276		2623				518	2444			2444	1455
v/c Ratio	0.08		0.15				0.84	0.91			0.26	0.45
Green Ratio	0.17		1.00				0.75	0.75			0.75	1.00
Uniform Delay d <sub>1</sub>	42.3		0.0				10.1	11.9			4.7	0.0
Delay Factor k	0.11		0.11				0.38	0.43			0.11	0.11
Incremental Delay d <sub>2</sub>	0.1		0.0				11.7	5.9			0.1	0.2
PF Factor	1.000		0.950				1.000	1.000			1.000	0.950
Control Delay	42.4		0.0				21.9	17.8			4.7	0.2
Lane Group LOS	D		A				C	B			A	A
Approach Delay	2.3						18.4			2.4		
Approach LOS	A						B			A		
Intersection Delay	12.2			Intersection LOS						B		

## SHORT REPORT

### General Information

Analyst *KNM*  
 Agency or Co. *HNTB*  
 Date Performed *3/24/08*  
 Time Period *Build I-4 Connection @ SR 417*

### Site Information

Intersection *US 17/92 and I-4 EB Ramps*  
 Area Type *All other areas*  
 Jurisdiction *Seminole County*  
 Analysis Year *2032 No Build*

### Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	2			1	1	1	1	2			2	1
Lane Group	L			L	T	R	L	T			T	R
Volume (vph)	1057			73	52	91	238	562			527	494
% Heavy Vehicles	2			9	9	9	11	11			11	11
PHF	0.95			0.95	0.95	0.95	0.95	0.95			0.95	0.95
Pretimed/Actuated (P/A)	A			A	A	A	A	A			A	A
Startup Lost Time	2.0			2.0	2.0	2.0	2.0	2.0			2.0	2.0
Extension of Effective Green	2.0			2.0	2.0	2.0	2.0	2.0			2.0	2.0
Arrival Type	3			3	3	3	3	3			3	3
Unit Extension	3.0			3.0	3.0	3.0	3.0	3.0			3.0	3.0
Ped/Bike/RTOR Volume	0	0		0	0	0	0	0		0	0	0
Lane Width	12.0			12.0	12.0	12.0	12.0	12.0			12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/Hour												
Bus Stops/Hour	0			0	0	0	0	0			0	0
Minimum Pedestrian Time		3.2			3.2			3.2			3.2	
Phasing	Excl. Left	WB Only	03	04	NB Only	NS Perm	07	08				
Timing	G = 40.0	G = 15.0	G =	G =	G = 20.0	G = 30.0	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 0	Y = 5	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 120.0						

### Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	
Adjusted Flow Rate	1113			77	55	96	251	592			555	520
Lane Group Capacity	1146			828	218	864	383	1358			815	1152
v/c Ratio	0.97			0.09	0.25	0.11	0.66	0.44			0.68	0.45
Green Ratio	0.33			0.50	0.13	0.58	0.46	0.42			0.25	0.79
Uniform Delay d <sub>1</sub>	39.4			15.7	47.4	11.1	22.7	24.9			40.7	4.1
Delay Factor k	0.48			0.11	0.11	0.11	0.23	0.11			0.25	0.11
Incremental Delay d <sub>2</sub>	19.9			0.0	0.6	0.1	4.0	0.2			2.3	0.3
PF Factor	1.000			1.000	1.000	1.000	1.000	1.000			1.000	1.000
Control Delay	59.4			15.8	48.0	11.2	26.7	25.2			43.0	4.3
Lane Group LOS	E			B	D	B	C	C			D	A
Approach Delay	59.4			21.6			25.6			24.3		
Approach LOS	E			C			C			C		
Intersection Delay	36.4			Intersection LOS						D		

## SHORT REPORT

### General Information

Analyst *KNM*  
 Agency or Co. *HNTB*  
 Date Performed *3/24/08*  
 Time Period *Build I-4 Connection @ SR 417*

### Site Information

Intersection *CR 15 @ Orange Blvd*  
 Area Type *All other areas*  
 Jurisdiction *Seminole County*  
 Analysis Year *2032 No Build*

### Volume and Timing Input

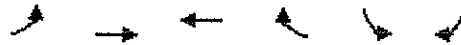
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	1		1				1	1			1	1
Lane Group	L		R				L	T			T	R
Volume (vph)	389		71				88	1022			415	165
% Heavy Vehicles	2		2				2	2			2	2
PHF	0.95		0.95				0.95	0.95			0.95	0.95
Pretimed/Actuated (P/A)	A		A				A	A			A	A
Startup Lost Time	2.0		2.0				2.0	2.0			2.0	2.0
Extension of Effective Green	2.0		2.0				2.0	2.0			2.0	2.0
Arrival Type	3		3				3	3			3	3
Unit Extension	3.0		3.0				3.0	3.0			3.0	3.0
Ped/Bike/RTOR Volume	0	0	40				0	0		0	0	0
Lane Width	12.0		12.0				12.0	12.0			12.0	12.0
Parking/Grade/Parking	N	0	N				N	0	N	N	0	N
Parking/Hour												
Bus Stops/Hour	0		0				0	0			0	0
Minimum Pedestrian Time		3.2						3.2			3.2	
Phasing	EB Only	02	03	04	NS Perm	06	07	08				
Timing	G = 30.0	G =	G =	G =	G = 60.0	G =	G =	G =				
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 100.0						

### Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	Adjusted Flow Rate	409		33				93	1076			437
Lane Group Capacity	531		1583				494	1118			1118	950
v/c Ratio	0.77		0.02				0.19	0.96			0.39	0.18
Green Ratio	0.30		1.00				0.60	0.60			0.60	0.60
Uniform Delay d <sub>1</sub>	31.9		0.0				9.0	18.9			10.5	9.0
Delay Factor k	0.32		0.11				0.11	0.47			0.11	0.11
Incremental Delay d <sub>2</sub>	6.8		0.0				0.2	18.5			0.2	0.1
PF Factor	1.000		0.950				1.000	1.000			1.000	1.000
Control Delay	38.7		0.0				9.2	37.5			10.7	9.1
Lane Group LOS	D		A				A	D			B	A
Approach Delay	35.8						35.2			10.2		
Approach LOS	D						D			B		
Intersection Delay	28.5			Intersection LOS						C		

HCM Signalized Intersection Capacity Analysis  
 26: SR 46 & Wekiva Park Dr

Wekiva Parkway  
 2032 No Build Conditions - PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↶	↷	↶	↷
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.98	
Flt Protected	0.95	1.00	1.00	1.00	0.96	
Satd. Flow (prot)	1770	1863	1863	1583	1746	
Flt Permitted	0.10	1.00	1.00	1.00	0.96	
Satd. Flow (perm)	194	1863	1863	1583	1746	
Volume (vph)	2	1588	1933	17	8	2
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	1726	2101	18	9	2
RTOR Reduction (vph)	0	0	0	1	2	0
Lane Group Flow (vph)	2	1726	2101	17	9	0
Turn Type	Perm			Perm		
Protected Phases		2	6		4	
Permitted Phases	2			6		
Actuated Green, G (s)	133.0	133.0	133.0	133.0	3.0	
Effective Green, g (s)	136.5	136.5	136.5	136.5	5.5	
Actuated g/C Ratio	0.91	0.91	0.91	0.91	0.04	
Clearance Time (s)	7.5	7.5	7.5	7.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	177	1695	1695	1441	64	
v/s Ratio Prot		0.93	c1.13		c0.01	
v/s Ratio Perm	0.01			0.01		
v/c Ratio	0.01	1.02	1.24	0.01	0.14	
Uniform Delay, d1	0.6	6.7	6.7	0.6	70.0	
Progression Factor	1.00	1.00	2.43	1.15	1.00	
Incremental Delay, d2	0.1	26.6	108.3	0.0	1.0	
Delay (s)	0.7	33.3	124.7	0.7	71.0	
Level of Service	A	C	F	A	E	
Approach Delay (s)		33.3	123.7		71.0	
Approach LOS		C	F		E	

Intersection Summary			
HCM Average Control Delay	83.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	111.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
1: SR 46 & Longwood Markham Road

Wekiva Parkway  
2032 No Build Conditions - PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗		↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		0.96	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1863	1583	1770	1863	1583	1770	1863	1583		1779	
Flt Permitted		1.00	1.00	0.04	1.00	1.00	0.76	1.00	1.00		1.00	
Satd. Flow (perm)		1863	1583	66	1863	1583	1408	1863	1583		1779	
Volume (vph)	0	1468	142	62	1657	1	306	4	120	0	2	1
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	1596	154	67	1801	1	333	4	130	0	2	1
RTOR Reduction (vph)	0	0	38	0	0	0	0	0	52	0	1	0
Lane Group Flow (vph)	0	1596	116	67	1801	1	333	4	78	0	2	0
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	Perm		
Protected Phases		2			6			8				4
Permitted Phases	2		2	6		6	8		8	4		
Actuated Green, G (s)		110.5	110.5	110.5	110.5	110.5	26.5	26.5	26.5		26.5	
Effective Green, g (s)		113.0	113.0	113.0	113.0	113.0	29.0	29.0	29.0		29.0	
Actuated g/C Ratio		0.75	0.75	0.75	0.75	0.75	0.19	0.19	0.19		0.19	
Clearance Time (s)		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5		6.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)		1403	1193	50	1403	1193	272	360	306		344	
v/s Ratio Prot		0.86			0.97			0.00			0.00	
v/s Ratio Perm			0.07	c1.02		0.00	c0.24		0.05			
v/c Ratio		1.14	0.10	1.34	1.28	0.00	1.22	0.01	0.26		0.01	
Uniform Delay, d1		18.5	4.9	18.5	18.5	4.6	60.5	48.9	51.3		48.9	
Progression Factor		1.03	1.53	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2		65.0	0.0	242.5	133.2	0.0	129.1	0.0	0.4		0.0	
Delay (s)		84.0	7.6	261.0	151.7	4.6	189.6	48.9	51.8		48.9	
Level of Service		F	A	F	F	A	F	D	D		D	
Approach Delay (s)		77.3			155.6			150.1			48.9	
Approach LOS		E			F			F			D	

Intersection Summary

HCM Average Control Delay	121.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	117.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
3: SR 46 & Lake Markham Road

Wekiva Parkway  
2032 No Build Conditions - PM Peak

	→	↗	↖	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑	↗	↖	↑	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
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)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.03	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	64	1863	1770	1583
Volume (vph)	1407	13	68	1802	107	223
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1529	14	74	1959	116	242
RTOR Reduction (vph)	0	2	0	0	0	83
Lane Group Flow (vph)	1529	12	74	1959	116	159
Turn Type		Perm	Perm			Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	112.5	112.5	112.5	112.5	13.5	13.5
Effective Green, g (s)	116.0	116.0	116.0	116.0	16.0	16.0
Actuated g/C Ratio	0.83	0.83	0.83	0.83	0.11	0.11
Clearance Time (s)	7.5	7.5	7.5	7.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1544	1312	53	1544	202	181
v/s Ratio Prot	0.82			1.05	0.07	
v/s Ratio Perm		0.01	c1.15			c0.10
v/c Ratio	0.99	0.01	1.40	1.27	0.57	0.88
Uniform Delay, d1	11.5	2.1	12.0	12.0	58.8	61.0
Progression Factor	1.00	1.00	0.88	0.97	1.00	1.00
Incremental Delay, d2	20.7	0.0	188.5	121.4	3.9	34.6
Delay (s)	32.2	2.1	199.0	133.1	62.7	95.6
Level of Service	C	A	F	F	E	F
Approach Delay (s)	31.9			135.5	84.9	
Approach LOS	C			F	F	

**Intersection Summary**

HCM Average Control Delay	90.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	107.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: SR 46 & Orange Blvd

Wekiva Parkway  
2032 No Build Conditions - PM Peak

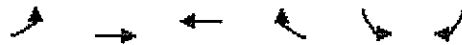
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.41	1.00	1.00	0.63	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	765	1863	1583	1165	1863	1583
Volume (vph)	139	1353	48	143	1776	231	365	195	120	159	92	119
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)	151	1471	52	155	1930	251	397	212	130	173	100	129
RTOR Reduction (vph)	0	0	20	0	0	73	0	0	106	0	0	116
Lane Group Flow (vph)	151	1471	32	155	1930	178	397	212	24	173	100	13
Turn Type	Prot		Perm	Prot		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	11.6	67.4	67.4	13.9	69.7	69.7	37.7	23.8	23.8	19.1	11.7	11.7
Effective Green, g (s)	14.1	71.4	71.4	16.4	73.7	73.7	40.2	26.3	26.3	24.1	14.2	14.2
Actuated g/C Ratio	0.10	0.51	0.51	0.12	0.53	0.53	0.29	0.19	0.19	0.17	0.10	0.10
Clearance Time (s)	6.5	8.0	8.0	6.5	8.0	8.0	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	178	1805	807	207	1863	833	378	350	297	243	189	161
v/s Ratio Prot	c0.09	0.42		0.09	c0.55		c0.17	0.11		0.05	0.05	
v/s Ratio Perm			0.02			0.11	c0.14		0.02	0.07		0.01
v/c Ratio	0.85	0.81	0.04	0.75	1.04	0.21	1.05	0.61	0.08	0.71	0.53	0.08
Uniform Delay, d <sub>1</sub>	61.9	28.8	17.2	59.8	33.2	17.7	47.1	52.1	46.9	53.3	59.7	57.0
Progression Factor	0.99	1.06	1.01	1.04	0.86	1.22	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d <sub>2</sub>	9.7	1.1	0.0	7.2	25.1	0.3	60.1	3.0	0.1	9.5	2.7	0.2
Delay (s)	70.8	31.7	17.4	69.2	53.5	21.9	107.2	55.1	47.0	62.8	62.4	57.2
Level of Service	E	C	B	E	D	C	F	E	D	E	E	E
Approach Delay (s)		34.8			51.1			81.6			60.9	
Approach LOS		C			D			F			E	

Intersection Summary

HCM Average Control Delay	50.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 29: SR 46 & Lake Forest Blvd

Wekiva Parkway  
 2032 No Build Conditions - PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↵	↕↕	↕↕	↵	↵	↵
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr <sub>t</sub>	1.00	1.00	1.00	0.85	1.00	0.85
Fl <sub>t</sub> Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Fl <sub>t</sub> Permitted	0.04	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	70	3539	3539	1583	1770	1583
Volume (vph)	48	1732	2159	431	288	62
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	1883	2347	468	313	67
RTOR Reduction (vph)	0	0	0	110	0	13
Lane Group Flow (vph)	52	1883	2347	358	313	54
Turn Type	Perm			Perm		Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	103.5	103.5	103.5	103.5	22.5	22.5
Effective Green, g (s)	107.0	107.0	107.0	107.0	25.0	25.0
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.18	0.18
Clearance Time (s)	7.5	7.5	7.5	7.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	54	2705	2705	1210	316	283
v/s Ratio Prot		0.53	0.66		0.18	
v/s Ratio Perm	0.75			0.23		0.03
v/c Ratio	0.96	0.70	0.87	0.30	0.99	0.19
Uniform Delay, d <sub>1</sub>	14.7	8.3	11.5	5.0	57.4	48.9
Progression Factor	0.76	0.33	0.54	0.92	1.00	1.00
Incremental Delay, d <sub>2</sub>	92.3	1.1	1.9	0.3	47.9	0.3
Delay (s)	103.5	3.8	8.2	4.9	105.3	49.2
Level of Service	F	A	A	A	F	D
Approach Delay (s)		6.5	7.6		95.4	
Approach LOS		A	A		F	

Intersection Summary

HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



HCM Signalized Intersection Capacity Analysis  
8: SR 46 & International Pkwy

Wekiva Parkway  
2032 No Build Conditions - PM Peak

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↖↑	↑↑	↖↑	↗↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Fr <sub>t</sub>	1.00	0.85	1.00	1.00	1.00	0.85
Fl <sub>t</sub> Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1583	3433	3539	3433	2787
Fl <sub>t</sub> Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1583	3433	3539	3433	2787
Volume (vph)	1929	211	209	2151	517	453
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2097	229	227	2338	562	492
RTOR Reduction (vph)	0	82	0	0	0	172
Lane Group Flow (vph)	2097	147	227	2338	562	320
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Actuated Green, G (s)	86.9	86.9	9.6	103.0	23.0	23.0
Effective Green, g (s)	89.9	89.9	12.1	106.0	26.0	26.0
Actuated g/C Ratio	0.64	0.64	0.09	0.76	0.19	0.19
Clearance Time (s)	7.0	7.0	6.5	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2273	1017	297	2680	638	518
v/s Ratio Prot	c0.59		0.07	c0.66	c0.16	
v/s Ratio Perm		0.09				0.11
v/c Ratio	0.92	0.14	0.76	0.87	0.88	0.62
Uniform Delay, d <sub>1</sub>	22.0	9.9	62.6	12.2	55.5	52.4
Progression Factor	0.54	1.12	1.27	0.19	0.64	0.42
Incremental Delay, d <sub>2</sub>	5.7	0.2	1.1	0.4	12.3	2.0
Delay (s)	17.6	11.3	80.4	2.8	48.1	24.2
Level of Service	B	B	F	A	D	C
Approach Delay (s)	17.0			9.6	36.9	
Approach LOS	B			A	D	
<b>Intersection Summary</b>						
HCM Average Control Delay		17.3		HCM Level of Service		B
HCM Volume to Capacity ratio		0.92				
Actuated Cycle Length (s)		140.0		Sum of lost time (s)		12.0
Intersection Capacity Utilization		84.0%		ICU Level of Service		E
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
31: SR 46 & N Oregon St

Wekiva Parkway  
2032 No Build Conditions - PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖↖		↖	↖↖	↖	↖	↖	↖	↖	↖	↖
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00
Satd. Flow (prot)	1770	5083		1770	3539	1583	1770	1863	1583	1681	1693	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.62	1.00	1.00	0.41	0.40	1.00
Satd. Flow (perm)	1770	5083		1770	3539	1583	1156	1863	1583	733	716	1583
Volume (vph)	127	1818	5	73	2358	349	22	93	201	357	18	55
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)	138	1976	5	79	2563	379	24	101	218	388	20	60
RTOR Reduction (vph)	0	0	0	0	0	88	0	0	90	0	0	51
Lane Group Flow (vph)	138	1981	0	79	2563	291	24	101	128	199	209	9
Turn Type	Prot			Prot		Perm pm+pt			Perm pm+pt			Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6	8		8	4		4
Actuated Green, G (s)	7.5	83.9		9.0	85.4	85.4	14.2	12.1	12.1	25.0	25.0	17.5
Effective Green, g (s)	10.0	87.9		11.5	89.4	89.4	19.2	14.6	14.6	28.6	28.6	20.0
Actuated g/C Ratio	0.07	0.63		0.08	0.64	0.64	0.14	0.10	0.10	0.20	0.20	0.14
Clearance Time (s)	6.5	8.0		6.5	8.0	8.0	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	126	3191		145	2260	1011	179	194	165	217	216	226
v/s Ratio Prot	c0.08	0.39		0.04	c0.72		0.00	0.05		0.07	c0.07	
v/s Ratio Perm						0.18	0.01		0.08	0.12	c0.13	0.01
v/c Ratio	1.10	0.62		0.54	1.13	0.29	0.13	0.52	0.78	0.92	0.97	0.04
Uniform Delay, d1	65.0	15.9		61.7	25.3	11.2	52.8	59.4	61.1	53.1	55.2	51.7
Progression Factor	1.09	0.86		1.00	0.71	0.75	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	81.3	0.4		1.0	61.9	0.2	0.3	2.5	20.3	38.6	51.4	0.1
Delay (s)	152.1	14.1		62.6	79.8	8.6	53.2	61.9	81.4	91.7	106.7	51.8
Level of Service	F	B		E	E	A	D	E	F	F	F	D
Approach Delay (s)		23.1			70.4			73.7			93.3	
Approach LOS		C			E			E			F	

Intersection Summary

HCM Average Control Delay	55.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

























HCM Signalized Intersection Capacity Analysis  
42: SR 46 & I-4 WB Ramp

Wekiva Parkway  
2032 No Build Conditions - PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations		↑↑	↑		↑↑		↑↑		↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0		4.0		
Lane Util. Factor		0.95	1.00		0.95		0.97		0.88		
Fr't		1.00	0.85		1.00		1.00		0.85		
Flt Protected		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (prot)		3539	1583		3539		3433		2787		
Flt Permitted		1.00	1.00		1.00		0.95		1.00		
Satd. Flow (perm)		3539	1583		3539		3433		2787		
Volume (vph)	0	1440	860	0	2259	0	951	0	539	0	0
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
Adj. Flow (vph)	0	1565	935	0	2455	0	1034	0	586	0	0
RTOR Reduction (vph)	0	0	321	0	0	0	0	0	8	0	0
Lane Group Flow (vph)	0	1565	614	0	2455	0	1034	0	578	0	0
Turn Type			Perm				Prot		custom		
Protected Phases		2			6		4				
Permitted Phases			2						4		
Actuated Green, G (s)		89.5	89.5		89.5		37.5		37.5		
Effective Green, g (s)		92.0	92.0		92.0		40.0		40.0		
Actuated g/C Ratio		0.66	0.66		0.66		0.29		0.29		
Clearance Time (s)		6.5	6.5		6.5		6.5		6.5		
Vehicle Extension (s)		3.0	3.0		3.0		3.0		3.0		
Lane Grp Cap (vph)		2326	1040		2326		981		796		
v/s Ratio Prot		0.44			0.69		0.30				
v/s Ratio Perm			0.39						0.21		
v/c Ratio		0.67	0.59		1.06		1.05		0.73		
Uniform Delay, d1		14.8	13.5		24.0		50.0		45.1		
Progression Factor		0.43	5.19		0.39		1.00		1.00		
Incremental Delay, d2		1.2	1.8		30.7		44.1		3.3		
Delay (s)		7.5	71.6		40.0		94.1		48.4		
Level of Service		A	E		D		F		D		
Approach Delay (s)		31.5			40.0			77.5		0.0	
Approach LOS		C			D			E		A	
<b>Intersection Summary</b>											
HCM Average Control Delay			46.0				HCM Level of Service			D	
HCM Volume to Capacity ratio			1.06								
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			8.0	
Intersection Capacity Utilization			88.0%				ICU Level of Service			E	
Analysis Period (min)			15								
c Critical Lane Group											

HCM Signalized Intersection Capacity Analysis  
35: SR 46 &

Wekiva Parkway  
2032 No Build Conditions - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			  		 		 			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.97		0.88			
Fr <sub>t</sub>	1.00	1.00			1.00	0.85	1.00		0.85			
Fl <sub>t</sub> Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	3539			5085	1583	3433		2787			
Fl <sub>t</sub> Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	3539			5085	1583	3433		2787			
Volume (vph)	446	1945	0	0	2536	1044	573	0	717	0	0	0
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)	485	2114	0	0	2757	1135	623	0	779	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	318	0	0	25	0	0	0
Lane Group Flow (vph)	485	2114	0	0	2757	817	623	0	754	0	0	0
Turn Type	Prot					Perm	custom		custom			
Protected Phases	5!	2!			6!							
Permitted Phases						6	2!		8			
Actuated Green, G (s)	16.5	96.5			73.5	73.5	96.5		30.5			
Effective Green, g (s)	19.0	99.0			76.0	76.0	99.0		33.0			
Actuated g/C Ratio	0.14	0.71			0.54	0.54	0.71		0.24			
Clearance Time (s)	6.5	6.5			6.5	6.5	6.5		6.5			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Lane Grp Cap (vph)	466	2503			2760	859	2428		657			
v/s Ratio Prot	c0.14	0.60			c0.54							
v/s Ratio Perm						0.52	0.18		c0.27			
v/c Ratio	1.04	0.84			1.00	0.95	0.26		1.15			
Uniform Delay, d <sub>1</sub>	60.5	14.9			32.0	30.3	7.3		53.5			
Progression Factor	1.16	0.54			0.46	1.78	1.00		1.00			
Incremental Delay, d <sub>2</sub>	41.7	2.0			4.9	3.2	0.3		83.3			
Delay (s)	112.1	10.1			19.7	57.0	7.6		136.8			
Level of Service	F	B			B	E	A		F			
Approach Delay (s)		29.1			30.6			79.4			0.0	
Approach LOS		C			C			E			A	

**Intersection Summary**

































HCM Average Control Delay	38.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 98: SR 46 & Towne

Wekiva Parkway  
 2032 No Build Conditions - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  		 	  		 			 		 
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.86	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fl <sub>t</sub> Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	3433	6408	1583	3433	1863	1583	1770	1863	1583
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	3433	6408	1583	3433	1863	1583	1770	1863	1583
Volume (vph)	325	1714	921	378	2527	165	718	66	289	144	62	199
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)	353	1863	1001	411	2747	179	780	72	314	157	67	216
RTOR Reduction (vph)	0	0	326	0	0	109	0	0	184	0	0	183
Lane Group Flow (vph)	353	1863	675	411	2747	70	780	72	130	157	67	33
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	25.8	60.6	60.6	17.7	52.5	52.5	25.5	22.3	22.3	13.4	10.2	10.2
Effective Green, g (s)	28.3	63.1	63.1	20.2	55.0	55.0	28.0	24.8	24.8	15.9	12.7	12.7
Actuated g/C Ratio	0.20	0.45	0.45	0.14	0.39	0.39	0.20	0.18	0.18	0.11	0.09	0.09
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	358	2292	713	495	2517	622	687	330	280	201	169	144
v/s Ratio Prot	c0.20	0.37		0.12	c0.43		c0.23	0.04		0.09	0.04	
v/s Ratio Perm			0.43			0.04			c0.08			0.02
v/c Ratio	0.99	0.81	0.95	0.83	1.09	0.11	1.14	0.22	0.46	0.78	0.40	0.23
Uniform Delay, d <sub>1</sub>	55.7	33.3	36.9	58.2	42.5	27.0	56.0	49.3	51.6	60.4	60.0	59.1
Progression Factor	1.05	0.94	0.86	1.06	1.02	1.73	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d <sub>2</sub>	30.7	1.8	14.7	1.1	41.9	0.0	78.1	0.3	1.2	17.7	1.5	0.8
Delay (s)	89.2	33.2	46.3	63.0	85.3	46.7	134.1	49.6	52.8	78.0	61.6	59.9
Level of Service	F	C	D	E	F	D	F	D	D	E	E	E
Approach Delay (s)		43.4			80.5			107.0			66.6	
Approach LOS		D			F			F			E	

Intersection Summary

HCM Average Control Delay	68.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
104: SR 46 & Rinehart

Wekiva Parkway  
2032 No Build Conditions - PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1863	1583
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1863	1583
Volume (vph)	62	2027	451	612	2185	13	934	71	645	41	37	145
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)	67	2203	490	665	2375	14	1015	77	701	45	40	158
RTOR Reduction (vph)	0	0	147	0	0	7	0	0	229	0	0	38
Lane Group Flow (vph)	67	2203	343	665	2375	7	1015	77	472	45	40	120
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	3.5	48.5	48.5	19.5	64.5	64.5	33.5	33.5	33.5	12.5	12.5	12.5
Effective Green, g (s)	6.0	51.0	51.0	22.0	67.0	67.0	36.0	36.0	36.0	15.0	15.0	15.0
Actuated g/C Ratio	0.04	0.36	0.36	0.16	0.48	0.48	0.26	0.26	0.26	0.11	0.11	0.11
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	76	1852	577	539	2434	758	883	479	407	190	200	170
v/s Ratio Prot	0.04	c0.43		c0.19	0.47		0.30	0.04		0.03	0.02	
v/s Ratio Perm			0.22			0.00			c0.30			c0.08
v/c Ratio	0.88	1.19	0.59	1.23	0.98	0.01	1.15	0.16	1.16	0.24	0.20	0.70
Uniform Delay, d <sub>1</sub>	66.6	44.5	36.1	59.0	35.7	19.1	52.0	40.3	52.0	57.3	57.0	60.4
Progression Factor	1.24	0.59	0.19	1.00	1.00	1.00	0.71	0.72	0.49	1.00	1.00	1.00
Incremental Delay, d <sub>2</sub>	52.9	89.6	3.3	120.6	13.4	0.0	76.6	0.1	89.6	0.6	0.5	12.4
Delay (s)	135.3	115.7	10.1	179.6	49.1	19.1	113.7	29.1	114.8	57.9	57.5	72.8
Level of Service	F	F	B	F	D	B	F	C	F	E	E	E
Approach Delay (s)		97.5			77.4			110.5			67.5	
Approach LOS		F			E			F			E	

**Intersection Summary**

HCM Average Control Delay	91.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	99.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 14: CR 46A & International Pkwy

Wekiva Parkway  
 2032 No Build Conditions - PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1770	3539	1583	3433	3539	1583
Volume (vph)	117	571	42	343	731	426	246	1215	1629	340	661	279
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)	127	621	46	373	795	463	267	1321	1771	370	718	303
RTOR Reduction (vph)	0	0	39	0	0	127	0	0	78	0	0	133
Lane Group Flow (vph)	127	621	7	373	795	337	267	1321	1693	370	718	170
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	5.5	19.5	19.5	8.5	22.5	22.5	25.0	77.5	77.5	8.5	61.0	61.0
Effective Green, g (s)	8.0	22.0	22.0	11.0	25.0	25.0	27.5	80.0	80.0	11.0	63.5	63.5
Actuated g/C Ratio	0.06	0.16	0.16	0.08	0.18	0.18	0.20	0.57	0.57	0.08	0.45	0.45
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	101	556	249	270	632	283	348	2022	905	270	1605	718
v/s Ratio Prot	0.07	0.18		c0.11	c0.22		0.15	0.37		c0.11	0.20	
v/s Ratio Perm			0.00			0.21			c1.07			0.11
v/c Ratio	1.26	1.12	0.03	1.38	1.26	1.19	0.77	0.65	1.87	1.37	0.45	0.24
Uniform Delay, d1	66.0	59.0	50.0	64.5	57.5	57.5	53.2	20.5	30.0	64.5	26.2	23.4
Progression Factor	1.00	1.00	1.00	0.81	0.69	0.80	1.00	1.00	1.00	1.07	0.70	0.75
Incremental Delay, d2	173.8	74.5	0.2	183.8	123.1	102.9	9.7	0.8	396.1	176.2	0.1	0.1
Delay (s)	239.8	133.5	50.2	235.8	163.0	148.7	63.0	21.3	426.1	245.2	18.5	17.7
Level of Service	F	F	D	F	F	F	E	C	F	F	B	B
Approach Delay (s)		145.7			175.6			238.0			78.6	
Approach LOS		F			F			F			E	

Intersection Summary

HCM Average Control Delay	182.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.69		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	136.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
78: CR 46A &

Wekiva Parkway  
2032 No Build Conditions - PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.95	0.95	0.88	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1681	1720	2787	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1681	1720	2787	1770	1863	1583
Volume (vph)	39	2054	697	771	1559	73	235	66	629	367	372	44
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)	42	2233	758	838	1695	79	255	72	684	399	404	48
RTOR Reduction (vph)	0	0	179	0	0	35	0	0	17	0	0	40
Lane Group Flow (vph)	42	2233	579	838	1695	44	159	168	667	399	404	8
Turn Type	Prot		Perm	Prot		Perm	Split		pt+ov	Split		Perm
Protected Phases	5	2		1	6		8	8	8 1	4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	3.7	58.5	58.5	21.5	76.3	76.3	14.5	14.5	41.5	22.5	22.5	22.5
Effective Green, g (s)	5.2	61.0	61.0	23.0	78.8	78.8	16.0	16.0	43.0	24.0	24.0	24.0
Actuated g/C Ratio	0.04	0.44	0.44	0.16	0.56	0.56	0.11	0.11	0.31	0.17	0.17	0.17
Clearance Time (s)	5.5	6.5	6.5	5.5	6.5	6.5	5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	66	1542	690	564	1992	891	192	197	856	303	319	271
v/s Ratio Prot	0.02	c0.63		c0.24	0.48		0.09	c0.10	0.24	c0.23	0.22	
v/s Ratio Perm			0.37			0.03						0.01
v/c Ratio	0.64	1.45	0.84	1.49	0.85	0.05	0.83	0.85	0.78	1.32	1.27	0.03
Uniform Delay, d1	66.5	39.5	35.1	58.5	25.7	13.8	60.7	60.8	44.2	58.0	58.0	48.3
Progression Factor	1.04	0.92	0.84	0.75	1.48	3.10	1.01	1.01	1.07	1.00	1.00	1.00
Incremental Delay, d2	1.8	202.0	1.2	219.5	0.5	0.0	24.3	28.1	4.5	164.0	142.5	0.0
Delay (s)	70.7	238.2	30.9	263.5	38.5	42.7	85.7	89.6	51.9	222.0	200.5	48.4
Level of Service	E	F	C	F	D	D	F	F	D	F	F	D
Approach Delay (s)		184.1			110.8			63.5			202.0	
Approach LOS		F			F			E			F	

Intersection Summary

HCM Average Control Delay	144.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	120.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
41: CR 46A & I-4

Wekiva Parkway  
2032 No Build Conditions - PM Peak

































Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕			↕	↖↗	↖↗	↕	↖↗			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.97		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	3539			3539	1583	3433		2787			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	3539			3539	1583	3433		2787			
Volume (vph)	365	2685	0	0	1769	445	634	0	1206	0	0	0
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)	397	2918	0	0	1923	484	689	0	1311	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	136	0	0	1	0	0	0
Lane Group Flow (vph)	397	2918	0	0	1923	348	689	0	1310	0	0	0
Turn Type	Prot					Perm	Prot		custom			
Protected Phases	5	2			6		3					
Permitted Phases						6			8			
Actuated Green, G (s)	12.5	80.0			62.0	62.0	47.5		47.5			
Effective Green, g (s)	14.0	83.0			65.0	65.0	49.0		49.0			
Actuated g/C Ratio	0.10	0.59			0.46	0.46	0.35		0.35			
Clearance Time (s)	5.5	7.0			7.0	7.0	5.5		5.5			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Lane Grp Cap (vph)	343	2098			1643	735	1202		975			
v/s Ratio Prot	0.12	0.82			0.54		0.20					
v/s Ratio Perm						0.22			0.47			
v/c Ratio	1.16	1.39			1.17	0.47	0.57		1.34			
Uniform Delay, d1	63.0	28.5			37.5	25.8	37.0		45.5			
Progression Factor	1.02	0.92			0.32	0.02	1.00		1.00			
Incremental Delay, d2	74.2	176.2			77.4	0.2	0.7		161.4			
Delay (s)	138.2	202.4			89.4	0.7	37.7		206.9			
Level of Service	F	F			F	A	D		F			
Approach Delay (s)		194.7			71.6			148.6			0.0	
Approach LOS		F			E			F			A	

**Intersection Summary**

HCM Average Control Delay	144.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	123.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
39: CR 46A & Rinehart

Wekiva Parkway  
2032 No Build Conditions - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	1770	3539	1583
Volume (vph)	1259	1763	869	337	703	130	1047	1020	513	125	731	464
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)	1368	1916	945	366	764	141	1138	1109	558	136	795	504
RTOR Reduction (vph)	0	0	288	0	0	112	0	0	117	0	0	338
Lane Group Flow (vph)	1368	1916	657	366	764	29	1138	1109	441	136	795	166
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	36.5	53.5	53.5	9.5	26.5	26.5	30.5	42.7	42.7	10.3	22.5	22.5
Effective Green, g (s)	38.0	56.0	56.0	11.0	29.0	29.0	32.0	45.2	45.2	11.8	25.0	25.0
Actuated g/C Ratio	0.27	0.40	0.40	0.08	0.21	0.21	0.23	0.32	0.32	0.08	0.18	0.18
Clearance Time (s)	5.5	6.5	6.5	5.5	6.5	6.5	5.5	6.5	6.5	5.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	932	1416	633	270	733	328	785	1143	511	149	632	283
v/s Ratio Prot	c0.40	c0.54		0.11	0.22		c0.33	0.31		0.08	c0.22	
v/s Ratio Perm			0.41			0.02			0.28			0.10
v/c Ratio	1.47	1.35	1.04	1.36	1.04	0.09	1.45	0.97	0.86	0.91	1.26	0.59
Uniform Delay, d1	51.0	42.0	42.0	64.5	55.5	44.8	54.0	46.7	44.5	63.6	57.5	52.7
Progression Factor	1.01	1.13	1.30	1.00	1.00	1.00	1.00	1.00	1.00	1.29	0.88	0.94
Incremental Delay, d2	211.1	159.3	22.4	182.3	44.8	0.5	209.5	19.8	14.0	36.0	124.3	2.0
Delay (s)	262.5	206.7	76.8	246.8	100.3	45.4	263.5	66.5	58.5	117.8	175.0	51.7
Level of Service	F	F	E	F	F	D	F	E	E	F	F	D
Approach Delay (s)		195.8			136.4			144.8			126.3	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	163.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	121.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
38: John & Rinehart

Wekiva Parkway  
2032 No Build Conditions - PM Peak

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.64	1.00	1.00	0.36	1.00	1.00	0.29	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1196	3539	1583	671	1863	1583	1040	3539	1583	256	3539	1583
Volume (vph)	86	188	190	270	168	201	383	1388	149	173	676	121
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)	93	204	207	293	183	218	416	1509	162	188	735	132
RTOR Reduction (vph)	0	0	185	0	0	114	0	0	56	0	0	63
Lane Group Flow (vph)	93	204	22	293	183	104	416	1509	106	188	735	69
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	19.6	12.3	12.3	40.7	27.9	27.9	83.9	73.9	73.9	77.7	70.8	70.8
Effective Green, g (s)	23.6	14.8	14.8	43.2	30.4	30.4	87.9	76.4	76.4	81.7	73.3	73.3
Actuated g/C Ratio	0.17	0.11	0.11	0.31	0.22	0.22	0.63	0.55	0.55	0.58	0.52	0.52
Clearance Time (s)	5.5	6.5	6.5	5.5	6.5	6.5	5.5	6.5	6.5	5.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	238	374	167	399	405	344	850	1931	864	340	1853	829
v/s Ratio Prot	0.02	0.06		c0.13	0.10		c0.04	c0.43		0.03	0.21	
v/s Ratio Perm	0.04		0.01	c0.10		0.07	0.27		0.07	0.29		0.04
v/c Ratio	0.39	0.55	0.13	0.73	0.45	0.30	0.49	0.78	0.12	0.55	0.40	0.08
Uniform Delay, d1	51.1	59.4	56.8	40.4	47.6	45.9	12.6	25.2	15.5	22.4	20.1	16.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.82	0.98	2.37	0.36	0.03
Incremental Delay, d2	1.1	1.6	0.4	6.9	0.8	0.5	0.2	1.3	0.1	0.6	0.2	0.1
Delay (s)	52.1	61.0	57.1	47.3	48.4	46.4	10.9	22.0	15.3	53.5	7.5	0.5
Level of Service	D	E	E	D	D	D	B	C	B	D	A	A
Approach Delay (s)		57.8			47.3			19.3			14.8	
Approach LOS		E			D			B			B	

Intersection Summary

HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
103: Rinehart &

Wekiva Parkway  
2032 No Build Conditions - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.86	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1522	1504	3433	3539	1583	3433	3539	1583
Flt Permitted	0.10	1.00	1.00	0.67	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	194	1863	1583	1253	1522	1504	3433	3539	1583	3433	3539	1583
Volume (vph)	53	21	137	411	42	1177	126	1056	162	197	891	42
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)	58	23	149	447	46	1279	137	1148	176	214	968	46
RTOR Reduction (vph)	0	0	108	0	77	77	0	0	115	0	0	29
Lane Group Flow (vph)	58	23	41	447	608	563	137	1148	61	214	968	17
Turn Type	pm+pt		Perm	pm+pt		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	37.8	35.0	35.0	65.0	54.7	54.7	5.2	45.0	45.0	7.5	47.3	47.3
Effective Green, g (s)	44.8	38.5	38.5	68.5	58.2	58.2	8.7	48.5	48.5	11.0	50.8	50.8
Actuated g/C Ratio	0.32	0.28	0.28	0.49	0.42	0.42	0.06	0.35	0.35	0.08	0.36	0.36
Clearance Time (s)	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	133	512	435	709	633	625	213	1226	548	270	1284	574
v/s Ratio Prot	0.02	0.01		c0.12	c0.40		0.04	c0.32		c0.06	0.27	
v/s Ratio Perm	0.12		0.03	0.19		0.37			0.04			0.01
v/c Ratio	0.44	0.04	0.09	0.63	0.96	0.90	0.64	0.94	0.11	0.79	0.75	0.03
Uniform Delay, d1	37.1	37.3	37.8	24.5	39.8	38.2	64.1	44.3	31.1	63.4	39.1	28.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.30	0.67	0.87	0.96	1.13	1.99
Incremental Delay, d2	2.3	0.0	0.1	1.8	26.3	16.2	4.8	11.4	0.3	13.1	3.7	0.1
Delay (s)	39.4	37.3	37.9	26.3	66.1	54.4	88.3	41.2	27.5	74.1	47.9	57.1
Level of Service	D	D	D	C	E	D	F	D	C	E	D	E
Approach Delay (s)		38.2			51.9			43.9			52.8	
Approach LOS		D			D			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay	49.0			HCM Level of Service				D				
HCM Volume to Capacity ratio	0.92											
Actuated Cycle Length (s)	140.0			Sum of lost time (s)				16.0				
Intersection Capacity Utilization	91.1%			ICU Level of Service				F				
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
101: Rinehart &

Wekiva Parkway  
2032 No Build Conditions - PM Peak



Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations	↖	↗	↕	↗	↖	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Volume (vph)	118	262	1082	918	482	957
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	128	285	1176	998	524	1040
RTOR Reduction (vph)	0	254	0	181	0	0
Lane Group Flow (vph)	128	31	1176	817	524	1040
Turn Type		Perm		Perm	Prot	
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	12.6	12.6	66.8	66.8	41.1	114.4
Effective Green, g (s)	15.1	15.1	69.3	69.3	43.6	116.9
Actuated g/C Ratio	0.11	0.11	0.50	0.50	0.31	0.84
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	191	171	1752	784	551	2955
v/s Ratio Prot	c0.07		0.33		c0.30	0.29
v/s Ratio Perm		0.02		c0.52		
v/c Ratio	0.67	0.18	0.67	1.04	0.95	0.35
Uniform Delay, d1	60.1	56.8	26.7	35.4	47.2	2.7
Progression Factor	1.00	1.04	0.69	0.56	0.89	1.67
Incremental Delay, d2	8.6	0.5	1.5	39.1	21.8	0.2
Delay (s)	68.7	59.8	20.0	58.9	63.7	4.8
Level of Service	E	E	B	E	E	A
Approach Delay (s)	62.6		37.8			24.5
Approach LOS	E		D			C

Intersection Summary

HCM Average Control Delay	35.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
16: Rinehart & Towne

Wekiva Parkway  
2032 No Build Conditions - PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.96	1.00
Satd. Flow (prot)	3433	3503		1770	3525			1792	1583		1795	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.75	1.00		0.75	1.00
Satd. Flow (perm)	3433	3503		1770	3525			1389	1583		1404	1583
Volume (vph)	552	1563	115	52	1099	29	51	14	24	64	21	453
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)	600	1699	125	57	1195	32	55	15	26	70	23	492
RTOR Reduction (vph)	0	4	0	0	1	0	0	0	19	0	0	250
Lane Group Flow (vph)	600	1820	0	57	1226	0	0	70	7	0	93	242
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	28.1	82.8		5.2	59.9			33.5	33.5		33.5	33.5
Effective Green, g (s)	29.6	85.3		6.7	62.4			36.0	36.0		36.0	36.0
Actuated g/C Ratio	0.21	0.61		0.05	0.45			0.26	0.26		0.26	0.26
Clearance Time (s)	5.5	6.5		5.5	6.5			6.5	6.5		6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	726	2134		85	1571			357	407		361	407
v/s Ratio Prot	c0.17	c0.52		0.03	0.35							
v/s Ratio Perm								0.05	0.00		0.07	c0.15
v/c Ratio	0.83	0.85		0.67	0.78			0.20	0.02		0.26	0.60
Uniform Delay, d1	52.7	22.2		65.6	33.0			40.7	38.8		41.4	45.6
Progression Factor	0.58	1.57		1.13	0.55			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.4		18.0	3.7			1.2	0.1		1.7	6.3
Delay (s)	31.1	35.4		92.4	21.7			41.9	38.9		43.1	51.9
Level of Service	C	D		F	C			D	D		D	D
Approach Delay (s)		34.4			24.9			41.1			50.5	
Approach LOS		C			C			D			D	

Intersection Summary

HCM Average Control Delay	33.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
64: International Pkwy &

Wekiva Parkway  
2032 No Build Conditions - PM Peak

Movement	EBL	EBR	EBR2	WBL	WBT	WBR	NBL	NBT	NBR2	SBL	SBT	SBR
Lane Configurations	↙	↘		↙	↘		↙	↑↑	↘	↙	↑↑	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frnt	1.00	0.85		1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1626		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1583		1770	1626		1770	3539	1583	1770	3539	1583
Volume (vph)	21	32	42	1013	47	260	63	571	1003	55	333	47
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)	23	35	46	1101	51	283	68	621	1090	60	362	51
RTOR Reduction (vph)	0	35	0	0	95	0	0	0	726	0	0	38
Lane Group Flow (vph)	23	46	0	1101	239	0	68	621	364	60	362	13
Turn Type	Protcustom		pm+pt			Prot		Perm		Prot		Perm
Protected Phases	7		3			5		2		1		6
Permitted Phases	4		8					2				6
Actuated Green, G (s)	2.1	12.0	79.0		70.4	8.6		33.7	33.7	7.8	32.9	32.9
Effective Green, g (s)	4.6	14.5	81.5		72.9	11.1		36.2	36.2	10.3	35.4	35.4
Actuated g/C Ratio	0.03	0.10	0.58		0.52	0.08		0.26	0.26	0.07	0.25	0.25
Clearance Time (s)	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	58	164	1030		847	140		915	409	130	895	400
v/s Ratio Prot	0.01		c0.48		0.15	c0.04		0.18		0.03	0.10	
v/s Ratio Perm	0.03		0.14						c0.23			0.01
v/c Ratio	0.40	0.28	1.07		0.28	0.49		0.68	0.89	0.46	0.40	0.03
Uniform Delay, d1	66.3	57.9	29.2		18.9	61.7		46.7	50.0	62.2	43.5	39.4
Progression Factor	1.00	1.00	0.95		0.85	0.86		1.02	4.07	1.03	1.35	2.60
Incremental Delay, d2	4.4	0.9	48.4		0.2	1.5		2.3	15.3	2.3	1.2	0.1
Delay (s)	70.8	58.9	76.1		16.1	54.5		50.0	218.6	66.3	59.9	102.7
Level of Service	E	E	E		B	D		D	F	E	E	F
Approach Delay (s)			62.1			153.5					65.3	
Approach LOS			E			F					E	

**Intersection Summary**

HCM Average Control Delay	105.4	HCM Level of Service	F
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			