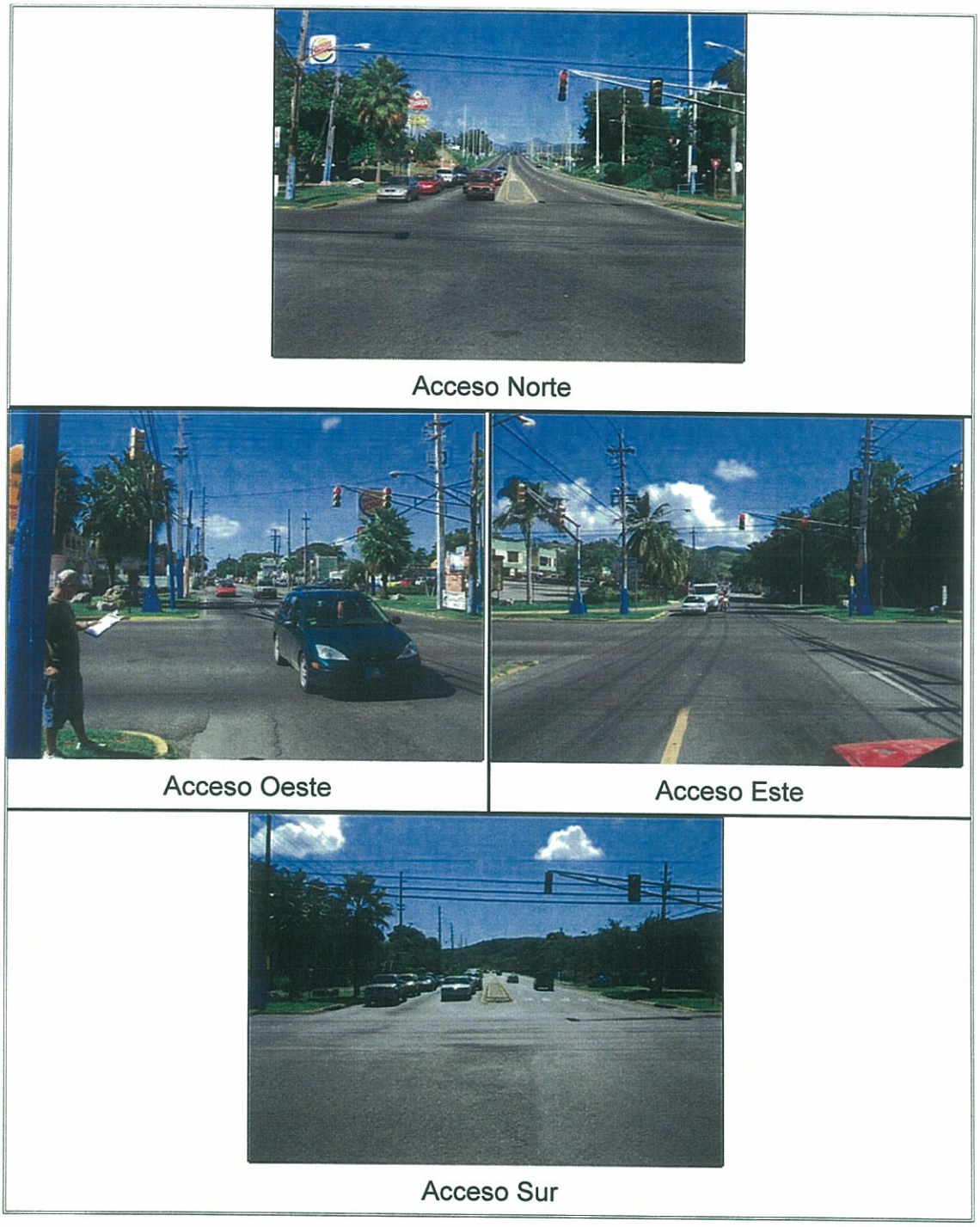
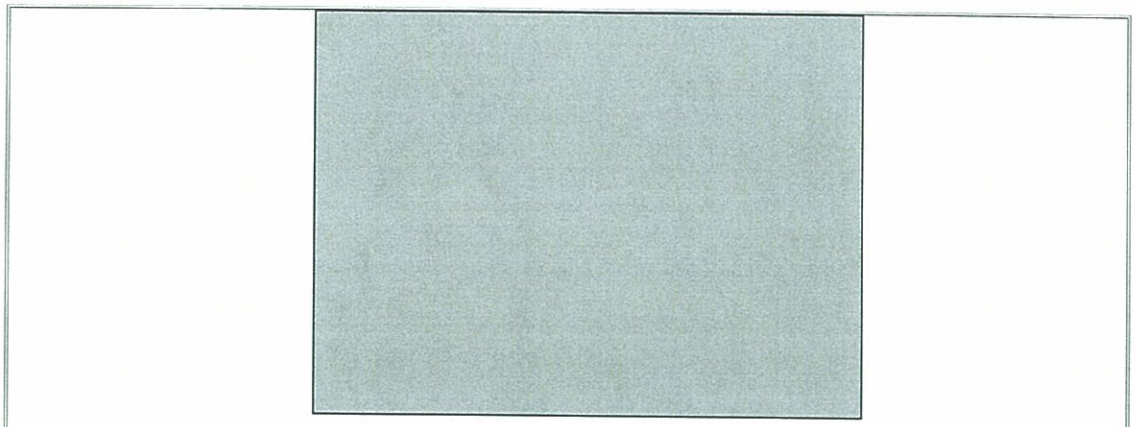


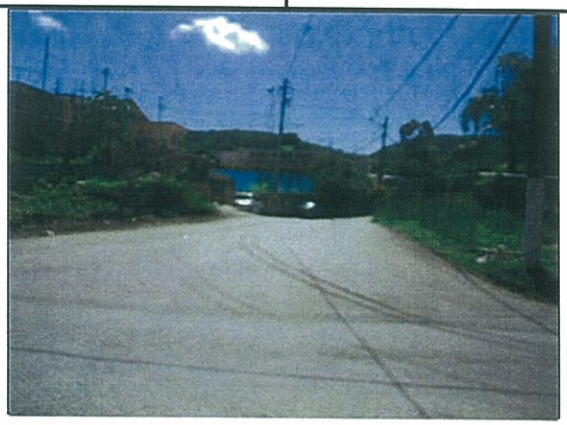
Figura 6 Fotografías Accesos Int. PR-128 y PR-127



Acceso Norte

Acceso Oeste

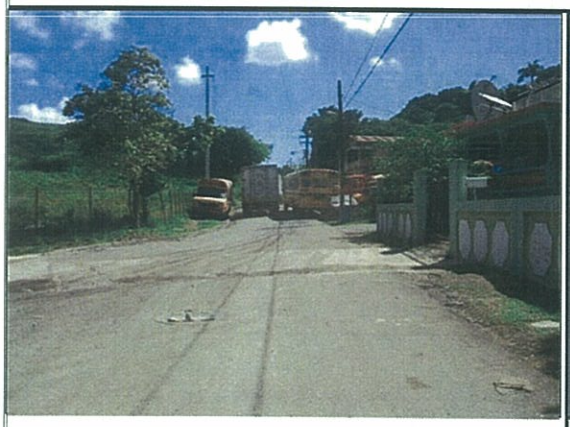
Acceso Este



Acceso Sur

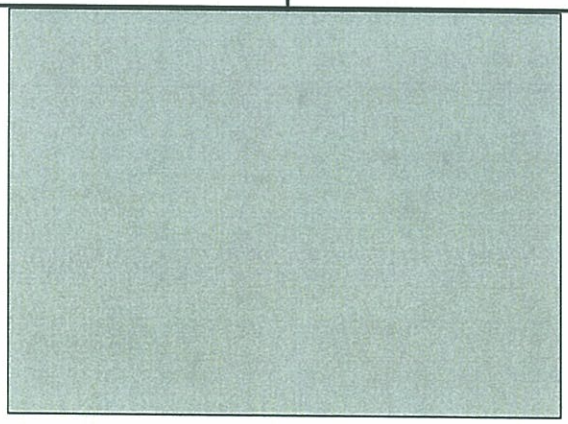
Figura 7 Fotografías Accesos Int. PR-127 y Calle 16

Acceso Norte



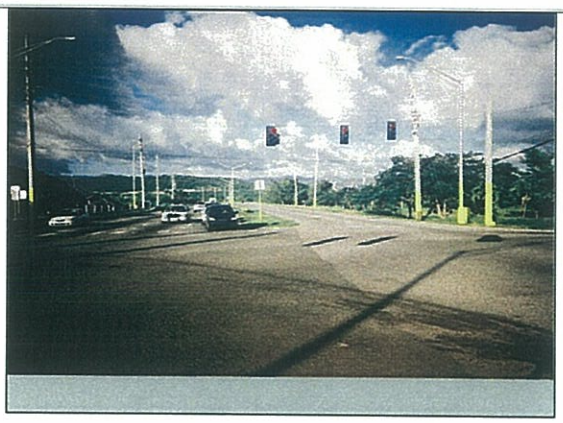
Acceso Oeste

Acceso Este



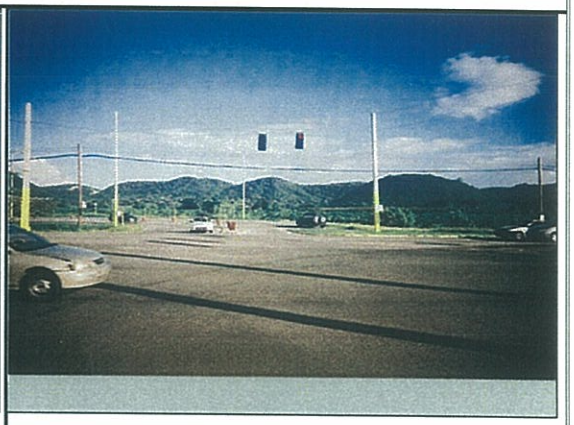
Acceso Sur

Figura 8 Fotografías Accesos Int. Calle 16 y Calle A

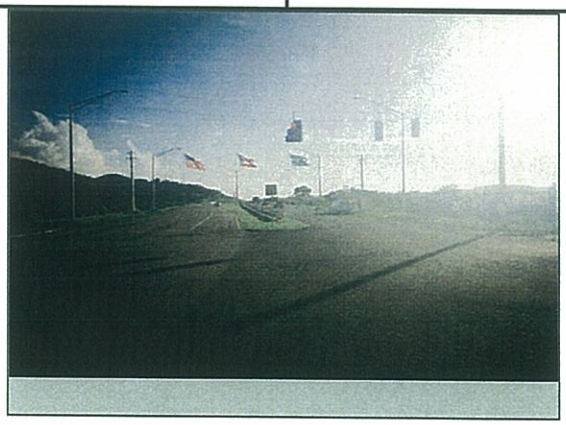


Acceso Norte

Acceso Oeste



Acceso Este



Acceso Sur

Figura 9 Fotografías Accesos Int. PR-116 y PR-116R

9.3 Apéndice 4: Resultados modelaciones

Output Tables
Output Tables
03 PR-128 y PR-127
Pico AM Base

Run Information
Cycle Time = 160 (Sum of User-given Phase Times)

* Basic Parameters:
Intersection Type: Signalised - Fixed Time
Driving on the right-hand side of the road
Input data specified in Metric units
Model Defaults: Standard Right TEC - Customised Model
Peak Flow Period (for performance): 15 minutes
Unit time (for volumes): 60 minutes.
Delay definition: Control delay
Geometric delay included
SIDRA Standard Delay model used
SIDRA Standard Queue model used
Level of Service based on: Delay (HCM method)
Queue definition: Back of queue, Average

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

* Cycle time is at maximum and short lanes exist.
A shorter cycle time may give better results.

Table S.1 - Movement Phase and Timing Parameters
03 PR-128 y PR-127
Pico AM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Mov ID	Mov Typ	PHASE MATRIX First Green Fr	To	Op Pr	Second Green Fr	To	Op Pr	Lost Tim 1st Grn	2nd Grn	Req.Mov.Time 1st Grn	2nd Grn	Eff. Grn 1st Grn	2nd Grn
South: PR- 128 S													
1 L	B	C	Y					5		71.1		36	
2 T	*B	C						4		72.0		37	
3 R (Slp)	B	C			C	B		4	4	10.0Min	30.0Min	37	115
East: PR-127 E													
4 L	*D	A	Y					5		35.5		34	
5 T	D	A						4		35.4		35	
6 R (Slp)	A	D			D	A		4	4	30.0Min	10.0Min	117	35
North: PR-128 N													
7 L	A	B	Y					4		64.2		37	
8 T	*A	B						4		64.2		37	
9 R (Slp)	A	B			B	A		4	4	22.3	30.0Min	37	115
West: PR-127 W													
10 L	C	D	Y					4		48.9		35	
11 T	*C	D						4		58.5		35	
12 R (Slp)	C	D			D	C		4	4	38.1	36.6	35	117

Current Phase Sequence: Two-phase
Input phase sequence: A B C D
Output phase sequence: A B C D

* Critical Movement/Green Period

Movement Types:
Slp Slip Lane Movement
Ped Pedestrian
Dum Dummy

Under heading 'Op':
Y If opposed turn

Table S.2 - Movement Capacity Parameters
03 PR-128 y PR-127
Pico AM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Mov ID	Dem Flow (veh /h)	HV (%)	Satn Flow 1st Grn	2nd Grn	Flow Ratio 1st Grn	2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x

South: PR- 128 S											
1	L	312	1.9	839		0.372		189	0.90	-46	100	1.653*
2	T	896	0.0	2344		0.382		542	0.90	-46	100	1.653*
3	R	92	0.0	1534<	1433<	0.034	0.028	1385	0.90	1255	100	0.066
East: PR-127 E											
4	L	76	0.0	443		0.172		94	0.90	11	100	0.807
5	T	116	1.7	656		0.177		144	0.90	11	22	0.808
6	R	88	0.0	518	551	0.084	0.081	499	0.90	411	22	0.176
North: PR-128 N											
7	L	188	0.0	555		0.339		128	0.90	-39	100	1.465
8	T	1056	0.0	3116		0.339		721	0.90	-39	100	1.465
9	R	412	1.9	1722<	1608<	0.126	0.121	1554	0.90	239	100	0.265
West: PR-127 W											
10	L	352	2.0	1393		0.253		305	0.90	-22	100	1.155
11	T	592	2.0	1930		0.307		422	0.90	-36	100	1.402
12	R	516	1.9	1426<	1323<	0.192	0.184	1279	0.90	123	100	0.403

< Reduced saturation flow due to a short lane effect

Table S.3 - Intersection Parameters
03 PR-128 y PR-127
Pico AM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Critical Movements: 8, 2, 11, 4

L= 17 Y= 1.199 U= 1.333 T= 230.2

Cycle Time:

Minimum	Maximum	Practical	Chosen
40	160*	****	160

(Phase times user specified, cycle time = sum of phase times)

* Cmax increased to match sum of phase times

**** Y and U values are too large ****

Cycle time is at maximum and short lanes exist.
A shorter cycle time may give better results.

Intersection Level of Service	=	F
Worst movement Level of Service	=	F
Average intersection delay (s/pers)	=	231.1
Largest average movement delay (s)	=	395.2
Largest back of queue, mean (m)	=	549
Performance Index	=	717.33
Degree of saturation (highest)	=	1.653
Practical Spare Capacity (lowest)	=	-46 %
Effective intersection capacity, (veh/h)	=	2841
Total vehicle flow (veh/h)	=	4696
Total person flow (pers/h)	=	7044
Total vehicle delay (veh-h/h)	=	301.41
Total person delay (pers-h/h)	=	452.12
Total effective vehicle stops (veh/h)	=	6654
Total effective person stops (pers/h)	=	9981
Total vehicle travel (veh-km/h)	=	2853.2
Total cost ($/h)	=	10231.02
Total fuel (L/h)	=	769.3
Total CO2 (kg/h)	=	1923.90

Table S.4 - Phase Information
03 PR-128 y PR-127
Pico AM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Phase Change Times: 0, 41, 82, 121
Phase Green Times: 37, 37, 35, 35

(Phase times specified by the user)
Current Phase Sequence: Two-phase
Input phase sequence: A B C D
Output phase sequence: A B C D

Table S.5 - Movement Performance

Mov ID		Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue Aver. (vehs)	Queue Back (m)	Perf. Index	Aver. Speed (km/h)
South: PR- 128 S										
1	L	34.25	51.37	395.2	1.00	1.72	46.2	327	72.92	5.1
2	T	96.76	145.14	388.8	1.00	1.88	78.5	549	207.21	5.1
3	R	0.20	0.29	7.7	0.06	0.61	0.1	1	1.57	49.5
East: PR-127 E										
4	L	1.70	2.55	80.5	1.00	0.94	9.6	68	6.65	18.7
5	T	2.33	3.50	72.4	1.00	0.94	9.6	68	9.89	20.1
6	R	0.19	0.29	8.0	0.06	0.64	0.1	1	1.51	49.1
North: PR-128 N										
7	L	15.98	23.96	305.9	1.00	1.68	53.4	374	37.28	6.4
8	T	86.98	130.47	296.5	1.00	1.72	63.0	441	206.46	6.6
9	R	0.89	1.33	7.8	0.07	0.61	0.6	5	7.15	49.4
West: PR-127 W										
10	L	16.85	25.28	172.3	1.00	1.31	26.0	185	48.96	10.5
11	T	44.14	66.22	268.4	1.00	1.65	53.1	378	108.63	7.2
12	R	1.14	1.71	8.0	0.17	0.63	0.9	6	9.10	48.9

Table S.6 - Intersection Performance
03 PR-128 y PR-127
Pico AM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
South: PR- 128 S									
1300	1.653	131.20	196.80	363.3	0.93	1.75	549	281.70	5.4
East: PR-127 E									
280	0.808	4.23	6.34	54.3	0.70	0.85	68	18.06	24.1
North: PR-128 N									
1656	1.465	103.85	155.77	225.8	0.77	1.44	441	250.89	8.3
West: PR-127 W									
1460	1.402	62.14	93.20	153.2	0.71	1.21	378	166.69	11.5
ALL VEHICLES:									
4696	1.653	301.41	452.12	231.1	0.79	1.42	549	717.33	8.2
INTERSECTION (persons):									
7044	1.653		452.12	231.1	0.79	1.42		717.33	8.2

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

Table S.7 - Lane Performance
03 PR-128 y PR-127
Pico AM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Lane No.	Effective Red and Green Times (sec) R1	G1	R2	G2	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue Aver. (vehs)	Queue Back (m)	Lane Length (m)
South: PR- 128 S												
1 LT	123	37	0	0	443	268	1.653	394.8	1.72	46.2	327.1	500.0
2 T	123	37	0	0	765	463	1.653	387.9	1.90	78.5	549.2	500.0
3 R	4	37	4	115	92	1385	0.066	7.7	0.61	0.1	0.8	42.0T
East: PR-127 E												
1 LT	125	35	0	0	192	238	0.808	75.6	0.94	9.6	67.6	500.0
2 R	4	117	4	35	88	499	0.176	8.0	0.64	0.1	0.8	500.0
North: PR-128 N												
1 LT	123	37	0	0	568	388	1.466	300.4	1.68	53.4	373.5	500.0
2 T	123	37	0	0	676	461	1.466	295.8	1.73	63.0	441.2	500.0
3 R	4	37	4	115	412	1554	0.265	7.8	0.61	0.6	4.5	78.0T
West: PR-127 W												
1 L	125	35	0	0	352	305	1.155	172.3	1.31	26.0	185.1	500.0
2 T	125	35	0	0	592	422	1.403	268.4	1.65	53.1	378.1	500.0
3 R	4	35	4	117	516	1279	0.403	8.0	0.63	0.9	6.1	36.0T

T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
03 PR-128 y PR-127
Pico AM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Lane 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 %
South: PR- 128 S												
1 LT	312	131	0	443	3.30	1950	1159	0	42	268	1.653	100
2 T	0	765	0	765	3.81	2001	2001	0	0	463	1.653	100
3 R	0	0	92	92	3.81	2001	1534<	1433<	0	1385	0.066	100
East: PR-127 E												
1 LT	76	116	0	192	3.35	1955	1087	0	33	238	0.808	100
2 R	0	0	88	88	3.20	1940	121	1878	0	499	0.176	22P
North: PR-128 N												
1 LT	188	380	0	568	3.33	1953	1677	0	31	388	1.466	100
2 T	0	676	0	676	3.73	1993	1993	0	0	461	1.466	100
3 R	0	0	412	412	3.73	1993	1722<	1608<	0	1554	0.265	100
West: PR-127 W												
1 L	352	0	0	352	2.97	1917	1393	0	49	305	1.155	100
2 T	0	592	0	592	3.35	1955	1930	0	0	422	1.403	100
3 R	0	0	516	516	3.35	1955	1426<	1323<	0	1279	0.403	100

< Reduced saturation flow due to a short lane effect
P Lane under-utilisation found by the "Program". This includes cases where the value of lane under-utilisation due to downstream effects has been modified by the program during lane flow calculations (e.g. a de facto exclusive lane has been found).

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

Table S.10 - Movement Capacity and Performance Summary
03 PR-128 y PR-127
Pico AM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Mov ID	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	Average Back Queue (veh)	Perf. Index
South: PR- 128 S											
1 L		312	189	100	1.653*	36		395.2	1.72	46.2	72.92
2 T		896	542	100	1.653*	37*		388.8	1.88	78.5	207.21

3	R	(Slp)	92	1385<	100	0.066	37	115	7.7	0.61	0.1	1.57
East: PR-127 E												
4	L		76	94	100	0.807	34*		80.5	0.94	9.6	6.65
5	T		116	144	22	0.808	35		72.4	0.94	9.6	9.89
6	R	(Slp)	88	499	22	0.176	117	35	8.0	0.64	0.1	1.51
North: PR-128 N												
7	L		188	128	100	1.465	37		305.9	1.68	53.4	37.28
8	T		1056	721	100	1.465	37*		296.5	1.72	63.0	206.46
9	R	(Slp)	412	1554<	100	0.265	37	115	7.8	0.61	0.6	7.15
West: PR-127 W												
10	L		352	305	100	1.155	35		172.3	1.31	26.0	48.96
11	T		592	422	100	1.402	35*		268.4	1.65	53.1	108.63
12	R	(Slp)	516	1279<	100	0.403	35	117	8.0	0.63	0.9	9.10

< Reduced capacity due to a short lane effect
* Maximum degree of saturation, or critical green periods

Table S.14 - Summary of Input and Output Data
03 PR-128 y PR-127
Pico AM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

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- 128 S													
1	LT	312	131		443	1	1950	37		1.653	394.8	327	500
2	T		765		765	0	1982	37		1.653	387.9	549	500
3	R			92	92	0	2001	37	115	0.066	7.7	1	42
		312	896	92	1300	0				1.653	363.3	549	
East: PR-127 E													
1	LT	76	116		192	1	1955	35		0.808	75.6	68	500
2	R			88	88	0	1950	117	35	0.176	8.0	1	500
		76	116	88	280	1				0.808	54.3	68	
North: PR-128 N													
1	LT	188	380		568	0	1953	37		1.466	300.4	374	500
2	T		676		676	0	1975	37		1.466	295.8	441	500
3	R			412	412	2	1993	37	115	0.265	7.8	5	78
		188	1056	412	1656	0				1.466	225.8	441	
West: PR-127 W													
1	L	352			352	2	1916	35		1.155	172.3	185	500
2	T		592		592	2	1955	35		1.403	268.4	378	500
3	R			516	516	2	1955	35	117	0.403	8.0	6	36
		352	592	516	1460	2				1.403	153.2	378	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	4696	1	160	1.653	231.1	549

Peak flow period = 15 minutes.

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

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

Table S.15 - Capacity and Level of Service
03 PR-128 y PR-127
Pico AM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Mov ID	Mov Typ	Green Time (g/C) Ratio 1st grn	2nd grn	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Aver. (vehs)	Queue Back (m)
South: PR- 128 S										
1	L	0.225		312	189	1.653*	395.2	F	46.2	327
2	T	0.231*		896	542	1.653*	388.8	F	78.5	549
3	R (Slp)	0.231	0.719	92	1385<	0.066	7.7	A	0.1	1
East: PR-127 E										
4	L	0.213*		76	94	0.807	80.5	F	9.6	68
5	T	0.219		116	144	0.808	72.4	E	9.6	68
6	R (Slp)	0.731	0.219	88	499	0.176	8.0	A	0.1	1
North: PR-128 N										
7	L	0.231		188	128	1.465	305.9	F	53.4	374
8	T	0.231*		1056	721	1.465	296.5	F	63.0	441
9	R (Slp)	0.231	0.719	412	1554<	0.265	7.8	A	0.6	5
West: PR-127 W										
10	L	0.219		352	305	1.155	172.3	F	26.0	185
11	T	0.219*		592	422	1.402	268.4	F	53.1	378
12	R (Slp)	0.219	0.731	516	1279<	0.403	8.0	A	0.9	6
ALL VEHICLES:				4696		1.653	231.1	F	78.5	549
INTERSECTION (persons):				7044			231.1		78.5	549

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the SIDRA Output Guide or the Output section of the on-line help.

< Reduced capacity due to a short lane effect
* Maximum v/c ratio, or critical green periods
" Movement Level of service has been determined using adjacent lane v/c ratio rather than short lane v/c ratio (v/c=1.0)

Table D.5 - Progression Factors and Actuated Signal Parameters
03 PR-128 y PR-127
Pico AM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Mov ID	Control	Coord.	Arrival Type	Delay Prog. Factor	Queue Prog. Factor	Disp. Grn. Settings 1st Grn Gmin	Gmax	2nd Grn Gmin	Gmax
South: PR- 128 S									
1 L	FT	No	3	1.000	1.000	6	NA		
2 T	FT	No	3	1.000	1.000	6	NA		
3 R	FT	No	3	1.000	1.000	6	NA	6	NA
East: PR-127 E									
4 L	FT	No	3	1.000	1.000	6	NA		
5 T	FT	No	3	1.000	1.000	6	NA		
6 R	FT	No	3	1.000	1.000	6	NA	6	NA
North: PR-128 N									
7 L	FT	No	3	1.000	1.000	6	NA		
8 T	FT	No	3	1.000	1.000	6	NA		
9 R	FT	No	3	1.000	1.000	6	NA	6	NA
West: PR-127 W									
10 L	FT	No	3	1.000	1.000	6	NA		
11 T	FT	No	3	1.000	1.000	6	NA		
12 R	FT	No	3	1.000	1.000	6	NA	6	NA

Site: 03 PR-128 y PR-127 BA
C:\Documents and Settings\Carlos M
Contreras\Desktop\Yauco-Vertedero-Dic2007\corridas
Yauco-Vertedero\Yauco-Vertedero.aap
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Output Tables
Output Tables
03 PR-128 y PR-127
Pico PM Base

Run Information
Cycle Time = 160 (Sum of User-given Phase Times)

* Basic Parameters:
Intersection Type: Signalised - Fixed Time
Driving on the right-hand side of the road
Input data specified in Metric units
Model Defaults: Standard Right TEC - Customised Model
Peak Flow Period (for performance): 15 minutes
Unit time (for volumes): 60 minutes.
Delay definition: Control delay
Geometric delay included
SIDRA Standard Delay model used
SIDRA Standard Queue model used
Level of Service based on: Delay (HCM method)
Queue definition: Back of queue, Average

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

* Cycle time is at maximum and short lanes exist.
A shorter cycle time may give better results.

Table S.1 - Movement Phase and Timing Parameters
03 PR-128 y PR-127
Pico PM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Mov ID	Mov Typ	PHASE MATRIX First Green Fr	To	Op Pr	Second Green Fr	To	Op Pr	Lost Tim 1st Grn	2nd Grn	Req.Mov.Time 1st Grn	2nd Grn	Eff. Grn 1st Grn	2nd Grn
South: PR- 128 S													
1 L	B	C	Y					4		50.0		37	
2 T	*B	C						4		50.0		37	

```
    3 R  (Slp) B      C            C      B            4    4   10.0Min  30.0Min
37  115
 ------------------------------------------------------------------------------
---------
 East: PR-127 E
    4 L        D      A      Y                        5        51.9
34
    5 T       *D      A                               4        52.3
35
    6 R  (Slp) A      D            D      A            4    4   44.3     12.8
117   35
 ------------------------------------------------------------------------------
---------
 North: PR-128 N
    7 L       *A      B      Y                        4        78.3
37
    8 T        A      B                               4        78.3
37
    9 R  (Slp) A      B            B      A            4    4   10.0Min  30.0Min
37  115
 ------------------------------------------------------------------------------
---------
 West: PR-127 W
   10 L        C      D      Y                        4        32.5
35
   11 T       *C      D                               4        41.6
35
   12 R  (Slp) C      D            D      C            4    4   33.8     32.6
35  117
 ------------------------------------------------------------------------------
---------
 ------------------------------------------------------------------------------
---------
   Current Phase Sequence: Two-phase
   Input phase sequence: A B C D
   Output phase sequence: A B C D
 ------------------------------------------------------------------------------
---------
   *  Critical Movement/Green Period

 Movement Types:                              Under heading 'Op':
   Slp  Slip Lane Movement                      Y   If opposed turn
   Ped  Pedestrian
   Dum  Dummy
```

Table S.2 - Movement Capacity Parameters
03 PR-128 y PR-127
Pico PM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Mov ID	Dem Flow (veh)	HV	Satn Flow 1st	Satn Flow 2nd	Flow Ratio 1st	Flow Ratio 2nd	Total Cap. (veh)	Prac. Deg. Satn	Prac. Spare Cap.	Lane Util	Deg. Satn
	/h)	(%)	Grn	Grn	Grn	Grn	/h)	xp	(%)	(%)	x
South: PR- 128 S											
1 L	280	2.1	1083		0.259		250	0.90	-20	100	1.118
2 T	616	0.0	2382		0.259		551	0.90	-20	100	1.118
3 R	152	0.0	1533<	1432<	0.052	0.050	1384	0.90	719	100	0.110
East: PR-127 E											
4 L	180	0.0	682		0.264		145	0.90	-28	100	1.242
5 T	208	1.9	766		0.272		168	0.90	-27	20	1.241
6 R	68	0.0	101	915	0.227	0.049	274	0.90	263	20	0.248
North: PR-128 N											
7 L	488	0.0	1168		0.418		270	0.90	-50	100	1.807*
8 T	916	0.0	2193		0.418		507	0.90	-50	100	1.806
9 R	96	2.1	1723<	1609<	0.034	0.024	1555	0.90	1358	100	0.062
West: PR-127 W											
10 L	300	2.0	1872		0.160		410	0.90	23	100	0.733
11 T	408	2.0	1930		0.211		422	0.90	-7	100	0.966
12 R	452	2.0	1425<	1323<	0.168	0.161	1279	0.90	155	100	0.353

< Reduced saturation flow due to a short lane effect

Table S.3 - Intersection Parameters
03 PR-128 y PR-127
Pico PM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Critical Movements: 7, 2, 11, 5

L= 16 Y= 1.159 U= 1.288 T= 222.1

Cycle Time:

Minimum	Maximum	Practical	Chosen
40	160*	****	160

(Phase times user specified, cycle time = sum of phase times)

* Cmax increased to match sum of phase times

**** Y and U values are too large ****

Cycle time is at maximum and short lanes exist.
A shorter cycle time may give better results.

Intersection Level of Service	=	F
Worst movement Level of Service	=	F
Average intersection delay (s/pers)	=	219.8
Largest average movement delay (s)	=	462.9
Largest back of queue, mean (m)	=	634
Performance Index	=	612.52
Degree of saturation (highest)	=	1.807
Practical Spare Capacity (lowest)	=	-50 %
Effective intersection capacity, (veh/h)	=	2305
Total vehicle flow (veh/h)	=	4164

Total person flow (pers/h)	=	6246
Total vehicle delay (veh-h/h)	=	254.24
Total person delay (pers-h/h)	=	381.36
Total effective vehicle stops (veh/h)	=	5592
Total effective person stops (pers/h)	=	8388
Total vehicle travel (veh-km/h)	=	2527.9
Total cost ($/h)	=	8689.22
Total fuel (L/h)	=	656.6
Total CO2 (kg/h)	=	1641.81

Table S.4 - Phase Information
03 PR-128 y PR-127
Pico PM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Phase Change Times: 0, 41, 82, 121
Phase Green Times: 37, 37, 35, 35

(Phase times specified by the user)
Current Phase Sequence: Two-phase
Input phase sequence: A B C D
Output phase sequence: A B C D

Table S.5 - Movement Performance

Mov ID		Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Aver. (vehs)	Queue Back (m)	Perf. Index	Aver. Speed (km/h)
South: PR- 128 S										
1	L	12.14	18.20	156.0	1.00	1.28	26.8	190	36.81	11.4
2	T	25.86	38.79	151.1	1.00	1.31	35.9	251	79.42	11.6
3	R	0.32	0.49	7.7	0.06	0.61	0.2	1	2.60	49.5
East: PR-127 E										
4	L	10.54	15.80	210.7	1.00	1.39	26.9	190	28.29	8.8
5	T	9.32	13.98	161.3	0.95	1.19	26.9	190	27.16	11.0
6	R	1.01	1.52	53.7	0.82	0.78	4.4	31	4.45	24.3
North: PR-128 N										
7	L	62.76	94.13	462.9	1.00	1.86	62.8	439	126.33	4.4
8	T	114.76	172.15	451.0	1.00	2.00	90.5	634	233.89	4.5
9	R	0.21	0.31	7.7	0.06	0.61	0.1	1	1.64	49.5
West: PR-127 W										
10	L	5.94	8.92	71.3	0.99	0.86	13.5	96	23.86	20.3
11	T	10.38	15.58	91.6	1.00	1.09	23.2	165	40.15	17.1
12	R	0.99	1.49	7.9	0.14	0.62	0.7	5	7.92	49.0

Table S.6 - Intersection Performance
03 PR-128 y PR-127
Pico PM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

	Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
South: PR- 128 S	1048	1.118	38.32	57.48	131.6	0.86	1.20	251	118.82	13.0
East: PR-127 E	456	1.242	20.87	31.31	164.8	0.95	1.21	190	59.90	10.9
North: PR-128 N	1500	1.807	177.73	266.59	426.5	0.94	1.87	634	361.86	4.7
West: PR-127 W	1160	0.966	17.32	25.98	53.8	0.66	0.85	165	71.93	24.3
ALL VEHICLES:	4164	1.807	254.24	381.36	219.8	0.84	1.34	634	612.52	8.5
INTERSECTION (persons):	6246	1.807		381.36	219.8	0.84	1.34		612.52	8.5

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

Table S.7 - Lane Performance
03 PR-128 y PR-127
Pico PM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Lane 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 Aver. (vehs)	Queue Back (m)	Lane Length (m)
South: PR- 128 S												
1 LT	123	37	0	0	378	338	1.118	155.7	1.28	26.8	190.3	500.0
2 T	123	37	0	0	518	463	1.118	150.4	1.31	35.9	251.5	500.0
3 R	4	37	4	115	152	1383	0.110	7.7	0.61	0.2	1.4	42.0T
East: PR-127 E												
1 LT	125	35	0	0	333	268	1.241	207.0	1.39	26.9	190.0	500.0
2 TR	4	8	113	35	123	494	0.248	50.2	0.72	4.4	31.1	500.0
North: PR-128 N												
1 LT	123	37	0	0	572	316	1.806	461.8	1.86	62.8	439.5	500.0
2 T	123	37	0	0	832	461	1.806	450.7	2.01	90.5	633.6	500.0
3 R	4	37	4	115	96	1555	0.062	7.7	0.61	0.1	0.9	78.0T
West: PR-127 W												
1 L	125	35	0	0	300	409	0.733	71.3	0.86	13.5	95.8	500.0
2 T	125	35	0	0	408	422	0.966	91.6	1.09	23.2	165.0	500.0
3 R	4	35	4	117	452	1279	0.353	7.9	0.62	0.7	5.1	36.0T

T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
03 PR-128 y PR-127
Pico PM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Lane 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 %
South: PR- 128 S												
1 LT	280	98	0	378	3.30	1950	1463	0	42	338	1.118	100
2 T	0	518	0	518	3.81	2001	2001	0	0	463	1.118	100
3 R	0	0	152	152	3.81	2001	1533<	1432<	0	1383	0.110	100
East: PR-127 E												
1 LT	180	153	0	333	3.35	1955	1227	0	37	268	1.241	100
2 TR	0	55	68	123	3.20	1940	1676	1877	0	494	0.248	20D
North: PR-128 N												
1 LT	488	84	0	572	3.33	1953	1368	0	46	316	1.806	100
2 T	0	832	0	832	3.73	1993	1993	0	0	461	1.806	100
3 R	0	0	96	96	3.73	1993	1723<	1609<	0	1555	0.062	100
West: PR-127 W												
1 L	300	0	0	300	2.97	1917	1872	0	49	409	0.733	100
2 T	0	408	0	408	3.35	1955	1930	0	0	422	0.966	100
3 R	0	0	452	452	3.35	1955	1425<	1323<	0	1279	0.353	100

< Reduced saturation flow due to a short lane effect
D Lane under-utilisation due to downstream effects

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

Table S.10 - Movement Capacity and Performance Summary
03 PR-128 y PR-127
Pico PM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Mov ID	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	Average Back Queue (veh)	Perf. Index
South: PR- 128 S											
1 L		280	250	100	1.118	37		156.0	1.28	26.8	36.81
2 T		616	551	100	1.118	37*		151.1	1.31	35.9	79.42
3 R	(Slp)	152	1384<	100	0.110	37	115	7.7	0.61	0.2	2.60
East: PR-127 E											
4 L		180	145	100	1.242	34		210.7	1.39	26.9	28.29
5 T		208	168	20	1.241	35*		161.3	1.19	26.9	27.16
6 R	(Slp)	68	274	20	0.248	117	35	53.7	0.78	4.4	4.45
North: PR-128 N											
7 L		488	270	100	1.807*	37*		462.9	1.86	62.8	126.33
8 T		916	507	100	1.806	37		451.0	2.00	90.5	233.89
9 R	(Slp)	96	1555<	100	0.062	37	115	7.7	0.61	0.1	1.64
West: PR-127 W											
10 L		300	410	100	0.733	35		71.3	0.86	13.5	23.86
11 T		408	422	100	0.966	35*		91.6	1.09	23.2	40.15
12 R	(Slp)	452	1279<	100	0.353	35	117	7.9	0.62	0.7	7.92

< Reduced capacity due to a short lane effect
* Maximum degree of saturation, or critical green periods

Table S.14 - Summary of Input and Output Data
03 PR-128 y PR-127
Pico PM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

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- 128 S												
1 LT	280	98		378	2	1950	37		1.118	155.7	190	500
2 T		518		518	0	1979	37		1.118	150.4	251	500
3 R			152	152	0	2001	37	115	0.110	7.7	1	42
	280	616	152	1048	1				1.118	131.6	251	
East: PR-127 E												
1 LT	180	153		333	1	1955	35		1.241	207.0	190	500
2 TR		55	68	123	1	1951	8	35	0.248	50.2	31	500U
	180	208	68	456	1				1.241	164.8	190	
North: PR-128 N												
1 LT	488	84		572	0	1953	37		1.806	461.8	439	500
2 T		832		832	0	1977	37		1.806	450.7	634	500
3 R			96	96	2	1993	37	115	0.062	7.7	1	78
	488	916	96	1500	0				1.806	426.5	634	
West: PR-127 W												
1 L	300			300	2	1916	35		0.733	71.3	96	500
2 T		408		408	2	1955	35		0.966	91.6	165	500
3 R			452	452	2	1955	35	117	0.353	7.9	5	36
	300	408	452	1160	2				0.966	53.8	165	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue

				4164	1	160	1.807	219.8	634	

Peak flow period = 15 minutes.

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

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

U Lane under-utilisation specified by the "User"

Table S.15 - Capacity and Level of Service
03 PR-128 y PR-127
Pico PM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Mov ID	Mov Typ	Green Ratio (g/C) 1st grn	Green Ratio (g/C) 2nd grn	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Aver. (vehs)	Queue Back (m)
South: PR- 128 S										
1 L		0.231		280	250	1.118	156.0	F	26.8	190
2 T		0.231*		616	551	1.118	151.1	F	35.9	251
3 R	(Slp)	0.231	0.719	152	1384<	0.110	7.7	A	0.2	1
East: PR-127 E										
4 L		0.213		180	145	1.242	210.7	F	26.9	190
5 T		0.219*		208	168	1.241	161.3	F	26.9	190
6 R	(Slp)	0.731	0.219	68	274	0.248	53.7	D	4.4	31
North: PR-128 N										
7 L		0.231*		488	270	1.807*	462.9	F	62.8	439
8 T		0.231		916	507	1.806	451.0	F	90.5	634
9 R	(Slp)	0.231	0.719	96	1555<	0.062	7.7	A	0.1	1
West: PR-127 W										
10 L		0.219		300	410	0.733	71.3	E	13.5	96
11 T		0.219*		408	422	0.966	91.6	F	23.2	165
12 R	(Slp)	0.219	0.731	452	1279<	0.353	7.9	A	0.7	5
ALL VEHICLES:				4164		1.807	219.8	F	90.5	634
INTERSECTION (persons):				6246			219.8		90.5	634

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the SIDRA Output Guide or the Output section of the on-line help.

< Reduced capacity due to a short lane effect

* Maximum v/c ratio, or critical green periods

" Movement Level of service has been determined using adjacent lane v/c ratio rather than short lane v/c ratio (v/c=1.0)

Table D.5 - Progression Factors and Actuated Signal Parameters
03 PR-128 y PR-127
Pico PM Base
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 160 (Sum of User-given Phase Times)

Mov ID	Control	Coord.	Arrival Type	Delay Prog. Factor	Queue Prog. Factor	Disp. Grn. Settings 1st Grn Gmin	1st Grn Gmax	2nd Grn Gmin	2nd Grn Gmax
South: PR- 128 S									
1 L	FT	No	3	1.000	1.000	6	NA		
2 T	FT	No	3	1.000	1.000	6	NA		
3 R	FT	No	3	1.000	1.000	6	NA	6	NA
East: PR-127 E									
4 L	FT	No	3	1.000	1.000	6	NA		
5 T	FT	No	3	1.000	1.000	6	NA		
6 R	FT	No	3	1.000	1.000	6	NA	6	NA
North: PR-128 N									
7 L	FT	No	3	1.000	1.000	6	NA		
8 T	FT	No	3	1.000	1.000	6	NA		
9 R	FT	No	3	1.000	1.000	6	NA	6	NA
West: PR-127 W									
10 L	FT	No	3	1.000	1.000	6	NA		
11 T	FT	No	3	1.000	1.000	6	NA		
12 R	FT	No	3	1.000	1.000	6	NA	6	NA

Site: 03 PR-128 y PR-127 BP
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Output Tables
Output Tables
03 PR-128 y PR-127
Pico AM Futuro 2010

Run Information
Cycle Time = 90 (Optimum Cycle Time)

* Basic Parameters:
Intersection Type: Signalised - Fixed Time
Driving on the right-hand side of the road
Input data specified in Metric units
Model Defaults: Standard Right TEC - Customised Model
Peak Flow Period (for performance): 15 minutes
Unit time (for volumes): 60 minutes.
Specified performance measure for "best" cycle time in variable run - Delay
Delay definition: Control delay
Geometric delay included
SIDRA Standard Delay model used
SIDRA Standard Queue model used
Level of Service based on: Delay (HCM method)
Queue definition: Back of queue, Average

* Iteration Data:
No. of Main (Timing-Capacity) Iterations = 3
Comparison of last two iterations:
Difference in intersection degree of satn = 0.0 %
Largest difference in eff. green times = 1 secs
(max. value for stopping = 1 secs)
Information on Previous Iteration:
Cycle Time = 90
Phase Times: 0, 29, 58, 79
Critical Movements: 9(1st), 2, 11

* If an "optimum" cycle time solution is adopted for actuated signal purposes ensure that vehicle-actuated settings reflect this solution in real life. Consider using the "sensitivity analysis" facility to optimise maximum green settings for actuated signals.

Table S.1 - Movement Phase and Timing Parameters
03 PR-128 y PR-127
Pico AM Futuro 2010
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	Mov Typ	PHASE MATRIX First Green Fr	To	Op Pr	Second Green Fr	To	Op Pr	Lost Tim 1st Grn	2nd Grn	Req.Mov.Time 1st Grn	2nd Grn	Eff. Grn 1st	2nd
South: PR- 128 S													
1	L	E	F							4		36.0	25
2	T	*E	F							4		36.0	25
3	R (Slp)	E	F		F	E	Y	4	35	18.9	38.8	25	26
East: PR-127 E													
4	L	D	C	Y						6		10.0Min	4
5	T	D	C							4		10.0Min	6
6	R (Slp)	E	D	Y	D	E		44	4	46.5	41.1	7	35
North: PR-128 N													
7	L	C	E							4		36.5	25
8	T	C	E							4		36.6	25
9	R (Slp)	*C	E		E	C	Y	4	21	36.6	33.1	25	40
West: PR-127 W													
10	L	F	D							4		24.2	18
11	TR	*F	C							4		40.7	28
12	R (Slp)	C	F	Y	F	C	Y	29	4	69.8	20.0Min	29	28

Current Phase Sequence: Split Phasing
Input phase sequence: C E F D
Output phase sequence: C E F D

* Critical Movement/Green Period

Movement Types:
Slp Slip Lane Movement
Ped Pedestrian
Dum Dummy

Under heading 'Op':
Y If opposed turn

Table S.2 - Movement Capacity Parameters
03 PR-128 y PR-127