



LA 447 Corridor Study

Task Order No. H.005734 S. A. #1

Contract No. 4400000651

**Walker, Louisiana
Livingston Parish**

I-12 at LA 447 Summary of Interchange Analysis

Prepared for:

**Louisiana Department of Transportation and Development
Traffic Engineering Division**

April 11, 2012

LA 447 at I-12 Interchange

Summary of Alternatives Analysis

The objective of this study was to develop two (2) build interchange alternatives for the interchange of I-12 at LA 447 that will meet the future traffic demand needs at this location. In addition, the proposed interchange alternatives should also be compatible with the widening of I-12 as well as the widening of LA 447 north and south of I-12.

A tier process was utilized to evaluate various interchange concepts. From this process, multiple interchange concepts were generally evaluated based on traffic operations, ROW, Environmental/Social Impacts and Cost. From the initial evaluation, several interchanges are recommended for further evaluation. However, the ultimate goal is to reduce the number of interchange concepts to two (2) to evaluate further.

Based on preliminary evaluation, the following interchanges three (3) interchange concepts were selected for evaluation.

1. No Build
2. PAR CLO-A w/signalized intersections
3. PAR CLO-A w/roundabout intersections

Conceptual geometry was developed for the two (2) build alternatives. The conceptual geometric layouts are attached. These two (2) build interchange concepts were evaluated based on Level of Service (LOS) based on forecasted 2038 traffic demands and estimated opinions of probable construction cost. In addition, LOS for the No Build condition was also determined. A summary of the LOS are shown in Table 1.

Table 1
Summary of Interchange Level of Service

	AM Peak							
	LA 447 at EB Ramps				LA 447 at WB Ramps			
Alternative	EB	SB	NB	Int.	WB	SB	NB	Int.
No Build	F	F	F	F	F	N/A	F	N/A
PAR CLO-A w/Signals	C	A	B	B	C	A	A	A
PAR CLO-A w/Roundabouts	B	A	B	B	B	A	A	A
	PM Peak							
	LA 447 at EB Ramps				LA 447 at WB Ramps			
Alternative	EB	SB	NB	Int.	WB	SB	NB	Int.
No Build	F	F	F	F	F	N/A	D	N/A
PAR CLO-A w/Signals	D	B	B	C	C	A	A	B
PAR CLO-A w/Roundabouts	B	A	B	B	B	A	A	A

A summary of the estimated opinions of probable construction costs are shown in Table 2.

Table 2
Summary of Estimated Opinions of Probable Construction Costs

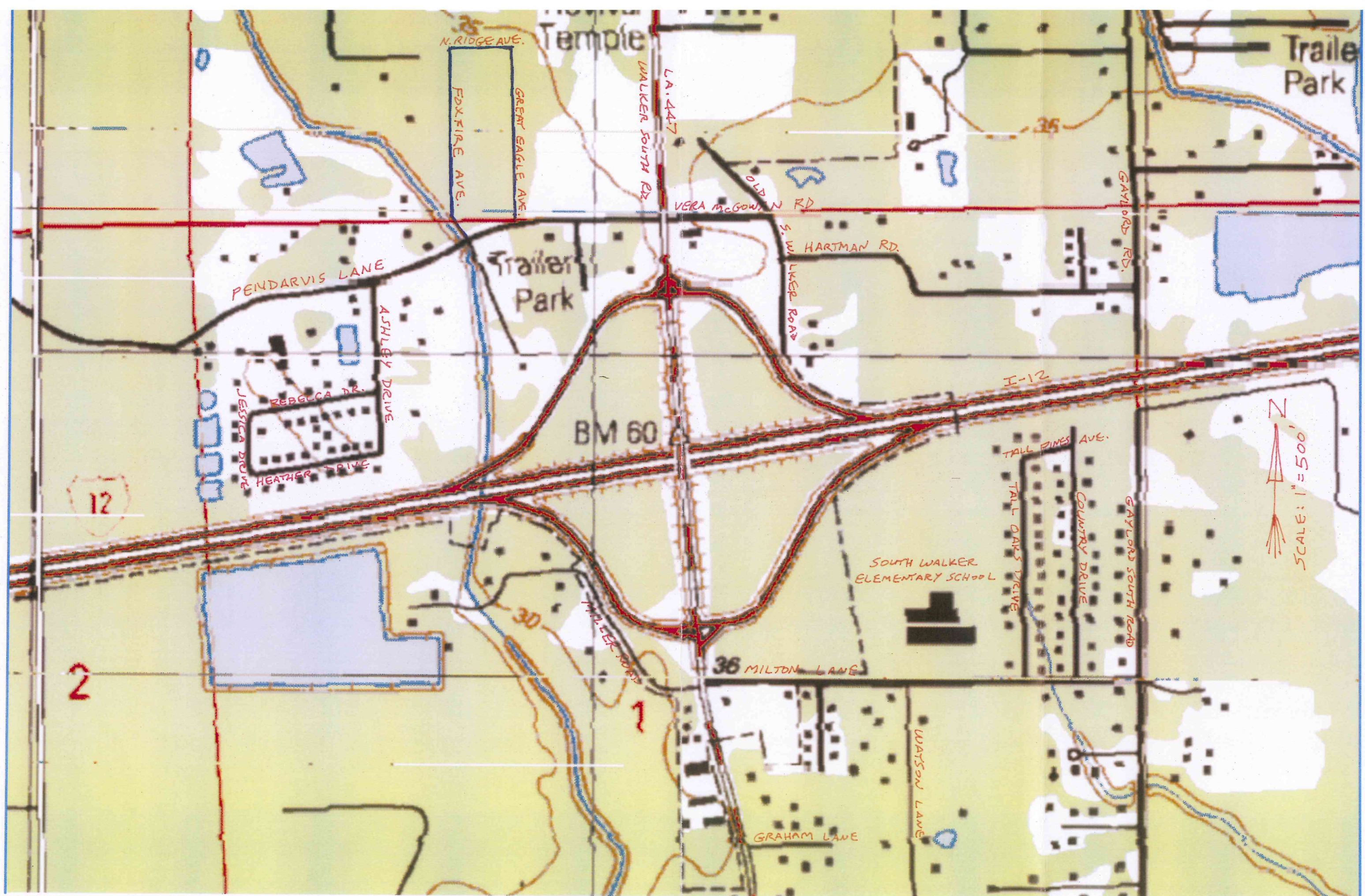
Alternative	Estimated Opinions of Probable Construction Costs
PAR CLO-A w/Signals	\$23,400,965.00
PAR CLO-A w/Roundabouts	\$22,490,079.00

Based on the anticipated LOS and estimated opinions of probable construction costs of the two (2) proposed alternatives, the preferred alternative is PAR CLO-A w/Roundabouts. In addition to providing a better LOS and lower estimated opinion of probable construction costs, the PAR CLO-A w/Roundabouts can be constructed in phases.

The initial phase of construction could construct the roundabouts at the future vertical grade, with the second phase including the initial bridge widening and the final phase would include construction of the cloverleaf ramps and the remaining bridge structure. The estimated opinions of probable construction costs for each phase of the preferred alternative, PAR CLO-A w/Roundabouts are shown in Table 3.

Table 3
Summary of Estimated Opinions of Phased Probable Construction Costs for
the Preferred Alternative – PAR CLO-A w/Roundabouts

Construction Phase	Estimated Opinions of Probable Construction Costs
Initial Phase	\$4,405,830.00
Intermediate Phase	\$4,258,430.00
Final Phase	\$13,825,819.00
Total	\$22,490,079.00





N. RIDGE AVE.

FOXFIRE AVE.

GREAT EAGLE AVE.

WALKER SOUTH RD.

LA 447

OLD S. WALKER RD.

VERA
McGOWAN RD.

HARTMAN RD.

GAYLORD ROAD

PENDARVIS LANE

ASHLEY DRIVE

REBECCA DR.

JESSICA DR.

HEATHER DR.

I-12

TALL PINES AVE.

TALL OAKS DRIVE

COUNTRY DRIVE

GAYLORD SOUTH ROAD

SOUTH WALKER
ELEMENTARY SCHOOL

MILLER ROAD

MILTON LANE

GRAHAM LANE

WATSON LANE

1"=500'

HCS+: Signalized Intersections Release 5.5

Analyst: AGT
 Agency: Neel-Schaffer, Inc.
 Date: 4/5/2012
 Period: AM Peak Hour
 Project ID: LA 447 at I-12 Interchange Analysis
 E/W St: EB Ramp

Inter.: LA 447 at EB Ramp
 Area Type: All other areas
 Jurisd: Livingston Parish
 Year : 2038 No Build
 N/S St: LA 447

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	0	0	0	1	0	1	1	0
LGConfig	LT						T			L T		
Volume	347	0					1397			272	762	
Lane Width	12.0						12.0			12.0	12.0	
RTOR Vol												

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	P				NB	Left		
	Thru	P					Thru	P	
	Right						Right		
	Peds						Peds		
WB	Left					SB	Left	P	P
	Thru						Thru	P	P
	Right						Right		
	Peds						Peds		
NB	Right					EB	Right		
SB	Right					WB	Right		
Green		17.0	0.0				14.0	51.0	0.0
Yellow		5.0					5.0	5.0	
All Red		1.0					1.0	1.0	

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

LT 293 1723 1.29 0.17 193.9 F 193.9 F

Westbound

Northbound

T 923 1810 1.64 0.51 319.5 F 319.5 F

Southbound

L 313 1719 0.95 0.71 70.5 E
 T 1285 1810 0.64 0.71 10.3 B 26.1 C

Intersection Delay = 194.6 (sec/veh) Intersection LOS = F

HCS+: Signalized Intersections Release 5.5

Analyst: AGT Inter.: LA 447 at EB Ramp
 Agency: Neel-Schaffer, Inc. Area Type: All other areas
 Date: 4/5/2012 Jurisd: Livingston Parish
 Period: PM Peak Hour Year : 2038 No Build
 Project ID: LA 447 at I-12 Interchange Analysis
 E/W St: EB Ramp N/S St: LA 447

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	0	0	0	1	0	1	1	0
LGConfig	LT						T			L	T	
Volume	652	0					1390			130	941	
Lane Width	12.0						12.0			12.0	12.0	
RTOR Vol												

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	P				NB Left			
Thru	P				Thru	P		
Right					Right			
Peds					Peds			
WB Left					SB Left	P	P	
Thru					Thru	P	P	
Right					Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	53.0	0.0			11.0	38.0	0.0	
Yellow	5.0				5.0	5.0		
All Red	1.0				1.0	1.0		

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

LT	761	1723	0.93	0.44	51.5	D	51.5	D
----	-----	------	------	------	------	---	------	---

Westbound

Northbound

T	573	1810	2.64	0.32	782.7	F	782.7	F
---	-----	------	------	------	-------	---	-------	---

Southbound

L	219	1719	0.64	0.46	40.1	D		
T	830	1810	1.23	0.46	147.6	F	134.6	F

Intersection Delay = 406.5 (sec/veh) Intersection LOS = F

TWO-WAY STOP CONTROL SUMMARY

General Information			Site Information	
Analyst	AGT		Intersection	LA 447 at WB Ramp
Agency/Co.	Neel-Schaffer, Inc.		Jurisdiction	Livingston Parish
Date Performed	4/5/2012		Analysis Year	2038 No Build
Analysis Time Period	AM Peak Hour			

Project Description LA 447 at I-12 Interchange Analysis

East/West Street: WB Ramp

North/South Street: LA 447

Intersection Orientation: North-South

Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	687	1057			898	
Peak-Hour Factor, PHF	0.92	0.92	1.00	1.00	0.92	1.00
Hourly Flow Rate, HFR (veh/h)	746	1148	0	0	976	0
Percent Heavy Vehicles	5	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	0
Configuration	L	T			T	
Upstream Signal		0			0	
Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				136	0	
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.92	0.92	1.00
Hourly Flow Rate, HFR (veh/h)	0	0	0	147	0	0
Percent Heavy Vehicles	0	0	0	5	5	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	1	0
Configuration				LT		

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L		LT					
v (veh/h)	746		147					
C (m) (veh/h)	695		0					
v/c	1.07							
95% queue length	20.21							
Control Delay (s/veh)	79.4							
LOS	F		F					
Approach Delay (s/veh)	--	--						
Approach LOS	--	--						

TWO-WAY STOP CONTROL SUMMARY

General Information			Site Information	
Analyst	AGT		Intersection	LA 447 at WB Ramp
Agency/Co.	Neel-Schaffer, Inc.		Jurisdiction	Livingston Parish
Date Performed	4/5/2012		Analysis Year	2038 No Build
Analysis Time Period	PM Peak Hour			

Project Description LA 447 at I-12 Interchange Analysis

East/West Street: WB Ramp

North/South Street: LA 447

Intersection Orientation: North-South

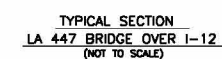
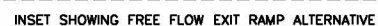
Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

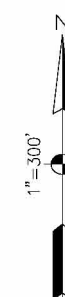
Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	525	1517			914	
Peak-Hour Factor, PHF	0.92	0.92	1.00	1.00	0.92	1.00
Hourly Flow Rate, HFR (veh/h)	570	1648	0	0	993	0
Percent Heavy Vehicles	5	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	0
Configuration	L	T			T	
Upstream Signal		0			0	
Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				156	0	
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.92	0.92	1.00
Hourly Flow Rate, HFR (veh/h)	0	0	0	169	0	0
Percent Heavy Vehicles	0	0	0	5	5	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	1	0
Configuration				LT		

Delay, Queue Length, and Level of Service

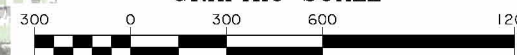
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L		LT					
v (veh/h)	570		169					
C (m) (veh/h)	685		1					
v/c	0.83		169.00					
95% queue length	9.10		23.68					
Control Delay (s/veh)	30.7		82668					
LOS	D		F					
Approach Delay (s/veh)	--	--	82668					
Approach LOS	--	--	F					



NOTE:
RIGHT OF WAY SHOWN IS APPARENT AND DRAWN BASED ON
ATTACHED AERIAL & AS-BUILTS.



GRAPHIC SCALE



CONCEPT A LAYOUT
PARTIAL CLOVERLEAF INTERCHANGE
(PAR-CLO A)
I-12 AT LA 447



STAGE 0 FEASIBILITY STUDY

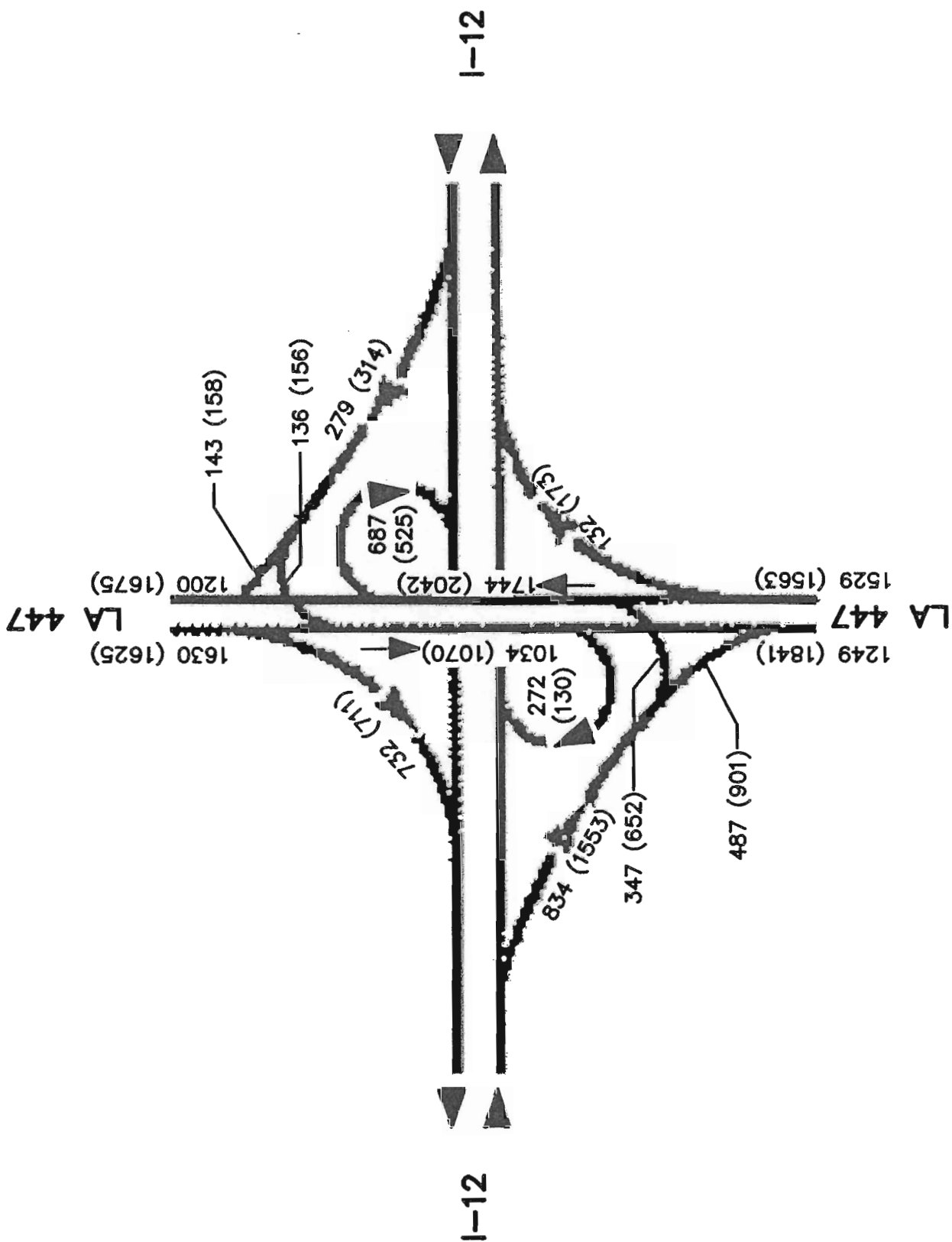
LA 447 INTERCHANGE IMPROVEMENTS AT INTERSTATE 12 WALKER, LA LIVINGSTON PARISH, LOUISIANA

Preliminary Construction Cost Estimate

PARTIAL CLOVER LEAF - ALTERNATE A					
Description	Unit	Unit Price	Quantity	Amount	Remarks
Clearing and Grubbing	LS	\$250,000.00	1	\$250,000.00	
Removal of Structures and Obstructions	LS	\$125,000.00	1	\$125,000.00	
Removal of Existing Bridge	EA	\$50,000.00	1	\$50,000.00	
Removal of Existing Pavement	SY	\$9.50	55,270	\$525,065.00	
Excavation	CY	\$8.00	9,000	\$72,000.00	
Embankment	CY	\$18.00	55,000	\$990,000.00	
Bridge Structure (LA 447 over I-12)	SY	\$650.00	6,040	\$3,926,000.00	Cost includes superstructure and substructure
Concrete Approach Slab	SY	\$225.00	1,301	\$292,725.00	
12" PCC Pavement (Travel Lanes)	SY	\$55.00	75,400	\$4,147,000.00	Assumed LA 447 section depth
9" PCC Pavement (Shoulder)	SY	\$40.00	25,776	\$1,031,040.00	Assumed LA 447 section depth
12" Stone Base		\$35.00	130,235	\$4,558,225.00	Assumed LA 447 section depth
Drainage	LS	\$400,000.00	1	\$400,000.00	
Erosion Control	LS	\$125,000.00	1	\$125,000.00	Cost includes all BMP materials for entire project limits
Pavement Markings	LS	\$75,000.00	1	\$75,000.00	Assumed pavement markings only necessary in areas of actual work within project areas. No restriping of existing roads.
Subtotal				\$16,567,055	
Mobilization (8% of Subtotal Cost)				\$1,325,364	
Traffic Control (5% of Subtotal Cost)				\$828,353	
Subtotal				\$18,720,772	
25% Contingencies				\$4,680,193	
Total Construction Cost				\$23,400,965	

Note: Right-of-Way, Utility Relocation, and Design cost were not included in the estimate.

PAR CLO-A



HCS+: Signalized Intersections Release 5.5

Analyst: GFT Inter.: LA 447 at I-12 EB Ramps
 Agency: NSI Area Type: All other areas
 Date: 10/12/2011 Jurisd: LADOTD
 Period: AM Peak Year : 2038
 Project ID: LA 447 at I-12 Interchange Analysis - PAR CLO-A
 E/W St: I-12 N/S St: LA 447

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	0	2	0	0	0	0	2	1	0	2	0
LGConfig	L		R					T	R		T	
Volume	347		487					1397	132		762	
Lane Width	12.0		12.0					12.0	12.0		12.0	
RTOR Vol			0						0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A				NB	Left		
	Thru						Thru	A	
	Right	A					Right	A	
	Peds						Peds		
WB	Left					SB	Left		
	Thru						Thru	A	
	Right						Right		
	Peds						Peds		
	Right					EB	Right		
	Right					WB	Right		
Green		20.0					48.0		
Yellow		5.0					5.0		
All Red		1.0					1.0		

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

L	859	3437	0.44	0.25	25.6	C	29.6	C
R	701	2803	0.75	0.25	32.4	C		

Westbound

Northbound

T	2128	3547	0.71	0.60	12.3	B	11.9	B
R	950	1583	0.15	0.60	7.1	A		

Southbound

T	2128	3547	0.39	0.60	4.9	A	4.9	A
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Intersection Delay = 14.9 (sec/veh) Intersection LOS = B

BACK-OF-QUEUE WORKSHEET												
General Information												
Project Description LA 447 at I-12 Interchange Analysis - PAR CLO-A												
Average Back of Queue												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane Group	L		R					T	R		T	
Initial Queue/Lane	0.0		0.0					0.0	0.0		0.0	
Flow Rate/Lane Group	377		529					1518	143		828	
Satflow/Lane	1770		1584					1862	1583		1862	
Capacity/Lane Group	859		701					2128	950		2128	
Flow Ratio	0.1		0.2					0.4	0.1		0.2	
v/c Ratio	0.44		0.75					0.71	0.15		0.39	
I Factor	1.000		1.000					1.000	1.000		0.948	
Arrival Type	3		3					3	3		4	
Platoon Ratio	1.00		1.00					1.00	1.00		1.33	
PF Factor	1.00		1.00					1.00	1.00		0.56	
Q1	3.6		6.1					12.4	1.4		2.8	
kB	0.4		0.4					0.7	0.6		0.7	
Q2	0.3		1.0					1.6	0.1		0.4	
Q Average	3.9		7.2					14.0	1.5		3.2	
Percentile Back of Queue (95th percentile)												
fB%	2.0		1.9					1.8	2.1		2.0	
Back of Queue	7.8		13.6					24.9	3.1		6.4	
Queue Storage Ratio												
Queue Spacing	25.0		25.0					25.0	25.0		25.0	
Queue Storage	0		0					0	0		0	
Average Queue Storage Ratio												
95% Queue Storage Ratio												

HCS+: Signalized Intersections Release 5.5

Analyst: GFT
 Agency: NSI
 Date: 10/12/2011
 Period: PM Peak
 Project ID: LA 447 at I-12 Interchange Analysis - PAR CLO-A
 E/W St: I-12

Inter.: LA 447 at I-12 EB Ramps
 Area Type: All other areas
 Jurisd: LADOTD
 Year : 2038
 N/S St: LA 447

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	0	2	0	0	0	0	2	1	0	2	0
LGConfig	L		R					T	R		T	
Volume	652		901				1390	173		940		
Lane Width	12.0		12.0				12.0	12.0		12.0		
RTOR Vol			0					0				

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left			
Thru					Thru	A		
Right	A				Right	A		
Peds					Peds			
WB Left					SB Left			
Thru					Thru	A		
Right					Right			
Peds					Peds			
Right					EB Right			
WB Right					WB Right			
Green	27.0				41.0			
Yellow	5.0				5.0			
All Red	1.0				1.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

L	1160	3437	0.61	0.34	23.1	C	47.5	D
R	946	2803	1.03	0.34	65.1	E		

Westbound

Northbound

T	1818	3547	0.83	0.51	20.0	B	19.0	B
R	811	1583	0.23	0.51	10.9	B		

Southbound

T	1818	3547	0.56	0.51	10.4	B	10.4	B
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Intersection Delay = 27.9 (sec/veh) Intersection LOS = C

BACK-OF-QUEUE WORKSHEET

General Information

Project Description LA 447 at I-12 Interchange Analysis - PAR CLO-A

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane Group	L		R					T	R		T	
Initial Queue/Lane	0.0		0.0					0.0	0.0		0.0	
Flow Rate/Lane Group	709		979					1511	188		1022	
Satflow/Lane	1770		1584					1862	1583		1862	
Capacity/Lane Group	1160		946					1818	811		1818	
Flow Ratio	0.2		0.3					0.4	0.1		0.3	
v/c Ratio	0.61		1.03					0.83	0.23		0.56	
I Factor	1.000		1.000					1.000	1.000		0.948	
Arrival Type	3		3					3	3		4	
Platoon Ratio	1.00		1.00					1.00	1.00		1.33	
PF Factor	1.00		1.00					1.00	1.00		0.75	
Q1	6.8		12.3					15.0	2.3		6.1	
kB	0.5		0.4					0.6	0.6		0.6	
Q2	0.7		6.8					2.7	0.2		0.7	
Q Average	7.5		19.1					17.7	2.5		6.9	

Percentile Back of Queue (95th percentile)

fB%	1.9		1.7					1.7	2.0		1.9	
Back of Queue	14.2		32.7					30.5	5.0		13.1	

Queue Storage Ratio

Queue Spacing	25.0		25.0					25.0	25.0		25.0	
Queue Storage	0		0					0	0		0	
Average Queue Storage Ratio												
95% Queue Storage Ratio												

HCS+: Signalized Intersections Release 5.5

Analyst: GFT
 Agency: NSI
 Date: 10/12/2011
 Period: PM Peak
 Project ID: LA 447 at I-12 Interchange Analysis - PAR CLO-A w/FF EB RT
 E/W St: I-12
 Inter.: LA 447 at I-12 EB Ramps
 Area Type: All other areas
 Jurisd: LADOTD
 Year : 2038
 N/S St: LA 447

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	0	0	0	0	0	0	2	1	0	2	0
LGConfig	L							T	R		T	
Volume	652						1390	173		940		
Lane Width	12.0						12.0	12.0		12.0		
RTOR Vol								0				

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A				NB	Left		
	Thru						Thru	A	
	Right						Right	A	
	Peds						Peds		
WB	Left					SB	Left		
	Thru						Thru	A	
	Right						Right		
	Peds						Peds		
	Right					EB	Right		
CB	Right					WB	Right		
Green		23.0					45.0		
Yellow		5.0					5.0		
All Red		1.0					1.0		

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

L	988	3437	0.72	0.29	28.1	C	28.1	C
---	-----	------	------	------	------	---	------	---

Westbound

Northbound

T	1995	3547	0.76	0.56	15.1	B	14.4	B
R	890	1583	0.21	0.56	8.8	A		

Southbound

T	1995	3547	0.51	0.56	7.3	A	7.3	A
---	------	------	------	------	-----	---	-----	---

Intersection Delay = 15.1 (sec/veh) Intersection LOS = B

BACK-OF-QUEUE WORKSHEET

General Information

Project Description LA 447 at I-12 Interchange Analysis - PAR CLO-A w/FF EB RT

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane Group	L							T	R		T	
Initial Queue/Lane	0.0							0.0	0.0		0.0	
Flow Rate/Lane Group	709							1511	188		1022	
Satflow/Lane	1770							1862	1583		1862	
Capacity/Lane Group	988							1995	890		1995	
Flow Ratio	0.2							0.4	0.1		0.3	
v/c Ratio	0.72							0.76	0.21		0.51	
I Factor	1.000							1.000	1.000		0.948	
Arrival Type	3							3	3		4	
Platoon Ratio	1.00							1.00	1.00		1.33	
PF Factor	1.00							1.00	1.00		0.66	
Q1	7.3							13.4	2.1		4.8	
kB	0.4							0.7	0.6		0.6	
Q2	1.0							1.9	0.2		0.7	
Q Average	8.3							15.4	2.2		5.5	

Percentile Back of Queue (95th percentile)

fB%	1.9							1.8	2.0		1.9	
Back of Queue	15.6							27.0	4.5		10.7	

Queue Storage Ratio

Queue Spacing	25.0							25.0	25.0		25.0	
Queue Storage	0							0	0		0	
Average Queue Storage Ratio												
95% Queue Storage Ratio												

HCS+: Signalized Intersections Release 5.5

Analyst: GFT Inter.: LA 447 at I-12 WB Ramps
 Agency: NSI Area Type: All other areas
 Date: 10/12/2011 Jurisd: LADOTD
 Period: AM Peak Year : 2038
 Project ID: LA 447 at I-12 Interchange Analysis - PAR CLO-A
 E/W St: I-12 N/S St: LA 447

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	2	0	0	2	1
LGConfig				L		R		T			T	R
Volume				136		143		1057			898	732
Lane Width				12.0		12.0		12.0			12.0	12.0
RTOR Vol						0						0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left					NB	Left		
	Thru						Thru	A	
	Right						Right	A	
	Peds						Peds		
WB	Left	A				SB	Left		
	Thru						Thru	A	
	Right	A					Right	A	
	Peds						Peds		
	Right					EB	Right		
SB	Right					WB	Right		
Green		14.0					54.0		
Yellow		5.0					5.0		
All Red		1.0					1.0		

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/	Lane	Adj Sat	Ratios		Lane Group		Approach	
Lane	Group	Flow Rate						
Grp	Capacity	(s)	v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

Westbound

L	310	1770	0.48	0.17	30.9	C	31.8	C
R	277	1583	0.56	0.17	32.7	C		

Northbound

T	2394	3547	0.48	0.68	2.3	A	2.3	A
---	------	------	------	------	-----	---	-----	---

Southbound

T	2394	3547	0.41	0.68	5.9	A	8.4	A
	1069	1583	0.74	0.68	11.4	B		

Intersection Delay = 8.4 (sec/veh) Intersection LOS = A

BACK-OF-QUEUE WORKSHEET												
General Information												
Project Description LA 447 at I-12 Interchange Analysis - PAR CLO-A												
Average Back of Queue												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane Group				L		R		T			T	R
Initial Queue/Lane				0.0		0.0		0.0			0.0	0.0
Flow Rate/Lane Group				148		155		1149			976	796
Satflow/Lane				1770		1583		1862			1862	1583
Capacity/Lane Group				310		277		2394			2394	1069
Flow Ratio				0.1		0.1		0.3			0.3	0.5
v/c Ratio				0.48		0.56		0.48			0.41	0.74
I Factor				1.000		1.000		0.820			1.000	1.000
Arrival Type				3		3		4			3	3
Platoon Ratio				1.00		1.00		1.33			1.00	1.00
PF Factor				1.00		1.00		0.37			1.00	1.00
Q1				3.0		3.2		2.4			5.1	11.6
kB				0.3		0.3		0.6			0.7	0.7
Q2				0.3		0.4		0.6			0.5	1.8
Q Average				3.2		3.5		2.9			5.6	13.4
Percentile Back of Queue (95th percentile)												
fb%				2.0		2.0		2.0			1.9	1.8
Back of Queue				6.5		7.0		5.9			10.9	23.9
Queue Storage Ratio												
Queue Spacing				25.0		25.0		25.0			25.0	25.0
Queue Storage				0		0		0			0	0
Average Queue Storage Ratio												
95% Queue Storage Ratio												

HCS+: Signalized Intersections Release 5.5

Analyst: GFT
 Agency: NSI
 Date: 10/12/2011
 Period: PM Peak
 Project ID: LA 447 at I-12 Interchange Analysis - PAR CLO-A
 E/W St: I-12

Inter.: LA 447 at I-12 WB Ramps
 Area Type: All other areas
 Jurisd: LADOTD
 Year : 2038
 N/S St: LA 447

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	1	0	1	0	2	0	0	2	1
LGConfig				L		R		T			T	R
Volume				156		158		1517			914	711
Lane Width				12.0		12.0		12.0			12.0	12.0
RTOR Vol						0						0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left			
Thru					Thru A			
Right					Right A			
Peds					Peds			
WB Left	A				SB Left			
Thru					Thru A			
Right	A				Right A			
Peds					Peds			
Right					EB Right			
SB Right					WB Right			
Green	14.0				54.0			
Yellow	5.0				5.0			
All Red	1.0				1.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/Lane	Lane Group	Adj Sat Flow Rate	Ratios		Lane Group		Approach	
Grp	Capacity	(s)	v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

Westbound

L	310	1770	0.55	0.17	32.2	C	33.5	C
R	277	1583	0.62	0.17	34.8	C		

Northbound

T	2394	3547	0.69	0.68	3.5	A	3.5	A
---	------	------	------	------	-----	---	-----	---

Southbound

m	2394	3547	0.41	0.68	6.0	A	8.1	A
	1069	1583	0.72	0.68	10.7	B		
Intersection Delay = 8.4			(sec/veh)		Intersection LOS = A			

BACK-OF-QUEUE WORKSHEET

General Information

Project Description LA 447 at I-12 Interchange Analysis - PAR CLO-A

Average Back of Queue

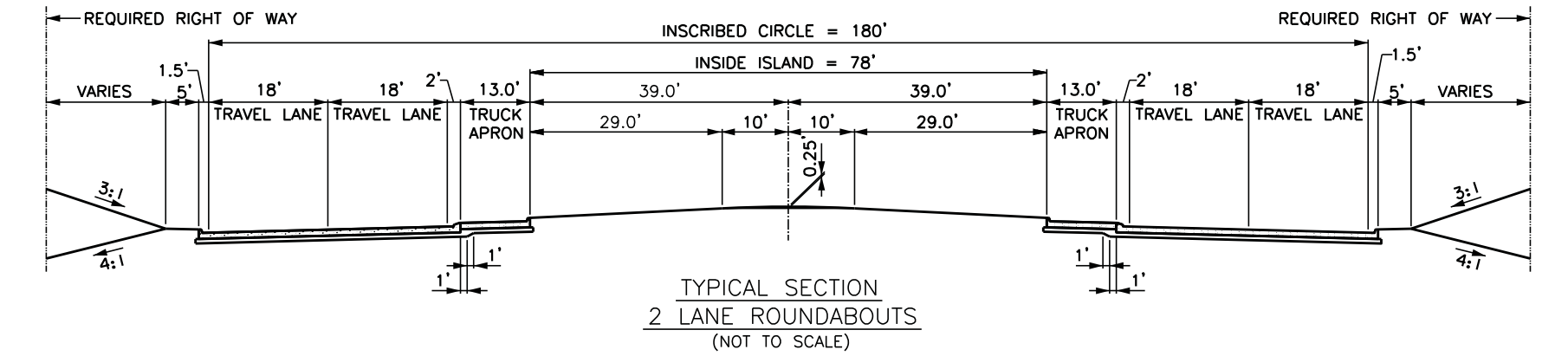
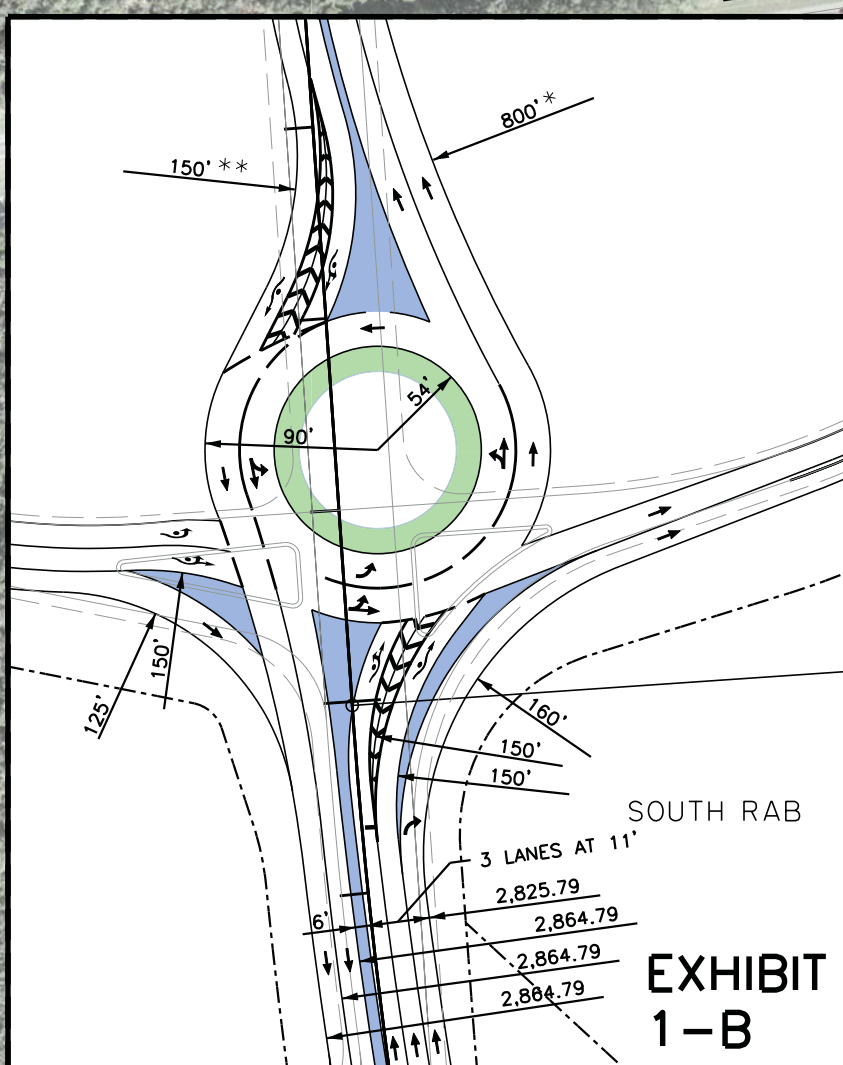
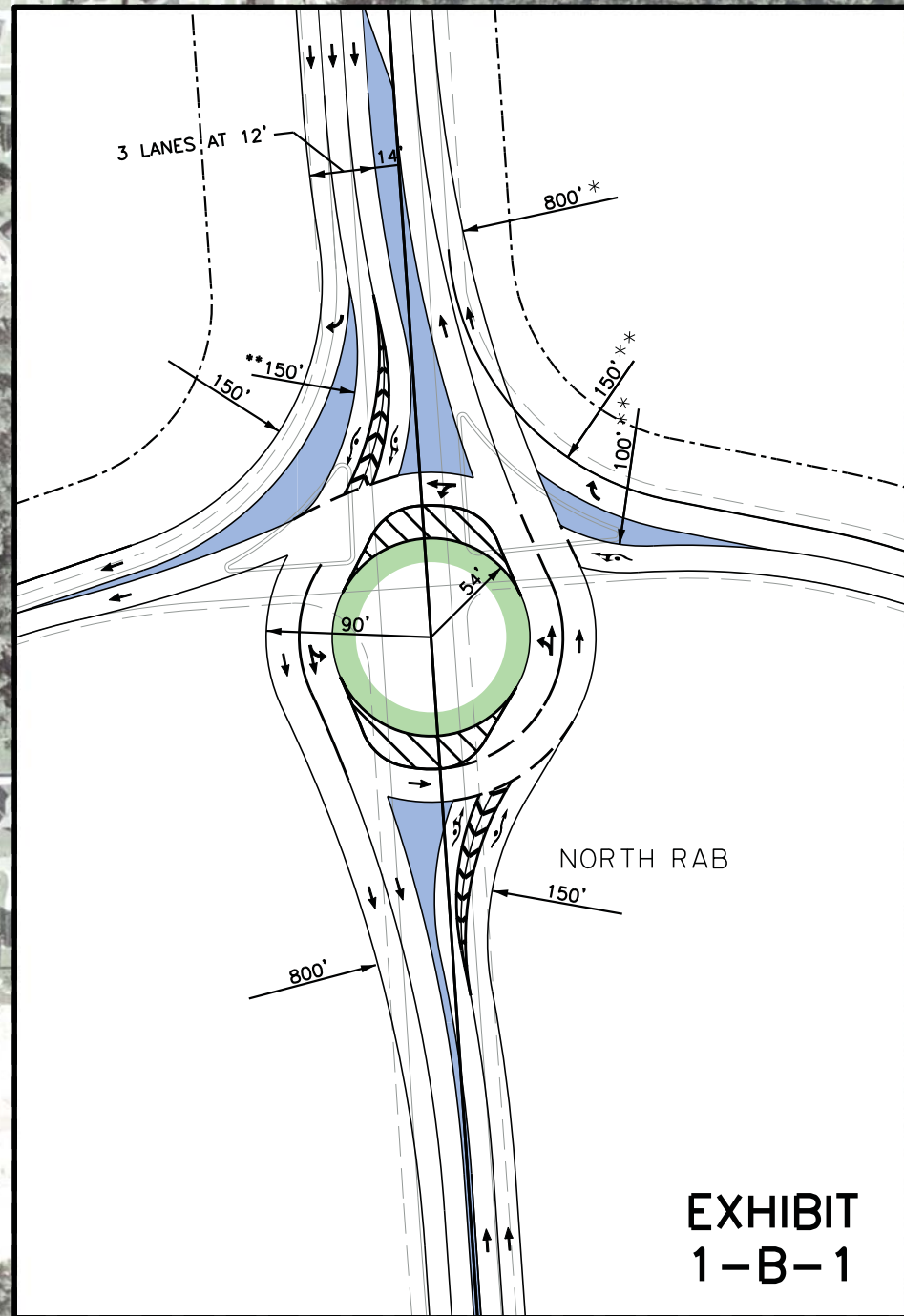
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane Group				L		R		T			T	R
Initial Queue/Lane				0.0		0.0		0.0			0.0	0.0
Flow Rate/Lane Group				170		172		1649			993	773
Satflow/Lane				1770		1583		1862			1862	1583
Capacity/Lane Group				310		277		2394			2394	1069
Flow Ratio				0.1		0.1		0.5			0.3	0.5
v/c Ratio				0.55		0.62		0.69			0.41	0.72
I Factor				1.000		1.000		0.820			1.000	1.000
Arrival Type				3		3		4			3	3
Platoon Ratio				1.00		1.00		1.33			1.00	1.00
PF Factor				1.00		1.00		0.43			1.00	1.00
Q1				3.4		3.5		5.1			5.2	10.9
kB				0.3		0.3		0.6			0.7	0.7
Q2				0.4		0.5		1.3			0.5	1.7
Q Average				3.8		4.0		6.4			5.7	12.6

Percentile Back of Queue (95th percentile)

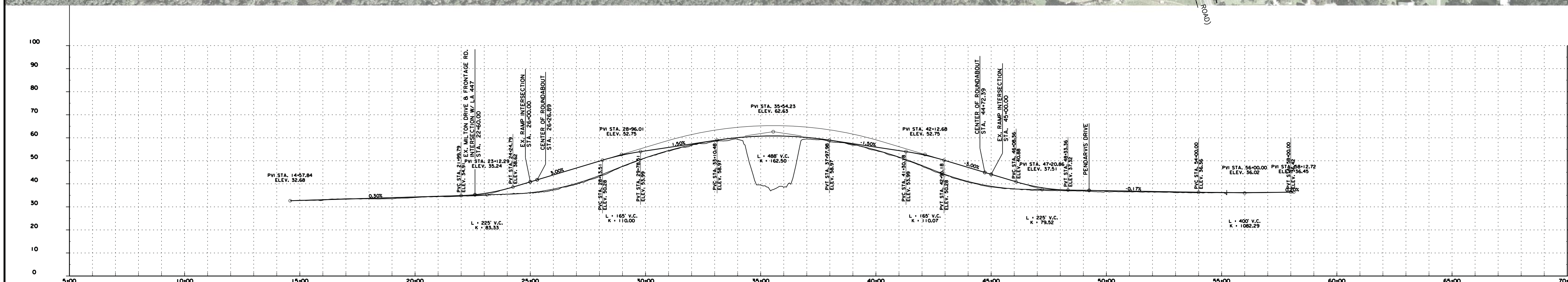
fb%				2.0		2.0		1.9			1.9	1.8
Back of Queue				7.6		7.9		12.2			11.1	22.6

Queue Storage Ratio

Queue Spacing				25.0		25.0		25.0			25.0	25.0
Queue Storage				0		0		0			0	0
Average Queue Storage Ratio												
95% Queue Storage Ratio												



- NOTE:
1. RIGHT OF WAY SHOWN IS APPARENT AND DRAWN BASED ON ATTACHED AERIAL & AS-BUILTS.
 - * 2. ROUNDABOUT EXIT RADII ARE 800' (TYP.).
 - ** 3. ALL MULTI-LEG ROUNDABOUT ENTRANCE RADII ARE 150'. ALL SINGLE LEG ROUNDABOUT ENTRANCE RADII ARE 100'.



LA 447 CORRIDOR STUDY ROUNDABOUTS AT EXISTING RAMP INTERSECTION LOCATIONS AND VERTICAL ALIGNMENT TO FUTURE INTERCHANGE

S.P. NO. 4400000651

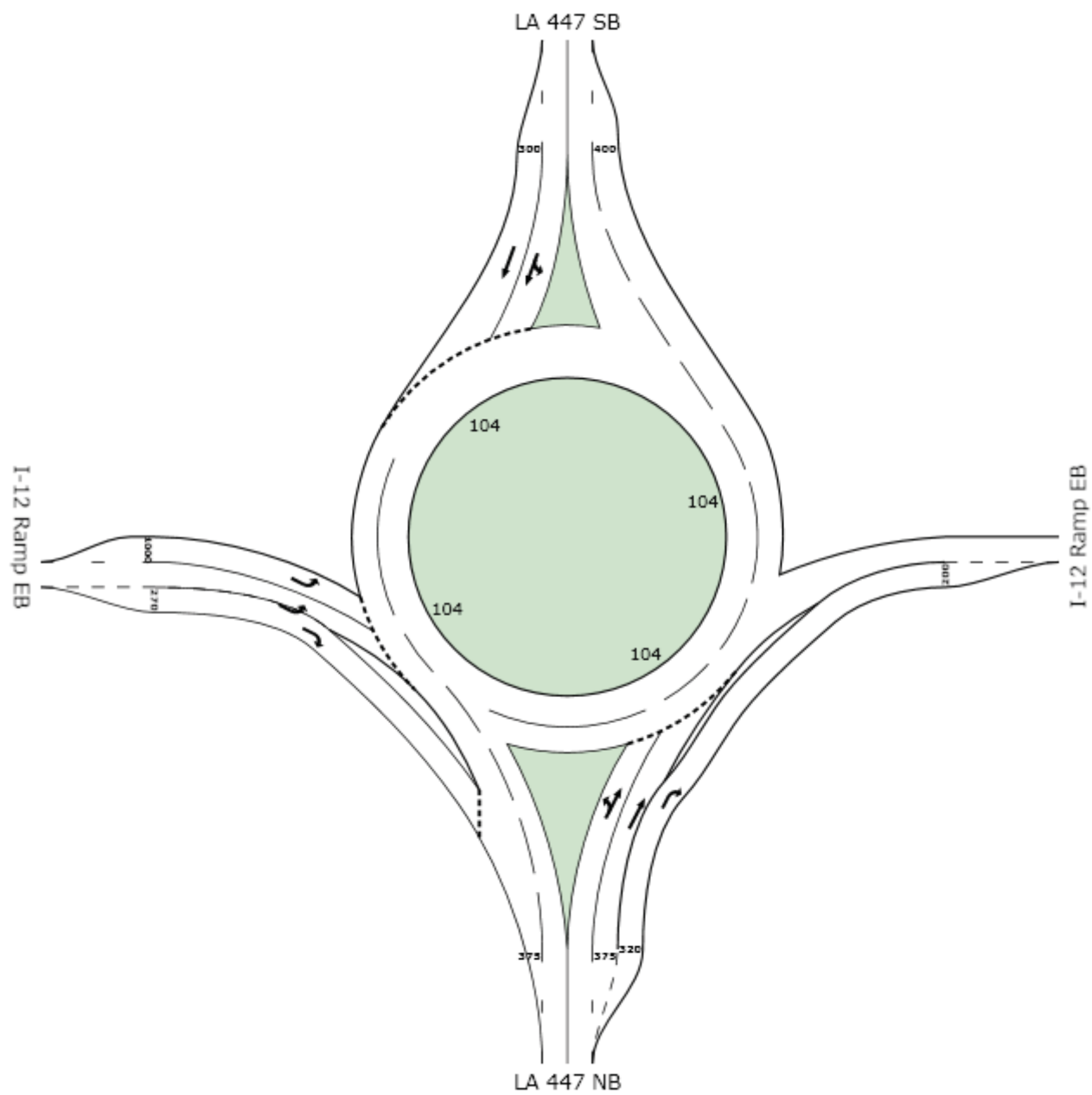
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**LA 447 CORRIDOR STUDY
LA 447 AT INTERSTATE 12 INTERCHANGE CONCEPTS
WALKER, LA
LIVINGSTON PARISH, LOUISIANA**

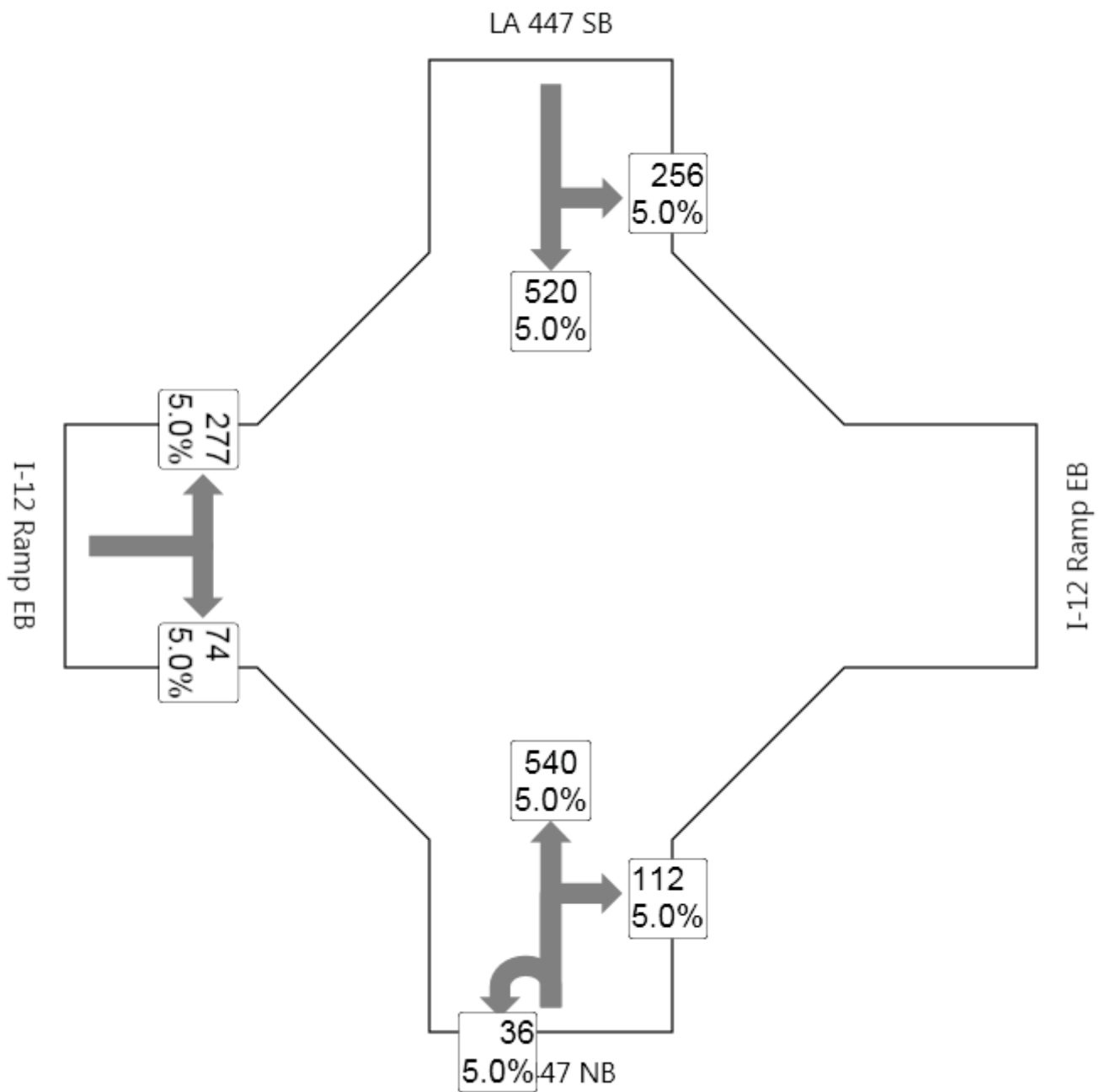
**Preliminary Estimated Opinion of
Probable Construction Cost**

ROUNDBABOUTS AT EXISTING RAMP INTERSECTION LOCATIONS AND VERTICAL ALIGNMENT TO MATCH FUTURE INTERCHANGE					
Description	Unit	Unit Price	Quantity	Amount	Remarks
Clearing and Grubbing	LS	\$50,000.00	1	\$50,000.00	
Removal of Structures and Obstructions	LS	\$150,000.00	1	\$150,000.00	
Removal of Existing Concrete Pavement	SY	\$9.50	15,267	\$145,036.50	
Excavation and Embankment	LS	\$400,000.00	1	\$400,000.00	
12" PCC Pavement (Travel Lanes)	SY	\$65.00	14,751	\$958,815.00	Assumed same pavement section for all road work.
9" PCC Pavement (Shoulder)	SY	\$40.00	3,062	\$122,480.00	Assumed same pavement section for all road work.
12" Stone Base		\$40.00	17,946	\$717,840.00	Assumed same pavement section for all road work.
Drainage	LS	\$400,000.00	1	\$400,000.00	
Erosion Control	LS	\$125,000.00	1	\$125,000.00	Cost includes all BMP materials for entire project limits
Pavement Markings	LS	\$50,000.00	1	\$50,000.00	Assumed pavement markings only necessary in areas of actual work within project areas. No restriping of existing roads.
Subtotal				\$3,119,172	
Mobilization (8% of Subtotal Cost)				\$249,534	
Traffic Control (5% of Subtotal Cost)				\$155,959	
Subtotal				\$3,524,664	
25% Contingencies				\$881,166	
Total Construction Cost				\$4,405,830	

Note: Right-of-Way, Utility Relocation, and Design cost were not included in the estimate.



LA 447 at I-12 Eastbound Ramps



LA 447 at I-12 Eastbound Ramps
2012 AM Peak

MOVEMENT SUMMARY

Site: LA 447@12EB AM 2011

LA 447 at I-12 EB Ramp
Walker, LA
N-S Prj#8428
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 447 NB											
3	L	38	5.0	0.407	18.0	LOS B	2.2	56.9	0.64	1.00	28.1
8	T	568	5.0	0.407	9.9	LOS A	2.2	56.9	0.63	0.73	33.6
18	R	118	5.0	0.076	7.5	X	X	X	X	0.54	36.6
Approach		724	5.0	0.407	10.0	LOS A	2.2	56.9	0.53	0.72	33.7
North: LA 447 SB											
7	L	269	5.0	0.348	15.2	LOS B	2.6	67.8	0.21	0.75	32.2
4	T	547	5.0	0.348	6.9	LOS A	2.6	67.8	0.20	0.45	36.0
Approach		817	5.0	0.348	9.6	LOS A	2.6	67.8	0.21	0.55	34.6
West: I-12 Ramp EB											
5	L	292	5.0	0.161	17.4	LOS B	0.7	18.4	0.58	0.85	31.3
12	R	78	5.0	0.069	9.7	LOS A	0.3	7.0	0.45	0.66	35.7
Approach		369	5.0	0.161	15.8	LOS B	0.7	18.4	0.55	0.81	32.1
All Vehicles		1911	5.0	0.407	10.9	LOS B	2.6	67.8	0.39	0.66	33.7

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: Tuesday, March 20, 2012 2:58:17 PM

SIDRA INTERSECTION 5.1.10.2069

Project: R:\LA\Livingston\8428 LA 447 Corr Study\SA #1 - Interchange Alternatives Analysis\Analysis - LA 447

Interchange\Roundabout Analysis\March 2012\447@12EB.sip

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SIDRA
INTERSECTION

MOVEMENT SUMMARY

Site: 447@12EB AM 5%

LA 447 at I-12 EB Ramp
Walker, LA
N-S Prj#8428
Roundabout
Design Life Analysis (Practical Capacity): Results for 5 years

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 447 NB											
3	L	48	5.0	0.587	21.0	LOS C	4.3	112.1	0.78	1.09	26.8
8	T	725	5.0	0.587	12.7	LOS B	4.3	112.1	0.76	0.94	32.3
18	R	150	5.0	0.097	7.5	X	X	X	X	0.54	36.6
Approach		924	5.0	0.587	12.3	LOS B	4.3	112.1	0.64	0.88	32.5
North: LA 447 SB											
7	L	344	5.0	0.448	15.3	LOS B	3.9	102.3	0.28	0.73	32.1
4	T	699	5.0	0.448	7.0	LOS A	3.9	102.3	0.27	0.45	35.6
Approach		1043	5.0	0.448	9.7	LOS A	3.9	102.3	0.27	0.54	34.3
West: I-12 Ramp EB											
5	L	372	5.0	0.234	18.4	LOS B	1.1	29.4	0.67	0.91	30.9
12	R	99	5.0	0.095	10.0	LOS B	0.4	10.1	0.52	0.69	35.3
Approach		472	5.0	0.234	16.6	LOS B	1.1	29.4	0.64	0.86	31.7
All Vehicles		2438	5.0	0.587	12.0	LOS B	4.3	112.1	0.48	0.73	33.1

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: Tuesday, March 20, 2012 2:57:54 PM

SIDRA INTERSECTION 5.1.10.2069

Project: R:\LA\Livingston\8428 LA 447 Corr Study\SA #1 - Interchange Alternatives Analysis\Analysis - LA 447

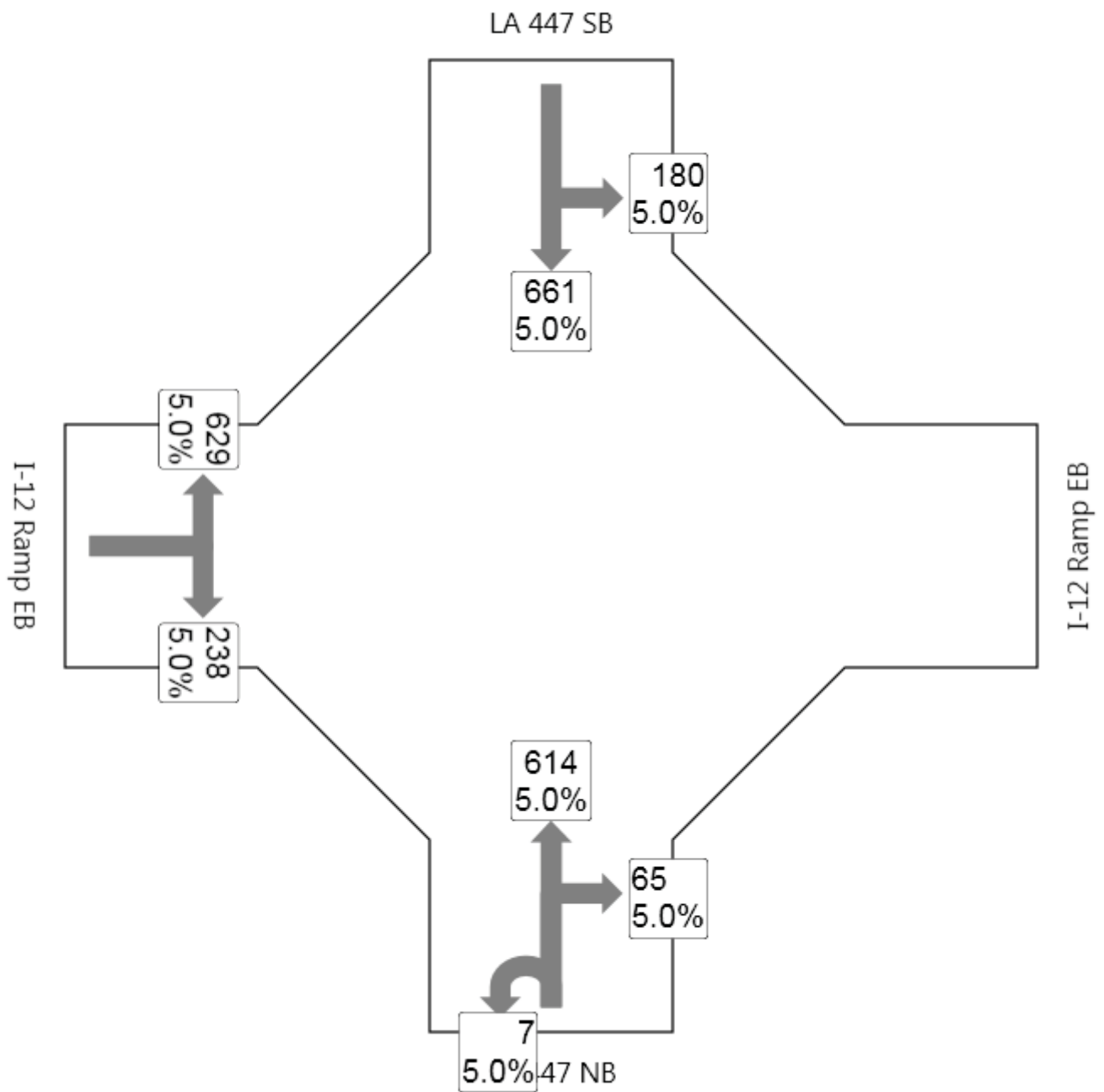
Interchange\Roundabout Analysis\March 2012\447@12EB.sip

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SIDRA
INTERSECTION



LA 447 at I-12 Eastbound Ramps
2012 PM Peak

MOVEMENT SUMMARY

Site: LA 447@12EB PM 2011

LA 447 at I-12 EB Ramp
Walker, LA
N-S Prj#8428
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 447 NB											
3	L	7	5.0	0.536	20.4	LOS C	3.4	89.3	0.78	1.09	27.1
8	T	640	5.0	0.536	12.3	LOS B	3.4	89.3	0.76	0.93	32.7
18	R	68	5.0	0.044	7.5	X	X	X	X	0.54	36.6
Approach		715	5.0	0.536	11.9	LOS B	3.4	89.3	0.69	0.89	32.9
North: LA 447 SB											
7	L	188	5.0	0.345	15.0	LOS B	2.8	71.7	0.08	0.85	32.4
4	T	689	5.0	0.345	6.8	LOS A	2.8	71.7	0.17	0.43	36.3
Approach		876	5.0	0.345	8.5	LOS A	2.8	71.7	0.15	0.52	35.3
West: I-12 Ramp EB											
5	L	655	5.0	0.362	18.0	LOS B	1.8	45.8	0.64	0.90	31.0
12	R	248	5.0	0.227	10.1	LOS B	1.0	25.1	0.52	0.70	35.3
Approach		903	5.0	0.362	15.8	LOS B	1.8	45.8	0.61	0.85	32.0
All Vehicles		2494	5.0	0.536	12.1	LOS B	3.4	89.3	0.47	0.74	33.4

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: Tuesday, March 20, 2012 2:58:28 PM

SIDRA INTERSECTION 5.1.10.2069

Project: R:\LA\Livingston\8428 LA 447 Corr Study\SA #1 - Interchange Alternatives Analysis\Analysis - LA 447

Interchange\Roundabout Analysis\March 2012\447@12EB.sip

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SIDRA
INTERSECTION

MOVEMENT SUMMARY

Site: 447@12EB PM 5%

LA 447 at I-12 EB Ramp
Walker, LA
N-S Prj#8428
Roundabout
Design Life Analysis (Practical Capacity): Results for 5 years

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 447 NB											
3	L	9	5.0	0.839	30.5	LOS C	8.7	226.9	0.96	1.27	23.2
8	T	814	5.0	0.839	20.9	LOS C	8.7	226.9	0.93	1.16	27.3
18	R	86	5.0	0.056	7.5	X	X	X	X	0.54	36.6
Approach		909	5.0	0.839	19.7	LOS B	8.7	226.9	0.84	1.10	27.9
North: LA 447 SB											
7	L	239	5.0	0.442	15.1	LOS B	4.2	109.8	0.11	0.83	32.4
4	T	879	5.0	0.442	6.8	LOS A	4.2	109.8	0.22	0.41	36.0
Approach		1118	5.0	0.442	8.6	LOS A	4.2	109.8	0.20	0.50	35.1
West: I-12 Ramp EB											
5	L	836	5.0	0.522	20.6	LOS C	3.4	89.0	0.76	1.00	29.6
12	R	316	5.0	0.312	10.7	LOS B	1.4	37.1	0.61	0.74	34.8
Approach		1153	5.0	0.522	17.9	LOS B	3.4	89.0	0.72	0.93	30.8
All Vehicles		3180	5.0	0.839	15.1	LOS B	8.7	226.9	0.57	0.83	31.2

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

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Project: R:\LA\Livingston\8428 LA 447 Corr Study\SA #1 - Interchange Alternatives Analysis\Analysis - LA 447

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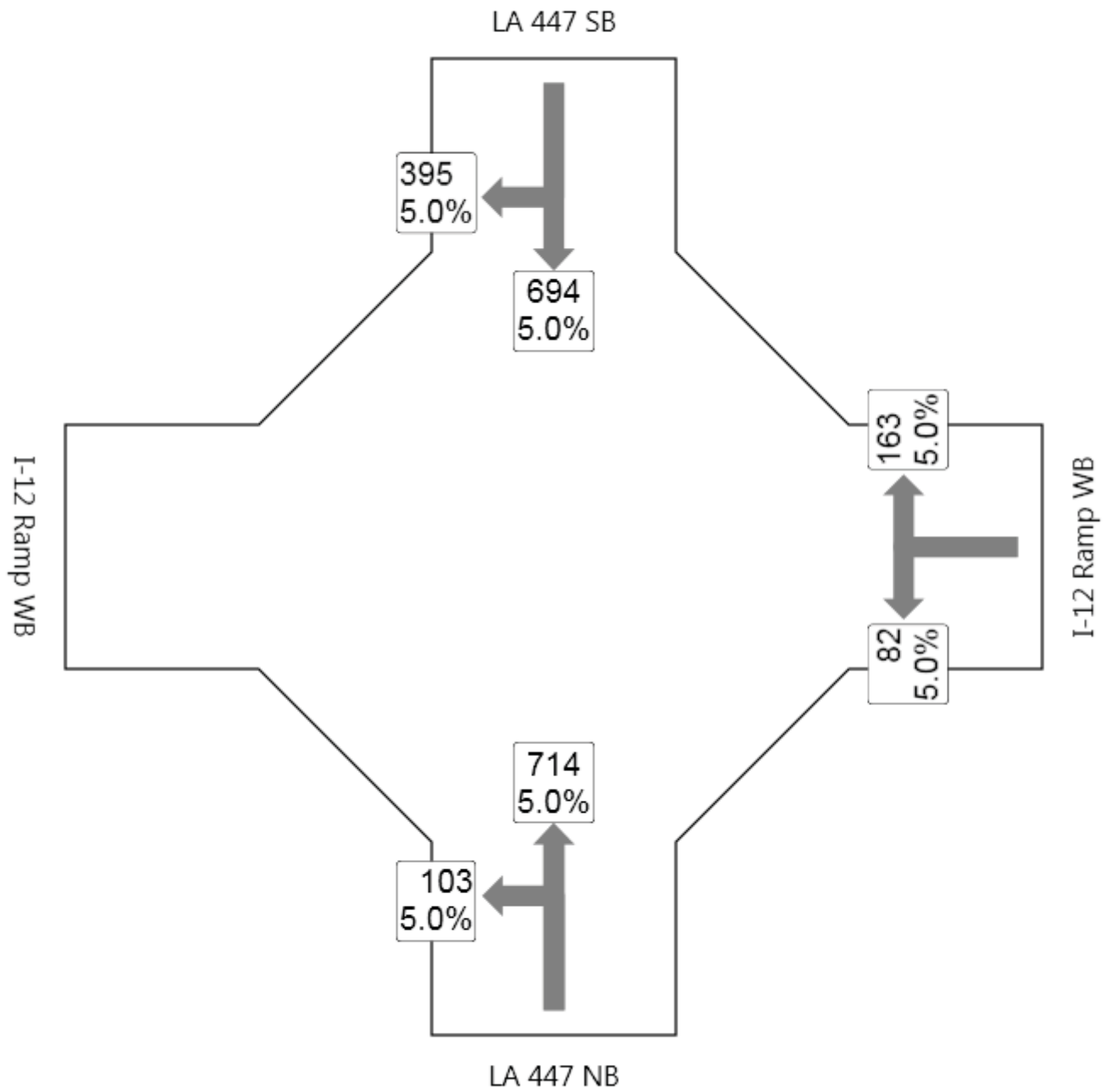
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INTERSECTION



LA 447 at I-12 Westbound Ramps



LA 447 at I-12 Westbound Ramps
2012 AM Peak

MOVEMENT SUMMARY

Site: LA 447@12WB AM 2011

LA 447 at I-12 WB Ramp
Walker, LA
N-S Prj#8428
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 447 NB											
3	L	112	5.0	0.281	15.0	LOS B	0.0	0.0	0.00	0.93	32.5
8	T	776	5.0	0.281	6.7	LOS A	0.0	0.0	0.00	0.48	37.4
Approach		888	5.0	0.281	7.7	LOS A	0.0	0.0	0.00	0.54	36.6
East: I-12 Ramp WB											
1	L	89	5.0	0.146	18.9	LOS B	0.5	13.4	0.57	0.89	30.6
16	R	177	5.0	0.214	11.0	LOS B	0.8	21.8	0.55	0.76	35.3
Approach		266	5.0	0.214	13.6	LOS B	0.8	21.8	0.56	0.80	33.5
North: LA 447 SB											
4	T	754	5.0	0.374	8.1	LOS A	2.5	64.3	0.47	0.58	34.6
14	R	429	5.0	0.276	7.7	X	X	X	X	0.55	36.4
Approach		1184	5.0	0.374	7.9	LOS A	2.5	64.3	0.30	0.57	35.2
All Vehicles		2338	5.0	0.374	8.5	LOS A	2.5	64.3	0.22	0.58	35.5

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

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INTERSECTION

MOVEMENT SUMMARY

Site: 447@12WB AM 5%

LA 447 at I-12 WB Ramp
Walker, LA
N-S Prj#8428
Roundabout
Design Life Analysis (Practical Capacity): Results for 5 years

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 447 NB											
3	L	143	5.0	0.358	15.0	LOS B	0.0	0.0	0.00	0.93	32.5
8	T	991	5.0	0.358	6.7	LOS A	0.0	0.0	0.00	0.48	37.4
Approach		1133	5.0	0.358	7.7	LOS A	0.0	0.0	0.00	0.54	36.6
East: I-12 Ramp WB											
1	L	114	5.0	0.205	20.1	LOS C	0.7	19.4	0.62	0.90	29.9
16	R	226	5.0	0.295	11.9	LOS B	1.2	31.7	0.62	0.83	34.9
Approach		340	5.0	0.295	14.7	LOS B	1.2	31.7	0.62	0.85	32.9
North: LA 447 SB											
4	T	963	5.0	0.503	8.7	LOS A	3.8	98.0	0.59	0.64	33.9
14	R	548	5.0	0.352	7.8	X	X	X	X	0.55	36.3
Approach		1511	5.0	0.503	8.4	LOS A	3.8	98.0	0.37	0.61	34.8
All Vehicles		2984	5.0	0.503	8.8	LOS A	3.8	98.0	0.26	0.61	35.2

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

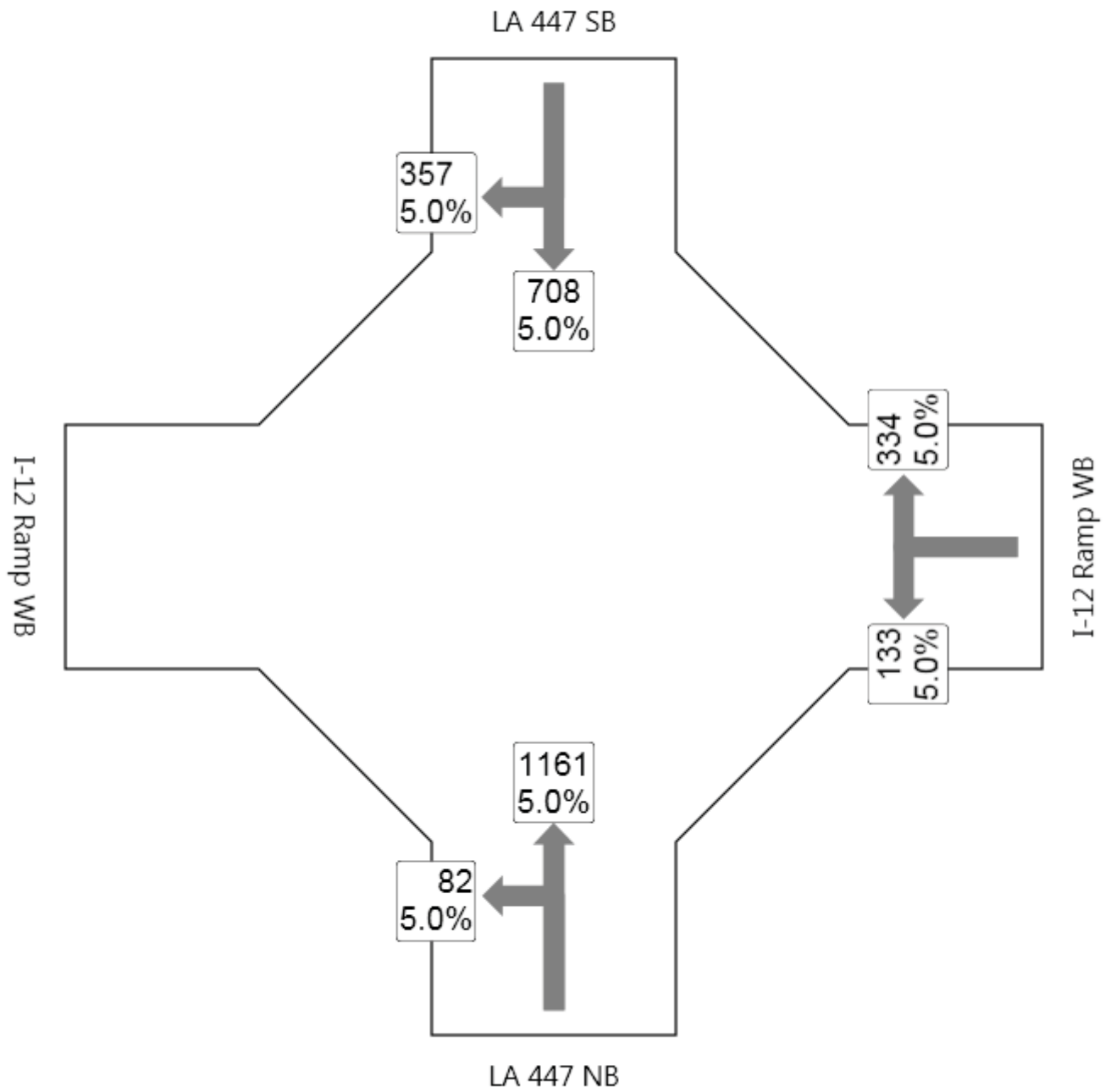
Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

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INTERSECTION



LA 447 at I-12 Westbound Ramps
2012 PM Peak

MOVEMENT SUMMARY

Site: LA 447@12WB PM 2011

LA 447 at I-12 WB Ramp
Walker, LA
N-S Prj#8428
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 447 NB											
3	L	85	5.0	0.405	15.0	LOS B	0.0	0.0	0.00	0.96	32.5
8	T	1197	5.0	0.405	6.7	LOS A	0.0	0.0	0.00	0.49	37.4
Approach		1281	5.0	0.405	7.2	LOS A	0.0	0.0	0.00	0.52	37.0
East: I-12 Ramp WB											
1	L	137	5.0	0.286	21.9	LOS C	1.1	28.3	0.68	0.93	28.9
16	R	344	5.0	0.478	14.3	LOS B	2.5	65.5	0.71	0.93	33.0
Approach		481	5.0	0.478	16.4	LOS B	2.5	65.5	0.70	0.93	31.7
North: LA 447 SB											
4	T	730	5.0	0.374	8.2	LOS A	2.5	66.1	0.51	0.59	34.4
14	R	368	5.0	0.237	7.7	X	X	X	X	0.55	36.4
Approach		1098	5.0	0.374	8.0	LOS A	2.5	66.1	0.34	0.58	35.0
All Vehicles		2861	5.0	0.478	9.1	LOS A	2.5	66.1	0.25	0.61	35.2

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

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MOVEMENT SUMMARY

Site: 447@12WB PM 5%

LA 447 at I-12 WB Ramp
Walker, LA
N-S Prj#8428
Roundabout
Design Life Analysis (Practical Capacity): Results for 5 years

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 447 NB											
3	L	108	5.0	0.517	15.0	LOS B	0.0	0.0	0.00	0.96	32.5
8	T	1528	5.0	0.517	6.7	LOS A	0.0	0.0	0.00	0.49	37.4
Approach		1635	5.0	0.517	7.2	LOS A	0.0	0.0	0.00	0.52	37.0
East: I-12 Ramp WB											
1	L	175	5.0	0.419	26.1	LOS C	1.9	48.9	0.79	1.00	26.8
16	R	439	5.0	0.692	20.4	LOS C	5.1	132.5	0.83	1.09	28.9
Approach		614	5.0	0.692	22.0	LOS C	5.1	132.5	0.82	1.06	28.3
North: LA 447 SB											
4	T	932	5.0	0.508	8.9	LOS A	3.9	102.2	0.63	0.66	33.7
14	R	470	5.0	0.302	7.8	X	X	X	X	0.55	36.4
Approach		1401	5.0	0.508	8.5	LOS A	3.9	102.2	0.42	0.62	34.5
All Vehicles		3651	5.0	0.692	10.2	LOS B	5.1	132.5	0.30	0.65	34.3

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

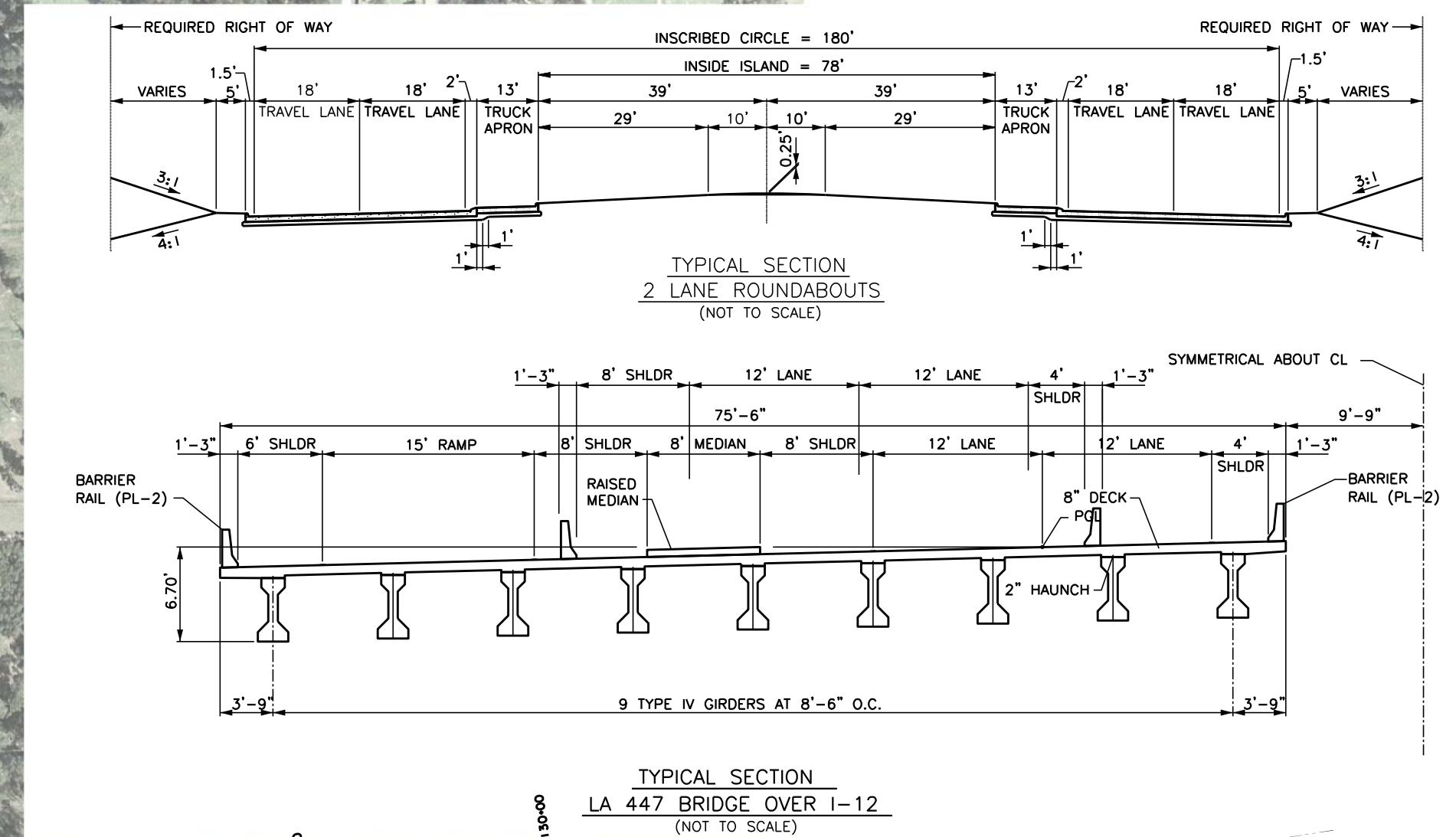
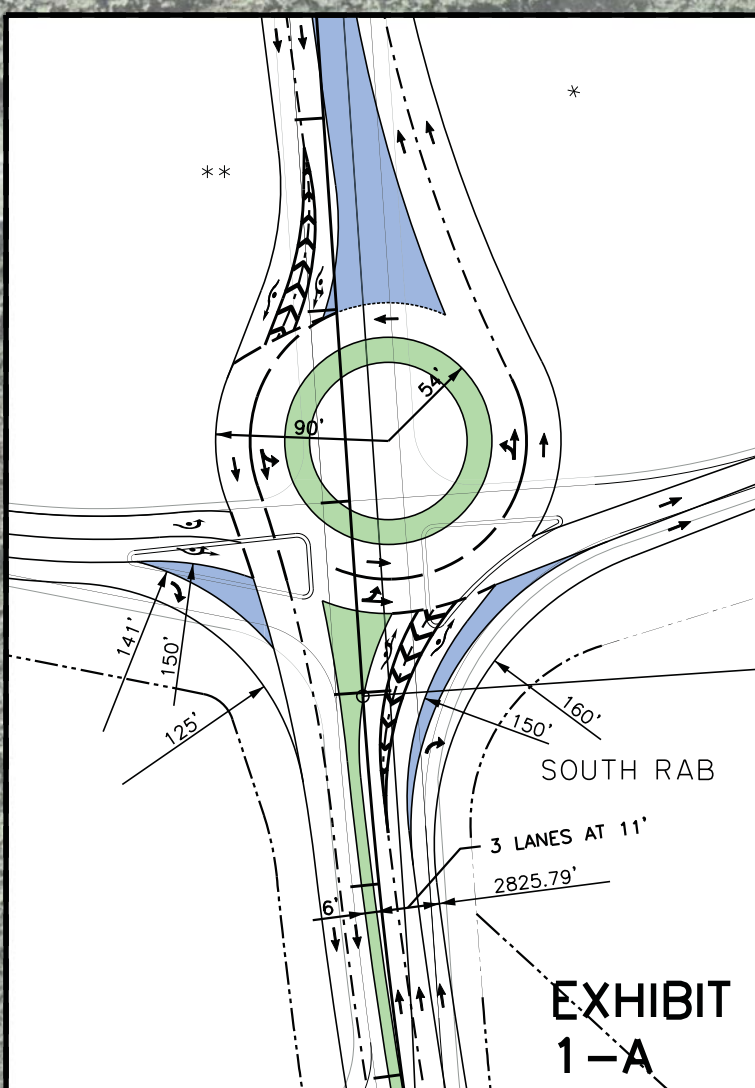
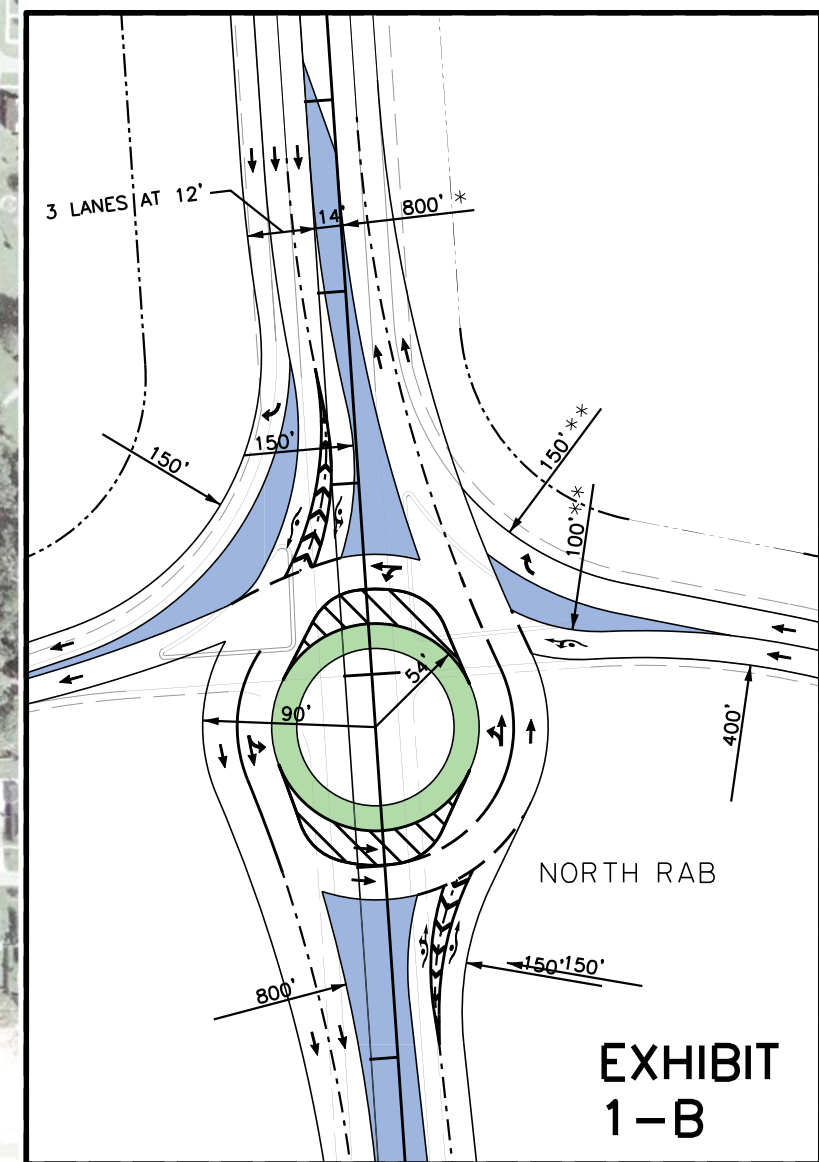
Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

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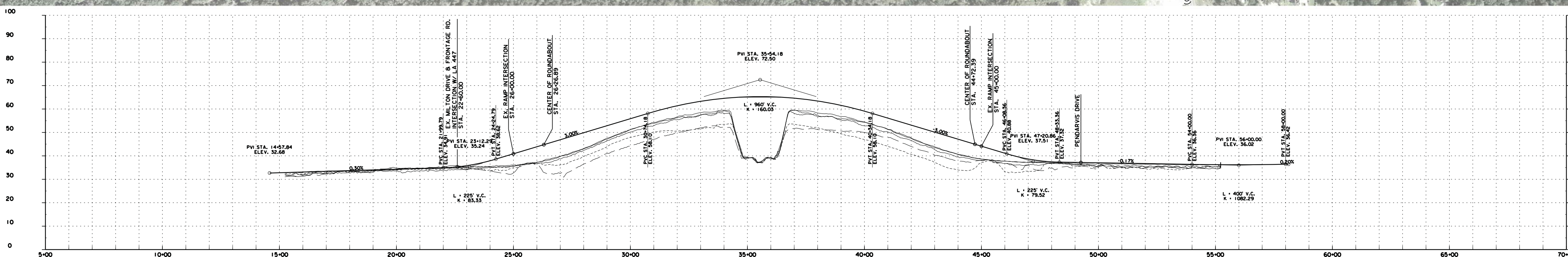


NOTE:

1. RIGHT OF WAY SHOWN IS APPARENT AND DRAWN BASED ON ATTACHED AERIAL & AS-BUILTS.

*2. ROUNDABOUT EXIT RADII ARE 800' (TYP.).

**3. ALL MULTI-LEG ROUNDABOUT ENTRANCE RADII ARE 150'. ALL SINGLE LEG ROUNDABOUT ENTRANCE RADII ARE 100'.



LA 447 CORRIDOR STUDY

ROUNDABOUTS – PAR_CLO_A WITH PHASE CONSTRUCTION

S.P. NO. 4400000651

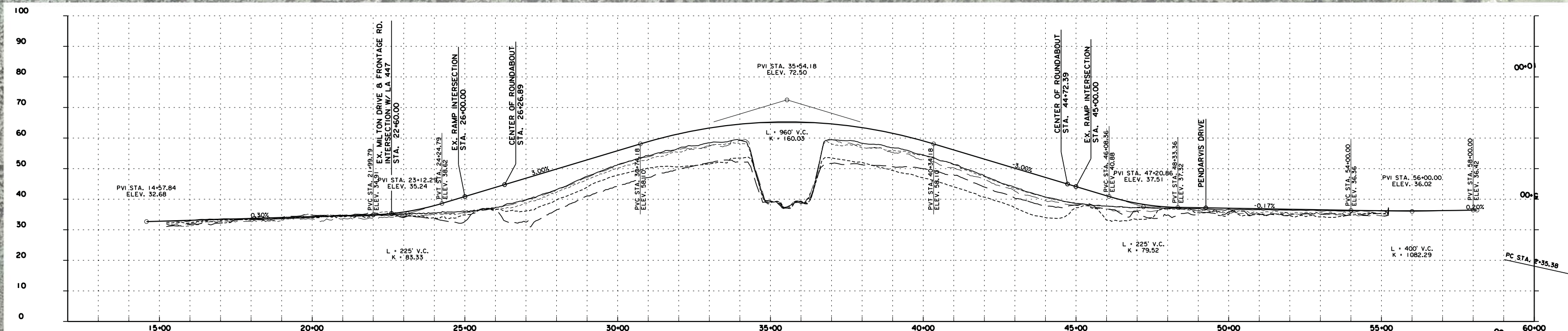
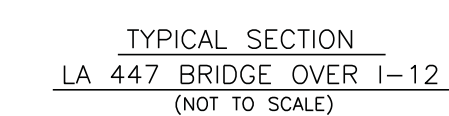
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**LA 447 CORRIDOR STUDY
LA 447 AT INTERSTATE 12 INTERCHANGE CONCEPTS
WALKER, LA
LIVINGSTON PARISH, LOUISIANA**

**Preliminary Estimated Opinion of
Probable Construction Cost**

ROUNDABOUTS - PAR_CLO_A WITH PHASE CONSTRUCTION					
Description	Unit	Unit Price	Quantity	Amount	Remarks
Clearing and Grubbing	LS	\$150,000.00	1	\$150,000.00	
Removal of Structures and Obstructions	LS	\$200,000.00	1	\$200,000.00	
Removal of Existing Bridge	EA	\$50,000.00	1	\$50,000.00	
Removal of Existing Pavement	SY	\$9.50	19,047	\$180,946.50	
Excavation	CY	\$8.00	10,000	\$80,000.00	
Embankment	CY	\$18.00	51,781	\$932,058.00	
Bridge Structure (LA 447 over I-12)	SY	\$650.00	3,081	\$2,002,650.00	Cost includes superstructure and substructure
Concrete Approach Slab	SY	\$225.00	322	\$72,450.00	
12" PCC Pavement (Travel Lanes)	SY	\$55.00	18,257	\$1,004,135.00	Assumed same pavement section for all road work.
9" PCC Pavement (Shoulder)	SY	\$40.00	3,041	\$121,640.00	Assumed same pavement section for all road work.
12" Stone Base		\$35.00	21,146	\$740,110.00	Assumed same pavement section for all road work.
Drainage	LS	\$400,000.00	1	\$400,000.00	
Erosion Control	LS	\$125,000.00	1	\$125,000.00	Cost includes all BMP materials for entire project limits
Pavement Markings	LS	\$75,000.00	1	\$75,000.00	Assumed pavement markings only necessary in areas of actual work within project areas. No restriping of existing roads.
Subtotal				\$6,133,990	
Mobilization (8% of Subtotal Cost)				\$490,719	
Traffic Control (5% of Subtotal Cost)				\$306,699	
Subtotal				\$6,931,408	
25% Contingencies				\$1,732,852	
Total Construction Cost				\$8,664,260	

Note: Right-of-Way, Utility Relocation, and Design cost were not included in the estimate.



LA 447 CORRIDOR STUDY

ROUNDBABOUTS – PAR_CLO_A
WITH J-TURNS ON
LA 447 NORTH OF INTERCHANGE

S.P. NO. 4400000651

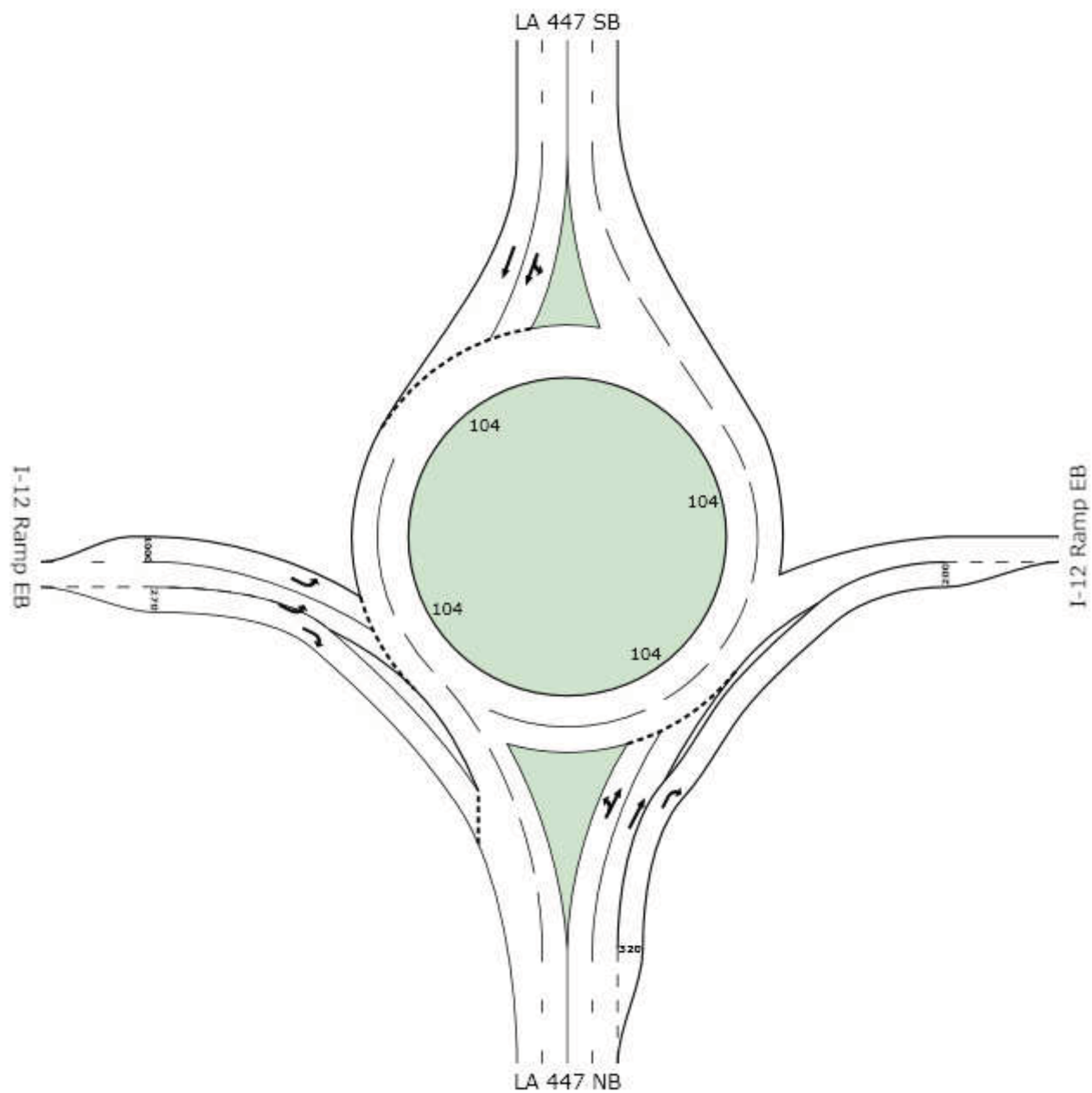
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**LA 447 CORRIDOR STUDY
LA 447 AT INTERSTATE 12 INTERCHANGE CONCEPTS
WALKER, LA
LIVINGSTON PARISH, LOUISIANA**

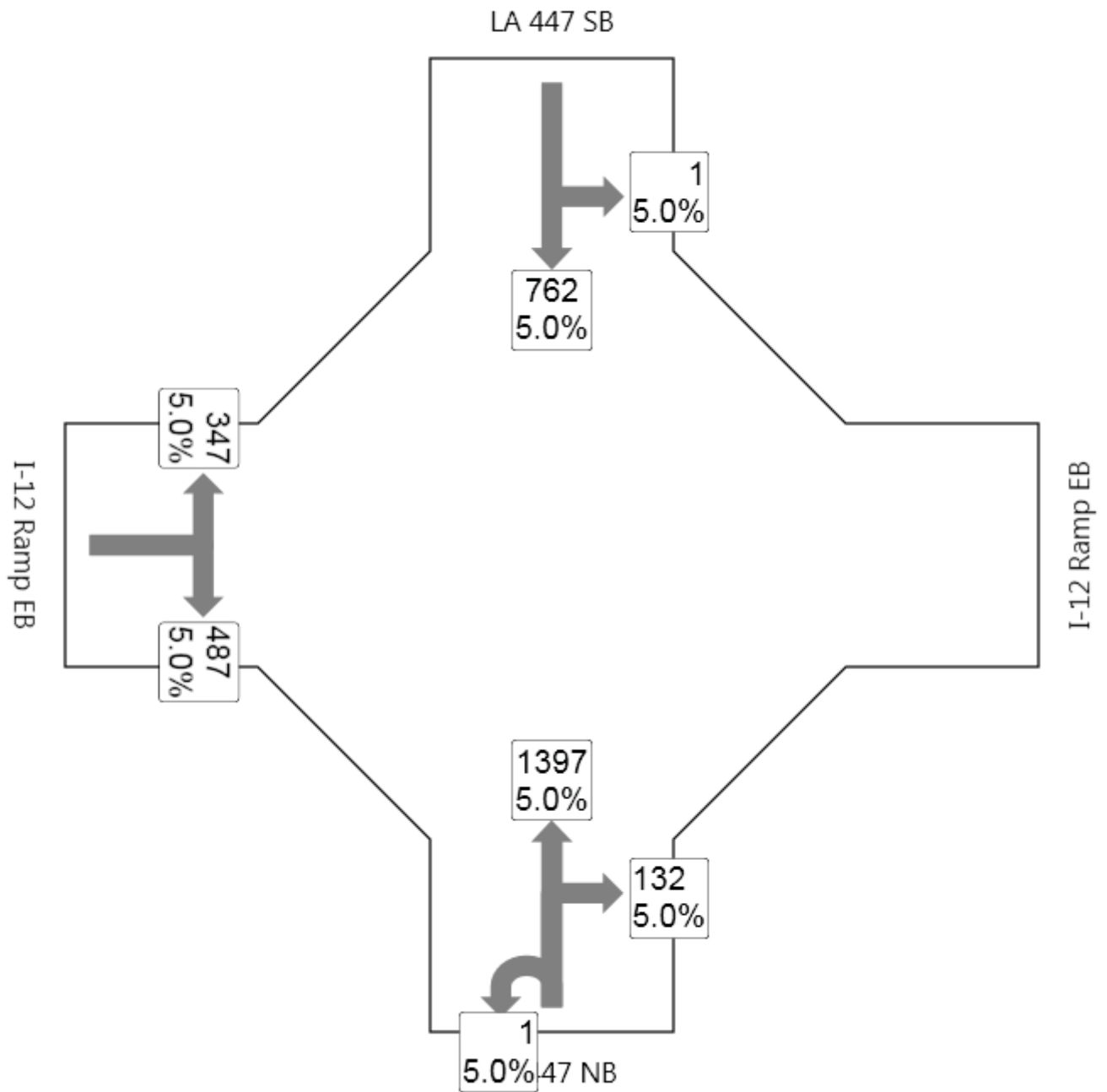
**Preliminary Estimated Opinion of
Probable Construction Cost**

ROUNDABOUTS - Par_Clo_A WITH J-TURNS ON LA 447 NORTH OF INTERCHANGE					
Description	Unit	Unit Price	Quantity	Amount	Remarks
Clearing and Grubbing	LS	\$350,000.00	1	\$350,000.00	
Removal of Structures and Obstructions	LS	\$250,000.00	1	\$250,000.00	
Removal of Existing Bridge	EA	\$50,000.00	1	\$50,000.00	
Removal of Existing Pavement	SY	\$9.50	55,269	\$525,056.56	
Excavation	CY	\$8.00	11,000	\$88,000.00	
Embankment	CY	\$18.00	85,871	\$1,545,678.00	
Bridge Structure (LA 447 over I-12)	SY	\$650.00	6,040	\$3,926,000.00	Cost includes superstructure and substructure
Concrete Approach Slab	SY	\$225.00	649	\$146,025.00	
12" PCC Pavement (Travel Lanes)	SY	\$55.00	69,890	\$3,843,950.00	Assumed same pavement section for all road work.
9" PCC Pavement (Shoulder)	SY	\$40.00	20,683	\$827,320.00	Assumed same pavement section for all road work.
12" Stone Base		\$35.00	96,290	\$3,370,150.00	Assumed same pavement section for all road work.
Drainage	LS	\$750,000.00	1	\$750,000.00	
Erosion Control	LS	\$150,000.00	1	\$150,000.00	Cost includes all BMP materials for entire project limits
Pavement Markings	LS	\$100,000.00	1	\$100,000.00	Assumed pavement markings only necessary in areas of actual work within project areas. No restriping of existing roads.
Subtotal				\$15,922,180	
Mobilization (8% of Subtotal Cost)				\$1,273,774	
Traffic Control (5% of Subtotal Cost)				\$796,109	
Subtotal				\$17,992,063	
25% Contingencies				\$4,498,016	
Total Construction Cost				\$22,490,079	

Note: Right-of-Way, Utility Relocation, and Design cost were not included in the estimate.



LA 447 at I-12 Eastbound Ramps
with Cloverleaf Alternative



LA 447 at I-12 Eastbound Ramps
2038 AM Peak

MOVEMENT SUMMARY

Site: LA 447@12EB AM 2038 -
Cloverleaf

LA 447 at I-12 EB Ramp
Walker, LA
N-S Prj#8428
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 447 NB											
3	L	1	5.0	0.713	18.9	LOS B	6.6	172.7	0.76	1.02	27.8
8	T	1471	5.0	0.713	10.6	LOS B	6.7	174.8	0.75	0.85	33.0
18	R	139	5.0	0.089	7.5	X	X	X	X	0.54	36.6
Approach		1611	5.0	0.713	10.4	LOS B	6.7	174.8	0.68	0.82	33.3
North: LA 447 SB											
7	L	1	5.0	0.248	14.8	LOS B	1.7	45.0	0.02	0.97	32.5
4	T	802	5.0	0.248	6.7	LOS A	1.8	46.2	0.02	0.48	37.3
Approach		803	5.0	0.248	6.7	LOS A	1.8	46.2	0.02	0.48	37.3
West: I-12 Ramp EB											
5	L	365	5.0	0.203	17.4	LOS B	0.8	20.4	0.54	0.86	31.5
12	R	513	5.0	0.409	10.4	LOS B	2.0	51.4	0.57	0.72	35.0
Approach		878	5.0	0.409	13.3	LOS B	2.0	51.4	0.56	0.78	33.4
All Vehicles		3292	5.0	0.713	10.3	LOS B	6.7	174.8	0.49	0.73	34.2

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).

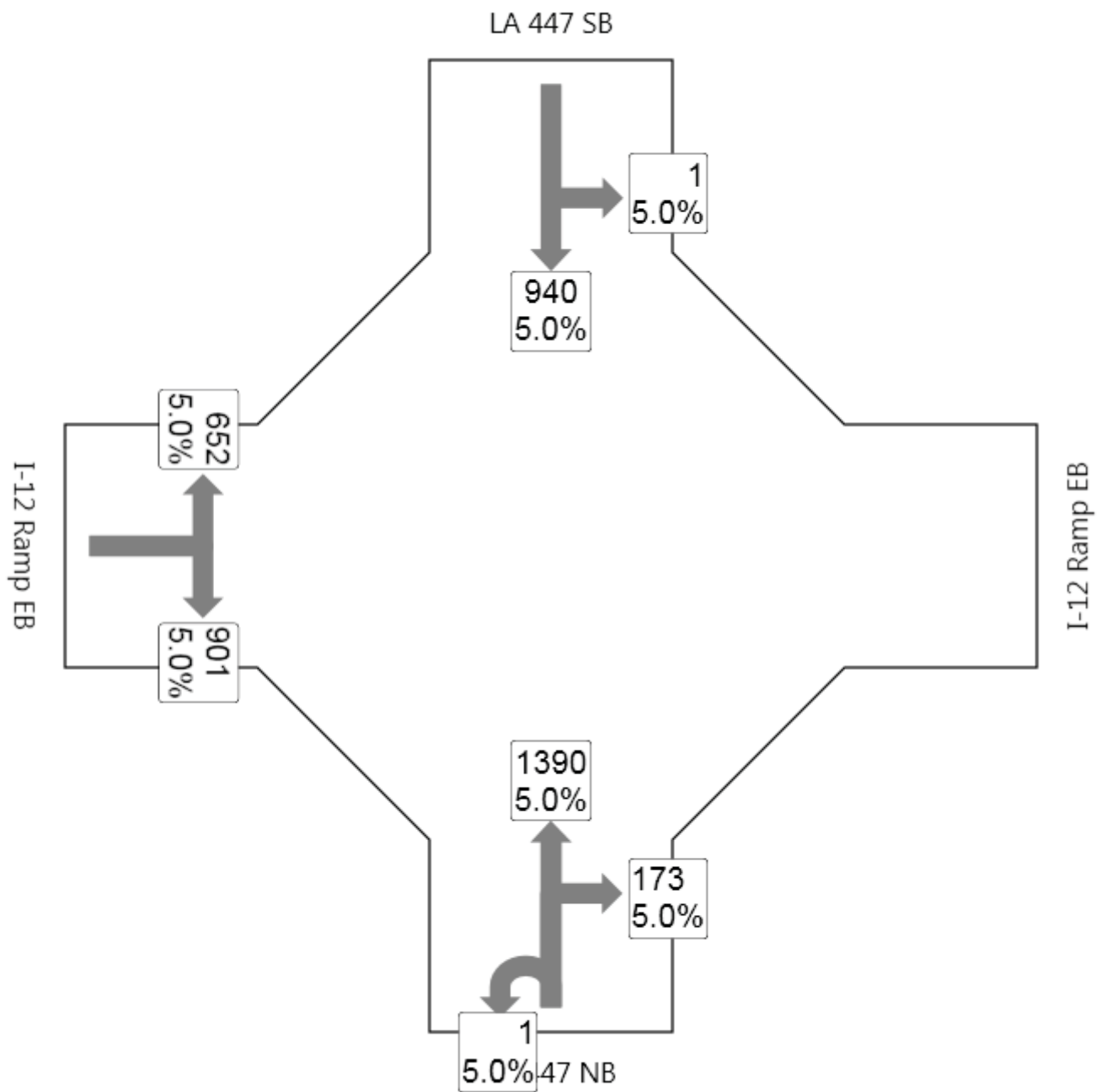
Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.



LA 447 at I-12 Eastbound Ramps
2038 PM Peak

MOVEMENT SUMMARY

Site: LA 447@12EB PM 2038 -
Cloverleaf

LA 447 at I-12 EB Ramp
Walker, LA
N-S Prj#8428
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 447 NB											
3	L	1	5.0	0.877	26.0	LOS C	10.6	274.4	0.94	1.27	24.8
8	T	1448	5.0	0.877	17.2	LOS B	11.0	287.2	0.94	1.20	29.4
18	R	180	5.0	0.116	7.5	X	X	X	X	0.54	36.6
Approach		1629	5.0	0.877	16.2	LOS B	11.0	287.2	0.84	1.13	30.0
North: LA 447 SB											
7	L	1	5.0	0.302	14.8	LOS B	2.4	61.4	0.03	0.97	32.5
4	T	979	5.0	0.302	6.7	LOS A	2.4	63.3	0.03	0.48	37.2
Approach		980	5.0	0.302	6.7	LOS A	2.4	63.3	0.03	0.48	37.2
West: I-12 Ramp EB											
5	L	679	5.0	0.391	18.5	LOS B	1.8	47.2	0.63	0.93	30.8
12	R	939	5.0	0.774	14.5	LOS B	7.5	195.8	0.78	1.05	32.9
Approach		1618	5.0	0.774	16.2	LOS B	7.5	195.8	0.72	1.00	32.0
All Vehicles		4227	5.0	0.877	14.0	LOS B	11.0	287.2	0.60	0.93	32.2

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

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SIDRA INTERSECTION 5.1.10.2069

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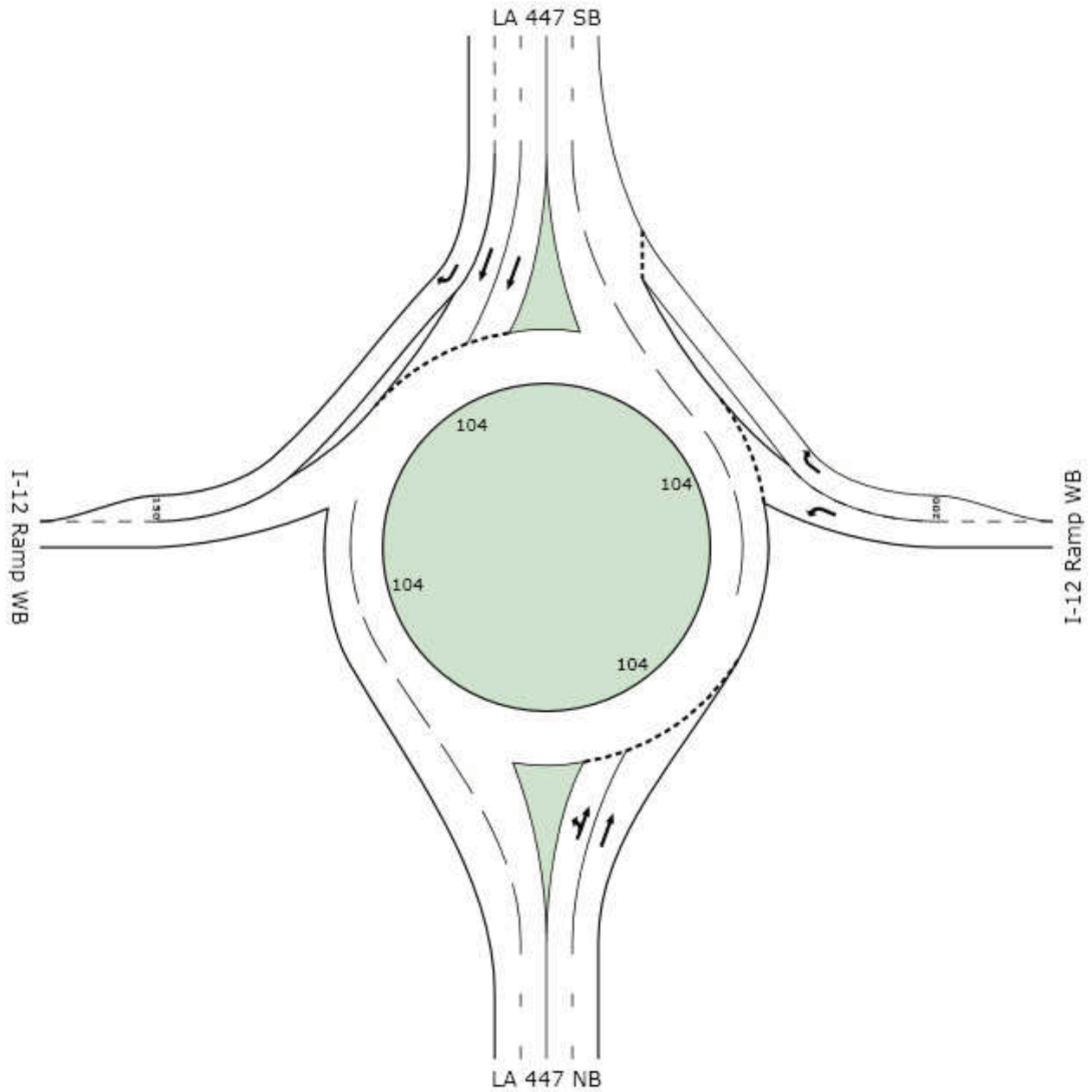
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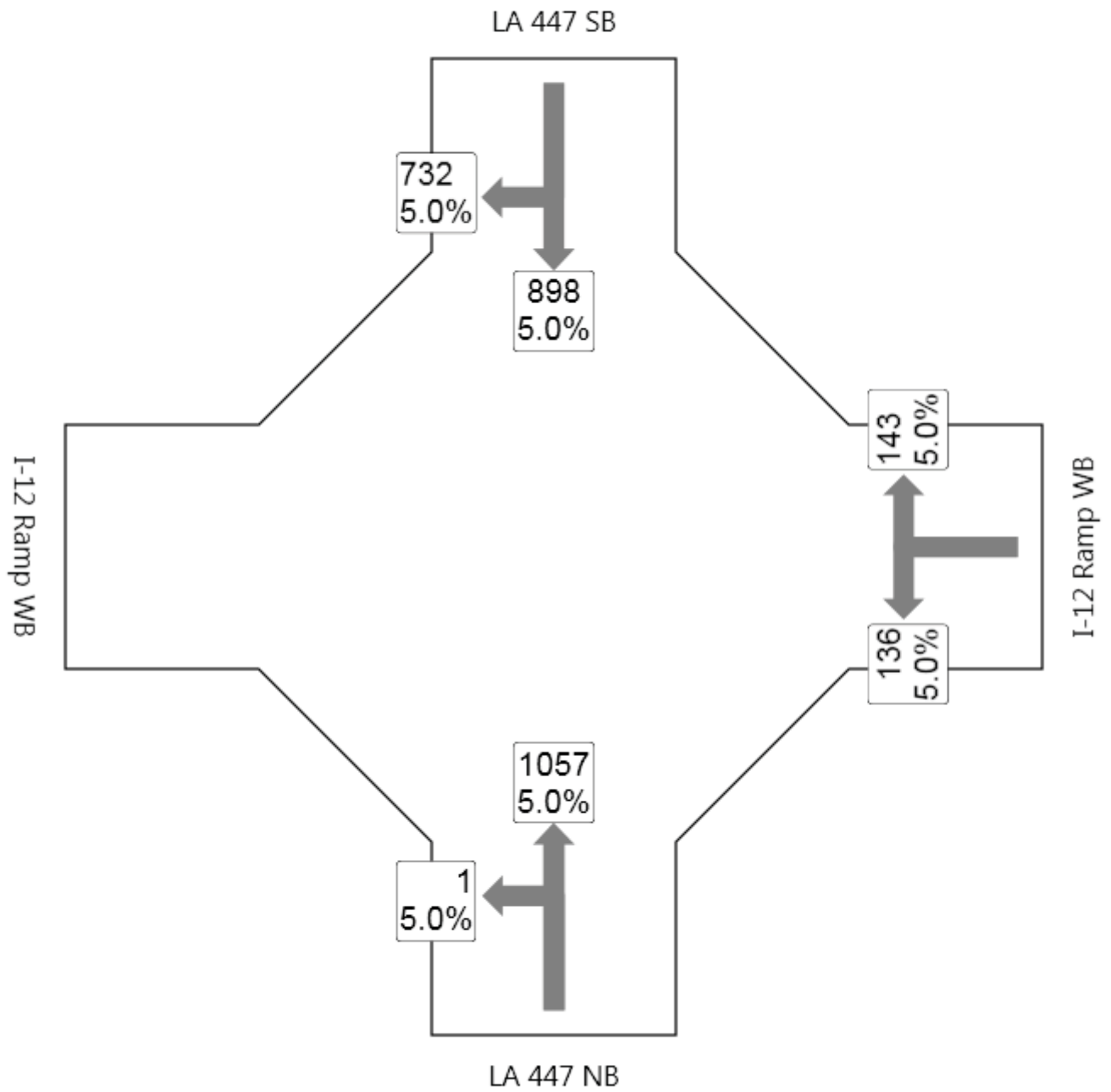
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INTERSECTION



LA 447 at I-12 Westbound Ramps
with Cloverleaf Alternative



LA 447 at I-12 Westbound Ramps
2038 AM Peak

MOVEMENT SUMMARY

Site: LA 447@12WB AM 2038 -
Cloverleaf

LA 447 at I-12 WB Ramp
Walker, LA
N-S Prj#8428
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 447 NB											
3	L	1	5.0	0.354	14.7	LOS B	0.0	0.0	0.00	1.00	32.5
8	T	1149	5.0	0.354	6.7	LOS A	0.0	0.0	0.00	0.49	37.4
Approach		1150	5.0	0.354	6.7	LOS A	0.0	0.0	0.00	0.49	37.4
East: I-12 Ramp WB											
1	L	148	5.0	0.209	18.9	LOS B	0.8	20.7	0.61	0.90	30.6
16	R	155	5.0	0.179	11.3	LOS B	0.7	18.2	0.59	0.78	35.1
Approach		303	5.0	0.209	15.0	LOS B	0.8	20.7	0.60	0.84	32.7
North: LA 447 SB											
4	T	976	5.0	0.381	7.6	LOS A	2.8	73.0	0.44	0.54	34.7
14	R	796	5.0	0.511	7.8	X	X	X	X	0.55	36.3
Approach		1772	5.0	0.511	7.7	LOS A	2.8	73.0	0.24	0.54	35.4
All Vehicles		3225	5.0	0.511	8.0	LOS A	2.8	73.0	0.19	0.55	35.8

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: Tuesday, February 28, 2012 4:48:35 PM

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Project: R:\LA\Livingston\8428 LA 447 Corr Study\SA #1 - Interchange Alternatives Analysis\Analysis - LA 447

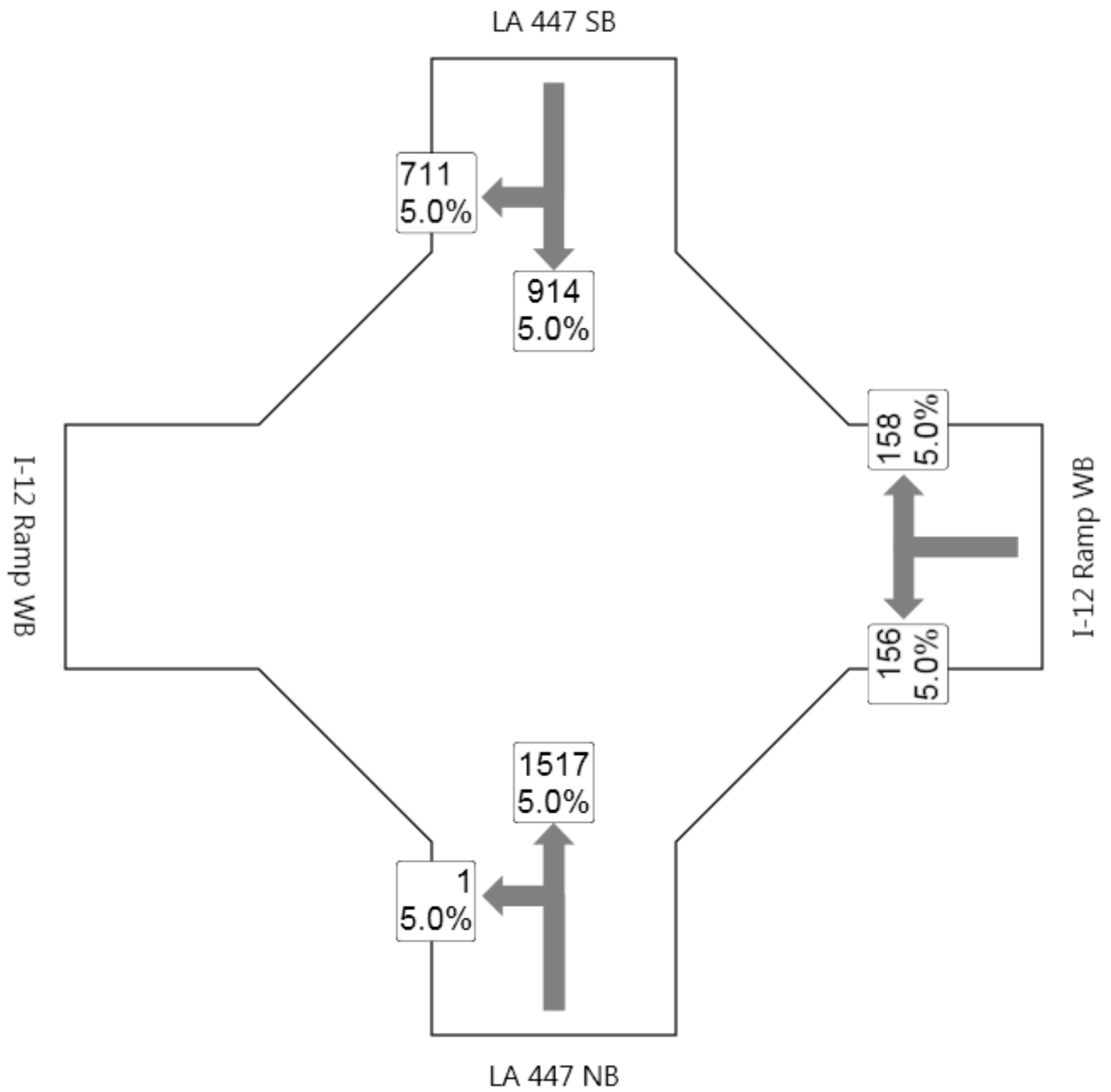
Interchange\Roundabout Analysis\March 2012\447@12WB.sip

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LA 447 at I-12 Westbound Ramps
2038 PM Peak

MOVEMENT SUMMARY

Site: LA 447@12WB PM 2038 -
Cloverleaf

LA 447 at I-12 WB Ramp
Walker, LA
N-S Prj#8428
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 447 NB											
3	L	1	5.0	0.482	14.7	LOS B	0.0	0.0	0.00	1.00	32.5
8	T	1564	5.0	0.482	6.7	LOS A	0.0	0.0	0.00	0.49	37.4
Approach		1565	5.0	0.482	6.7	LOS A	0.0	0.0	0.00	0.49	37.4
East: I-12 Ramp WB											
1	L	161	5.0	0.278	21.2	LOS C	1.1	29.4	0.70	0.93	29.2
16	R	163	5.0	0.212	12.8	LOS B	0.9	23.4	0.68	0.86	34.2
Approach		324	5.0	0.278	17.0	LOS B	1.1	29.4	0.69	0.89	31.5
North: LA 447 SB											
4	T	942	5.0	0.374	7.7	LOS A	2.8	72.3	0.46	0.55	34.6
14	R	733	5.0	0.471	7.8	X	X	X	X	0.55	36.3
Approach		1675	5.0	0.471	7.7	LOS A	2.8	72.3	0.26	0.55	35.3
All Vehicles		3564	5.0	0.482	8.1	LOS A	2.8	72.3	0.18	0.55	35.8

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

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