WASHINGTON / DALRYMPLE IMR
CHAPTER 2 APP B
Existing Conditions Analysis

URBAN SYSTEMS inc.

Project # 10-085-2

Capcaity Analysis
Existing Conditions - Intersection Analysis

Location	AM			PM		
	Delay (sec)	V/C Ratio	95th % Queues	Delay (sec)	V/C Ratio	95th % Queues
I-10 WB ramps at Dalrymple Dr	**6.9**	-	-	**5.9**	-	-
I-10 ramp Eastbound	27.3	0.23	40	27.7	0.27	45
E Lakeshore Dr Westbound	27.4	0.25	40	27.1	0.17	28
Dalrymple Dr Northbound	2.7	0.26	55	2.5	0.27	55
Dalrymple Dr Southbound	5.9	0.15	58	5.9	0.17	65
I-10 EB off ramp at Dalrymple Dr	**7.3**	-	-	**4.0**	-	-
I-10 ramp Eastbound	27.0	0.81	150	32.9	0.79	68
Dalrymple Dr Northbound	3.7	0.19	63	2.1	0.24	70
Dalrymple Dr Southbound	4.2	0.31	118	2.1	0.22	63
I-10 WB on ramp at Washington St	-	-	-	-	-	-
Washington St Eastbound	4.7	0.26	25	5.4	0.27	28
I-10 EB off ramp at Washington St	**12.1**	-	-	**12.5**	-	-
I-10 ramp Eastbound	14.2	0.52	195	14.4	0.55	213
E Lakeshore Dr Westbound	10.7	0.23	58	10.5	0.21	53
Dalrymple Dr Northbound	10.8	0.24	65	10.4	0.2	55
Dalrymple Dr Southbound	10.4	0.18	55	9.2	0.02	8

- V/C ratio not reported

Capacity Analysis
Existing Conditions - Merge and Diverge Analysis

Location	AM	PM
	Density (pc/ln/mi)	Density (pc/ln/mi)
I-10 Eastbound Diverge to Washington St	36.7	29.2
I-10 Eastbound Merge from Braddock St	--	24.4
I-10 Eastbound Diverge to Dalrymple Dr	39.9	27.0
I-10 Westbound Diverge to Dalrymple Dr	39.5	39.9
I-10 Westbound Merge from Dalrymple Dr	40.5	41.6
I-10 Westbound Merge from Washington St	38.4	37.6
I-10 Westbound Diverge to Louise St	38.1	40.1

--When v/c is greater than 1 the HCS software does not report density

HCS Merge/Diverge analysis		
INPUT		Notes
Project Properties		
Analyst	Initials of person doing analysis	
Agency	USI- 10-085-2	
Analysis Year	2017	
Project Description	I-10 Corridor Improvement Stage 1 EA - "analysis location"	
Jurisdiction	LADOTD	
Time Period	Existing AM or Existing PM	
Date	"Date of analysis"	
Geometric Data		
Number of lanes	3	# of lanes in analysis direction
Freeway FFS	Posted speed	
Freeway Length	default	
Freeway Terrain Type	level	
Freeway Grade	default	
Freeway Grade Length	default	
Highway or C-D Roadway	unchecked	
Managed Lane	unchecked	
Ramp Lanes	1	
Ramp FFS	Advisory speed of ramp or 35 mph	Diverge- use advisory speed of ramp. Merge- use default 35 mph.
Ramp side	Right	
Ramp Terrain Type	Level	
Ramp Grade	default	
Ramp Grade length	default	
Length of First Accel Lane	distance in feet	measured in google earth
Length of Second Accel Lane	default	
Demand Data		
Freeway Demand	I-10 mainline volume (DC Figure 2)	Volume upsteam from the merge/diverge
Freeway Peak Hour Factor	Calculated mainline PHF	
Freeway Total Trucks	HV % (DC Table 1)	
Freeway Tractor-Trailers	default	
Freeway Single Unit Trucks	default	
Merge Demand	On/Off ramp volume	
Ramp Peak Hour Factor	Calculated ramp PHF	
Ramp Total Trucks	HV % (DC Table 1)	
Ramp Single Unit Trucks	default	
Ramp Tractor-Trailers	default	
Adjustment Factors		
Freeway Driver Population	default	
Freeway Weather Type	default	
Frreeway Speed Adjustment Factor	default	
Freeway Capacity Adjustment Factor	default	
Freeway Demand Adjustment Factor	default	
Incident Type	default	
Ramp Driver Population	default	
Ramp Weather Type	default	
Ramp Speed Adjustment Factor	default	
Ramp Capacity Adjustment Factor	default	
Ramp Demand Adjustment Factor	default	
Adjacent Ramps		
Upstream Ramp	**	Merge or Diverge
Distance to Upstream Ramp	distance in feet	measured in google earth
Upstream Ramp Terrain	default	
Upstream Ramp Demand	On/Off ramp volume	
Upstram Ramp PHF	Calculated ramp PHF	
Upstream Ramp Trucks	HV % (DC Table 1)	
Downstream Ramp	**	Merge or Diverge
Distance to Downstream Ramp	distance in feet	measured in google earth
Downstream Ramp Terrain	default	
Downstream Ramp Demand	On/Off ramp volume	
Downstram Ramp PHF	Calculated ramp PHF	
Downstream Ramp Trucks	HV % (DC Table 1)	

NOTES** Be sure to put both upstream and downstream ramp information in the same analysis file. HCS 7 will report whichever is the "worst" condition.

Washington/Dalrymple Existing PHF
Mainline and Ramps for HCS Merge/Diverge Analysis

PHF = Vt / (Vpeak 15 * 4)

I-10 EB

AM

I-10 EB Off ramp to Terrace St AM	
Count Source	#21
Day	Weds 10/25/2017
Time	7:00 AM-8:00 AM
	15 Min Volumes
7:00	178
7:15	198
7:30	197
7:45	228
PHF	0.88

I-10 EB Between Washington St and I-110/I-10 Merge AM	
Count Source	#24, #24A and #26
Day	10/25/2018
Time	7:00 AM-8:00 AM
	15 Min Volumes
7:00	1282
7:15	1291
7:30	1015
7:45	823
PHF	0.85

I-10 EB Off ramp to Washington St AM	
Count Source	#33
Day	Thurs 11/9/2017
Time	7:00 AM-8:00 AM
PHF	0.77

I-10 EB On ramp from Braddock St AM	
Count Source	#32
Day	Weds 10/25/2017
Time	7:00 AM-8:00 AM
	15 Min Volumes
7:00	148
7:15	103
7:30	108
7:45	153
PHF	0.84

PM

I-10 EB Off ramp to Terrace St PM	
Count Source	#21
Day	Weds 10/25/2017
Time	4:30 PM - 5:30 PM
	15 Min Volumes
4:30	195
4:45	165
5:00	218
5:15	124
PHF	0.81

I-10 EB Between Washington St and I-110/I-10 Merge PM	
Count Source	#24, #24A and #26
Day	10/25/2018
Time	4:30 PM - 5:30 PM
	15 Min Volumes
4:30	887
4:45	933
5:00	912
5:15	1060
PHF	0.89

I-10 EB Off ramp to Washington St PM	
Count Source	#33
Day	Thurs 11/9/2017
Time	4:30 PM - 5:30 PM
PHF	0.96

I-10 EB On ramp from Braddock St PM	
Count Source	#32
Day	Weds 10/25/2017
Time	4:30 PM - 5:30 PM
	15 Min Volumes
4:30	224
4:45	231
5:00	204
5:15	211
PHF	0.94

I-10 EB Off ramp to Dalrymple St AM	
Count Source	#39
Day	Weds 10/25/2017
Time	7:00 AM-8:00 AM
PHF	0.81

I-10 EB Off ramp to Dalrymple St PM	
Count Source	#39
Day	Weds 10/25/2017
Time	4:30 PM - 5:30 PM
PHF	0.85

I-10 EB Between perkins and Dalrymple AM	
Count Source	#6
Day	Weds 10/12/2017
Time	7:00 AM-8:00 AM
	15 Min Volumes
7:00	1346
7:15	1379
7:30	1356
7:45	1296
PHF	0.97

I-10 EB Between perkins and Dalrymple PM	
Count Source	#6
Day	Weds 10/11/2017
Time	4:30 PM - 5:30 PM
	15 Min Volumes
4:30	981
4:45	857
5:00	792
5:15	616
PHF	0.83

I-10 EB off ramp to Perkins Rd	
Count Source	#43
Day	Thursday 11/09/17
Time	7:00 AM-8:00 AM
PHF	0.98

I-10 EB off ramp to Perkins Rd	
Count Source	#43
Day	Thursday 11/09/17
Time	4:45:00 PM-5:45:00 PM
PHF	0.91

PHF = Vt / (Vpeak 15 * 4)

I-10 WB

AM

I-10 WB on ramp from Ferdinand St AM	
Count Source	#20
Day	Weds 10/25/2017
Time	7:00 AM-8:00 AM
	15 Min Volumes
7:00	102
7:15	85
7:30	94
7:45	93
PHF	0.92

I-10 WB Between Washington St and I-110/I-10 Diverge AM	
Count Source	#25 and #27
Day	Weds 10/11/2017
Time	7:00 AM-8:00 AM
	15 Min Volumes
7:00	1388
7:15	1368
7:30	1330
7:45	1371
PHF	0.98

I-10 WB On ramp from Washington St AM	
Count Source	#35
Day	Weds 10/25/2017
Time	6:45 AM-7:45 AM
PHF	0.73

I-10 WB Off ramp to McCalop St AM	
Count Source	#31
Day	Thurs 10/26/2017
Time	7:00 AM-8:00 AM
	15 Min Volumes
7:00	91
7:15	78
7:30	96
7:45	80
PHF	0.90

PM

I-10 WB on ramp from Ferdinand St PM	
Count Source	#20
Day	Weds 10/25/2017
Time	4:30 PM - 5:30 PM
	15 Min Volumes
4:30	232
4:45	216
5:00	219
5:15	205
PHF	0.94

I-10 WB Between Washington St and I-110/I-10 Diverge PM	
Count Source	#25 and #27
Day	Weds 10/11/2017
Time	4:30 PM - 5:30 PM
	15 Min Volumes
4:30	1372
4:45	1315
5:00	1276
5:15	1271
PHF	0.95

I-10 WB On ramp from Washington St PM	
Count Source	#35
Day	Weds 10/25/2017
Time	4:30 PM - 5:30 PM
PHF	0.93

I-10 WB Off ramp to McCalop St AM	
Count Source	#31
Day	Thurs 10/26/2017
Time	4:30 PM - 5:30 PM
	15 Min Volumes
4:30	55
4:45	42
5:00	62
5:15	50
PHF	0.84

I-10 WB On ramp from Dalrymple St AM	
Count Source	#38
Day	10/25/2017
Time	7:00 AM-8:00 AM
PHF	0.72

I-10 WB On ramp from Dalrymple St PM	
Count Source	#38
Day	10/25/2017
Time	4:30 PM - 5:30 PM
PHF	0.86

I-10 WB Off ramp to Dalrymple St AM	
Count Source	#38
Day	10/25/2017
Time	7:00 AM-8:00 AM
PHF	0.76

I-10 WB Off ramp to Dalrymple St PM	
Count Source	#38
Day	10/25/2017
Time	4:30 PM - 5:30 PM
PHF	0.83

I-10 WB Between perkins and Dalrymple AM	
Count Source	#6
Day	Weds 10/12/2017
Time	7:00 AM-8:00 AM
	15 Min Volumes
7:00	1451
7:15	1488
7:30	1502
7:45	1434
PHF	0.98

I-10 WB Between perkins and Dalrymple PM	
Count Source	#6
Day	Weds 10/11/2017
Time	4:30 PM - 5:30 PM
	15 Min Volumes
4:30	1439
4:45	1420
5:00	1500
5:15	1380
PHF	0.96

I-10 WB on ramp from Perkins Rd	
Count Source	#43
Day	Thursday 11/09/17
Time	7:00:00 AM-8:00 AM
	15 Min Volumes
7:00	168
7:15	174
7:30	208
7:45	198
PHF	0.90

I-10 WB on ramp from Perkins Rd	
Count Source	#43
Day	Thursday 11/09/17
Time	4:45:00 PM-5:45:00 PM
	15 Min Volumes
16:45	85
17:00	130
17:15	154
17:30	156
PHF	0.84

Acadian/Perkins Existing PHF
Intersection Totals for Synchro Analysis

PHF = Vt / (Vpeak 15 * 4)

I-10 EB

AM

I-10 EB off ramp at Washington St AM	
Count Source	#33
Day	Thurs 11/9/2017
Time	7:00:00 AM-8:00 AM
	15 Min Volumes
7:00	275
7:15	142
7:30	173
7:45	176
PHF	0.70

I-10 EB off ramp at Dalrymple St AM	
Count Source	#39
Day	Weds 10/25/2017
Time	7:00:00 AM-8:00 AM
	15 Min Volumes
7:00	288
7:15	324
7:30	351
7:45	275
PHF	0.88

PM

I-10 EB off ramp at Washington St PM	
Count Source	#33
Day	Thurs 11/9/2017
Time	4:30 PM - 5:30 PM
	15 Min Volumes
4:30	194
4:45	191
5:00	194
5:15	208
PHF	0.95

I-10 EB off ramp at Dalrymple St PM	
Count Source	#39
Day	Weds 10/25/2017
Time	4:30 PM - 5:30 PM
	15 Min Volumes
4:30	278
4:45	336
5:00	287
5:15	286
PHF	0.88

I-10 WB

AM

I-10 WB on ramp at Washington St AM	
Count Source	#35
Day	Weds 10/25/2017
Time	7:00:00 AM-8:00 AM
	15 Min Volumes
7:00	252
7:15	152
7:30	135
7:45	153
PHF	0.69

I-10 WB off ramp at Dalrymple St AM	
Count Source	#38
Day	Weds 10/25/2017
Time	7:00:00 AM-8:00 AM
	15 Min Volumes
7:00	266
7:15	304
7:30	348
7:45	318
PHF	0.89

PM

I-10 WB on ramp at Washington St PM	
Count Source	#35
Day	Weds 10/25/2017
Time	4:30 PM - 5:30 PM
	15 Min Volumes
4:30	203
4:45	221
5:00	204
5:15	190
PHF	0.93

I-10 WB off ramp at Dalrymple St PM	
Count Source	#38
Day	Weds 10/25/2017
Time	4:30 PM - 5:30 PM
	15 Min Volumes
4:30	315
4:45	346
5:00	295
5:15	312
PHF	0.92

Summary of Input Sources for Merge/Diverge Freeway Analysis
Heavy Vehicles

Data Source	Intersection	Approach	Movement	AM Volumes from Turning Movement Counts						PM Volumes from Turning Movement Counts					
				# cars	# trucks	# buses	Total Trucks and Buses	Total Vehicles	% Heavy Vehicles per approach	# cars	# trucks	# buses	Total Trucks and Buses	Total Vehicles	% Heavy Vehicles per approach
Washington / Dalrymple Data Collection Report	I-10 EB	Eastbound	Thru						13.0%						11.0%
	I-10 WB	Westbound	Thru						6.0%						8.0%
TMC #43	I-10 EB at Perkins Rd	Eastbound Off Ramp	SB Left	293	2	4	8	327	2.4%	110	0	0	0	119	0.0%
			SB Right	26	2	0				9	0	0			
		Westbound On Ramp	EB Left	45	0	0	14	748	1.9%	37	1	0	10	488	2.0%
			WB Right	689	5	9				441	4	5			
TMC #38 and #39	I-10 at Dalrymple Dr	Westbound On Ramp	NB Left	199	2	0	2	258	0.8%	203	3	0	3	236	1.3%
			WB Thru	21	0	0				10	0	0			
			SB Right	36	0	0				20	0	0			
		Westbound Off Ramp	Left	45	1	0	2	435	0.5%	48	1	0	1	275	0.4%
			Thru	1	0	0				5	0	0			
			Right	387	1	0				221	0	0			
		Eastbound Off Ramp	Left	25	0	1	5	174	2.9%	11	0	0	0	71	0.0%
			Right	144	4	0				60	0	0			
48 hr #31	I-10 at Louise St	Westbound Off Ramp	Thru	307	15	3	18	325	5.5%	188	2	3	5	193	2.6%
48 hr #32	I-10 at Braddock St	Eeastbound On	Right	500	8	4	12	512	2.3%	855	11	4	15	870	1.7%
TMC #33 and 35	I-10 at Washington St	Eastbound Off Ramp	Left	112	2	4	9	289	3.1%	19	0	0	0	35	0.0%
			Thru	18	0	0				2	0	0			
			Right	150	0	3				14	0	0			
		Westbound On Ramp	NB Left	234	5	21	32	358	8.9%	344	1	0	3	396	0.8%
			SB Right	92	0	6				49	2	0			
48 hr # 20 and 21	I-10 at Ferdinand St/Terrace St	Westbound On Ramp	NB RIght	349	22	3	25	374	6.7%	827	41	4	45	872	5.2%
		Eastbound Off Ramp	SB Left	756	42	3	45	801	5.6%	672	25	5	30	702	4.3%

TRAFFIC SIGNAL INVENTORY

DEPARTMENT OF PUBLIC WORKS/ TRAFFIC ENGINEERING DIVISION

TSI NO. S-157
SHEET: 1 OF 3

INTERSECTION: DALRYMPLE AT I-10 EB
CITY: BATON ROUGE **PARISH:** EAST BATON ROUGE **INSTALLATION DATE:** 02/01/78
TYPE SIGNAL: FULLY-ACTUATED/ INTERCONNECTED **LAST REVISION DATE:** 12/13/16

PHASES	Φ2 + Φ6			Φ8															FL	
INTERVALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
SIGNAL FACES 1	G	Y	R																R	Emergency
2	G	Y	R																R	
3				G	Y	R													R	
4				G	Y	R													R	
5	G	Y	R																R	
6	G	Y	R																R	
7																				HOURS OF FLASHING OPERATION
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
TIME	SEC	30.0	**4.0**	**1.0**	20.0	**4.0**	**1.0**													Offset =
FO	SEC	0.0			25.0															48
YP	SEC																			sec
SPLIT	SEC		**35**			**25**														

PATTERN 1 CYCLE LENGTH = 60 TIMES OF OPERATION = 24/7

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
TIME	SEC																			Offset =
FO	SEC																			
YP	SEC																			sec
SPLIT	SEC																			

PATTERN CYCLE LENGTH = TIMES OF OPERATION =

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
TIME	SEC																			Offset =
FO	SEC																			
YP	SEC																			sec
SPLIT	SEC																			

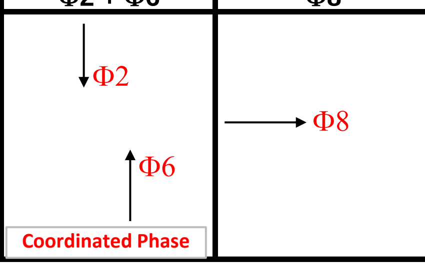
PATTERN CYCLE LENGTH = TIMES OF OPERATION =

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
TIME	SEC																			Offset =
FO	SEC																			
YP	SEC																			sec
SPLIT	SEC																			

PATTERN CYCLE LENGTH = TIMES OF OPERATION =

PHASING SEQUENCE

Φ2 + Φ6 **Φ8**



SIGNAL WARRANTS: MAINTAINED BY: DPW CONTROLLER MANUF: NAZTEC SYSTEM #:

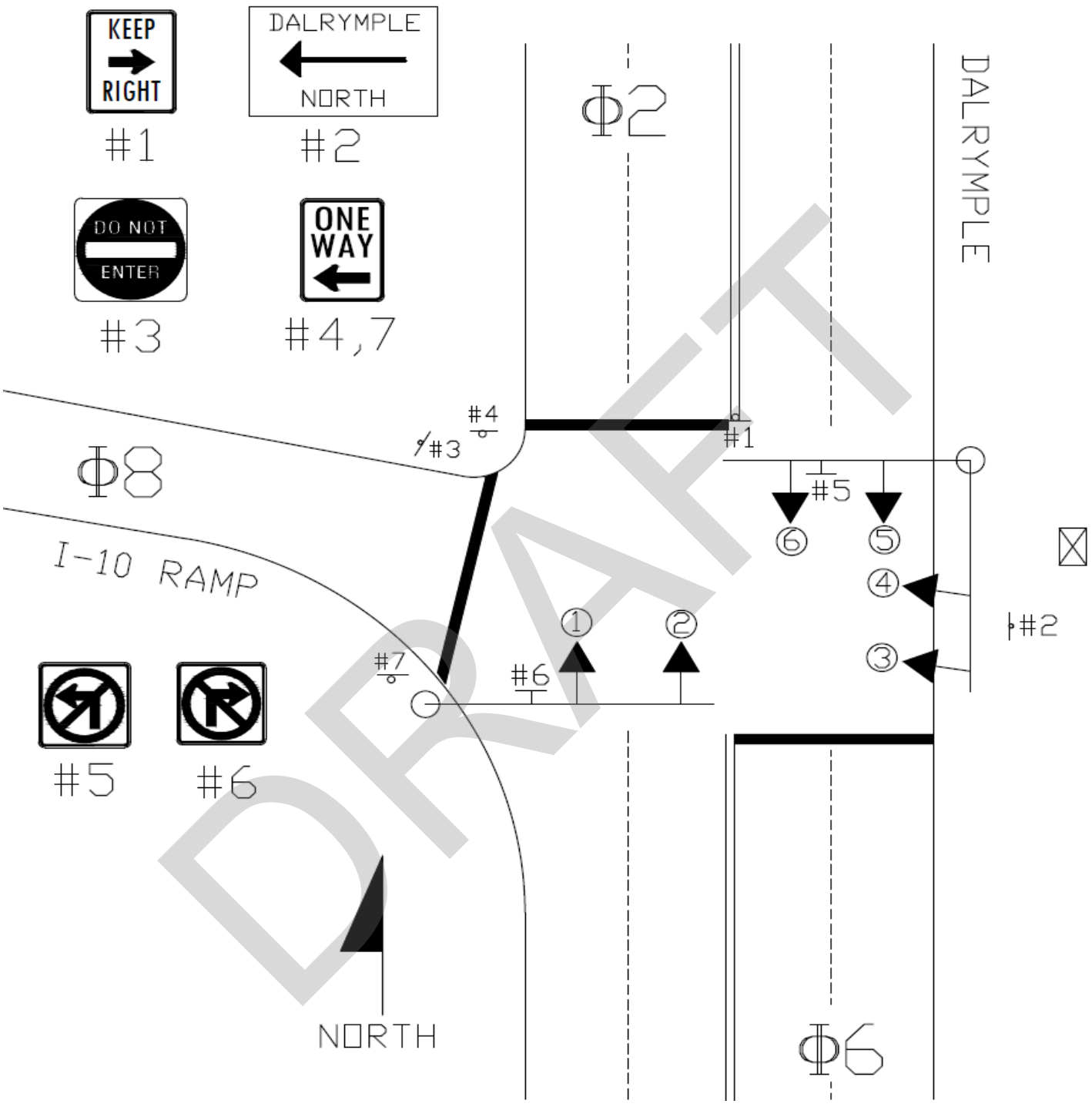
MASTER/ SLAVE: MASTER AT TSI #: COORDINATED WITH TSI #'S:

TRAFFIC SIGNAL INVENTORY

TSI NO. S-157

DEPARTMENT OF PUBLIC WORKS/ TRAFFIC ENGINEERING DIVISION

SHEET: 2 OF 3



SIGNAL FACES	1-6									
TOTALS	6									
R= RED Y = YELLOW G = GREEN G = GREEN ARROW Y = YELLOW ARROW DK = DARK 8" = 8" DIA. LENS 12" = 12" DIA. LENS WA = WALK DW = DON'T WALK FDW = FLASHING DON'T WALK	R Y G	R Y→ G→	R ←Y ←G	R Y ←G G	R Y G G→	R Y Y→ G G→	R ←Y Y ←G G			PED W DW

TRAFFIC SIGNAL INVENTORY	TSI NO. S-157
DEPARTMENT OF PUBLIC WORKS/ TRAFFIC ENGINEERING DIVISION	SHEET: 3 OF 3

Phase Timing Parameters

Phase Designation		1	2	3	4	5	6	7	8
Movement Description			↓				↑		→
PARAMETER	RANGE								
MIN GREEN (MIN Grn)	0-255		10.0				10.0		5.0
GAP EXTENSION	0-25.5		5.0				5.0		2.0
MAX GREEN I (MAX I)	0-255		40.0				40.0		30.0
MAX GREEN II (MAX II)	0-255		40.0				40.0		30.0
YELLOW CLEARANCE (YEL)	0-25.5		4.0				4.0		4.0
RED CLEARANCE (RED)	0-25.5		1.0				1.0		1.0
WALK (WALK)	0-255								
PED CLEARANCE (P CLR)	0-255								
ADDED INITIAL GREEN	0-25.5								
MAX INITIAL GREEN	0-255								
TIME BEFORE REDUCTION	0-255								
TIME TO REDUCE	0-255								
MIN GAP	0-25.5								
DYNAMIC MAX LIMIT	0-255								
MAX STEP	0-25.5								
RECALL	CODES		MIN				MIN		
LOOP # - DELAY (in sec.)	0-25.5								
LOOP # - EXTEND (in sec.)	0-25.5								

RECALL FUNCTIONS	
MON	MEMORY ON
MOF	MEMORY OFF
MIN	MINIMUM
MAX	MAXIMUM
PMN	PEDESTRIAN AND MINIMUM
PMX	PEDESTRIAN AND MAXIMUM

Note 1: Runs MAX INH During Coordination

Note 2:

Note 3:

TRAFFIC SIGNAL INVENTORY

DEPARTMENT OF PUBLIC WORKS/ TRAFFIC ENGINEERING DIVISION

TSI NO. S-158
SHEET: 1 OF 3

INTERSECTION: DALRYMPLE/ E. LAKESHORE DR AT I-10 WB

CITY: BATON ROUGE **PARISH:** EAST BATON ROUGE **INSTALLATION DATE:** 11/20/90

TYPE SIGNAL: FULLY-ACTUATED/ INTERCONNECTED **LAST REVISION DATE:** 09/23/15

PHASES →	Φ2 + Φ6			Φ4 + Φ8			Φ1 + Φ6												FL
INTERVALS →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
SIGNAL FACES 1	/G	/Y	R				←G/G	←Y/G	/G										R
2	G	Y	R				G	G	G										R
3	G	Y	R				G	G	G										R
4	G	Y	R																R
5	G	Y	R																R
6				G	Y	R													R
7				G	Y	R													R
8				G	Y	R													R
9				G	Y	R													R
10																			
11																			
12																			
13																			
14																			
15																			
16																			

HOURS OF FLASHING OPERATION: Emergency

Free Operation 24/7

		Timing	Offset = sec
TIME	SEC		
FO	SEC		
YP	SEC		
SPLIT	SEC		

PATTERN CYCLE LENGTH = TIMES OF OPERATION =

		Timing	Offset = sec
TIME	SEC		
FO	SEC		
YP	SEC		
SPLIT	SEC		

PATTERN CYCLE LENGTH = TIMES OF OPERATION =

		Timing	Offset = sec
TIME	SEC		
FO	SEC		
YP	SEC		
SPLIT	SEC		

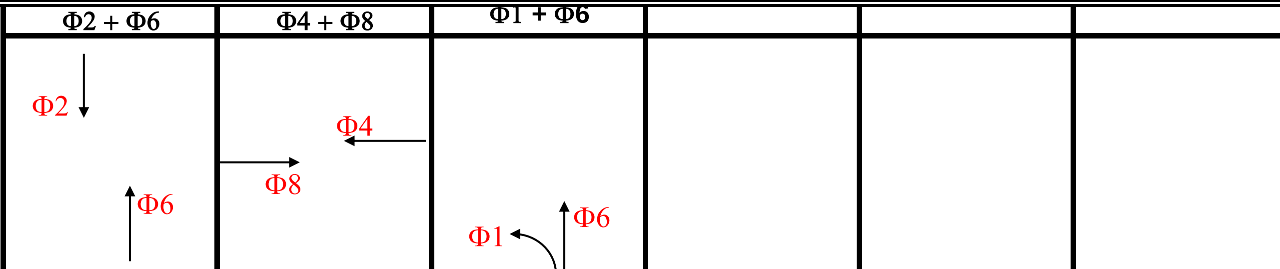
PATTERN CYCLE LENGTH = TIMES OF OPERATION =

		Timing	Offset = sec
TIME	SEC		
FO	SEC		
YP	SEC		
SPLIT	SEC		

PATTERN CYCLE LENGTH = TIMES OF OPERATION =

PHASING

Φ2 + Φ6	Φ4 + Φ8	Φ1 + Φ6			



SIGNAL WARRANTS: MAINTAINED BY: DPW CONTROLLER MANUF: NAZTEC SYSTEM #: Dalrymple

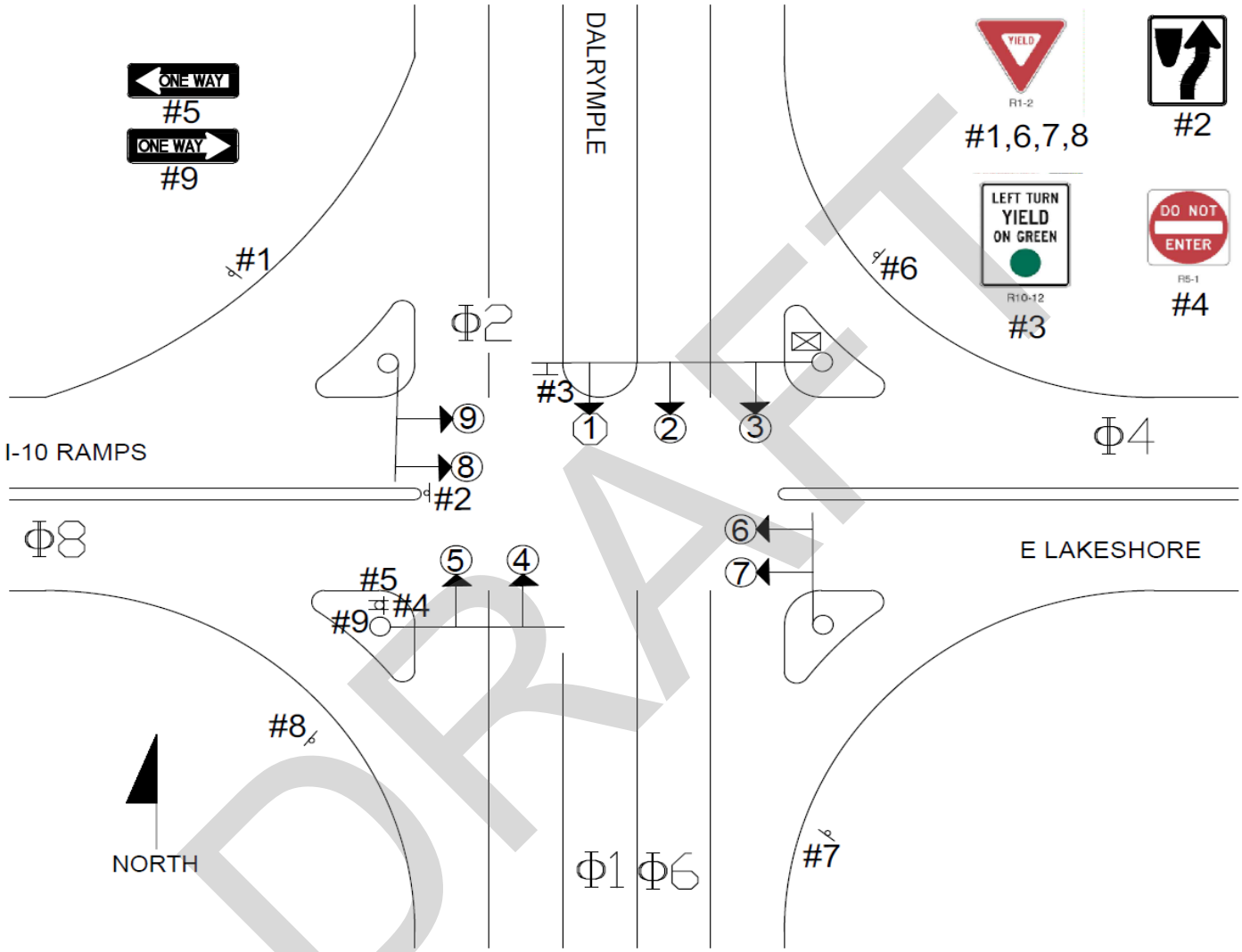
MASTER/ SLAVE: MASTER AT TSI #: COORDINATED WITH TSI #'S: S-157, S-158

TRAFFIC SIGNAL INVENTORY

TSI NO. S-158

DEPARTMENT OF PUBLIC WORKS/ TRAFFIC ENGINEERING DIVISION

SHEET: 2 OF 3



SIGNAL FACES	2-9						1			
TOTALS	8						1			
R= RED Y = YELLOW G = GREEN G = GREEN ARROW Y = YELLOW ARROW DK = DARK 8" = 8" DIA. LENS 12" = 12" DIA. LENS WA = WALK DW = DON'T WALK FDW = FLASHING DON'T WALK	R Y G	R Y→ G→	R ←Y ←G	R Y ←G G	R Y G G→	R Y Y→ G G→	R ←Y Y ←G G			PED W DW

TRAFFIC SIGNAL INVENTORY	TSI NO. S-158
DEPARTMENT OF PUBLIC WORKS/ TRAFFIC ENGINEERING DIVISION	SHEET: 3 OF 3

Phase Timing Parameters

Phase Designation		1	2	3	4	5	6	7	8
Movement Description		↰	↓		←		↑		→
PARAMETER	RANGE								
MIN GREEN (MIN Grn)	0-255	5.0	10.0		5.0		10.0		5.0
GAP EXTENSION	0-25.5	2.0	5.0		3.0		5.0		3.0
MAX GREEN I (MAX I)	0-255	15.0	45.0		15.0		45.0		15.0
MAX GREEN II (MAX II)	0-255	15.0	45.0		15.0		45.0		15.0
YELLOW CLEARANCE (YEL)	0-25.5	4.0	4.0		4.0		4.0		4.0
RED CLEARANCE (RED)	0-25.5	1.0	1.0		1.7		1.0		1.7
WALK (WALK)	0-255								
PED CLEARANCE (P CLR)	0-255								
ADDED INITIAL GREEN	0-25.5								
MAX INITIAL GREEN	0-255								
TIME BEFORE REDUCTION	0-255								
TIME TO REDUCE	0-255								
MIN GAP	0-25.5								
DYNAMIC MAX LIMIT	0-255								
MAX STEP	0-25.5								
RECALL	CODES		MIN				MIN		
LOOP # - DELAY (in sec.)	0-25.5								
LOOP # - EXTEND (in sec.)	0-25.5								

RECALL FUNCTIONS	
MON	MEMORY ON
MOF	MEMORY OFF
MIN	MINIMUM
MAX	MAXIMUM
PMN	PEDESTRIAN AND MINIMUM
PMX	PEDESTRIAN AND MAXIMUM

Note 1:

Note 2:

Note 3:

TRAFFIC SIGNAL INVENTORY

DEPARTMENT OF PUBLIC WORKS/ TRAFFIC ENGINEERING DIVISION

TSI NO. S-154

SHEET: 1 OF 3

INTERSECTION: E. WASHINGTON AT I-10/ KENTUCKY ST.

CITY: BATON ROUGE **PARISH:** EAST BATON ROUGE **INSTALLATION DATE:** 08/07/70

TYPE SIGNAL: FIXED TIME/ ISOLATED **LAST REVISION DATE:** 11/02/17

PHASES	Φ2			Φ1															FL
INTERVALS / SIGNAL FACES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1				G	Y	R													R
2	G	Y	R																R
3	G	Y	R																R
4				G	Y	R													R
5				G	Y	R													R
6				G	Y	R													R
7	G	Y	R																R
8	G	Y	R																R
9				G	Y	R													R
10				G	Y	R													
11																			
12																			
13																			
14																			
15																			
16																			

Free Operation
24/7

HOURS OF FLASHING OPERATION: Emergency

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
TIME	SEC																			Offset =
FO	SEC																			
YP	SEC																			sec
SPLIT	SEC																			

PATTERN CYCLE LENGTH = TIMES OF OPERATION =

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
TIME	SEC																			Offset =
FO	SEC																			
YP	SEC																			sec
SPLIT	SEC																			

PATTERN CYCLE LENGTH = TIMES OF OPERATION =

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
TIME	SEC																			Offset =
FO	SEC																			
YP	SEC																			sec
SPLIT	SEC																			

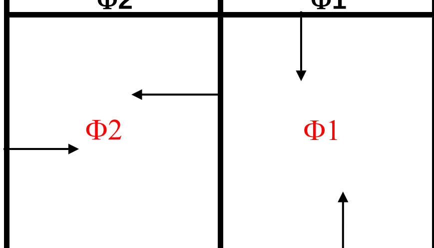
PATTERN CYCLE LENGTH = TIMES OF OPERATION =

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
TIME	SEC																			Offset =
FO	SEC																			
YP	SEC																			sec
SPLIT	SEC																			

PATTERN CYCLE LENGTH = TIMES OF OPERATION =

PHASING SEQUENCE

Φ2 Φ1



SIGNAL WARRANTS: MAINTAINED BY: DPW CONTROLLER MANUF: NAZTEC SYSTEM #:

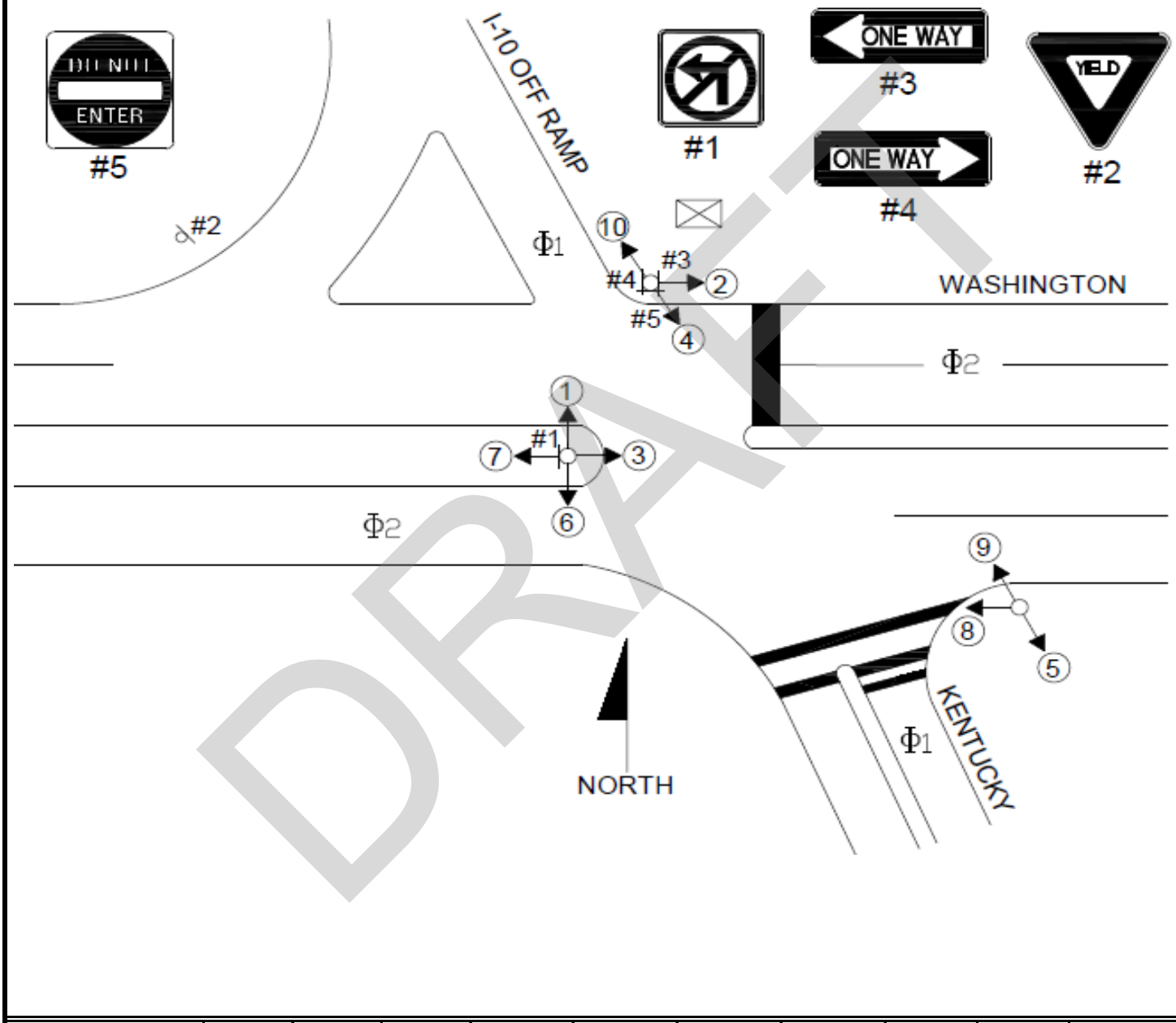
MASTER/ SLAVE: MASTER AT TSI #: COORDINATED WITH TSI #'S:

TRAFFIC SIGNAL INVENTORY

TSI NO. S-154

DEPARTMENT OF PUBLIC WORKS/ TRAFFIC ENGINEERING DIVISION

SHEET: 2 OF 3



SIGNAL FACES	1-10									
TOTALS	10									
R= RED Y = YELL0W G = GREEN G = GREEN ARROW Y = YELLOW ARROW DK = DARK 8" = 8" DIA. LENS 12" = 12" DIA. LENS WA = WALK DW = DON'T WALK FDW = FLASHING DON'T WALK	Ⓡ Ⓨ Ⓖ	Ⓡ Ⓨ→ Ⓖ→	Ⓡ ←Ⓨ ←Ⓖ	Ⓡ Ⓨ ←Ⓖ Ⓖ	Ⓡ Ⓨ Ⓖ Ⓖ→	Ⓡ Ⓨ Ⓨ→ Ⓖ Ⓖ→	Ⓡ ←Ⓨ Ⓨ ←Ⓖ Ⓖ			PED W DW

TRAFFIC SIGNAL INVENTORY	TSI NO. S-154
DEPARTMENT OF PUBLIC WORKS/ TRAFFIC ENGINEERING DIVISION	SHEET: 3 OF 3

Phase Timing Parameters

Phase Designation		1	2	3	4	5	6	7	8
Movement Description		↑ ↓	→ ←						
PARAMETER	RANGE								
MIN GREEN (MIN Grn)	0-255	10	10						
GAP EXTENSION	0-25.5	2.5	2.5						
MAX GREEN I (MAX I)	0-255	25	25						
MAX GREEN II (MAX II)	0-255	25	25						
YELLOW CLEARANCE (YEL)	0-25.5	4.0	4.0						
RED CLEARANCE (RED)	0-25.5	1.0	0.5						
WALK (WALK)	0-255								
PED CLEARANCE (P CLR)	0-255								
ADDED INITIAL GREEN	0-25.5								
MAX INITIAL GREEN	0-255								
TIME BEFORE REDUCTION	0-255								
TIME TO REDUCE	0-255								
MIN GAP	0-25.5								
DYNAMIC MAX LIMIT	0-255								
MAX STEP	0-25.5								
RECALL	CODES	MAX	MAX						
LOOP # - DELAY (in sec.)	0-25.5								
LOOP # - EXTEND (in sec.)	0-25.5								

RECALL FUNCTIONS	
MON	MEMORY ON
MOF	MEMORY OFF
MIN	MINIMUM
MAX	MAXIMUM
PMN	PEDESTRIAN AND MINIMUM
PMX	PEDESTRIAN AND MAXIMUM

Note 1:

Note 2:

Note 3:

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	249	9	33	146	0	2	0	98	71	17	139
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1770	1900	1900	1811	0	1900	1900	1743	1976	1922	1976
Adj Flow Rate, veh/h	0	356	13	47	209	0	3	0	140	101	24	0
Adj No. of Lanes	0	1	0	0	2	0	0	1	1	0	1	0
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	0	7	7	6	6	0	0	0	9	0	0	0
Cap, veh/h	0	679	25	223	954	0	730	0	593	563	121	0
Arrive On Green	0.00	0.40	0.40	0.40	0.40	0.00	0.40	0.00	0.40	0.40	0.40	0.00
Sat Flow, veh/h	0	1697	62	309	2468	0	1465	0	1482	1081	303	0
Grp Volume(v), veh/h	0	0	369	126	130	0	3	0	140	125	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1759	1129	1566	0	1465	0	1482	1384	0	0
Q Serve(g_s), s	0.0	0.0	8.0	0.5	2.7	0.0	0.0	0.0	3.1	2.3	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	8.0	8.4	2.7	0.0	0.0	0.0	3.1	2.8	0.0	0.0
Prop In Lane	0.00		0.04	0.37		0.00	1.00		1.00	0.81		0.00
Lane Grp Cap(c), veh/h	0	0	704	551	626	0	730	0	593	684	0	0
V/C Ratio(X)	0.00	0.00	0.52	0.23	0.21	0.00	0.00	0.00	0.24	0.18	0.00	0.00
Avail Cap(c_a), veh/h	0	0	704	551	626	0	730	0	593	684	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	11.4	9.9	9.8	0.0	9.0	0.0	9.9	9.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	2.8	1.0	0.8	0.0	0.0	0.0	0.9	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	7.8	2.3	2.3	0.0	0.0	0.0	2.6	2.2	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	14.2	10.9	10.6	0.0	9.0	0.0	10.9	10.4	0.0	0.0
LnGrp LOS			B	B	B		A		B	B		
Approach Vol, veh/h		369			256			143			125	
Approach Delay, s/veh		14.2			10.7			10.8			10.4	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.0		25.0		25.0		25.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		20.0		20.0		20.0		20.0
Max Q Clear Time (g_c+I1), s		10.0		4.8		10.4		5.1
Green Ext Time (p_c), s		1.5		0.7		1.4		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	222	199	195	76	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	10	1	4	6	0	0
Mvmt Flow	322	288	283	110	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	283	0	-	0	1071	283
Stage 1	-	-	-	-	283	-
Stage 2	-	-	-	-	788	-
Critical Hdwy	4.2	-	-	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.29	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1235	-	-	-	232	761
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	414	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1235	-	-	-	172	761
Mov Cap-2 Maneuver	-	-	-	-	172	-
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	306	-

Approach	EB	WB	SB
HCM Control Delay, s	4.7	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1235	-	-	-	-
HCM Lane V/C Ratio	0.261	-	-	-	-
HCM Control Delay (s)	8.9	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	1	-	-	-	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	26	148	0	400	664	0
Number	3	18	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1842	1900	0	1863	1881	0
Adj Flow Rate, veh/h	30	168	0	455	755	0
Adj No. of Lanes	0	0	0	2	2	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	2	1	0
Cap, veh/h	37	207	0	2405	2429	0
Arrive On Green	0.15	0.15	0.00	0.68	0.68	0.00
Sat Flow, veh/h	240	1345	0	3725	3762	0
Grp Volume(v), veh/h	199	0	0	455	755	0
Grp Sat Flow(s),veh/h/ln	1593	0	0	1770	1787	0
Q Serve(g_s), s	7.2	0.0	0.0	2.8	5.1	0.0
Cycle Q Clear(g_c), s	7.2	0.0	0.0	2.8	5.1	0.0
Prop In Lane	0.15	0.84	0.00			0.00
Lane Grp Cap(c), veh/h	245	0	0	2405	2429	0
V/C Ratio(X)	0.81	0.00	0.00	0.19	0.31	0.00
Avail Cap(c_a), veh/h	531	0	0	2405	2429	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.5	0.0	0.0	3.5	3.9	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	0.2	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.0	0.0	0.0	2.5	4.7	0.0
LnGrp Delay(d),s/veh	27.0	0.0	0.0	3.7	4.2	0.0
LnGrp LOS	C			A	A	
Approach Vol, veh/h	199			455	755	
Approach Delay, s/veh	27.0			3.7	4.2	
Approach LOS	C			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		45.8				45.8		14.2
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		30.0				30.0		20.0
Max Q Clear Time (g_c+I1), s		7.1				4.8		9.2
Green Ext Time (p_c), s		11.6				12.2		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	7.3
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	1	388	27	21	21	201	196	28	19	251	36
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1896	1900	1900	1900	1900	1881	1842	1900	1900	1885	1900
Adj Flow Rate, veh/h	52	1	0	30	24	0	226	220	0	21	282	0
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	0	0	0	1	3	3	1	1	1
Cap, veh/h	226	2	0	153	60	0	872	2634	0	155	1918	0
Arrive On Green	0.07	0.07	0.00	0.07	0.07	0.00	0.08	0.75	0.00	0.59	0.59	0.00
Sat Flow, veh/h	1542	30	0	854	859	0	1792	3593	0	149	3360	0
Grp Volume(v), veh/h	53	0	0	54	0	0	226	220	0	161	142	0
Grp Sat Flow(s),veh/h/ln	1571	0	0	1713	0	0	1792	1750	0	1794	1629	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	2.6	1.0	0.0	0.0	2.4	0.0
Cycle Q Clear(g_c), s	1.7	0.0	0.0	1.7	0.0	0.0	2.6	1.0	0.0	2.3	2.4	0.0
Prop In Lane	0.98		0.00	0.56		0.00	1.00		0.00	0.13		0.00
Lane Grp Cap(c), veh/h	228	0	0	212	0	0	872	2634	0	1118	954	0
V/C Ratio(X)	0.23	0.00	0.00	0.25	0.00	0.00	0.26	0.08	0.00	0.14	0.15	0.00
Avail Cap(c_a), veh/h	608	0	0	646	0	0	962	2634	0	1118	954	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.8	0.0	0.0	26.8	0.0	0.0	3.2	2.0	0.0	5.6	5.6	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.6	0.0	0.0	0.1	0.1	0.0	0.3	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	0.0	0.0	1.6	0.0	0.0	2.2	0.9	0.0	2.3	2.1	0.0
LnGrp Delay(d),s/veh	27.3	0.0	0.0	27.4	0.0	0.0	3.3	2.0	0.0	5.9	6.0	0.0
LnGrp LOS	C			C			A	A		A	A	
Approach Vol, veh/h		53			54			446			303	
Approach Delay, s/veh		27.3			27.4			2.7			5.9	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	10.0	40.1		9.9		50.1		9.9
Change Period (Y+Rc), s	5.0	5.0		* 5.7		5.0		* 5.7
Max Green Setting (Gmax), s	5.0	16.0		* 20		29.0		* 20
Max Q Clear Time (g_c+I1), s	4.6	4.4		3.7		3.0		3.7
Green Ext Time (p_c), s	0.1	3.2		0.3		4.5		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	6.9
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	379	7	39	184	0	3	0	119	15	1	23
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1854	0	1900	1900	1881	1976	1976	1976
Adj Flow Rate, veh/h	0	399	7	41	194	0	3	0	125	16	1	0
Adj No. of Lanes	0	1	0	0	2	0	0	1	1	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	3	3	0	0	0	1	0	0	0
Cap, veh/h	0	730	13	214	982	0	722	0	640	650	37	0
Arrive On Green	0.00	0.40	0.40	0.40	0.40	0.00	0.40	0.00	0.40	0.40	0.40	0.00
Sat Flow, veh/h	0	1826	32	290	2539	0	1445	0	1599	1275	92	0
Grp Volume(v), veh/h	0	0	406	115	120	0	3	0	125	17	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1858	1142	1603	0	1445	0	1599	1367	0	0
Q Serve(g_s), s	0.0	0.0	8.4	0.4	2.4	0.0	0.0	0.0	2.5	0.2	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	8.4	8.8	2.4	0.0	0.0	0.0	2.5	0.3	0.0	0.0
Prop In Lane	0.00		0.02	0.36		0.00	1.00		1.00	0.94		0.00
Lane Grp Cap(c), veh/h	0	0	743	554	641	0	722	0	640	687	0	0
V/C Ratio(X)	0.00	0.00	0.55	0.21	0.19	0.00	0.00	0.00	0.20	0.02	0.00	0.00
Avail Cap(c_a), veh/h	0	0	743	554	641	0	722	0	640	687	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	11.5	9.8	9.7	0.0	9.0	0.0	9.8	9.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	2.9	0.8	0.6	0.0	0.0	0.0	0.7	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	8.5	2.0	2.1	0.0	0.0	0.0	2.2	0.3	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	14.4	10.7	10.4	0.0	9.0	0.0	10.4	9.2	0.0	0.0
LnGrp LOS			B	B	B		A		B	A		
Approach Vol, veh/h		406			235			128			17	
Approach Delay, s/veh		14.4			10.5			10.4			9.2	
Approach LOS		B			B			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.0		25.0		25.0		25.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		20.0		20.0		20.0		20.0
Max Q Clear Time (g_c+I1), s		10.4		2.3		10.8		4.5
Green Ext Time (p_c), s		1.5		0.5		1.5		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	12.5
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	345	212	210	51	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	2	4	0	0
Mvmt Flow	371	228	226	55	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	226	0	-	0	1082	226
Stage 1	-	-	-	-	226	-
Stage 2	-	-	-	-	856	-
Critical Hdwy	4.1	-	-	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1354	-	-	-	229	818
Stage 1	-	-	-	-	816	-
Stage 2	-	-	-	-	382	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1354	-	-	-	166	818
Mov Cap-2 Maneuver	-	-	-	-	166	-
Stage 1	-	-	-	-	816	-
Stage 2	-	-	-	-	277	-

Approach	EB	WB	SB
HCM Control Delay, s	5.4	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1354	-	-	-	-
HCM Lane V/C Ratio	0.274	-	-	-	-
HCM Control Delay (s)	8.7	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	1.1	-	-	-	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	11	60	0	584	532	0
Number	3	18	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	0	1881	1863	0
Adj Flow Rate, veh/h	12	68	0	664	605	0
Adj No. of Lanes	0	0	0	2	2	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	1	2	0
Cap, veh/h	15	86	0	2757	2730	0
Arrive On Green	0.06	0.06	0.00	0.77	0.77	0.00
Sat Flow, veh/h	244	1380	0	3762	3725	0
Grp Volume(v), veh/h	81	0	0	664	605	0
Grp Sat Flow(s),veh/h/ln	1644	0	0	1787	1770	0
Q Serve(g_s), s	2.9	0.0	0.0	3.1	2.8	0.0
Cycle Q Clear(g_c), s	2.9	0.0	0.0	3.1	2.8	0.0
Prop In Lane	0.15	0.84	0.00			0.00
Lane Grp Cap(c), veh/h	102	0	0	2757	2730	0
V/C Ratio(X)	0.79	0.00	0.00	0.24	0.22	0.00
Avail Cap(c_a), veh/h	548	0	0	2757	2730	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.8	0.0	0.0	1.9	1.9	0.0
Incr Delay (d2), s/veh	5.1	0.0	0.0	0.2	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.7	0.0	0.0	2.8	2.5	0.0
LnGrp Delay(d),s/veh	32.9	0.0	0.0	2.1	2.1	0.0
LnGrp LOS	C			A	A	
Approach Vol, veh/h	81			664	605	
Approach Delay, s/veh	32.9			2.1	2.1	
Approach LOS	C			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		51.3				51.3		8.7
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		30.0				30.0		20.0
Max Q Clear Time (g_c+I1), s		4.8				5.1		4.9
Green Ext Time (p_c), s		12.8				12.7		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	4.0
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	49	5	221	23	10	28	206	350	35	33	287	20
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1893	1900	1900	1900	1900	1863	1883	1900	1900	1884	1900
Adj Flow Rate, veh/h	53	5	0	25	11	0	224	380	0	36	312	0
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	2	1	1	1	1	1
Cap, veh/h	208	9	0	171	43	0	843	2704	0	218	1803	0
Arrive On Green	0.07	0.07	0.00	0.07	0.07	0.00	0.08	0.76	0.00	0.59	0.59	0.00
Sat Flow, veh/h	1418	134	0	1047	657	0	1774	3672	0	248	3137	0
Grp Volume(v), veh/h	58	0	0	36	0	0	224	380	0	181	167	0
Grp Sat Flow(s),veh/h/ln	1552	0	0	1705	0	0	1774	1789	0	1670	1629	0
Q Serve(g_s), s	0.9	0.0	0.0	0.0	0.0	0.0	2.6	1.7	0.0	0.0	2.8	0.0
Cycle Q Clear(g_c), s	2.0	0.0	0.0	1.1	0.0	0.0	2.6	1.7	0.0	2.6	2.8	0.0
Prop In Lane	0.91		0.00	0.69		0.00	1.00		0.00	0.20		0.00
Lane Grp Cap(c), veh/h	217	0	0	214	0	0	843	2704	0	1059	963	0
V/C Ratio(X)	0.27	0.00	0.00	0.17	0.00	0.00	0.27	0.14	0.00	0.17	0.17	0.00
Avail Cap(c_a), veh/h	564	0	0	585	0	0	1024	2704	0	1059	963	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.1	0.0	0.0	26.7	0.0	0.0	3.2	2.0	0.0	5.6	5.6	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.4	0.0	0.0	0.1	0.1	0.0	0.4	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.8	0.0	0.0	1.1	0.0	0.0	2.2	1.6	0.0	2.6	2.4	0.0
LnGrp Delay(d),s/veh	27.7	0.0	0.0	27.1	0.0	0.0	3.3	2.1	0.0	5.9	6.0	0.0
LnGrp LOS	C			C			A	A		A	A	
Approach Vol, veh/h		58			36			604			348	
Approach Delay, s/veh		27.7			27.1			2.5			5.9	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	9.9	40.5		9.7		50.3		9.7
Change Period (Y+Rc), s	5.0	5.0		* 5.7		5.0		* 5.7
Max Green Setting (Gmax), s	4.9	15.0		* 18		31.0		* 18
Max Q Clear Time (g_c+I1), s	4.6	4.8		3.1		3.7		4.0
Green Ext Time (p_c), s	0.2	4.2		0.2		6.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	5.9
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCS7 Freeway Diverge Report

Project Information

Analyst	MHM	Date	4/9/2018
Agency	USI 10-085-2	Analysis Year	2017
Jurisdiction	LADOTD	Time Period Analyzed	Existing AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 EB Off ramp to Dalrymple Dr		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	30.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	175
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	5551	174
Peak Hour Factor (PHF)	0.97	0.81
Total Trucks, %	13.00	2.90
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.885	0.972
Flow Rate (v_i), pc/h	6466	221
Capacity (c), pc/h	6900	1900
Volume-to-Capacity Ratio (v/c)	0.94	0.12

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	3072.8	Density in Ramp Influence Area (D_R), pc/mi/ln	36.2
Distance to Upstream Ramp (L_{UP}), ft	1109	Speed Index (D_S)	0.513
Downstream Equilibrium Distance (L_{EQ}), ft	396.6	Flow Outer Lanes (v_{OA}), pc/h/ln	2573
Distance to Downstream Ramp (L_{DOWN}), ft	4631	Off-Ramp Influence Area Speed (S_R), mi/h	50.8
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.588	Outer Lanes Freeway Speed (S_O), mi/h	59.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	3893	Ramp Junction Speed (S), mi/h	54.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	39.9
Level of Service (LOS)	E		

HCS7 Freeway Diverge Report

Project Information

Analyst	MHM	Date	4/9/2018
Agency	USI 10-085-2	Analysis Year	2017
Jurisdiction	LADOTD	Time Period Analyzed	Existing PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 EB Off ramp to Dalrymple Dr		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	30.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	114
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	3317	71
Peak Hour Factor (PHF)	0.83	0.85
Total Trucks, %	11.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.901	1.000
Flow Rate (v_i), pc/h	4436	84
Capacity (c), pc/h	6900	1900
Volume-to-Capacity Ratio (v/c)	0.64	0.04

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	5648.4	Density in Ramp Influence Area (D_R), pc/mi/ln	28.1
Distance to Upstream Ramp (L_{UP}), ft	1109	Speed Index (D_S)	0.501
Downstream Equilibrium Distance (L_{EQ}), ft	165.3	Flow Outer Lanes (v_{OA}), pc/h/ln	1545
Distance to Downstream Ramp (L_{DOWN}), ft	4631	Off-Ramp Influence Area Speed (S_R), mi/h	51.0
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.645	Outer Lanes Freeway Speed (S_O), mi/h	63.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	2891	Ramp Junction Speed (S), mi/h	54.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	27.0
Level of Service (LOS)	D		

HCS7 Freeway Diverge Report

Project Information

Analyst	MHM	Date	4/9/2018
Agency	USI 10-085-2	Analysis Year	2017
Jurisdiction	LADOTD	Time Period Analyzed	Existing AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 EB Off ramp Washington St		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	25.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	530
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	4411	227
Peak Hour Factor (PHF)	0.85	0.77
Total Trucks, %	13.00	2.80
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.885	0.973
Flow Rate (v_i), pc/h	5864	303
Capacity (c), pc/h	6900	1900
Volume-to-Capacity Ratio (v/c)	0.85	0.16

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	5256.9	Density in Ramp Influence Area (D_R), pc/mi/ln	31.0
Distance to Upstream Ramp (L_{UP}), ft	4970	Speed Index (D_S)	0.585
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2197
Distance to Downstream Ramp (L_{DOWN}), ft	1350	Off-Ramp Influence Area Speed (S_R), mi/h	49.5
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.605	Outer Lanes Freeway Speed (S_O), mi/h	61.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	3667	Ramp Junction Speed (S), mi/h	53.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	36.7
Level of Service (LOS)	D		

HCS7 Freeway Diverge Report

Project Information

Analyst	MHM	Date	4/9/2018
Agency	USI 10-085-2	Analysis Year	2017
Jurisdiction	LADOTD	Time Period Analyzed	Existing PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 EB Off ramp Washington St		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	25.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	530
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	3792	39
Peak Hour Factor (PHF)	0.89	0.96
Total Trucks, %	11.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.901	1.000
Flow Rate (v_i), pc/h	4729	41
Capacity (c), pc/h	6900	1900
Volume-to-Capacity Ratio (v/c)	0.69	0.02

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	5117.1	Density in Ramp Influence Area (D_R), pc/mi/ln	25.7
Distance to Upstream Ramp (L_{UP}), ft	4970	Speed Index (D_S)	0.562
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1678
Distance to Downstream Ramp (L_{DOWN}), ft	1350	Off-Ramp Influence Area Speed (S_R), mi/h	49.9
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.642	Outer Lanes Freeway Speed (S_O), mi/h	63.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	3051	Ramp Junction Speed (S), mi/h	53.9
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	29.2
Level of Service (LOS)	C		

HCS7 Freeway Merge Report

Project Information

Analyst	MHM	Date	4/10/2018
Agency	USI-10-085-2	Analysis Year	2017
Jurisdiction	LADOTD	Time Period Analyzed	Existing AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 EB on ramp from Braddock St		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	150
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	5039	512
Peak Hour Factor (PHF)	0.85	0.84
Total Trucks, %	13.00	2.30
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.885	0.978
Flow Rate (v_i), pc/h	6699	623
Capacity (c), pc/h	6900	2000
Volume-to-Capacity Ratio (v/c)	1.06	0.31

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1061.7	Density in Ramp Influence Area (D_R), pc/mi/ln	40.6
Distance to Upstream Ramp (L_{UP}), ft	1609	Speed Index (M_S)	-
Downstream Equilibrium Distance (L_{EQ}), ft	1759.2	Flow Outer Lanes (v_{OA}), pc/h/ln	2666
Distance to Downstream Ramp (L_{DOWN}), ft	1100	On-Ramp Influence Area Speed (S_R), mi/h	47.0
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.602	Outer Lanes Freeway Speed (S_O), mi/h	51.3
Flow in Lanes 1 and 2 (v_{12}), pc/h	4033	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4656	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F		

HCS7 Freeway Merge Report

Project Information

Analyst	MHM	Date	4/10/2018
Agency	USI-10-085-2	Analysis Year	2017
Jurisdiction	LADOTD	Time Period Analyzed	Existing PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 EB on ramp from Braddock St		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	150
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	2447	870
Peak Hour Factor (PHF)	0.89	0.94
Total Trucks, %	11.00	1.70
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.901	0.983
Flow Rate (v_i), pc/h	3052	942
Capacity (c), pc/h	6900	2000
Volume-to-Capacity Ratio (v/c)	0.58	0.47

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	349.5	Density in Ramp Influence Area (D_R), pc/mi/ln	25.4
Distance to Upstream Ramp (L_{UP}), ft	1609	Speed Index (M_S)	0.370
Downstream Equilibrium Distance (L_{EQ}), ft	664.8	Flow Outer Lanes (v_{OA}), pc/h/ln	1276
Distance to Downstream Ramp (L_{DOWN}), ft	1100	On-Ramp Influence Area Speed (S_R), mi/h	53.3
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.582	Outer Lanes Freeway Speed (S_O), mi/h	57.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	1776	Ramp Junction Speed (S), mi/h	54.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2718	Average Density (D), pc/mi/ln	24.4
Level of Service (LOS)	C		

HCS7 Freeway Diverge Report

Project Information

Analyst	MHM	Date	4/10/2018
Agency	USI	Analysis Year	2017
Jurisdiction	LADOTD	Time Period Analyzed	Existing AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB off ramp to Dalrymple Dr		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	30.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	250
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5875	435
Peak Hour Factor (PHF)	0.98	0.76
Total Trucks, %	6.00	0.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.943	0.995
Flow Rate (v_i), pc/h	6357	575
Capacity (c), pc/h	6900	1900
Volume-to-Capacity Ratio (v/c)	0.92	0.30

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	4482.5	Density in Ramp Influence Area (D_R), pc/mi/ln	35.5
Distance to Upstream Ramp (L_{UP}), ft	3370	Speed Index (D_S)	0.545
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2457
Distance to Downstream Ramp (L_{DOWN}), ft	860	Off-Ramp Influence Area Speed (S_R), mi/h	50.2
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.575	Outer Lanes Freeway Speed (S_O), mi/h	60.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	3900	Ramp Junction Speed (S), mi/h	53.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	39.5
Level of Service (LOS)	E		

HCS7 Freeway Diverge Report

Project Information

Analyst	MHM	Date	4/10/2018
Agency	USI	Analysis Year	2017
Jurisdiction	LADOTD	Time Period Analyzed	Existing PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB off ramp to Dalrymple Dr		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	30.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	250
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	5739	275
Peak Hour Factor (PHF)	0.96	0.83
Total Trucks, %	8.00	0.40
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.926	0.996
Flow Rate (v_i), pc/h	6456	333
Capacity (c), pc/h	6900	1900
Volume-to-Capacity Ratio (v/c)	0.94	0.18

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	3030.5	Density in Ramp Influence Area (D_R), pc/mi/ln	35.6
Distance to Upstream Ramp (L_{UP}), ft	3370	Speed Index (D_S)	0.523
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2553
Distance to Downstream Ramp (L_{DOWN}), ft	860	Off-Ramp Influence Area Speed (S_R), mi/h	50.6
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.583	Outer Lanes Freeway Speed (S_O), mi/h	59.8
Flow in Lanes 1 and 2 (v_{12}), pc/h	3903	Ramp Junction Speed (S), mi/h	53.9
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	39.9
Level of Service (LOS)	E		

HCS7 Freeway Diverge Report

Project Information

Analyst	MHM	Date	4/10/2018
Agency	USI	Analysis Year	2017
Jurisdiction	LADOTD	Time Period Analyzed	Existing AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB off ramp to Louise St		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	30.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	100
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	5700	345
Peak Hour Factor (PHF)	0.98	0.90
Total Trucks, %	6.00	5.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.943	0.948
Flow Rate (v_i), pc/h	6168	404
Capacity (c), pc/h	6900	1900
Volume-to-Capacity Ratio (v/c)	0.89	0.21

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1998.2	Density in Ramp Influence Area (D_R), pc/mi/ln	35.9
Distance to Upstream Ramp (L_{UP}), ft	1300	Speed Index (D_S)	0.529
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2381
Distance to Downstream Ramp (L_{DOWN}), ft	260	Off-Ramp Influence Area Speed (S_R), mi/h	50.5
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.587	Outer Lanes Freeway Speed (S_O), mi/h	60.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	3787	Ramp Junction Speed (S), mi/h	53.9
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	38.1
Level of Service (LOS)	E		

HCS7 Freeway Diverge Report

Project Information

Analyst	MHM	Date	4/10/2018
Agency	USI	Analysis Year	2017
Jurisdiction	LADOTD	Time Period Analyzed	Existing PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB off ramp to Louise St		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	30.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	100
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	5700	209
Peak Hour Factor (PHF)	0.95	0.84
Total Trucks, %	8.00	2.60
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.926	0.975
Flow Rate (v_i), pc/h	6479	255
Capacity (c), pc/h	6900	1900
Volume-to-Capacity Ratio (v/c)	0.94	0.13

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1385.5	Density in Ramp Influence Area (D_R), pc/mi/ln	36.9
Distance to Upstream Ramp (L_{UP}), ft	1300	Speed Index (D_S)	0.516
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2577
Distance to Downstream Ramp (L_{DOWN}), ft	260	Off-Ramp Influence Area Speed (S_R), mi/h	50.7
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.586	Outer Lanes Freeway Speed (S_O), mi/h	59.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	3902	Ramp Junction Speed (S), mi/h	53.9
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Average Density (D), pc/mi/ln	40.1
Level of Service (LOS)	E		

HCS7 Freeway Merge Report

Project Information

Analyst	MHM	Date	4/10/2018
Agency	USI-10-085-2	Analysis Year	2017
Jurisdiction	LADOTD	Time Period Analyzed	Existing AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB on ramp from Dalrymple Dr		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	375
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	5440	260
Peak Hour Factor (PHF)	0.98	0.72
Total Trucks, %	6.00	0.80
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.943	0.992
Flow Rate (v_i), pc/h	5887	364
Capacity (c), pc/h	6900	2000
Volume-to-Capacity Ratio (v/c)	0.91	0.18

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	932.4	Density in Ramp Influence Area (D_R), pc/mi/ln	35.5
Distance to Upstream Ramp (L_{UP}), ft	860	Speed Index (M_S)	0.545
Downstream Equilibrium Distance (L_{EQ}), ft	2701.1	Flow Outer Lanes (v_{OA}), pc/h/ln	2090
Distance to Downstream Ramp (L_{DOWN}), ft	1100	On-Ramp Influence Area Speed (S_R), mi/h	50.2
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.645	Outer Lanes Freeway Speed (S_O), mi/h	54.3
Flow in Lanes 1 and 2 (v_{12}), pc/h	3797	Ramp Junction Speed (S), mi/h	51.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4161	Average Density (D), pc/mi/ln	40.5
Level of Service (LOS)	E		

HCS7 Freeway Merge Report

Project Information

Analyst	MHM	Date	4/10/2018
Agency	USI-10-085-2	Analysis Year	2017
Jurisdiction	LADOTD	Time Period Analyzed	Existing PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB on ramp from Dalrymple Dr		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	375
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	5464	236
Peak Hour Factor (PHF)	0.96	0.86
Total Trucks, %	8.00	1.30
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.926	0.987
Flow Rate (v_i), pc/h	6147	278
Capacity (c), pc/h	6900	2000
Volume-to-Capacity Ratio (v/c)	0.93	0.14

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	969.7	Density in Ramp Influence Area (D_R), pc/mi/ln	34.5
Distance to Upstream Ramp (L_{UP}), ft	860	Speed Index (M_S)	0.514
Downstream Equilibrium Distance (L_{EQ}), ft	1705.0	Flow Outer Lanes (v_{OA}), pc/h/ln	2397
Distance to Downstream Ramp (L_{DOWN}), ft	1100	On-Ramp Influence Area Speed (S_R), mi/h	50.7
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.610	Outer Lanes Freeway Speed (S_O), mi/h	52.9
Flow in Lanes 1 and 2 (v_{12}), pc/h	3750	Ramp Junction Speed (S), mi/h	51.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4028	Average Density (D), pc/mi/ln	41.6
Level of Service (LOS)	D		

HCS7 Freeway Merge Report

Project Information

Analyst	MHM	Date	4/10/2018
Agency	USI-10-085-2	Analysis Year	2017
Jurisdiction	LADOTD	Time Period Analyzed	Existing AM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB on ramp from Washington St		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	300
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5159	298
Peak Hour Factor (PHF)	0.98	0.73
Total Trucks, %	6.00	9.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.943	0.917
Flow Rate (v_i), pc/h	5582	445
Capacity (c), pc/h	6900	2000
Volume-to-Capacity Ratio (v/c)	0.87	0.22

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	851.2	Density in Ramp Influence Area (D_R), pc/mi/ln	32.4
Distance to Upstream Ramp (L_{UP}), ft	950	Speed Index (M_S)	0.460
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2311
Distance to Downstream Ramp (L_{DOWN}), ft	5130	On-Ramp Influence Area Speed (S_R), mi/h	51.7
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.586	Outer Lanes Freeway Speed (S_O), mi/h	53.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	3271	Ramp Junction Speed (S), mi/h	52.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3716	Average Density (D), pc/mi/ln	38.4
Level of Service (LOS)	D		

HCS7 Freeway Merge Report

Project Information

Analyst	MHM	Date	4/10/2018
Agency	USI-10-085-2	Analysis Year	2017
Jurisdiction	LADOTD	Time Period Analyzed	Existing PM
Project Description	I-10 Corridor Improvement Stage 1 EA - I-10 WB on ramp from Washington St		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	60.0	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	300
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4838	396
Peak Hour Factor (PHF)	0.95	0.93
Total Trucks, %	8.00	0.80
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (f_{HV})	0.926	0.992
Flow Rate (v_i), pc/h	5500	429
Capacity (c), pc/h	6900	2000
Volume-to-Capacity Ratio (v/c)	0.86	0.21

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	830.2	Density in Ramp Influence Area (D_R), pc/mi/ln	32.0
Distance to Upstream Ramp (L_{UP}), ft	950	Speed Index (M_S)	0.450
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2277
Distance to Downstream Ramp (L_{DOWN}), ft	5130	On-Ramp Influence Area Speed (S_R), mi/h	51.9
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.586	Outer Lanes Freeway Speed (S_O), mi/h	53.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	3223	Ramp Junction Speed (S), mi/h	52.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3652	Average Density (D), pc/mi/ln	37.6
Level of Service (LOS)	D		

Chapter 2 and Appendices B & C QA/QC

Task	Chapter/Appendix	Done by and Date	Checked by and Date	Notes
Archive Ch 2 pdf and word with "submittal" and the submittal date in the title	Ch 2	mhm 6-6-19	apc 7-9-19	
Update analysis software verbiage in report text	Ch 2	mhm 6-6-19	apc 7-9-19	
Udate Table 2.4 and 2.6 with HCM 10 report MOE's for Existing and no build	Ch 2	mhm 6-6-19	amb 6-6-19	
Revised text formatting based on comments provided by Providence	Ch 2	mhm 8-2-19	apc 8-5-19	
Create a pdf and print	Ch 2	mhm 8-6-19	apc 8-6-19	
Check the print copy	Ch 2	mhm 8-6-19	apc 8-6-19	
Update QAQC	Ch 2	mhm 8-6-19	apc 8-6-19	
Archive App B with word "submittal" and the submittal date in the title	Ch 2 App B	mhm 6-11-19	apc 7-9-19	
Udate Existing Analysis files and Table in Ch 2 App B	Ch 2 App B	mhm 6-11-19	apc 7-9-19	
Create a pdf and print	Ch 2 App B	mhm 8-6-19	apc 8-6-19	
Check the print copy	Ch 2 App B	mhm 8-6-19	apc 8-6-19	
Update APP B QA/QC	Ch 2 App B	mhm 8-7-19	apc 8-7-19	
Archive App C with the word "submittal" and the submittal date in the title	Ch 2 App C	mhm 6-11-19	apc 7-9-19	
Update analysis files in APP C	Ch 2 App C	mhm 6-11-19	apc 7-9-19	
Create a pdf and print	Ch 2 App C	mhm 8-6-19	apc 8-6-19	
Check the print copy	Ch 2 App C	mhm 8-6-19	apc 8-6-19	
Update App C QA/QC	Ch 2 App C	mhm 8-7-19	apc 8-7-19	

Alyssa Biernes, E.I. — Date: 8/7/19

Mathew Morgan, E.I. — Date: 8/7/19

Alben Cooper III, P.E., PTOE — Date: 8/7/19