

Phone:  
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Merge Analysis

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Analyst: KNM  
 Agency/Co.: HNTB  
 Date performed: 10/31/2006  
 Analysis time period: Existing Conditions  
 Freeway/Dir of Travel: I-4 EB  
 Junction: On Ramp from CR 46A  
 Jurisdiction: Seminole County  
 Analysis Year: 2005  
 Description: Wekiva Parkway Project Development & Environment Study

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Freeway Data

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

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On Ramp Data

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Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	260	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

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Adjacent Ramp Data (if one exists)

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Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	690	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	4826	ft

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Conversion to pc/h Under Base Conditions

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Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3070	260	690	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	834	71	187	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 from CR 46A.txt  
 3487 295 784 pcph

Estimation of V12 Merge Areas

$L =$  (Equation 25-2 or 25-3)  
 $P = 0.591$  Using Equation 1  
 $v_{12} = v_F (P_{FM}) = 2063$  pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{FO}$	3782	6750	No
$v_3$ or $v_{av34}$	1424 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, $v_{12A} = 2063$		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
$v_{R12}$	2063	4600	No

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 20.6$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	$M = 0.327$	
Space mean speed in ramp influence area,	$S_R = 50.7$	mph
Space mean speed in outer lanes,	$S_0 = 51.7$	mph
Space mean speed for all vehicles,	$S = 51.1$	mph

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

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Merge Analysis

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Analyst: Cristina Torres-Reyes  
Agency/Co.: HNTB  
Date performed: 10/31/2006  
Analysis time period: Existing Conditions  
Freeway/Dir of Travel: I-4 NB  
Junction: On Ramp from SR 417 WB  
Jurisdiction: Seminole County  
Analysis Year: 2005  
Description: Wekiva Parkway Project Development & Environment Study

Freeway Data

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Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3330	vph

On Ramp Data

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Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	690	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

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Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	870	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	5148	ft

Conversion to pc/h Under Base Conditions

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Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3330	690	870	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	905	187	236	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 from SR 417 WB\_Merge.txt 988 pcph  
 3782 784

Estimation of V12 Merge Areas

$L =$  (Equation 25-2 or 25-3)  
 $EQ$   
 $P = 0.120$  Using Equation 4  
 $FM$   
 $v_{12} = v_F (P_{FM}) = 453$  pc/h

Capacity Checks

		Actual	Maximum	LOS F?
	$v_{FO}$	4566	9000	No
	$v_3$ or $v_{av34}$	1664 pc/h	(Equation 25-4 or 25-5)	
Is	$v_3$ or $v_{av34}$	$> 2700$ pc/h?	No	
Is	$v_3$ or $v_{av34}$	$> 1.5 v_{12} / 2$	Yes	
If yes,	$v_{12A} = 1512$		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
$v_{12A}$	1512	4600	No

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 19.9$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	$M = 0.325$	
Space mean speed in ramp influence area,	$S_R = 50.8$	mph
Space mean speed in outer lanes,	$S_0 = 52.7$	mph
Space mean speed for all vehicles,	$S = 51.7$	mph

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Diverge Analysis

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Analyst: Cristina Torres-Reyes  
 Agency/Co.: HNTB  
 Date performed: 10/31/2006  
 Analysis time period: Existing Conditions  
 Freeway/Dir of Travel: I-4 WB  
 Junction: Off Ramp to SR 417 EB & CR 46A  
 Jurisdiction: Seminole County  
 Analysis Year: 2005  
 Description: Wekiva Parkway Project Development & Environment Study

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Freeway Data

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Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	55.0	mph	
Volume on freeway	3980	vph	

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Off Ramp Data

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Side of freeway	Right		
Number of lanes in ramp	2		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	1220	vph	
Length of first accel/decel lane	500	ft	
Length of second accel/decel lane	500	ft	

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Adjacent Ramp Data (if one exists)

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Does adjacent ramp exist?	Yes		
Volume on adjacent ramp	1180	vph	
Position of adjacent ramp	Upstream		
Type of adjacent ramp	On		
Distance to adjacent ramp	3305	ft	

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Conversion to pc/h Under Base Conditions

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Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3980	1220	1180	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1082	332	321	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	

I-4 WB Off Ramp to SR 417 EB and CR 46A\_2.txt  
 Flow rate, vp 4521 1386 1340 pcph

Estimation of V12 Diverge Areas

L = (Equation 25-8 or 25-9)  
 EQ  
 P = 0.450 Using Equation 0  
 FD  
 $v_{12} = v_R + (v_F - v_R) P_{FD} = 2797$  pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4521	6750	No
$v_{FO} = v_F - v_R$	3135	6750	No
$v_R$	1386	3800	No
$v_{3 \text{ or } av34}$	1724 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, $v_{12A} = 2797$		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	2797	4400	No

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 14.8$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,  $D = 0.553$   
 Space mean speed in ramp influence area,  $S_R = 47.8$  mph  
 Space mean speed in outer lanes,  $S_0 = 57.5$  mph  
 Space mean speed for all vehicles,  $S = 51.1$  mph

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Diverge Analysis

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Analyst: Cristina Torres-Reyes  
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 Date performed: 10/31/2006  
 Analysis time period: Existing Conditions  
 Freeway/Dir of Travel: I-4 WB  
 Junction: Off Ramp to SR 417 EB & CR 46A  
 Jurisdiction: Seminole County  
 Analysis Year: 2005  
 Description: Wekiva Parkway Project Development & Environment Study

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Freeway Data

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Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	55.0	mph	
Volume on freeway	3980	vph	

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Off Ramp Data

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Side of freeway	Right		
Number of lanes in ramp	2		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	1220	vph	
Length of first accel/decel lane	500	ft	
Length of second accel/decel lane	500	ft	

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Adjacent Ramp Data (if one exists)

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Does adjacent ramp exist?	Yes		
Volume on adjacent ramp	1180	vph	
Position of adjacent ramp	Upstream		
Type of adjacent ramp	On		
Distance to adjacent ramp	3305	ft	

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Conversion to pc/h Under Base Conditions

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Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3980	1220	1180	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1082	332	321	v
Trucks and buses	9	9	9	%
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	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	

I-4 WB Off Ramp to SR 417 EB and CR 46A\_2.txt  
 Flow rate, vp                                      4521                                      1386                                      1340                                      pcph

Estimation of V12 Diverge Areas

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

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

$$v_{12} = v_R + (v_F - v_R) P = 2797 \text{ pc/h}$$

Capacity Checks

	Actual	Maximum	LOS F?
$v_{12} = v_F$	4521	6750	No
$v_{FO} = v_F - v_R$	3135	6750	No
$v_R$	1386	3800	No
$v_{3 \text{ or } av34}$	1724 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, $v_{12A} = 2797$		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	2797	4400	No

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 14.8$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	$D = 0.553$	
Space mean speed in ramp influence area,	$S_R = 47.8$	mph
Space mean speed in outer lanes,	$S_0 = 57.5$	mph
Space mean speed for all vehicles,	$S = 51.1$	mph



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Diverge Analysis

Analyst: Cristina Torres-Reyes  
 Agency/Co.: HNTB  
 Date performed: 10/31/2006  
 Analysis time period: Existing Conditions  
 Freeway/Dir of Travel: I-4 WB CD Road  
 Junction: Off Ramp to SR 417 EB  
 Jurisdiction: Seminole County  
 Analysis Year: 2005  
 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	1220	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	840	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)	1220	840		vph
Peak-hour factor, PHF	0.92	0.92		
Peak 15-min volume, v15	332	228		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	0.00	%	%
Length	0.00	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,  $v_p$

pcph

Estimation of  $V_{12}$  Diverge Areas

$L =$  (Equation 25-8 or 25-9)  
 EQ  
 $P = 1.000$  Using Equation 0  
 FD  
 $v_{12} = v_R + (v_F - v_R) P = 1386$  pc/h  
 FD

Capacity Checks

		Actual	Maximum	LOS F?
	$v_{Fi} = v_F$	1386	4500	No
	$v_{FO} = v_F - v_R$	432	4500	No
	$v_R$	954	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,	$v_{12A} = 1386$		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	1386	4400	No

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 11.7$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	$D = 0.514$	
Space mean speed in ramp influence area,	$S_S = 48.3$	mph
Space mean speed in outer lanes,	$S_R = N/A$	mph
Space mean speed for all vehicles,	$S_0 = 48.3$	mph

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Diverge Analysis

Analyst: Cristina Torres-Reyes  
 Agency/Co.: HNTB  
 Date performed: 10/31/2006  
 Analysis time period: Existing Conditions  
 Freeway/Dir of Travel: I-4 NB  
 Junction: Off Ramp to SR 417 EB & SR 46  
 Jurisdiction: Seminole County  
 Analysis Year: 2005  
 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	4190	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	1120	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	1010	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)	4190	1120	1010	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1139	304	274	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	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	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	



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Diverge Analysis

Analyst: Cristina Torres-Reyes  
 Agency/Co.: HNTB  
 Date performed: 10/31/2006  
 Analysis time period: Existing Conditions  
 Freeway/Dir of Travel: SR 417 WB  
 Junction: Off Ramp to I-4 EB  
 Jurisdiction: Seminole County  
 Analysis Year: 2005  
 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	990	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	690	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?	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)	990	690		vph
Peak-hour factor, PHF	0.92	0.92		
Peak 15-min volume, v15	269	187		v
Trucks and buses	9	9		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	0.00	%	%
Length	0.00	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,  $v_p$  I-4 EB On from SR 417 WB.txt  
 1125 784 pcph

Estimation of V12 Diverge Areas

$L =$  (Equation 25-8 or 25-9)  
 EQ  
 $P = 0.450$  Using Equation 0  
 FD  
 $v_{12} = v_R + (v_F - v_R) P = 937$  pc/h  
 FD

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	1125	6750	No
$v_{FO} = v_F - v_R$	341	6750	No
$v_R$	784	3800	No
$v_{3 \text{ or } av34}$	188 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, $v_{12A} = 937$		(Equation 25-18)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	937	4400	No

Level of Service Determination (if not F)

Density,  $D = 4.252 + 0.0086 v_R - 0.009 L_D = -1.2$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence A

Speed Estimation

Intermediate speed variable,	$D = 0.499$	
Space mean speed in ramp influence area,	$S_S = 48.5$	mph
Space mean speed in outer lanes,	$S_R = 60.3$	mph
Space mean speed for all vehicles,	$S_0 = 50.2$	mph

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Merge Analysis

Analyst: Cristina Torres-Reyes  
 Agency/Co.: HNTB  
 Date performed: 10/31/2006  
 Analysis time period: Existing Conditions  
 Freeway/Dir of Travel: I-4 EB  
 Junction: On Ramp from SR 46  
 Jurisdiction: Seminole County  
 Analysis Year: 2005  
 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	4020	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	870	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	690	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)	4020	870	690	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1092	236	187	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 I-4 EB On from SR 46.txt 4566 988 784 pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)  
 EQ  
 P = 0.094 Using Equation 4  
 FM  
 $v_{12} = v_F (P_{FM}) = 431 \text{ pc/h}$

Capacity Checks

		Actual	Maximum	LOS F?
	$v_{FO}$	5554	9000	No
	$v_3$ or $v_{av34}$	2067 pc/h	(Equation 25-4 or 25-5)	
Is	$v_3$ or $v_{av34}$	> 2700 pc/h?	No	
Is	$v_3$ or $v_{av34}$	> $1.5 v_{12} / 2$	Yes	
If yes,	$v_{12A} = 1826$		(Equation 25-8)	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
$v_{12A}$	1826	4600	No

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 23.8 \text{ pc/mi/ln}$   
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	$M = 0.351$	
Space mean speed in ramp influence area,	$S_R = 50.4$	mph
Space mean speed in outer lanes,	$S_0 = 51.9$	mph
Space mean speed for all vehicles,	$S = 51.1$	mph



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Diverge Analysis

Analyst: KNM  
 Agency/Co.: HNTB  
 Date performed: 10/31/2006  
 Analysis time period: Existing Conditions  
 Freeway/Dir of Travel: I-4 EB  
 Junction: Off Ramp to CR 46A  
 Jurisdiction: Seminole County  
 Analysis Year: 2005  
 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	5200	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	1010	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	1120	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)	5200	1010	1120	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	1413	274	304	v
Trucks and buses	9	9	9	%
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	0.957	0.957	0.957	
Driver population factor, fP	1.00	1.00	1.00	



## SHORT REPORT

### General Information

Analyst *Cristina Torres-Reyes*  
 Agency or Co. *HNTB*  
 Date Performed *8/14/2006*  
 Time Period *Existing PM*

### Site Information

Intersection *US 441 at CR 437*  
 Area Type *All other areas*  
 Jurisdiction *Orange County*  
 Analysis Year *2006*

### 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				0		0
Lane Group	L	T			T	R					LR	
Volume (vph)	84	1112			1373	380				204		27
% Heavy Vehicles	11	11			11	11				2		2
PHF	0.96	0.96			0.96	0.96				0.96		0.96
Pretimed/Actuated (P/A)	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
Lane Width	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	
Minimum Pedestrian Time		3.2			3.2						3.2	

Phasing	EB Only	EW Perm	03	04	SB Only	06	07	08
Timing	G = 7.7	G = 94.7	G =	G =	G = 31.7	G =	G =	G =
	Y = 5.3	Y = 5.3	Y =	Y =	Y = 5.3	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 150.0		

### 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	88	1158			1430	396						241
Lane Group Capacity	212	2340			2058	919						371
v/c Ratio	0.42	0.49			0.69	0.43						0.65
Green Ratio	0.72	0.72			0.63	0.63						0.21
Uniform Delay d <sub>1</sub>	13.5	9.3			18.2	14.0						54.1
Delay Factor k	0.11	0.11			0.26	0.11						0.23
Incremental Delay d <sub>2</sub>	1.3	0.2			1.0	0.3						4.0
PF Factor	1.000	1.000			1.000	1.000						1.000
Control Delay	14.8	9.4			19.2	14.3						58.1
Lane Group LOS	B	A			B	B						E
Approach Delay	9.8			18.1						58.1		
Approach LOS	A			B						E		
Intersection Delay	17.9			Intersection LOS						B		

## SHORT REPORT

General Information	Site Information
Analyst <i>Cristina Torres-Reyes</i>	Intersection <i>CR 437 at Ponkan Road</i>
Agency or Co. <i>HNTB</i>	Area Type <i>All other areas</i>
Date Performed <i>8/14/2006</i>	Jurisdiction <i>Orange County</i>
Time Period <i>Existing PM</i>	Analysis Year <i>2006</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)	29	92	46	19	108	49	39	472	15	40	231	23
% Heavy Vehicles	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
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 = 19.4	G =	G =	G =	G = 19.7	G =	G =	G =				
	Y = 5.6	Y =	Y =	Y =	Y = 5.3	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 50.0						

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

	EB			WB			NB			SB			
Adjusted Flow Rate		179			189			566			316		
Lane Group Capacity		646			668			697			649		
v/c Ratio		0.28			0.28			0.81			0.49		
Green Ratio		0.39			0.39			0.39			0.39		
Uniform Delay d <sub>1</sub>		10.5			10.5			13.5			11.4		
Delay Factor k		0.11			0.11			0.35			0.11		
Incremental Delay d <sub>2</sub>		0.2			0.2			7.3			0.6		
PF Factor		1.000			1.000			1.000			1.000		
Control Delay		10.7			10.8			20.8			11.9		
Lane Group LOS		B			B			C			B		
Approach Delay		10.7			10.8			20.8			11.9		
Approach LOS		B			B			C			B		
Intersection Delay		15.6			Intersection LOS						B		

## SHORT REPORT

### General Information

Analyst *Cristina Torres-Reyes*  
 Agency or Co. *HNTB*  
 Date Performed *8/14/2006*  
 Time Period *Existing PM*

### Site Information

Intersection *CR 437 at Kelly Park Road*  
 Area Type *All other areas*  
 Jurisdiction *Orange County*  
 Analysis Year *2006*

### 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)	37	85	26	55	74	75	33	448	71	45	148	11
% Heavy Vehicles	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
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 = 18.0	G =	G =	G =	G = 54.7	G =	G =	G =				
	Y = 7	Y =	Y =	Y =	Y = 5.3	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25								Cycle Length C = 85.0				

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

	EB			WB			NB			SB			
	Adjusted Flow Rate		178			245			666			245	
Lane Group Capacity		305			314			1143			953		
v/c Ratio		0.58			0.78			0.58			0.26		
Green Ratio		0.21			0.21			0.64			0.64		
Uniform Delay d <sub>1</sub>		30.1			31.6			8.6			6.5		
Delay Factor k		0.18			0.33			0.17			0.11		
Incremental Delay d <sub>2</sub>		2.9			11.9			0.8			0.1		
PF Factor		1.000			1.000			1.000			1.000		
Control Delay		33.0			43.6			9.4			6.6		
Lane Group LOS		C			D			A			A		
Approach Delay		33.0			43.6			9.4			6.6		
Approach LOS		C			D			A			A		
Intersection Delay		18.3			Intersection LOS						B		

## TWO-WAY STOP CONTROL SUMMARY

### General Information

Analyst	KNM
Agency/Co.	HNTB
Date Performed	3/7/2006
Analysis Time Period	PM Peak

### Site Information

Intersection	US 441 and SR 46
Jurisdiction	
Analysis Year	2006

Project Description *Wekiva Parkway*

East/West Street: *SR 46*

North/South Street: *US 441 South Bound off ramps*

Intersection Orientation: *East-West*

Study Period (hrs): *0.25*

### Vehicle Volumes and Adjustments

Major Street Movement	Eastbound			Westbound		
	1 L	2 T	3 R	4 L	5 T	6 R
Volume (veh/h)	0	255	31	88	237	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate (veh/h)	0	268	32	92	249	0
Proportion of heavy vehicles, P <sub>HV</sub>	0	--	--	13	--	--
Median type	<i>Undivided</i>					
RT Channelized?			0			0
Lanes	0	1	1	1	1	0
Configuration		T	R	L	T	
Upstream Signal		0			0	

### Minor Street

Movement	Northbound			Southbound		
	7 L	8 T	9 R	10 L	11 T	12 R
Volume (veh/h)	0	0	0	180	0	70
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate (veh/h)	0	0	0	189	0	73
Proportion of heavy vehicles, P <sub>HV</sub>	0	0	0	10	0	10
Percent grade (%)	0			0		
Flared approach		N			N	
Storage		0			0	
RT Channelized?			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

### Control Delay, Queue Length, Level of Service

Approach Movement	EB 1	WB 4	Northbound			Southbound		
			7	8	9	10	11	12
Lane Configuration		L				L		R
Volume, v (vph)		92				189		73
Capacity, c <sub>m</sub> (vph)		1201				356		771
v/c ratio		0.08				0.53		0.09
Queue length (95%)		0.25				2.97		0.31
Control Delay (s/veh)		8.2				26.0		10.2
LOS		A				D		B
Approach delay (s/veh)	--	--				21.6		
Approach LOS	--	--				C		

## TWO-WAY STOP CONTROL SUMMARY

### General Information

Analyst	KNM
Agency/Co.	HNTB
Date Performed	3/7/2006
Analysis Time Period	PM Peak

### Site Information

Intersection	US 441 and SR 46
Jurisdiction	
Analysis Year	2006

Project Description *Wekiva Parkway*

East/West Street: *SR 46*

North/South Street: *US 441 North Bound off ramps*

Intersection Orientation: *East-West*

Study Period (hrs): *0.25*

### Vehicle Volumes and Adjustments

Major Street Movement	Eastbound			Westbound		
	1 L	2 T	3 R	4 L	5 T	6 R
Volume (veh/h)	65	370			282	155
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate (veh/h)	68	389	0	0	296	163
Proportion of heavy vehicles, P <sub>HV</sub>	13	--	--	13	--	--
Median type	<i>Undivided</i>					
RT Channelized?			0			0
Lanes	1	1	0	0	1	1
Configuration	L	T			T	R
Upstream Signal		0			0	

### Minor Street

Movement	Northbound			Southbound		
	7 L	8 T	9 R	10 L	11 T	12 R
Volume (veh/h)	43	0	41		0	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate (veh/h)	45	0	43	0	0	0
Proportion of heavy vehicles, P <sub>HV</sub>	10	0	10	10	0	10
Percent grade (%)	0			0		
Flared approach		N			N	
Storage		0			0	
RT Channelized?			0			0
Lanes	1	0	1	0	0	0
Configuration	L		R			

### Control Delay, Queue Length, Level of Service

Approach Movement	EB 1 L	WB 4	Northbound			Southbound		
			7 L	8	9 R	10	11	12
Lane Configuration								
Volume, v (vph)	68		45		43			
Capacity, c <sub>m</sub> (vph)	1046		279		642			
v/c ratio	0.07		0.16		0.07			
Queue length (95%)	0.21		0.57		0.21			
Control Delay (s/veh)	8.7		20.4		11.0			
LOS	A		C		B			
Approach delay (s/veh)	--	--	15.8					
Approach LOS	--	--	C					

## SHORT REPORT

### General Information

Analyst *Cristina Torres-Reyes*  
 Agency or Co. *HNTB*  
 Date Performed *8/14/2006*  
 Time Period *Existing PM*

### Site Information

Intersection *SR 46 at Round Lake Road*  
 Area Type *All other areas*  
 Jurisdiction *Lake County*  
 Analysis Year *2006*

### 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)	22	467	45	42	356	28	46	57	80	16	39	17
% Heavy Vehicles	11	11	11	11	11	11	2	2	2	2	2	2
PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
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 = 53.0	G =	G =	G =	G = 24.0	G =	G =	G =				
	Y = 7	Y =	Y =	Y =	Y = 6	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		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate	25	576		47	400	31		206				81
Lane Group Capacity	495	995		363	1008	857		421				438
v/c Ratio	0.05	0.58		0.13	0.40	0.04		0.49				0.18
Green Ratio	0.59	0.59		0.59	0.59	0.59		0.27				0.27
Uniform Delay d <sub>1</sub>	7.8	11.5		8.2	9.9	7.8		27.8				25.5
Delay Factor k	0.11	0.17		0.11	0.11	0.11		0.11				0.11
Incremental Delay d <sub>2</sub>	0.0	0.8		0.2	0.3	0.0		0.9				0.2
PF Factor	1.000	1.000		1.000	1.000	1.000		1.000				1.000
Control Delay	7.9	12.4		8.4	10.2	7.8		28.7				25.7
Lane Group LOS	A	B		A	B	A		C				C
Approach Delay	12.2			9.9			28.7			25.7		
Approach LOS	B			A			C			C		
Intersection Delay	14.7			Intersection LOS						B		



## SHORT REPORT

### General Information

Analyst *Cristina Torres-Reyes*  
 Agency or Co. *HNTB*  
 Date Performed *8/14/2006*  
 Time Period *Existing PM*

### Site Information

Intersection *SR 46 at CR 437 South*  
 Area Type *All other areas*  
 Jurisdiction *Lake County*  
 Analysis Year *2006*

### Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		1	0	1	1		0		0			
Lane Group		TR		L	T			LR				
Volume (vph)		465	103	186	407		135		306			
% Heavy Vehicles		11	11	11	11		2		2			
PHF		0.93	0.93	0.93	0.93		0.93		0.93			
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	WB Only	EW Perm	03	04	NB Only	06	07	08				
Timing	G = 5.0	G = 38.5	G =	G =	G = 31.5	G =	G =	G =				
	Y = 5	Y = 5	Y =	Y =	Y = 5	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		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate		611		200	438			474				
Lane Group Capacity		714		269	923			582				
v/c Ratio		0.86		0.74	0.47			0.81				
Green Ratio		0.43		0.54	0.54			0.35				
Uniform Delay d <sub>1</sub>		23.2		22.7	12.9			26.6				
Delay Factor k		0.39		0.30	0.11			0.36				
Incremental Delay d <sub>2</sub>		10.0		10.7	0.4			8.7				
PF Factor		1.000		1.000	1.000			1.000				
Control Delay		33.3		33.3	13.2			35.3				
Lane Group LOS		C		C	B			D				
Approach Delay		33.3			19.5			35.3				
Approach LOS		C			B			D				
Intersection Delay		28.8			Intersection LOS						C	

## SHORT REPORT

### General Information

Analyst *Cristina Torres-Reyes*  
 Agency or Co. *HNTB*  
 Date Performed *8/14/2006*  
 Time Period *Existing PM*

### Site Information

Intersection *SR 46 at CR 437 North*  
 Area Type *All other areas*  
 Jurisdiction *Lake County*  
 Analysis Year *2006*

### 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)	285	517			402	273				245		141
% Heavy Vehicles	11	11			11	11				2		2
PHF	0.93	0.93			0.93	0.93				0.93		0.93
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	EW Perm	03	04	SB Only	06	07	08				
Timing	G = 7.0	G = 34.5	G =	G =	G = 20.0	G =	G =	G =				
	Y = 5	Y = 5.5	Y =	Y =	Y = 5	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 77.0						

### 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	306	556		432	294					263		152
Lane Group Capacity	450	1034		767	1134					460		658
v/c Ratio	0.68	0.54		0.56	0.26					0.57		0.23
Green Ratio	0.61	0.60		0.45	0.78					0.26		0.42
Uniform Delay $d_1$	9.0	8.9		15.7	2.4					24.8		14.5
Delay Factor k	0.25	0.14		0.16	0.11					0.17		0.11
Incremental Delay $d_2$	4.1	0.6		1.0	0.1					1.7		0.2
PF Factor	1.000	1.000		1.000	1.000					1.000		1.000
Control Delay	13.1	9.5		16.6	2.5					26.5		14.7
Lane Group LOS	B	A		B	A					C		B
Approach Delay	10.8			10.9						22.2		
Approach LOS	B			B						C		
Intersection Delay	13.2			Intersection LOS						B		

## SHORT REPORT

### General Information

Analyst *Cristina Torres-Reyes*  
 Agency or Co. *HNTB*  
 Date Performed *8/14/2006*  
 Time Period *Existing PM*

### Site Information

Intersection *SR 46 at CR 435*  
 Area Type *All other areas*  
 Jurisdiction *Lake County*  
 Analysis Year *2006*

### 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	0	0	1	1	0	1	0
Lane Group	L	T	R	L	TR			LT	R		LTR	
Volume (vph)	3	494	181	228	430	12	195	10	145	8	14	5
% Heavy Vehicles	11	11	11	11	11	11	2	2	2	2	2	2
PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
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 = 5.5	G = 57.5	G =	G =	G = 19.5	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 = 100.0					

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

	EB			WB			NB			SB		
Adjusted Flow Rate	3	531	195	245	475			221	156		29	
Lane Group Capacity	484	984	837	450	1168			260	499		291	
v/c Ratio	0.01	0.54	0.23	0.54	0.41			0.85	0.31		0.10	
Green Ratio	0.57	0.57	0.57	0.69	0.69			0.19	0.31		0.19	
Uniform Delay d <sub>1</sub>	9.1	13.1	10.4	12.2	6.9			38.8	26.0		33.0	
Delay Factor k	0.11	0.14	0.11	0.14	0.11			0.38	0.11		0.11	
Incremental Delay d <sub>2</sub>	0.0	0.6	0.1	1.4	0.2			22.5	0.4		0.2	
PF Factor	1.000	1.000	1.000	1.000	1.000			1.000	1.000		1.000	
Control Delay	9.1	13.7	10.6	13.5	7.1			61.4	26.4		33.2	
Lane Group LOS	A	B	B	B	A			E	C		C	
Approach Delay	12.8			9.3			46.9			33.2		
Approach LOS	B			A			D			C		
Intersection Delay	18.7			Intersection LOS						B		

## SHORT REPORT

### General Information

Analyst *Cristina Torres-Reyes*  
 Agency or Co. *HNTB*  
 Date Performed *8/14/2006*  
 Time Period *Existing PM*

### Site Information

Intersection *SR 46 at CR 46A*  
 Area Type *All other areas*  
 Jurisdiction *Lake County*  
 Analysis Year *2006*

### 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)	4	648			698	491				216		9
% Heavy Vehicles	11	11			11	11				2		2
PHF	0.99	0.99			0.99	0.99				0.99		0.99
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 = 53.0	G =	G =	G =	G = 30.0	G =	G =	G =				
	Y = 7	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 95.0						

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

	EB			WB			NB			SB		
Adjusted Flow Rate		659			705	496					227	
Lane Group Capacity		952			955	1455					558	
v/c Ratio		0.69			0.74	0.34					0.41	
Green Ratio		0.56			0.56	1.00					0.32	
Uniform Delay d <sub>1</sub>		15.1			15.8	0.0					25.5	
Delay Factor k		0.26			0.30	0.11					0.11	
Incremental Delay d <sub>2</sub>		2.2			3.1	0.1					0.5	
PF Factor		1.000			1.000	0.950					1.000	
Control Delay		17.3			18.9	0.1					26.0	
Lane Group LOS		B			B	A					C	
Approach Delay		17.3			11.1						26.0	
Approach LOS		B			B						C	
Intersection Delay		14.7			Intersection LOS						B	

## TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	<i>Cristina Torres-Reyes</i>	Intersection	<i>SR 46 at Wekiva River Road</i>
Agency/Co.	<i>HNTB</i>	Jurisdiction	<i>Lake County</i>
Date Performed	<i>8/15/2006</i>	Analysis Year	<i>2006</i>
Analysis Time Period	<i>Existing PM</i>		

Project Description <i>Wekiva Parkway Project Development and Environment Study</i>	
East/West Street: <i>SR 46</i>	North/South Street: <i>Wekiva River Road</i>
Intersection Orientation: <i>East-West</i>	Study Period (hrs): <i>0.25</i>

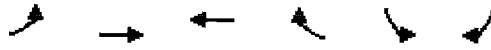
### Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound			
	Movement	1	2	3	4	5	6
		L	T	R	L	T	R
Volume (veh/h)			864	33	67	1125	
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)		0	960	36	74	1250	0
Percent Heavy Vehicles		11	--	--	11	--	--
Median Type	<i>Undivided</i>						
RT Channelized				0			0
Lanes		0	1	1	1	1	0
Configuration			T	R	L	T	
Upstream Signal			0			0	

Minor Street	Northbound			Southbound			
	Movement	7	8	9	10	11	12
		L	T	R	L	T	R
Volume (veh/h)		16		45			
Peak-Hour Factor, PHF		0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)		17	0	50	0	0	0
Percent Heavy Vehicles		2	2	2	2	2	2
Percent Grade (%)			0			0	
Flared Approach			N			N	
Storage			0			0	
RT Channelized				0			0
Lanes		0	0	0	0	0	0
Configuration			LR				

### Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound			
	Movement	1	4	7	8	9	10	11	12
Lane Configuration			L		LR				
v (veh/h)			74		67				
C (m) (veh/h)			660		104				
v/c			0.11		0.64				
95% queue length			0.38		3.21				
Control Delay (s/veh)			11.1		87.8				
LOS			B		F				
Approach Delay (s/veh)	--	--			87.8				
Approach LOS	--	--			F				



























Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.978	
Flt Protected					0.960	
Satd. Flow (prot)	0	1863	1861	0	1749	0
Flt Permitted					0.960	
Satd. Flow (perm)	0	1863	1861	0	1749	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		2863	3295		2199	
Travel Time (s)		65.1	74.9		50.0	
Volume (vph)	1	860	1271	11	5	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	935	1382	12	5	1
Lane Group Flow (vph)	0	936	1394	0	6	0
Sign Control		Free	Free		Stop	

**Intersection Summary**

Area Type: Other  
 Control Type: Unsignalized  
 Intersection Capacity Utilization 77.6%      ICU Level of Service D  
 Analysis Period (min) 15

SR 46 and Longwood Markham Rd  
Existing Conditions - PM Peak

Wekiva Parkway  
PD&E Study

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	422		422	317		0	0		264	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850						0.850		0.932	
Flt Protected				0.950				0.953				
Satd. Flow (prot)	1863	1863	1583	1770	1863	0	0	1775	1583	0	1736	0
Flt Permitted				0.950				0.953				
Satd. Flow (perm)	1863	1863	1583	1770	1863	0	0	1775	1583	0	1736	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		3295			4055			7956			2494	
Travel Time (s)		74.9			92.2			180.8			56.7	
Volume (vph)	0	805	78	45	1212	1	84	1	33	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	875	85	49	1317	1	91	1	36	0	1	1
Lane Group Flow (vph)	0	875	85	49	1318	0	0	92	36	0	2	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 81.9%

ICU Level of Service D

Analysis Period (min) 15



Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↕		↙	↕	↘	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	475		0	0
Storage Lanes		0	1		1	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999				0.909	
Flt Protected			0.950		0.984	
Satd. Flow (prot)	1861	0	1770	1863	1666	0
Flt Permitted			0.950		0.984	
Satd. Flow (perm)	1861	0	1770	1863	1666	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			30	30	
Link Distance (ft)	1717			3400	1536	
Travel Time (s)	39.0			77.3	34.9	
Volume (vph)	856	8	45	1201	23	48
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	930	9	49	1305	25	52
Lane Group Flow (vph)	939	0	49	1305	77	0
Sign Control	Free			Free	Stop	

**Intersection Summary**

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	74.1%
ICU Level of Service	D
Analysis Period (min)	15



SR 46 and Orange Blvd  
Existing Conditions - PM Peak

Wekiva Parkway  
PD&E Study

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	264		0	422		264	264		0	264		0
Storage Lanes	1		0	1		1	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt		0.995				0.850		0.943			0.915	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3522	0	1770	3539	1583	1770	1757	0	1770	1704	0
Flt Permitted	0.950			0.950			0.549			0.381		
Satd. Flow (perm)	1770	3522	0	1770	3539	1583	1023	1757	0	710	1704	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				115		17				37
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		3194			1651			4271			2253	
Travel Time (s)		72.6			37.5			97.1			51.2	
Volume (vph)	78	757	27	79	979	127	215	115	71	88	51	66
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	823	29	86	1064	138	234	125	77	96	55	72
Lane Group Flow (vph)	85	852	0	86	1064	138	234	202	0	96	127	0
Turn Type	Prot			Prot		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8	2			6		
Total Split (s)	25.0	75.0	0.0	25.0	75.0	75.0	25.0	35.0	0.0	25.0	35.0	0.0
Act Effct Green (s)	21.0	71.0		21.0	71.0	71.0	52.0	31.0		52.0	31.0	
Actuated g/C Ratio	0.13	0.44		0.13	0.44	0.44	0.32	0.19		0.32	0.19	
v/c Ratio	0.37	0.54		0.37	0.68	0.18	0.54	0.57		0.26	0.35	
Control Delay	68.5	34.1		79.5	52.0	15.0	44.5	60.5		37.9	42.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	68.5	34.1		79.5	52.0	15.0	44.5	60.5		37.9	42.3	
LOS	E	C		E	D	B	D	E		D	D	
Approach Delay		37.3			49.9			51.9			40.4	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 160  
 Actuated Cycle Length: 160  
 Offset: 48 (30%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.68  
 Intersection Signal Delay: 45.4  
 Intersection Capacity Utilization 63.4%  
 Analysis Period (min) 15  
 Intersection LOS: D  
 ICU Level of Service B



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙	↑↑	↑↑	↘	↙	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	581			422	0	0
Storage Lanes	1			1	1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Fr <sub>t</sub>				0.850		0.850
Fl <sub>t</sub> Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Fl <sub>t</sub> Permitted	0.162				0.950	
Satd. Flow (perm)	302	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				267		39
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	30		30	
Link Distance (ft)		1871	1289		2493	
Travel Time (s)		42.5	29.3		56.7	
Volume (vph)	27	984	1233	246	167	36
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	1070	1340	267	182	39
Lane Group Flow (vph)	29	1070	1340	267	182	39
Turn Type	Perm			Perm		Perm
Protected Phases		4	8		6	
Permitted Phases	4			8		6
Total Split (s)	60.0	60.0	60.0	60.0	20.0	20.0
Act Effct Green (s)	56.0	56.0	56.0	56.0	16.0	16.0
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.20	0.20
v/c Ratio	0.14	0.43	0.54	0.22	0.51	0.11
Control Delay	3.2	2.8	6.8	1.0	34.5	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.2	2.8	6.8	1.0	34.5	10.2
LOS	A	A	A	A	C	B
Approach Delay		2.8	5.8		30.2	
Approach LOS		A	A		C	

**Intersection Summary**

Area Type: Other  
 Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 0 (0%), Referenced to phase 2: and 6:SBL, Start of Green  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.54  
 Intersection Signal Delay: 6.5  
 Intersection Capacity Utilization 50.0%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service A



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑↑	↑↑	↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		739	1000		0	0
Storage Lanes		1	2		2	2
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Fit		0.850				0.850
Fit Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	3433	3539	3433	2787
Fit Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	3433	3539	3433	2787
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		126				249
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			30	30	
Link Distance (ft)	1289			2047	439	
Travel Time (s)	29.3			46.5	10.0	
Volume (vph)	1061	116	118	1217	261	229
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1153	126	128	1323	284	249
Lane Group Flow (vph)	1153	126	128	1323	284	249
Turn Type		Perm	Prot			Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Total Split (s)	50.0	50.0	25.0	75.0	25.0	25.0
Act Effct Green (s)	46.0	46.0	21.0	71.0	21.0	21.0
Actuated g/C Ratio	0.46	0.46	0.21	0.71	0.21	0.21
v/c Ratio	0.71	0.16	0.18	0.53	0.39	0.32
Control Delay	24.6	3.4	33.2	7.6	35.9	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.6	3.4	33.2	7.6	35.9	5.5
LOS	C	A	C	A	D	A
Approach Delay	22.5			9.9	21.7	
Approach LOS	C			A	C	













**Intersection Summary**

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 16.8  
 Intersection Capacity Utilization 50.1%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A



SR 46 and I-4 WB Ramps  
Existing Conditions - PM Peak

Wekiva Parkway  
PD&E Study

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑↑					↑↑		↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	317		0	0		0	0		0
Storage Lanes	0		1	1		0	0		0	2		1
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frnt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	3539	1583	3433	3539	0	0	0	0	3433	0	1583
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	3539	1583	3433	3539	0	0	0	0	3433	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			491									42
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		720			840			923			1010	
Travel Time (s)		16.4			19.1			21.0			23.0	
Volume (vph)	0	1046	452	460	1447	0	0	0	0	425	0	241
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1137	491	500	1573	0	0	0	0	462	0	262
Lane Group Flow (vph)	0	1137	491	500	1573	0	0	0	0	462	0	262
Turn Type			Perm	Prot						custom		custom
Protected Phases		4		3	8							
Permitted Phases			4							6		6
Total Split (s)	0.0	45.0	45.0	24.0	69.0	0.0	0.0	0.0	0.0	31.0	0.0	31.0
Act Effct Green (s)		41.0	41.0	20.0	65.0					27.0		27.0
Actuated g/C Ratio		0.41	0.41	0.20	0.65					0.27		0.27
v/c Ratio		0.78	0.52	0.73	0.68					0.50		0.57
Control Delay		30.4	4.0	44.5	13.0					33.0		32.0
Queue Delay		0.0	0.0	0.0	0.0					0.0		0.0
Total Delay		30.4	4.0	44.5	13.0					33.0		32.0
LOS		C	A	D	B					C		C
Approach Delay		22.4			20.6							
Approach LOS		C			C							

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2: and 6:SBL, Start of Green  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.78  
 Intersection Signal Delay: 23.2  
 Intersection LOS: C  
 Intersection Capacity Utilization 91.6%  
 ICU Level of Service F  
 Analysis Period (min) 15

SR 46 and I-4 EB Ramps  
Existing Conditions - PM Peak

Wekiva Parkway  
PD&E Study



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗			↗	↘	↘	↗	↗			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	317		0	0		0	0		0	0		0
Storage Lanes	1		0	0		1	1		2	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	3539	0	0	5085	1583	1770	0	2787	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1770	3539	0	0	5085	1583	1770	0	2787	0	0	0
Right Turn on Red			Yes			Yes		Yes				Yes
Satd. Flow (RTOR)						663		133				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		840			744			1249			770	
Travel Time (s)		19.1			16.9			28.4			17.5	
Volume (vph)	310	1176	0	0	1554	725	352	0	440	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	337	1278	0	0	1689	788	383	0	478	0	0	0
Lane Group Flow (vph)	337	1278	0	0	1689	788	383	0	478	0	0	0
Turn Type	Prot					Perm custom		custom				
Protected Phases	7	4			8							
Permitted Phases						8	2		2			
Total Split (s)	22.0	55.0	0.0	0.0	33.0	33.0	25.0	0.0	25.0	0.0	0.0	0.0
Act Effct Green (s)	18.0	51.0			29.0	29.0	21.0		21.0			
Actuated g/C Ratio	0.22	0.64			0.36	0.36	0.26		0.26			
v/c Ratio	0.85	0.57			0.92	0.79	0.82		0.58			
Control Delay	51.0	9.5			33.8	11.0	44.6		21.4			
Queue Delay	0.0	0.0			0.0	0.0	0.0		0.0			
Total Delay	51.0	9.5			33.8	11.0	44.6		21.4			
LOS	D	A			C	B	D		C			
Approach Delay		18.1			26.5							
Approach LOS		B			C							

Intersection Summary

Area Type: Other  
 Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.92  
 Intersection Signal Delay: 24.7  
 Intersection LOS: C  
 Intersection Capacity Utilization 91.6%  
 ICU Level of Service F  
 Analysis Period (min) 15





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖↖	↖	↖↖	↖↖↖	↖	↖↖	↖	↖	↖	↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	416		210	560		376	543		0	0		0
Storage Lanes	1		1	2		1	2		1	1		1
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
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>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1863	1583
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5085	1583	3433	5085	1583	3433	1863	1583	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			224			14			364			129
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1010			1564			2150			949	
Travel Time (s)		23.0			35.5			48.9			21.6	
Volume (vph)	62	926	206	345	1232	13	485	71	335	41	37	145
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	67	1007	224	375	1339	14	527	77	364	45	40	158
Lane Group Flow (vph)	67	1007	224	375	1339	14	527	77	364	45	40	158
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4			8			2			6
Total Split (s)	10.0	23.0	23.0	14.0	27.0	27.0	21.0	21.0	21.0	20.0	20.0	20.0
Act Effct Green (s)	6.0	19.0	19.0	10.0	23.0	23.0	17.0	17.0	17.0	16.0	16.0	16.0
Actuated g/C Ratio	0.08	0.24	0.24	0.13	0.29	0.29	0.22	0.22	0.22	0.21	0.21	0.21
v/c Ratio	0.49	0.81	0.40	0.85	0.89	0.03	0.70	0.19	0.58	0.12	0.10	0.37
Control Delay	47.5	34.2	6.1	53.3	35.6	10.3	34.1	26.4	7.3	26.4	26.1	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	34.2	6.1	53.3	35.6	10.3	34.1	26.4	7.3	26.4	26.1	10.6
LOS	D	C	A	D	D	B	C	C	A	C	C	B
Approach Delay		30.0			39.3			23.4			16.1	
Approach LOS		C			D			C			B	

**Intersection Summary**

Area Type: Other  
 Cycle Length: 78  
 Actuated Cycle Length: 78  
 Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.89  
 Intersection Signal Delay: 31.5      Intersection LOS: C  
 Intersection Capacity Utilization 58.2%      ICU Level of Service B  
 Analysis Period (min) 15



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	370		0	845		686	317		317	634		0
Storage Lanes	1		0	2		1	1		1	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frnt		0.990				0.850			0.850		0.956	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3504	0	3433	3539	1583	1770	3539	1583	3433	3383	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3504	0	3433	3539	1583	1770	3539	1583	3433	3383	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				314			201			55
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1661			1154			1507			1657	
Travel Time (s)		37.8			26.2			34.3			37.7	
Volume (vph)	92	451	33	286	610	356	106	523	866	181	121	51
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	100	490	36	311	663	387	115	568	941	197	132	55
Lane Group Flow (vph)	100	526	0	311	663	387	115	568	941	197	187	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Total Split (s)	10.0	20.0	0.0	12.0	22.0	22.0	16.0	47.0	47.0	11.0	42.0	0.0
Act Effct Green (s)	6.0	16.0		8.0	18.0	18.0	12.0	43.0	43.0	7.0	38.0	
Actuated g/C Ratio	0.07	0.18		0.09	0.20	0.20	0.13	0.48	0.48	0.08	0.42	
v/c Ratio	0.85	0.84		1.02	0.94	0.68	0.49	0.34	1.09	0.74	0.13	
Control Delay	93.8	48.6		99.2	58.1	14.3	43.9	15.3	79.8	58.3	11.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	93.8	48.6		99.2	58.1	14.3	43.9	15.3	79.8	58.3	11.4	
LOS	F	D		F	E	B	D	B	E	E	B	
Approach Delay		55.8			55.0			54.7			35.4	
Approach LOS		E			E			D			D	

**Intersection Summary**

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Control Type: Pretimed  
 Maximum v/c Ratio: 1.09  
 Intersection Signal Delay: 53.1      Intersection LOS: D  
 Intersection Capacity Utilization 82.3%      ICU Level of Service E  
 Analysis Period (min) 15

CR 46A and I-4 WB Ramps  
Existing Conditions - PM Peak

Wekiva Parkway  
PD&E Study



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕	↗	↖↗	↕		↖	↕	↗	↖	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	234		581	845		0	0		0	360		0
Storage Lanes	1		1	2		0	1		2	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	0.95	0.95	0.95	0.88	1.00	1.00	1.00
Fr <sub>t</sub>			0.850		0.993				0.850		0.984	
Fl <sub>t</sub> Protected	0.950			0.950			0.950	0.972		0.950		
Satd. Flow (prot)	1770	3539	1583	3433	3514	0	1681	1720	2787	1770	1833	0
Fl <sub>t</sub> Permitted	0.950			0.950			0.950	0.972		0.950		
Satd. Flow (perm)	1770	3539	1583	3433	3514	0	1681	1720	2787	1770	1833	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			450		6				78		5	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1154			1555			753			808	
Travel Time (s)		26.2			35.3			17.1			18.4	
Volume (vph)	24	1300	414	458	1159	54	53	15	142	232	221	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	1413	450	498	1260	59	58	16	154	252	240	29
Lane Group Flow (vph)	26	1413	450	498	1319	0	36	38	154	252	269	0
Turn Type	Prot		Perm	Prot			Split		pt+ov	Split		
Protected Phases	7	4		3	8		2	2	2 3	6	6	
Permitted Phases			4									
Total Split (s)	10.0	41.0	41.0	19.0	50.0	0.0	20.0	20.0	39.0	20.0	20.0	0.0
Act Effct Green (s)	6.0	37.0	37.0	15.0	46.0		16.0	16.0	31.0	16.0	16.0	
Actuated g/C Ratio	0.06	0.37	0.37	0.15	0.46		0.16	0.16	0.31	0.16	0.16	
v/c Ratio	0.25	1.08	0.52	0.97	0.81		0.13	0.14	0.17	0.89	0.91	
Control Delay	50.8	80.8	4.5	75.6	28.3		38.9	39.1	7.2	74.2	74.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	50.8	80.8	4.5	75.6	28.3		38.9	39.1	7.2	74.2	74.8	
LOS	D	F	A	E	C		D	D	A	E	E	
Approach Delay		62.2			41.3			17.5			74.5	
Approach LOS		E			D			B			E	

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green  
 Control Type: Pretimed  
 Maximum v/c Ratio: 1.08  
 Intersection Signal Delay: 52.8  
 Intersection LOS: D  
 Intersection Capacity Utilization 78.9%  
 ICU Level of Service D  
 Analysis Period (min) 15

CR 46A and I-4 EB Ramps  
Existing Conditions - PM Peak

Wekiva Parkway  
PD&E Study



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NEL2	NEL	NER
Lane Configurations	↔↔	↕↕			↕↕	↔			↔↔		↔↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	528		0	0		0	0	0		0	0
Storage Lanes	2		0	0		1	0	0		2	2
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
Turning Speed (mph)	15		9	15		9	15	9	15	15	9
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.97	1.00	0.88
Frts						0.850					0.850
Flt Protected	0.950								0.950		
Satd. Flow (prot)	3433	3539	0	0	3539	1583	0	0	3433	0	2787
Flt Permitted	0.950								0.950		
Satd. Flow (perm)	3433	3539	0	0	3539	1583	0	0	3433	0	2787
Right Turn on Red			Yes			Yes					Yes
Satd. Flow (RTOR)						300					60
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30		30			30	
Link Distance (ft)		1555			666		639			844	
Travel Time (s)		35.3			15.1		14.5			19.2	
Volume (vph)	226	1448	0	0	1345	276	0	0	326	0	620
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	246	1574	0	0	1462	300	0	0	354	0	674
Lane Group Flow (vph)	246	1574	0	0	1462	300	0	0	354	0	674
Turn Type	Prot					Perm			Prot		custom
Protected Phases	7	4			8				2		
Permitted Phases						8					2
Total Split (s)	11.0	47.0	0.0	0.0	36.0	36.0	0.0	0.0	23.0	0.0	23.0
Act Effct Green (s)	7.0	43.0			32.0	32.0			19.0		19.0
Actuated g/C Ratio	0.10	0.61			0.46	0.46			0.27		0.27
v/c Ratio	0.72	0.72			0.90	0.34			0.38		0.84
Control Delay	44.0	11.9			27.4	2.8			22.2		33.7
Queue Delay	0.0	0.0			0.0	0.0			0.0		0.0
Total Delay	44.0	11.9			27.4	2.8			22.2		33.7
LOS	D	B			C	A			C		C
Approach Delay		16.2			23.2						
Approach LOS		B			C						

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 2:NEL and 6:, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.90

























Intersection Signal Delay: 21.9

Intersection LOS: C

Intersection Capacity Utilization 68.4%

ICU Level of Service C

Analysis Period (min) 15

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	610		375	366		366	406		406	360		0
Storage Lanes	2		1	2		1	2		1	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
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	0.95
Friction			0.850			0.850			0.850		0.942	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	1770	3334	0
Fit Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	1770	3334	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			380			113			287		108	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		666			5772			1913			1147	
Travel Time (s)		15.1			131.2			43.5			26.1	
Volume (vph)	669	937	462	270	564	104	674	657	330	103	604	383
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	727	1018	502	293	613	113	733	714	359	112	657	416
Lane Group Flow (vph)	727	1018	502	293	613	113	733	714	359	112	1073	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Total Split (s)	31.0	42.0	42.0	15.0	26.0	26.0	32.0	53.0	53.0	20.0	41.0	0.0
Act Effct Green (s)	27.0	38.0	38.0	11.0	22.0	22.0	28.0	49.0	49.0	16.0	37.0	
Actuated g/C Ratio	0.21	0.29	0.29	0.08	0.17	0.17	0.22	0.38	0.38	0.12	0.28	
v/c Ratio	1.02	0.98	0.69	1.01	1.02	0.31	0.99	0.54	0.46	0.51	1.05	
Control Delay	89.3	70.2	15.2	114.0	95.6	10.6	82.0	33.4	8.6	62.5	81.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	89.3	70.2	15.2	114.0	95.6	10.6	82.0	33.4	8.6	62.5	81.3	
LOS	F	E	B	F	F	B	F	C	A	E	F	
Approach Delay		64.1			91.5			48.2			79.5	
Approach LOS		E			F			D			E	

**Intersection Summary**

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 66.9

Intersection LOS: E

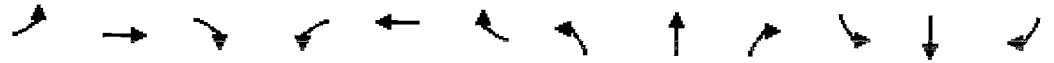
Intersection Capacity Utilization 96.2%

ICU Level of Service F

Analysis Period (min) 15

Rinehart Rd and St Johns Pkwy  
Existing Conditions - PM Peak

Wekiva Parkway  
PD&E Study



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	326		0	420		0	426		257	405		405
Storage Lanes	1		0	1		1	1		1	1		1
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frnt		0.922				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3263	0	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.689			0.599			0.414			0.250		
Satd. Flow (perm)	1283	3263	0	1116	1863	1583	771	3539	1583	466	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		128				126			85			79
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30		30		30
Link Distance (ft)		598			632			1924		2150		
Travel Time (s)		13.6			14.4			43.7		48.9		
Volume (vph)	50	109	118	156	97	116	200	725	78	105	410	73
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	118	128	170	105	126	217	788	85	114	446	79
Lane Group Flow (vph)	54	246	0	170	105	126	217	788	85	114	446	79
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Total Split (s)	10.0	20.0	0.0	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0
Act Effct Green (s)	22.0	16.0		22.0	16.0	16.0	22.0	16.0	16.0	22.0	16.0	16.0
Actuated g/C Ratio	0.37	0.27		0.37	0.27	0.27	0.37	0.27	0.27	0.37	0.27	0.27
v/c Ratio	0.10	0.26		0.36	0.21	0.24	0.57	0.83	0.18	0.38	0.47	0.16
Control Delay	10.7	9.4		13.4	18.5	5.4	18.2	30.7	5.9	14.4	20.5	5.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	9.4		13.4	18.5	5.4	18.2	30.7	5.9	14.4	20.5	5.9
LOS	B	A		B	B	A	B	C	A	B	C	A
Approach Delay		9.7			12.2			26.3			17.6	
Approach LOS		A			B			C			B	

Intersection Summary

Area Type: Other  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 48 (80%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 19.6  
 Intersection Capacity Utilization 54.6%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

Rinehart Rd and SR 417 NB Ramps  
Existing Conditions - PM Peak

Wekiva Parkway  
PD&E Study



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		427	530	
Storage Lanes	1	1		1	1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Fr <sub>t</sub>		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		344		59		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		30			30
Link Distance (ft)	485		1304			1924
Travel Time (s)	11.0		29.6			43.7
Volume (vph)	152	436	567	54	66	618
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	165	474	616	59	72	672
Lane Group Flow (vph)	165	474	616	59	72	672
Turn Type		Perm		Perm	Prot	
Protected Phases	8		2		1	6
Permitted Phases		8		2		
Total Split (s)	20.0	20.0	20.0	20.0	12.0	32.0
Act Effct Green (s)	16.0	16.0	16.0	16.0	8.0	28.0
Actuated g/C Ratio	0.31	0.31	0.31	0.31	0.15	0.54
v/c Ratio	0.30	0.65	0.57	0.11	0.26	0.35
Control Delay	15.7	9.6	17.5	5.2	22.3	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	9.6	17.5	5.2	22.3	7.5
LOS	B	A	B	A	C	A
Approach Delay	11.2		16.5			8.9
Approach LOS	B		B			A

Intersection Summary

Area Type: Other

Cycle Length: 52

Actuated Cycle Length: 52

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 12.1

Intersection LOS: B

Intersection Capacity Utilization 49.3%

ICU Level of Service A

Analysis Period (min) 15

Rinehart Rd and SR 417 SB Ramps  
Existing Conditions - PM Peak

Wekiva Parkway  
PD&E Study



Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	388	0	475	0	0	437
Storage Lanes	1	1	1	0	0	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15	9	15	9	15	9
Lane Util. Factor	1.00	1.00	1.00	0.88	0.97	1.00
Fr <sub>t</sub>		0.850		0.850		0.850
Fl <sub>t</sub> Protected	0.950		0.950		0.950	
Satd. Flow (prot)	1770	1583	1770	2787	3433	1583
Fl <sub>t</sub> Permitted	0.950		0.950		0.950	
Satd. Flow (perm)	1770	1583	1770	2787	3433	1583
Right Turn on Red		Yes		Yes		Yes
Satd. Flow (RTOR)		63		592		465
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		30		30	
Link Distance (ft)	1070		1304		560	
Travel Time (s)	24.3		29.6		12.7	
Volume (vph)	26	58	225	545	563	428
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	63	245	592	612	465
Lane Group Flow (vph)	28	63	245	592	612	465
Turn Type		Perm	Prot			Perm
Protected Phases	8		1		2	
Permitted Phases		8		6		2
Total Split (s)	20.0	20.0	20.0	40.0	20.0	20.0
Act Effct Green (s)	16.0	16.0	16.0	36.0	16.0	16.0
Actuated g/C Ratio	0.27	0.27	0.27	0.60	0.27	0.27
v/c Ratio	0.06	0.13	0.52	0.31	0.67	0.61
Control Delay	16.9	6.2	23.4	1.0	12.4	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	6.2	23.4	1.0	12.4	9.5
LOS	B	A	C	A	B	A
Approach Delay	9.5		7.6		11.1	
Approach LOS	A		A		B	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 40 (67%), Referenced to phase 2:NEL and 6:SBR, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 9.6

Intersection LOS: A























Intersection Capacity Utilization 41.9%

ICU Level of Service A

Analysis Period (min) 15

Rinehart Rd and Towne Center Blvd  
Existing Conditions - PM Peak

Wekiva Parkway  
PD&E Study

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	506		0	397		0	0		0	0		0	
Storage Lanes	2		0	1		0	0		1	0		1	
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	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9	
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.990			0.996				0.850				0.850
Fl <sub>t</sub> Protected	0.950			0.950				0.962				0.964	
Satd. Flow (prot)	3433	3504	0	1770	3525	0	0	1792	1583	0	1796	1583	
Fl <sub>t</sub> Permitted	0.950			0.950				0.792			0.799		
Satd. Flow (perm)	3433	3504	0	1770	3525	0	0	1475	1583	0	1488	1583	
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)		15			5				21				230
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30				30			30	
Link Distance (ft)		2192			1287				597			476	
Travel Time (s)		49.8			29.3				13.6			10.8	
Volume (vph)	354	1002	74	32	673	18	40	11	19	37	12	377	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	385	1089	80	35	732	20	43	12	21	40	13	410	
Lane Group Flow (vph)	385	1169	0	35	752	0	0	55	21	0	53	410	
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm	
Protected Phases	7	4		3	8			2		2		6	
Permitted Phases							2		2	6			6
Total Split (s)	14.0	29.0	0.0	9.0	24.0	0.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
Act Effct Green (s)	10.0	25.0		5.0	20.0			18.0	18.0		18.0	18.0	18.0
Actuated g/C Ratio	0.17	0.42		0.08	0.33			0.30	0.30		0.30	0.30	0.30
v/c Ratio	0.67	0.80		0.24	0.64			0.12	0.04		0.12	0.64	0.64
Control Delay	30.2	20.3		29.2	19.6			16.3	7.7		16.2	13.3	13.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0	0.0
Total Delay	30.2	20.3		29.2	19.6			16.3	7.7		16.2	13.3	13.3
LOS	C	C		C	B			B	A		B	B	B
Approach Delay		22.7			20.0			13.9			13.7		
Approach LOS		C			C			B			B		

**Intersection Summary**

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 20.3      Intersection LOS: C

Intersection Capacity Utilization 55.9%      ICU Level of Service B

Analysis Period (min) 15