22 L		*C	A					3		18.5		16	
23 R	(Un1)	B	C	R		C	B	11	3	9.0Min	34.5	10	39
North: PR-906 Norte													
42 L		*A	B					3		23.0Max		20	
41 T		A	C					3		37.9		41	

Current Phase Sequence No.: 1
Input phase sequence: A B C
Output phase sequence: A B C

Movement Types:
- Ped Pedestrian
- Dum Dummy
- Und Undetected in both green periods
- Un1 Undetected in 1st green period
- Un2 Undetected in 2nd green period

Under heading 'Op':
- L "Left" turns are opposed
- R "Right" turns are opposed
- LR "Left and Right" opposed
- C "Constant" saturation flow

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Table S.2 - MOVEMENT CAPACITY PARAMETERS

Mov No.	Dem Flow (veh /h)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: PR-906 Sur Candelero Abaj										
31 T	592	3800		0.156		1086	0.90	65	100	0.545
33 R	17	1800	1615	0.000	0.010	1006	0.90	5224	100	0.017
East: Palmas del Mar Main Entry										
22 L	25	190		0.132		48	0.90	74	100	0.518
23 R	1059	1417	2931	0.000	0.361	2039	0.90	73	100	0.519
North: PR-906 Norte										
42 L	1337	3610		0.370		1146	0.90	-23	100	1.167*
41 T	899	1900		0.473		1237	0.90	24	62	0.727

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Table S.3 - INTERSECTION PARAMETERS

Crit Mov No.	App. & Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
42	N_L		A	B	23	-	-	23.0Max
31	S_T		B	C	3	0.156	0.280	20.7
22	E_L		C	A	3	0.132	0.247	18.5
				Total:	29	0.287	0.527	62.2

- Flow ratio not used for cycle time calculations and the adjusted lost time equals the required movement time (=Min or Max as shown in Table S.1)

Cycle Time:

Minimum	Maximum	Practical	Chosen
27	NA	62	63

Intersection Level of Service	=	D
Worst movement Level of Service	=	F
Average intersection delay (s)	=	53.5
Largest average movement delay (s)	=	127.2
Largest back of queue, 95% (m)	=	22
Performance Index	=	193.92
Degree of saturation (highest)	=	1.167
Practical Spare Capacity (lowest)	=	-23 %
Total vehicle capacity, all lanes (veh/h)	=	6561
Total vehicle flow (veh/h)	=	3929
Total person flow (pers/h)	=	4715
Total vehicle delay (veh-h/h)	=	58.40
Total person delay (pers-h/h)	=	70.08
Total effective vehicle stops (veh/h)	=	3428
Total effective person stops (pers/h)	=	4113
Total vehicle travel (veh-km/h)	=	2444.4
Total cost ($/h)	=	1034.83
Total fuel (L/h)	=	345.8
Total CO2 (kg/h)	=	864.58

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le S.4 - PHASE INFORMATION

Phase No.	Change Time	Green Start	Displayed Green	Grn+Intgrn Secs	Prop.
A	0	3	20	23	0.365
B	23	26	18	21	0.333
C	44	47	16	19	0.302

urrent Phase Sequence No.: 1
nput phase sequence: A B C
utput phase sequence: A B C

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le S.5 - MOVEMENT PERFORMANCE

ov o.	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	(m)	Perf. Index	Aver. Speed (km/h)
th: PR-906 Sur Candelero Abaj									
31 T	3.77	4.52	22.9	0.87	0.74	10.3	5	21.30	39.1
33 R	0.07	0.08	14.2	0.38	0.70	0.3	0	0.40	45.8
t: Palmas del Mar Main Entry									
22 L	0.12	0.14	17.0	0.60	0.82	10.2	5	0.67	42.1
23 R	4.63	5.56	15.8	0.55	0.83	10.2	5	27.08	43.3
th: PR-906 Norte									
42 L	47.23	56.68	127.2	1.00	1.12	44.5	22	118.74	13.8
41 T	2.58	3.09	10.3	0.70	0.65	23.1	12	25.72	50.1

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Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
South: PR-906 Sur Candelero Abaj									
609	0.545	3.84	4.60	22.7	0.862	0.74	5	21.70	39.3
East: Palmas del Mar Main Entry									
1084	0.519	4.75	5.70	15.8	0.554	0.83	5	27.76	43.3
North: PR-906 Norte									
2236	1.167	49.81	59.77	80.2	0.882	0.93	22	144.46	19.5
INTERSECTION (persons):									
4715	1.167		70.08	53.5	0.788	0.87		193.92	25.3

Queue values in this table are 95% back of queue (metres).

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Table S.7 - LANE PERFORMANCE

Lane No.	Mov No.	Effective Green Times (sec) R1	G1	R2	G2	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue 95% Back (vehs)	(m)	Shrt Lane (m)
South: PR-906 Sur Candelero Abaj													
1 T	31	45	18	0	0	296	543	0.545	22.9	0.74	10.3	5	
2 T	31	45	18	0	0	296	543	0.545	22.9	0.74	10.3	5	
3 R	33	21	2	3	37	17	1006	0.017	14.2	0.70	0.3	0	50
East: Palmas del Mar Main Entry													
1 LR	22, 23	16	10	3	34	503	969	0.519	17.4	0.84	10.2	5	
2 R	23	11	10	3	39	581	1118	0.519	14.4	0.82	9.7	5	
North: PR-906 Norte													
1 L	42	43	20	0	0	669	573	1.167	127.2	1.12	44.5	22	50
2 L	42, 41	43	20	0	0	669	573	1.167	127.2	1.12	44.5	22	
3 T	41	22	41	0	0	899	1237	0.727	10.3	0.65	23.1	12	

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Table S.8 - LANE FLOW AND CAPACITY INFORMATION

Lan	Mov	Dem Flow (veh/h)	Lane	Saturation Flow Adj.	Aver	Aver	End Cap	Tot Cap	Deg.	Lane

	No.	Lef	Thru	Rig	Tot	Width (m)	Basic (tcu)	1st (veh)	2nd (veh)	(veh /h)	(veh /h)	Satn x	Util %
uth: PR-906 Sur Candelero Abaj													
T	31	0	296	0	296	3.60	1900	1900	0	0	543	0.545	100
T	31	0	296	0	296	3.60	1900	1900	0	0	543	0.545	100
R	33	0	0	17	17	3.60	1900	1800	1615	57*	1006	0.017	100
st: Palmas del Mar Main Entry													
LR	22, 23	25	0	478	503	3.60	1900	693	1592	57	969	0.519	100
R	23	0	0	581	581	3.60	1900	744	1615	57	1118	0.519	100
rth: PR-906 Norte													
L	42	669	0	0	669	3.60	1900	1805	0	0	573	1.167	100
L	42, 41	669	0	0	669	3.60	1900	1805	0	0	573	1.167	100
T	41	0	899	0	899	3.60	1900	1900	0	0	1237	0.727	62P

Large end capacity has resulted in a saturation flow which is larger than the full unopposed saturation flow
Lane under-utilisation found by the "Program"

asic Saturation Flow in this table is adjusted for lane width, approach rade, parking manoeuvres and number of buses stopping. Saturation flow cale applies if specified.

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le S.9 - SIGNAL TIMING DIAGRAM

played (Phase) Green Times

```
     Phase A                    Phase B                    Phase C

                        23                        44                        63
----------------------I-----------------------I-----------------------I
GGGGGGGGGGGGGGGGGGGGG.....GGGGGGGGGGGGGGGGGG.....GGGGGGGGGGGGGGGGGG.
                            26                        47
```

ective (Movement) Green Times

uth: PR-906 Sur Candelero Abaj

```
.   31 (T)
                        I                         I                         I
.............................GGGGGGGGGGGGGGGGGGG.....................
                              28                        46

.   33 (R)
                        I                         I                         I
.........................G...GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG
                        23 25  28
```

ast: Palmas del Mar Main Entry

```
.   22 (L)
                        I                         I                         I
.......................................................GGGGGGGGGGGGGGGGG
```

```
Mov.   23 (R)
I                          I                          I                         I
GGGGGGGGGGGGGGGGGGGGGGGGGGGGGG............GGGGGGGGGG...GGGGGGGGGGGGGGGGGG
                              25           36          46  49
```

North: PR-906 Norte

```
Mov.   42 (L)
I                          I                          I                         I
......GGGGGGGGGGGGGGGGGGGGGG.......................................................
     5                     25

Mov.   41 (T)
I                          I                          I                         I
......GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG....................
     5                                                46

I-----I------I------I------I------I------I------I------I------I------I------I---->
0     6      13     19     25     32     38     44     50     57     63

                              T I M E  (s)
```

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Table S.10 - MOVEMENT CAPACITY AND PERFORMANCE SUMMARY

Mov No.	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Eff. Grn 1st Grn	Eff. Grn 2nd Grn	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
South: PR-906 Sur Candelero Abaj											
31 T		592	1086	100	0.545	18*		22.9	0.74	10.3	21.30
33 R	(Unl)	17	1006	100	0.017	2	37	14.2	0.70	0.3	0.40
East: Palmas del Mar Main Entry											
22 L		25	48	100	0.518	16*		17.0	0.82	10.2	0.67
23 R	(Unl)	1059	2039	100	0.519	10	39	15.8	0.83	10.2	27.08
North: PR-906 Norte											
42 L		1337	1146	100	1.167*	20*		127.2	1.12	44.5	118.74
41 T		899	1237	62	0.727	41		10.3	0.65	23.1	25.72

* Maximum degree of saturation, or critical green periods

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Table S.12A - FUEL CONSUMPTION, EMISSIONS AND COST - TOTAL

Mov No.	Fuel Total L/h	Cost Total $/h	HC Total kg/h	CO Total kg/h	NOX Total kg/h	CO2 Total kg/h
South: PR-906 Sur Candelero Abaj						
31 T	43.7	102.26	0.191	9.03	0.272	109.3

:3 R	1.3	2.90	0.006	0.29	0.008	3.2
	45.0	105.16	0.197	9.32	0.280	112.5
: Palmas del Mar Main Entry						
.2 L	1.9	4.47	0.009	0.42	0.012	4.8
.3 R	81.2	186.79	0.366	17.96	0.513	203.0
	83.1	191.26	0.375	18.38	0.525	207.8
:h: PR-906 Norte						
:2 L	159.1	611.89	0.796	25.66	0.750	397.8
:1 T	58.6	126.53	0.244	11.47	0.367	146.6
	217.7	738.42	1.039	37.13	1.117	544.3
:ERSECTION:	345.8	1034.83	1.611	64.83	1.923	864.6

:METERS USED IN COST CALCULATIONS

Pump price of fuel ($/L)	=	0.400
Fuel resource cost factor	=	0.70
Ratio of running cost to fuel cost	=	3.0
Average income ($/h)	=	17.00
Time value factor	=	0.40
Average occupancy (persons/veh)	=	1.2
Light vehicle mass (1000 kg)	=	1.4
Heavy vehicle mass (1000 kg)	=	11.0
Light vehicle idle fuel rate (L/h)	=	1.350
Heavy vehicle idle fuel rate (L/h)	=	2.000

ne idle fuel and vehicle mass parameters given above are the default
alues (data given in RIDES may override some of these parameters).

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le S.12B - FUEL CONSUMPTION, EMISSIONS AND COST - RATE

ov o.	Fuel Rate L/100km	Cost Rate $/km	HC Rate g/km	CO Rate g/km	NOX Rate g/km	CO2 Rate g/km
th: PR-906 Sur Candelero Abaj						
31 T	11.8	0.28	0.515	24.39	0.735	295.1
33 R	12.2	0.28	0.547	27.07	0.775	304.7
	11.8	0.28	0.516	24.47	0.736	295.4
t: Palmas del Mar Main Entry						
22 L	12.3	0.29	0.556	27.05	0.775	308.7
23 R	12.4	0.28	0.558	27.38	0.783	309.5
	12.4	0.28	0.558	27.38	0.783	309.4
th: PR-906 Norte						
42 L	19.2	0.74	0.959	30.91	0.903	479.3
41 T	10.4	0.23	0.434	20.41	0.653	260.7
	15.6	0.53	0.747	26.67	0.802	391.0
:TERSECTION:	14.1	0.42	0.659	26.52	0.787	353.7

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Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-906 Sur Candelero Abaj												
1 T		296		296	0	1900	18		0.545	22.9	5	
2 T		296		296	0	1900	18		0.545	22.9	5	
3 R			17	17	0	1900	2	37	0.017	14.2	0	50
	0	592	17	609	0				0.545	22.7	5	
East: Palmas del Mar Main Entry												
1 LR	25		478	503	0	1900	10	34	0.519	17.4	5	
2 R			581	581	0	1900	10	39	0.519	14.4	5	
	25	0	1059	1084	0				0.519	15.8	5	
North: PR-906 Norte												
1 L	669			669	0	1900	20		1.167	127.2	22	50
2 L	669			669	0	1900	20		1.167	127.2	22	
3 T		899		899	0	1900	41		0.727	10.3	12	
	1337	899	0	2236	0				1.167	80.2	22	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	3929	0	63	1.167	53.5	22

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

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Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Green Time Ratio (g/C) 1st grn	2nd grn	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
South: PR-906 Sur Candelero Abaj								
31 T		0.286*		592	1086	0.545	22.9	C
33 R	(Unl)	0.032	0.587	17	1006	0.017	14.2	B
				609	2091	0.545	22.7	C
East: Palmas del Mar Main Entry								
22 L		0.254*		25	48	0.518	17.0	B

R (Unl)	0.159	0.619	1059	2039	0.519	15.8	B
			1084	2088	0.519	15.8	B
h: PR-906 Norte							
L	0.317*		1337	1146	1.167*	127.2	F
T	0.651		899	1237	0.727	10.3	B
			2236	2383	1.167	80.2	F
L VEHICLES:			3929	6561	1.167	53.5	D
TERSECTION (persons):			4715	6561	1.167	53.5	

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria) and v/c ratio,
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.
Maximum v/c ratio, or critical green periods

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e D.0 - GEOMETRIC DELAY DATA

m roach	To Approach	Negn Radius (m)	Negn Speed (km/h)	Negn Dist. (m)	Appr. Dist. (m)	Downstream Distance (m)
th: PR-906 Sur Candelero Abaj						
	East	10.0	18.5	15.7	500	119
	North	S	65.0	23.0	500	125
t: Palmas del Mar Main Entry						
	South	15.1	22.7	23.7	500	121
	North	10.0	18.5	15.7	500	119
th: PR-906 Norte						
	South	S	65.0	23.0	500	125
	East	13.9	21.8	21.9	500	121

ownstream distance is distance travelled from the stopline until exit
ruise speed is reached (includes negotiation distance). Acceleration
istance is weighted for light and heavy vehicles. The same distance
plies for both stopped and unstopped vehicles.

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le D.1 - LANE DELAYS

			Delay (seconds/veh)								
		Deg.	Stop-line Delay			Acc.	Queuing		Stopd		
ne	Mov	Satn	1st	2nd	Total	Dec.	Total	MvUp	(Idle)	Geom	Control
	No.	x	d1	d2	dSL	dn	dq	dqm	di	dig	dic
th: PR-906 Sur Candelero Abaj											
T	31	0.545	21.9	1.0	22.9	7.8	15.1	0.0	15.1	0.0	22.9
T	31	0.545	21.9	1.0	22.9	7.8	15.1	0.0	15.1	0.0	22.9

3 R	33	0.017	4.5	0.0	4.5	1.5	3.2	0.0	3.2	9.7	14.2
East: Palmas del Mar Main Entry											
1 LR	22, 23	0.519	7.3	0.4	7.7	2.3	7.1	0.4	6.8	9.4 9.7	17.4
2 R	23	0.519	4.4	0.4	4.8	1.9	4.0	0.2	3.7	9.7	14.4
North: PR-906 Norte											
1 L	42	1.167	24.9	92.8	117.7	4.3	113.3	4.7	108.6	9.5	127.2
2 L	42, 41	1.167	24.9	92.8	117.7	4.3	113.3	4.7	108.6	9.5 0.0	127.2
3 T	41	0.727	8.2	2.1	10.3	6.3	4.0	0.0	4.0	0.0	10.3

dn is average stop-start delay for all vehicles queued and unqueued

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Table D.2 - LANE STOPS

Lane No.	Deg. Satn x	-- Effective Stop Rate -- he1	he2	Geom. hig	Overall h	Prop. Queued pq	Queue Move-up Rate hqm
South: PR-906 Sur Candelero Abaj							
1 T	0.545	0.74	0.00	0.00	0.74	0.875	0.00
2 T	0.545	0.74	0.00	0.00	0.74	0.875	0.00
3 R	0.017	0.27	0.00	0.44	0.70	0.387	0.00
East: Palmas del Mar Main Entry							
1 LR	0.519	0.54	0.02	0.28	0.84	0.604	0.19
2 R	0.519	0.46	0.01	0.35	0.82	0.510	0.13
North: PR-906 Norte							
1 L	1.167	0.89	0.23	0.00	1.12	1.000	1.27
2 L	1.167	0.89	0.23	0.00	1.12	1.000	1.21
3 T	0.727	0.65	0.00	0.00	0.65	0.706	0.00

hg is the average value for all movements in a shared lane
hqm is average queue move-up rate for all vehicles queued and unqueued

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Table D.3 - LANE QUEUES

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nb1	Nb2	Nb	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: PR-906 Sur Candelero Abaj											
1 T	0.545	0.5	4.9	0.5	5.3	6.3	8.2	9.1	10.3	12.6	0.01
2 T	0.545	0.5	4.9	0.5	5.3	6.3	8.2	9.1	10.3	12.6	0.01
3 R	0.017	0.0	0.1	0.0	0.1	0.2	0.2	0.2	0.3	0.4	0.00
East: Palmas del Mar Main Entry											
1 LR	0.519	0.6	4.7	0.6	5.2	6.2	8.1	8.9	10.2	12.4	0.01
2 R	0.519	0.6	4.3	0.6	4.9	5.9	7.7	8.5	9.7	11.8	0.01

rth: PR-906 Norte											
	1.167	14.3	13.0	14.3	27.3	31.4	38.8	41.0	44.5	49.7	0.45
	1.167	14.3	13.0	14.3	27.3	31.4	38.8	41.0	44.5	49.7	0.04
	0.727	1.6	11.3	1.6	12.9	15.1	19.3	20.7	23.1	26.7	0.02

Values printed in this table are back of queue (vehicles).

udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
erseccion Palmas del Mar Main Entrance y PR-906 A?o 2020
ersection ID: 1
Actuated Isolated Signals, Cycle Time = 63

le D.4 - MOVEMENT SPEEDS (km/h)

ov o.	App. Speeds Cruise	App. Speeds Negn	Exit Speeds Negn	Exit Speeds Cruise	Queue Move-up 1st Grn	Queue Move-up 2nd Grn	Av. Section Spd Running	Av. Section Spd Overall
uth: PR-906 Sur Candelero Abaj								
31	65.0	65.0	65.0	65.0			53.0	39.1
33	65.0	18.5	18.5	65.0			49.1	45.8
st: Palmas del Mar Main Entry								
22	65.0	22.7	22.7	65.0	3.8		47.5	42.1
23	65.0	18.5	18.5	65.0	3.9		48.1	43.3
rth: PR-906 Norte								
42	65.0	21.8	21.8	65.0	8.7		42.2	13.8
41	65.0	65.0	65.0	65.0	12.8		55.0	50.1

Running Speed" is the average speed excluding stopped periods.

udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
erseccion Palmas del Mar Main Entrance y PR-906 A?o 2020
ersection ID: 1
Actuated Isolated Signals, Cycle Time = 63

le D.5 - PROGRESSION FACTORS & ACTUATED SIGNAL PARAMETERS

ov o.	Control	Coord.	Arrival Type	Delay Prog. Factor	Queue Prog. Factor	Gap Settings es	Gap Settings eh	Disp. Grn. Settings 1st Grn Gmin	1st Grn Gmax	2nd Grn Gmin	2nd Grn Gmax
uth: PR-906 Sur Candelero Abaj											
31	VA	No	3	1.000	1.000	2.5	2.7	6	50		
33	VA	No	3	1.000	1.000	2.5	2.7	6	50	6	50
st: Palmas del Mar Main Entry											
22	VA	No	3	1.000	1.000	2.0	2.2	6	20		
23	VA	No	3	1.000	1.000	2.5	2.7	6	50	6	50
orth: PR-906 Norte											
42	VA	No	3	1.000	1.000	2.0	2.2	6	20		
41	VA	No	3	1.000	1.000	2.5	2.7	6	50		

--- End of aaSIDRA Output ---

Semáforo
Centro de M
Sur
PR-906

Akcelik & Associates Pty Ltd - aaSIDRA 2.0.0.205

CMA Architects & Engineers LLP
Ing. Ricardo Rivera Registered User No. 50310
Licence Type: Professional, Single Computer

Time and Date of Analysis 10:45 AM, Nov 5,2002

Filename: C:\CMA AE LLP Projects\Estudios de Transito\00237 - Palmas del Mar PR-906 Traffi
dy, Humacao\Revision 2002\Int22020.OUT

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Sur Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2

aaTraffic SIDRA US Highway Capacity Manual (2000) Metric Version

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
    Any maximum cycle time specification
    Any user-given cycle time (unless phase times also given)
    User-given cycle and phase times (if variable flow scale run)
    Any variable cycle time specification
    Any green split priority specification
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 10
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
                    Geometric delay included
  HCM Delay and Queue Models option selected
  Level of Service based on: Delay and degree of saturation
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 5
  Comparison of last two iterations:
    Difference in intersection degree of satn = 0.0 %
    Difference in total vehicle capacity   = 0.0 %
    Largest difference in eff. green times = 0 secs
    (max. value for stopping = 1 secs)

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Sur Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF10.SDF)

1. Basic saturation flow: 1900 tcu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

LEFT		THROUGH		RIGHT	
LV	HV	LV	HV	LV	HV

Normal	1.053	2.000	1.000	2.000	1.176	2.000
Restricted	1.303	2.500			1.426	2.500

. Opposed turn parameters (Signalised intersection)

	Crit. Gap	Fol.up Hdway	Deps at End	% Exit Flow Opposing
Left turns :	4.5	2.5	2.0	0
Right turns:	4.0	2.4	2.5	0

. Cruise speed= 65 km/h, Approach Distance= 500 m

. Queue space per vehicle in metres
Light vehicles: 7.6 Heavy vehicles: 14.0

full list of input data defaults and ranges is given in the
nput Guide part of aaSIDRA User Guide.

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udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
erseccion Sur Centro Mercadeo y PR-906 A?o 2020
ersection ID: 2
Actuated Isolated Signals, Cycle Time = 109

le S.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
ICLES	Demand flows in veh/hour as used by the program							
t: Entrada Sur Centro Mercad								
12	86	0	0	0	0	0	1.00	0.95
13	0	0	0	0	425	0	1.00	0.95
th: PR-906 Sur								
32	392	0	0	0	0	0	1.00	0.95
31	0	0	1259	0	0	0	1.00	0.95
th: PR-906 Norte								
41	0	0	1811	0	0	0	1.00	0.95
43	0	0	0	0	84	0	1.00	0.95

ed on unit time = 60 minutes.
w Scale and Peak Hour Factor effects included in flow values.

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udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
erseccion Sur Centro Mercadeo y PR-906 A?o 2020
ersection ID: 2
Actuated Isolated Signals, Cycle Time = 109

le S.1 - MOVEMENT PHASE AND TIMING PARAMETERS

v .	Mov Typ	PHASE MATRIX First Green Fr	To	Op	Pr	Second Green Fr	To	Op	Pr	Lost Tim 1st Grn	Lost Tim 2nd Grn	Req.Mov.Time 1st Grn	Req.Mov.Time 2nd Grn	Eff. Grn 1st Grn	Eff. Grn 2nd Grn
st: Entrada Sur Centro Mercad															
.2 L		C	A							3		23.0Max		30	
13 R		A	C	R		*C	A			33	4	53.0Max	32.6	23	29
uth: PR-906 Sur															
32 L		*B	C							3		23.0Max		20	
31 T		A	C							3		53.0Max		73	

rth: PR-906 Norte

41	T	*A	B				3		53.0Max		50
43	R	A	B	B	A	R	3	18	16.3	19.0Min	50 38

Current Phase Sequence No.: 1
Input phase sequence: A B C
Output phase sequence: A B C

Movement Types:
- Ped Pedestrian
- Dum Dummy
- Und Undetected in both green periods
- Un1 Undetected in 1st green period
- Un2 Undetected in 2nd green period

Under heading 'Op':
- L "Left" turns are opposed
- R "Right" turns are opposed
- LR "Left and Right" opposed
- C "Constant" saturation flow

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Sur Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 109

Table S.2 - MOVEMENT CAPACITY PARAMETERS

Mov No.	Dem Flow (veh /h)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
West: Entrada Sur Centro Mercad										
12 L	86	783		0.110		216	0.90	126	100	0.399
13 R	425	1846	2537	0.000	0.168	1065	0.90	125	100	0.399
South: PR-906 Sur										
32 L	392	2593		0.151		476	0.90	9	100	0.824
31 T	1259	2282		0.552		1528	0.90	9	100	0.824
North: PR-906 Norte										
41 T	1811	3800		0.477		1743	0.90	-13	100	1.039*
43 R	84	1615	1490	0.052	0.000	1260	0.90	1250	6	0.067

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Sur Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 109

Table S.3 - INTERSECTION PARAMETERS

Crit Mov No.	App. & Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
41	N_T		A	B	53	-	-	53.0Max
32	S_L		B	C	23	-	-	23.0Max
13	W_R	2nd	C	A	4	0.168	0.262	32.6
				Total:	80	0.168	0.262	108.6

- Flow ratio not used for cycle time calculations and the adjusted lost time equals the required movement time (=Min or Max as shown in Table S.1)

Cycle Time:

Minimum	Maximum	Practical	Chosen
28	NA	109	109

Intersection Level of Service = D

Worst movement Level of Service	=	F
Average intersection delay (s)	=	52.4
Largest average movement delay (s)	=	74.0
Largest back of queue, 95% (m)	=	32
Performance Index	=	252.00
Degree of saturation (highest)	=	1.039
Practical Spare Capacity (lowest)	=	-13 %
Total vehicle capacity, all lanes (veh/h)	=	6288
Total vehicle flow (veh/h)	=	4057
Total person flow (pers/h)	=	4868
Total vehicle delay (veh-h/h)	=	59.01
Total person delay (pers-h/h)	=	70.81
Total effective vehicle stops (veh/h)	=	3620
Total effective person stops (pers/h)	=	4344
Total vehicle travel (veh-km/h)	=	2531.7
Total cost ($/h)	=	1034.39
Total fuel (L/h)	=	355.5
Total CO2 (kg/h)	=	888.78

udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
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ersection ID: 2
Actuated Isolated Signals, Cycle Time = 109

le S.4 - PHASE INFORMATION

Phase No.	Change Time	Green Start	Displayed Green	Grn+Intgrn Secs	Prop.
A	0	3	50	53	0.486
B	53	56	20	23	0.211
C	76	79	30	33	0.303

urrent Phase Sequence No.: 1
nput phase sequence: A B C
utput phase sequence: A B C

udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
erseccion Sur Centro Mercadeo y PR-906 A?o 2020
ersection ID: 2
Actuated Isolated Signals, Cycle Time = 109

le S.5 - MOVEMENT PERFORMANCE

ov o.	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	(m)	Perf. Index	Aver. Speed (km/h)
t: Entrada Sur Centro Mercad									
12 L	0.95	1.14	39.7	0.81	0.82	8.5	4	3.81	26.0
13 R	3.72	4.46	31.5	0.71	0.81	12.7	6	17.85	32.2
th: PR-906 Sur									
32 L	7.82	9.39	71.8	0.99	0.86	22.0	11	27.21	21.0
31 T	9.02	10.82	25.8	0.82	0.76	46.3	23	60.06	37.3
th: PR-906 Norte									
41 T	37.24	44.68	74.0	1.00	1.02	63.7	32	141.29	20.7
43 R	0.27	0.32	11.5	0.20	1.73	1.1	1	1.78	46.9

tudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
terseccion Sur Centro Mercadeo y PR-906 A?o 2020
tersection ID: 2

Actuated Isolated Signals, Cycle Time = 109

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
West: Entrada Sur Centro Mercad									
511	0.399	4.67	5.60	32.9	0.728	0.81	6	21.66	31.0
South: PR-906 Sur									
1651	0.824	16.84	20.21	36.7	0.865	0.78	23	87.27	31.5
North: PR-906 Norte									
1895	1.039	37.50	45.00	71.2	0.965	1.01	32	143.07	21.2
INTERSECTION (persons):									
4868	1.039		70.81	52.4	0.894	0.89		252.00	25.7

Queue values in this table are 95% back of queue (metres).

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Sur Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 109

Table S.7 - LANE PERFORMANCE

Lane No.	Mov No.	Effective Red and Green Times (sec) R1	G1	R2	G2	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue 95% Back (vehs)	Queue 95% Back (m)	Shrt Lane (m)
West: Entrada Sur Centro Mercad													
1 LR	12, 13	53	3	23	30	202	506	0.399	40.0	0.82	8.5	4	
2 R	13	53	23	4	29	309	774	0.399	28.3	0.81	12.7	6	
South: PR-906 Sur													
1 L	32	89	20	0	0	273	331	0.824	73.4	0.85	19.0	9	50
2 LT	32, 31	85	24	0	0	330	401	0.824	62.5	0.85	22.0	11	
3 T	31	36	73	0	0	1048	1272	0.824	19.1	0.74	46.3	23	
North: PR-906 Norte													
1 T	41	59	50	0	0	906	872	1.039	74.0	1.02	63.7	32	
2 T	41, 43	59	50	0	0	906	872	1.039	74.0	1.02	63.7	32	
3 R	43	3	50	18	38	84	1260	0.067	11.5	0.73	1.1	1	50

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Sur Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 109

Table S.8 - LANE FLOW AND CAPACITY INFORMATION

Lan No.	Mov No.	Dem Flow (veh/h) Lef	Thru	Rig	Tot	Lane Width (m)	Saturation Flow Adj. Aver Basic (tcu)	1st (veh)	2nd (veh)	End Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %

st: Entrada Sur Centro Mercad

LR	12, 13	86	0	116	202	3.60	1900	1738	1665	33*	506	0.399	100	
R	13	0	0	309	309	3.60	1900	1631	1615	33*	774	0.399	100	

uth: PR-906 Sur

L	32	273	0	0	273	3.60	1900	1805	0	0	331	0.824	100	
LT	32, 31	119	211	0	330	3.60	1900	1819	0	0	401	0.824	100	
T	31	0	1048	0	1048	3.60	1900	1900	0	0	1272	0.824	100	

rth: PR-906 Norte

T	41	0	906	0	906	3.60	1900	1900	0	0	872	1.039	100	
T	41, 43	0	906	0	906	3.60	1900	1900	0	0	872	1.039	100	
R	43	0	0	84	84	3.60	1900	1615	1490	33	1260	0.067		6P

Large end capacity has resulted in a saturation flow which is
larger than the full unopposed saturation flow
Lane under-utilisation found by the "Program"

asic Saturation Flow in this table is adjusted for lane width, approach
rade, parking manoeuvres and number of buses stopping. Saturation flow
cale applies if specified.

---

udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
erseccion Sur Centro Mercadeo y PR-906 A?o 2020
ersection ID: 2
Actuated Isolated Signals, Cycle Time = 109

le S.9 - SIGNAL TIMING DIAGRAM

played (Phase) Green Times

```
          Phase A                 Phase B            Phase C

                                 53            76                    109
-------------------------------I-------------I---------------------I
:GGGGGGGGGGGGGGGGGGGGGGGGGGGGGG...GGGGGGGGGGG....GGGGGGGGGGGGGGGGGGG.
                                 56            79
```

ective (Movement) Green Times

st: Entrada Sur Centro Mercad

```
.   12 (L)
                                 I             I                     I
.................................................GGGGGGGGGGGGGGGGGGG
                                                81

.   13 (R)
                                 I             I                     I
.................................GGGGGGGGGGGGGGG...GGGGGGGGGGGGGGGGGGG
                                 55            78  82
```

outh: PR-906 Sur

```
.   32 (L)
                                 I             I                     I
.................................GGGGGGGGGGGG......................
                                 58            78

.   31 (T)
```

```
 I                                               I              I                       I
...GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG.78...................
  5                                                              78
```

North: PR-906 Norte

```
Mov.   41 (T)
I                                               I              I                       I
...GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG.....................................
  5                                              55

Mov.   43 (R)
I                                               I              I                       I
G..GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG.............GGGGGGGGGGGGGGGGGGGGGGGGG
2 5                                              55            73

I-----I------I------I------I------I------I------I------I------I------I---->
0     11     22     33     44     55     65     76     87     98    109

                          T I M E  (s)
```

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Sur Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 109

Table S.10 - MOVEMENT CAPACITY AND PERFORMANCE SUMMARY

Mov No.	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Eff. Grn 1st Grn	Eff. Grn 2nd Grn	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
West: Entrada Sur Centro Mercad											
12	L	86	216	100	0.399	30		39.7	0.82	8.5	3.81
13	R	425	1065	100	0.399	23	29*	31.5	0.81	12.7	17.85
South: PR-906 Sur											
32	L	392	476	100	0.824	20*		71.8	0.86	22.0	27.21
31	T	1259	1528	100	0.824	73		25.8	0.76	46.3	60.06
North: PR-906 Norte											
41	T	1811	1743	100	1.039*	50*		74.0	1.02	63.7	141.29
43	R	84	1260	6	0.067	50	38	11.5	0.73	1.1	1.78

* Maximum degree of saturation, or critical green periods

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Sur Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 109

Table S.12A - FUEL CONSUMPTION, EMISSIONS AND COST - TOTAL

Mov No.	Fuel Total L/h	Cost Total $/h	HC Total kg/h	CO Total kg/h	NOX Total kg/h	CO2 Total kg/h
West: Entrada Sur Centro Mercad						
12 L	7.7	22.55	0.036	1.51	0.044	19.2
13 R	35.4	93.87	0.164	7.37	0.211	88.6
	43.1	116.42	0.200	8.88	0.255	107.8

th: PR-906 Sur						
32 L	38.2	122.86	0.183	7.10	0.205	95.4
31 T	92.8	227.01	0.405	18.39	0.564	232.1
	131.0	349.87	0.589	25.49	0.769	327.5
th: PR-906 Norte						
41 T	175.1	553.91	0.827	32.47	0.953	437.7
43 R	6.3	14.19	0.028	1.39	0.040	15.7
	181.4	568.10	0.855	33.86	0.993	453.4
ERSECTION:	355.5	1034.39	1.644	68.23	2.017	888.8

AMETERS USED IN COST CALCULATIONS

Pump price of fuel ($/L)	=	0.400
Fuel resource cost factor	=	0.70
Ratio of running cost to fuel cost	=	3.0
Average income ($/h)	=	17.00
Time value factor	=	0.40
Average occupancy (persons/veh)	=	1.2
Light vehicle mass (1000 kg)	=	1.4
Heavy vehicle mass (1000 kg)	=	11.0
Light vehicle idle fuel rate (L/h)	=	1.350
Heavy vehicle idle fuel rate (L/h)	=	2.000

ne idle fuel and vehicle mass parameters given above are the default alues (data given in RIDES may override some of these parameters).

udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
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ersection ID: 2
Actuated Isolated Signals, Cycle Time = 109

le S.12B - FUEL CONSUMPTION, EMISSIONS AND COST - RATE

ov o.	Fuel Rate L/100km	Cost Rate $/km	HC Rate g/km	CO Rate g/km	NOX Rate g/km	CO2 Rate g/km
t: Entrada Sur Centro Mercad						
12 L	14.4	0.42	0.678	28.32	0.816	360.1
13 R	13.5	0.36	0.622	28.00	0.803	336.6
	13.6	0.37	0.632	28.05	0.805	340.5
th: PR-906 Sur						
32 L	15.7	0.51	0.755	29.22	0.844	392.5
31 T	11.8	0.29	0.515	23.35	0.716	294.8
	12.7	0.34	0.571	24.74	0.746	317.8
th: PR-906 Norte						
41 T	15.5	0.49	0.730	28.66	0.841	386.4
43 R	12.1	0.27	0.542	26.79	0.769	302.7
	15.3	0.48	0.722	28.58	0.839	382.8
NTERSECTION:	14.0	0.41	0.649	26.95	0.797	351.1

tudio de Transito Centro de Mercadeo PR-906 Palmas del Mar

Interseccion Sur Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 109

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
West: Entrada Sur Centro Mercad												
1 LR	86		116	202	0	1900	3	30	0.399	40.0	4	
2 R			309	309	0	1900	23	29	0.399	28.3	6	
	86	0	425	511	0				0.399	32.9	6	
South: PR-906 Sur												
1 L	273			273	0	1900	20		0.824	73.4	9	50
2 LT	119	211		330	0	1900	24		0.824	62.5	11	
3 T		1048		1048	0	1900	73		0.824	19.1	23	
	392	1259	0	1651	0				0.824	36.7	23	
North: PR-906 Norte												
1 T		906		906	0	1900	50		1.039	74.0	32	
2 T		906		906	0	1900	50		1.039	74.0	32	
3 R			84	84	0	1900	50	38	0.067	11.5	1	50
	0	1811	84	1895	0				1.039	71.2	32	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	4057	0	109	1.039	52.4	32

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are 95% back of queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

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Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Green Ratio (g/C) 1st grn	2nd grn	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
West: Entrada Sur Centro Mercad								
12	L	0.275		86	216	0.399	39.7	D
13	R	0.211	0.266*	425	1065	0.399	31.5	C
				511	1280	0.399	32.9	C
South: PR-906 Sur								
32	L	0.183*		392	476	0.824	71.8	E
31	T	0.670		1259	1528	0.824	25.8	C
				1651	2004	0.824	36.7	D

h: PR-906 Norte							
T	0.459*		1811	1743	1.039*	74.0	F
R	0.459	0.349	84	1260	0.067	11.5	B
			1895	3003	1.039	71.2	F
L VEHICLES:			4057	6288	1.039	52.4	D
TERSECTION (persons):			4868	6288	1.039	52.4	

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria) and v/c ratio,
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.
Maximum v/c ratio, or critical green periods

---

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e D.0 - GEOMETRIC DELAY DATA

m roach	To Approach	Negn Radius (m)	Negn Speed (km/h)	Negn Dist. (m)	Appr. Dist. (m)	Downstream Distance (m)
t: Entrada Sur Centro Mercad						
	South	10.0	18.5	15.7	500	119
	North	14.2	22.0	22.2	500	121
th: PR-906 Sur						
	West	11.8	20.1	18.6	500	120
	North	S	65.0	20.0	500	125
th: PR-906 Norte						
	West	10.0	18.5	15.7	500	119
	South	S	65.0	20.0	500	125

wnstream distance is distance travelled from the stopline until exit
uise speed is reached (includes negotiation distance). Acceleration
stance is weighted for light and heavy vehicles. The same distance
plies for both stopped and unstopped vehicles.

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e D.1 - LANE DELAYS

			Delay (seconds/veh)								
			Stop-line		Delay	Acc.	Queuing		Stopd		
e	Mov No.	Deg. Satn x	1st d1	2nd d2	Total dSL	Dec. dn	Total dq	MvUp dqm	(Idle) di	Geom dig	Control dic
t: Entrada Sur Centro Mercad											
R	12, 13	0.399	30.0	0.4	30.4	3.3	39.0	0.4	38.5	9.5 9.7	40.0
R	13	0.399	18.4	0.3	18.6	2.6	16.3	0.0	16.3	9.7	28.3
th: PR-906 Sur											
L	32	0.824	49.1	14.7	63.8	4.1	59.8	0.3	59.5	9.6	73.4

2 LT	32, 31	0.824	46.2	12.9	59.0	7.1	51.8	0.1	51.7	9.6	62.5
										0.0	
3 T	31	0.824	14.7	4.5	19.1	7.1	12.0	0.0	12.0	0.0	19.1
North: PR-906 Norte											
1 T	41	1.039	33.0	41.0	74.0	8.9	65.1	2.0	63.1	0.0	74.0
2 T	41, 43	1.039	33.0	41.0	74.0	8.9	65.1	2.0	63.1	0.0	74.0
										0.0	
3 R	43	0.067	1.8	0.0	1.8	0.8	2.8	0.0	2.8	9.7	11.5

dn is average stop-start delay for all vehicles queued and unqueued

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Table D.2 - LANE STOPS

Lane No.	Deg. Satn x	-- Effective Stop Rate -- hel	he2	Geom. hig	Overall h	Prop. Queued pq	Queue Move-up Rate hqm
West: Entrada Sur Centro Mercad							
1 LR	0.399	0.67	0.02	0.13	0.82	0.816	0.28
2 R	0.399	0.57	0.00	0.24	0.81	0.670	0.00
South: PR-906 Sur							
1 L	0.824	0.84	0.01	0.00	0.85	0.995	0.07
2 LT	0.824	0.84	0.00	0.00	0.85	0.989	0.00
3 T	0.824	0.74	0.00	0.00	0.74	0.792	0.00
North: PR-906 Norte							
1 T	1.039	0.92	0.10	0.00	1.02	1.000	0.37
2 T	1.039	0.92	0.10	0.00	1.02	1.000	0.37
3 R	0.067	0.17	0.00	0.57	0.73	0.208	0.00

hg is the average value for all movements in a shared lane
hqm is average queue move-up rate for all vehicles queued and unqueued

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Table D.3 - LANE QUEUES

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nbl	Nb2	Nb	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
West: Entrada Sur Centro Mercad											
1 LR	0.399	0.3	4.0	0.3	4.3	5.1	6.7	7.4	8.5	10.5	0.01
2 R	0.399	0.4	6.2	0.4	6.6	7.9	10.2	11.2	12.7	15.3	0.01
South: PR-906 Sur											
1 L	0.824	1.5	8.8	1.5	10.3	12.1	15.6	16.9	19.0	22.2	0.19
2 LT	0.824	1.7	10.4	1.7	12.2	14.3	18.3	19.7	22.0	25.5	0.02
3 T	0.824	3.7	24.8	3.7	28.5	32.7	40.4	42.6	46.3	51.6	0.05
North: PR-906 Norte											
1 T	1.039	11.3	29.4	11.3	40.7	46.3	56.1	59.2	63.7	71.0	0.06
2 T	1.039	11.3	29.4	11.3	40.7	46.3	56.1	59.2	63.7	71.0	0.06

R	0.067	0.1	0.5	0.1	0.5	0.6	0.9	1.0	1.1	1.4	0.01

Values printed in this table are back of queue (vehicles).

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.e D.4 - MOVEMENT SPEEDS (km/h)

ov o.	App. Speeds Cruise	App. Speeds Negn	Exit Speeds Negn	Exit Speeds Cruise	Queue Move-up 1st Grn	Queue Move-up 2nd Grn	Av. Section Spd Running	Av. Section Spd Overall
st: Entrada Sur Centro Mercad								
12	65.0	22.0	22.0	65.0	3.3		38.9	26.0
13	65.0	18.5	18.5	65.0	7.3		47.7	32.2
ıth: PR-906 Sur								
32	65.0	20.1	20.1	65.0	9.0		46.3	21.0
31	65.0	65.0	65.0	65.0			53.6	37.3
rth: PR-906 Norte								
41	65.0	65.0	65.0	65.0	14.1		49.4	20.7
43	65.0	18.5	18.5	65.0	13.0		49.8	46.9

Running Speed" is the average speed excluding stopped periods.

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le D.5 - PROGRESSION FACTORS & ACTUATED SIGNAL PARAMETERS

ov o.	Control	Coord.	Arrival Type	Delay Prog. Factor	Queue Prog. Factor	Gap Settings es	Gap Settings eh	Disp. Grn. Settings 1st Grn Gmin	1st Grn Gmax	2nd Grn Gmin	2nd Grn Gmax
st: Entrada Sur Centro Mercad											
12	VA	No	3	1.000	1.000	2.0	2.2	6	20		
13	VA	No	3	1.000	1.000	2.5	2.7	6	50	6	50
uth: PR-906 Sur											
32	VA	No	3	1.000	1.000	2.0	2.2	6	20		
31	VA	No	3	1.000	1.000	2.5	2.7	6	50		
rth: PR-906 Norte											
41	VA	No	3	1.000	1.000	2.5	2.7	6	50		
43	VA	No	3	1.000	1.000	2.5	2.7	6	50	6	50

--- End of aaSIDRA Output ---

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Akcelik & Associates Pty Ltd - aaSIDRA 2.0.0.205

CMA Architects & Engineers LLP
Ing. Ricardo Rivera Registered User No. 50310
Licence Type: Professional, Single Computer

Time and Date of Analysis 11:01 AM, Nov 5,2002

Filename: C:\CMA AE LLP Projects\Estudios de Transito\00237 - Palmas del Mar PR-906 Traffi dy, Humacao\Revision 2002\Int32020.OUT

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Norte Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2

aaTraffic SIDRA US Highway Capacity Manual (2000) Metric Version

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
    Any maximum cycle time specification
    Any user-given cycle time (unless phase times also given)
    User-given cycle and phase times (if variable flow scale run)
    Any variable cycle time specification
    Any green split priority specification
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 10
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
                Geometric delay included
  HCM Delay and Queue Models option selected
  Level of Service based on: Delay and degree of saturation
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 5
  Comparison of last two iterations:
    Difference in intersection degree of satn = 1.4 %
    Difference in total vehicle capacity = 0.0 %
    Largest difference in eff. green times = 1 secs
    (max. value for stopping = 1 secs)
  Information on Previous Iteration:
    Cycle Time = 81
    Phase Times: 0, 41, 63
    Critical Movements: 41, 32, 13(2nd)

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Norte Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF10.SDF)

1. Basic saturation flow: 1900 tcu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.053	2.000	1.000	2.000	1.176	2.000
Restricted	1.303	2.500			1.426	2.500

Opposed turn parameters (Signalised intersection)

	Crit. Gap	Fol.up Hdway	Deps at End	% Exit Flow Opposing
Left turns :	4.5	2.5	2.0	0
Right turns:	4.0	2.4	2.5	0

Cruise speed= 65 km/h, Approach Distance= 500 m

Queue space per vehicle in metres
Light vehicles: 7.6 Heavy vehicles: 14.0

full list of input data defaults and ranges is given in the
:put Guide part of aaSIDRA User Guide.

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udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
erseccion Norte Centro Mercadeo y PR-906 A?o 2020
ersection ID: 2
Actuated Isolated Signals, Cycle Time = 80

le S.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
ICLES Demand flows in veh/hour as used by the program								
t: Entrada Sur Centro Mercad								
12	151	0	0	0	0	0	1.00	0.95
13	0	0	0	0	335	0	1.00	0.95
th: PR-906 Sur								
32	306	0	0	0	0	0	1.00	0.95
31	0	0	1038	0	0	0	1.00	0.95
th: PR-906 Norte								
41	0	0	1559	0	0	0	1.00	0.95
43	0	0	0	0	146	0	1.00	0.95

ed on unit time = 60 minutes.
w Scale and Peak Hour Factor effects included in flow values.

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udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
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le S.1 - MOVEMENT PHASE AND TIMING PARAMETERS

:v	Mov Typ	PHASE MATRIX First Green Fr	To	Op	Pr	Second Green Fr	To	Op	Pr	Lost Tim 1st Grn	Lost Tim 2nd Grn	Req.Mov.Time 1st Grn	Req.Mov.Time 2nd Grn	Eff. Grn 1st Grn	Eff. Grn 2nd Grn
st: Entrada Sur Centro Mercad															
12 L		C	A							3		18.1		15	
13 R		A	C		R	*C		A		33	4	46.2	18.1	29	14

uth: PR-906 Sur

32 L	*B C					3		22.1		19
31 T	A C					3		44.4		59
North: PR-906 Norte										
41 T	*A B					3		39.8		37
43 R	A B		B	A	R	3	12	15.3	19.0Min	37 28

Current Phase Sequence No.: 1
Input phase sequence: A B C
Output phase sequence: A B C

Movement Types:
- Ped Pedestrian
- Dum Dummy
- Und Undetected in both green periods
- Un1 Undetected in 1st green period
- Un2 Undetected in 2nd green period

Under heading 'Op':
- L "Left" turns are opposed
- R "Right" turns are opposed
- LR "Left and Right" opposed
- C "Constant" saturation flow

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Norte Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 80

Table S.2 - MOVEMENT CAPACITY PARAMETERS

Mov No.	Dem Flow (veh /h)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
West: Entrada Sur Centro Mercad										
12 L	151	1794		0.084		336	0.90	100	100	0.449
13 R	335	1270	1634	0.111	0.119	746	0.90	101	100	0.449
South: PR-906 Sur										
32 L	306	2345		0.130		557	0.90	64	100	0.549
31 T	1038	2562		0.405		1889	0.90	64	100	0.549
North: PR-906 Norte										
41 T	1559	3800		0.410		1758	0.90	1	100	0.887*
43 R	146	1615	1335	0.090	0.000	1214	0.90	648	14	0.120

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Interseccion Norte Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2
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Table S.3 - INTERSECTION PARAMETERS

Crit Mov No.	App. & Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
41	N_T		A	B	3	0.410	0.460	39.8
32	S_L		B	C	3	0.130	0.239	22.1
13	W_R	2nd	C	A	4	0.119	0.177	18.1
				Total:	10	0.660	0.876	80.1

Cycle Time:

Minimum	Maximum	Practical	Chosen
28	NA	81	80

Intersection Level of Service	=	C
Worst movement Level of Service	=	D
Average intersection delay (s)	=	25.5
Largest average movement delay (s)	=	46.0
Largest back of queue, 95% (m)	=	18
Performance Index	=	138.83
Degree of saturation (highest)	=	0.887
Practical Spare Capacity (lowest)	=	1 %
Total vehicle capacity, all lanes (veh/h)	=	6501
Total vehicle flow (veh/h)	=	3535
Total person flow (pers/h)	=	4242
Total vehicle delay (veh-h/h)	=	25.06
Total person delay (pers-h/h)	=	30.07
Total effective vehicle stops (veh/h)	=	2664
Total effective person stops (pers/h)	=	3197
Total vehicle travel (veh-km/h)	=	2205.6
Total cost ($/h)	=	660.95
Total fuel (L/h)	=	266.6
Total CO2 (kg/h)	=	666.40

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Interseccion Norte Centro Mercadeo y PR-906 A?o 2020
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Table S.4 - PHASE INFORMATION

Phase No.	Change Time	Green Start	Displayed Green	Grn+Intgrn Secs	Prop.
A	0	3	37	40	0.500
B	40	43	19	22	0.275
C	62	65	15	18	0.225

Current Phase Sequence No.: 1
Input phase sequence: A B C
Output phase sequence: A B C

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Norte Centro Mercadeo y PR-906 A?o 2020
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Table S.5 - MOVEMENT PERFORMANCE

Mov No.	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	(m)	Perf. Index	Aver. Speed (km/h)
West: Entrada Sur Centro Mercad									
12 L	1.93	2.32	46.0	0.90	0.81	7.0	3	7.15	21.5
13 R	1.96	2.35	21.1	0.65	0.82	9.8	5	11.00	40.0
South: PR-906 Sur									
32 L	3.38	4.06	39.8	0.89	0.82	13.8	7	14.05	30.1
31 T	3.08	3.69	10.7	0.56	0.50	16.8	8	29.26	49.7
North: PR-906 Norte									
41 T	14.26	17.12	32.9	0.96	0.89	35.0	18	74.54	33.3
43 R	0.44	0.53	10.9	0.21	0.74	1.5	1	2.83	48.1

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar

erseccion Norte Centro Mercadeo y PR-906 A?o 2020
ersection ID: 2
Actuated Isolated Signals, Cycle Time = 80

le S.6 - INTERSECTION PERFORMANCE

tal ow h/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
t: Entrada Sur Centro Mercad									
86	0.449	3.89	4.67	28.8	0.732	0.81	5	18.15	31.5
th: PR-906 Sur									
44	0.549	6.46	7.75	17.3	0.640	0.58	8	43.31	43.3
th: PR-906 Norte									
05	0.887	14.71	17.65	31.1	0.902	0.88	18	77.37	34.2
ERSECTION (persons):									
.42	0.887		30.07	25.5	0.779	0.75		138.83	36.7

eue values in this table are 95% back of queue (metres).

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udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
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ble S.7 - LANE PERFORMANCE

ane o.	Mov No.	Effective Green Times (sec) R1	G1	R2	G2	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue 95% Back (vehs)	(m)	Shrt Lane (m)
est: Entrada Sur Centro Mercad													
LR	12, 13	33	1	31	15	154	343	0.449	46.4	0.81	7.0	3	
R	13	33	29	4	14	332	740	0.449	20.8	0.82	9.8	5	
outh: PR-906 Sur													
L	32	61	19	0	0	236	429	0.549	41.3	0.82	10.7	5	50
LT	32, 31	53	27	0	0	339	616	0.549	27.4	0.75	13.8	7	
T	31	21	59	0	0	770	1401	0.549	5.6	0.43	16.8	8	
orth: PR-906 Norte													
T	41	43	37	0	0	780	879	0.887	32.9	0.89	35.0	18	
T	41, 43	43	37	0	0	780	879	0.887	32.9	0.89	35.0	18	
R	43	3	37	12	28	146	1214	0.120	10.9	0.74	1.5	1	50

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tudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
terseccion Norte Centro Mercadeo y PR-906 A?o 2020
tersection ID: 2
Actuated Isolated Signals, Cycle Time = 80

ble S.8 - LANE FLOW AND CAPACITY INFORMATION

an o.	Mov No.	Dem Flow (veh/h)	Lane Width	Saturation Flow Adj. Basic	Aver 1st	Aver 2nd	End Cap (veh	Tot Cap (veh	Deg. Satn	Lane Util

		Lef	Thru	Rig	Tot	(m)	(tcu)	(veh)	(veh)	/h)	/h)	x	%
West: Entrada Sur Centro Mercad													
1 LR	12, 13	151	0	3	154	3.60	1900	439	1800	45	343	0.449	100
2 R	13	0	0	332	332	3.60	1900	1261	1615	45	740	0.449	100
South: PR-906 Sur													
1 L	32	236	0	0	236	3.60	1900	1805	0	0	429	0.549	100
2 LT	32, 31	70	268	0	339	3.60	1900	1826	0	0	616	0.549	100
3 T	31	0	770	0	770	3.60	1900	1900	0	0	1401	0.549	100
North: PR-906 Norte													
1 T	41	0	780	0	780	3.60	1900	1900	0	0	879	0.887	100
2 T	41, 43	0	780	0	780	3.60	1900	1900	0	0	879	0.887	100
3 R	43	0	0	146	146	3.60	1900	1615	1335	45	1214	0.120	14P

P Lane under-utilisation found by the "Program"

Basic Saturation Flow in this table is adjusted for lane width, approach grade, parking manoeuvres and number of buses stopping. Saturation flow scale applies if specified.

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Norte Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 80

Table S.9 - SIGNAL TIMING DIAGRAM

Displayed (Phase) Green Times

```
            Phase A                          Phase B         Phase C
                                      40               62             80
0                                                                      
I--------------------------------I-----------------I---------------I
...GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG....GGGGGGGGGGGGGGG....GGGGGGGGGGGG.
  3                                   43               65
```

Effective (Movement) Green Times

West: Entrada Sur Centro Mercad

```
Mov.   12 (L)
                                  I                  I              I
I
G.....................................................GGGGGGGGGG
 2                                                    67

Mov.   13 (R)
                                  I                  I              I
I
GG...........................GGGGGGGGGGGGGGGGGGGGGGGGG....GGGGGGGGGG
 2                          35                      64   68
```

South: PR-906 Sur

```
Mov.   32 (L)
                                  I                  I              I
I
..................................GGGGGGGGGGGGGGGG...............
                                 45               64

Mov.   31 (T)
```

```
                                  I                        I                   I
..GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG...............
5                                                             64

orth: PR-906 Norte

v.   41 (T)
                                  I                        I                   I
..GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG.................................
5                                   42

v.   43 (R)
                                  I                        I                   I
..GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG...........GGGGGGGGGGGGGGGGGGGGGGGGGG
5                                  42          54

----I------I------I------I------I------I------I------I------I------I---->
    8      16     24     32     40     48     56     64     72     80

                               T I M E  (s)
```

tudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
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tersection ID: 2
Actuated Isolated Signals, Cycle Time = 80

ble S.10 - MOVEMENT CAPACITY AND PERFORMANCE SUMMARY

ov o.	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Eff. Grn 1st Grn	Eff. Grn 2nd Grn	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
st: Entrada Sur Centro Mercad											
12	L	151	336	100	0.449	15		46.0	0.81	7.0	7.15
13	R	335	746	100	0.449	29	14*	21.1	0.82	9.8	11.00
uth: PR-906 Sur											
32	L	306	557	100	0.549	19*		39.8	0.82	13.8	14.05
31	T	1038	1889	100	0.549	59		10.7	0.50	16.8	29.26
rth: PR-906 Norte											
41	T	1559	1758	100	0.887*	37*		32.9	0.89	35.0	74.54
43	R	146	1214	14	0.120	37	28	10.9	0.74	1.5	2.83

* Maximum degree of saturation, or critical green periods

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terseccion Norte Centro Mercadeo y PR-906 A?o 2020
tersection ID: 2
Actuated Isolated Signals, Cycle Time = 80

ble S.12A - FUEL CONSUMPTION, EMISSIONS AND COST - TOTAL

Mov No.	Fuel Total L h	Cost Total $/h	HC Total kg/h	CO Total kg/h	NOX Total kg/h	CO2 Total kg/h
est: Entrada Sur Centro Mercad						
12 L	14.5	46.42	0.070	2.71	0.078	36.3
13 R	26.2	62.53	0.119	5.73	0.164	65.6
	40.8	108.96	0.189	8.44	0.242	101.9

South: PR-906 Sur						
32 L	26.1	70.82	0.121	5.37	0.154	65.2
31 T	64.5	147.52	0.263	11.26	0.387	161.2
	90.5	218.33	0.384	16.63	0.540	226.3
North: PR-906 Norte						
41 T	124.4	309.44	0.557	25.99	0.763	310.9
43 R	10.9	24.22	0.049	2.42	0.069	27.2
	135.3	333.66	0.606	28.41	0.832	338.1
INTERSECTION:	266.6	660.95	1.178	53.48	1.615	666.4

PARAMETERS USED IN COST CALCULATIONS

Pump price of fuel ($/L)	=	0.400
Fuel resource cost factor	=	0.70
Ratio of running cost to fuel cost	=	3.0
Average income ($/h)	=	17.00
Time value factor	=	0.40
Average occupancy (persons/veh)	=	1.2
Light vehicle mass (1000 kg)	=	1.4
Heavy vehicle mass (1000 kg)	=	11.0
Light vehicle idle fuel rate (L/h)	=	1.350
Heavy vehicle idle fuel rate (L/h)	=	2.000

The idle fuel and vehicle mass parameters given above are the default values (data given in RIDES may override some of these parameters).

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Norte Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 80

Table S.12B - FUEL CONSUMPTION, EMISSIONS AND COST - RATE

Mov No.	Fuel Rate L/100km	Cost Rate $/km	HC Rate g/km	CO Rate g/km	NOX Rate g/km	CO2 Rate g/km
West: Entrada Sur Centro Mercad						
12 L	15.5	0.50	0.743	28.90	0.835	387.4
13 R	12.6	0.30	0.574	27.61	0.789	316.1
	13.5	0.36	0.626	28.01	0.804	338.3
South: PR-906 Sur						
32 L	13.7	0.37	0.639	28.30	0.811	343.5
31 T	9.9	0.23	0.404	17.35	0.595	248.3
	10.8	0.26	0.457	19.83	0.644	269.8
North: PR-906 Norte						
41 T	12.8	0.32	0.571	26.66	0.782	318.9
43 R	12.0	0.27	0.538	26.77	0.768	300.9
	12.7	0.31	0.569	26.67	0.781	317.4
INTERSECTION:	12.1	0.30	0.534	24.25	0.732	302.1

erseccion Norte Centro Mercadeo y PR-906 A?o 2020
ersection ID: 2
Actuated Isolated Signals, Cycle Time = 80

le S.14 - SUMMARY OF INPUT AND OUTPUT DATA

.ne	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
:st: Entrada Sur Centro Mercad												
.R	151		3	154	0	1900	1	15	0.449	46.4	3	
			332	332	0	1900	29	14	0.449	20.8	5	
	151	0	335	486	0				0.449	28.9	5	
;uth: PR-906 Sur												
	236			236	0	1900	19		0.549	41.3	5	50
.T	70	268		339	0	1900	27		0.549	27.4	7	
		770		770	0	1900	59		0.549	5.6	8	
	306	1038	0	1344	0				0.549	17.3	8	
;rth: PR-906 Norte												
		780		780	0	1900	37		0.887	32.9	18	
		780		780	0	1900	37		0.887	32.9	18	
			146	146	0	1900	37	28	0.120	10.9	1	50
	0	1559	146	1705	0				0.887	31.1	18	

.L VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	3535	0	80	0.887	25.5	18

:al flow period = 60 minutes. Peak flow period = 15 minutes.

eue values in this table are 95% back of queue (metres).

:e: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

:udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
terseccion Norte Centro Mercadeo y PR-906 A?o 2020
tersection ID: 2
Actuated Isolated Signals, Cycle Time = 80

ble S.15 - CAPACITY AND LEVEL OF SERVICE

ov o.	Mov Typ	Green Ratio 1st grn	Time (g/C) 2nd grn	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
st: Entrada Sur Centro Mercad								
12	L	0.188		151	336	0.449	46.0	D
13	R	0.363	0.175*	335	746	0.449	21.1	C
				486	1083	0.449	28.8	C
uth: PR-906 Sur								
32	L	0.237*		306	557	0.549	39.8	D
31	T	0.738		1038	1889	0.549	10.7	B
				:344	2446	0.549	17.3	B

North: PR-906 Norte							
41 T	0.463*		1559	1758	0.887*	32.9	C
43 R	0.463	0.350	146	1214	0.120	10.9	B
			1705	2972	0.887	31.1	C
ALL VEHICLES:			3535	6501	0.887	25.5	C
INTERSECTION (persons):			4242	6501	0.887	25.5	

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria) and v/c ratio,
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Norte Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 80

Table D.0 - GEOMETRIC DELAY DATA

From Approach	To Approach	Negn Radius (m)	Negn Speed (km/h)	Negn Dist. (m)	Appr. Dist. (m)	Downstream Distance (m)
West: Entrada Sur Centro Mercad						
	South	10.0	18.5	15.7	500	119
	North	14.2	22.0	22.2	500	121
South: PR-906 Sur						
	West	11.8	20.1	18.6	500	120
	North	S	65.0	20.0	500	125
North: PR-906 Norte						
	West	10.0	18.5	15.7	500	119
	South	S	65.0	20.0	500	125

Downstream distance is distance travelled from the stopline until exit
cruise speed is reached (includes negotiation distance). Acceleration
distance is weighted for light and heavy vehicles. The same distance
applies for both stopped and unstopped vehicles.

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Interseccion Norte Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 80

Table D.1 - LANE DELAYS

			Delay (seconds/veh)								
			Stop-line Delay			Acc.	Queuing		Stopd		
Lane No.	Mov No.	Deg. Satn x	1st d1	2nd d2	Total dSL	Dec. dn	Total dq	MvUp dqm	(Idle) di	Geom dig	Control dic
West: Entrada Sur Centro Mercad											
1 LR	12, 13	0.449	36.1	0.8	36.9	4.0	56.1	0.2	55.9	9.5 9.7	46.4
2 R	13	0.449	10.8	0.4	11.2	2.5	8.9	0.0	8.9	9.7	20.8
South: PR-906 Sur											
1 L	32	0.549	30.7	1.0	31.7	3.7	28.0	0.0	28.0	9.6	41.3

LT	32, 31	0.549	24.5	0.9	25.4	6.7	18.7	0.0	18.7	9.6 0.0	27.4
T	31	0.549	5.1	0.4	5.6	4.2	1.4	0.0	1.4	0.0	5.6
rth: PR-906 Norte											
T	41	0.887	22.1	10.8	32.9	8.6	24.3	0.3	24.1	0.0	32.9
T	41, 43	0.887	22.1	10.8	32.9	8.6	24.3	0.3	24.1	0.0 0.0	32.9
R	43	0.120	1.2	0.0	1.3	0.8	1.6	0.0	1.6	9.7	10.9

.n is average stop-start delay for all vehicles queued and unqueued

udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
erseccion Norte Centro Mercadeo y PR-906 A?o 2020
ersection ID: .2
Actuated Isolated Signals, Cycle Time = 80

le D.2 - LANE STOPS

ane .	Deg. Satn x	-- Effective Stop Rate -- he1	he2	Geom. hig	Overall h	Prop. Queued pq	Queue Move-up Rate hqm
st: Entrada Sur Centro Mercad							
LR	0.449	0.73	0.01	0.06	0.81	0.908	0.39
R	0.449	0.56	0.00	0.25	0.82	0.651	0.00
uth: PR-906 Sur							
L	0.549	0.75	0.00	0.07	0.82	0.905	0.00
LT	0.549	0.72	0.00	0.02	0.75	0.845	0.00
T	0.549	0.43	0.00	0.00	0.43	0.469	0.00
orth: PR-906 Norte							
T	0.887	0.88	0.01	0.00	0.89	0.966	0.05
T	0.887	0.88	0.01	0.00	0.89	0.966	0.05
R	0.120	0.18	0.00	0.56	0.74	0.216	0.00

ng is the average value for all movements in a shared lane
hqm is average queue move-up rate for all vehicles queued and unqueued

tudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
terseccion Norte Centro Mercadeo y PR-906 A?o 2020
tersection ID: 2
Actuated Isolated Signals, Cycle Time = 80

ble D.3 - LANE QUEUES

ane o.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nb1	Nb2	Nb	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
est: Entrada Sur Centro Mercad											
LR	0.449	0.3	3.2	0.3	3.5	4.2	5.5	6.1	7.0	8.6	0.01
R	0.449	0.4	4.6	0.4	5.0	6.0	7.8	8.6	9.8	11.9	0.01
outh: PR-906 Sur											
L	0.549	0.5	5.1	0.5	5.5	6.6	8.6	9.4	10.7	13.0	0.11
LT	0.549	0.6	6.7	0.6	7.3	8.6	11.1	12.2	13.8	16.5	0.01
T	0.549	0.9	8.0	0.9	9.0	10.6	13.7	14.9	16.8	19.8	0.02
orth: PR-906 Norte											
T	0.887	3.6	17.1	3.6	20.7	24.0	30.0	31.9	35.0	39.4	0.04
T	0.887	3.6	17.1	3.6	20.7	24.0	30.0	31.9	35.0	39.4	0.04

3 R	0.120	0.1	0.6	0.1	0.7	0.8	1.1	1.2	1.3	1.9	[illegible]

Values printed in this table are back of queue (vehicles).

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Norte Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 80

Table D.4 - MOVEMENT SPEEDS (km/h)

Mov No.	App. Speeds Cruise	App. Speeds Negn	Exit Speeds Negn	Exit Speeds Cruise	Queue Move-up 1st Grn	Queue Move-up 2nd Grn	Av. Section Spd Running	Av. Section Spd Overall
West: Entrada Sur Centro Mercad								
12	65.0	22.0	22.0	65.0	1.0		32.8	21.5
13	65.0	18.5	18.5	65.0	8.7		48.0	40.0
South: PR-906 Sur								
32	65.0	20.1	20.1	65.0			46.9	30.1
31	65.0	65.0	65.0	65.0			56.7	49.7
North: PR-906 Norte								
41	65.0	65.0	65.0	65.0	12.1		51.7	33.3
43	65.0	18.5	18.5	65.0	11.2		49.8	48.1

"Running Speed" is the average speed excluding stopped periods.

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Norte Centro Mercadeo y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 80

Table D.5 - PROGRESSION FACTORS & ACTUATED SIGNAL PARAMETERS

Mov No.	Control	Coord.	Arrival Type	Delay Prog. Factor	Queue Prog. Factor	Gap Settings es	Gap Settings eh	Disp. Grn. Settings 1st Grn Gmin	1st Grn Gmax	2nd Grn Gmin	2nd Grn Gmax
West: Entrada Sur Centro Mercad											
12	VA	No	3	1.000	1.000	2.0	2.2	6	20		
13	VA	No	3	1.000	1.000	2.5	2.7	6	50	6	50
South: PR-906 Sur											
32	VA	No	3	1.000	1.000	2.0	2.2	6	20		
31	VA	No	3	1.000	1.000	2.5	2.7	6	50		
North: PR-906 Norte											
41	VA	No	3	1.000	1.000	2.5	2.7	6	50		
43	VA	No	3	1.000	1.000	2.5	2.7	6	50	6	50

--- End of aaSIDRA Output ---

Demolición
PR-906
PR-923

Akcelik & Associates Pty Ltd - aaSIDRA 2.0.0.205

CMA Architects & Engineers LLP
Ing. Ricardo Rivera Registered User No. 50310
Licence Type: Professional, Single Computer

Time and Date of Analysis 11:36 AM, Nov 5,2002

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:udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
ıtro Mercadeo, PR-923 y PR-906 A?o 2020
:ersection ID: 2

:raffic SIDRA US Highway Capacity Manual (2000) Metric Version

N INFORMATION

Basic Parameters:
Intersection Type: Signalised - Actuated Isolated
For fully-actuated signal timings, the following specifications will be ignored:
Any maximum cycle time specification
Any user-given cycle time (unless phase times also given)
User-given cycle and phase times (if variable flow scale run)
Any variable cycle time specification
Any green split priority specification
Driving on the right-hand side of the road
Input data specified in Metric units
Default Values File No. 10
Peak flow period (for performance): 15 minutes
Unit time (for volumes): 60 minutes (Total Flow Period)
Delay definition: Control delay
Geometric delay included
HCM Delay and Queue Models option selected
Level of Service based on: Delay and degree of saturation
Queue definition: Back of queue, 95th Percentile

No. of Main (Timing-Capacity) Iterations = 3
Comparison of last two iterations:
Difference in intersection degree of satn = 0.0 %
Difference in total vehicle capacity = 0.0 %
Largest difference in eff. green times = 0 secs
(max. value for stopping = 0 secs)

---

tudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
ntro Mercadeo, PR-923 y PR-906 A?o 2020
tersection ID: 2

FAULT PARAMETERS

fault values for some of the important general parameters:
efault Values File: DEF10.SDF)

1. Basic saturation flow: 1900 tcu/h

This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

LEFT		THROUGH		RIGHT	
LV	HV	LV	HV	LV	HV

Normal	1.053	2.000	1.000	2.000	1.176	2.000
Restricted	1.303	2.500			1.426	2.500

3. Opposed turn parameters (Signalised intersection)

	Crit. Gap	Fol.up Hdway	Deps at End	% Exit Flow Opposing
Left turns :	4.5	2.5	2.0	0
Right turns:	4.0	2.4	2.5	0

4. Cruise speed= 65 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.6 Heavy vehicles: 14.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

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Centro Mercadeo, PR-923 y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

Table S.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
VEHICLES Demand flows in veh/hour as used by the program								
West: Entrada Centro Mercadeo								
12	190	0	0	0	0	0	1.00	0.97
11	0	0	246	0	0	0	1.00	0.97
13	0	0	0	0	192	0	1.00	0.97
South: PR-906 Sur								
32	71	0	0	0	0	0	1.00	0.97
31	0	0	963	0	0	0	1.00	0.97
33	0	0	0	0	46	0	1.00	0.97
East: PR-923 Palmas del Mar Sec								
22	69	0	0	0	0	0	1.00	0.97
21	0	0	229	0	0	0	1.00	0.97
23	0	0	0	0	407	0	1.00	0.97
North: PR-906 Norte								
42	270	0	0	0	0	0	1.00	0.97
41	0	0	1408	0	0	0	1.00	0.97
43	0	0	0	0	185	0	1.00	0.97

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
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Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

Table S.1 - MOVEMENT PHASE AND TIMING PARAMETERS

Mov No.	Mov Typ	PHASE MATRIX First Green Fr	To	Op	Pr	Second Green Fr	To	Op	Pr	Lost Tim 1st Grn	Lost Tim 2nd Grn	Req.Mov.Time 1st Grn	Req.Mov.Time 2nd Grn	Eff. Grn 1st Grn	Eff. Grn 2nd Grn
West: Entrada Centro Mercadeo															

.2 L		B	C				3		19.4		22	
.1 T		B	C				3		19.8		22	
.3 R		B	C		C	B	R	3	33	25.5	18.0Min	22	42
ıth: PR-906 Sur												
32 L		C	A					3		11.5		31	
31 T		*C	A					3		33.9		31	
33 R	(Unl)	B	C	R	C	B	R	3	13	9.0Min	18.0Min	22	62
st: PR-923 Palmas del Mar Sec												
22 L		B	C					3		11.3		22	
21 T		B	C					3		17.5		22	
23 R		*B	C	R	C	B	R	8	4	25.5	33.2	17	71
ɛth: PR-906 Norte													
42 L		A	B					3		23.0Max		38	
41 T		*A	B					3		41.1		38	
43 R	(Unl)	B	C	R	C	B	R	3	5	17.6	23.7	22	70

Current Phase Sequence No.: 1
Input phase sequence: A B C
Output phase sequence: A B C

vement Types:
Ped Pedestrian
Dum Dummy
Und Undetected in both green periods
Unl Undetected in 1st green period
Un2 Undetected in 2nd green period

Under heading 'Op':
L "Left" turns are opposed
R "Right" turns are opposed
LR "Left and Right" opposed
C "Constant" saturation flow

tudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
ntro Mercadeo, PR-923 y PR-906 A?o 2020
tersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

ble S.2 - MOVEMENT CAPACITY PARAMETERS

ov o.	Dem Flow (veh /h)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
st: Entrada Centro Mercadeo										
12 L	190	2812		0.068		619	0.90	193	100	0.307
11 T	246	3640		0.068		801	0.90	193	100	0.307
13 R	192	1870	1576	0.103	0.000	1073	0.90	403	58	0.179
uth: PR-906 Sur										
32 L	71	2090		0.034		648	0.90	721	16	0.110
31 T	963	4400		0.219		1364	0.90	27	100	0.706
33 R	46	1200	1414	0.007	0.026	1141	0.90	2132	6	0.040
.st: PR-923 Palmas del Mar Sec										
22 L	69	2090		0.033		460	0.90	500	57	0.150
21 T	229	3944		0.058		868	0.90	241	100	0.264
23 R	407	1234	1877	0.093	0.155	1542	0.90	241	100	0.264
orth: PR-906 Norte										
42 L	270	2090		0.129		794	0.90	165	40	0.340
41 T	1408	4400		0.320		1672	0.90	7	100	0.842*
43 R	185	1200	1543	0.058	0.075	1344	0.90	554	16	0.138

Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

Table S.3 - INTERSECTION PARAMETERS

Crit Mov No.	App. & Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
41	N_T		A	B	3	0.320	0.381	41.1
23	E_R	1st	B	C	8	0.093	0.175	25.5
31	S_T		C	A	3	0.219	0.309	33.9
				Total:	14	0.632	0.864	100.4

Cycle Time:

Minimum	Maximum	Practical	Chosen
27	NA	104	100

Intersection Level of Service	=	C
Worst movement Level of Service	=	D
Average intersection delay (s)	=	33.3
Largest average movement delay (s)	=	46.3
Largest back of queue, 95% (m)	=	19
Performance Index	=	194.63
Degree of saturation (highest)	=	0.842
Practical Spare Capacity (lowest)	=	7 %
Total vehicle capacity, all lanes (veh/h)	=	12325
Total vehicle flow (veh/h)	=	4276
Total person flow (pers/h)	=	5131
Total vehicle delay (veh-h/h)	=	39.55
Total person delay (pers-h/h)	=	47.46
Total effective vehicle stops (veh/h)	=	3404
Total effective person stops (pers/h)	=	4084
Total vehicle travel (veh-km/h)	=	2666.8
Total cost ($/h)	=	883.2[illegible]
Total fuel (L/h)	=	343.3
Total CO2 (kg/h)	=	858.15

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Centro Mercadeo, PR-923 y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

Table S.4 - PHASE INFORMATION

Phase No.	Change Time	Green Start	Displayed Green	Grn+Intgrn Secs	Grn+Intgrn Prop.
A	0	3	38	41	0.410
B	41	44	22	25	0.250
C	66	70	30	34	0.340

Current Phase Sequence No.: 1
Input phase sequence: A B C
Output phase sequence: A B C

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Centro Mercadeo, PR-923 y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

Table S.5 - MOVEMENT PERFORMANCE

Mov No.	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	(m)	Perf. Index	Aver. Speed (km/h)
st: Entrada Centro Mercadeo									
12 L	2.44	2.93	46.3	0.85	0.79	7.7	4	9.74	27.7
11 T	2.52	3.03	36.9	0.85	0.69	7.8	4	11.91	31.5
13 R	0.89	1.07	16.7	0.42	0.77	4.7	2	5.45	38.5
uth: PR-906 Sur									
32 L	0.72	0.87	36.6	0.72	0.75	3.2	2	3.12	31.5
31 T	10.01	12.01	37.4	0.92	0.80	25.0	12	49.58	31.2
33 R	0.14	0.16	10.7	0.16	0.73	0.4	0	0.88	48.5
st: PR-923 Palmas del Mar Sec									
22 L	0.86	1.03	44.6	0.82	0.75	3.6	2	3.41	28.3
21 T	2.24	2.69	35.2	0.84	0.67	6.7	3	10.78	32.2
23 R	1.29	1.55	11.4	0.21	0.75	5.7	3	8.33	48.6
rth: PR-906 Norte									
42 L	2.55	3.07	34.1	0.73	0.80	11.6	6	11.78	32.7
41 T	15.37	18.44	39.3	0.96	0.86	37.1	19	76.55	30.5
43 R	0.51	0.61	9.9	0.09	0.73	0.9	0	3.10	50.2

tudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
ntro Mercadeo, PR-923 y PR-906 A?o 2020
tersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

ble S.6 - INTERSECTION PERFORMANCE

otal low eh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
st: Entrada Centro Mercadeo									
628	0.307	5.86	7.03	33.6	0.724	0.74	4	27.10	31.9
uth: PR-906 Sur									
080	0.706	10.87	13.04	36.2	0.877	0.80	12	53.59	31.7
st: PR-923 Palmas del Mar Sec									
705	0.264	4.38	5.26	22.4	0.476	0.72	3	22.52	39.3
rth: PR-906 Norte									
.863	0.842	18.43	22.12	35.6	0.843	0.84	19	91.43	32.0
NTERSECTION (persons):									
3131	0.842		47.46	33.3	0.773	0.80		194.63	32.9

eue values in this table are 95% back of queue (metres).

studio de Transito Centro de Mercadeo PR-906 Palmas del Mar
entro Mercadeo, PR-923 y PR-906 A?o 2020
ntersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

able S.7 - LANE PERFORMANCE

Lane No.	Mov No.	Effective Green Times (sec) R1	G1	R2	G2	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue 95% Back (vehs)	(m)	Shrt Lane (m)

West: Entrada Centro Mercadeo													
1 L	12	78	22	0	0	141	460	0.307	46.3	0.79	7.5	4	50
2 LT	12, 11	78	22	0	0	146	476	0.307	40.1	0.72	7.7	4	
3 T	11, 13	78	22	0	0	149	484	0.307	36.9	0.69	7.8	4	
4 R	13	3	22	33	42	192	1073	0.179	16.7	0.77	4.7	2	50
South: PR-906 Sur													
1 L	32	69	31	0	0	71	648	0.110	36.6	0.75	3.2	2	50
2 T	32, 31	69	31	0	0	482	682	0.706	37.4	0.80	25.0	12	
3 T	31, 33	69	31	0	0	482	682	0.706	37.4	0.80	25.0	12	
4 R	33	3	22	13	62	46	1141	0.040	10.7	0.73	0.4	0	50
East: PR-923 Palmas del Mar Sec													
1 L	22	78	22	0	0	69	460	0.150	44.6	0.75	3.6	2	50
2 T	22, 21	78	22	0	0	128	484	0.264	36.4	0.68	6.7	3	
3 TR	21, 23	73	22	4	1	113	427	0.264	34.6	0.68	5.7	3	
4 R	23	8	17	4	71	396	1499	0.264	10.5	0.75	4.1	2	50
North: PR-906 Norte													
1 L	42	62	38	0	0	270	794	0.340	34.1	0.80	11.6	6	50
2 T	42, 41	62	38	0	0	704	836	0.842	39.3	0.86	37.1	19	
3 T	41, 43	62	38	0	0	704	836	0.842	39.3	0.86	37.1	19	
4 R	43	3	22	5	70	185	1344	0.138	9.9	0.73	0.9	0	50

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Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

Table S.8 - LANE FLOW AND CAPACITY INFORMATION

Lan No.	Mov No.	Dem Flow (veh/h) Lef	Thru	Rig	Tot	Lane Width (m)	Saturation Flow Adj. Basic (tcu)	Aver 1st (veh)	Aver 2nd (veh)	End Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %
West: Entrada Centro Mercadeo													
1 L	12	141	0	0	141	3.60	2200	2090	0	0	460	0.307	100
2 LT	12, 11	49	97	0	146	3.60	2200	2162	0	0	476	0.307	100
3 T	11, 13	0	149	0	149	3.60	2200	2200	0	0	484	0.307	100
4 R	13	0	0	192	192	3.60	2200	1870	1576	36	1073	0.179	58P
South: PR-906 Sur													
1 L	32	71	0	0	71	3.60	2200	2090	0	0	648	0.110	16P
2 T	32, 31	0	482	0	482	3.60	2200	2200	0	0	682	0.706	100
3 T	31, 33	0	482	0	482	3.60	2200	2200	0	0	682	0.706	100
4 R	33	0	0	46	46	3.60	2200	1200	1414	72	1141	0.040	6P
East: PR-923 Palmas del Mar Sec													
1 L	22	69	0	0	69	3.60	2200	2090	0	0	460	0.150	57P
2 T	22, 21	0	128	0	128	3.60	2200	2200	0	0	484	0.264	100
3 TR	21,	0	101	11	113	3.60	2200	1923	403	72	427	0.264	100

R	23 23	0	0	396	396	3.60	2200	1005	1870	72	1499	0.264	100

rth: PR-906 Norte

L	42	270	0	0	270	3.60	2200	2090	0	0	794	0.340	40P
T	42, 41	0	704	0	704	3.60	2200	2200	0	0	836	0.842	100
T	41, 43	0	704	0	704	3.60	2200	2200	0	0	836	0.842	100
R	43	0	0	185	185	3.60	2200	1200	1543	72	1344	0.138	16P

Lane under-utilisation found by the "Program"

asic Saturation Flow in this table is adjusted for lane width, approach rade, parking manoeuvres and number of buses stopping. Saturation flow cale applies if specified.

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udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
tro Mercadeo, PR-923 y PR-906 A?o 2020
ersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

le S.9 - SIGNAL TIMING DIAGRAM

played (Phase) Green Times

```
        Phase A                 Phase B                 Phase C

                           41                  66                      100
-------------------------I-----------------I-----------------------I
GGGGGGGGGGGGGGGGGGGGGGGGG....GGGGGGGGGGGGGG....GGGGGGGGGGGGGGGGGGGG.
                              44                  70
```

fective (Movement) Green Times

est: Entrada Centro Mercadeo

```
.   12 (L)
                           I                   I                       I
.............................GGGGGGGGGGGGGGG......................
                              46                68

.   11 (T)
                           I                   I                       I
.............................GGGGGGGGGGGGGGG......................
                              46                68

.   13 (R)
                           I                   I                       I
GGGGGGGGGGGGGGGGGGGGGGGGGGGG.GGGGGGGGGGGGGGG......................
                              43 46             68
```

outh: PR-906 Sur

```
.   32 (L)
                           I                   I                       I
.................................................GGGGGGGGGGGGGGGGGGGGG
                                                 71

v.  31 (T)
                           I                   I                       I
.................................................GGGGGGGGGGGGGGGGGGGGG
```

2

```
Mov.   33 (R)
I                                I                   I                        I
GGGGGGGGGGGGGGGGGGGGGGGGGGGGGG..GGGGGGGGGGGGGGG.........GGGGGGGGGGGGGG
                                43 46               68        81
```

East: PR-923 Palmas del Mar Sec

```
Mov.   22 (L)
I                                I                   I                        I
...............................GGGGGGGGGGGGGGG......................
                                46                  68

Mov.   21 (T)
I                                I                   I                        I
...............................GGGGGGGGGGGGGGG......................
                                46                  68

Mov.   23 (R)
I                                I                   I                        I
GGGGGGGGGGGGGGGGGGGGGGGGGGGGGG......GGGGGGGGGGG..GGGGGGGGGGGGGGGGGGGGGG
                                43    51            68 72
```

North: PR-906 Norte

```
Mov.   42 (L)
I                                I                   I                        I
....GGGGGGGGGGGGGGGGGGGGGGGGGG.......................................
   5                            43

Mov.   41 (T)
I                                I                   I                        I
....GGGGGGGGGGGGGGGGGGGGGGGGGG.......................................
   5                            43

Mov.   43 (R)
I                                I                   I                        I
GGGGGGGGGGGGGGGGGGGGGGGGGGGGGG..GGGGGGGGGGGGGGG...GGGGGGGGGGGGGGGGGGGGG
                                43 46               68  73

I-----I------I------I------I------I------I------I------I------I------I---->
0     10     20     30     40     50     60     70     80     90    100

                          T I M E  (s)
```

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Centro Mercadeo, PR-923 y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

Table S.10 - MOVEMENT CAPACITY AND PERFORMANCE SUMMARY

Mov No.	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Eff. Grn 1st Grn	Eff. Grn 2nd Grn	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
West: Entrada Centro Mercadeo											
12	L	190	619	100	0.307	22		46.3	0.79	7.7	9.74
11	T	246	801	100	0.307	22		36.9	0.69	7.8	11.91
13	R	192	1073	58	0.179	22	42	16.7	0.77	4.7	5.45

South: PR-906 Sur

32 L	71	648	16	0.110	31		36.6	0.75	3.2	3.12
31 T	963	1364	100	0.706	31*		37.4	0.80	25.0	49.58
33 R (Un1)	46	1141	6	0.040	22	62	10.7	0.73	0.4	0.88
t: PR-923 Palmas del Mar Sec										
22 L	69	460	57	0.150	22		44.6	0.75	3.6	3.41
21 T	229	868	100	0.264	22		35.2	0.67	6.7	10.78
23 R	407	1542	100	0.264	17*	71	11.4	0.75	5.7	8.33
th: PR-906 Norte										
42 L	270	794	40	0.340	38		34.1	0.80	11.6	11.78
41 T	1408	1672	100	0.842*	38*		39.3	0.86	37.1	76.55
43 R (Un1)	185	1344	16	0.138	22	70	9.9	0.73	0.9	3.10

Maximum degree of saturation, or critical green periods

udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
ntro Mercadeo, PR-923 y PR-906 A?o 2020
ersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

ble S.12A - FUEL CONSUMPTION, EMISSIONS AND COST - TOTAL

Mov No.	Fuel Total L/h	Cost Total $/h	HC Total kg/h	CO Total kg/h	NOX Total kg/h	CO2 Total kg/h
st: Entrada Centro Mercadeo						
12 L	16.6	47.03	0.078	3.33	0.096	41.5
11 T	19.3	51.42	0.086	3.74	0.114	48.4
13 R	15.2	37.27	0.069	3.25	0.093	37.9
	51.1	135.71	0.233	10.32	0.303	127.8
th: PR-906 Sur						
32 L	5.9	15.89	0.027	1.22	0.035	14.8
31 T	77.4	202.25	0.348	15.50	0.462	193.4
33 R	3.4	7.60	0.015	0.76	0.022	8.6
	86.7	225.74	0.390	17.48	0.519	216.8
st: PR-923 Palmas del Mar Sec						
22 L	6.0	16.81	0.028	1.20	0.035	15.0
21 T	17.8	46.92	0.079	3.44	0.105	44.5
23 R	30.3	67.04	0.135	6.75	0.194	75.7
	54.1	130.77	0.242	11.39	0.333	135.2
rth: PR-906 Norte						
42 L	22.3	58.64	0.103	4.64	0.133	55.8
41 T	115.4	302.40	0.522	23.46	0.691	288.5
43 R	13.6	29.94	0.061	3.04	0.087	34.1
	151.4	390.98	0.685	31.15	0.912	378.4
NTERSECTION:	343.3	883.20	1.550	70.34	2.067	858.2

RAMETERS USED IN COST CALCULATIONS

Pump price of fuel ($/L)	=	0.400
Fuel resource cost factor	=	0.70
Ratio of running cost to fuel cost	=	3.0
Average income ($/h)	=	17.00
Time value factor	=	0.40

Average occupancy (persons/veh)	=	1.2
Light vehicle mass (1000 kg)	=	1.4
Heavy vehicle mass (1000 kg)	=	11.0
Light vehicle idle fuel rate (L/h)	=	1.350
Heavy vehicle idle fuel rate (L/h)	=	2.000

The idle fuel and vehicle mass parameters given above are the default values (data given in RIDES may override some of these parameters).

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Centro Mercadeo, PR-923 y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

Table S.12B - FUEL CONSUMPTION, EMISSIONS AND COST - RATE

Mov No.	Fuel Rate L/100km	Cost Rate $/km	HC Rate g/km	CO Rate g/km	NOX Rate g/km	CO2 Rate g/km
West: Entrada Centro Mercadeo						
12 L	14.1	0.40	0.657	28.19	0.810	351.3
11 T	12.6	0.33	0.561	24.29	0.739	314.4
13 R	12.8	0.31	0.580	27.33	0.785	318.9
	13.1	0.35	0.596	26.39	0.775	326.9
South: PR-906 Sur						
32 L	13.4	0.36	0.621	27.67	0.795	335.9
31 T	12.8	0.34	0.577	25.74	0.767	321.2
33 R	12.0	0.27	0.536	26.70	0.766	300.2
	12.9	0.33	0.578	25.91	0.769	321.3
East: PR-923 Palmas del Mar Sec						
22 L	13.9	0.39	0.651	28.09	0.808	348.7
21 T	12.4	0.33	0.553	24.02	0.733	311.0
23 R	12.0	0.27	0.536	26.76	0.768	300.2
	12.3	0.30	0.553	25.99	0.760	308.5
North: PR-906 Norte						
42 L	13.3	0.35	0.613	27.67	0.795	332.4
41 T	13.1	0.34	0.592	26.65	0.785	327.6
43 R	11.9	0.26	0.530	26.56	0.763	297.7
	13.0	0.34	0.589	26.78	0.784	325.4
INTERSECTION:	12.9	0.33	0.581	26.37	0.775	321.8

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Centro Mercadeo, PR-923 y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
West: Entrada Centro Mercadeo												
1 L	141			141	0	2200	22		0.307	46.3	4	50
2 LT	[illegible]	97		146	0	2200	22		0.307	40.1	4	

T		149		149	0	2200	22		0.307	36.9	4	
R			192	192	0	2200	22	42	0.179	16.7	2	50
	190	246	192	628	0				0.307	33.6	4	
outh: PR-906 Sur												
L	71			71	0	2200	31		0.110	36.6	2	50
T		482		482	0	2200	31		0.706	37.4	12	
T		482		482	0	2200	31		0.706	37.4	12	
R			46	46	0	2200	22	62	0.040	10.7	0	50
	71	963	46	1080	0				0.706	36.2	12	
ast: PR-923 Palmas del Mar Sec												
L	69			69	0	2200	22		0.150	44.6	2	50
T		128		128	0	2200	22		0.264	36.4	3	
TR		101	11	113	0	2200	22	1	0.264	34.6	3	
R			396	396	0	2200	17	71	0.264	10.5	2	50
	69	229	407	705	0				0.264	22.4	3	
orth: PR-906 Norte												
L	270			270	0	2200	38		0.340	34.1	6	50
T		704		704	0	2200	38		0.842	39.3	19	
T		704		704	0	2200	38		0.842	39.3	19	
R			185	185	0	2200	22	70	0.138	9.9	0	50
	270	1408	185	1863	0				0.842	35.6	19	

LL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	4276	0	100	0.842	33.3	19

tal flow period = 60 minutes. Peak flow period = 15 minutes.

eue values in this table are 95% back of queue (metres).

te: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

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tudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
ntro Mercadeo, PR-923 y PR-906 A?o 2020
tersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

ble S.15 - CAPACITY AND LEVEL OF SERVICE

ov o.	Mov Typ	Green Ratio 1st grn	Green Ratio 2nd grn	Time (g/C)	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
st: Entrada Centro Mercadeo									
12	L	0.220			190	619	0.307	46.3	D
11	T	0.220			246	801	0.307	36.9	D
13	R	0.220	0.420		192	1073	0.179	16.7	B
					628	2493	0.307	33.6	C
outh: PR-906 Sur									
32	L	0.310			71	648	0.110	36.6	D
31	T	0.310*			963	1364	0.706	37.4	D
33	R (Unl)	0.220	0.620		46	1141	0.040	10.7	B
					1080	3153	0.706	36.2	D

East: PR-923 Palmas del Mar Sec							
22 L		0.220		69	460	0.150	44.6	D
21 T		0.220		229	868	0.264	35.2	D
23 R		0.170*	0.710	407	1542	0.264	11.4	B
				705	2870	0.264	22.4	C
North: PR-906 Norte								
42 L		0.380		270	794	0.340	34.1	C
41 T		0.380*		1408	1672	0.842*	39.3	D
43 R	(Unl)	0.220	0.700	185	1344	0.138	9.9	A
				1863	3810	0.842	35.6	D
ALL VEHICLES:				4276	12325	0.842	33.3	C
INTERSECTION (persons):				5131	12325	0.842	33.3	

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria) and v/c ratio,
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Centro Mercadeo, PR-923 y PR-906 A?o 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

Table D.0 - GEOMETRIC DELAY DATA

From Approach	To Approach	Negn Radius (m)	Negn Speed (km/h)	Negn Dist. (m)	Appr. Dist. (m)	Downstream Distance (m)
West: Entrada Centro Mercadeo						
	South	10.0	18.5	15.7	500	119
	East	S	65.0	26.2	500	125
	North	15.8	23.2	24.8	500	121
South: PR-906 Sur						
	West	15.8	23.2	24.8	500	121
	East	10.0	18.5	15.7	500	119
	North	S	65.0	26.2	500	125
East: PR-923 Palmas del Mar Sec						
	West	S	65.0	26.2	500	125
	South	15.5	23.0	24.3	500	121
	North	10.0	18.5	15.7	500	119
North: PR-906 Norte						
	West	10.0	18.5	15.7	500	119
	South	S	65.0	26.2	500	125
	East	15.2	22.8	23.9	500	121

Downstream distance is distance travelled from the stopline until exit
cruise speed is reached (includes negotiation distance). Acceleration
distance is weighted for light and heavy vehicles. The same distance
applies for both stopped and unstopped vehicles.

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Actuated Isolated Signals, Cycle Time = 100

ble D.1 - LANE DELAYS

ane o.	Mov No.	Deg. Satn x	Stop-line Delay 1st d1	2nd d2	Total dSL	Acc. Dec. dn	Queuing Total dq	MvUp dqm	Stopd (Idle) di	Geom dig	Control dic
			Delay (seconds/veh)								
est: Entrada Centro Mercadeo											
L	12	0.307	36.7	0.2	36.9	3.9	33.0	0.0	33.0	9.4	46.3
LT	12, 11	0.307	36.7	0.3	37.0	6.4	30.5	0.0	30.5	9.4 0.0	40.1
T	11, 13	0.307	36.6	0.3	36.9	7.6	29.3	0.0	29.3	0.0 0.0	36.9
R	13	0.179	7.0	0.1	7.0	1.6	12.4	0.0	12.4	9.7	16.7
outh: PR-906 Sur											
L	32	0.110	27.2	0.0	27.2	3.3	23.9	0.0	23.9	9.4	36.6
T	32, 31	0.706	34.2	3.2	37.4	8.2	29.2	0.0	29.2	0.0 0.0	37.4
T	31, 33	0.706	34.2	3.2	37.4	8.2	29.2	0.0	29.2	0.0 0.0	37.4
R	33	0.040	1.0	0.0	1.0	0.6	1.3	0.0	1.3	9.7	10.7
ast: PR-923 Palmas del Mar Sec											
L	22	0.150	35.1	0.1	35.2	3.7	31.5	0.0	31.5	9.4	44.6
T	22, 21	0.264	36.2	0.2	36.4	7.6	28.9	0.0	28.9	0.0 0.0	36.4
TR	21, 23	0.264	33.3	0.3	33.6	7.1	26.8	0.0	26.8	0.0 9.7	34.6
R	23	0.264	0.8	0.1	0.8	0.7	0.3	0.0	0.3	9.7	10.5
orth: PR-906 Norte											
L	42	0.340	24.5	0.1	24.6	3.3	21.3	0.0	21.3	9.4	34.1
T	42, 41	0.842	31.6	7.7	39.3	8.6	30.7	0.0	30.7	0.0 0.0	39.3
T	41, 43	0.842	31.6	7.7	39.3	8.6	30.7	0.0	30.7	0.0 0.0	39.3
R	43	0.138	0.2	0.0	0.3	0.4	0.1	0.0	0.1	9.7	9.9

dn is average stop-start delay for all vehicles queued and unqueued

studio de Transito Centro de Mercadeo PR-906 Palmas del Mar
entro Mercadeo, PR-923 y PR-906 A?o 2020
ntersection ID: 2
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able D.2 - LANE STOPS

Lane No.	Deg. Satn x	-- Effective Stop Rate -- he1	he2	Geom. hig	Overall h	Prop. Queued pq	Queue Move-up Rate hqm
West: Entrada Centro Mercadeo							
1 L	0.307	0.69	0.00	0.10	0.79	0.856	0.00
2 LT	0.307	0.69	0.00	0.03	0.72	0.856	0.00
3 T	0.307	0.69	0.00	0.00	0.69	0.856	0.00
4 R	0.179	0.35	0.00	0.41	0.77	0.422	0.00
South: PR-906 Sur							
1 L	0.110	0.57	0.00	0.18	0.75	0.727	0.00
2 T	0.706	0.80	0.00	0.00	0.80	0.922	0.00
3 T	0.706	0.80	0.00	0.00	0.80	0.922	0.00
4 R	0.040	0.13	0.00	0.60	0.73	0.168	0.00

East: PR-923 Palmas del Mar Sec							
1 L	0.150	0.63	0.00	0.12	0.75	0.820	0.00
2 T	0.264	0.68	0.00	0.00	0.68	0.846	0.00
3 TR	0.264	0.67	0.00	0.01	0.68	0.845	0.01
4 R	0.264	0.17	0.00	0.58	0.75	0.192	0.00
North: PR-906 Norte							
1 L	0.340	0.62	0.00	0.18	0.80	0.736	0.00
2 T	0.842	0.86	0.00	0.00	0.86	0.961	0.01
3 T	0.842	0.86	0.00	0.00	0.86	0.961	0.01
4 R	0.138	0.08	0.00	0.65	0.73	0.095	0.00

hg is the average value for all movements in a shared lane
hqm is average queue move-up rate for all vehicles queued and unqueued

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Table D.3 - LANE QUEUES

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nb1	Nb2	Nb	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
West: Entrada Centro Mercadeo											
1 L	0.307	0.2	3.6	0.2	3.8	4.5	5.9	6.5	7.5	9.2	0.07
2 LT	0.307	0.2	3.7	0.2	3.9	4.6	6.1	6.7	7.7	9.5	0.01
3 T	0.307	0.2	3.7	0.2	4.0	4.7	6.2	6.8	7.8	9.6	0.01
4 R	0.179	0.2	2.2	0.2	2.3	2.8	3.7	4.1	4.7	5.9	0.05
South: PR-906 Sur											
1 L	0.110	0.1	1.5	0.1	1.6	1.9	2.5	2.8	3.2	4.1	0.03
2 T	0.706	1.3	12.7	1.3	14.1	16.5	20.9	22.5	25.0	28.7	0.02
3 T	0.706	1.3	12.7	1.3	14.1	16.5	20.9	22.5	25.0	28.7	0.02
4 R	0.040	0.0	0.2	0.0	0.2	0.3	0.3	0.4	0.4	0.6	0.00
East: PR-923 Palmas del Mar Sec											
1 L	0.150	0.1	1.7	0.1	1.8	2.1	2.8	3.1	3.6	4.5	0.04
2 T	0.264	0.2	3.2	0.2	3.3	4.0	5.3	5.8	6.7	8.3	0.01
3 TR	0.264	0.2	2.7	0.2	2.9	3.4	4.5	5.0	5.7	7.1	0.01
4 R	0.264	0.3	1.7	0.3	2.0	2.4	3.2	3.6	4.1	5.2	0.04
North: PR-906 Norte											
1 L	0.340	0.3	5.7	0.3	6.0	7.2	9.3	10.2	11.6	14.1	0.12
2 T	0.842	3.0	19.2	3.0	22.1	25.6	31.9	33.9	37.1	41.7	0.04
3 T	0.842	3.0	19.2	3.0	22.1	25.6	31.9	33.9	37.1	41.7	0.04
4 R	0.138	0.1	0.3	0.1	0.4	0.5	0.7	0.8	0.9	1.2	0.01

Values printed in this table are back of queue (vehicles).

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Table D.4 - MOVEMENT SPEEDS (km/h)

Mov No.	App. Speeds Cruise	Negn	Exit Speeds Negn	Cruise	Queue Move-up 1st Grn	2nd Grn	Av. Section Spd Running	Overall

st: Entrada Centro Mercadeo								
12	65.0	23.2	23.2	65.0			46.9	27.7
11	65.0	65.0	65.0	65.0			53.2	31.5
13	65.0	18.5	18.5	65.0			48.9	38.5
uth: PR-906 Sur								
32	65.0	23.2	23.2	65.0			47.5	31.5
31	65.0	65.0	65.0	65.0			52.5	31.2
33	65.0	18.5	18.5	65.0			50.0	48.5
st: PR-923 Palmas del Mar Sec								
22	65.0	23.0	23.0	65 0			47.1	28.3
21	65.0	65.0	65.0	65.0		0.0	53.4	32.2
23	65.0	18.5	18.5	65.0		16.2	49.8	48.6
rth: PR-906 Norte								
42	65.0	22.8	22.8	65.0	12.9		47.4	32.7
41	65.0	65.0	65.0	65.0	13.2		52.1	30.5
43	65.0	18.5	18.5	65.0	7.4		50.3	50.2

'Running Speed" is the average speed excluding stopped periods.

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:ersection ID: 2
Actuated Isolated Signals, Cycle Time = 100

:le D.5 - PROGRESSION FACTORS & ACTUATED SIGNAL PARAMETERS

Mov No.	Control	Coord.	Arrival Type	Delay Prog. Factor	Queue Prog. Factor	Gap Settings es	Gap Settings eh	Disp. Grn. Settings 1st Grn Gmin	1st Grn Gmax	2nd Grn Gmin	2nd Grn Gmax
ast: Entrada Centro Mercadeo											
12	VA	No	3	1.000	1.000	2.0	2.2	6	20		
11	VA	No	3	1.000	1.000	2.5	2.7	6	50		
13	VA	No	3	1.000	1.000	2.5	2.7	6	50	6	50
outh: PR-906 Sur											
32	VA	No	3	1.000	1.000	2.0	2.2	6	20		
31	VA	No	3	1.000	1.000	2.5	2.7	6	50		
33	VA	No	3	1.000	1.000	2.5	2.7	6	50	6	50
ast: PR-923 Palmas del Mar Sec											
22	VA	No	3	1.000	1.000	2.0	2.2	6	20		
21	VA	No	3	1.000	1.000	2.5	2.7	6	50		
23	VA	No	3	1.000	1.000	2.5	2.7	6	50	6	50
orth: PR-906 Norte											
42	VA	No	3	1.000	1.000	2.0	2.2	6	20		
41	VA	No	3	1.000	1.000	2.5	2.7	6	50		
43	VA	No	3	1.000	1.000	2.5	2.7	6	50	6	50

--- End of aaSIDRA Output ---

PR-53
Palmas
Tierra del

Akcelik & Associates Pty Ltd - aaSIDRA 2.0.0.205

CMA Architects & Engineers LLP
Ing. Ricardo Rivera Registered User No. 50310
Licence Type: Professional, Single Computer

Time and Date of Analysis 1:02 PM, Nov 5,2002

Filename: C:\CMA AE LLP Projects\Estudios de Transito\00237 - Palmas del Mar PR-906 Traffi dy, Humacao\Revision 2002\Int52020.OUT

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Rampa PR-53, Tierra del Sol y PR-906 2020
Intersection ID: 2

aaTraffic SIDRA US Highway Capacity Manual (2000) Metric Version

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
    Any maximum cycle time specification
    Any user-given cycle time (unless phase times also given)
    User-given cycle and phase times (if variable flow scale run)
    Any variable cycle time specification
    Any green split priority specification
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 10
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
                Geometric delay included
  HCM Delay and Queue Models option selected
  Level of Service based on: Delay and degree of saturation
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 2
  Comparison of last two iterations:
    Difference in intersection degree of satn = 0.0 %
    Difference in total vehicle capacity = 0.0 %
    Largest difference in eff. green times = 0 secs
    (max. value for stopping = 0 secs)

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Rampa PR-53, Tierra del Sol y PR-906 2020
Intersection ID: 2

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF10.SDF)

1. Basic saturation flow: 1900 tcu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

LEFT		THROUGH		RIGHT	
LV	HV	LV	HV	LV	HV

Normal	1.053	2.000	1.000	2.000	1.176	2.000
Restricted	1.303	2.500			1.426	2.500

. Opposed turn parameters (Signalised intersection)

	Crit. Gap	Fol.up Hdway	Deps at End	% Exit Flow Opposing
Left turns :	4.5	2.5	2.0	0
Right turns:	4.0	2.4	2.5	0

. Cruise speed= 65 km/h, Approach Distance= 500 m

. Queue space per vehicle in metres
Light vehicles: 7.6 Heavy vehicles: 14.0

. full list of input data defaults and ranges is given in the
nput Guide part of aaSIDRA User Guide.

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udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
pa PR-53, Tierra del Sol y PR-906 2020
ersection ID: 2
Actuated Isolated Signals, Cycle Time = 64

ble S.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
HICLES Demand flows in veh/hour as used by the program								
st: PR-53 Rampa desde Yabucoa								
12	88	0	0	0	0	0	1.00	0.97
11	0	0	10	0	0	0	1.00	0.97
13	0	0	0	0	72	0	1.00	0.97
rth: PR-906 Sur								
31	0	0	1529	0	0	0	1.00	0.97
33	0	0	0	0	10	0	1.00	0.97
st: Tierra del Sol y Comunidd								
22	26	0	0	0	0	0	1.00	0.97
23	0	0	0	0	60	0	1.00	0.97
rth: PR-906 Norte								
42	115	0	0	0	0	0	1.00	0.97
41	0	0	1765	0	0	0	1.00	0.97

sed on unit time = 60 minutes.
ow Scale and Peak Hour Factor effects included in flow values.

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tudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
mpa PR-53, Tierra del Sol y PR-906 2020
tersection ID: 2
Actuated Isolated Signals, Cycle Time = 64

ble S.1 - MOVEMENT PHASE AND TIMING PARAMETERS

ov c.	Mov Typ	PHASE MATRIX First Green Fr	To	Op	Pr	Second Green Fr	To	Op	Pr	Lost Tim 1st Grn	Lost Tim 2nd Grn	Req.Mov.Time 1st Grn	Req.Mov.Time 2nd Grn	Eff. Grn 1st Grn	Eff. Grn 2nd Grn
st: PR-53 Rampa desde Yabucoa															
12 L		*B	C							3		9.7		7	
11 T		B	C							3		9.0Min		7	
13 R		B	C			C	B	R		3	27	9.0Min	18.0Min	7	27

South: PR-906 Sur													
31 T		*C	A					3		31.1		28	
33 R	(Unl)	B	C	R	C	B	R	3	5	16.6	48.4	7	49
East: Tierra del Sol y Comunidd													
22 L		B	C					3		9.0Min		7	
23 R		B	C		C	B	R	3	4	9.0Min	18.0Min	7	50
North: PR-906 Norte													
42 L		*A	B					3		23.0Max		20	
41 T		C	B					3		45.6		51	

Current Phase Sequence No.: 1
Input phase sequence: A B C
Output phase sequence: A B C

Movement Types:
- Ped Pedestrian
- Dum Dummy
- Und Undetected in both green periods
- Unl Undetected in 1st green period
- Un2 Undetected in 2nd green period

Under heading 'Op':
- L "Left" turns are opposed
- R "Right" turns are opposed
- LR "Left and Right" opposed
- C "Constant" saturation flow

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Rampa PR-53, Tierra del Sol y PR-906 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 64

Table S.2 - MOVEMENT CAPACITY PARAMETERS

Mov No.	Dem Flow (veh /h)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
West: PR-53 Rampa desde Yabucoa										
12 L	88	2090		0.042		229	0.90	134	100	0.385
11 T	10	318		0.031		35	0.90	213	75	0.288
13 R	72	1612	176	0.045	0.000	251	0.90	213	75	0.287
South: PR-906 Sur										
31 T	1529	4359		0.351		1907	0.90	12	100	0.802
33 R	10	6	15	0.186	0.592	12	0.90	9	100	0.824*
East: Tierra del Sol y Comunidd										
22 L	26	943		0.028		103	0.90	257	100	0.252
23 R	60	1157	143	0.052	0.000	238	0.90	257	100	0.252
North: PR-906 Norte										
42 L	115	527		0.218		165	0.90	29	100	0.698
41 T	1765	3171		0.557		2527	0.90	29	100	0.698

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Rampa PR-53, Tierra del Sol y PR-906 2020
Intersection ID: 2
Actuated Isolated Signals, Cycle Time = 64

Table S.3 - INTERSECTION PARAMETERS

Crit Mov No.	App. & Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time

42	N_L	A	B	23	-	-	23.0Max
12	W_L	B	C	3	0.042	0.105	9.7
31	S_T	C	A	3	0.351	0.439	31.1
			Total:	29	0.393	0.545	63.9

Flow ratio not used for cycle time calculations and
the adjusted lost time equals the required movement time
(=Min or Max as shown in Table S.1)

Cycle Time:

Minimum	Maximum	Practical	Chosen
27	NA	64	64

Intersection Level of Service	=	B
Worst movement Level of Service	=	D
Average intersection delay (s)	=	17.9
Largest average movement delay (s)	=	43.5
Largest back of queue, 95% (m)	=	26
Performance Index	=	133.56
Degree of saturation (highest)	=	0.824
Practical Spare Capacity (lowest)	=	9 %
Total vehicle capacity, all lanes (veh/h)	=	5466
Total vehicle flow (veh/h)	=	3675
Total person flow (pers/h)	=	4410
Total vehicle delay (veh-h/h)	=	18.25
Total person delay (pers-h/h)	=	21.90
Total effective vehicle stops (veh/h)	=	2527
Total effective person stops (pers/h)	=	3033
Total vehicle travel (veh-km/h)	=	2296.1
Total cost ($/h)	=	622.88
Total fuel (L/h)	=	260.6
Total CO2 (kg/h)	=	651.49

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ersection ID: 2
Actuated Isolated Signals, Cycle Time = 64

le S.4 - PHASE INFORMATION

Phase No.	Change Time	Green Start	Displayed Green	Grn+Intgrn Secs	Prop.
A	0	3	20	23	0.359
B	23	26	7	10	0.156
C	33	37	27	31	0.484

Current Phase Sequence No.: 1
Input phase sequence: A B C
Output phase sequence: A B C

udio de Transito Centro de Mercadeo PR-906 Palmas del Mar
mpa PR-53, Tierra del Sol y PR-906 2020
ersection ID: 2
Actuated Isolated Signals, Cycle Time = 64

ble S.5 - MOVEMENT PERFORMANCE

Mov No.	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	(m)	Perf. Index	Aver. Speed (km/h)

st: PR-53 Rampa desde Yabucoa

12 L	1.01	1.22	41.4	0.94	0.76	3.7	2	3.85	29.4
11 T	0.04	0.04	13.2	0.83	0.70	2.9	1	0.32	37.5
13 R	0.46	0.55	22.8	0.83	0.82	2.9	1	2.55	32.2
South: PR-906 Sur									
31 T	11.95	14.34	28.1	0.91	0.82	52.7	26	77.75	33.0
33 R	0.12	0.15	43.5	0.90	0.89	52.7	26	0.67	25.1
East: Tierra del Sol y Comunidd									
22 L	0.23	0.28	32.3	0.86	0.76	3.0	2	0.98	33.3
23 R	0.54	0.65	32.5	0.86	0.76	3.0	2	2.27	33.3
North: PR-906 Norte									
42 L	0.66	0.80	20.8	0.85	0.86	14.8	7	3.41	38.8
41 T	3.23	3.88	6.6	0.60	0.55	22.4	11	41.75	53.7

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Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
West: PR-53 Rampa desde Yabucoa									
170	0.385	1.51	1.81	31.9	0.890	0.78	2	6.72	30.9
South: PR-906 Sur									
1539	0.824	12.07	14.49	28.2	0.911	0.82	26	78.42	32.9
East: Tierra del Sol y Comunidd									
86	0.252	0.77	0.93	32.4	0.865	0.76	2	3.26	33.3
North: PR-906 Norte									
1880	0.698	3.90	4.68	7.5	0.617	0.56	11	45.16	52.4
INTERSECTION (persons):									
4410	0.824		21.90	17.9	0.758	0.69		133.56	40.5

Queue values in this table are 95% back of queue (metres).

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Table S.7 - LANE PERFORMANCE

Lane No.	Mov No.	Effective Red and Green Times (sec) R1	G1	R2	G2	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue 95% Back (vehs)	Queue 95% Back (m)	Shrt Lane (m)
West: PR-53 Rampa desde Yabucoa													
1 L	12, 11	57	7	0	0	88	229	0.385	41.8	0.76	3.7	2	
2 TR	11, 13	7	7	27	23	82	285	0.287	21.6	0.81	2.9	1	
South: PR-906 Sur													
1 T	31	36	28	0	0	772	963	0.802	22.5	0.82	26.4	13	

TR	31, 33	25	1	9	29	767	957	0.802	34.0	0.83	52.7	26
ast: Tierra del Sol y Comunidd												
LR	22, 23	48	7	4	5	86	341	0.252	32.5	0.76	3.0	2
orth: PR-906 Norte												
LT	42, 41	23	20	13	8	656	939	0.698	13.0	0.76	14.8	7
T	41	13	51	0	0	1224	1753	0.698	4.5	0.46	22.4	11

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ble S.8 - LANE FLOW AND CAPACITY INFORMATION

an o.	Mov No.	Dem Flow (veh/h) Lef	Thru	Rig	Tot	Lane Width (m)	Saturation Flow Adj. Basic (tcu)	Aver 1st (veh)	Aver 2nd (veh)	End Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %
est: PR-53 Rampa desde Yabucoa													
L	12, 11	88	0	0	88	3.60	2200	2090	0	0	229	0.385	100
TR	11, 13	0	10	72	82	3.60	2200	1905	214	56	285	0.287	75P
outh: PR-906 Sur													
T	31	0	772	0	772	3.60	2200	2200	0	0	963	0.802	100
TR	31, 33	0	757	10	767	3.60	2200	48	2110	113	957	0.802	100
ast: Tierra del Sol y Comunidd													
LR	22, 23	26	0	60	86	3.60	2200	1931	1661	56	341	0.252	100
orth: PR-906 Norte													
LT	42, 41	115	541	0	656	3.60	2200	2180	2061	0	939	0.698	100
T	41	0	1224	0	1224	3.60	2200	2200	0	0	1753	0.698	100

P Lane under-utilisation found by the "Program"

Basic Saturation Flow in this table is adjusted for lane width, approach grade, parking manoeuvres and number of buses stopping. Saturation flow scale applies if specified.

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ble S.9 - SIGNAL TIMING DIAGRAM

isplayed (Phase) Green Times

Phase A	Phase B	Phase C
23	33	64

```
I-----------------------I----------I-------------------------------I
...GGGGGGGGGGGGGGGGGGGG....GGGGGGG.....GGGGGGGGGGGGGGGGGGGGGGGGGGGGG.
  3                        26          37
```

Effective (Movement) Green Times

West: PR-53 Rampa desde Yabucoa

```
Mov.   12 (L)
I                        I          I                                I
.............................GGGGGG.................................
                            28      35

Mov.   11 (T)
I                        I          I                                I
.............................GGGGGG.................................
                            28      35

Mov.   13 (R)
I                        I          I                                I
GGGGGGGGGGGGGGGGGGGGGGGGGGG....GGGGGG.............................GGG
                          25  28     35                            62
```

South: PR-906 Sur

```
Mov.   31 (T)
I                        I          I                                I
G.......................................GGGGGGGGGGGGGGGGGGGGGGGGGGGGG
 2                                     38

Mov.   33 (R)
I                        I          I                                I
GGGGGGGGGGGGGGGGGGGGGGGGGGG....GGGGGG......GGGGGGGGGGGGGGGGGGGGGGGGGGG
                          25  28     35     40
```

East: Tierra del Sol y Comunidd

```
Mov.   22 (L)
I                        I          I                                I
.............................GGGGGG.................................
                            28      35

Mov.   23 (R)
I                        I          I                                I
GGGGGGGGGGGGGGGGGGGGGGGGGGG....GGGGGG.....GGGGGGGGGGGGGGGGGGGGGGGGGGGG
                          25  28     35    39
```

North: PR-906 Norte

```
Mov.   42 (L)
I                        I          I                                I
.....GGGGGGGGGGGGGGGGGGGG.........................................
    5                     25

Mov.   41 (T)
I                        I          I                                I
GGGGGGGGGGGGGGGGGGGGGGGGGGG................GGGGGGGGGGGGGGGGGGGGGGGGGGGG
                          25               38

I-----I------I------I------I------I------I------I------I------I------I---->
0     6     13     19     26     32     38     45     51     58     64
```

T I M E (s)

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ble S.10 - MOVEMENT CAPACITY AND PERFORMANCE SUMMARY

ov o.	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Eff. Grn 1st Grn	Eff. Grn 2nd Grn	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
st: PR-53 Rampa desde Yabucoa											
12	L	88	229	100	0.385	7*		41.4	0.76	3.7	3.85
11	T	10	35	75	0.288	7		13.2	0.70	2.9	0.32
13	R	72	251	75	0.287	7	27	22.8	0.82	2.9	2.55
uth: PR-906 Sur											
31	T	1529	1907	100	0.802	28*		28.1	0.82	52.7	77.75
33	R (Unl)	10	12	100	0.824*	7	49	43.5	0.89	52.7	0.67
st: Tierra del Sol y Comunidd											
22	L	26	103	100	0.252	7		32.3	0.76	3.0	0.98
23	R	60	238	100	0.252	7	50	32.5	0.76	3.0	2.27
rth: PR-906 Norte											
42	L	115	165	100	0.698	20*		20.8	0.86	14.8	3.41
41	T	1765	2527	100	0.698	51		6.6	0.55	22.4	41.75

* Maximum degree of saturation, or critical green periods

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ble S.12A - FUEL CONSUMPTION, EMISSIONS AND COST - TOTAL

Mov No.	Fuel Total L/h	Cost Total $/h	HC Total kg/h	CO Total kg/h	NOX Total kg/h	CO2 Total kg/h
st: PR-53 Rampa desde Yabucoa						
12 L	7.6	20.80	0.035	1.55	0.044	18.9
11 T	0.7	1.79	0.003	0.15	0.004	1.8
13 R	6.0	15.86	0.028	1.26	0.036	15.0
	14.3	38.45	0.066	2.96	0.085	35.8
uth: PR-906 Sur						
31 T	120.3	306.23	0.537	24.31	0.726	300.8
33 R	0.9	2.70	0.004	0.18	0.005	2.3
	121.2	308.93	0.541	24.49	0.731	303.1
st: Tierra del Sol y Comunidd						
22 L	2.1	5.56	0.010	0.45	0.013	5.4
23 R	5.0	12.83	0.023	1.05	0.030	12.4
	7.1	18.39	0.033	1.50	0.043	17.8
orth: PR-906 Norte						
42 L	9.1	21.80	0.041	1.99	0.057	22.7
41 T	108.9	235.32	0.442	19.93	0.670	272.1

	117.9	257.11	0.483	21.92	0.727	294.9
INTERSECTION:	260.6	622.88	1.123	50.86	1.586	651.5

PARAMETERS USED IN COST CALCULATIONS

Pump price of fuel ($/L)	=	0.400
Fuel resource cost factor	=	0.70
Ratio of running cost to fuel cost	=	3.0
Average income ($/h)	=	17.00
Time value factor	=	0.40
Average occupancy (persons/veh)	=	1.2
Light vehicle mass (1000 kg)	=	1.4
Heavy vehicle mass (1000 kg)	=	11.0
Light vehicle idle fuel rate (L/h)	=	1.350
Heavy vehicle idle fuel rate (L/h)	=	2.000

The idle fuel and vehicle mass parameters given above are the default values (data given in RIDES may override some of these parameters).

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Table S.12B - FUEL CONSUMPTION, EMISSIONS AND COST - RATE

Mov No.	Fuel Rate L/100km	Cost Rate $/km	HC Rate g/km	CO Rate g/km	NOX Rate g/km	CO2 Rate g/km
West: PR-53 Rampa desde Yabucoa						
12 L	13.9	0.38	0.648	28.51	0.816	347.5
11 T	11.8	0.29	0.514	23.46	0.718	294.7
13 R	13.5	0.36	0.623	28.17	0.806	337.0
	13.6	0.37	0.630	28.07	0.806	339.9
South: PR-906 Sur						
31 T	12.6	0.32	0.561	25.42	0.759	314.5
33 R	14.7	0.44	0.694	28.76	0.827	367.0
	12.6	0.32	0.562	25.44	0.760	314.9
East: Tierra del Sol y Comunidd						
22 L	13.3	0.34	0.615	28.18	0.805	333.4
23 R	13.3	0.35	0.615	28.17	0.805	333.5
	13.3	0.35	0.615	28.17	0.805	333.5
North: PR-906 Norte						
42 L	12.8	0.31	0.581	27.96	0.797	319.3
41 T	9.9	0.21	0.400	18.05	0.607	246.5
	10.0	0.22	0.411	18.65	0.619	250.9
INTERSECTION:	11.3	0.27	0.489	22.15	0.691	283.7

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ble S.14 - SUMMARY OF INPUT AND OUTPUT DATA

ane	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
est: PR-53 Rampa desde Yabucoa												
L	88			88	0	2200	7		0.385	41.4	2	
TR		10	72	82	0	2200	7	23	0.287	21.6	1	
	88	10	72	170	0				0.385	32.1	2	
outh: PR-906 Sur												
T		772		772	0	2200	28		0.802	22.5	13	
TR		757	10	767	0	2200	1	29	0.802	34.0	26	
	0	1529	10	1539	0				0.802	28.2	26	
ast: Tierra del Sol y Comunidd												
LR	26		60	86	0	2200	7	5	0.252	32.5	2	
	26	0	60	86	0				0.252	32.5	2	
orth: PR-906 Norte												
LT	115	541		656	0	2200	20	8	0.698	13.0	7	
T		1224		1224	0	2200	51		0.698	4.5	11	
	115	1765	0	1880	0				0.698	7.5	11	

LL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	3675	0	64	0.824	17.9	26

tal flow period = 60 minutes. Peak flow period = 15 minutes.

eue values in this table are 95% back of queue (metres).

te: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

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ble S.15 - CAPACITY AND LEVEL OF SERVICE

ov o.	Mov Typ	Green Time Ratio (g/C) 1st grn	2nd grn	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
est: PR-53 Rampa desde Yabucoa								
12 L		0.109*		88	229	0.385	41.4	D
11 T		0.109		10	35	0.288	13.2	B
13 R		0.109	0.422	72	251	0.287	22.8	C
				170	514	0.385	31.9	C
outh: PR-906 Sur								
31 T		0.438*		1529	1907	0.802	28.1	C
33 R	(Unl)	0.109	0.766	10	12	0.824*	43.5	D

			1539	1919	0.824	28.2	C
East: Tierra del Sol y Comunidd							
22 L	0.109		26	103	0.252	32.3	C
23 R	0.109	0.781	60	238	0.252	32.5	C
			86	341	0.252	32.4	C
North: PR-906 Norte							
42 L	0.313*		115	165	0.698	20.8	C
41 T	0.797		1765	2527	0.698	6.6	A
			1880	2692	0.698	7.5	A
ALL VEHICLES:			3675	5466	0.824	17.9	B
INTERSECTION (persons):			4410	5466	0.824	17.9	

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria) and v/c ratio,
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

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Table D.0 - GEOMETRIC DELAY DATA

From Approach	To Approach	Negn Radius (m)	Negn Speed (km/h)	Negn Dist. (m)	Appr. Dist. (m)	Downstream Distance (m)
West: PR-53 Rampa desde Yabucoa						
	South	10.0	18.5	15.7	500	119
	East	S	65.0	19.0	500	125
	North	8.7	17.3	13.7	500	119
South: PR-906 Sur						
	East	10.0	18.5	15.7	500	119
	North	S	65.0	10.8	500	125
East: Tierra del Sol y Comunidd						
	South	9.8	18.3	15.4	500	119
	North	10.0	18.5	15.7	500	119
North: PR-906 Norte						
	South	S	65.0	10.8	500	125
	East	9.8	18.3	15.4	500	119

Downstream distance is distance travelled from the stopline until exit cruise speed is reached (includes negotiation distance). Acceleration distance is weighted for light and heavy vehicles. The same distance applies for both stopped and unstopped vehicles.

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Table D.1 - LANE DELAYS

ane .	Mov No.	Deg. Satn x	Delay (seconds/veh) Stop-line Delay 1st d1	2nd d2	Total dSL	Acc. Dec. dn	Queuing Total dq	MvUp dqm	Stopd (Idle) di	Geom dig	Control dic
st: PR-53 Rampa desde Yabucoa											
L	12, 11	0.385	31.2	0.9	32.1	3.4	28.3	0.0	28.3	9.7 0.0	41.8
TR	11, 13	0.287	12.7	0.5	13.2	3.7	21.7	0.0	21.7	0.0 9.7	21.6
uth: PR-906 Sur											
T	31	0.802	17.7	4.8	22.5	8.2	14.4	0.0	14.4	0.0	22.5
TR	31, 33	0.802	29.0	4.9	33.9	8.0	36.9	0.3	36.6	0.0 9.7	34.0
st: Tierra del Sol y Comunidd											
LR	22, 23	0.252	22.5	0.3	22.8	3.3	19.7	0.0	19.7	9.7 9.7	32.5
orth: PR-906 Norte											
LT	42, 41	0.698	9.1	2.2	11.3	6.8	6.8	0.0	6.8	9.7 0.0	13.0
T	41	0.698	3.3	1.2	4.5	4.4	0.1	0.0	0.1	0.0	4.5

in is average stop-start delay for all vehicles queued and unqueued

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ble D.2 - LANE STOPS

ane o.	Deg. Satn x	-- Effective Stop Rate -- he1	he2	Geom. hig	Overall h	Prop. Queued pq	Queue Move-up Rate hqm
est: PR-53 Rampa desde Yabucoa							
L	0.385	0.72	0.00	0.04	0.76	0.945	0.00
TR	0.287	0.70	0.00	0.11	0.81	0.830	0.00
outh: PR-906 Sur							
T	0.802	0.82	0.00	0.00	0.82	0.914	0.00
TR	0.802	0.81	0.01	0.00	0.83	0.907	0.45
ast: Tierra del Sol y Comunidd							
LR	0.252	0.66	0.00	0.10	0.76	0.865	0.00
orth: PR-906 Norte							
LT	0.698	0.74	0.00	0.02	0.76	0.851	0.00
T	0.698	0.46	0.00	0.00	0.46	0.492	0.00

hg is the average value for all movements in a shared lane
hqm is average queue move-up rate for all vehicles queued and unqueued

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ble D.3 - LANE QUEUES

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nb1	Nb2	Nb	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
West: PR-53 Rampa desde Yabucoa											
1 L	0.385	0.1	1.7	0.1	1.8	2.2	2.9	3.2	3.7	4.6	0.00
2 TR	0.287	0.1	1.3	0.1	1.4	1.7	2.2	2.5	2.9	3.7	0.00
South: PR-906 Sur											
1 T	0.802	2.0	12.9	2.0	15.0	17.5	22.2	23.8	26.4	30.2	0.03
2 TR	0.802	2.0	31.0	2.0	33.1	37.8	46.3	48.8	52.7	58.8	0.05
East: Tierra del Sol y Comunidd											
1 LR	0.252	0.1	1.4	0.1	1.5	1.8	2.3	2.6	3.0	3.8	0.00
North: PR-906 Norte											
1 LT	0.698	1.2	6.6	1.2	7.8	9.2	12.0	13.1	14.8	17.6	0.01
2 T	0.698	1.8	10.6	1.8	12.4	14.6	18.6	20.1	22.4	25.9	0.02

Values printed in this table are back of queue (vehicles).

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Table D.4 - MOVEMENT SPEEDS (km/h)

Mov No.	App. Speeds Cruise	App. Speeds Negn	Exit Speeds Negn	Exit Speeds Cruise	Queue Move-up 1st Grn	Queue Move-up 2nd Grn	Av. Section Spd Running	Av. Section Spd Overall
West: PR-53 Rampa desde Yabucoa								
12	65.0	17.3	17.3	65.0			47.0	29.4
11	65.0	65.0	65.0	65.0			46.6	37.5
13	65.0	18.5	18.5	65.0			47.3	32.2
South: PR-906 Sur								
31	65.0	65.0	65.0	65.0	5.9	0.0	48.2	33.0
33	65.0	18.5	18.5	65.0	0.3	11.3	46.7	25.1
East: Tierra del Sol y Comunidd								
22	65.0	18.3	18.3	65.0			47.2	33.3
23	65.0	18.5	18.5	65.0			47.2	33.3
North: PR-906 Norte								
42	65.0	18.3	18.3	65.0	9.5	0.0	45.3	38.8
41	65.0	65.0	65.0	65.0			56.1	53.7

"Running Speed" is the average speed excluding stopped periods.

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Table D.5 - PROGRESSION FACTORS & ACTUATED SIGNAL PARAMETERS

Mov No.	Control	Coord.	Arrival Type	Delay Prog. Factor	Queue Prog. Factor	Gap Settings es	Gap Settings eh	Disp. Grn. Settings 1st Grn Gmin	1st Grn Gmax	2nd Grn Gmin	2nd Grn Gmax

st: PR-53 Rampa desde Yabucoa											
12	VA	No	3	1.000	1.000	2.0	2.2	6	20		
11	VA	No	3	1.000	1.000	2.5	2.7	6	50		
13	VA	No	3	1.000	1.000	2.5	2.7	6	50	6	50
uth: PR-906 Sur											
31	VA	No	3	1.000	1.000	2.5	2.7	6	50		
33	VA	No	3	1.000	1.000	2.5	2.7	6	50	6	50
st: Tierra del Sol y Comunidd											
22	VA	No	3	1.000	1.000	2.0	2.2	6	20		
23	VA	No	3	1.000	1.000	2.5	2.7	6	50	6	50
rth: PR-906 Norte											
42	VA	No	3	1.000	1.000	2.0	2.2	6	20		
41	VA	No	3	1.000	1.000	2.5	2.7	6	50		

--- End of aaSIDRA Output ---

Akcelik & Associates Pty Ltd - aaSIDRA 2.0.0.205

CMA Architects & Engineers LLP
Ing. Ricardo Rivera Registered User No. 50310
Licence Type: Professional, Single Computer

Time and Date of Analysis 1:14 PM, Nov 5,2002

Filename: C:\CMA AE LLP Projects\Estudios de Transito\00237 - Palmas del Mar PR-906 Traffi dy, Humacao\Revision 2002\Int62020.OUT

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion PR-3 y PR-906 A?o 2020
Intersection ID: 6

aaTraffic SIDRA US Highway Capacity Manual (2000) Metric Version

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
    Any maximum cycle time specification
    Any user-given cycle time (unless phase times also given)
    User-given cycle and phase times (if variable flow scale run)
    Any variable cycle time specification
    Any green split priority specification
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 10
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
                Geometric delay included
  HCM Delay and Queue Models option selected
  Level of Service based on: Delay and degree of saturation
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 3
  Comparison of last two iterations:
    Difference in intersection degree of satn = 0.0 %
    Difference in total vehicle capacity = 0.0 %
    Largest difference in eff. green times = 0 secs
    (max. value for stopping = 0 secs)

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion PR-3 y PR-906 A?o 2020
Intersection ID: 6

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF10.SDF)

1. Basic saturation flow: 1900 tcu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

LEFT		THROUGH		RIGHT	
LV	HV	LV	HV	LV	HV