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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studio de Transito Centro de Mercadeo PR-906 Palmas del Mar
nterseccion Palmas del Mar Main Entrance y PR-906 A?o 2020
ntersection ID: 1
Stop Sign Controlled Intersection

able S.12B - FUEL CONSUMPTION, EMISSIONS AND C[illegible]

Mov No.	Fuel Rate L/100km	Cost Rate $/km	HC Rate g/km	CO Rate g/km	[illegible] g/km	CO2 Rate g/km
outh: PR-906 Sur Candelero Abaj						
31 T	7.2	0.19	0.243	4.71	0.351	180.1
33 R	11.9	0.26	0.528	26.41	0.760	296.8
	7.3	0.19	0.251	5.31	0.362	183.3
ast: Palmas del Mar Main Entry						
22 L	42.0	2.31	2.310	38.91	1.231	1050.6
23 R	39.4	2.12	2.151	38.75	1.210	984.8
	39.5	2.12	2.155	38.75	1.210	986.3
orth: PR-906 Norte						
42 L	12.3	0.28	0.551	27.37	0.781	306.6
41 T	7.2	0.19	0.243	4.71	0.351	180.1
	10.2	0.24	0.427	18.22	0.607	255.5
[illegible]ERSECTION:	17.8	0.75	0.874	21.85	0.735	445.0

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Palmas del Mar Main Entrance y PR-906 A?o 2020
Intersection ID: 1
Stop Sign Controlled Intersection

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			0.156	0.0	0	
2 T		296		296	0			0.156	0.0	0	
3 R			17	17	0			0.011	9.7	0	50
	0	592	17	609	0			0.156	0.3		

East: Palmas del Mar Main Entry									
1 LR	25		204	229	0	1.906	498.2	38	
2 R			855	855	0	1.906	436.9	72	
	25	0	1059	1084	0	1.906	449.9	72	
North: PR-906 Norte									
1 L	669			669	0	0.698	16.2	4	50
2 L	669			669	0	0.698	16.2	4	
3 T		899		899	0	0.473	0.0	0	
	1337	899	0	2236	0	0.698	9.7	4	

ALL VEHICLES	Total Flow	% HV	Max X	Aver. Delay	Max Queue
	3929	0	1.923	129.7	72

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 are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Palmas del Mar Main Entrance y PR-906 A?o 2020
Intersection ID: 1
Stop Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	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		592	3800	0.156	0.0	A
33 R	(Unl)	17	1615	0.011	9.7	A
		609	5415	0.156	0.3	A
East: Palmas del Mar Main Entry						
22 L		25	13	1.923*	498.2	F
23 R	(Unl)	1059	556	1.905	448.7	F
		1084	569	1.923	449.9	F
North: PR-906 Norte						
42 L		1337	1914	0.699	16.2	C
41 T		899	1900	0.473	0.0	A
		2236	3814	0.699	9.7	A
ALL VEHICLES:		3929	9798	1.923	129.7	F

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

---

ntersection ID: 1
Stop Sign Controlled Intersection

able 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)
South: PR-906 Sur Candelero Abaj						
	East	10.0	18.5	15.7	500	119
	North	S	65.0	23.0	500	125
East: Palmas del Mar Main Entry						
	South	15.1	22.7	23.7	500	121
	North	10.0	18.5	15.7	500	119
North: PR-906 Norte						
	South	S	65.0	23.0	500	125
	East	13.9	21.8	21.9	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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studio de Transito Centro de Mercadeo PR-906 Pa
nterseccion Palmas del Mar Main Entrance y PR-906
ntersection ID: 1
Stop Sign Controlled Intersection

D.1 - LANE DELAYS

Lane No.	Mov No.	Deg. Satn x	Stop-line Delay 1st d1	2nd d2	Total dSL	Delay (seconds/veh) Acc. Dec. dn	Queuing Total dq	MvUp dqm	Stopd (Idle) di	Geom dig	Control dic
South: PR-906 Sur Candelero Abaj											
1 T	31	0.156	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 T	31	0.156	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 R	33	0.011	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	9.7
East: Palmas del Mar Main Entry											
1 LR	22, 23	1.906	30.0	463.2	493.2	2.0	491.3	3.6	487.6	5.0 5.0	498.2
2 R	23	1.906	8.0	423.9	431.9	1.9	430.0	23.3	406.7	5.0	436.9
North: PR-906 Norte											
1 L	42	0.698	4.0	2.7	6.7	3.0	3.6	1.5	2.1	9.5	16.2
2 L	42, 41	0.698	4.0	2.7	6.7	3.0	3.6	1.5	2.1	9.5 0.0	16.2
3 T	41	0.473	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

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studio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Intersection Palmas del Mar Main Entrance y PR-906 A?o 2020
Intersection ID: 1
Stop Sign Controlled Intersection

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	0.156	0.00	0.00	0.00	0.00	0.000	0.00
2 T	0.156	0.00	0.00	0.00	0.00	0.000	0.00
3 R	0.011	0.00	0.00	0.72	0.72	0.000	0.00
East: Palmas del Mar Main Entry							
1 LR	1.906	1.00	0.17	0.00	1.17	1.000	1.92
2 R	1.906	1.00	1.11	0.00	2.11	1.000	11.82
North: PR-906 Norte							
1 L	0.698	0.70	0.07	0.20	0.98	0.703	0.66
2 L	0.698	0.70	0.07	0.20	0.98	0.703	0.66
3 T	0.473	0.00	0.00	0.00	0.00	0.000	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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Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Palmas del Mar Main Entrance y PR-906 A?o 2020
Intersection ID: 1
Stop Sign Controlled Intersection

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	0.156	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2 T	0.156	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 R	0.011	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
East: Palmas del Mar Main Entry											
1 LR	1.906	17.7	12.1	18.3	30.4	37.0	49.2	58.3	76.5	91.7	0.08
2 R	1.906	51.7	5.0	52.7	57.7	69.2	92.3	109.6	144.2	173.0	0.14
North: PR-906 Norte											
1 L	0.698	0.6	1.6	1.3	2.9	4.9	6.1	6.9	8.7	10.1	0.09
2 L	0.698	0.6	1.6	1.3	2.9	4.9	6.1	6.9	8.7	10.1	0.01
3 T	0.473	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

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

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Palmas del Mar Main Entrance y PR-906 A?o 2020
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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
South: PR-906 Sur Candelero Abaj								
31	65.0	65.0	65.0	65.0			65.0	65.0

33	65.0	18.5	18.5	65.0		50.7	50.7
East: Palmas del Mar Main Entry							
22	65.0	0.0	22.7	65.0	2.5	45.9	4.2
23	65.0	0.0	18.5	65.0	4.1	34.0	4.6
North: PR-906 Norte							
42	65.0	21.8	21.8	65.0	4.9	46.1	44.2
41	65.0	65.0	65.0	65.0	0.0	65.0	65.0

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

--- 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 10:46 AM, Nov 5,2002

Filename: C:\CMA AE LLP Projects\Estudios de Transito\00237 - Palmas del Mar PR-906 Traffic dy, Humacao\Revision 2002\Int22020NS.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: Unsignalised - Two-Way Stop Control
  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

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

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Fol.up Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	7.5	3.5	2.0	50
Through :	6.5	4.0	2.0	50
Right turns:	6.9	3.3	2.0	50
Opposed turns from priority road:				
	4.1	2.2	2.0	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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studio de Transito Centro de Mercadeo PR-906 Palmas del Mar
nterseccion Sur Centro Mercadeo y PR-906 A?o 2020
ntersection ID: 2
Stop Sign Controlled Intersection

able 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								
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
outh: 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
orth: 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

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

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studio de Transito Centro de Mercadeo PR-906 Palmas del Mar
nterseccion Sur Centro Mercadeo y PR-906 A?o 2020
ntersection ID: 2
Stop Sign Controlled Intersection

able S.2 - MOVEMENT CAPACITY PARAMETERS

Mov No.	Dem Flow (veh /h	Total Opng Flow (veh/h)	%HV	Adjust. Opng Flow (pcu/h)	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
est: Entrada Sur Centro Mercad									
12 L	86	3504+	0.0	3504	40	0.80	-63	100	2.150*
13 R	425	1853+	0.0	1853	200	0.80	-62	100	2.125
South: PR-906 Sur									
32 L	392	1895	0.0	1895	491	0.80	0	100	0.798
31 T	1259	0			1900	0.80	21	83	0.663
n: PR-906 Norte									
41 T	1811	0			3800	0.80	68	100	0.477
43 R	84	0			1615	0.80	1438	11	0.052

+ Percentage of exiting flow included in total opposing 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
Stop Sign Controlled Intersection

Table S.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	F
Worst movement Level of Service	=	F
Average intersection delay (s)	=	79.5
Largest average movement delay (s)	=	594.5
Largest back of queue, 95% (m)	=	481
Performance Index	=	545.20
Degree of saturation (highest)	=	2.150
Practical Spare Capacity (lowest)	=	-63 %
Total vehicle capacity, all lanes (veh/h)	=	8046
Total vehicle flow (veh/h)	=	4057
Total person flow (pers/h)	=	4868
Total vehicle delay (veh-h/h)	=	89.57
Total person delay (pers-h/h)	=	107.49
Total effective vehicle stops (veh/h)	=	1044
Total effective person stops (pers/h)	=	1253
Total vehicle travel (veh-km/h)	=	2531.7
Total cost ($/h)	=	1328.61
Total fuel (L/h)	=	330.6
Total CO2 (kg/h)	=	826.61

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

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% (vehs)	Back (m)	Perf. Index	Aver. Speed (km/h)
West: Entrada Sur Centro Mercad									
12 L	14.20	17.04	594.5	1.00	1.01	961.8	481	144.75	3.5
13 R	70.18	84.22	594.5	1.00	1.12	961.8	481	356.15	3.5
South: PR-906 Sur									
32 L	4.96	5.95	45.6	0.96	1.07	5.6	3	13.56	27.9
31 T	0.00	0.00	0.0	0.00	0.00	0.0	0	12.11	65.0
North: PR-906 Norte									
41 T	0.00	0.00	0.0	0.00	0.00	0.0	0	17.42	65.0
43 R	0.23	0.27	9.7	0.00	0.72	0.0	0	1.19	50.7

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

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	2.150	84.39	101.26	594.5	1.000	1.11	481	500.91	3.5
South: PR-906 Sur									
1651	0.798	4.96	5.95	10.8	0.229	0.25	3	25.67	49.5

orth: PR-906 Norte									
1895	0.477	0.23	0.27	0.4	0.000	0.03	0	18.62	64.2
NTERSECTION (persons):									
4868	2.150		107.49	79.5	0.219	0.26		545.20	19.6

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

.studio de Transito Centro de Mercadeo PR-906 Palmas del Mar
nterseccion Sur Centro Mercadeo y PR-906 A?o 2020
ntersection ID: 2
Stop Sign Controlled Intersection

'able S.7 - LANE PERFORMANCE

Lane No.	Mov No.	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec	Eff.	Queue		Short Lane (m)
West: Entrada Sur Centro Mercad									
1 LR	12, 13	256	120	2.129	594.5	1.01	961.[illegible]		
2 R	13	256	120	2.129	594.5	1.20	64.2	32	
South: PR-906 Sur									
1 L	32	196	246	0.798	45.6	1.07	5.6	3	50
2 L	32, 31	196	246	0.798	45.6	1.07	5.6	3	
3 T	31	1259	1900	0.663	0.0	0.00	0.0	0	
North: PR-906 Norte									
1 T	41	906	1900	0.477	0.0	0.00	0.0	0	
2 T	41, 43	906	1900	0.477	0.0	0.00	0.0	0	
[illegible]	43	84	1615	0.052	9.7	0.72	0.0	0	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
Stop Sign Controlled Intersection

Table S.8 - LANE FLOW AND CAPACITY INFORMATION

Lan No.	Mov No.	Dem Flow (veh/h) Lef	Thru	Rig	Tot	Min Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %
West: Entrada Sur Centro Mercad									
1 LR	12, 13	86	0	170	256	120	120	2.129	100
2 R	13	0	0	256	256	120	120	2.129	100
South: PR-906 Sur									
1 L	32	196	0	0	196	120	246	0.798	100
2 L	32, 31	196	0	0	196	120	246	0.798	100
3 T	31	0	1259	0	1259	1259	1900	0.663	83P
North: PR-906 Norte									
1 T	41	0	906	0	906	906	1900	0.477	100
2 T	41, 43	0	906	0	906	906	1900	0.477	100

3	R	43	0	0	84	84	84	1615	0.052	11P

P Lane under-utilisation found by the "Program"

The capacity value for priority and continuous movements is obtained by adjusting the basic saturation flow for heavy vehicle and turning vehicle effects. Saturation flow scale applies if specified.

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

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	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
West: Entrada Sur Centro Mercad									
12	L	86	40	100	2.150*	594.5	1.01	961.8	144.75
13	R	425	200	100	2.125	594.5	1.12	961.8	356.15
South: PR-906 Sur									
32	L	392	491	100	0.798	45.6	1.07	5.6	13.56
31	T	1259	1900	83	0.663	0.0	0.00	0.0	12.11
North: PR-906 Norte									
41	T	1811	3800	100	0.477	0.0	0.00	0.0	17.42
43	R	84	1615	11	0.052	9.7	0.72	0.0	1.19

* Maximum degree of saturation

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

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	25.5	144.97	0.142	2.19	0.070	63.9
13 R	126.3	716.45	0.701	10.85	0.348	315.7
	151.8	861.42	0.843	13.04	0.418	379.6
South: PR-906 Sur						
32 L	34.3	96.40	0.161	6.95	0.199	85.8
31 T	56.7	146.50	0.191	3.71	0.276	141.8
	91.0	242.90	0.352	10.66	0.475	227.6
North: PR-906 Norte						
41 T	81.6	210.73	0.275	5.33	0.397	204.0
43 R	6.2	13.56	0.027	1.37	0.040	15.4
	87.8	224.29	0.303	6.71	0.437	219.4
INTERSECTION:	330.6	1328.61	1.497	30.41	1.330	826.6

ARAMETERS 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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studio de Transito Centro de Mercadeo PR-906 Palmas del Mar
nterseccion Sur Centro Mercadeo y PR-906 A?o 2020
ntersection ID: 2
Stop Sign Controlled Intersection

able 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
est: Entrada Sur Centro Mercad						
12 L	47.8	2.72	2.656	41.04	1.317	1196.2
13 R	48.0	2.72	2.663	41.22	1.322	1199.3
	47.9	2.72	2.662	41.19	1.321	1198.7
outh: PR-906 Sur						
32 L	14.1	0.40	0.661	28.61	0.820	352.9
31 T	7.2	0.19	0.243	4.71	0.351	180.1
	8.8	0.24	0.341	10.34	0.461	220.9
orth: PR-906 Norte						
41 T	7.2	0.19	0.243	4.71	0.351	180.1
43 R	11.9	0.26	0.528	26.41	0.760	296.8
	7.4	0.19	0.255	5.66	0.369	185.2
INTERSECTION:	13.1	0.52	0.591	12.01	0.525	326.5

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studio de Transito Centro de Mercadeo PR-906 Palmas del Mar
nterseccion Sur Centro Mercadeo y PR-906 A?o 2020
ntersection ID: 2
Stop Sign Controlled Intersection

able 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												
LR	86		170	256	0				2.129	594.5	481	

2 R			256	256	0	2.129	594.5	[illegible]	
	86	0	425	511	0	2.129	594.5	481	
South: PR-906 Sur									
1 L	196			196	0	0.798	45.6	3	50
2 L	196			196	0	0.798	45.6	3	
3 T		1259		1259	0	0.663	0.0	0	
	392	1259	0	1651	0	0.798	10.8	3	
North: PR-906 Norte									
1 T		906		906	0	0.477	0.0	0	
2 T		906		906	0	0.477	0.0	0	
3 R			84	84	0	0.052	9.7	0	50
	0	1811	84	1895	0	0.477	0.4		

ALL VEHICLES	Total Flow	% HV	Max X	Aver. Delay	Max Queue
	4057	0	2.150	79.5	481

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 are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
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Stop Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
West: Entrada Sur Centro Mercad						
12 L		86	40	2.150*	594.5	F
13 R		425	200	2.125	594.5	F
		511	240	2.150	594.5	F
South: PR-906 Sur						
32 L		392	491	0.798	45.6	E
31 T		1259	1900	0.663	0.0	A
		1651	2391	0.798	10.8	B
North: PR-906 Norte						
41 T		1811	3800	0.477	0.0	A
43 R		84	1615	0.052	9.7	A
		1895	5415	0.477	0.4	A
ALL VEHICLES:		4057	8046	2.150	79.5	F

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 Sur Centro Mercadeo y PR-906 A?o 2020
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Stop Sign Controlled Intersection

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.

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Sur Centro Mercadeo y PR-906 A?o 2020
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Stop Sign Controlled Intersection

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	2.129	30.0	559.5	589.5	2.0	587.5	0.2	587.2	5.0 5.0	594.5
2 R	13	2.129	30.0	559.5	589.5	1.9	587.6	4.2	583.3	5.0	594.5
South: PR-906 Sur											
1 L	32	0.798	17.7	18.3	36.0	3.9	32.0	1.7	30.4	9.6	45.6
2 L	32, 31	0.798	17.7	18.3	36.0	3.9	32.0	1.7	30.4	9.6 0.0	45.6
3 T	31	0.663	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
North: PR-906 Norte											
1 T	41	0.477	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 T	41, 43	0.477	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 0.0	0.0
3 R	43	0.052	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	9.7

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

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
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Intersection ID: 2

Stop Sign Controlled Intersection

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	2.129	1.00	0.01	0.00	1.01	1.000	0.18
2 R	2.129	1.00	0.20	0.00	1.20	1.000	3.05
South: PR-906 Sur							
1 L	0.798	0.97	0.08	0.02	1.07	0.966	1.10
2 L	0.798	0.97	0.08	0.02	1.07	0.966	1.10
3 T	0.663	0.00	0.00	0.00	0.00	0.000	0.00
North: PR-906 Norte							
1 T	0.477	0.00	0.00	0.00	0.00	0.000	0.00
2 T	0.477	0.00	0.00	0.00	0.00	0.000	0.00
3 R	0.052	0.00	0.00	0.72	0.72	0.000	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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Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
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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 Sur Centro Mercad											
1 LR	2.129	41.9	346.2	38.5	384.7	461.6	615.5	730.9	961.8	*****	0.96
2 R	2.129	18.2	7.3	18.0	25.4	31.2	41.3	49.0	64.2	76.9	0.06
South: PR-906 Sur											
1 L	0.798	0.9	1.1	0.7	1.8	3.2	4.0	4.5	5.6	6.6	0.06
2 L	0.798	0.9	1.1	0.7	1.8	3.2	4.0	4.5	5.6	6.6	0.01
3 T	0.663	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
North: PR-906 Norte											
1 T	0.477	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2 T	0.477	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 R	0.052	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

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

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

App. Speeds	Exit Speeds	Queue Move-up	Av. Section Spd

Mov No.	Cruise	Negn	Negn	Cruise	1st Grn	2nd Grn	Running	Overall
West: Entrada Sur Centro Mercad								
12	65.0	0.0	22.0	65.0	2.3		48.0	3.5
13	65.0	0.0	18.5	65.0	2.8		45.9	3.5
South: PR-906 Sur								
32	65.0	20.1	20.1	65.0	3.1		45.1	27.9
31	65.0	65.0	65.0	65.0	0.0		65.0	65.0
North: PR-906 Norte								
41	65.0	65.0	65.0	65.0			65.0	65.0
43	65.0	18.5	18.5	65.0			50.7	50.7

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

--- 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 11:02 AM, Nov 5,2002

Filename: C:\CMA AE LLP Projects\Estudios de Transito\00237 - Palmas del Mar PR-906 Traffic Study, Humacao\Revision 2002\Int32020NS.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: Unsignalised - Two-Way Stop Control
  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

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.

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 (Two-Way Stop Control)

	Crit. Gap	Fol.up Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	7.5	3.5	2.0	50
Through :	6.5	4.0	2.0	50
Right turns:	6.9	3.3	2.0	50
Opposed turns from priority road:	4.1	2.2	2.0	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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studio de Transito Centro de Mercadeo PR-906 Palmas del Mar
nterseccion Norte Centro Mercadeo y PR-906 A?o 2020
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Stop Sign Controlled Intersection

able 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							
est: 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
outh: 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
orth: 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

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

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nterseccion Norte Centro Mercadeo y PR-906 A?o 2020
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Stop Sign Controlled Intersection

able S.2 - MOVEMENT CAPACITY PARAMETERS

Mov No.	Dem Flow (veh /h)	Total Opng Flow (veh/h)	%HV	Adjust. Opng Flow (pcu/h)	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
est: Entrada Sur Centro Mercad									
12 L	151	2976+	0.0	2976	75	0.80	-60	100	2.013
13 R	335	1632+	0.0	1632	165	0.80	-61	100	2.030*
outh: PR-906 Sur									
32 L	306	1705	0.0	1705	596	0.80	56	100	0.513
31 T	1038	0			2023	0.80	56	100	0.513
orth: PR-906 Norte									
41 T	1559	0			3800	0.80	95	100	0.410
43 R	146	0			1615	0.80	785	22	0.090

+ Percentage of exiting flow included in total opposing 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
Stop Sign Controlled Intersection

Table S.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	F
Worst movement Level of Service	=	F
Average intersection delay (s)	=	78.6
Largest average movement delay (s)	=	549.4
Largest back of queue, 95% (m)	=	157
Performance Index	=	262.39
Degree of saturation (highest)	=	2.030
Practical Spare Capacity (lowest)	=	-61 %
Total vehicle capacity, all lanes (veh/h)	=	8274
Total vehicle flow (veh/h)	=	3535
Total person flow (pers/h)	=	4242
Total vehicle delay (veh-h/h)	=	77.21
Total person delay (pers-h/h)	=	92.66
Total effective vehicle stops (veh/h)	=	975
Total effective person stops (pers/h)	=	1170
Total vehicle travel (veh-km/h)	=	2205.6
Total cost ($/h)	=	1152.24
Total fuel (L/h)	=	290.5
Total CO2 (kg/h)	=	726.32

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	23.04	27.65	549.4	1.00	1.02	313.5	157	102.83	3.8
13 R	51.12	61.35	549.4	1.00	1.21	313.5	157	123.91	3.8
South: PR-906 Sur									
32 L	2.34	2.81	27.5	0.94	1.01	3.8	2	7.90	36.1
31 T	0.31	0.38	1.1	0.06	0.00	3.8	2	10.67	63.0
North: PR-906 Norte									
41 T	0.00	0.00	0.0	0.00	0.00	0.0	0	15.00	65.0
43 R	0.39	0.47	9.7	0.00	0.72	0.0	0	2.07	50.7

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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: Entrada Sur Centro Mercad									
486	2.030	74.17	89.00	549.4	1.000	1.15	157	226.74	3.8
South: PR-906 Sur									
1344	0.513	2.65	3.19	7.1	0.263	0.23	2	18.57	53.9

orth: PR-906 Norte
1705 0.410 0.39 0.47 0.8 0.000 0.06 0 17.07 63.5

NTERSECTION (persons):
4242 2.030 92.66 78.6 0.237 0.28 262.39 19.7

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

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studio de Transito Centro de Mercadeo PR-906 Palmas del Mar
nterseccion Norte Centro Mercadeo y PR-906 A?o 2020
ntersection ID: 2
Stop Sign Controlled Intersection

able S.7 - LANE PERFORMANCE

Lane No.	Mov No.	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue 95% Back (vehs)	Queue 95% Back (m)	Short Lane (m)
West: Entrada Sur Centro Mercad									
1 LR	12, 13	243	120	2.025	549.4	1.02	313.5	157	
2 R	13	243	120	2.025	549.4	1.28	53.6	27	
South: PR-906 Sur									
1 L	32	158	308	0.513	27.5	1.00	2.9	1	50
2 LT	32, 31	211	411	0.513	24.7	0.72	3.8	2	
3 T	31	975	1900	0.513	0.0	0.00	0.0	0	
North: PR-906 Norte									
1 T	41	780	1900	0.410	0.0	0.00	0.0	0	
2 T	41, 43	780	1900	0.410	0.0	0.00	0.0	0	
3 R	43	146	1615	0.090	9.7	0.72	0.0	0	50

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Table S.8 - LANE FLOW AND CAPACITY INFORMATION

Lan No.	Mov No.	Dem Flow (veh/h) Lef	Thru	Rig	Tot	Min Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %
West: Entrada Sur Centro Mercad									
1 LR	12, 13	151	0	92	243	120	120	2.025	100
2 R	13	0	0	243	243	120	120	2.025	100
South: PR-906 Sur									
1 L	32	158	0	0	158	120	308	0.513	100
2 LT	32, 31	148	63	0	211	167	411	0.513	100
3 T	31	0	975	0	975	974	1900	0.513	100
North: PR-906 Norte									
1 T	41	0	780	0	780	780	1900	0.410	100
2 T	41, 43	0	780	0	780	780	1900	0.410	100

3 R	43	0	0	146	146	120	1615	0.090	22P

P Lane under-utilisation found by the "Program"

The capacity value for priority and continuous movements is obtained by adjusting the basic saturation flow for heavy vehicle and turning vehicle effects. Saturation flow scale applies if specified.

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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	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
West: Entrada Sur Centro Mercad									
12	L	151	75	100	2.013	549.4	1.02	313.5	102.83
13	R	335	165	100	2.030*	549.4	1.21	313.5	123.91
South: PR-906 Sur									
32	L	306	596	100	0.513	27.5	1.01	3.8	7.90
31	T	1038	2023	100	0.513	1.1	0.00	3.8	10.67
North: PR-906 Norte									
41	T	1559	3800	100	0.410	0.0	0.00	0.0	15.00
43	R	146	1615	22	0.090	9.7	0.72	0.0	2.07

* Maximum degree of saturation

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Interseccion Norte Centro Mercadeo y PR-906 A?o 2020
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Stop Sign Controlled Intersection

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	42.3	236.96	0.234	3.75	0.120	105.7
13 R	93.9	525.79	0.519	8.35	0.266	234.8
	136.2	762.74	0.753	12.11	0.386	340.5
South: PR-906 Sur						
32 L	24.7	61.02	0.113	5.34	0.152	61.7
31 T	48.6	123.50	0.169	3.93	0.245	121.6
	73.3	184.52	0.282	9.27	0.397	183.3
North: PR-906 Norte						
41 T	70.2	181.41	0.237	4.59	0.342	175.6
43 R	10.7	23.57	0.048	2.39	0.069	26.8
	81.0	204.98	0.285	6.98	0.411	202.5
INTERSECTION:	290.5	1152.24	1.319	28.36	1.193	726.3

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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studio de Transito Centro de Mercadeo PR-906 Palmas del Mar
nterseccion Norte Centro Mercadeo y PR-906 A?o 2020
ntersection ID: 2
Stop Sign Controlled Intersection

able 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
est: Entrada Sur Centro Mercad						
12 L	45.1	2.53	2.494	40.04	1.277	1128.1
13 R	45.3	2.53	2.502	40.26	1.282	1131.4
	45.2	2.53	2.500	40.19	1.281	1130.4
outh: PR-906 Sur						
32 L	13.0	0.32	0.596	28.14	0.802	325.3
31 T	7.5	0.19	0.260	6.06	0.377	187.3
	8.7	0.22	0.336	11.05	0.473	218.5
orth: PR-906 Norte						
41 T	7.2	0.19	0.243	4.71	0.351	180.1
43 R	11.9	0.26	0.528	26.41	0.760	296.8
	7.6	0.19	0.267	6.55	0.385	190.0
INTERSECTION:	13.2	0.52	0.598	12.86	0.541	329.3

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able 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	151		92	243	0				2.025	549.4	157	

2 R			243	243	0	2.025	549.4	27	
	151	0	335	486	0	2.025	549.4	157	
South: PR-906 Sur									
1 L	158			158	0	0.513	27.5	1	50
2 LT	148	63		211	0	0.513	24.7	2	
3 T		975		975	0	0.513	0.0	0	
	306	1038	0	1344	0	0.513	7.1	2	
North: PR-906 Norte									
1 T		780		780	0	0.410	0.0	0	
2 T		780		780	0	0.410	0.0	0	
3 R			146	146	0	0.090	9.7	0	50
	0	1559	146	1705	0	0.410	0.8		
ALL VEHICLES				Total Flow 3535	% HV 0	Max X 2.030	Aver. Delay 78.6	Max Queue 157	

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 are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

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Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
West: Entrada Sur Centro Mercad						
12 L		151	75	2.013	549.4	F
13 R		335	165	2.030*	549.4	F
		486	240	2.030	549.4	F
South: PR-906 Sur						
32 L		306	596	0.513	27.5	D
31 T		1038	2023	0.513	1.1	A
		1344	2619	0.513	7.1	A
North: PR-906 Norte						
41 T		1559	3800	0.410	0.0	A
43 R		146	1615	0.090	9.7	A
		1705	5415	0.410	0.8	A
ALL VEHICLES:		3535	8274	2.030	78.6	F

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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able 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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able D.1 - LANE DELAYS

Lane No.	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
West: Entrada Sur Centro Mercad											
1 LR	12, 13	2.025	30.0	514.4	544.4	2.1	542.3	0.5	541.8	5.0 5.0	549.4
2 R	13	2.025	30.0	514.4	544.4	1.9	542.5	6.0	536.5	5.0	549.4
South: PR-906 Sur											
1 L	32	0.513	13.3	4.6	18.0	3.7	14 3	0.6	13.7	9.6	27.5
2 LT	32, 31	0.513	16.4	1.5	17.9	5.5	12.4	0.4	12.0	9.6 0.0	24.7
3 T	31	0.513	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[illegible]th: PR-906 Norte											
[illegible]	41	0.410	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 [illegible]	41, 43	0.410	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 0.0	0.0
3 R	43	0.090	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	9.7

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
West: Entrada Sur Centro Mercad							
1 LR	2.025	1.00	0.02	0.00	1.02	1.000	0.37
2 R	2.025	1.00	0.28	0.00	1.28	1.000	4.15
South: PR-906 Sur							
1 L	0.513	0.90	0.03	0.07	1.00	0.899	0.40
2 LT	0.513	0.70	0.02	0.00	0.72	1.000	0.36
3 T	0.513	0.00	0.00	0.00	0.00	0.000	0.00
North: PR-906 Norte							
1 T	0.410	0.00	0.00	0.00	0.00	0.000	0.00
2 T	0.410	0.00	0.00	0.00	0.00	0.000	0.00
3 R	0.090	0.00	0.00	0.72	0.72	0.000	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 Sur Centro Mercad											
1 LR	2.025	26.5	100.7	24.6	125.4	150.5	200.6	238.2	313.5	376.2	0.31
2 R	2.025	16.3	4.8	16.2	21.0	26.3	34.7	41.0	53.6	64.0	0.05
South: PR-906 Sur											
1 L	0.513	0.3	0.7	0.2	0.9	1.7	2.1	2.3	2.9	3.3	0.03
2 LT	0.513	0.2	1.1	0.1	1.2	2.2	2.7	3.1	3.8	4.4	0.00
3 T	0.513	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
North: PR-906 Norte											
1 T	0.410	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2 T	0.410	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 R	0.090	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

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

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

App. Speeds	Exit Speeds	Queue Move-up	Av. Section Spd

Mov No.	Cruise	Negn	Negn	Cruise	1st Grn	2nd Grn	Running	Overall
West: Entrada Sur Centro Mercad								
12	65.0	0.0	22.0	65.0	2.4		47.8	3.8
13	65.0	0.0	18.5	65.0	2.9		44.2	3.8
South: PR-906 Sur								
32	65.0	20.1	20.1	65.0	3.2		46.1	36.1
31	65.0	65.0	65.0	65.0	0.0		64.0	63.0
North: PR-906 Norte								
41	65.0	65.0	65.0	65.0			65.0	65.0
43	65.0	18.5	18.5	65.0			50.7	50.7

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

--- End of aaSIDRA Output ---

Akcelik & Associates Pty Ltd - aaSIDRA 2.0.0.205

no remark

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

Time and Date of Analysis 11:32 AM, Nov 5,2002

Filename: C:\CMA AE LLP Projects\Estudios de Transito\00237 - Palmas del Mar PR-906 Traffic dy, Humacao\Revision 2002\Int42020NS.OUT

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
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Intersection ID: 2

aaTraffic SIDRA US Highway Capacity Manual (2000) Metric Version

RUN INFORMATION
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* Basic Parameters:
  Intersection Type: Unsignalised - Two-Way Stop Control
  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

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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

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Fol.up Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	7.5	3.5	2.0	50
Through :	6.5	4.0	2.0	50
Right turns:	6.9	3.3	2.0	50
Opposed turns from priority road:	4.1	2.2	2.0	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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able S.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
EHICLES	Demand flows in veh/hour as used by the program							
est: 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
outh: 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
ast: 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
orth: 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.

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Table S.2 - MOVEMENT CAPACITY PARAMETERS

Mov No.	Dem Flow (veh /h)	Total Opng Flow (veh/h)	%HV	Adjust. Opng Flow (pcu/h)	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
West: Entrada Centro Mercadeo									
12 L	190	3366+	0.0	3366	190	0.80	-20	49	1.000
11 T	246	2851+	0.0	2851	120	0.80	-61	49	2.050*
13 R	192	1501+	0.0	1501	120	0.80	-50	78	1.600
South: PR-906 Sur									
32 L	71	1593	0.0	1593	350	0.80	294	93	0.203
31 T	963	0			4400	0.80	266	100	0.219
33 R	46	0			1870	0.80	3152	11	0.025
East: PR-923 Palmas del Mar Sec									

22 L	69	3094+	0.0	3094	69	0.80	-20	77	1.000
21 T	229	2920+	0.0	2920	177	0.80	-38	100	1.294
23 R	407	986+	0.0	986	314	0.80	-38	100	1.296
North: PR-906 Norte									
42 L	270	1009	0.0	1009	768	0.80	128	100	0.352
41 T	1408	0			4005	0.80	128	100	0.352
43 R	185	0			1870	0.80	709	28	0.099

+ Percentage of exiting flow included in total opposing flow

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Table S.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	F
Worst movement Level of Service	=	F
Average intersection delay (s)	=	93.0
Largest average movement delay (s)	=	560.2
Largest back of queue, 95% (m)	=	357
Performance Index	=	852.32
Degree of saturation (highest)	=	2.050
Practical Spare Capacity (lowest)	=	-61 %
Total vehicle capacity, all lanes (veh/h)	=	14252
Total vehicle flow (veh/h)	=	4276
Total person flow (pers/h)	=	5131
Total vehicle delay (veh-h/h)	=	110.48
Total person delay (pers-h/h)	=	132.58
Total effective vehicle stops (veh/h)	=	2030
Total effective person stops (pers/h)	=	2436
Total vehicle travel (veh-km/h)	=	2663.5
Total cost ($/h)	=	1577.64
Total fuel (L/h)	=	408.6
Total CO2 (kg/h)	=	1021.39

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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 Centro Mercadeo									
12 L	5.22	6.27	98.9	1.00	1.00	714.2	357	471.48	16.2
11 T	38.28	45.94	560.2	1.00	1.04	156.3	78	103.86	3.7
13 R	19.71	23.65	369.6	1.00	1.28	34.1	17	35.12	5.5
South: PR-906 Sur									
32 L	0.40	0.48	20.4	0.82	0.94	0.9	0	1.56	40.8
31 T	0.00	0.00	0.0	0.00	0.00	0.0	0	9.27	65.0
33 R	0.12	0.15	9.7	0.00	0.72	0.0	0	0.05	50.7
East: PR-923 Palmas del Mar Sec									
22 L	4.03	4.84	210.4	1.00	1.01	181.0	90	77.27	9.0
21 T	15.90	19.09	250.0	1.00	1.03	104.4	52	72.04	7.7
23 R	23.71	28.46	209.8	1.00	1.35	62.4	31	55.79	9.0

North: PR-906 Norte

42 L	1.19	1.43	15.9	0.73	0.93	7.6	4	5.31	44.5
41 T	1.41	1.69	3.6	0.42	0.00	7.6	4	17.33	58.6
43 R	0.50	0.60	9.7	0.00	0.72	0.0	0	2.63	50.7

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able 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)
est: Entrada Centro Mercadeo									
628	2.050	63.21	75.85	362.4	1.000	1.10	[illegible]	46	5.6
outh: PR-906 Sur									
1080	0.219	0.52	0.63	1.7	0.054	0.09	[illegible]	[illegible].48	61.9
est: PR-923 Palmas del Mar Sec									
[illegible]	1.296	43.65	52.38	222.9	1.000	1.21	90	205.10	8.5
orth: PR-906 Norte									
1863	0.352	3.09	3.71	6.0	0.425	0.21	4	25.27	55.2
NTERSECTION (persons):									
5131	2.050		132.58	93.0	0.511	0.47		852.32	17.4

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

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able S.7 - LANE PERFORMANCE

Lane No.	Mov No.	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue 95% Back (vehs)	Queue 95% Back (m)	Short Lane (m)
West: Entrada Centro Mercadeo									
1 L	12	120	120	1.000	35.0r	1.00	714.2*	357<	50
2 L	12, 11	70	70	1.000	208.6	1.01	445.6	223	
3 T	11, 13	246	120	2.050	560.2	1.04	156.3	78	
4 R	13	192	120	1.600	369.6	1.28	34.1	17	50
[illegible]: PR-906 Sur									
[illegible]	32	71	350	0.203	20.4	0.94	0.9	0	50
[illegible]	32, 31	482	2200	0.219	0.0	0.00	0.0	0	
3 T	31, 33	482	2200	0.219	0.0	0.00	0.0	0	
4 R	33	46	1870	0.025	9.7	0.72	0.0	0	50
East: PR-923 Palmas del Mar Sec									
1 L	22	69	69	1.000	210.4	1.01	181.0*	90	50
2 T	22, 21	156	120	1.297	250.0	1.03	104.4	52	

3 TR	21, 23	156	120	1.297	[illegible]	[illegible]	[illegible]		
4 R	23	325	250	1.297	199.6	1.42	35.9	18	50
North: PR-906 Norte									
1 L	42	229	651	0.352	15.6	0.92	2.1	1	50
2 LT	42, 41	676	1922	0.352	8.5	0.06	7.6	4	
3 T	41, 43	773	2200	0.352	0.0	0.00	0.0	0	
4 R	43	185	1870	0.099	9.7	0.72	0.0	0	50

< Short lane capacity is reached and there is excess flow into an adjacent lane

* Queue length exceeds short lane length due to specification of a percentile queue in the aaSIDRA Configuration File. For calculation of this statistic, you may specify the lane with full length.

r Delay, stops and queue length for this lane have been cut down to fit in the queuing space. The amount cut may not be accounted for fully in the adjacent lane performance statistics. You may wish to change the short lane to a full lane to investigate the extent of this effect.

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Table S.8 - LANE FLOW AND CAPACITY INFORMATION

Lan No.	Mov No.	Dem Flow (veh/h) Lef	Thru	Rig	Tot	Min Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %
West: Entrada Centro Mercadeo									
1 L	12	120	0	0	120	120	120	1.000	49P
2 L	12, 11	70	0	0	70	70	70	1.000	49P
3 T	11, 13	0	246	0	246	120	120	2.050	100
4 R	13	0	0	192	192	120	120	1.600	78P
South: PR-906 Sur									
1 L	32	71	0	0	71	71	350	0.203	93P
2 T	32, 31	0	482	0	482	120	2200	0.219	100
3 T	31, 33	0	482	0	482	120	2200	0.219	100
4 R	33	0	0	46	46	46	1870	0.025	11P
East: PR-923 Palmas del Mar Sec									
1 L	22	69	0	0	69	69	69	1.000	77P
2 T	22, 21	0	156	0	156	120	120	1.297	100
3 TR	21, 23	0	73	82	156	120	120	1.297	100
4 R	23	0	0	325	325	120	250	1.297	100
North: PR-906 Norte									
1 L	42	229	0	0	229	120	651	0.352	100
2 LT	42, 41	41	635	0	676	120	1922	0.352	100
3 T	41, 43	0	773	0	773	120	2200	0.352	100
4 R	43	0	0	185	185	120	1870	0.099	28P

P Lane under-utilisation found by the "Program"

The capacity value for priority and continuous movements is obtained by adjusting the basic saturation flow for heavy vehicle and turning vehicle effects. Saturation flow scale applies if specified.

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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	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
West: Entrada Centro Mercadeo									
12	L	190	190	49	1.000	98.9	1.00	714.2	471.48
11	T	246	120	49	2.050*	560.2	1.04	156.3	103.86
13	R	192	120	78	1.600	369.6	1.28	34.1	35.12
South: PR-906 Sur									
32	L	71	350	93	0.203	20.4	0.94	0.9	1.56
31	T	963	4400	100	0.219	0.0	0.00	0.0	9.27
33	R	46	1870	11	0.025	9.7	0.72	0.0	0.65
East: PR-923 Palmas del Mar Sec									
22	L	69	69	77	1.000	210.4	1.01	181.0	77.27
21	T	229	177	100	1.294	250.0	1.03	104.4	72.04
[illegible]	R	407	314	100	1.296	209.8	1.35	62.4	55.79
North: PR-906 Norte									
42	L	270	768	100	0.352	15.9	0.93	7.6	5.31
41	T	1408	4005	100	0.352	3.6	0.00	7.6	17.33
43	R	185	1870	28	0.099	9.7	0.72	0.0	2.63

* Maximum degree of saturation

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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
West: Entrada Centro Mercadeo						
12 L	21.1	77.20	0.104	3.53	0.103	52.8
11 T	69.8	392.46	0.386	6.14	0.196	174.5
13 R	40.9	212.24	0.221	4.31	0.133	102.2
	131.8	681.90	0.711	13.98	0.433	329.6
South: PR-906 Sur						
32 L	5.5	12.84	0.025	1.21	0.035	13.8
31 T	43.4	112.06	0.146	2.83	0.211	108.5
33 R	3.4	7.43	0.015	0.75	0.022	8.5
	52.3	132.32	0.186	4.80	0.268	130.7

East: PR-923 Palmas del Mar Sec						
22 L	10.6	47.89	0.055	1.39	0.042	26.4
21 T	38.3	181.96	0.202	4.72	0.143	95.9
23 R	62.4	282.09	0.324	8.26	0.247	155.9
	111.3	511.95	0.581	14.38	0.432	278.2
North: PR-906 Norte						
42 L	20.5	45.99	0.092	4.58	0.131	51.2
41 T	79.1	175.62	0.307	12.35	0.466	197.8
43 R	13.6	29.86	0.060	3.03	0.087	34.0
	113.2	251.47	0.459	19.95	0.684	283.0
INTERSECTION:	408.6	1577.64	1.937	53.11	1.816	1021.4

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).

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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: Entrada Centro Mercadeo						
12 L	17.9	0.65	0.881	29.91	0.872	447.3
11 T	45.9	2.58	2.539	40.34	1.289	1147.3
13 R	34.4	1.78	1.857	36.28	1.122	859.6
	33.9	1.75	1.828	35.93	1.112	847.0
South: PR-906 Sur						
32 L	12.5	0.29	0.564	27.53	0.786	312.0
31 T	7.2	0.19	0.243	4.71	0.351	180.1
33 R	11.9	0.26	0.528	26.41	0.760	296.8
	7.7	0.20	0.276	7.12	0.396	193.7
East: PR-923 Palmas del Mar Sec						
22 L	24.6	1.12	1.280	32.42	0.972	615.6
21 T	27.1	1.29	1.425	33.37	1.010	677.0
23 R	24.7	1.12	1.285	32.78	0.981	618.4
	25.5	1.17	1.330	32.93	0.990	637.2

orth: PR-906 Norte						
42 L	12.2	0.27	0.548	27.28	0.779	305.1
41 T	9.0	0.20	0.348	14.02	0.529	224.6
43 R	11.9	0.26	0.528	26.41	0.760	296.8
	9.7	0.22	0.395	17.15	0.588	243.3
INTERSECTION:	15.3	0.59	0.727	19.94	0.682	383.5

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able 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												
L	120			120	0				1.000	35.0r	357*	50
L	70			70	0				1.000	208.6	223	
T		246		246	0				2.050	560.2	78	
R			192	192	0				1.600	369.6	17	50
	190	246	192	628	0				2.050	362.4	357	
South: PR-906 Sur												
L	71			71	0				0.203	20.4	0	50
T		482		482	0				0.219	0.0	0	
T		482		482	0				0.219	0.0	0	
R			46	46	0				0.025	9.7	0	50
	71	963	46	1080	0				0.219	1.7	0	
East: PR-923 Palmas del Mar Sec												
L	69			69	0				1.000	210.4	90*	50
T		156		156	0				1.297	250.0	52	
TR		73	82	156	0				1.297	250.0	31	
R			325	325	0				1.297	199.6	18	50
	69	229	407	705	0				1.297	222.9	90	
North: PR-906 Norte												
L	229			229	0				0.352	15.6	1	50
LT	41	635		676	0				0.352	8.5	4	
T		773		773	0				0.352	0.0	0	
R			185	185	0				0.099	9.7	0	50
	270	1408	185	1863	0				0.352	6.0	4	

ALL VEHICLES	Total Flow	% HV	Max X	Aver. Delay	Max Queue
	4276	0	2.050	93.0	357

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 are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

* Queue length exceeds short lane length due to specification of a percentile queue in the aaSIDRA Configuration File. For calculation

of this statistic, you may specify the lane with [illegible]

r Delay, stops and queue length for this lane have been cut down to fit in the queuing space. The amount cut may not be accounted for fully in the adjacent lane performance statistics. You may wish to change the short lane to a full lane to investigate the extent of this effect.

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Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
West: Entrada Centro Mercadeo						
12	L	190	190	1.000	98.9	F
11	T	246	120	2.050*	560.2	F
13	R	192	120	1.600	369.6	F
		628	430	2.050	362.4	F
South: PR-906 Sur						
32	L	71	350	0.203	20.4	C
31	T	963	4400	0.219	0.0	A
33	R	46	1870	0.025	9.7	A
		1080	6620	0.219	1.7	A
East: PR-923 Palmas del Mar Sec						
22	L	69	69	1.000	210.4	F
21	T	229	177	1.294	250.0	F
23	R	407	314	1.296	209.8	F
		705	560	1.296	222.9	F
North: PR-906 Norte						
42	L	270	768	0.352	15.9	C
41	T	1408	4005	0.352	3.6	A
43	R	185	1870	0.099	9.7	A
		1863	6643	0.352	6.0	A
ALL VEHICLES:		4276	14252	2.050	93.0	F

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	To	Negn Radius	Negn Speed	Negn Dist.	Appr. Dist.	Downstream Distance

Approach	Approach	(m)	(km/h)	(m)	(m)	(m)
West: Entrada Centro Mercadeo						
	South	10.0	18.5	15.7	500	119
	East	S	26.0	26.2	500	118
	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	26.0	26.2	500	118
	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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able D.1 - LANE DELAYS

			Delay (seconds/veh)								
		Deg.	Stop-line Delay			Acc.	Queuing		Stopd		
Lane	Mov	Satn	1st	2nd	Total	Dec.	Total	MvUp	(Idle)	Geom	Control
No.	No.	x	d1	d2	dSL	dn	dq	dqm	di	dig	dic
West: Entrada Centro Mercadeo											
1 L	12	1.000	30.0	0.0	30.0	2.3	27.7	0.0	27.7	5.0	35.0
2 L	12,	1.000	51.4	152.1	203.6	2.3	201.2	0.1	201.1	5.0	208.6
	11									5.0	
3 T	11,	2.050	30.0	525.2	555.2	2.5	552.6	0.8	551.8	5.0	560.2
	13									5.0	
4 R	13	1.600	30.0	334.6	364.6	1.9	362.6	5.9	356.8	5.0	369.6
South: PR-906 Sur											
1 L	32	0.203	10.6	0.3	10.9	3.7	7.2	0.1	7.1	9.4	20.4
2 T	32,	0.219	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	31									0.0	
3 T	31,	0.219	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	33									0.0	
4 R	33	0.025	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	9.7
East: PR-923 Palmas del Mar Sec											
1 L	22	1.000	52.2	153.2	205.4	2.3	203.1	0.2	202.9	5.0	210.4
2 T	22,	1.297	30.0	215.0	245.0	2.5	242.5	0.6	241.9	5.0	250.0
	21									5.0	
3 TR	21,	1.297	30.0	215.0	245.0	2.2	242.8	1.2	241.6	5.0	250.0
	23									5.0	
4 R	23	1.297	14.4	180.2	194.6	1.9	192.6	8.8	183.8	5.0	199.6
North: PR-906 Norte											
1 L	42	0.352	5.4	0.8	6.2	3.1	3.1	0.3	2.7	9.4	15.6
2 LT	42,	0.352	7.4	0.5	8.0	8.1	0.2	0.0	0.2	9.4	8.5

3 T	41 41,	0.352	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 0.0	0.0
4 R	43 43	0.099	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	9.7

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 Centro Mercadeo							
1 L	1.000	1.00	0.00	0.00	1.00	1.000	0.00
2 L	1.000	1.00	0.01	0.00	1.01	1.000	0.10
3 T	2.050	1.00	0.04	0.00	1.04	1.000	0.66
4 R	1.600	1.00	0.28	0.00	1.28	1.000	3.99
South: PR-906 Sur							
1 L	0.203	0.82	0.00	0.12	0.94	0.822	0.04
2 T	0.219	0.00	0.00	0.00	0.00	0.000	0.00
3 T	0.219	0.00	0.00	0.00	0.00	0.000	0.00
4 R	0.025	0.00	0.00	0.72	0.72	0.000	0.00
East: PR-923 Palmas del Mar Sec							
1 L	1.000	1.00	0.01	0.00	1.01	1.000	0.17
2 T	1.297	1.00	0.03	0.00	1.03	1.000	0.49
3 TR	1.297	1.00	0.06	0.00	1.06	1.000	0.83
4 R	1.297	1.00	0.42	0.00	1.42	1.000	5.29
North: PR-906 Norte							
1 L	0.352	0.70	0.02	0.20	0.92	0.700	0.18
2 LT	0.352	0.06	0.00	0.00	0.06	0.935	0.27
3 T	0.352	0.00	0.00	0.00	0.00	0.000	0.00
4 R	0.099	0.00	0.00	0.72	0.72	0.000	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	1.000	25.9	285.7	0.0	285.7	342.8*	457.1*	542.8*	714.2*	857.0*	7.14
2 L	1.000	15.2	168.3	9.9	178.2	213.9	285.2	338.7	445.6	534.7	0.45
3 T	2.050	20.8	42.7	19.8	62.5	75.1	100.1	118.8	156.3	187.6	0.16
4 R	1.600	10.0	3.1	9.8	12.9	17.3	22.4	26.3	34.1	40.5	0.34
South: PR-906 Sur											

1 L	0.203	0.0	0.3	0.0	0.3	0.6	0.7	0.8	0.9	1.1	0.01
2 T	0.219	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 T	0.219	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
4 R	0.025	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
East: PR-923 Palmas del Mar Sec											
1 L	1.000	9.6	66.0	6.4	72.4	86.9	115.8*	137.5*	181.0*	217.2*	1.81
2 T	1.297	11.3	32.1	9.6	41.7	50.2	66.9	79.4	104.4	125.2	0.10
3 TR	1.297	9.8	15.8	8.8	24.6	30.4	40.2	47.6	62.4	74.7	0.06
4 R	1.297	10.8	2.6	11.1	13.7	18.1	23.6	27.7	35.9	42.7	0.36
North: PR-906 Norte											
1 L	0.352	0.1	0.6	0.1	0.7	1.3	1.5	1.7	2.1	2.5	0.02
2 LT	0.352	0.3	2.1	0.4	2.5	4.3	5.3	6.1	7.6	8.9	0.01
3 T	0.352	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
4 R	0.099	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

Values printed in this table are back of queue (vehicles).
* Queue length exceeds short lane length due to specification of a percentile queue in the aaSIDRA Configuration File. For calculation of this statistic, you may specify the lane with full length.

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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	Intersection Spd Running	Intersection Spd Overall
West: Entrada Centro Mercadeo								
12	65.0	0.0	23.2	65.0	2.4		48.1	16.2
11	65.0	0.0	26.0	65.0	2.4		47.6	3.7
13	65.0	0.0	18.5	65.0	3.0		43.0	5.5
South: PR-906 Sur								
32	65.0	23.2	23.2	65.0	3.3		47.0	40.8
31	65.0	65.0	65.0	65.0			65.0	65.0
33	65.0	18.5	18.5	65.0			50.7	50.7
East: PR-923 Palmas del Mar Sec								
22	65.0	0.0	23.0	65.0	2.4		48.0	9.0
21	65.0	0.0	26.0	65.0	2.4		47.6	7.7
23	65.0	0.0	18.5	65.0	3.4		41.8	9.0
North: PR-906 Norte								
42	65.0	22.8	22.8	65.0	3.9		47.1	44.5
41	65.0	65.0	65.0	65.0	0.0		58.6	58.6
43	65.0	18.5	18.5	65.0			50.7	50.7

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

--- 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 1:02 PM, Nov 5,2002

Filename: C:\CMA AE LLP Projects\Estudios de Transito\00237 - Palmas del Mar PR-906 Traffic S
dy, Humacao\Revision 2002\Int52020NS.OUT

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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: Unsignalised - Two-Way Stop Control
  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

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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

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Fol.up Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	7.5	3.5	2.0	50
Through :	6.5	4.0	2.0	50
Right turns:	6.9	3.3	2.0	50
Opposed turns from priority road:	4.1	2.2	2.0	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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able S.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
EHICLES Demand flows in veh/hour as used by the program								
est: 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
outh: 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
ast: 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
orth: 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

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

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able S.2 - MOVEMENT CAPACITY PARAMETERS

Mov No.	Dem Flow (veh /h)	Total Opng Flow (veh/h)	%HV	Adjust. Opng Flow (pcu/h)	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
est: PR-53 Rampa desde Yabucoa									
12 L	88	3469	0.0	3469	88	0.80	-20	100	1.000*
11 T	10	3419	0.0	3419	10	0.80	-20	100	1.000*
13 R	72	1765	0.0	1765	72	0.80	-20	100	1.000*
outh: PR-906 Sur									
31 T	1529	0			4366	0.80	128	100	0.350
33 R	10	0			29	0.80	132	100	0.345
East: Tierra del Sol y Comunidd									
22 L	26	3496+	0.0	3496	26	0.80	-20	100	1.000*
23 R	60	1534+	0.0	1534	60	0.80	-20	100	1.000*
North: PR-906 Norte									

42 L	[illegible]	[illegible]	[illegible]					
41 T	1765	0		3098	0.80	40	100	0.570

+ Percentage of exiting flow included in total opposing flow

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Table S.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	E
Worst movement Level of Service	=	F
Average intersection delay (s)	=	17.7
Largest average movement delay (s)	=	189.5
Largest back of queue, 95% (m)	=	404
Performance Index	=	508.25
Degree of saturation (highest)	=	1.000
Practical Spare Capacity (lowest)	=	-20 %
Total vehicle capacity, all lanes (veh/h)	=	7950
Total vehicle flow (veh/h)	=	3675
Total person flow (pers/h)	=	4410
Total vehicle delay (veh-h/h)	=	18.03
Total person delay (pers-h/h)	=	21.64
Total effective vehicle stops (veh/h)	=	389
Total effective person stops (pers/h)	=	466
Total vehicle travel (veh-km/h)	=	2296.0
Total cost ($/h)	=	603.96
Total fuel (L/h)	=	212.3
Total CO2 (kg/h)	=	530.80

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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: PR-53 Rampa desde Yabucoa									
12 L	4.44	5.33	181.6	1.00	1.01	808.3	404	328.83	10.1
11 T	0.53	0.63	189.5	1.00	1.03	36.7	18	2.36	9.7
13 R	3.79	4.55	189.5	1.00	1.03	36.7	18	16.98	9.8
South: PR-906 Sur									
31 T	0.00	0.00	0.0	0.00	0.00	0.0	0	14.71	65.0
33 R	0.03	0.03	9.7	0.00	0.72	0.0	0	0.14	50.7
East: Tierra del Sol y Comunidd									
22 L	1.33	1.60	184.1	1.00	1.01	282.2	141	35.78	10.0
23 R	3.07	3.68	184.1	1.00	1.01	282.2	141	82.56	10.0
North: PR-906 Norte									
42 L	1.14	1.37	35.8	1.00	1.05	10.7	5	3.24	31.8
41 T	3.71	4.45	7.6	0.29	0.00	10.7	5	23.65	53.3

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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	1.000	8.75	10.51	185.4	1.000	1.02	404	348.17	9.9
South: PR-906 Sur									
1539	0.350	0.03	0.03	0.1	0.000	0.00	0	14.85	64.9
East: Tierra del Sol y Comunidd									
86	1.000	4.40	5.28	184.1	1.000	1.01	141	118.34	10.0
North: PR-906 Norte									
1680	0.570	4.85	5.82	9.3	0.333	0.06	5	26.89	51.2
INTERSECTION (persons):									
4410	1.000		21.64	17.7	0.240	0.11		508.25	42.8

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

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Table S.7 - LANE PERFORMANCE

Lane No.	Mov No.	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue 95% Back (vehs)	Queue 95% Back (m)	Short Lane (m)
West: PR-53 Rampa desde Yabucoa									
1 L	12, 11	88	88	1.000	181.6	1.01	808.3	404	
2 TR	11, 13	82	82	1.000	189.5	1.03	36.7	18	
South: PR-906 Sur									
1 T	31	770	2200	0.350	0.0	0.00	0.0	0	
2 TR	31, 33	769	2195	0.350	0.1	0.01	0.0	0	
East: Tierra del Sol y Comunidd									
1 LR	22, 23	86	86	1.000	184.1	1.01	282.2	141	
North: PR-906 Norte									
1 LT	42, 41	626	1099	0.570	27.9	0.19	10.7	5	
2 T	41	1254	2200	0.570	0.0	0.00	0.0	0	

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Table S.8 - LANE FLOW AND CAPACITY INFORMATION

Lan No.	Mov No.	Dem Flow (veh/h) Lef	Thru	Rig	Tot	Min Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %
West: PR-53 Rampa desde Yabucoa									
1 L	12, 11	88	0	0	88	88	88	1.000	100
2 TR	11, 13	0	10	72	82	82	82	1.000	100
South: PR-906 Sur									
1 T	31	0	770	0	770	120	2200	0.350	100
2 TR	31, 33	0	759	10	769	120	2195	0.350	100
East: Tierra del Sol y Comunidd									
1 LR	22, 23	26	0	60	86	86	86	1.000	100
North: PR-906 Norte									
1 LT	42, 41	115	511	0	626	120	1099	0.570	100
2 T	41	0	1254	0	1254	120	2200	0.570	100

The capacity value for priority and continuous movements is obtained by adjusting the basic saturation flow for heavy vehicle and turning vehicle effects. Saturation flow scale applies if specified.

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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	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
West: PR-53 Rampa desde Yabucoa									
12 L		88	88	100	1.000*	181.6	1.01	808.3	328.83
11 T		10	10	100	1.000*	189.5	1.03	36.7	2.36
13 R		72	72	100	1.000*	189.5	1.03	36.7	16.98
South: PR-906 Sur									
31 T		1529	4366	100	0.350	0.0	0.00	0.0	14.71
33 R	(Unl)	10	29	100	0.345	9.7	0.72	0.0	0.14
East: Tierra del Sol y Comunidd									
22 L		26	26	100	1.000*	184.1	1.01	282.2	35.78
23 R		60	60	100	1.000*	184.1	1.01	282.2	82.56
North: PR-906 Norte									
42 L		115	202	100	0.569	35.8	1.05	10.7	3.24
41 T		1765	3098	100	0.570	7.6	0.00	10.7	23.65

* Maximum degree of saturation

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able 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: PR-53 Rampa desde Yabucoa						
12 L	12.5	54.51	0.064	1.74	0.052	31.3
11 T	1.4	6.36	0.007	0.20	0.006	3.6
13 R	10.5	46.07	0.054	1.43	0.043	26.1
	24.4	106.95	0.126	3.37	0.100	61.0
outh: PR-906 Sur						
31 T	68.9	177.92	0.232	4.50	0.335	172.2
33 R	0.7	1.61	0.003	0.16	0.005	1.8
	69.6	179.53	0.236	4.66	0.340	174.1
ast: Tierra del Sol y Comunidd						
22 L	3.7	16.28	0.019	0.51	0.015	9.3
23 R	8.6	37.56	0.044	1.19	0.035	21.5
	12.3	53.84	0.063	1.70	0.051	30.8
rth: PR-906 Norte						
42 L	9.7	25.42	0.045	2.03	0.058	24.1
41 T	96.3	238.23	0.368	12.39	0.527	240.8
	106.0	263.65	0.412	14.42	0.585	265.0
INTERSECTION:	212.3	603.96	0.837	24.15	1.076	530.8

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	23.0	1.00	1.181	31.90	0.950	574.0
11 T	23.6	1.04	1.215	32.23	0.963	588.8
13 R	23.4	1.03	1.209	32.08	0.957	585.8
	23.2	1.02	1.195	32.00	0.954	579.9
South: PR-906 Sur						
31 T	7.2	0.19	0.243	4.71	0.351	180.1
33 R	11.9	0.26	0.528	26.41	0.760	296.8
	7.2	0.19	0.245	4.85	0.353	180.9
East: Tierra del Sol y Comunidd						
22 L	23.1	1.01	1.190	31.95	0.952	577.6
23 R	23.1	1.01	1.190	31.95	0.952	577.6
	23.1	1.01	1.190	31.95	0.952	577.6
North: PR-906 Norte						
42 L	13.6	0.36	0.628	28.48	0.813	338.9
41 T	8.7	0.22	0.333	11.22	0.478	218.2
	9.0	0.22	0.351	12.27	0.498	225.5
INTERSECTION:	9.2	0.26	0.365	10.52	0.469	231.2

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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)
West: PR-53 Rampa desde Yabucoa												
1 L	88			88	0				1.000	181.6	404	
2 TR		10	72	82	0				1.000	189.5	18	
	88	10	72	170	0				1.000	185.4	404	
South: PR-906 Sur												
1 T		770		770	0				0.350	0.0	0	
2 TR		759	10	769	0				0.350	0.1	0	
	0	1529	10	1539	0				0.350	0.1		
East: Tierra del Sol y Comunidd												
1 LR	26		60	86	0				1.000	184.1	141	
	26	0	60	86	0				1.000	184.1	141	
North: PR-906 Norte												
1 LT	115	511		626	0				0.570	27.9	5	
2 T		1254		1254	0				0.570	0.0	0	
	115	1765	0	1880	0				0.570	9.3	5	

ALL VEHICLES	Total Flow	% HV	Max X	Aver. Delay	Max Queue
	3675	0	1.000	17.7	404

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

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

:ote: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

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'able S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	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	88	88	1.000*	181.6	F
11	T	10	10	1.000*	189.5	F
13	R	72	72	1.000*	189.5	F
		170	170	1.000	185.4	F
[illegible]: PR-906 Sur						
[illegible]	T	1529	4366	0.350	0.0	A
3[illegible]	R (Unl)	10	29	0.345	9.7	A
		1539	4395	0.350	0.1	A
.ast: Tierra del Sol y Comunidd						
22	L	26	26	1.000*	184.1	F
23	R	60	60	1.000*	184.1	F
		86	86	1.000	184.1	F
:orth: PR-906 Norte						
42	L	115	202	0.569	35.8	E
41	T	1765	3098	0.570	7.6	A
		1880	3300	0.570	9.3	A
ALL VEHICLES:		3675	7950	1.000	17.7	E

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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:able 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	26.0	19.0	500	112
	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

Lane No.	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
West: PR-53 Rampa desde Yabucoa											
1 L	12, 11	1.000	40.9	135.7	176.6	1.8	174.8	0.1	174.6	5.0 5.0	181.6
2 TR	11, 13	1.000	43.9	140.6	184.5	2.0	182.4	0.7	181.7	5.0 5.0	189.5
South: PR-906 Sur											
1 T	31	0.350	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 TR	31, 33	0.350	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 9.7	0.1
East: Tierra del Sol y Comunidd											
1 LR	22, 23	1.000	41.9	137.2	179.1	1.9	177.2	0.2	176.9	5.0 5.0	184.1
North: PR-906 Norte											
1 LT	42, 41	0.570	24.4	1.7	26.1	8.0	18.1	0.2	17.9	9.7 0.0	27.9
2 T	41	0.570	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

West: PR-53 Rampa desde Yabucoa							
1 L	1.000	1.00	0.01	0.00	1.01	1.000	0.09
2 TR	1.000	1.00	0.03	0.00	1.03	1.000	0.53
South: PR-906 Sur							
1 T	0.350	0.00	0.00	0.00	0.00	0.000	0.00
2 TR	0.350	0.00	0.00	0.01	0.01	0.000	0.00
East: Tierra del Sol y Comunidd							
1 LR	1.000	1.00	0.01	0.00	1.01	1.000	0.18
North: PR-906 Norte							
1 LT	0.570	0.18	0.01	0.00	0.19	1.000	0.71
2 T	0.570	0.00	0.00	0.00	0.00	0.000	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: PR-53 Rampa desde Yabucoa											
1 L	1.000	22.9	307.8	15.6	323.3	388.0	517.3	614.3	808.3	969.9	0.81
2 TR	1.000	4.7	10.6	3.4	14.0	18.5	24.1	28.3	36.7	43.7	0.04
South: PR-906 Sur											
1 T	0.350	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2 TR	0.350	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
East: Tierra del Sol y Comunidd											
1 LR	1.000	15.0	101.9	11.0	112.9	135.5	180.6	214.5	282.2	338.6	0.28
North: PR-906 Norte											
1 LT	0.570	0.7	2.8	0.8	3.6	6.0	7.4	8.5	10.7	12.5	0.01
2 T	0.570	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

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
West: PR-53 Rampa desde Yabucoa								
12	65.0	0.0	17.3	65.0	2.3		48.5	10.1
11	65.0	0.0	26.0	65.0	2.3		48.2	9.7
13	65.0	0.0	18.5	65.0	2.8		47.7	9.8

South: PR-906 Sur							
31	65.0	65.0	65.0	65.0		65.0	65.0
33	65.0	18.5	18.5	65.0		50.7	50.7
East: Tierra del Sol y Comunidd							
22	65.0	0.0	18.3	65.0	2.3	48.3	10.0
23	65.0	0.0	18.5	65.0	2.9	48.2	10.0
North: PR-906 Norte							
42	65.0	18.3	18.3	65.0	3.3	45.6	31.8
41	65.0	65.0	65.0	65.0	0.0	60.5	53.3

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

--- End of aaSIDRA Output ---

ANEJO F

PR-906
Palmas del M
SEMAFORO

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 8:41 AM, Nov 5,2002

Filename: C:\CMA AE LLP Projects\Estudios de Transito\00237 - Palmas del Mar PR-906 Traffic Study, Humacao\Revision 2002\Int02020.OUT

Estudio de Transito Centro de Mercadeo PR-906, Palmas del Mar
Interseccion Palmas del Rio y PR-906 A?o 2020
Intersection ID: 1

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 = 1
  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 Palmas del Rio y PR-906 A?o 2020
Intersection ID: 1

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
put Guide part of aaSIDRA User Guide.

---

dio de Transito Centro de Mercadeo PR-906, Palmas del Mar
rseccion Palmas del Rio y PR-906 A?o 2020
rsection ID: 1
Actuated Isolated Signals, Cycle Time = 19

e S.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
CLES	Demand flows in veh/hour as used by the program							
: Palmas del Rio								
12	248	0	0	0	0	0	1.00	0.92
13	0	0	0	0	14	0	1.00	0.92
.h: PR-906 Sur Candelero Abaj								
32	10	0	0	0	0	0	1.00	0.92
31	0	0	146	0	0	0	1.00	0.92
:h: PR-906 Norte								
41	0	0	233	0	0	0	1.00	0.92
43	0	0	0	0	478	0	1.00	0.92

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

ıdio de Transito Centro de Mercadeo PR-906, Palmas del Mar
erseccion Palmas del Rio y PR-906 A?o 2020
ersection ID: 1
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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
t: Palmas del Rio															
2 L	(Und)	B	A							3		10.0Min		7	
3 R		A	B	R		*B	A			3	4	9.0Min	10.0Min	6	6
th: PR-906 Sur Candelero Abaj															
2 L		A	B	L						3		9.0Min		6	
1 T		A	B							3		9.0Min		6	
th: PR-906 Norte															

```
  41 T        *A  B                          3          9.0Min              6
  43 R  (Und) A  B           B  A            3    3     9.0Min  10.0Min     6    7
-----------------------------------------------------------------------------------
  Current Phase Sequence No.: 1
  Input phase sequence: A  B
  Output phase sequence: A  B
-----------------------------------------------------------------------------------

Movement Types:                                  Under heading 'Op':
  Ped  Pedestrian                                  L   "Left" turns are opposed
  Dum  Dummy                                       R   "Right" turns are opposed
  Und  Undetected in both green periods            LR  "Left and Right" opposed
  Un1  Undetected in 1st green period              C   "Constant" saturation flow
  Un2  Undetected in 2nd green period
```

Estudio de Transito Centro de Mercadeo PR-906, Palmas del Mar
Interseccion Palmas del Rio y PR-906 A?o 2020
Intersection ID: 1
Actuated Isolated Signals, Cycle Time = 19

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: Palmas del Rio										
12 L	248	3485		0.071		1284	0.90	366	100	0.193
13 R	14	94	135	0.000	0.104	72	0.90	365	100	0.194
South: PR-906 Sur Candelero Abaj										
32 L	10	1796		0.006		567	0.90	5004	100	0.018
31 T	146	3800		0.038		1200	0.90	640	100	0.122
North: PR-906 Norte										
41 T	233	3800		0.061		1200	0.90	364	100	0.194
43 R	478	1615	1615	0.148	0.148	1105	0.90	108	100	0.433*

Estudio de Transito Centro de Mercadeo PR-906, Palmas del Mar
Interseccion Palmas del Rio y PR-906 A?o 2020
Intersection ID: 1
Actuated Isolated Signals, Cycle Time = 19

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	9	-	-	9.0Min
13	W_R	2nd	B	A	10	-	-	10.0Min
				Total:	19	0.000	0.000	19.0

- 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
19	NA	20	19

Intersection Level of Service = A

orst movement Level of Service	=	B
verage intersection delay (s)	=	9.5
argest average movement delay (s)	=	14.8
argest back of queue, 95% (m)	=	1
erformance Index	=	19.74
egree of saturation (highest)	=	0.433
ractical Spare Capacity (lowest)	=	108 %
otal vehicle capacity, all lanes (veh/h)	=	5429
otal vehicle flow (veh/h)	=	1129
otal person flow (pers/h)	=	1355
otal vehicle delay (veh-h/h)	=	2.97
otal person delay (pers-h/h)	=	3.56
otal effective vehicle stops (veh/h)	=	770
otal effective person stops (pers/h)	=	924
otal vehicle travel (veh-km/h)	=	703.9
otal cost ($/h)	=	171.79
otal fuel (L/h)	=	79.8
otal CO2 (kg/h)	=	199.62

---

dio de Transito Centro de Mercadeo PR-906, Palmas del Mar
rseccion Palmas del Rio y PR-906 A?o 2020
rsection ID: 1
Actuated Isolated Signals, Cycle Time = 19

e S.4 - PHASE INFORMATION

hase No.	Change Time	Green Start	Displayed Green	Grn+Intgrn Secs	Prop.
A	0	3	6	9	0.474
B	9	13	6	10	0.526

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

---

udio de Transito Centro de Mercadeo PR-906, Palmas del Mar
erseccion Palmas del Rio y PR-906 A?o 2020
ersection ID: 1
Actuated Isolated Signals, Cycle Time = 19

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: Palmas del Rio									
12 L	0.92	1.10	13.3	0.67	0.75	1.2	1	4.78	45.8
13 R	0.05	0.06	12.2	0.66	0.75	0.9	0	0.26	45.8
th: PR-906 Sur Candelero Abaj									
32 L	0.04	0.05	14.8	0.69	0.68	0.1	0	0.20	45.5
31 T	0.23	0.27	5.6	0.72	0.55	0.7	0	2.55	54.8
th: PR-906 Norte									
41 T	0.38	0.45	5.8	0.74	0.58	1.2	1	4.14	54.5
43 R	1.36	1.63	10.2	0.46	0.73	1.9	1	7.82	48.8

---

udio de Transito Centro de Mercadeo PR-906, Palmas del Mar
erseccion Palmas del Rio y PR-906 A?o 2020
ersection ID: 1
Actuated Isolated Signals, Cycle Time = 19

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: Palmas del Rio									
262	0.194	0.97	1.16	13.3	0.677	0.75	1	5.03	45.8
South: PR-906 Sur Candelero Abaj									
156	0.122	0.27	0.32	6.2	0.721	0.56	0	2.75	54.1
North: PR-906 Norte									
711	0.433	1.74	2.08	8.8	0.558	0.68	1	11.96	50.5
INTERSECTION (persons):									
1355	0.433		3.56	9.5	0.608	0.68		19.74	49.8

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

Estudio de Transito Centro de Mercadeo PR-906, Palmas del Mar
Interseccion Palmas del Rio y PR-906 A?o 2020
Intersection ID: 1
Actuated Isolated Signals, Cycle Time = 19

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)
West: Palmas del Rio													
1 L	12	12	7	0	0	128	665	0.193	14.4	0.76	1.2	1	
2 LR	12, 13	3	1	8	7	134	692	0.[illegible]	12.2	0.75	0.9	0	
South: PR-906 Sur Candelero Abaj													
1 L	32	13	6	0	0	10	567	0.018	14.8	0.68	0.1	0	50
2 T	31	13	6	0	0	73	600	0.122	5.6	0.55	0.7	0	
3 T	31	13	6	0	0	73	600	0.122	5.6	0.55	0.7	0	
North: PR-906 Norte													
1 T	41	13	6	0	0	117	600	0.194	5.8	0.58	1.2	1	
2 T	41	13	6	0	0	117	600	0.194	5.8	0.58	1.2	1	
3 R	43	3	6	3	7	478	1105	0.433	10.2	0.73	1.9	1	

Estudio de Transito Centro de Mercadeo PR-906, Palmas del Mar
Interseccion Palmas del Rio y PR-906 A?o 2020
Intersection ID: 1
Actuated Isolated Signals, Cycle Time = 19

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: Palmas del Rio													
1 L	12	128	0	0	128	3.60	1900	1805	0	0	665	0.193	100
2 LR	12,	120	0	14	134	3.60	1900	782	1765	189	692	0.193	100

```
:th: PR-906 Sur Candelero Abaj
-     32    10    0    0   10  3.60  1900 1796     0  379  567 0.018  100
-     31     0   73    0   73  3.60  1900 1900     0    0  600 0.122  100
      31     0   73    0   73  3.60  1900 1900     0    0  600 0.122  100

-th: PR-906 Norte
-     41     0  117    0  117  3.60  1900 1900     0    0  600 0.194  100
:     41     0  117    0  117  3.60  1900 1900     0    0  600 0.194  100
      43     0    0  478  478  3.60  1900 1615  1615    0 1105 0.433  100
```

:sic Saturation Flow in this table is adjusted for lane width, approach
'ade, parking manoeuvres and number of buses stopping. Saturation flow
:ale applies if specified.

:dio de Transito Centro de Mercadeo PR-906, Palmas del Mar
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ersection ID: 1
Actuated Isolated Signals, Cycle Time = 19

:e S.9 - SIGNAL TIMING DIAGRAM

```
olayed (Phase) Green Times

         Phase A                                Phase B

                                 9                                      19
-----------------------------I-----------------------------------I
........GGGGGGGGGGGGGGGGGGGG................GGGGGGGGGGGGGGGGGGGGG.
       3                                    13

ective (Movement) Green Times

st: Palmas del Rio

.    12 (L)
                                 I                                      I
GGG.............................................GGGGGGGGGGGGGGGGGGGG
   2                                            14

.    13 (R)
                                 I                                      I
GGGG...........GGGGGGGGGGGGGGGGGGGGGG..............GGGGGGGGGGGGGGGGG
   2          5                      11            15

uth: PR-906 Sur Candelero Abaj

.    32 (L)
                                 I                                      I
................GGGGGGGGGGGGGGGGGGGGGG.............................
               5                      11

.    31 (T)
                                 I                                      I
................GGGGGGGGGGGGGGGGGGGGGG.............................
               5                      11

orth: PR-906 Norte

.    41 (T)
```

```
I                                I                                        I
.................GGGGGGGGGGGGGGGGGGGGG.............................
                5                          11

Mov.   43 (R)
I                                I                                        I
GGGGGGG...........GGGGGGGGGGGGGGGGGGGGG...........GGGGGGGGGGGGGGGGGGGG
      2         5                          11         14

I-----I------I------I------I------I------I------I------I------I------I---->
0     2      4      6      8      10     11     13     15     17     19

                                T I M E  (s)
```

Estudio de Transito Centro de Mercadeo PR-906, Palmas del Mar
Interseccion Palmas del Rio y PR-906 A?o 2020
Intersection ID: 1
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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
West: Palmas del Ric											
12 L	(Und)	246	1284	100	0.193	7		13.3	0.75	1.2	4.78
13 R		14	72	100	0.194	6	6*	12.2	0.75	0.9	0.26
South: PR-906 Sur Candelero Abaj											
32 L		10	567	100	0.018	6		14.8	0.68	0.1	0.20
31 T		146	1200	100	0.122	6		5.6	0.55	0.7	2.55
North: PR-906 Norte											
41 T		233	1200	100	0.194	6*		5.8	0.58	1.2	4.14
43 R	(Und)	478	1105	100	0.433*	6	7	10.2	0.73	1.9	7.82

* Maximum degree of saturation, or critical green periods

Estudio de Transito Centro de Mercadeo PR-906, Palmas del Mar
Interseccion Palmas del Rio y PR-906 A?o 2020
Intersection ID: 1
Actuated Isolated Signals, Cycle Time = 19

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: Palmas del Ric						
12 L	18.6	41.41	0.083	4.18	0.119	46.6
13 R	1.1	2.34	0.005	0.24	0.007	2.6
	19.7	43.75	0.088	4.42	0.126	49.2
South: PR-906 Sur Candelero Abaj						
32 L	0.8	1.68	0.003	0.17	0.005	1.9
31 T	9.4	19.08	0.039	1.89	0.060	23.4
	10.1	20.77	0.042	2.06	0.065	25.3
North: PR-906 Norte						

1 T	15.1	30.55	0.062	3.08	0.097	37.7
3 R	35.0	76.72	0.155	7.74	0.223	87.4
	50.0	107.27	0.217	10.82	0.320	125.1
ERSECTION:	79.8	171.79	0.348	17.30	0.511	199.6

METERS USED IN COST CALCULATIONS

ump price of fuel ($/L)	=	0.400
uel resource cost factor	=	0.70
atio of running cost to fuel cost	=	3.0
verage income ($/h)	=	17.00
ime value factor	=	0.40
verage occupancy (persons/veh)	=	1.2
ight vehicle mass (1000 kg)	=	1.4
eavy vehicle mass (1000 kg)	=	11.0
ight vehicle idle fuel rate (L/h)	=	1.350
eavy vehicle idle fuel rate (L/h)	=	2.000

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

---

dio de Transito Centro de Mercadeo PR-906, Palmas del Mar
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e S.12B - FUEL CONSUMPTION, EMISSIONS AND COST - RATE

v	Fuel Rate L/100km	Cost Rate $/km	HC Rate g/km	CO Rate g/km	NOX Rate g/km	CO2 Rate g/km
: Palmas del Rio						
2 L	12.1	0.27	0.542	27.14	0.775	302.7
3 R	12.1	0.27	0.541	27.08	0.774	302.4
	12.1	0.27	0.542	27.14	0.775	302.7
h: PR-906 Sur Candelero Abaj						
2 L	12.2	0.27	0.546	27.32	0.779	304.4
1 T	10.3	0.21	0.423	20.68	0.657	256.4
	10.4	0.21	0.431	21.10	0.664	259.4
h: PR-906 Norte						
1 T	10.3	0.21	0.429	21.13	0.665	258.5
3 R	11.7	0.26	0.520	25.99	0.749	293.3
	11.3	0.24	0.490	24.40	0.722	281.9
ERSECTION:	11.3	0.24	0.494	24.57	0.726	283.6

---

udio de Transito Centro de Mercadeo PR-906, Palmas del Mar
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ersection ID: 1
Actuated Isolated Signals, Cycle Time = 19

le 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: Palmas del Rio												
1 L	128			128	0	1900	7		0.193	14.4	1	
2 LR	120		14	134	0	1900	1	7	0.193	12.2	0	
	248	0	14	262	0				0.193	13.3	1	
South: PR-906 Sur Candelero Abaj												
1 L	10			10	0	1900	6		0.018	14.8	0	50
2 T		73		73	0	1900	6		0.122	5.6	0	
3 T		73		73	0	1900	6		0.122	5.6	0	
	10	146	0	156	0				0.122	6.2	0	
North: PR-906 Norte												
1 T		117		117	0	1900	6		0.194	5.8	1	
2 T		117		117	0	1900	6		0.194	5.8	1	
3 R			478	478	0	1900	6	7	0.433	10.2	1	
	0	233	478	711	0				0.433	8.8	1	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	1129	0	19	0.433	9.5	1

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.

Estudio de Transito Centro de Mercadeo PR-906, Palmas del Mar
Intersection Palmas del Rio y PR-906 A?o 2020
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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
West: Palmas del Rio								
12 L	(Und)	0.368		248	1284	0.193	13.3	B
13 R		0.316	0.316*	14	72	0.194	12.2	B
				262	1356	0.194	13.3	B
South: PR-906 Sur Candelero Abaj								
32 L		0.316		10	567	0.018	14.8	B
31 T		0.316		146	1200	0.122	5.6	A
				156	1767	0.122	6.2	A
North: PR-906 Norte								
41 T		0.316*		233	1200	0.194	5.8	A
43 R	(Und)	0.316	0.368	478	1105	0.433*	10.2	B
				711	2305	0.433	8.8	A
ALL VEHICLES:				1129	5429	0.433	9.5	A

TERSECTION (persons):	1355	5429	0.433	9.5

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

---

dio de Transito Centro de Mercadeo PR-906, Palmas del Mar
rseccion Palmas del Rio y PR-906 A?o 2020
rsection ID: 1
Actuated Isolated Signals, Cycle Time = 19

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)
st: Palmas del Rio						
	South	15.0	22.6	23.6	500	121
	North	14.7	22.4	23.1	500	121
th: PR-906 Sur Candelero Abaj						
	West	12.8	20.9	20.1	500	120
	North	S	65.0	20.0	500	125
th: PR-906 Norte						
	West	20.0	26.1	31.4	500	123
	South	S	65.0	20.0	500	125

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 vicles. The same distance
pplies 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
st: Palmas del Rio											
L	12	0.193	4.9	0.1	5.0	3.1	1.9	0.0	1.9	9.5	14.4
LR	12, 13	0.193	2.6	0.1	2.7	2.9	2.0	0.0	2.0	9.5	12.2
										9.4	
uth: PR-906 Sur Candelero Abaj											
L	32	0.018	5.2	0.0	5.2	2.9	2.3	0.0	2.3	9.5	14.8
T	31	0.122	5.5	0.1	5.6	6.5	0.0	0.0	0.0	0.0	5.6
T	31	0.122	5.5	0.1	5.6	6.5	0.0	0.0	0.0	0.0	5.6
rth: PR-906 Norte											
T	41	0.194	5.7	0.1	5.8	6.6	0.0	0.0	0.0	0.0	5.8
T	41	0.194	5.7	0.1	5.8	6.6	0.0	0.0	0.0	0.0	5.8
R	43	0.433	0.8	0.2	1.1	2.3	0.0	0.0	0.0	9.2	10.2

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: Palmas del Rio							
1 L	0.193	0.55	0.00	0.21	0.76	0.694	0.00
2 LR	0.193	0.52	0.00	0.23	0.75	0.661	0.00
South: PR-906 Sur Candelero Abaj							
1 L	0.018	0.47	0.00	0.21	0.68	0.692	0.00
2 T	0.122	0.55	0.00	0.00	0.55	0.723	0.00
3 T	0.122	0.55	0.00	0.00	0.55	0.723	0.00
North: PR-906 Norte							
1 T	0.194	0.58	0.00	0.00	0.58	0.743	0.00
2 T	0.194	0.58	0.00	0.00	0.58	0.743	0.00
3 R	0.433	0.39	0.00	0.35	0.73	0.468	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: Palmas del Rio											
1 L	0.193	0.1	0.5	0.1	0.6	0.7	0.9	1.1	1.2	1.6	0.00
2 LR	0.193	0.1	0.4	0.1	0.4	0.5	0.7	0.8	0.9	1.1	0.00
South: PR-906 Sur Candelero Abaj											
1 L	0.018	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.00
2 T	0.122	0.0	0.3	0.0	0.3	0.4	0.6	0.6	0.7	0.9	0.00
3 T	0.122	0.0	0.3	0.0	0.3	0.4	0.6	0.6	0.7	0.9	0.00
North: PR-906 Norte											
1 T	0.194	0.0	0.5	0.0	0.6	0.7	0.9	1.0	1.2	1.5	0.00
2 T	0.194	0.0	0.5	0.0	0.6	0.7	0.9	1.0	1.2	1.5	0.00
3 R	0.433	0.2	0.7	0.2	0.9	1.1	1.4	1.6	1.9	2.4	0.00

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

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

v	App. Speeds		Exit Speeds		Queue Move-up		Av. Section Spd	
.	Cruise	Negn	Negn	Cruise	1st Grn	2nd Grn	Running	Overall
t: Palmas del Rio								
.2	65.0	22.4	22.4	65.0			47.6	45.8
3	65.0	22.6	22.6	65.0			47.8	45.8
:th: PR-906 Sur Candelero Abaj								
;2	65.0	20.9	20.9	65.0			47.7	45.5
1	65.0	65.0	65.0	65.0			54.8	54.8
:th: PR-906 Norte								
;1	65.0	65.0	65.0	65.0			54.5	54.5
;3	65.0	26.1	26.1	65.0			48.8	48.8

Running Speed" is the average speed excluding stopped periods.

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.e D.5 - PROGRESSION FACTORS & ACTUATED SIGNAL PARAMETERS

ov				Delay	Queue	Gap		Disp. Grn.		Settings	
o.	Control	Coord.	Arrival Type	Prog. Factor	Prog. Factor	Settings es	eh	1st Grn Gmin	Gmax	2nd Grn Gmin	Gmax
st: Palmas del Rio											
:2	VA	No	3	1.000	1.000	2.0	2.2	6	20		
:3	VA	No	3	1.000	1.000	2.5	2.7	6	50	6	50
ıth: PR-906 Sur Candelero Abaj											
32	VA	No	3	1.000	1.000	2.5	2.7	6	50		
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 ---

Escuro
PR-906
PDM 1

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 10:50 AM, Nov 5,2002

Filename: C:\CMA AE LLP Projects\Estudios de Transito\00237 - Palmas del Mar PR-906 Traffi dy, Humacao\Revision 2002\Int12020.OUT

Estudio de Transito Centro de Mercadeo PR-906 Palmas del Mar
Interseccion Palmas del Mar Main Entrance y PR-906 A?o 2020
Intersection ID: 1

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 = 1.6 %
    Difference in total vehicle capacity = 0.5 %
    Largest difference in eff. green times = 1 secs
    (max. value for stopping = 1 secs)
  Information on Previous Iteration:
    Cycle Time = 64
    Phase Times: 0, 23, 44
    Critical Movements: 42, 31, 22

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Intersection ID: 1

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

e S.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
CLES	Demand flows in veh/hour as used by the program							
h: PR-906 Sur Candelero Abaj								
31	0	0	592	0	0	0	1.00	0.95
33	0	0	0	0	17	0	1.00	0.95
: Palmas del Mar Main Entry								
22	25	0	0	0	0	0	1.00	0.95
23	0	0	0	0	1059	0	1.00	0.95
h: PR-906 Norte								
42	1337	0	0	0	0	0	1.00	0.95
41	0	0	899	0	0	0	1.00	0.95

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

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le S.1 - MOVEMENT PHASE AND TIMING PARAMETERS

y .	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
th: PR-906 Sur Candelero Abaj															
1 T		*B	C							3		20.7		18	
3 R	(Unl)	A	B	R		B	A			21	3	9.0Min	18.0Min	2	37
t: Palmas del Mar Main Entry															