Traffic Consulting Group

Validación de Ruta
Sistema de Transportación Colectivo Caguas
Determinación Niveles de Servicio Actuales y Futuros
En Intersecciones bajo Evaluación

Preparado para:
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1 INTRODUCCIÓN

El siguiente informe presenta un análisis de las intersecciones que se encuentran bajo estudio como parte del proceso de validación del Sistema de Transportación Colectiva propuesto para el municipio de Caguas. Se evalúan en este Estudio dos escenarios. El primero es el análisis de las condiciones existentes (año 2006) de las intersecciones de interés y el segundo es el escenario futuro (año 2011) sin contemplar la construcción del sistema de Transportación Colectiva. El escenario con la construcción del proyecto fue imposible de evaluar ya que al momento la Autoridad de Carreteras y Transportación no cuenta con estimados de cuantos viajes generarían cada una de las estaciones del Tren y por que rutas especificas transitarían dichos viajes hacia y desde las futuras estaciones. Aun así el análisis de las condiciones futuras de tránsito sin la contemplación de la construcción del proyecto arroja valiosa información que debe de ser considerada seriamente por los planificadores y/o diseñadores del Sistema.

2 INTERSECCIONES EVALUADAS

Las intersecciones evaluadas en este reporte son las siguientes:

1. PR 52 con Avenida Garrido Este
2. PR 52 con Avenida Garrido Oeste
3. PR 30 con Avenida Rafael Cordero Norte
4. PR 30 con Avenida Rafael Cordero Sur
5. PR 52 con PR 177 Este
6. PR 52 con PR 177 Oeste
7. PR 52 con 199 Este
8. PR 52 con PR 199 Oeste
9. PR 1 con rampas de PR 30 y PR 52
10. PR 1 con PR 176

3 METODOLOGÍA PARA LA EVALUACIÓN DEL IMPACTO EN EL TRÁNSITO DEBIDO A LA ACCIÓN PROPUESTA

1. Los días 7,8 y 9 de noviembre de 2006 se realizaron conteos de vehículos en el área de estudio durante las 12 horas de mayor afluencia vehicular. Los horarios de conteos fueron realizados de 6:00 AM a 6:00 PM.

2. Con toda la data recopilada se procedió a analizar las intersecciones en cuestión. Para realizar este análisis se utilizó el programa de computadoras Sidra Intersection 3.0 y el programa Synchro según aplicara. Las situaciones estudiadas fueron los períodos pico de la mañana y de la tarde con los flujos existentes.

3. Los flujos obtenidos en el año 2006 fueron expandidos al año 2011, cuando entendemos que el proyecto estará operando. Los flujos de la zona fueron expandidos utilizando un factor de crecimiento que nos fue brindado por la Oficina de Recopilación de Datos y Análisis de Tránsito de la Autoridad de Carreteras y Transportación. Con dichos flujos se evaluaron las condiciones futuras de las intersecciones bajo evaluación en el escenario de no construcción del proyecto.

4 TEORÍA

4.1 Evaluación de Nivel de Servicio (LOS) para una intersección

El nivel de servicio es la metodología más conocida utilizada para la evaluación de una facilidad. El nivel de servicio representa las condiciones de operación de las intersecciones: el nivel de servicio “A” representa las condiciones excelentes de tránsito y el nivel “F”, las peores condiciones. Tanto las intersecciones semaforizadas como las no semaforizadas pueden ser categorizadas utilizando esta metodología. Estos niveles de servicio a su vez se encuentran basados en las demoras promedio que tienen los vehículos en las intersecciones. A continuación se definen las categorías para cada nivel de servicio.

LOS A: Excelente

Esta es una condición de flujo libre, acompañada por bajos volúmenes de tránsito y altas velocidades. Hay poca o ninguna restricción en maniobrabilidad del conductor y los conductores pueden mantener sus deseadas velocidades con poco o ningún retraso.

LOS B: Muy Buena

En esta condición, las velocidades de operación comienzan a estar restringidas un tanto por las condiciones del tránsito. Los conductores aún tienen una libertad considerable para seleccionar su velocidad y carril de operación.

LOS C: Buena

Las velocidades y maniobrabilidad se vuelven más controladas por volúmenes de tránsito más altos. La mayoría de los conductores están restringidos en su libertad para seleccionar su propia velocidad, cambiar de carril o pasar.

LOS D: Aceptable

Este nivel de servicio se acerca a un flujo inestable, con velocidades operacionales tolerables siendo mantenidas, aunque considerablemente afectadas por los cambios en las condiciones operacionales. Los conductores tienen poca libertad para maniobrar y la comodidad y conveniencia son bajas.

LOS E: Capacidad

El flujo de tránsito se vuelve inestable y podría haber paradas momentáneas.

LOS F: Mala

En esta condición, la velocidad operacional podría bajar a cero y resultar en colas de tránsito.

4.2 Relación entre demoras y Nivel de Servicio

La Tabla 1, muestra las diferentes relaciones entre el nivel de servicio y las demoras promedio por cada vehículo en las intersecciones controladas ya sea por semáforo, señales de PARE o CEDA, o en rotondas. (Manual de aaSIDRA 2.1. Estas demoras tienen como componentes la demora de viajar a través de la intersección más la demora de la detención como consecuencia de la intersección.

Tabla 1 Criterio del Nivel de Servicio para intersecciones

Nivel de Servicio	Demora de vehículos (segs.)	
	Semáforo y Rotonda	PARE y CEDA
A	d ≤ 10	d ≤ 10
B	10 < d ≤ 20	10 < d ≤ 15
C	20 < d ≤ 35	15 < d ≤ 25
D	35 < d ≤ 55	25 < d ≤ 35
E	55 < d ≤ 80	35 < d ≤ 50
F	80 < d	50 < d

4.3 Glosario

A continuación se presenta una lista de términos comunes en la práctica de la ingeniería de tránsito, según definidos por la Autoridad de Carreteras y Transportación.

1. **Acceso (intersección)** – está caracterizado por un grupo de carriles en una dirección de la intersección, incluyendo los movimientos a la izquierda, recto y a la derecha.
2. **ADT** – "Average Daily Traffic", tránsito promedio diario en una facilidad de una carretera.
3. **Área de estudio** – área geográfica que contiene las intersecciones y segmentos más críticos de una carretera, los cuales se esperan sean afectados por el tránsito a ser generado por el desarrollo.
4. **Ciclo** – el período de tiempo requerido para una secuencia completa de indicaciones del semáforo.
5. **Desarrollo** – proyectos residenciales, comerciales, de oficinas, de hospederías e industriales, entre otros, que serán construidos en un predio de terreno sin desarrollar o que forman parte de una reconstrucción o expansión de una edificación existente.
6. **Día típico** – un martes, miércoles o jueves durante los días de clase entre los meses de enero a mayo y de agosto a diciembre. Para los usos comerciales, el sábado podrá incluirse entre los días típicos.
7. **Estudio operacional** – el análisis del impacto potencial al tránsito causado por un desarrollo propuesto. Este tipo de estudio dependerá del tipo y tamaño del proyecto. Para propósitos de este documento, un estudio operacional consistirá de un estudio de accesos o un estudio de tránsito.
8. **Factor de hora pico** – una medida de la fluctuación en la demanda vehicular dentro de la hora pico.
9. **Fase** – una parte del ciclo asignado a un movimiento de tránsito que tenga el derecho de paso o a una combinación de movimientos de tránsito que tengan simultáneamente el derecho de paso durante uno o más intervalos.

10. **Hora pico** – un período de una hora durante la mañana (AM) o durante la tarde (PM) que representa el volumen de tránsito más alto en el sistema, resultado de la suma de los volúmenes de cuatro (4) períodos de quince (15) minutos consecutivos.
11. **Modelos de micro-simulación** – modelos que simulan el movimiento individual de vehículos, basados en teorías de cambio de carril, dirección de los vehículos y forma de conducir.
12. **Nivel de servicio ("Level of Service" - LOS)** – una medida cualitativa que describe las condiciones operacionales de un componente del sistema de transportación. Generalmente descrito por los siguientes factores: velocidad, tiempo de viaje, demora, interrupciones en el tránsito y seguridad.
13. **Semáforo actuado** – un tipo de sistema de semáforos mediante el cual se varían los intervalos de tiempo de acuerdo con las demandas del tránsito registradas por la actuación de los detectores localizados en el pavimento de rodaje.
14. **Semáforo semi-actuado** – un tipo de sistema de semáforos donde los detectores son colocados en los accesos de menor flujo vehicular para permitirle prioridad de verde a los accesos principales.
15. **Semáforo de tiempo fijo** – un tipo de sistema de semáforos que opera con programas predeterminados de ciclos en intervalos.
16. **Volumen** – el número de personas o vehículos pasando por un punto de un carril o un segmento de carretera durante cierto intervalo de

5 ANÁLISIS DE TRÁNSITO

5.1 Afluencia vehicular

A modo de determinar el patrón de viajes actuales del sector se realizó un conteo manual en las intersecciones mencionadas anteriormente. Dichos conteos se realizaron en los periodos de 6:00 AM a 6:00 PM.

Las tablas en el apéndice 1 ilustran el flujo vehicular obtenido mediante dichos conteos manuales. Para determinar la hora pico se buscaron los cuatro períodos consecutivos de 15 minutos con más flujo. Una vez se encontraba esta hora en los períodos AM y PM, se buscaba el período de 15 minutos con mayor flujo, y este valor multiplicado por cuatro era el que se utilizaba para la modelación. Dado que ya se está usando el valor del período de 15 minutos mas alto, el factor de hora pico a utilizarse es 1.0.

Los flujos mostrados están identificados por dos letras separadas por un guión. La primera representa el acceso de procedencia del movimiento en inglés: North, South, East & West. La segunda letra representa el tipo de movimiento: Left, Thru & Right.

Las siguientes tablas muestran los flujos vehiculares por acceso de las intersecciones estudiadas.

Tabla 2 Flujos PR 52 y Avenida Garrido Este (Condición Presente)

2006	S-L	S-T	S-R	E-L	E-T	E-R	W-L	W-T	W-R	Total
Pico AM	124	612	960	n/a	392	164	732	984	n/a	3968
Pico PM	284	444	548	n/a	688	464	932	1572	n/a	4932

Tabla 3 Flujos PR 52 y Avenida Garrido Oeste (Condición Presente)

2006	E-L	E-T	E-R	N-L	N-T	N-R	W-L	W-T	W-R	Total
Pico AM	176	340	n/a	364	332	584	n/a	1352	100	3248
Pico PM	400	572	n/a	908	924	1088	n/a	1596	144	5632

Tabla 4 Flujos PR 30 con Avenida Rafael Cordero Norte (Condición Presente)

2006	S-L	S-T	S-R	E-L	E-T	E-R	N-L	N-T	N-R	Total
Pico AM	800	0	n/a	1820	0	0	n/a	12	0	2632
Pico PM	1620	0	n/a	1008	0	0	n/a	0	0	2628

Tabla 5 Flujos PR 30 con Avenida Rafael Cordero Sur (Condición Presente)

2006	S-L	S-T	S-R	N-L	N-T	N-R	W-L	W-T	W-R	Total
Pico AM	n/a	712	484	64	1500	n/a	20	0	756	3536
Pico PM	n/a	1612	1904	4	1004	n/a	8	32	1240	5804

Tabla 6 Flujos PR 52 con PR 177 Este (Condición Presente)

2006	S-L	S-T	S-R	E-L	E-T	E-R	W-L	W-T	W-R	Total
Pico AM	224	0	152	n/a	1304	1676	480	1380	n/a	5216
Pico PM	488	0	264	n/a	1668	796	316	2068	n/a	5600

Tabla 7 Flujos PR 52 con PR 177 Oeste (Condición Presente)

2006	E-L	E-T	N-T	N-R	Total
Pico AM	424	1200	1836	284	3744
Pico PM	456	2024	2080	720	5280

Tabla 8 Flujos PR 52 con PR 199 Este (Condición Presente)

2006	S-L	S-T	S-R	E-L	E-T	E-R	W-L	W-T	W-R	Total
Pico AM	788	300	484	n/a	1768	1400	620	2468	n/a	7848
Pico PM	756	72	384	n/a	1656	652	508	2396	n/a	6424

Tabla 9 Flujos PR 52 y PR 199 Oeste (Condición Presente)

2006	E-L	E-T	E-R	N-L	N-T	N-R	W-L	W-T	W-R	Total
Pico AM	552	2004	n/a	676	68	216	n/a	2412	644	6572
Pico PM	644	1768	n/a	1260	144	344	n/a	1644	868	6672

Tabla 10 Flujos PR 1 y Rampas de PR 30 y PR 52 (Condición Presente)

2006	S-L	S-T	S-R	E-L	E-T	E-R	N-L	N-T	N-R	W-L	PR-52	PR-30	Total
Pico AM	4	2420	56	28	12	36	20	1112	40	0	1128	2160	7016
Pico PM	12	1892	4	24	16	4	4	1128	24	0	1392	2884	7384

Tabla 11 Flujos PR 1 y PR 176 (Condición Presente)

2006	S-L	S-T	S-R	E-L	E-T	E-R	N-L	N-T	N-R	W-L	W-T	W-L	Total
Pico AM	132	2264	296	88	1360	52	492	1524	28	16	412	44	6708
Pico PM	188	1512	164	236	1440	88	284	2856	88	28	980	32	7896

5.2 Crecimiento Anual

Los flujos obtenidos en el año 2006 fueron expandidos al año 2011, cuando entendemos que el proyecto estará operando. Los flujos de la zona fueron expandidos utilizando un factor de crecimiento que nos fue brindado por la Oficina de Recopilación de Datos y Análisis de Tránsito de la Autoridad de Carreteras y Transportación. Los factores de crecimiento a 20 años brindados por dicha oficina son los siguientes:

- PR 52 – PR 30…….. 1.40
- PR 52 – PR 1……. 1.40
- PR 30 – RAFAEL CORDERO……. 1.67
- PR 30 – PR 1…… 1.67
- PR 52 – AVENIDA GARRIDO…… 1.40
- PR 1 -- PR 176…….. 1.40
- PR 52 – PR 177…….. 1.16
- PR 52 – PR 199 ……... 1.16

5.3 Tránsito Futuro

Para la modelación de la situación futura se tomaron los flujos de la situación base y se multiplicaron por el factor de crecimiento anual. Las siguientes tablas muestran los flujos modelados.

Tabla 12 Flujos PR 52 y Avenida Garrido Este (2011)

2011	S-L	S-T	S-R	E-L	E-T	E-R	W-L	W-T	W-R	Total
Pico AM	136	673	1056	N/A	431	180	805	1082	N/A	4365
Pico PM	312	488	603	N/A	757	510	1025	1729	N/A	5425

Tabla 13 Flujos PR 52 y Avenida Garrido Oeste (2011)

2011	E-L	E-T	E-R	N-L	N-T	N-R	W-L	W-T	W-R	Total
Pico AM	194	374	N/A	400	365	642	N/A	1487	110	3573
Pico PM	440	629	N/A	999	1016	1197	N/A	1756	158	6195

Tabla 14 Flujos PR 30 con Avenida Rafael Cordero Norte (2011)

2011	S-L	S-T	S-R	E-L	E-T	E-R	N-L	N-T	N-R	Total
Pico AM	934	N/A	N/A	2125	N/A	N/A	N/A	14	N/A	3073
Pico PM	1891	N/A	N/A	1177	N/A	N/A	N/A	1	N/A	3069

Tabla 15 Flujos PR 30 con Avenida Rafael Cordero Sur (2011)

2011	S-L	S-T	S-R	N-L	N-T	N-R	W-L	W-T	W-R	Total
Pico AM	N/A	831	565	75	1751	N/A	23	1	883	4129
Pico PM	N/A	1882	2223	5	1172	N/A	9	37	1448	6776

Tabla 16 Flujos PR 52 con PR 177 Este (2011)

2011	S-L	S-T	S-R	E-L	E-T	E-R	W-L	W-T	W-R	Total
Pico AM	233	N/A	158	N/A	1356	1743	499	1435	N/A	5425
Pico PM	508	N/A	275	N/A	1735	828	329	2151	N/A	5824

Tabla 17 Flujos PR 52 con PR 177 Oeste (2011)

2011	E-L	E-T	W-T	W-R	Total
Pico AM	441	1248	1909	295	3894
Pico PM	474	2105	2163	749	5491

Tabla 18 Flujos PR 52 con PR 199 Este (2011)

2011	S-L	S-T	S-R	E-L	E-T	E-R	W-L	W-T	W-R	Total
Pico AM	820	312	503	N/A	1839	1477	645	2567	N/A	8162
Pico PM	786	75	399	N/A	1722	678	528	2492	N/A	6681

Tabla 19 Flujos PR 52 y PR 199 Oeste (2011)

2011	E-L	E-T	E-R	N-L	N-T	N-R	W-L	W-T	W-R	Total
Pico AM	574	2084	N/A	703	71	225	N/A	2508	670	6835
Pico PM	670	1839	N/A	1310	150	358	N/A	1710	903	6939

Tabla 20 Flujos PR 1 y Rampas de PR 30 y PR 52 (2011)

2006	S-L	S-T	S-R	E-L	E-T	E-R	N-L	N-T	N-R	W-L	PR-52	PR-30	Total
Pico AM	5	2825	65	33	14	42	23	1298	47	0	1317	2522	8191
Pico PM	14	2209	5	28	19	5	5	1317	28	0	1625	3367	8621

Tabla 21 Flujos PR 1 y PR 176 (2011)

2011	S-T	S-R	N-T	W-L	W-T	W-R	Total
Pico AM	2684	332	1707	18	461	49	7513
Pico PM	1904	184	3199	31	1098	36	8844

5.4 Modelación de Tránsito

Para la evaluación de las intersecciones estudiadas se utilizó el programa SIDRA INTERSECTION 3.0 o el programa Synchro según aplicara. Se realizaron modelaciones para los períodos pico de la mañana y de la tarde para la situación actual y situación futura (2011).

5.4.1 Intersección PR 52 con Avenida Garrido Este

Esta intersección es controlada por un semáforo, con una geometría de cruz. La avenida Garrido compone los accesos este y oeste y las rampas de la PR 52 los accesos norte y sur La siguiente figura muestra un croquis de esta intersección, seguida por una tabla que muestra los resultados obtenidos para las distintas situaciones modeladas.

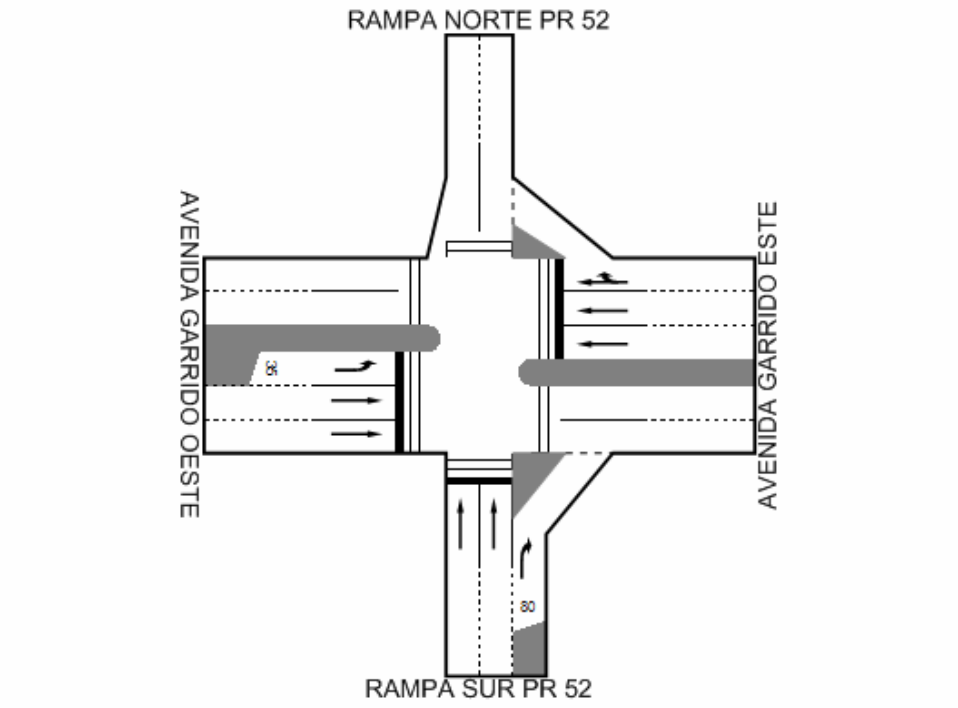

Figura 1 Int. PR 52 con Avenida Garrido Este

La siguiente tabla muestra los resultados obtenidos para las distintas situaciones modeladas.

Tabla 22 Resultados modelación PR 52 con Avenida Garrido Este

		Demora Promedio por Vehículo [seg.], Nivel de Servicio (LOS) y Cola Promedio [metros]												
		Acceso Sur			Acceso Este			Acceso Norte			Acceso Oeste			
		Demora y LOS		Cola	Demora y LOS		Cola	Demora y LOS		Cola	Demora y LOS		Cola	Total Int.
Base 2006														
AM	Izquierda	57.1	E	40.5	--	--	--	--	--	--	92.3	F	268.2	238.9 F
	Recto	428.1	F	347.4	55.9	E	63.8	--	--	--	27.1	C	136.8	
	Derecha	577.6	F	416.0	51.0	D	17.9	--	--	--	--	--	--	
	Acceso	485.5	F	--	54.4	D	--	--	--	--	54.9	D	--	
PM	Izquierda	113.4	F	104.5	--	--	--	--	--	--	145.8	F	393.7	114.5 F
	Recto	293.6	F	221.2	89.9	F	172.2	--	--	--	22.9	C	303.9	
	Derecha	181.9	F	153.4	148.1	F	126.0	--	--	--	--	--	--	
	Acceso	205.5	F	--	113.3	F	--	--	--	--	68.6	E	--	
Futuro 2011														
AM	Izquierda	45.1	D	30.7	--	--	--	--	--	--	73.7	E	370.7	65.6 E
	Recto	188.6	F	335.1	185.6	F	105.8	--	--	--	8.8	A	21.6	
	Derecha	4.1	A	0.0	0.4	A	0.0	--	--	--	--	--	--	
	Acceso	73.7	E	--	130.9	F	--	--	--	--	36.5	D	--	
PM	Izquierda	44.3	D	62.8	--	--	--	--	--	--	283.1	F	418.4	123.6 F
	Recto	73.3	E	121.7	364.0	F	161.3	--	--	--	30.6	C	121.1	
	Derecha	2.1	A	0.0	0.9	A	0.0	--	--	--	--	--	--	
	Acceso	36.3	D	--	218.0	F	--				124.6	F	--	

5.4.2 Intersección PR 52 con Avenida Garrido Oeste

Esta intersección es controlada por un semáforo, con una geometría de cruz. La avenida Garrido compone los accesos este y oeste y las rampas de la PR 52 los accesos norte y sur La siguiente figura muestra un croquis de esta intersección, seguida por una tabla que muestra los resultados obtenidos para las distintas situaciones modeladas.

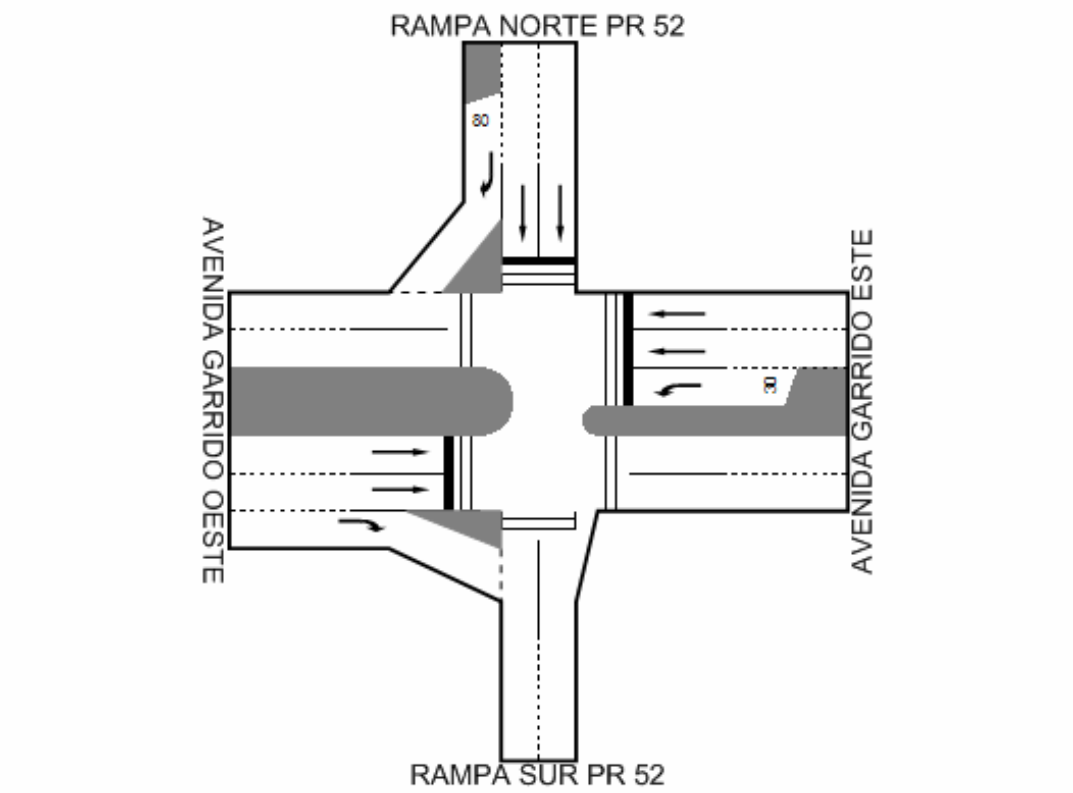

Figura 2 Int. PR 52 con Avenida Garrido Oeste

La siguiente tabla muestra los resultados obtenidos para las distintas situaciones modeladas.

Tabla 23 Resultados modelación PR 52 con Avenida Garrido Oeste

		Demora Promedio por Vehículo [seg.], Nivel de Servicio (LOS) y Cola Promedio [metros]												
		Acceso Sur			Acceso Este			Acceso Norte			Acceso Oeste			
		Demora y LOS		Cola	Demora y LOS		Cola	Demora y LOS		Cola	Demora y LOS		Cola	Total Int.
Base 2006														
AM	Izquierda	--	--	--	86.0	F	64.1	71.2	E	115.8	--	--	--	53.5 D
	Recto	--	--	--	49.7	D	45.0	70.8	E	122.0	45.1	D	221.4	
	Derecha	--	--	--	--	--	--	50.1	D	41.0	22.6	C	13.0	
	Acceso	--	--	--	62.1	E	--	61.5	E	--	43.5	D	--	
PM	Izquierda	--	--	--	102.0	F	142.5	489.3	F	500.2	--	--	--	282.3 F
	Recto	--	--	--	54.9	D	76.3	490.9	F	526.6	290.0	F	422.1	
	Derecha	--	--	--	--	--	--	139.8	F	212.5	38.1	D	28.1	
	Acceso	--	--	--	74.3	E	--	359.6	F	--	269.1	F	--	
Futuro 2011														
AM	Izquierda	--	--	--	33.8	C	74.7	69.6	E	141.8	--	--	--	85.2 F
	Recto	--	--	--	28.3	C	76.5	69.2	E	148.9	156.8	F	372.2	
	Derecha	--	--	--	--	--	--	0.5	A	0.0	0.3	A	0.0	
	Acceso	--	--	--	30.1	C	--	37.9	D	--	146.0	F	--	
PM	Izquierda	--	--	--	212.8	F	139.4	398.0	F	429.6	--	--	--	254.2 F
	Recto	--	--	--	6.2	A	33.8	398.3	F	452.4	383.8	F	381.6	
	Derecha	--	--	--	--	--	--	1.1	A	0.0	0.4	A	0.0	
	Acceso	--	--	--	91.2	F	--	250.2	F	--	352.1	F	--	

5.4.3 Intersección PR 30 con Avenida Cordero Norte

Esta intersección es controlada por un semáforo, con una geometría de cruz. La avenida Cordero compone el acceso sur y la entrada a una cantera el acceso norte, las rampas de la PR 30 componen los accesos este y oeste. La siguiente figura muestra un croquis de esta intersección, seguida por una tabla que muestra los resultados obtenidos para las distintas situaciones modeladas.

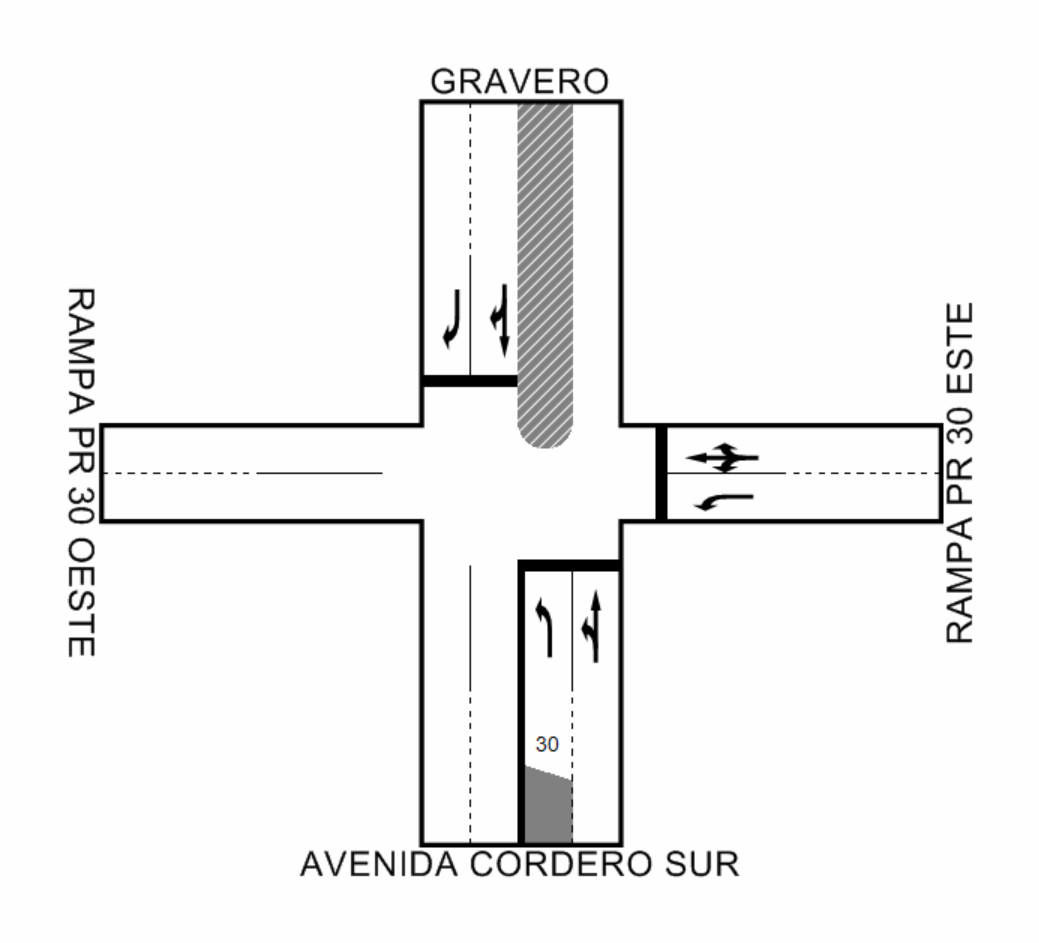

Figura 3 PR 30 y Avenida Cordero Norte

La siguiente tabla muestra los resultados obtenidos para las distintas situaciones modeladas.

Tabla 24 Resultados modelación PR 30 y Avenida Cordero Norte

		Demora Promedio por Vehículo [seg.], Nivel de Servicio (LOS) y Cola Promedio [metros]										
		Acceso Sur		Acceso Este		Acceso Norte		Acceso Oeste				
		Demora y LOS	Cola	Demora y LOS	Cola	Demora y LOS	Cola	Demora y LOS	Cola			Total Int.
Base 2006												
AM	Izquierda	32.8 C	29	281.0 F	487	-- --	--	-- --	--			204.4 F
	Recto	24.0 C	29	272.5 F	487	40.6 D	1	-- --	--			
	Derecha	-- --	--	280.7 F	487	13.1 B	0	-- --	--			
	Acceso	32.8 C	29	281.0 F	487	38.5 D	--	-- --	--			
PM	Izquierda	313.8 F	951	44.4 D	36	-- --	--	-- --	--			210.3 F
	Recto	354.2 F	0	36.0 D	36	39.5 D	0	-- --	--			
	Derecha	-- --	--	44.1 D	36	19.0 B	0	-- --	--			
	Acceso	313.8 F	951	44.4 D	36	29.2 C	0	-- --	--			
Futuro 2011												
AM	Izquierda	77.2 E	63	51.9 D	92	-- --	--	-- --	--			59.7 E
	Recto	68.6 E	63	-- --	--	74.0 E	1	-- --	--			
	Derecha	-- --	--	52.2 D	0	65.0 E	1	-- --	--			
	Acceso	77.2 E	63	51.9 D	92	73.4 E	1	-- --	--			
PM	Izquierda	60.0 E	96	73.0 E	75	-- --	--	-- --	--			65.0 E
	Recto	51.3 D	96	-- --	--	87.4 F	0	-- --	--			
	Derecha	-- --	--	73.3 E	75	29.9 C	0	-- --	--			
	Acceso	60.0 E	96	73.1 E	75	58.6 E	0	-- --	--			

5.4.4 Intersección PR 30 con Avenida Cordero Sur

Esta intersección será controlada por prioridad, en una configuración de cruz. La avenida Cordero compone los accesos norte y sur y las rampas de la PR 30 los accesos este y oeste. La siguiente figura muestra un croquis de esta intersección.

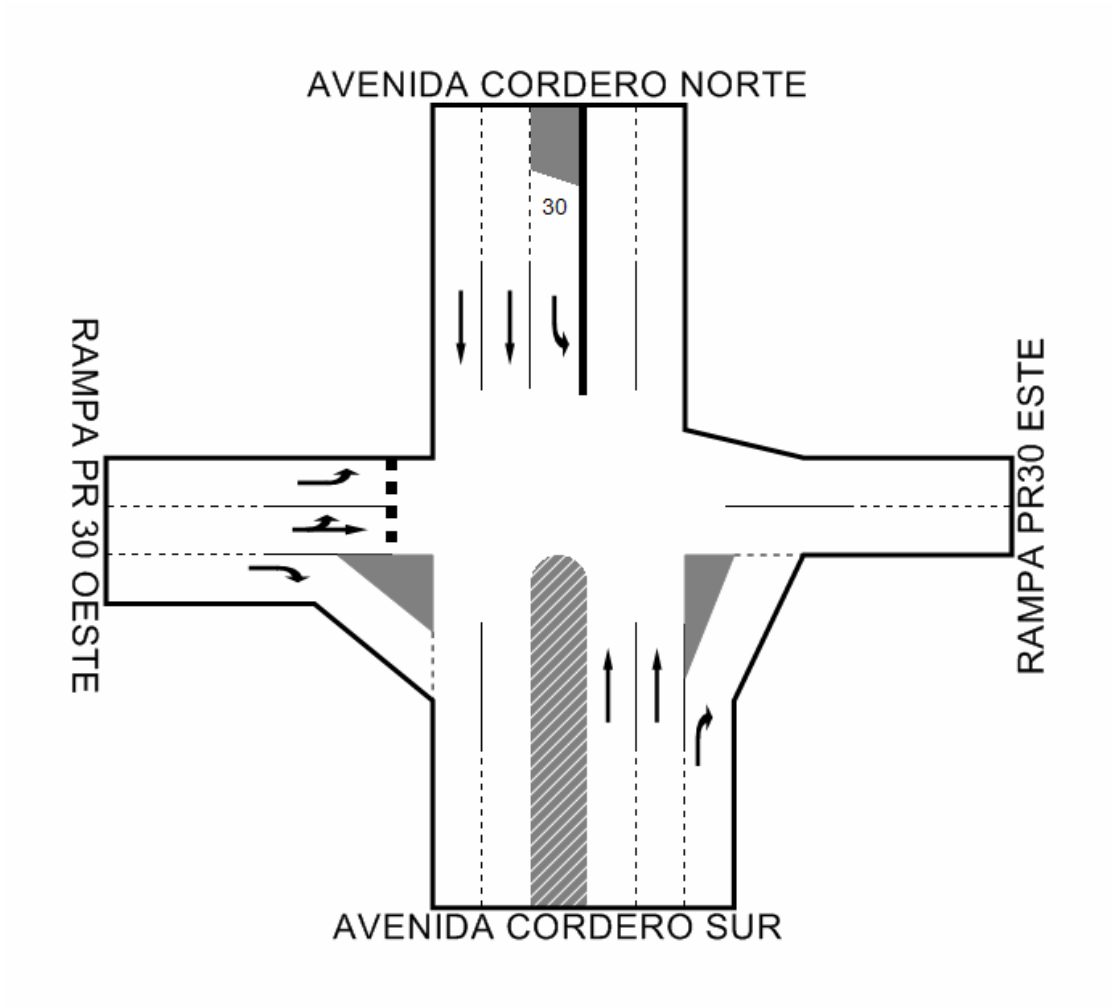

Figura 4 PR 30 con Avenida Cordero Sur

La siguiente tabla muestra los resultados obtenidos para las distintas situaciones modeladas.

Tabla 25 Resultados modelación PR 30 con Avenida Cordero Sur

		Demora Promedio por Vehículo [seg.], Nivel de Servicio (LOS) y Cola Promedio [metros]										
		Acceso Sur		Acceso Este		Acceso Norte		Acceso Oeste				
		Demora y LOS	Cola	Demora y LOS	Cola	Demora y LOS	Cola	Demora y LOS	Cola	Total Int.		
Base 2006												
AM	Izquierda	-- --	--	-- --	--	12.4 B	1	71.5 F	1	3.3		
	Recto	0.0 A	0	-- --	--	0.0 A	0	78.9 F	1			
	Derecha	7.6 A	0	-- --	--	-- --	--	7.6 A	13			
	Acceso	3.1 A	--	-- --	--	0.5 A	1	9.4 A	1			
PM	Izquierda	-- --	--	-- --	--	31.9 D	0	117.6 F	1	4.4		
	Recto	0.0 A	0	-- --	--	0.0 A	0	119.3 F	1			
	Derecha	7.6 A	0	-- --	--	-- --	--	7.7 A	21			
	Acceso	4.1 A	--	-- --	--	0.1 A	0	8.5 A	1			
Futuro 2011												
AM	Izquierda	-- --	--	-- --	--	13.6 B	1	196.3 F	4	4.1		
	Recto	0.0 A	0	-- --	--	0.0 A	0	225.9 F	4			
	Derecha	7.6 A	0	-- --	--	-- --	--	7.6 C	15			
	Acceso	3.1 A	0	-- --	--	0.6 A	1	12.7 B	4			
PM	Izquierda	-- --	--	-- --	--	52.9 F	F	427.9 F	4	25.6		
	Recto	0.0 A	0	-- --	--	0.0 A	A	429.6 F	4			
	Derecha	70.6 F	272	-- --	--	-- --	--	7.8 A	24			
	Acceso	38.2 E	272			0.2 A	A	10.7 B	4			

5.4.5 PR 52 con PR 177 Este

Esta intersección esta controlada por semáforo, en una configuración de cruz. Las Rampas de la PR 52 componen los accesos norte y sur y la PR 177 los accesos este y oeste. La siguiente figura muestra un croquis de esta intersección.

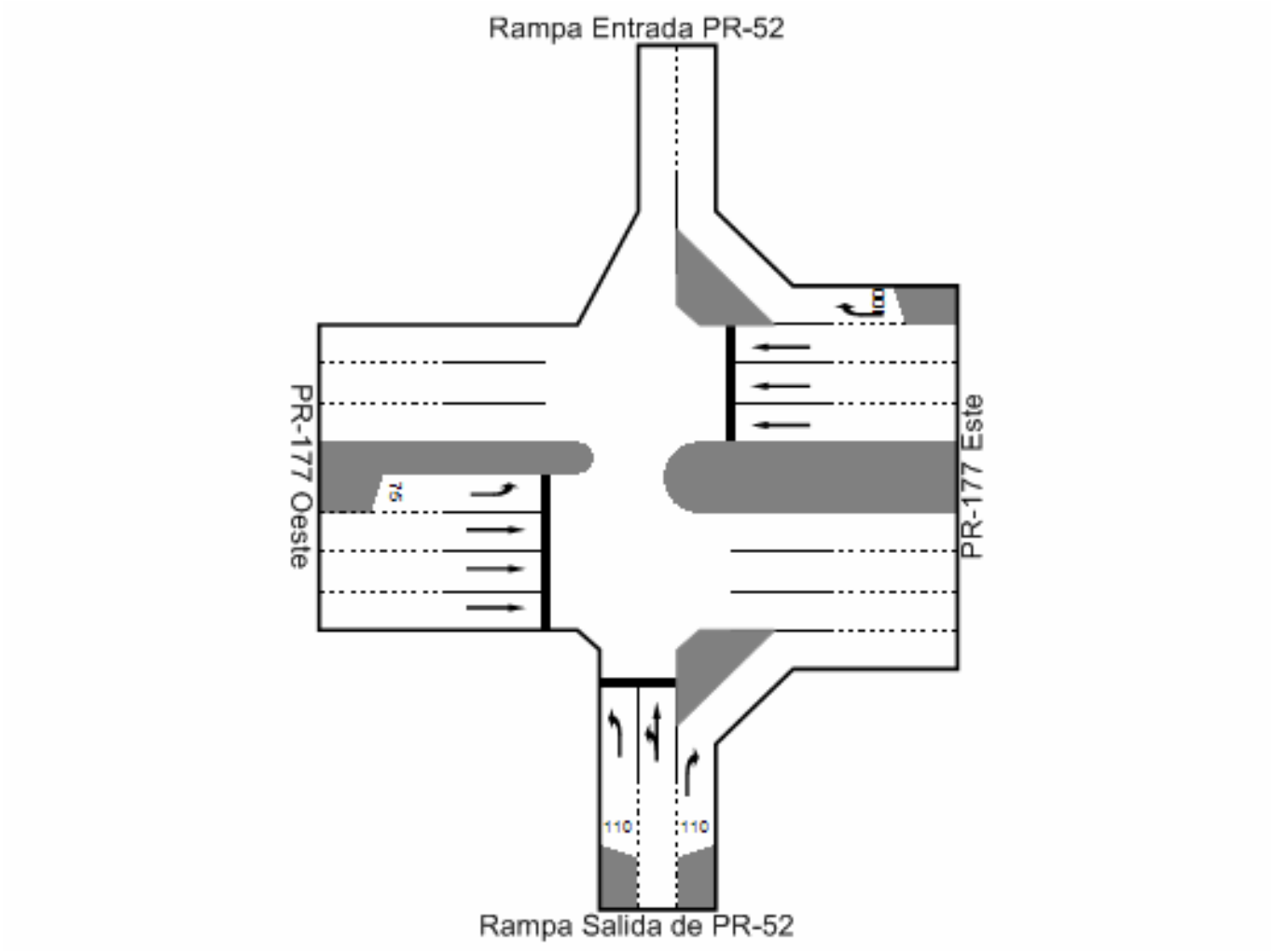

Figura 5 PR 52 con PR 177 Este

La siguiente tabla muestra los resultados obtenidos para las distintas situaciones modeladas.

Tabla 26 Resultados modelación PR 52 y PR 177 Este

		Demora Promedio por Vehículo [seg.], Nivel de Servicio (LOS) y Cola Promedio [metros]								
		Acceso Sur		Acceso Este		Acceso Norte		Acceso Oeste		
		Demora y LOS	Cola	Demora y LOS	Cola	Demora y LOS	Cola	Demora y LOS	Cola	Total Int.
Base 2006										
AM	Izquierda	58.7 E	11	-- --	--	-- --	--	67.8 E	32	14.4 B
	Recto	50.8 D	11	15.7 B	13	-- --	--	5.3 A	5	
	Derecha	7.6 A	3	7.9 A	0	-- --	--	-- --	--	
	Acceso	38.1 D	11	11.3 B	13	-- --	--	16.3 B	32	
PM	Izquierda	64.1 E	27	-- --	--	-- --	--	67.8 E	32	17.7 B
	Recto	56.1 E	27	17.0 B	18	-- --	--	6.0 A	8	
	Derecha	7.6 A	4	7.6 C	13	-- --	--	-- --	--	
	Acceso	44.2 D	27	14.0 B	18	-- --	--	13.4 B	32	
Futuro 2011										
AM	Izquierda	57.6 E	11	-- --	--	-- --	--	34.7 C	26	19.2 B
	Recto	49.6 D	11	41.0 D	36	-- --	--	1.7 A	2	
	Derecha	7.6 A	3	8.0 A	30	-- --	--	-- --	--	
	Acceso	37.4 D	11	22.4 C	36			10.2 B	26	
PM	Izquierda	48.8 D	20	-- --		-- --	--	39.7 D	20	17.8 B
	Recto	40.9 D	20	26.3 C	30	-- --	--	5.3 A	7	
	Derecha	7.6 A	5	7.6 C	14	-- --	--	-- --	--	
	Acceso	34.4 C	20	20.3 C	30	-- --	--	9.9 A	20	

5.4.6 PR 52 con PR 177 Oeste

Esta intersección será controlada por semáforo, en una configuración de cruz. Las Rampas de la PR 52 componen los accesos norte y sur y la PR 177 los accesos este y oeste. La siguiente figura muestra un croquis de esta intersección.

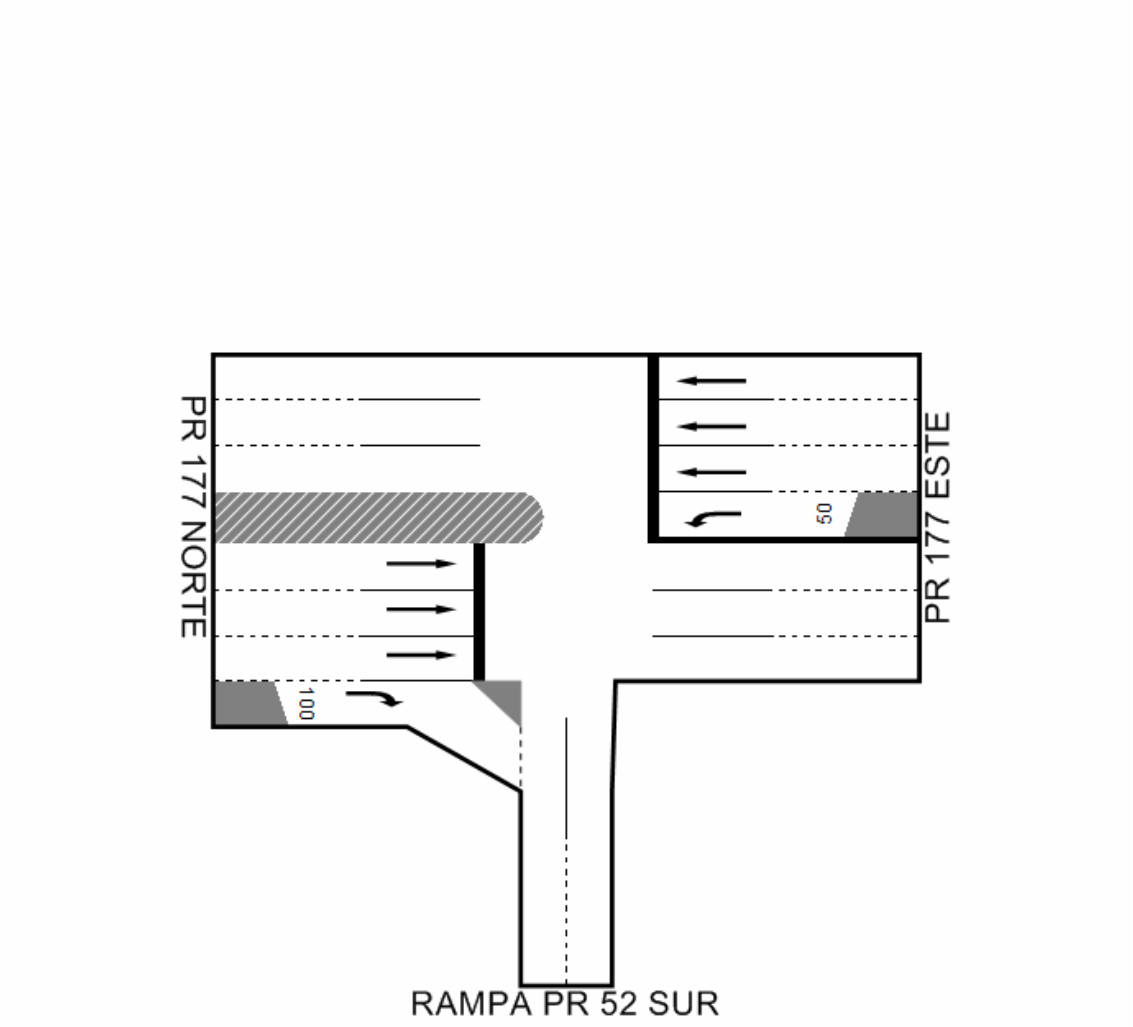

Figura 6 PR 52 y PR 177 Oeste

La siguiente tabla muestra los resultados obtenidos para las distintas situaciones modeladas.

Tabla 27 Resultados modelación PR 52 y PR 177 Oeste

		Demora Promedio por Vehículo [seg.], Nivel de Servicio (LOS) y Cola Promedio [metros]								
		Acceso Sur		Acceso Este		Acceso Norte		Acceso Oeste		
		Demora y LOS	Cola	Demora y LOS	Cola	Demora y LOS	Cola	Demora y LOS	Cola	Total Int.
Base 2006										
AM	Izquierda	-- --	--	59.2 E	19	-- --	--	-- --	--	7.9 A
	Recto	-- --	--	0.2 A	0	-- --	--	8.5 A	10	
	Derecha	-- --	--	-- --	--	-- --	--	7.7 A	0	
	Acceso	-- --	--	8.4 A	19	-- --	--	8.4 A	10	
PM	Izquierda	-- --	--	71.0 E	20	-- --	--	-- --	--	7.0 A
	Recto	-- --	--	0.2 A	0	-- --	--	9.1 A	12	
	Derecha	-- --	--	-- --	--	-- --	--	7.8 A	0	
	Acceso	-- --	--	5.7 A	20	-- --	--	8.7 A	12	
Futuro 2011										
AM	Izquierda	-- --	--	27.2 C	15	-- --	--	-- --	--	32.7 C
	Recto	-- --	--	0.0 A	7	-- --	--	59.8 E	74	
	Derecha	-- --	--	-- --	--	-- --	--	7.8 A	0	
	Acceso	-- --	--	6.6 A	15	-- --	--	52.8 D	74	
PM	Izquierda	-- --	--	30.2 C	12	-- --	--	-- --	--	25.5 C
	Recto	-- --	--	0.1 A	13	-- --	--	57.8 E	81	
	Derecha	-- --	--	-- --	--	-- --	--	7.9 A	0	
	Acceso	-- --	--	3.7 A	12	-- --	--	45.0 D	81	

5.4.7 PR 52 con PR 199 Oeste

Esta intersección será controlada por semáforo, en una configuración de cruz. Las Rampas de la PR 52 componen los accesos norte y sur y la PR 199 los accesos este y oeste. La siguiente figura muestra un croquis de esta intersección.

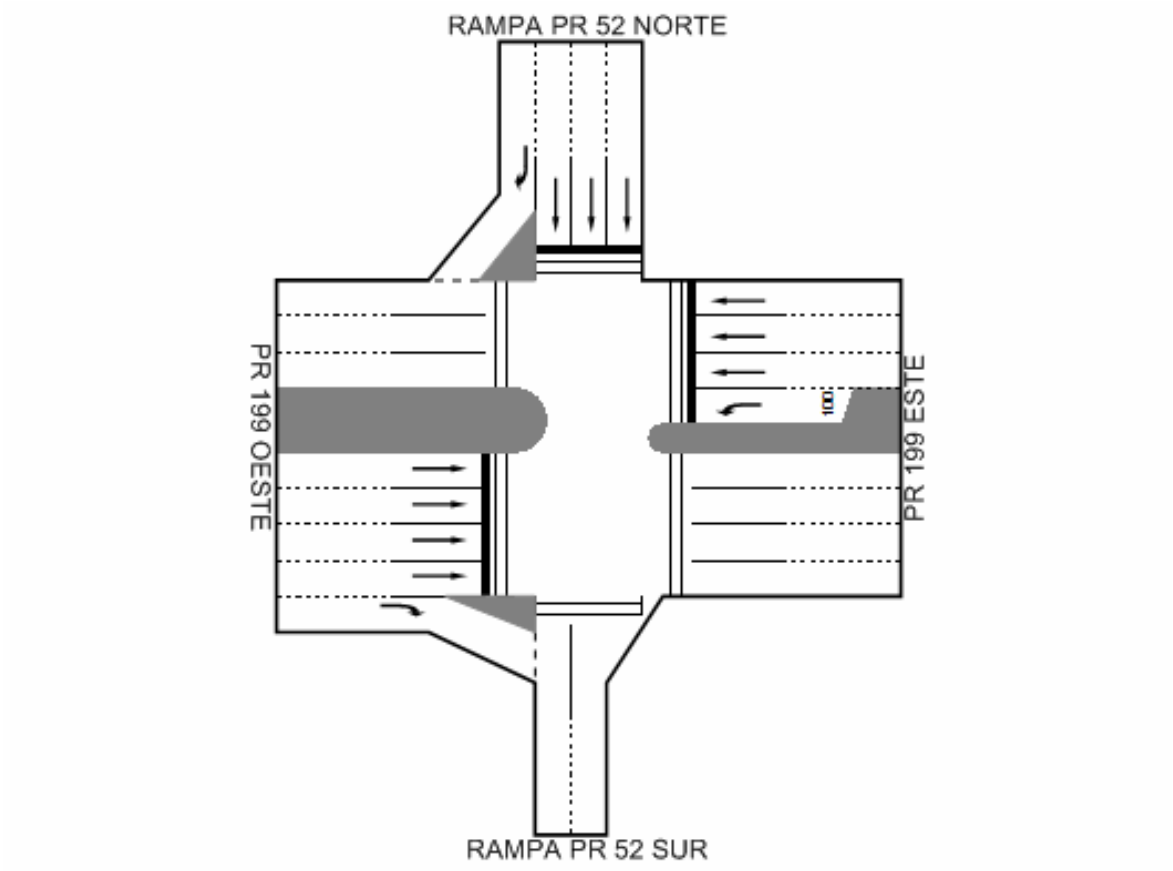

Figura 7 PR 52 y PR 199 Oeste

La siguiente tabla muestra los resultados obtenidos para las distintas situaciones modeladas.

Tabla 28 Resultados modelación PR 52 y PR 199 Oeste

		Demora Promedio por Vehículo [seg.], Nivel de Servicio (LOS) y Cola Promedio [metros]									
		Acceso Sur		Acceso Este		Acceso Norte		Acceso Oeste			
		Demora y LOS	Cola	Demora y LOS	Cola	Demora y LOS	Cola	Demora y LOS	Cola	Total Int.	
Base 2006											
AM	Izquierda	-- --	--	14.4 B	30.0	114.4 F	132.7	-- --	--	149.3 F	
	Recto	-- --	--	12.6 B	112.1	127.7 F	144.8	355.3 F	278.4		
	Derecha	-- --	--	-- --	--	0.5 A	0.0	1.4 A	0.0		
	Acceso	-- --	--	13.0 B	--	94.0 F	--	280.7 F	--		
PM	Izquierda	-- --	--	23.9 C	36.3	457.4 F	359.8	-- --	--	136.7 F	
	Recto	-- --	--	13.4 B	104.3	492.2 F	383.5	124.3 F	151.3		
	Derecha	-- --	--	-- --	--	0.4 A	0.0	1.6 A	0.0		
	Acceso	-- --	--	16.2 B	--	381.8 F	--	81.9 F	--		
Futuro 2011											
AM	Izquierda	-- --	--	45.1 D	165.3	68.2 E	106.6	-- --	--	79.6 E	
	Recto	-- --	--	14.2 B	78.5	74.0 E	113.6	175.4 F	209.7		
	Derecha	-- --	--	-- --	--	0.5 A	0.0	1.3 A	0.0		
	Acceso	-- --	--	20.9 C		55.3 E	--	138.7 F	--		
PM	Izquierda	-- --	--	193.2 F	192.7	217.0 F	172.0	-- --	--	132.4 F	
	Recto	-- --	--	24.7 C	81.8	240.9 F	188.4	237.6 F	133.0		
	Derecha	-- --	--	-- --	--	1.9 A	0.0	2.4 A	0.0		
	Acceso	-- --	--	69.7 E	--	184.5 F	--	156.3 F	--		

5.4.8 PR 52 con PR 199 Este

Esta intersección será controlada por semáforo, en una configuración de cruz. Las Rampas de la PR 52 componen los accesos norte y sur y la PR 177 los accesos este y oeste. La siguiente figura muestra un croquis de esta intersección.

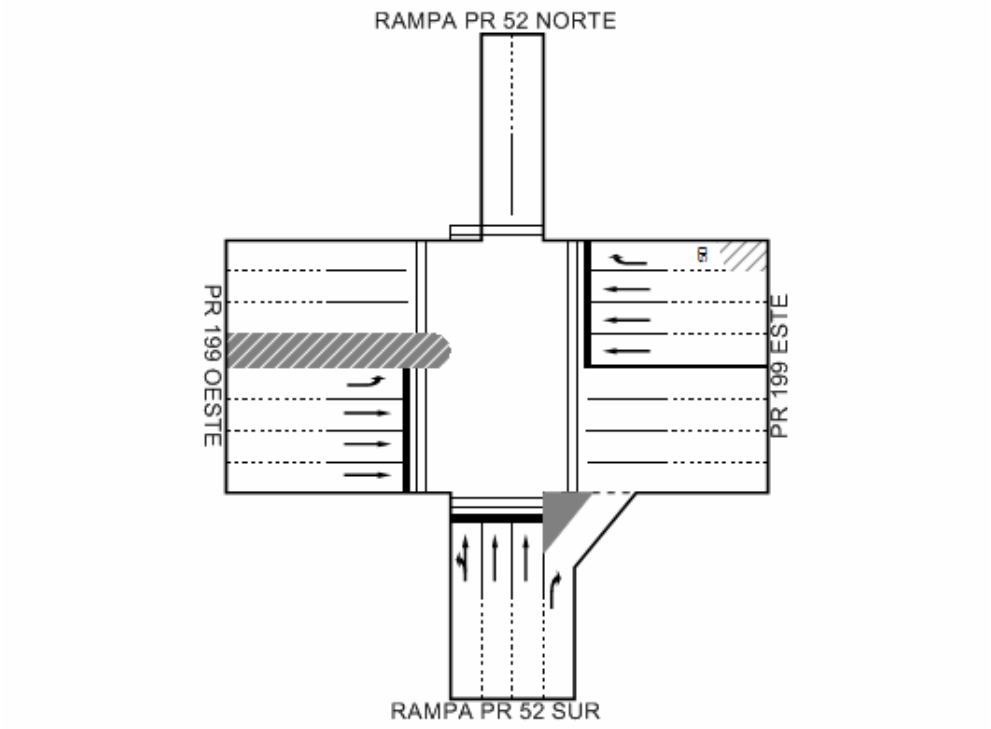

Figura 8 PR 52 y PR 199 Oeste

La siguiente tabla muestra los resultados obtenidos para las distintas situaciones modeladas.

Tabla 29 Resultados modelación PR 52 y PR 199 Este

		Demora Promedio por Vehículo [seg.], Nivel de Servicio (LOS) y Cola Promedio [metros]												
		Acceso Sur			Acceso Este			Acceso Norte			Acceso Oeste			
		Demora y LOS		Cola	Demora y LOS		Cola	Demora y LOS		Cola	Demora y LOS		Cola	Total Int.
Base 2006														
AM	Izquierda	254.5	F	169.0	--	--	--	--	--	--	351.1	F	277.2	86.3 F
	Recto	268.8	F	179.0	30.7	C	161.2	--	--	--	27.7	C	311.4	
	Derecha	0.7	A	0.0	37.9	D	517.8	--	--	--	--	--	--	
	Acceso	179.8	F	--	33.9	C	--	--	--	--	92.7	F	--	
PM	Izquierda	119.4	F	106.0	--	--	--	--	--	--	207.4	F	205.7	53.7 D
	Recto	148.8	F	115.8	29.2	C	145.2	--	--	--	34.6	C	302.2	
	Derecha	0.3	A	0.0	0.8	A	0.0	--	--	--	--	--		
	Acceso	89.3	F		21.2	C	--	--	--	--	64.8	E		
Futuro 2011														
AM	Izquierda	183.6	F	124.6	--	--	--	--	--	--	94.4	F	119.7	95.4 F
	Recto	198.0	F	132.1	196.3	F	242.6	--	--	--	20.1	C	111.9	
	Derecha	1.9	A	0.0	59.7	E	489.6	--	--	--	--	--	--	
	Acceso	131.1	F	--	135.5	F	--	--	--	--	35.8	D	--	
PM	Izquierda	52.4	D	69.5	--	--		--	--	--	101.5	F	153.0	34.5 C
	Recto	65.8	E	73.9	55.0	E	145.4	--	--	--	12.7	B	67.0	
	Derecha	0.7	A	0.0	1.7	A	0.0	--	--	--	--	--	--	
	Acceso	39.2	D	--	40.0	D	--	--	--	--	28.2	C	--	

5.4.9 Intersección PR 1 con PR 30 y PR 52

Esta intersección será controlada por semáforo, la PR 1 compone los accesos norte y sur, el acceso este es una calle municipal y las rampas hacia la PR 30 y la PR 52 quedan al oeste. La siguiente figura muestra un croquis de esta intersección, seguida por una tabla que muestra los resultados obtenidos para las distintas situaciones modeladas.

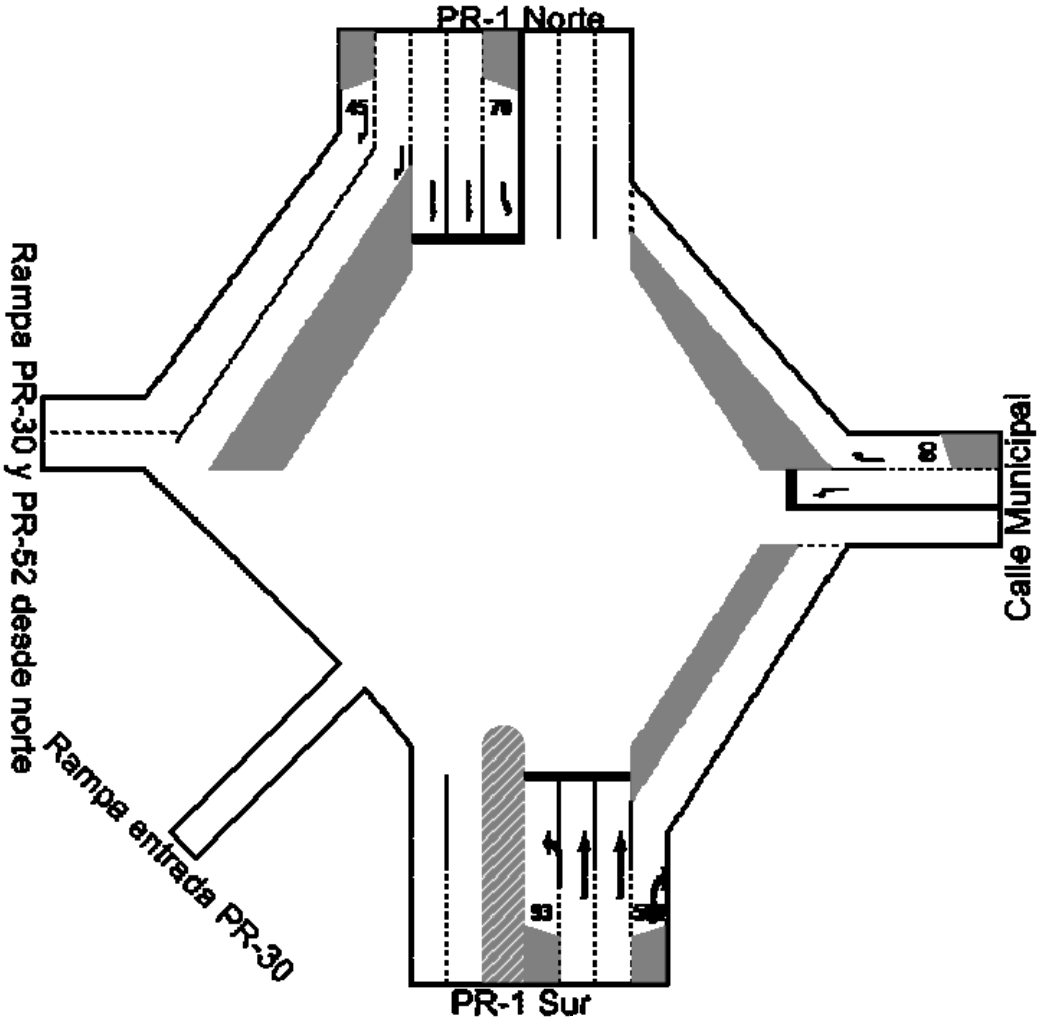

Figura 9 Int. PR 1 con PR 30 y PR 52

La siguiente tabla muestra los resultados obtenidos para las distintas situaciones modeladas.

Tabla 30 Resultados modelación PR 1 con PR 30 y PR 52

		Demora Promedio por Vehículo [seg.], Nivel de Servicio (LOS) y Cola Promedio [metros]								
		Acceso Sur		Acceso Este		Acceso Norte		Acceso Oeste		
		Demora y LOS	Cola	Demora y LOS	Cola	Demora y LOS	Cola	Demora y LOS	Cola	Total Int.
Base 2006										
AM	Izquierda	81.8 F	1	76.6 E	5	83.0 F	3	-- --	--	9.3 A
	Recto	18.7 B	44	-- --	--	10.0 B	11	--	--	
	Derecha	7.7 A	0	7.7 A	0	0.8 E	28	-- --	--	
	Acceso	18.6 B	44	44.0 D	5	3.5 A	11	-- --	--	
PM	Izquierda	82.7 F	2	76.4 E	5	81.1 F	1	-- --	--	30.8 C
	Recto	13.8 B	25	-- --	0	10.0 B	11	--	--	
	Derecha	7.7 A	0	7.7 A	5	43.3 F	132	-- --	--	
	Acceso	14.2 B	25	70.1 E	5	36.3 D	11	-- --	--	
Futuro 2011										
AM	Izquierda	87.3 F	1	89.7 F	8	87.9 F	4	-- --	--	9.4 A
	Recto	7.3 A	20	-- --	--	3.1 A	4	--	--	
	Derecha	7.7 A	0	7.7 A	0	11.6 F	51	-- --	--	
	Acceso	7.4 A	20	51.0 D	8	9.8 A	4			
PM	Izquierda	88.6 F	2	89.4 F	8	85.7 F	1	-- --	--	60.4 E
	Recto	4.6 A	10	-- --	--	3.1 A	4	--	--	
	Derecha	7.7 A	0	7.7 A	0	100.7 F	143	-- --	--	
	Acceso	5.2 A	10	81.5 F	8	79.8 E	4	-- --	--	

5.4.10 Intersección PR 1 con PR 176

Esta intersección tiene una configuración en cruz “+” y está controlada por un sistema de semáforos. La misma consiste al presente en el acceso norte de seis carriles de ingreso, siendo dos de ellos carriles cortos de viraje a la izquierda, uno (el comienzo de la marginal) es utilizado principalmente como carril corto de viraje a la derecha y tres carriles de egreso. El acceso sur consiste de cuatro carriles de ingreso, incluyendo un carril corto de viraje a la izquierda y tres carriles de egreso. El acceso este cuenta con tres carriles de ingreso, uno de ellos para viraje a la izquierda, y dos carriles de egreso. Por último, el acceso oeste consiste de dos carriles por dirección general de flujo. La figura que sigue muestra gráficamente lo antes descrito.

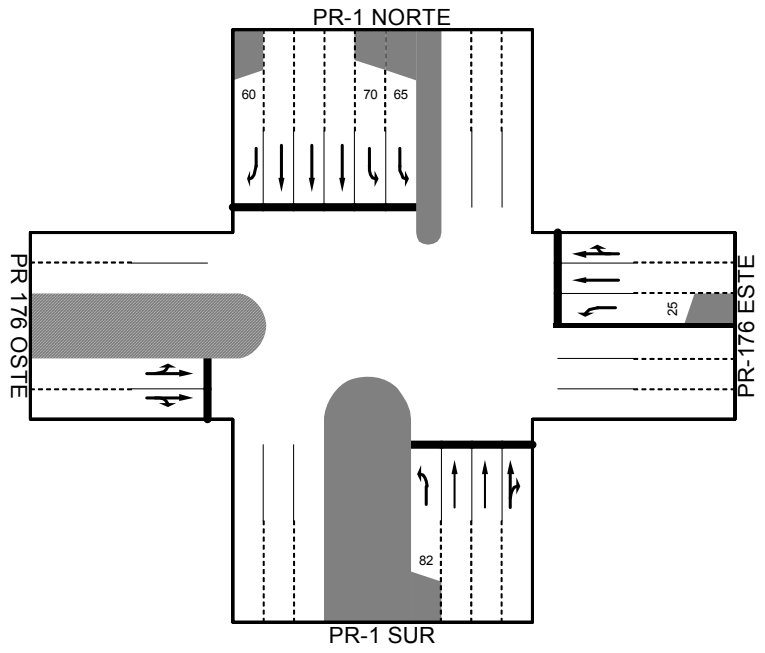

Figura 10 Int. PR 21 con calle Cesar González (Centro Médico)

La siguiente tabla muestra los resultados obtenidos para las distintas situaciones modeladas.

Tabla 31 Resultados modelación PR 1 con PR 176

		Demora Promedio por Vehículo [seg.], Nivel de Servicio (LOS) y Cola Promedio [metros]												
		Acceso Sur			Acceso Este			Acceso Norte			Acceso Oeste			
		Demora y LOS		Cola	Demora y LOS		Cola	Demora y LOS		Cola	Demora y LOS		Cola	Total Int.
Base 2006														
AM	Izquierda	183.6	F	45	66.9	E	11	191.3	F	51	215.6	F	99	147.2 F
	Recto	186.9	F	332	173.4	F	278	53.5	D	65	193.6	F	99	
	Derecha	184.6	F	308	165.1	F	222	21.2	C	1	185.7	F	87	
	Acceso	186.5	F	332	166.8	F	278	79.5	E	65	193.6	F	99	
PM	Izquierda	317.4	F	78	60.8	E	11	255.2	F	60	371.6	F	387	269.8 F
	Recto	72.4	E	90	305.0	F	613	352.0	F	701	347.5	F	387	
	Derecha	84.2	F	90	328.3	F	522	17.1	B	2	339.1	F	353	
	Acceso	92.5	F	90	315.9	F	613	342.6	F	701	347.9	F	387	
Futuro 2011														
AM	Izquierda	--	--	--	--	--	--	--	--	--	46.3	D	13	10.3 B
	Recto	7.0	A	10	--	--	--	6.1	A	7	37.3	D	13	
	Derecha	14.9	B	10	--	--	--	--	--	--	43.6	D	12	
	Acceso	7.8	A	10	--	--	--	6.1	A	7	38.2	D	12	
PM	Izquierda	--	--	--	--	--	--	--	--	--	57.9	E	37	21.3 C
	Recto	9.8	A	11	--	--	--	15.6	B	32	55.6	E	51	
	Derecha	19.4	B	11	--	--	--	--	--	--	76.2	E	51	
	Acceso	10.6	B	11	--	--	--	15.6	B	32	56.3	E	51	

Para el escenario futuro se incorporaron en la modelación los cambios geométricos presentes en el proyecto de mejoras para los alrededores de las estaciones de Tren Urbano. A continuación presentamos el esquema de dichos cambios.

Figura 11 Int. PR 1 con PR 176 Geometría Propuesta

6 DISCUSIÓN DE HALLAZGOS

- **PR 52 con Avenida Garrido Este y Oeste**

Las modelaciones de estas intersecciones reflejan niveles de servicio deficientes en el escenario presente. Aun con modificaciones en el arreglo de fases y distribución de tiempos del semáforo no se logran cambios significativos en los niveles de servicio. Es imperativo que al momento de diseñar una futura estación del Tren en Las Catalinas se tome en consideración el resultado obtenido . Se deben tomar en consideración por los planificadores y/o diseñadores del proyecto alternativas de mejoras geométricas o construcción de nuevas vías alternas que viabilicen el desarrollo de la estación del Tren en el área.

- **PR 30 con Avenida Rafael Cordero Norte**

Esta intersección refleja en la actualidad niveles de servicio deficientes, cuando modelamos en la situación futura se obtiene una mejoría significativa al optimizar la repartición de los tiempos de semáforo de la intersección. Con los cambios en los tiempos de semáforo se logra que la intersección tenga la capacidad de manejar el aumento en tránsito proyectado para el año 2011 con mejores niveles de servicio que los actuales.

- **PR 30 con Avenida Rafael Cordero Sur**

Esta intersección se encuentra trabajando en la actualidad bajo niveles de servicio excelentes, al modelar la situación futura se observa un pequeño deterioro en los mismos de un orden que no es significativo. La intersección tiene la capacidad de manejar el aumento esperado en el tránsito para el año 2011 sin mayores dificultades.

- **PR 52 con PR 177 Este y Oeste**

Estas intersecciones reflejan niveles de servicios excelentes tanto en la situación actual como en la futura, lo que nos revela que las mismas tienen la capacidad para manejar sin dificultad el incremento en tránsito esperado para el año 2011.

- **PR 52 con 199 Este y Oeste**

Las modelaciones de estas intersecciones reflejan niveles de servicio deficientes tanto en el escenario presente como en el futuro. Con cambios en el sistema de fases y repartición de tiempos del semáforo se logra alguna mejoría en los nivels de servicio de las intersecciones aunque las mismas siguen trabajando en niveles deficientes.

- **PR 1 con rampas de PR 30 y PR 52**

Al modelar esta intersección encontramos que la misma tiene la capacidad para manejar el incremento en tránsito proyectado para el año 2011. Los niveles de servicio que se obtienen en la modelación futura solo reflejan un leve deterioro. Cabe señalar que el acceso Este, donde estaría ubicada una de las estaciones del Tren, se encuentra trabajando en un nivel de servicio “D”. Por lo que el añadirle volumen adicional al estimado por el crecimiento esperado sin la construcción del Tren podría reflejar un deterioro mayor. La misma situación sucede con el viraje a la izquierda desde el acceso Norte hacia el acceso Este, dicho viraje esta operando en un nivel de servicio deficiente por lo que un incremento adicional sin duda lo empeoraría. Es importante que durante el proceso de diseño de la futura estación planificada para el área se tomen en cuenta estos hallazgos. Es evidente que la actual configuración y geometría de la intersección no podrá

manejar eficientemente el aumento en tránsito que el desarrollo de una estación del tren podría provocar.

- **PR 1 con PR 176**

Esta intersección refleja en la actualidad niveles de servicio deficientes. Como parte de proyecto de mejoras alrededor de la estaciones del Tren Urbano se contempla la construcción de varios cambios geométricos en la misma, así como la redistribución de los flujos que llegan a la misma. Con dichos cambios la mejoría en los niveles de servicio es significativa. Esto es indicativo de que la misma no tendrá dificultades en manejar el aumento en tránsito proyectado para el 2011. La construcción de una nueva estación para servir el Tren de Caguas deberá de tomar en consideración los cambios que en la actualidad la Autoridad de Carreteras y Transportación planifica no solo en esta intersección sino también en las aledañas a la misma.

REFERENCIAS

1. SIDRA 3.0 User Manual
2. Guías para la Preparación de Estudios Operacionales de Accesos y de Tránsito para Puerto Rico, Autoridad de Carretera y Transportación, 2004
3. Synchro User Manual

7 APÉNDICES

7.1 Apéndice 1: Flujos Obtenidos Mediante Conteos

Conteo PR 52 con Avenida Garrido Este

Comienzo del Periodo	Movimiento												Total cada 15 min.	Total por hora
	1	2	3	4	5	6	7	8	9	10	11	12		
06:00	0	0	0	11	49	0	44	42	100	0	123	7	376	2108
06:15	0	0	0	10	59	0	44	49	120	0	165	8	455	2544
06:30	0	0	0	18	78	0	46	55	141	0	223	9	570	2884
06:45	0	0	0	28	62	0	78	61	177	0	284	17	707	3126
07:00	0	0	0	34	74	0	93	56	223	0	301	31	812	3199
07:15	0	0	0	48	72	0	88	59	197	0	309	22	795	3037
07:30	0	0	0	44	85	0	91	83	146	0	338	25	812	2898
07:45	0	0	0	44	74	0	94	71	131	0	352	14	780	2671
08:00	0	0	0	52	37	0	108	67	93	0	283	10	650	2420
08:15	0	0	0	29	43	0	87	77	139	0	276	5	656	2279
08:30	0	0	0	32	46	0	75	108	119	0	196	9	585	2146
08:45	0	0	0	32	43	0	55	85	98	0	206	10	529	2105
09:00	0	0	0	41	25	0	51	99	107	0	179	7	509	2114
09:15	0	0	0	46	49	0	65	79	89	0	189	6	523	2118
09:30	0	0	0	48	70	0	60	98	73	0	190	5	544	2016
09:45	0	0	0	60	63	0	50	107	80	0	172	6	538	1873
10:00	0	0	0	23	78	0	64	72	79	0	194	3	513	1790
10:15	0	0	0	55	41	0	50	51	79	0	142	3	421	1844
10:30	0	0	0	21	56	0	30	73	91	0	129	1	401	1972
10:45	0	0	0	63	35	0	50	93	76	0	134	4	455	2163
11:00	0	0	0	59	41	0	69	95	118	0	176	9	567	2183
11:15	0	0	0	45	80	0	54	97	99	0	170	4	549	2268
11:30	0	0	0	44	73	0	65	105	110	0	191	4	592	2254
11:45	0	0	0	51	73	0	38	84	68	0	159	2	475	2247
12:00	0	0	0	40	122	0	77	99	111	0	200	3	652	2253
12:15	0	0	0	52	37	0	62	121	100	0	156	7	535	2187
12:30	0	0	0	27	114	0	50	99	106	0	181	8	585	2421
12:45	0	0	0	16	110	0	58	76	55	0	156	10	481	2692
13:00	0	0	0	75	25	0	121	123	93	0	138	11	586	3085
13:15	0	0	0	89	24	0	129	179	114	0	219	15	769	3314
13:30	0	0	0	93	80	0	77	211	128	0	251	16	856	3565
13:45	0	0	0	86	88	0	78	224	112	0	280	6	874	3674
14:00	0	0	0	97	118	0	75	158	80	0	273	14	815	3573
14:15	0	0	0	33	287	0	95	94	80	0	400	31	1020	3642
14:30	0	0	0	84	244	0	64	79	89	0	393	12	965	3790
14:45	0	0	0	111	136	0	140	102	85	0	189	10	773	3942
15:00	0	0	0	124	138	0	115	126	140	0	234	7	884	4321
15:15	0	0	0	125	118	0	181	210	219	0	306	9	1168	4603
15:30	0	0	0	144	80	0	249	153	272	0	209	10	1117	4843
15:45	0	0	0	155	129	0	145	195	211	0	307	10	1152	4892
16:00	0	0	0	170	100	0	194	167	195	0	325	15	1166	4742
16:15	0	0	0	100	143	0	227	231	272	0	399	36	1408	4555
16:30	0	0	0	72	209	0	113	166	246	0	321	39	1166	4208
16:45	0	0	0	76	168	0	125	182	225	0	200	26	1002	4349
17:00	0	0	0	73	130	0	114	199	249	0	165	49	979	4440
17:15	0	0	0	72	127	0	134	229	212	0	253	34	1061	
17:30	0	0	0	85	176	0	281	195	304	0	239	27	1307	
17:45	0	0	0	64	151	0	238	189	218	0	214	19	1093	

Conteo PR 52 con Avenida Garrido Oeste

Comienzo del Periodo	Movimiento												Total cada 15 min.	Total por hora
	1	2	3	4	5	6	7	8	9	10	11	12		
06:00	11	100	100	0	49	41	0	0	0	146	21	0	468	2713
06:15	14	138	146	0	55	58	0	0	0	157	52	0	620	3109
06:30	16	176	147	0	80	66	0	0	0	187	82	0	754	3428
06:45	20	179	158	0	70	82	0	0	0	232	130	0	871	3666
07:00	10	154	144	0	98	64	0	0	0	217	177	0	864	3724
07:15	17	185	185	0	103	52	0	0	0	202	195	0	939	3654
07:30	31	153	240	0	98	41	0	0	0	183	246	0	992	3422
07:45	36	99	227	0	82	39	0	0	0	213	233	0	929	3060
08:00	17	92	180	0	72	42	0	0	0	121	270	0	794	2774
08:15	19	88	131	0	53	53	0	0	0	160	203	0	707	2543
08:30	21	77	136	0	57	68	0	0	0	138	133	0	630	2408
08:45	23	91	141	0	52	75	0	0	0	138	123	0	643	2357
09:00	12	84	107	0	54	76	0	0	0	143	87	0	563	2319
09:15	16	71	88	0	79	64	0	0	0	137	117	0	572	2361
09:30	27	54	92	0	91	65	0	0	0	133	117	0	579	2311
09:45	23	76	105	0	100	79	0	0	0	135	87	0	605	2189
10:00	15	73	87	0	86	86	0	0	0	121	137	0	605	2077
10:15	11	64	85	0	85	85	0	0	0	96	96	0	522	2036
10:30	15	82	70	0	62	69	0	0	0	83	76	0	457	2072
10:45	17	61	69	0	81	81	0	0	0	73	111	0	493	2219
11:00	13	73	60	0	87	86	0	0	0	113	132	0	564	2289
11:15	21	76	66	0	104	67	0	0	0	130	94	0	558	2420
11:30	20	81	65	0	97	85	0	0	0	100	156	0	604	2409
11:45	58	91	71	0	66	80	0	0	0	96	101	0	563	2492
12:00	57	88	78	0	105	90	0	0	0	147	130	0	695	2591
12:15	15	87	75	0	74	78	0	0	0	83	135	0	547	2516
12:30	16	112	118	0	125	85	0	0	0	114	117	0	687	2704
12:45	17	115	99	0	109	108	0	0	0	83	131	0	662	2844
13:00	18	83	94	0	82	84	0	0	0	114	145	0	620	3134
13:15	24	94	77	0	89	103	0	0	0	95	253	0	735	3417
13:30	54	90	107	0	119	129	0	0	0	133	195	0	827	3818
13:45	34	132	148	0	140	140	0	0	0	126	232	0	952	4102
14:00	64	73	118	0	151	149	0	0	0	161	187	0	903	4043
14:15	164	86	115	0	156	120	0	0	0	239	256	0	1136	4118
14:30	152	71	125	0	176	130	0	0	0	253	204	0	1111	4138
14:45	104	133	86	0	143	98	0	0	0	170	159	0	893	3994
15:00	60	140	111	0	202	116	0	0	0	168	181	0	978	4147
15:15	67	140	154	0	176	132	0	0	0	188	299	0	1156	4325
15:30	91	90	103	0	133	92	0	0	0	222	236	0	967	4402
15:45	105	100	91	0	179	119	0	0	0	225	227	0	1046	4481
16:00	87	121	102	0	183	144	0	0	0	226	293	0	1156	4337
16:15	71	111	137	0	172	116	0	0	0	233	393	0	1233	3975
16:30	72	108	100	0	209	123	0	0	0	193	241	0	1046	3640
16:45	51	113	90	0	193	130	0	0	0	121	204	0	902	3758
17:00	40	86	96	0	163	130	0	0	0	103	176	0	794	3872
17:15	37	93	87	0	162	132	0	0	0	110	277	0	898	
17:30	59	113	124	0	202	146	0	0	0	106	414	0	1164	
17:45	23	94	114	0	192	141	0	0	0	100	352	0	1016	

Conteo PR 30 con Avenida Cordero Norte

Comienzo del Periodo	Movimiento												Total cada 15 min.	Total por hora
	1	2	3	4	5	6	7	8	9	10	11	12		
06:00	127	0	0	139	0	0	0	1	0	0	0	0	267	1381
06:15	135	4	0	167	1	0	0	0	0	0	0	0	307	1623
06:30	115	1	0	262	2	0	0	0	0	0	0	0	380	1910
06:45	143	2	0	278	0	0	0	4	0	0	0	0	427	2091
07:00	152	1	0	349	4	0	0	2	1	0	0	0	509	2322
07:15	165	0	0	419	2	0	0	4	4	0	0	0	594	2387
07:30	132	2	0	425	0	0	0	1	1	0	0	0	561	2320
07:45	200	0	0	455	0	0	0	3	0	0	0	0	658	2254
08:00	183	0	0	389	0	0	0	2	0	0	0	0	574	2086
08:15	171	0	0	355	0	0	0	0	1	0	0	0	527	1940
08:30	163	0	0	328	1	0	0	1	2	0	0	0	495	1791
08:45	176	1	0	308	0	0	0	4	1	0	0	0	490	1741
09:00	130	0	0	293	0	0	0	5	0	0	0	0	428	1694
09:15	125	2	0	246	1	0	0	4	0	0	0	0	378	1684
09:30	123	1	0	321	0	0	0	0	0	0	0	0	445	1683
09:45	137	1	0	292	3	0	0	7	3	0	0	0	443	1611
10:00	158	1	0	257	0	0	0	2	0	0	0	0	418	1548
10:15	134	1	0	238	0	0	0	2	2	0	0	0	377	1582
10:30	138	0	0	233	1	0	0	1	0	0	0	0	373	1704
10:45	151	0	0	227	0	0	0	2	0	0	0	0	380	1852
11:00	184	1	0	263	0	0	0	3	1	0	0	0	452	1969
11:15	175	0	0	315	2	0	0	3	4	0	0	0	499	1933
11:30	220	0	0	295	0	0	0	5	1	0	0	0	521	1791
11:45	196	0	0	294	0	0	0	5	2	0	0	0	497	1722
12:00	151	1	0	254	1	0	0	5	4	0	0	0	416	1605
12:15	146	0	0	205	3	0	0	1	2	0	0	0	357	1595
12:30	198	1	0	247	0	0	0	4	2	0	0	0	452	1782
12:45	171	0	0	202	1	0	0	3	3	0	0	0	380	1805
13:00	166	1	0	237	0	0	0	0	2	0	0	0	406	1941
13:15	251	0	0	288	0	0	0	3	2	0	0	0	544	2021
13:30	200	1	0	272	0	0	0	2	0	0	0	0	475	1894
13:45	219	0	0	290	0	0	0	4	3	0	0	0	516	1922
14:00	185	0	0	296	0	0	0	5	0	0	0	0	486	1957
14:15	188	0	0	223	0	0	0	3	3	0	0	0	417	1951
14:30	232	0	0	270	0	0	0	0	1	0	0	0	503	2041
14:45	186	1	0	360	0	0	0	3	1	0	0	0	551	1976
15:00	178	0	0	300	0	0	0	2	0	0	0	0	480	1858
15:15	133	0	0	372	0	0	0	2	0	0	0	0	507	1788
15:30	150	0	0	285	0	0	0	2	1	0	0	0	438	1766
15:45	131	0	0	302	0	0	0	0	0	0	0	0	433	1742
16:00	171	0	0	237	0	0	0	2	0	0	0	0	410	1797
16:15	211	0	0	271	0	0	0	2	1	0	0	0	485	2044
16:30	130	0	0	284	0	0	0	0	0	0	0	0	414	2158
16:45	277	0	0	211	0	0	0	0	0	0	0	0	488	2304
17:00	405	0	0	252	0	0	0	0	0	0	0	0	657	2350
17:15	364	0	0	232	0	0	0	3	0	0	0	0	599	
17:30	369	0	0	189	0	0	0	2	0	0	0	0	560	
17:45	354	0	0	178	0	0	0	2	0	0	0	0	534	

Conteo PR 30 con Avenida Cordero Sur

Comienzo del Periodo	Movimiento												Total cada 15 min.	Total por hora
	1	2	3	4	5	6	7	8	9	10	11	12		
06:00	0	126	23	0	0	0	0	140	0	1	0	32	322	1741
06:15	0	135	33	0	0	0	0	167	0	0	0	48	383	2087
06:30	0	115	32	0	0	0	0	262	0	0	0	59	468	2461
06:45	0	142	77	0	0	0	0	282	0	1	0	66	568	2744
07:00	0	152	93	0	0	0	1	350	0	0	0	72	668	3020
07:15	0	164	88	0	0	0	9	414	0	1	0	81	757	3236
07:30	0	132	100	0	0	0	5	421	0	0	0	93	751	3231
07:45	0	198	82	0	0	0	4	454	0	2	0	104	844	3149
08:00	0	178	121	0	0	0	16	375	0	5	0	189	884	2999
08:15	0	171	77	0	0	0	4	351	0	0	0	149	752	2800
08:30	0	159	53	0	0	0	21	308	0	4	0	124	669	2644
08:45	0	175	85	0	0	0	5	307	0	1	0	121	694	2665
09:00	0	128	146	0	0	0	10	288	0	2	2	109	685	2647
09:15	0	125	97	0	0	0	8	242	0	0	0	124	596	2643
09:30	0	118	125	0	0	0	8	313	0	5	9	112	690	2597
09:45	0	135	121	0	0	0	4	295	0	2	0	119	676	2455
10:00	0	157	115	0	0	0	5	254	0	1	0	149	681	2351
10:15	0	130	91	0	0	0	8	232	0	4	0	85	550	2313
10:30	0	135	110	0	0	0	5	229	0	3	0	66	548	2494
10:45	0	151	110	0	0	0	2	227	0	0	0	82	572	2769
11:00	0	177	106	0	0	0	3	263	0	7	0	87	643	3073
11:15	0	172	129	0	0	0	7	311	0	3	0	109	731	2992
11:30	0	211	168	0	0	0	10	290	0	9	0	135	823	2761
11:45	0	187	193	0	0	0	21	278	0	9	1	187	876	2737
12:00	0	140	74	0	0	0	20	239	0	11	0	78	562	2675
12:15	0	144	82	0	0	0	10	196	0	2	1	65	500	3007
12:30	0	195	189	0	0	0	4	247	0	3	1	160	799	3531
12:45	0	165	211	0	0	0	5	200	0	6	2	225	814	3755
13:00	0	156	191	0	0	0	7	230	0	10	1	299	894	3994
13:15	0	251	288	0	0	0	5	286	0	0	0	194	1024	4067
13:30	0	200	328	0	0	0	13	261	0	0	0	221	1023	4017
13:45	0	219	294	0	0	0	15	279	0	0	0	246	1053	4146
14:00	0	179	248	0	0	0	3	302	0	6	0	229	967	4402
14:15	0	188	335	0	0	0	4	222	0	0	0	225	974	4712
14:30	0	232	340	0	0	0	4	269	0	0	0	307	1152	5197
14:45	0	186	390	0	0	0	8	364	0	0	0	361	1309	5295
15:00	0	164	268	0	0	0	5	298	0	14	0	528	1277	5179
15:15	0	133	416	0	0	0	4	370	0	0	5	531	1459	5051
15:30	0	147	402	0	0	0	4	283	0	3	0	411	1250	4699
15:45	0	131	359	0	0	0	1	302	0	0	0	400	1193	4478
16:00	0	158	237	0	0	0	2	237	0	13	0	502	1149	4337
16:15	0	207	232	0	0	0	6	267	0	4	0	391	1107	4639
16:30	0	130	289	0	0	0	1	283	0	0	0	326	1029	4937
16:45	0	272	215	0	0	0	2	209	0	5	0	349	1052	5286
17:00	0	403	476	0	0	0	1	251	0	2	8	310	1451	5523
17:15	0	359	456	0	0	0	5	230	0	5	2	348	1405	
17:30	0	367	448	0	0	0	2	219	0	2	1	339	1378	
17:45	0	354	389	0	0	0	1	222	0	0	1	322	1289	

Conteo PR 52 con PR 177 Este

Comienzo del Periodo	Movimiento												Total cada 15 min.	Total por hora
	1	2	3	4	5	6	7	8	9	10	11	12		
06:00	44	4	15	0	90	198	0	0	0	33	204	0	588	3291
06:15	70	0	28	0	125	202	0	0	0	38	219	0	682	3786
06:30	63	0	41	0	201	308	0	0	0	47	294	0	954	4283
06:45	96	0	33	0	232	345	0	0	0	62	299	0	1067	4633
07:00	75	0	32	0	300	336	0	0	0	76	264	0	1083	4802
07:15	86	0	41	0	303	343	0	0	0	99	307	0	1179	4720
07:30	56	0	38	0	326	419	0	0	0	120	345	0	1304	4620
07:45	97	0	52	0	300	286	0	0	0	110	391	0	1236	4324
08:00	89	0	44	0	245	280	0	0	0	92	251	0	1001	4131
08:15	91	0	42	0	291	315	0	0	0	67	273	0	1079	4171
08:30	81	0	36	0	300	273	0	0	0	73	245	0	1008	3920
08:45	86	0	49	0	265	310	0	0	0	73	260	0	1043	3746
09:00	68	6	84	0	234	298	0	0	0	156	195	0	1041	3557
09:15	84	0	52	0	178	204	0	0	0	126	184	0	828	3342
09:30	75	0	81	0	180	182	0	0	0	104	212	0	834	3427
09:45	62	0	31	0	150	277	0	0	0	93	241	0	854	3485
10:00	109	0	48	0	195	203	0	0	0	76	195	0	826	3447
10:15	167	0	72	0	175	179	0	0	0	98	222	0	913	3502
10:30	159	0	87	0	168	156	0	0	0	97	225	0	892	3430
10:45	114	0	75	0	142	150	0	0	0	80	255	0	816	3394
11:00	125	0	60	0	194	171	0	0	0	86	245	0	881	3360
11:15	74	0	61	0	183	176	0	0	0	94	253	0	841	3333
11:30	79	0	43	0	171	175	0	0	0	93	295	0	856	3476
11:45	75	0	32	0	162	148	0	0	0	80	285	0	782	3561
12:00	83	0	35	0	133	132	0	0	0	94	377	0	854	3686
12:15	116	1	53	0	171	154	0	0	0	95	394	0	984	3790
12:30	101	1	60	0	208	129	0	0	0	83	359	0	941	3619
12:45	100	0	72	0	230	135	0	0	0	88	282	0	907	3605
13:00	123	1	65	0	222	149	0	0	0	65	333	0	958	3598
13:15	101	0	43	0	223	136	0	0	0	72	238	0	813	3697
13:30	107	2	43	0	264	138	0	0	0	68	305	0	927	3929
13:45	113	0	37	0	245	111	0	0	0	63	331	0	900	4018
14:00	106	1	47	0	268	143	0	0	0	94	398	0	1057	4245
14:15	115	1	55	0	298	122	0	0	0	78	376	0	1045	4222
14:30	80	1	56	0	330	108	0	0	0	91	350	0	1016	4239
14:45	135	2	60	0	289	125	0	0	0	97	419	0	1127	4261
15:00	109	1	51	0	356	102	0	0	0	79	336	0	1034	4223
15:15	99	0	52	0	316	114	0	0	0	80	401	0	1062	4216
15:30	119	0	50	0	320	106	0	0	0	48	395	0	1038	4244
15:45	102	0	43	0	402	109	0	0	0	55	378	0	1089	4217
16:00	65	0	26	0	342	101	0	0	0	77	416	0	1027	4245
16:15	73	0	48	0	300	103	0	0	0	92	474	0	1090	4548
16:30	74	0	43	0	278	101	0	0	0	96	419	0	1011	4748
16:45	109	0	45	0	389	87	0	0	0	96	391	0	1117	5137
17:00	124	0	51	0	478	110	0	0	0	91	476	0	1330	5307
17:15	127	1	52	0	432	135	0	0	0	94	449	0	1290	
17:30	122	0	66	0	417	199	0	0	0	79	517	0	1400	
17:45	112	0	57	0	397	144	0	0	0	70	507	0	1287	

Conteo PR 52 con PR 177 Oeste

Comienzo del Periodo	Movimiento												Total cada 15 min.	Total por hora
	1	2	3	4	5	6	7	8	9	10	11	12		
06:00	0	0	0	26	114	0	0	0	0	0	230	50	420	2345
06:15	0	0	0	37	165	0	0	0	0	0	248	71	521	2688
06:30	0	0	0	47	225	0	0	0	0	0	334	68	674	2987
06:45	0	0	0	52	278	0	0	0	0	0	343	57	730	3166
07:00	0	0	0	59	322	0	0	0	0	0	322	60	763	3372
07:15	0	0	0	81	300	0	0	0	0	0	383	56	820	3365
07:30	0	0	0	103	282	0	0	0	0	0	428	40	853	3308
07:45	0	0	0	106	300	0	0	0	0	0	459	71	936	3221
08:00	0	0	0	60	285	0	0	0	0	0	320	91	756	2995
08:15	0	0	0	53	325	0	0	0	0	0	320	65	763	2904
08:30	0	0	0	51	341	0	0	0	0	0	297	77	766	2756
08:45	0	0	0	38	319	0	0	0	0	0	316	37	710	2573
09:00	0	0	0	36	275	0	0	0	0	0	330	24	665	2470
09:15	0	0	0	32	241	0	0	0	0	0	288	54	615	2396
09:30	0	0	0	41	201	0	0	0	0	0	293	48	583	2450
09:45	0	0	0	35	187	0	0	0	0	0	317	68	607	2553
10:00	0	0	0	52	241	0	0	0	0	0	251	47	591	2566
10:15	0	0	0	54	285	0	0	0	0	0	296	34	669	2664
10:30	0	0	0	55	277	0	0	0	0	0	304	50	686	2656
10:45	0	0	0	51	216	0	0	0	0	0	309	44	620	2638
11:00	0	0	0	50	262	0	0	0	0	0	313	64	689	2698
11:15	0	0	0	58	200	0	0	0	0	0	325	78	661	2748
11:30	0	0	0	41	215	0	0	0	0	0	358	54	668	2993
11:45	0	0	0	31	222	0	0	0	0	0	340	87	680	3210
12:00	0	0	0	34	175	0	0	0	0	0	443	87	739	3389
12:15	0	0	0	79	205	0	0	0	0	0	467	155	906	3521
12:30	0	0	0	67	241	0	0	0	0	0	417	160	885	3365
12:45	0	0	0	51	285	0	0	0	0	0	351	172	859	3322
13:00	0	0	0	49	302	0	0	0	0	0	377	143	871	3252
13:15	0	0	0	37	301	0	0	0	0	0	293	119	750	3320
13:30	0	0	0	54	313	0	0	0	0	0	343	132	842	3525
13:45	0	0	0	51	306	0	0	0	0	0	364	68	789	3673
14:00	0	0	0	47	325	0	0	0	0	0	449	118	939	3942
14:15	0	0	0	61	356	0	0	0	0	0	409	129	955	3938
14:30	0	0	0	41	389	0	0	0	0	0	396	164	990	3949
14:45	0	0	0	52	378	0	0	0	0	0	473	155	1058	3912
15:00	0	0	0	51	417	0	0	0	0	0	375	92	935	3843
15:15	0	0	0	49	389	0	0	0	0	0	439	89	966	3916
15:30	0	0	0	56	402	0	0	0	0	0	413	82	953	4025
15:45	0	0	0	65	435	0	0	0	0	0	404	85	989	4102
16:00	0	0	0	58	361	0	0	0	0	0	465	124	1008	4236
16:15	0	0	0	58	332	0	0	0	0	0	529	156	1075	4548
16:30	0	0	0	52	321	0	0	0	0	0	479	178	1030	4717
16:45	0	0	0	73	428	0	0	0	0	0	429	193	1123	4970
17:00	0	0	0	114	506	0	0	0	0	0	520	180	1320	5037
17:15	0	0	0	78	487	0	0	0	0	0	498	181	1244	
17:30	0	0	0	93	457	0	0	0	0	0	538	195	1283	
17:45	0	0	0	73	431	0	0	0	0	0	506	180	1190	

Conteo PR 52 con PR 199 Este

Comienzo del Periodo	Movimiento												Total cada 15 min.	Total por hora
	1	2	3	4	5	6	7	8	9	10	11	12		
06:00	83	33	41	0	275	252	0	0	0	76	421	0	1181	5477
06:15	99	42	49	0	274	311	0	0	0	78	430	0	1283	5841
06:30	98	55	63	0	302	366	0	0	0	96	488	0	1468	6188
06:45	116	86	65	0	310	370	0	0	0	99	499	0	1545	6612
07:00	111	49	42	0	318	381	0	0	0	119	525	0	1545	7011
07:15	127	78	44	0	322	384	0	0	0	142	533	0	1630	7428
07:30	168	78	68	0	419	391	0	0	0	172	596	0	1892	7650
07:45	201	71	124	0	415	356	0	0	0	189	588	0	1944	7588
08:00	197	75	121	0	442	355	0	0	0	155	617	0	1962	7234
08:15	156	69	93	0	430	354	0	0	0	128	622	0	1852	6690
08:30	189	43	87	0	444	333	0	0	0	115	619	0	1830	6164
08:45	161	39	81	0	278	321	0	0	0	121	589	0	1590	5514
09:00	136	37	74	0	299	268	0	0	0	115	489	0	1418	5050
09:15	128	32	72	0	289	272	0	0	0	109	424	0	1326	4735
09:30	129	22	43	0	247	229	0	0	0	121	389	0	1180	4500
09:45	117	19	41	0	248	217	0	0	0	99	385	0	1126	4383
10:00	101	22	42	0	264	203	0	0	0	106	365	0	1103	4294
10:15	107	21	44	0	266	203	0	0	0	89	361	0	1091	4234
10:30	104	17	39	0	232	209	0	0	0	88	374	0	1063	4137
10:45	104	20	33	0	232	216	0	0	0	74	358	0	1037	4113
11:00	109	23	35	0	239	187	0	0	0	78	372	0	1043	4134
11:15	127	22	32	0	221	184	0	0	0	75	333	0	994	4112
11:30	126	22	25	0	227	193	0	0	0	68	378	0	1039	4157
11:45	132	20	43	0	241	194	0	0	0	66	362	0	1058	4153
12:00	111	23	51	0	221	178	0	0	0	91	346	0	1021	4160
12:15	98	28	50	0	256	181	0	0	0	87	339	0	1039	4235
12:30	106	26	42	0	269	187	0	0	0	88	317	0	1035	4281
12:45	100	24	56	0	274	201	0	0	0	89	321	0	1065	4350
13:00	111	32	42	0	288	201	0	0	0	99	323	0	1096	4379
13:15	107	22	49	0	276	196	0	0	0	96	339	0	1085	4431
13:30	111	23	44	0	279	190	0	0	0	92	365	0	1104	4492
13:45	99	24	49	0	273	181	0	0	0	90	378	0	1094	4528
14:00	92	26	54	0	295	162	0	0	0	92	427	0	1148	4609
14:15	99	22	56	0	266	178	0	0	0	89	436	0	1146	4682
14:30	93	23	54	0	253	160	0	0	0	111	446	0	1140	4789
14:45	113	22	52	0	254	162	0	0	0	120	452	0	1175	4920
15:00	99	19	44	0	316	142	0	0	0	123	478	0	1221	5049
15:15	99	17	53	0	329	152	0	0	0	114	489	0	1253	5211
15:30	98	16	56	0	333	163	0	0	0	106	499	0	1271	5382
15:45	98	17	55	0	361	166	0	0	0	97	510	0	1304	5489
16:00	96	14	61	0	384	193	0	0	0	111	524	0	1383	5591
16:15	97	17	64	0	374	203	0	0	0	127	542	0	1424	5716
16:30	110	15	61	0	326	162	0	0	0	117	587	0	1378	5898
16:45	124	16	69	0	315	178	0	0	0	126	578	0	1406	6114
17:00	144	18	81	0	363	191	0	0	0	119	592	0	1508	6177
17:15	189	18	96	0	414	163	0	0	0	127	599	0	1606	
17:30	165	23	114	0	426	155	0	0	0	122	589	0	1594	
17:45	143	22	110	0	389	147	0	0	0	111	547	0	1469	

Conteo 52 con PR 199 Oeste

Comienzo del Periodo	Movimiento												Total cada 15 min.	Total por hora
	1	2	3	4	5	6	7	8	9	10	11	12		
06:00	0	0	0	48	310	0	73	4	13	0	424	63	935	4160
06:15	0	0	0	59	314	0	88	4	12	0	420	67	964	4469
06:30	0	0	0	74	326	0	97	6	21	0	487	88	1099	4823
06:45	0	0	0	71	355	0	111	8	37	0	487	93	1162	5358
07:00	0	0	0	77	352	0	127	7	53	0	517	111	1244	5826
07:15	0	0	0	85	364	0	129	9	57	0	546	128	1318	6225
07:30	0	0	0	103	484	0	122	7	85	0	646	187	1634	6481
07:45	0	0	0	128	488	0	158	8	55	0	619	174	1630	6438
08:00	0	0	0	138	501	0	169	17	54	0	603	161	1643	6154
08:15	0	0	0	157	429	0	172	14	80	0	578	144	1574	5716
08:30	0	0	0	154	479	0	178	12	70	0	556	142	1591	5248
08:45	0	0	0	144	295	0	163	12	54	0	547	131	1346	4701
09:00	0	0	0	126	309	0	141	8	47	0	463	111	1205	4354
09:15	0	0	0	107	310	0	145	13	34	0	388	109	1106	4133
09:30	0	0	0	98	278	0	134	12	45	0	376	101	1044	3992
09:45	0	0	0	85	280	0	128	10	34	0	356	106	999	3885
10:00	0	0	0	85	280	0	129	11	33	0	342	104	984	3801
10:15	0	0	0	82	291	0	122	9	36	0	328	97	965	3770
10:30	0	0	0	86	250	0	122	12	28	0	340	99	937	3714
10:45	0	0	0	80	256	0	115	12	42	0	317	93	915	3725
11:00	0	0	0	84	264	0	133	11	46	0	317	98	953	3773
11:15	0	0	0	87	261	0	152	11	48	0	256	94	909	3777
11:30	0	0	0	82	271	0	152	10	47	0	294	92	948	3845
11:45	0	0	0	88	285	0	159	12	65	0	269	85	963	3882
12:00	0	0	0	111	221	0	159	21	68	0	278	99	957	3912
12:15	0	0	0	110	244	0	161	17	89	0	265	91	977	3988
12:30	0	0	0	124	251	0	178	18	92	0	227	95	985	4041
12:45	0	0	0	111	263	0	173	14	97	0	237	98	993	4124
13:00	0	0	0	122	277	0	179	14	93	0	243	105	1033	4197
13:15	0	0	0	115	268	0	162	14	87	0	273	111	1030	4295
13:30	0	0	0	121	269	0	153	12	91	0	304	118	1068	4394
13:45	0	0	0	127	245	0	155	10	95	0	313	121	1066	4479
14:00	0	0	0	128	259	0	156	11	96	0	363	118	1131	4591
14:15	0	0	0	121	244	0	147	18	94	0	378	127	1129	4696
14:30	0	0	0	125	221	0	146	17	99	0	411	134	1153	4830
14:45	0	0	0	124	243	0	200	14	97	0	372	128	1178	4954
15:00	0	0	0	143	272	0	222	13	92	0	379	115	1236	5093
15:15	0	0	0	125	303	0	223	22	90	0	380	120	1263	5266
15:30	0	0	0	111	320	0	251	25	91	0	354	125	1277	5461
15:45	0	0	0	121	338	0	265	33	93	0	342	125	1317	5630
16:00	0	0	0	127	353	0	302	26	100	0	333	168	1409	5786
16:15	0	0	0	156	315	0	307	20	101	0	362	197	1458	5916
16:30	0	0	0	153	283	0	299	11	89	0	405	206	1446	6126
16:45	0	0	0	161	278	0	299	21	98	0	405	211	1473	6335
17:00	0	0	0	181	326	0	289	19	84	0	422	218	1539	6392
17:15	0	0	0	161	442	0	315	36	86	0	411	217	1668	
17:30	0	0	0	155	436	0	322	36	94	0	389	223	1655	
17:45	0	0	0	141	391	0	309	33	88	0	349	219	1530	

Conteo de tránsito

Fecha: Dia: Clima:

Nombre de intersección: PR 1 -- PR 30 -- PR 52

Descripción del movimiento:

1	S Left	2	S Through
3	S Right	4	E Left
5	E Through	6	E Right
7	N Left	8	N Through
9	N Right	10	W Left
11	PR 52 RAMP	12	PR 30 RAMP

Comienzo del Periodo	Movimiento											
	1	2	3	4	5	6	7	8	9	10	11	12
06:00	3	369	17	1	3	8	7	53	10		155	325
06:15	10	472	27	1	5	8	2	86	16		170	364
06:30	4	503	35	11	2	6	5	122	51		225	426
06:45	1	633	61	8	2	12	5	160	37		210	400
07:00	1	616	57	8	2	14	12	184	45		212	397
07:15	9	655	23	6	4	10	4	230	30		251	493
07:30	1	605	14	7	3	9	5	278	10		282	540
07:45	3	603	17	7	4	8	8	248	22		277	526
08:00	5	602	7	15	8	18	5	169	22		253	503
08:15	7	604	9	3	4	10	7	206	29		232	445
08:30	3	603	9	12	6	12	9	156	43		217	441
08:45	11	578	13	9	9	5	7	163	55		224	438
09:00	3	533	5	6	5	13	30	151	20		189	414
09:15	10	547	9	10	4	18	31	279	49		207	376
09:30	9	544	20	14	7	9	42	263	36		187	414
09:45	14	503	17	12	11	18	22	179	24		197	383
10:00	31	555	21	14	13	7	28	230	25		205	350
10:15	11	424	43	12	12	12	34	260	19		178	374
10:30	6	503	0	7	7	18	10	157	18		185	362
10:45	13	550	12	12	5	17	10	182	15		192	332
11:00	5	530	4	7	7	14	10	176	17		204	372
11:15	10	458	5	6	6	19	17	190	18		188	361
11:30	16	569	6	19	6	14	12	203	16		214	408
11:45	10	531	15	16	9	11	34	224	17		207	379
12:00	3	570	11	19	11	29	15	413	26		212	408
12:15	11	590	8	15	3	7	13	271	16		223	458
12:30	9	586	6	7	4	1	21	159	10		235	442
12:45	5	524	9	7	4	16	8	137	4		221	455
13:00	3	440	19	11	4	5	10	122	12		242	447
13:15	2	489	11	9	11	8	8	195	3		235	535
13:30	4	540	5	21	37	9	18	170	7		265	515
13:45	0	398	6	14	8	20	12	185	8		248	524
14:00	7	481	2	9	7	15	7	153	1		270	497
14:15	7	470	3	4	5	4	4	109	9		255	599
14:30	4	499	5	1	3	1	17	125	1		290	631
14:45	2	433	3	1	9	2	12	113	8		303	602
15:00	2	454	6	4	10	47	0	141	11		293	567
15:15	7	589	6	3	9	14	1	162	12		282	633
15:30	5	519	3	15	11	7	3	165	6		276	660
15:45	2	411	5	5	1	3	7	171	13		237	669
16:00	2	327	1	24	21	13	4	146	7		267	682
16:15	5	502	2	1	3	2	4	189	7		267	671
16:30	5	391	1	5	6	2	1	191	6		301	664
16:45	5	449	1	6	2	1	1	171	7		350	667
17:00	3	473	1	6	4	1	1	282	6		348	721
17:15	3	514	1	3	2	1	1	157	7		361	704
17:30	2	463	2	2	1	1	1	235	8		350	682
17:45	1	429	3	1	3	5	3	232	5		367	701

PR-1 con PR-176

Comienzo del Periodo	Movimiento											
	S-L	S-T	S-R	E-L	E-T	E-R	N-L	N-T	N-R	W-L	W-T	W-R
06:00	10	387	22	33	247	10	78	261	12	2	76	5
06:15	14	480	24	30	299	11	124	274	10	5	95	4
06:30	22	431	24	30	318	12	93	336	11	6	121	7
06:45	27	439	21	29	345	12	150	347	8	3	96	8
07:00	25	465	30	25	395	15	132	386	9	8	78	9
07:15	27	528	32	28	389	12	128	394	8	4	100	10
07:30	33	566	74	22	340	13	123	381	7	4	103	11
07:45	31	539	63	22	278	11	83	364	12	3	104	9
08:00	33	557	59	21	296	12	65	385	11	5	100	8
08:15	48	590	70	27	272	13	73	412	10	3	130	9
08:30	36	482	80	38	197	12	70	415	8	9	115	7
08:45	39	436	49	36	189	19	52	350	9	5	109	8
09:00	38	351	62	34	190	16	51	319	12	4	143	11
09:15	32	354	63	47	170	14	32	317	10	8	170	9
09:30	34	386	64	37	178	12	53	327	12	4	135	9
09:45	49	349	82	44	201	19	51	306	11	8	196	9
10:00	44	315	81	44	171	20	93	314	14	8	123	14
10:15	59	349	80	48	186	22	89	340	13	6	150	10
10:30	42	310	62	40	185	20	80	329	10	4	189	14
10:45	43	304	64	46	213	21	56	333	8	4	199	13
11:00	26	330	61	54	201	16	56	312	12	7	205	12
11:15	37	391	62	49	238	13	45	307	10	4	289	16
11:30	63	354	64	32	220	13	57	317	21	10	298	17
11:45	74	342	69	42	287	12	45	317	20	12	210	13
12:00	99	332	58	43	387	18	65	396	39	9	186	14
12:15	73	341	56	55	365	24	66	419	36	14	174	18
12:30	52	317	41	59	359	18	55	401	41	8	200	11
12:45	62	320	43	54	344	17	60	458	42	10	196	14
13:00	55	287	43	68	365	14	50	399	39	12	203	15
13:15	52	295	40	59	363	19	61	414	36	8	198	21
13:30	50	296	42	58	312	17	82	420	26	7	201	19
13:45	47	317	49	69	311	20	56	415	28	16	189	18
14:00	39	389	47	60	272	19	84	472	35	15	201	20
14:15	37	346	47	54	348	18	85	514	33	13	244	19
14:30	33	364	55	53	359	19	90	536	34	9	258	15
14:45	33	349	54	44	374	17	56	584	39	9	249	19
15:00	39	361	80	59	370	16	99	598	37	4	254	14
15:15	42	357	73	52	363	19	65	659	44	6	301	17
15:30	39	317	83	55	352	33	41	617	39	5	301	8
15:45	44	264	78	59	363	30	72	600	39	4	301	17
16:00	35	243	62	60	349	29	64	545	39	3	300	9
16:15	41	303	59	59	314	28	91	578	32	4	281	8
16:30	37	326	58	57	342	26	95	633	31	9	300	9
16:45	39	298	73	56	319	26	98	689	32	12	245	9
17:00	33	325	57	54	375	21	78	665	34	5	253	11
17:15	47	378	41	59	360	22	71	714	22	7	245	8
17:30	32	365	44	51	299	23	73	745	38	5	265	10
17:45	29	325	43	49	296	20	63	685	31	5	260	6

7.2 Apéndice 3: Resultados modelaciones

Output Tables
Output Tables
01 PR-177 Este y Rampa PR-52
Pico AM Base

Run Information
Cycle Time = 130 (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
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: Cycle average 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)

* Movement 10 has large x because of short lanes.
The degree of saturation of adjacent movement 11 is less than xp,
hence this solution may be satisfactory.
See Table S.7 for queue length, delay etc.

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
01 PR-177 Este y Rampa PR-52
Pico AM Base
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: Rampa desde PR-52							
	East	3	Right	152	0	1.00	1.00
	North	2	Thru	1	0	1.00	1.00
	West	1	Left	224	0	1.00	1.00
East: PR-177 Este							
	North	6	Right	1676	0	1.00	1.00
	West	5	Thru	1304	0	1.00	1.00
West: PR-177 Oeste							
	East	11	Thru	1380	0	1.00	1.00
	North	10	Left	480	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
01 PR-177 Este y Rampa PR-52
Pico AM Base
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Mov ID		Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program							
South: Rampa desde PR-52							
1	L	224	0	0	0	0	0
2	T	0	0	1	0	0	0
3	R	0	0	0	0	152	0
East: PR-177 Este							
5	T	0	0	1304	0	0	0
6	R	0	0	0	0	1676	0
West: PR-177 Oeste							
10	L	480	0	0	0	0	0
11	T	0	0	1380	0	0	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
01 PR-177 Este y Rampa PR-52
Pico AM Base
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Mov ID	Mov Typ	PHASE MATRIX First Green Fr	First Green To	First Green Op Pr	Second Green Fr	Second Green To	Second Green 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

```
---------------------------------------------------------------------------
---------
South: Rampa desde PR-52
   1 L        A     B                                 4         12.4
23
   2 T       *A     B                                 4         12.5
23
---------------------------------------------------------------------------
---------
East: PR-177 Este
   5 T       *C     A                                 4         35.6
75
---------------------------------------------------------------------------
---------
West: PR-177 Oeste
  10 L       *B     C                                 4         26.2
20
  11 LT       B     A                                 4         43.0
99
---------------------------------------------------------------------------
---------
---------------------------------------------------------------------------
---------
   Current Phase Sequence: ACTUAL
   Input phase sequence: A B C
   Output phase sequence: A B C
---------------------------------------------------------------------------
---------
   *  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
01 PR-177 Este y Rampa PR-52
Pico AM Base
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Mov ID	Dem Flow (veh /h)	HV (%)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: Rampa desde PR-52											
1 L	224	0.0	3832		0.058		678	0.90	172	100	0.330
2 T	1	0.0	17		0.059		3	0.90	171	100	0.332
3 R	152	0.0	1972		0.077		1972	0.90	1068	100	0.077
East: PR-177 Este											
5 T	1304	0.0	5955		0.219		3436	0.90	137	100	0.380
6 R	1676	0.0	2020		0.830		2020	0.90	8	100	0.830
West: PR-177 Oeste											
10 L	274	0.0	1780<		0.154		274	0.90	-10	100	1.000*
11 LT	1586E	0.0	5872		0.270		4472	0.90	154	100	0.355

E "Excess" flow from the short lane of an adjacent movement added to normal flow

Movement 10 has large x because of short lanes.
The degree of saturation of adjacent movement 11 is less than xp, hence this solution may be satisfactory.
See Table S.7 for queue length, delay etc.

Table S.3 - Intersection Parameters
01 PR-177 Este y Rampa PR-52
Pico AM Base
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
2	S_T		A	B	4	0.059	0.065	12.5
10	W_L		B	C	4	0.154	0.171	26.2
5	E_T		C	A	4	0.219	0.243	35.6
					----	------	------	------
				Total:	12	0.432	0.480	74.3

Cycle Time:

Minimum	Maximum	Practical	Chosen
30	150	30	130

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

Intersection Level of Service	=	B
Worst movement Level of Service	=	F
Average intersection delay (s/pers)	=	14.4
Largest average movement delay (s)	=	67.8
Largest cycle-average queue, mean (m)	=	32
Performance Index	=	104.37
Degree of saturation (highest)	=	1.000
Practical Spare Capacity (lowest)	=	-10 %
Effective intersection capacity, (veh/h)	=	5217
Total vehicle flow (veh/h)	=	5217
Total person flow (pers/h)	=	7826
Total vehicle delay (veh-h/h)	=	20.84
Total person delay (pers-h/h)	=	31.26
Total effective vehicle stops (veh/h)	=	2677
Total effective person stops (pers/h)	=	4016
Total vehicle travel (veh-km/h)	=	3175.5
Total cost ($/h)	=	2448.07
Total fuel (L/h)	=	327.3

Total CO2 (kg/h) = 818.27

Table S.4 - Phase Information
01 PR-177 Este y Rampa PR-52
Pico AM Base
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	4	4	23	27	4	27	21%
B	27	4	31	20	51	4	24	18%
C	51	4	55	75	130	4	79	61%

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

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 Cycle (vehs)	Longest Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: Rampa desde PR-52									
1 L	3.65	5.48	58.7	0.92	0.79	1.6	11	10.06	23.0
2 T	0.01	0.02	50.8	0.92	0.73	1.6	11	0.04	25.0
3 R	0.32	0.48	7.6		0.60	2.5#		2.39	49.8
East: PR-177 Este									
5 T	5.68	8.53	15.7	0.58	0.52	1.9	13	28.28	41.9
6 R	3.68	5.51	7.9		0.60	28.3#		26.37	49.4
West: PR-177 Oeste									
10 L	5.15	7.73	67.8	1.00	0.84	4.5	32	13.72	20.9
11 LT	2.34	3.51	5.3	0.35	0.32	0.8	5	23.51	52.4

Largest density (passenger cars per km or mile) for any lane

Table S.6 - Intersection Performance
01 PR-177 Este y Rampa PR-52
Pico AM Base
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (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: Rampa desde PR-52									
377	0.332	3.99	5.98	38.1	0.55	0.71	18	12.49	29.4
East: PR-177 Este									
2980	0.830	9.36	14.04	11.3	0.25	0.56	198	54.65	45.8
West: PR-177 Oeste									
1860	1.000	7.49	11.24	14.5	0.45	0.39	32	37.23	42.9
ALL VEHICLES:									
5217	1.000	20.84	31.26	14.4	0.34	0.51	32	104.37	43.0
INTERSECTION (persons):									
7826	1.000		31.26	14.4	0.34	0.51		104.37	43.0

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
01 PR-177 Este y Rampa PR-52
Pico AM Base
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (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 Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
South: Rampa desde PR-52												
1 L	107	23	0	0	112	340	0.330	58.7	0.79	1.6	11.1	110.0T
2 LT	107	23	0	0	113	341	0.330	58.7	0.78	1.6	11.1	500.0
3 R	0	130	0	0	152	1972	0.077	7.6	0.60	2.5#		110.0T
East: PR-177 Este												
1 T	55	75	0	0	435	1145	0.380	15.7	0.52	1.9	13.3	500.0
2 T	55	75	0	0	435	1145	0.380	15.7	0.52	1.9	13.3	500.0
3 T	55	75	0	0	435	1145	0.380	15.7	0.52	1.9	13.3	500.0
4 R	0	130	0	0	1676	2020	0.830	7.9	0.60	28.3#		100.0T
West: PR-177 Oeste												
1 L	110	20	0	0	274	274	1.000	67.8r	0.84	4.5	31.7<	75.0T
2 LT	31	99	0	0	522	1471	0.355	5.3	0.56	0.8	5.4	500.0
3 T	31	99	0	0	532	1500	0.355	5.3	0.32	0.8	5.5	500.0
4 T	31	99	0	0	532	1500	0.355	5.3	0.32	0.8	5.5	500.0

< Short lane capacity is reached and there is excess flow into an adjacent lane
Density (passenger cars per km or mile)
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.
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
01 PR-177 Este y Rampa PR-52
Pico AM Base
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (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: Rampa desde PR-52												
1 L	112	0	0	112	4.00	2020	1924	0	0	340	0.330	100
2 LT	112	1	0	113	4.00	2020	1925	0	0	341	0.330	100
3 R	0	0	152	152	4.50	2071	1972	0	0	1972	0.077	100
East: PR-177 Este												
1 T	0	435	0	435	3.65	1985	1985	0	0	1145	0.380	100
2 T	0	435	0	435	3.65	1985	1985	0	0	1145	0.380	100
3 T	0	435	0	435	3.65	1985	1985	0	0	1145	0.380	100
4 R	0	0	1676	1676	5.00	2121	2020	0	0	2020	0.830	100
West: PR-177 Oeste												
1 L	274	0	0	274	4.20	2040	1780<	0	0	274	1.000	100
2 LT	206E	316	0	522	3.50	1970	1932	0	0	1471	0.355	100
3 T	0	532	0	532	3.50	1970	1970	0	0	1500	0.355	100
4 T	0	532	0	532	3.50	1970	1970	0	0	1500	0.355	100

E "Excess" flow from back of an adjacent short lane
< Reduced saturation flow due to a short lane effect

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
01 PR-177 Este y Rampa PR-52
Pico AM Base
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (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	Cycle Average Queue (veh)	Perf. Index
South: Rampa desde PR-52											
1 L		224	678	100	0.330	23		58.7	0.79	1.6	10.06
2 T		1	3	100	0.332	23*		50.8	0.73	1.6	0.04
3 R	(Con)	152	1972	100	0.077	130		7.6	0.60	2.5 #	2.39
East: PR-177 Este											
5 T		1304	3436	100	0.380	75*		15.7	0.52	1.9	28.28
6 R	(Con)	1676	2020	100	0.830	130		7.9	0.60	28.3 #	26.37
West: PR-177 Oeste											
10 L		274	274<	100	1.000*	20*		67.8	0.84	4.5	13.72
11 LT		1586E	4472	100	0.355	99		5.3	0.32	0.8	23.51

E "Excess" flow from the short lane of an adjacent movement added to normal flow
< Reduced capacity due to a short lane effect
* Maximum degree of saturation, or critical green periods
# Largest density (passenger cars per km or mile) for any lane

Table S.14 - Summary of Input and Output Data
01 PR-177 Este y Rampa PR-52
Pico AM Base
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (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: Rampa desde PR-52												
1 L	112			112	0	2020	23		0.330	58.7	11	110
2 LT	112	1		113	0	2020	23		0.330	58.7	11	500
3 R			152	152	0	2070	130		0.077	7.6		110
	224	1	152	377	0				0.330	38.1	11	
East: PR-177 Este												
1 T		435		435	0	1985	75		0.380	15.7	13	500
2 T		435		435	0	1985	75		0.380	15.7	13	500
3 T		435		435	0	1985	75		0.380	15.7	13	500
4 R			1676	1676	0	2120	130		0.830	7.9		100
	0	1304	1676	2980	0				0.830	11.3	13	
West: PR-177 Oeste												
1 L	274			274	0	2040	20		1.000	67.8r	32	75
2 LT		316		522	0	1970	99		0.355	5.3	5	500
3 T		532		532	0	1970	99		0.355	5.3	5	500
4 T		532		532	0	1970	99		0.355	5.3	5	500
	274	1380	0	1654	0				1.000	16.3	32	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	5217	0	130	1.000	14.4	32

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

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

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.

Table S.15 - Capacity and Level of Service
01 PR-177 Este y Rampa PR-52
Pico AM Base
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (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 Queue Cycle (vehs)	Longest Queue Aver. (m)
South: Rampa desde PR-52										
1	L	0.177		224	678	0.330	58.7	E	1.6	11
2	T	0.177*		1	3	0.332	50.8	D	1.6	11
3	R (Con)	1.000		152	1972	0.077	7.6	A#	2.5#	
East: PR-177 Este										
5	T	0.577*		1304	3436	0.380	15.7	B	1.9	13
6	R (Con)	1.000		1676	2020	0.830	7.9	F#	28.3#	
West: PR-177 Oeste										
10	L	0.154*		274	274<	1.000*	67.8	E	4.5	32
11	LT	0.762		1586E	4472	0.355	5.3	A	0.8	5
ALL VEHICLES:				5217		1.000	14.4	B	4.5	32
INTERSECTION (persons):				7826			14.4		4.5	32

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.
\# Continuous movements: Level Of Service based on density, Density (passenger cars per km or mile) instead of queue.
< 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)
E "Excess" flow from the short lane of an adjacent movement added to normal flow

Table D.3A - Lane Queues (veh)
01 PR-177 Este y Rampa PR-52
Pico AM Base
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Ncl	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: Rampa desde PR-52											
1 L	0.330	0.0	1.6	0.0	1.6	2.0	2.9	3.6	4.8	5.5	0.25
2 LT	0.330	0.0	1.6	0.0	1.6	2.0	2.9	3.6	4.8	5.5	0.05
East: PR-177 Este											
1 T	0.380	0.0	1.9	0.0	1.9	2.4	3.4	4.2	5.4	6.3	0.13
2 T	0.380	0.0	1.9	0.0	1.9	2.4	3.4	4.2	5.4	6.3	0.13
3 T	0.380	0.0	1.9	0.0	1.9	2.4	3.4	4.2	5.4	6.3	0.13
West: PR-177 Oeste											
1 L	1.000	2.3	4.5	0.0	4.5	5.5	7.5	9.0	10.5	11.6*	1.00
2 LT	0.355	0.0	0.8	0.0	0.8	1.0	1.5	1.9	2.7	3.1	0.09
3 T	0.355	0.0	0.8	0.0	0.8	1.0	1.5	1.9	2.7	3.2	0.09
4 T	0.355	0.0	0.8	0.0	0.8	1.0	1.5	1.9	2.7	3.2	0.09

Values printed in this table are cycle-average queues (vehicles).
* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Table D.3B - Lane Queues (metres)
01 PR-177 Este y Rampa PR-52
Pico AM Base
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Lane	Deg. Satn	Ovrfl. Queue	Average (metres)			Percentile (metres)					Queue Stor.
No.	x	No	Ncl	Nc2	Nc	70%	85%	90%	95%	98%	Ratio

No.		x	No	Ncl	Nc2	Nc	70%	85%	90%	95%	98%	Ratio
South: Rampa desde PR-52												
1	L	0.330	0.0	11.1	0.0	11.1	13.9	20.1	25.2	33.4	38.6	0.25
2	LT	0.330	0.0	11.1	0.0	11.1	13.9	20.1	25.2	33.4	38.6	0.05
East: PR-177 Este												
1	T	0.380	0.0	13.3	0.0	13.3	16.5	23.7	29.5	38.1	43.9	0.13
2	T	0.380	0.0	13.3	0.0	13.3	16.5	23.7	29.5	38.1	43.9	0.13
3	T	0.380	0.0	13.3	0.0	13.3	16.5	23.7	29.5	38.1	43.9	0.13
West: PR-177 Oeste												
1	L	1.000	16.3	31.7	0.0	31.7	38.6	52.8	62.7	73.2	81.5*	1.00
2	LT	0.355	0.0	5.4	0.0	5.4	6.9	10.2	13.0	18.6	21.9	0.09
3	T	0.355	0.0	5.5	0.0	5.5	7.0	10.4	13.3	18.9	22.3	0.09
4	T	0.355	0.0	5.5	0.0	5.5	7.0	10.4	13.3	18.9	22.3	0.09

Values printed in this table are cycle-average queues (metres).
* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Site: 01 PR-177 Este y Rampa PR-52 BA
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren base.aap
Processed Jun 14, 2007 11:17:01AM

Output Tables
Output Tables
PR-177 ESTE CON RAMPA PR-52
Base, PM

Run Information
Cycle Time = 130 (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
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: Cycle average 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)

* Movement 10 has large x because of short lanes.
The degree of saturation of adjacent movement 11 is less than xp, hence this solution may be satisfactory.
See Table S.7 for queue length, delay etc.

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PR-177 ESTE CON RAMPA PR-52
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: Rampa Salida desde PR-52							
	East	3	Right	264	0	1.00	1.00
	North	2	Thru	1	0	1.00	1.00
	West	1	Left	488	0	1.00	1.00
East: PR-177 Este							
	North	6	Right	796	0	1.00	1.00
	West	5	Thru	1668	0	1.00	1.00

```
 West: PR-177 Oeste
          East          11   Thru   2068     0    1.00      1.00
          North         10   Left    316     0    1.00      1.00
-------------------------------------------------------------------
Unit Time for Volumes =  60 minutes
Peak Flow Period =  15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor
```

```
Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
  PR-177 ESTE CON RAMPA PR-52
  Base, PM
 Intersection ID: 01
 Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

 ------------------------------------------------
   Mov          Left        Through       Right
   ID        ---------     ---------    ---------
              LV    HV      LV    HV     LV    HV
 ------------------------------------------------
 Demand flows in veh/hour as used by the program
 South: Rampa Salida desde PR-52
     1 L     488     0       0     0      0     0
     2 T       0     0       1     0      0     0
     3 R       0     0       0     0    264     0
 ------------------------------------------------
 East: PR-177 Este
     5 T       0     0    1668     0      0     0
     6 R       0     0       0     0    796     0
 ------------------------------------------------
 West: PR-177 Oeste
    10 L     316     0       0     0      0     0
    11 T       0     0    2068     0      0     0
 ------------------------------------------------
 Unit Time for Volumes =  60 minutes
 Peak Flow Period =  15 minutes
 Flow Rates include effects of Flow Scale and Peak Flow Factor
```

```
Table S.1 - Movement Phase and Timing Parameters
  PR-177 ESTE CON RAMPA PR-52
  Base, PM
 Intersection ID: 01
 Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

 ------------------------------------------------------------------------------
----------
   Mov     Mov          P H A S E  M A T R I X          Lost Tim  Req.Mov.Time
Eff. Grn
   ID      Typ     First Green         Second Green     --------  ------------
--------
                 ------------------  ------------------  1st  2nd  1st      2nd
1st  2nd
                  Fr    To   Op Pr    Fr    To   Op Pr   Grn  Grn  Grn      Grn
Grn  Grn
```

```
 ------------------------------------------------------------------------------
----------
 South: Rampa Salida desde PR-52
    1 L       *A     B                                    4        22.4
23
    2 T        A     B                                    4        22.1
23
 ------------------------------------------------------------------------------
----------
 East: PR-177 Este
    5 T       *C     A                                    4        44.5
75
 ------------------------------------------------------------------------------
----------
 West: PR-177 Oeste
   10 L       *B     C                                    4        26.2
20
   11 LT       B     A                                    4        55.6
99
 ------------------------------------------------------------------------------
----------
 ------------------------------------------------------------------------------
----------
   Current Phase Sequence: ACTUAL
   Input phase sequence: A B C
   Output phase sequence: A B C
 ------------------------------------------------------------------------------
----------
   *  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
  PR-177 ESTE CON RAMPA PR-52
  Base, PM
 Intersection ID: 01
 Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

 ------------------------------------------------------------------------------
 Mov      Dem          Satn Flow    Flow Ratio  Total Prac. Prac. Lane   Deg.
 ID       Flow         ----------   ----------   Cap. Deg. Spare Util   Satn
          (veh    HV   1st  2nd     1st  2nd   (veh  Satn  Cap.
           /h)   (%)   Grn  Grn     Grn  Grn    /h)  xp    (%)   (%)    x
 ------------------------------------------------------------------------------
 South: Rampa Salida desde PR-52
    1 L     488   0.0  3841         0.127        680  0.90   25   100  0.718
    2 T       1   0.0     8         0.125          1  0.90   27   100  0.707
    3 R     264   0.0  1972         0.134       1972  0.90  572   100  0.134
 ------------------------------------------------------------------------------
 East: PR-177 Este
```

5 T	1668	0.0	5955	0.280	3436	0.90	85	100	0.486
6 R	796	0.0	2020	0.394	2020	0.90	128	100	0.394
West: PR-177 Oeste									
10 L	274	0.0	1780<	0.154	274	0.90	-10	100	1.000*
11 LT	2110E	0.0	5904	0.357	4496	0.90	92	100	0.469

E "Excess" flow from the short lane of an adjacent movement added to normal flow

Movement 10 has large x because of short lanes.
The degree of saturation of adjacent movement 11 is less than xp, hence this solution may be satisfactory.
See Table S.7 for queue length, delay etc.

Table S.3 - Intersection Parameters
PR-177 ESTE CON RAMPA PR-52
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
1	S_L		A	B	4	0.127	0.141	22.4
10	W_L		B	C	4	0.154	0.171	26.2
5	E_T		C	A	4	0.280	0.311	44.5
				Total:	12	0.561	0.623	93.0

Cycle Time:

Minimum	Maximum	Practical	Chosen
30	150	32	130

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

Intersection Level of Service	=	B
Worst movement Level of Service	=	E
Average intersection delay (s/pers)	=	17.7
Largest average movement delay (s)	=	67.8
Largest cycle-average queue, mean (m)	=	32
Performance Index	=	124.65
Degree of saturation (highest)	=	1.000
Practical Spare Capacity (lowest)	=	-10 %
Effective intersection capacity, (veh/h)	=	5601
Total vehicle flow (veh/h)	=	5601
Total person flow (pers/h)	=	8402
Total vehicle delay (veh-h/h)	=	27.53
Total person delay (pers-h/h)	=	41.29
Total effective vehicle stops (veh/h)	=	3018
Total effective person stops (pers/h)	=	4527
Total vehicle travel (veh-km/h)	=	3405.8
Total cost ($/h)	=	2772.86
Total fuel (L/h)	=	360.3
Total CO2 (kg/h)	=	900.67

Table S.4 - Phase Information
PR-177 ESTE CON RAMPA PR-52
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	4	4	23	27	4	27	21%
B	27	4	31	20	51	4	24	.18%
C	51	4	55	75	130	4	79	61%

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

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 Cycle (vehs)	Longest Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: Rampa Salida desde PR-52									
1 L	8.68	13.03	64.1	1.00	0.86	3.8	27	23.57	21.8
2 T	0.02	0.02	56.1	1.00	0.86	3.8	27	0.05	23.6
3 R	0.56	0.83	7.6		0.60	4.4#		4.15	49.8
East: PR-177 Este									
5 T	7.90	11.85	17.0	0.63	0.57	2.6	18	37.93	40.9
6 R	1.68	2.53	7.6		0.60	13.3#		12.50	49.7
West: PR-177 Oeste									
10 L	5.15	7.73	67.8	1.00	0.84	4.5	32	13.72	20.9
11 LT	3.54	5.31	6.0	0.40	0.37	1.2	8	32.73	51.5

Largest density (passenger cars per km or mile) for any lane

Table S.6 - Intersection Performance
PR-177 ESTE CON RAMPA PR-52
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (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: Rampa Salida desde PR-52									

753	0.718	9.26	13.88	44.2	0.65	0.77	31	27.77	27.2
East: PR-177 Este									
2464	0.486	9.58	14.37	14.0	0.43	0.58	93	50.44	43.4
West: PR-177 Oeste									
2384	1.000	8.69	13.04	13.1	0.47	0.42	32	46.45	44.1
ALL VEHICLES:									
5601	1.000	27.53	41.29	17.7	0.48	0.54	32	124.65	40.4
INTERSECTION (persons):									
8402	1.000		41.29	17.7	0.48	0.54		124.65	40.4

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PR-177 ESTE CON RAMPA PR-52
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Lane No.	Effective Green (R1)	Red and Times (sec) G1	R2	G2	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
South: Rampa Salida desde PR-52												
1 L	107	23	0	0	244	340	0.718	64.1	0.86	3.8	26.7	110.0T
2 LT	107	23	0	0	245	340	0.718	64.0	0.86	3.8	26.7	500.0
3 R	0	130	0	0	264	1972	0.134	7.6	0.60	4.4#		110.0T
East: PR-177 Este												
1 T	55	75	0	0	556	1145	0.485	17.0	0.57	2.6	18.4	500.0
2 T	55	75	0	0	556	1145	0.485	17.0	0.57	2.6	18.4	500.0
3 T	55	75	0	0	556	1145	0.485	17.0	0.57	2.6	18.4	500.0
4 R	0	130	0	0	796	2020	0.394	7.6	0.60	13.3#		100.0T
West: PR-177 Oeste												
1 L	110	20	0	0	274	274	1.000	67.8r	0.84	4.5	31.7<	75.0T
2 LT	31	99	0	0	702	1496	0.469	6.0	0.51	1.2	8.2	500.0
3 T	31	99	0	0	704	1500	0.469	6.0	0.37	1.2	8.3	500.0
4 T	31	99	0	0	704	1500	0.469	6.0	0.37	1.2	8.3	500.0

< Short lane capacity is reached and there is excess flow into an adjacent lane
Density (passenger cars per km or mile)
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.
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
PR-177 ESTE CON RAMPA PR-52
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (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: Rampa Salida desde PR-52												
1 L	244	0	0	244	4.00	2020	1924	0	0	340	0.718	100
2 LT	244	1	0	245	4.00	2020	1924	0	0	340	0.718	100
3 R	0	0	264	264	4.50	2071	1972	0	0	1972	0.134	100
East: PR-177 Este												
1 T	0	556	0	556	3.65	1985	1985	0	0	1145	0.485	100
2 T	0	556	0	556	3.65	1985	1985	0	0	1145	0.485	100
3 T	0	556	0	556	3.65	1985	1985	0	0	1145	0.485	100
4 R	0	0	796	796	5.00	2121	2020	0	0	2020	0.394	100
West: PR-177 Oeste												
1 L	274	0	0	274	4.20	2040	1780<	0	0	274	1.000	100
2 LT	42E	660	0	702	3.50	1970	1964	0	0	1496	0.469	100
3 T	0	704	0	704	3.50	1970	1970	0	0	1500	0.469	100
4 T	0	704	0	704	3.50	1970	1970	0	0	1500	0.469	100

E "Excess" flow from back of an adjacent short lane
< Reduced saturation flow due to a short lane effect

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
PR-177 ESTE CON RAMPA PR-52
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (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	Cycle Average Queue (veh)	Perf. Index
South: Rampa Salida desde PR-52											
1 L		488	680	100	0.718	23*		64.1	0.86	3.8	23.57
2 T		1	1	100	0.707	23		56.1	0.86	3.8	0.05
3 R	(Con)	264	1972	100	0.134	130		7.6	0.60	4.4 #	4.15
East: PR-177 Este											
5 T		1668	3436	100	0.486	75*		17.0	0.57	2.6	37.93
6 R	(Con)	796	2020	100	0.394	130		7.6	0.60	13.3 #	12.50

West: PR-177 Oeste											
10	L	274	274<	100	1.000*	20*		67.8	0.84	4.5	13.72
11	LT	2110E	4496	100	0.469	99		6.0	0.37	1.2	32.73

E "Excess" flow from the short lane of an adjacent movement added to normal flow
< Reduced capacity due to a short lane effect
* Maximum degree of saturation, or critical green periods
# Largest density (passenger cars per km or mile) for any lane

Table S.14 - Summary of Input and Output Data
PR-177 ESTE CON RAMPA PR-52
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (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: Rampa Salida desde PR-52													
1	L	244			244	0	2020	23		0.718	64.1	27	110
2	LT	244	1		245	0	2020	23		0.718	64.0	27	500
3	R			264	264	0	2070	130		0.134	7.6		110
		488	1	264	753	0				0.718	44.2	27	
East: PR-177 Este													
1	T		556		556	0	1985	75		0.485	17.0	18	500
2	T		556		556	0	1985	75		0.485	17.0	18	500
3	T		556		556	0	1985	75		0.485	17.0	18	500
4	R			796	796	0	2120	130		0.394	7.6		100
		0	1668	796	2464	0				0.485	14.0	18	
West: PR-177 Oeste													
1	L	274			274	0	2040	20		1.000	67.8r	32	75
2	LT		660		702	0	1970	99		0.469	6.0	8	500
3	T		704		704	0	1970	99		0.469	6.0	8	500
4	T		704		704	0	1970	99		0.469	6.0	8	500
		274	2068	0	2342	0				1.000	13.4	32	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	5601	0	130	1.000	17.7	32

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

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

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.

Table S.15 - Capacity and Level of Service
PR-177 ESTE CON RAMPA PR-52
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Mov ID	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	Longest Queue Cycle (vehs)	Aver. (m)
South: Rampa Salida desde PR-52										
1	L	0.177*		488	680	0.718	64.1	E	3.8	27
2	T	0.177		1	1	0.707	56.1	E	3.8	27
3	R (Con)	1.000		264	1972	0.134	7.6	A#	4.4#	
East: PR-177 Este										
5	T	0.577*		1668	3436	0.486	17.0	B	2.6	18
6	R (Con)	1.000		796	2020	0.394	7.6	C#	13.3#	
West: PR-177 Oeste										
10	L	0.154*		274	274<	1.000*	67.8	E	4.5	32
11	LT	0.762		2110E	4496	0.469	6.0	A	1.2	8
ALL VEHICLES:				5601		1.000	17.7	B	4.5	32
INTERSECTION (persons):				8402			17.7		4.5	32

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.
Continuous movements: Level Of Service based on density, Density (passenger cars per km or mile) instead of queue.
< 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)
E "Excess" flow from the short lane of an adjacent movement added to normal flow

Table D.3A - Lane Queues (veh)
PR-177 ESTE CON RAMPA PR-52
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Lane	Deg. Satn	Ovrfl. Queue	Average (veh) No.	Nc1	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: Rampa Salida desde PR-52												
1 L	0.718	0.1	3.7	0.1	3.8	4.7	6.4	7.7	9.1	10.2		0.59
2 LT	0.718	0.1	3.7	0.1	3.8	4.7	6.4	7.7	9.1	10.2		0.13
East: PR-177 Este												
1 T	0.485	0.0	2.6	0.0	2.6	3.3	4.6	5.6	6.9	7.9		0.17
2 T	0.485	0.0	2.6	0.0	2.6	3.3	4.6	5.6	6.9	7.9		0.17
3 T	0.485	0.0	2.6	0.0	2.6	3.3	4.6	5.6	6.9	7.9		0.17
West: PR-177 Oeste												
1 L	1.000	2.3	4.5	0.0	4.5	5.5	7.5	9.0	10.5	11.6*		1.00
2 LT	0.469	0.0	1.2	0.0	1.2	1.5	2.2	2.8	3.8	4.4		0.14
3 T	0.469	0.0	1.2	0.0	1.2	1.5	2.2	2.8	3.8	4.4		0.14
4 T	0.469	0.0	1.2	0.0	1.2	1.5	2.2	2.8	3.8	4.4		0.14

Values printed in this table are cycle-average queues (vehicles).
* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Table D.3B - Lane Queues (metres)
PR-177 ESTE CON RAMPA PR-52
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Lane	Deg. Satn	Ovrfl. Queue	Average (metres) No.	Nc1	Nc2	Nc	Percentile (metres) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: Rampa Salida desde PR-52												
1 L	0.718	0.6	26.2	0.5	26.7	32.6	45.0	54.0	63.9	71.7		0.59
2 LT	0.718	0.6	26.2	0.5	26.7	32.6	45.0	54.0	64.0	71.7		0.13
East: PR-177 Este												
1 T	0.485	0.0	18.4	0.0	18.4	22.8	32.1	39.3	48.6	55.2		0.17
2 T	0.485	0.0	18.4	0.0	18.4	22.8	32.1	39.3	48.6	55.2		0.17
3 T	0.485	0.0	18.4	0.0	18.4	22.8	32.1	39.3	48.6	55.2		0.17
West: PR-177 Oeste												
1 L	1.000	16.3	31.7	0.0	31.7	38.6	52.8	62.7	73.2	81.5*		1.00
2 LT	0.469	0.0	8.2	0.0	8.2	10.4	15.2	19.3	26.4	30.8		0.14
3 T	0.469	0.0	8.3	0.0	8.3	10.4	15.3	19.3	26.5	30.9		0.14
4 T	0.469	0.0	8.3	0.0	8.3	10.4	15.3	19.3	26.5	30.9		0.14

Values printed in this table are cycle-average queues (metres).
* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Output Tables
Output Tables
01 PR-177 Este y Rampa PR-52
Pico AM FUTURO

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
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: Cycle average 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 = 0 secs
(max. value for stopping = 0 secs)

* 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 B.1 - Movement Definitions and Flow Rates (Origin-Destination)
01 PR-177 Este y Rampa PR-52
Pico AM FUTURO
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: Rampa desde PR-52							
	East	3	Right	158	0	1.00	1.00
	North	2	Thru	1	0	1.00	1.00
	West	1	Left	233	0	1.00	1.00
East: PR-177 Este							
	North	6	Right	1743	0	1.00	1.00
	West	5	Thru	1356	0	1.00	1.00
West: PR-177 Oeste							
	East	11	Thru	1435	0	1.00	1.00
	North	10	Left	499	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
01 PR-177 Este y Rampa PR-52
Pico AM FUTURO
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program						
South: Rampa desde PR-52						
1 L	233	0	0	0	0	0
2 T	0	0	1	0	0	0
3 R	0	0	0	0	158	0
East: PR-177 Este						
5 T	0	0	1356	0	0	0
6 R	0	0	0	0	1743	0
West: PR-177 Oeste						
10 L	499	0	0	0	0	0
11 T	0	0	1435	0	0	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
01 PR-177 Este y Rampa PR-52
Pico AM FUTURO
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	Mov Typ	PHASE MATRIX First Green	PHASE MATRIX Second Green	Lost Tim 1st	Lost Tim 2nd	Req.Mov.Time 1st	Req.Mov.Time 2nd	Eff. Grn 1st	Eff. Grn 2nd

		Fr	To	Op	Pr	Fr	To	Op	Pr	Grn	Grn	Grn	Grn
South: Rampa desde PR-52													
1	L	A	B							4		10.1	7
2	T	*A	B							4		10.2	7
East: PR-177 Este													
5	T	*C	A							4		26.8	24
West: PR-177 Oeste													
10	L	*B	C							4		48.5	47
11	T	B	A							4		28.3	75

Current Phase Sequence: ACTUAL
Input phase sequence: A B C
Output phase sequence: A B C

* 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
01 PR-177 Este y Rampa PR-52
Pico AM FUTURO
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID		Dem Flow (veh /h)	HV (%)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: Rampa desde PR-52												
1	L	233	0.0	3833		0.061		298	0.90	15	100	0.782
2	T	1	0.0	16		0.062		1	0.90	12	100	0.804
3	R	158	0.0	1972		0.080		1972	0.90	1023	100	0.080
East: PR-177 Este												
5	T	1356	0.0	5955		0.228		1588	0.90	5	100	0.854
6	R	1743	0.0	2020		0.863		2020	0.90	4	100	0.863*
West: PR-177 Oeste												
10	L	499	0.0	1122<		0.445		586	0.90	6	100	0.852
11	T	1435	0.0	5910		0.243		4925	0.90	209	100	0.291

Table S.3 - Intersection Parameters
01 PR-177 Este y Rampa PR-52
Pico AM FUTURO
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Crit Mov ID	App. and Turn	Green Period Fr	Green Period To	Phases	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
2	S_T	A	B		4	0.062	0.069	10.2
10	W_L	B	C		4	0.445	0.494	48.5
5	E_T	C	A		4	0.228	0.253	26.8
	Total:				12	0.735	0.817	85.5

Cycle Time:

Minimum	Maximum	Practical	Chosen
30	150	65	90

(Program-determined Optimum Cycle Time)

Intersection Level of Service	=	B
Worst movement Level of Service	=	F
Average intersection delay (s/pers)	=	19.2
Largest average movement delay (s)	=	57.6
Largest cycle-average queue, mean (m)	=	36
Performance Index	=	126.18
Degree of saturation (highest)	=	0.863
Practical Spare Capacity (lowest)	=	4 %
Effective intersection capacity, (veh/h)	=	6287
Total vehicle flow (veh/h)	=	5425
Total person flow (pers/h)	=	8138
Total vehicle delay (veh-h/h)	=	28.89
Total person delay (pers-h/h)	=	43.34
Total effective vehicle stops (veh/h)	=	3461
Total effective person stops (pers/h)	=	5192
Total vehicle travel (veh-km/h)	=	3300.6
Total cost ($/h)	=	2779.02
Total fuel (L/h)	=	365.4
Total CO2 (kg/h)	=	913.58

Table S.4 - Phase Information
01 PR-177 Este y Rampa PR-52

Pico AM FUTURO
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	4	4	7	11	4	11	12%
B	11	4	15	47	62	4	51	57%
C	62	4	66	24	90	4	28	31%

Current Phase Sequence: ACTUAL
Input phase sequence: A B C
Output phase sequence: A B C

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 Cycle (vehs)	Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: Rampa desde PR-52									
1 L	3.73	5.59	57.6	1.00	0.89	1.6	11	10.45	23.3
2 T	0.01	0.02	49.6	1.00	0.89	1.6	11	0.04	25.4
3 R	0.33	0.50	7.6		0.60	2.6#		2.48	49.8
East: PR-177 Este									
5 T	15.45	23.18	41.0	1.00	1.00	5.2	36	52.13	28.2
6 R	3.87	5.80	8.0		0.60	29.5#		27.43	49.3
West: PR-177 Oeste									
10 L	4.81	7.21	34.7	0.80	0.95	3.7	26	16.14	30.7
11 T	0.69	1.04	1.7	0.24	0.20	0.2	2	17.51	56.8

Largest density (passenger cars per km or mile) for any lane

Table S.6 - Intersection Performance
01 PR-177 Este y Rampa PR-52
Pico AM FUTURO
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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: Rampa desde PR-52									
392	0.804	4.07	6.11	37.4	0.60	0.77	18	12.97	29.7
East: PR-177 Este									
3099	0.863	19.32	28.98	22.4	0.44	0.77	207	79.56	37.2
West: PR-177 Oeste									
1934	0.852	5.50	8.25	10.2	0.38	0.40	26	33.65	46.6
ALL VEHICLES:									
5425	0.863	28.89	43.34	19.2	0.43	0.64	36	126.18	39.3
INTERSECTION (persons):									
8138	0.863		43.34	19.2	0.43	0.64		126.18	39.3

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
01 PR-177 Este y Rampa PR-52
Pico AM FUTURO
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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 Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
South: Rampa desde PR-52												
1 L	83	7	0	0	117	150	0.782	57.6	0.89	1.6	11.3	110.0T
2 LT	83	7	0	0	117	150	0.782	57.5	0.89	1.6	11.3	500.0
3 R	0	90	0	0	158	1972	0.080	7.6	0.60	2.6#		110.0T
East: PR-177 Este												
1 T	66	24	0	0	452	529	0.854	41.0	1.00	5.2	36.1	500.0
2 T	66	24	0	0	452	529	0.854	41.0	1.00	5.2	36.1	500.0
3 T	66	24	0	0	452	529	0.854	41.0	1.00	5.2	36.1	500.0
4 R	0	90	0	0	1743	2020	0.863	8.0	0.60	29.5#		100.0T
West: PR-177 Oeste												
1 L	43	47	0	0	499	586	0.852	34.7r	0.95	3.7	25.7	75.0T
2 T	15	75	0	0	478	1642	0.291	1.7	0.20	0.2	1.6	500.0
3 T	15	75	0	0	478	1642	0.291	1.7	0.20	0.2	1.6	500.0
4 T	15	75	0	0	478	1642	0.291	1.7	0.20	0.2	1.6	500.0

Density (passenger cars per km or mile)
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.
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
01 PR-177 Este y Rampa PR-52
Pico AM FUTURO
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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

No.	Lef	Thru	Rig	Tot	Width (m)	Basic (tcu)	1st (veh)	2nd (veh)	(veh /h)	(veh /h)	Satn x	Util %
South: Rampa desde PR-52												
1 L	117	0	0	117	4.00	2020	1924	0	0	150	0.782	100
2 LT	116	1	0	117	4.00	2020	1925	0	0	150	0.782	100
3 R	0	0	158	158	4.50	2071	1972	0	0	1972	0.080	100
East: PR-177 Este												
1 T	0	452	0	452	3.65	1985	1985	0	0	529	0.854	100
2 T	0	452	0	452	3.65	1985	1985	0	0	529	0.854	100
3 T	0	452	0	452	3.65	1985	1985	0	0	529	0.854	100
4 R	0	0	1743	1743	5.00	2121	2020	0	0	2020	0.863	100
West: PR-177 Oeste												
1 L	499	0	0	499	4.20	2040	1122<	0	0	586	0.852	100
2 T	0	478	0	478	3.50	1970	1970	0	0	1642	0.291	100
3 T	0	478	0	478	3.50	1970	1970	0	0	1642	0.291	100
4 T	0	478	0	478	3.50	1970	1970	0	0	1642	0.291	100

< Reduced saturation flow due to a short lane effect

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
01 PR-177 Este y Rampa PR-52
Pico AM FUTURO
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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	Cycle Average Queue (veh)	Perf. Index
South: Rampa desde PR-52											
1 L		233	298	100	0.782	7		57.6	0.89	1.6	10.45
2 T		1	1	100	0.804	7*		49.6	0.89	1.6	0.04
3 R	(Con)	158	1972	100	0.080	90		7.6	0.60	2.6 #	2.48
East: PR-177 Este											
5 T		1356	1588	100	0.854	24*		41.0	1.00	5.2	52.13
6 R	(Con)	1743	2020	100	0.863*	90		8.0	0.60	29.5 #	27.43
West: PR-177 Oeste											
10 L		499	586<	100	0.852	47*		34.7	0.95	3.7	16.14
11 T		1435	4925	100	0.291	75		1.7	0.20	0.2	17.51

< Reduced capacity due to a short lane effect
* Maximum degree of saturation, or critical green periods
# Largest density (passenger cars per km or mile) for any lane

Table S.14 - Summary of Input and Output Data
01 PR-177 Este y Rampa PR-52
Pico AM FUTURO
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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: Rampa desde PR-52												
1 L	117			117	0	2020	7		0.782	57.6	11	110
2 LT	116	1		117	0	2020	7		0.782	57.5	11	500
3 R			158	158	0	2070	90		0.080	7.6		110
	233	1	158	392	0				0.782	37.4	11	
East: PR-177 Este												
1 T		452		452	0	1985	24		0.854	41.0	36	500
2 T		452		452	0	1985	24		0.854	41.0	36	500
3 T		452		452	0	1985	24		0.854	41.0	36	500
4 R			1743	1743	0	2120	90		0.863	8.0		100
	0	1356	1743	3099	0				0.863	22.4	36	
West: PR-177 Oeste												
1 L	499			499	0	2040	47		0.852	34.7r	26	75
2 T		478		478	0	1970	75		0.291	1.7	2	500
3 T		478		478	0	1970	75		0.291	1.7	2	500
4 T		478		478	0	1970	75		0.291	1.7	2	500
	499	1435	0	1934	0				0.852	10.2	26	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	5425	0	90	0.863	19.2	36

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

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

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.

Table S.15 - Capacity and Level of Service
01 PR-177 Este y Rampa PR-52
Pico AM FUTURO
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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 Cycle (vehs)	Queue Aver. (m)
South: Rampa desde PR-52										
1 L		0.078		233	298	0.782	57.6	E	1.6	11
2 T		0.078*		1	1	0.804	49.6	D	1.6	11
3 R	(Con)	1.000		158	1972	0.080	7.6	A#	2.6#	
East: PR-177 Este										
5 T		0.267*		1356	1588	0.854	41.0	D	5.2	36
6 R	(Con)	1.000		1743	2020	0.863*	8.0	F#	29.5#	
West: PR-177 Oeste										
10 L		0.522*		499	586<	0.852	34.7	C	3.7	26
11 T		0.833		1435	4925	0.291	1.7	A	0.2	2
ALL VEHICLES:				5425		0.863	19.2	B	5.2	36
INTERSECTION (persons):				8138			19.2		5.2	36

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.

\# Continuous movements: Level Of Service based on density,
Density (passenger cars per km or mile) instead of queue.

< 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 S.21 - Optimum Cycle Time Results
01 PR-177 Este y Rampa PR-52
Pico AM FUTURO
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	0.863	90
Average Delay	19.2	90
Stop Rate	0.64	90
Max. Queue for Any Movement	5.2	90
Perf. Index	126.2	90
Cost	2779.0	90

Performance Measure	Largest Value	Cycle Time
Eff. Inters. Cap.	6287	90
Prac. Spare Cap.	4	90

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 D.3A - Lane Queues (veh)
01 PR-177 Este y Rampa PR-52
Pico AM FUTURO
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Ncl	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: Rampa desde PR-52											
1 L	0.782	0.1	1.5	0.1	1.6	2.0	2.9	3.7	4.8	5.6	0.22
2 LT	0.782	0.1	1.5	0.1	1.6	2.0	2.9	3.7	4.8	5.6	0.05
East: PR-177 Este											
1 T	0.854	0.9	4.3	0.8	5.2	6.2	8.5	10.0	11.6	12.9	0.18
2 T	0.854	0.9	4.3	0.8	5.2	6.2	8.5	10.0	11.6	12.9	0.18
3 T	0.854	0.9	4.3	0.8	5.2	6.2	8.5	10.0	11.6	12.9	0.18
West: PR-177 Oeste											
1 L	0.852	1.6	2.4	1.3	3.7	4.5	6.2	7.5	8.9	10.0	1.00
2 T	0.291	0.0	0.2	0.0	0.2	0.3	0.5	0.6	0.9	1.1	0.04
3 T	0.291	0.0	0.2	0.0	0.2	0.3	0.5	0.6	0.9	1.1	0.04
4 T	0.291	0.0	0.2	0.0	0.2	0.3	0.5	0.6	0.9	1.1	0.04

Values printed in this table are cycle-average queues (vehicles).

* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Table D.3B - Lane Queues (metres)
01 PR-177 Este y Rampa PR-52
Pico AM FUTURO
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Lane	Deg. Satn	Ovrfl. Queue	Average (metres)			Percentile (metres)					Queue Stor. Ratio
No.	x	No	Nc1	Nc2	Nc	70%	85%	90%	95%	98%	
South: Rampa desde PR-52											
1 L	0.782	0.7	10.7	0.6	11.3	14.1	20.4	25.6	33.8	39.1	0.22
2 LT	0.782	0.7	10.7	0.6	11.3	14.1	20.4	25.6	33.8	39.1	0.05
East: PR-177 Este											
1 T	0.854	6.3	30.2	5.9	36.1	43.7	59.5	70.1	81.2	90.1	0.18
2 T	0.854	6.3	30.2	5.9	36.1	43.7	59.5	70.1	81.2	90.1	0.18
3 T	0.854	6.3	30.2	5.9	36.1	43.7	59.5	70.1	81.2	90.1	0.18
West: PR-177 Oeste											
1 L	0.852	11.4	16.7	9.0	25.7	31.5	43.5	52.3	62.2	69.8	1.00
2 T	0.291	0.0	1.6	0.0	1.6	2.1	3.2	4.1	6.3	7.5	0.04
3 T	0.291	0.0	1.6	0.0	1.6	2.1	3.2	4.1	6.3	7.5	0.04
4 T	0.291	0.0	1.6	0.0	1.6	2.1	3.2	4.1	6.3	7.5	0.04

Values printed in this table are cycle-average queues (metres).
* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Table V.21 - Intersection Summary for Optimum Cycle Time
01 PR-177 Este y Rampa PR-52

Pico AM FUTURO
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Cycle Time (sec)	Eff. Int. Cap.	Intersn Deg. of Satn	Prac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
90	6287	0.863	4	19.2	0.64	5.2	126.2	2779.0	
100	6094	0.890	1	21.0	0.64	6.0	131.7	2853.5	
110	5925	0.916	-2	23.0	0.64	6.8	137.7	2935.3	
120	5771	0.940	-4	25.1	0.64	7.6	144.1	3023.8	
130	5616	0.966	-7	28.6	0.65	9.3	155.1	3173.0	
140	5476	0.991	-9	31.0	0.65	10.2	162.1	3269.9	
150	5425	1.000	-10	32.8	0.65	11.1	167.5	3343.8	

Site: 01 PR-177 Este y Rampa PR-52 FA
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren futuro.aap
Processed Jun 15, 2007 10:18:25AM

Output Tables
Output Tables
PR-177 ESTE CON RAMPA PR-52
FUTURO, PM

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
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: Cycle average queue, Average

* Iteration Data:
No. of Main (Timing-Capacity) Iterations = 4
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)

* 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 B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PR-177 ESTE CON RAMPA PR-52
FUTURO, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: Rampa Salida desde PR-52							
	East	3	Right	275	0	1.00	1.00
	North	2	Thru	1	0	1.00	1.00
	West	1	Left	508	0	1.00	1.00
East: PR-177 Este							
	North	6	Right	828	0	1.00	1.00
	West	5	Thru	1735	0	1.00	1.00
West: PR-177 Oeste							
	East	11	Thru	2151	0	1.00	1.00
	North	10	Left	329	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PR-177 ESTE CON RAMPA PR-52
FUTURO, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program						
South: Rampa Salida desde PR-52						
1 L	508	0	0	0	0	0
2 T	0	0	1	0	0	0
3 R	0	0	0	0	275	0
East: PR-177 Este						
5 T	0	0	1735	0	0	0
6 R	0	0	0	0	828	0
West: PR-177 Oeste						
10 L	329	0	0	0	0	0
11 T	0	0	2151	0	0	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
PR-177 ESTE CON RAMPA PR-52
FUTURO, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	Mov Typ	PHASE MATRIX First Green	PHASE MATRIX Second Green	Lost Tim 1st	Lost Tim 2nd	Req.Mov.Time 1st	Req.Mov.Time 2nd	Eff. Grn 1st	Eff. Grn 2nd

		Fr	To	Op Pr	Fr	To	Op Pr	Grn	Grn	Grn	Grn
Grn	Grn										
South: Rampa Salida desde PR-52											
1	L	*A	B					4		17.2	
16											
2	T	A	B					4		16.5	
16											
East: PR-177 Este											
5	T	*C	A					4		33.1	
35											
West: PR-177 Oeste											
10	L	*B	C					4		26.6	
27											
11	T	B	A					4		40.4	
66											

Current Phase Sequence: ACTUAL
Input phase sequence: A B C
Output phase sequence: A B C

* 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
PR-177 ESTE CON RAMPA PR-52
FUTURO, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID		Dem Flow (veh /h)	HV (%)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: Rampa Salida desde PR-52												
1	L	508	0.0	3841		0.132		683	0.90	21	100	0.744
2	T	1	0.0	8		0.125		1	0.90	28	100	0.703
3	R	275	0.0	1972		0.139		1972	0.90	545	100	0.139
East: PR-177 Este												
5	T	1735	0.0	5955		0.291		2316	0.90	20	100	0.749
6	R	828	0.0	2020		0.410		2020	0.90	120	100	0.410
West: PR-177 Oeste												
10	L	329	0.0	1455<		0.226		437	0.90	19	100	0.754*
11	T	2151	0.0	5910		0.364		4334	0.90	81	100	0.496

Table S.3 - Intersection Parameters
PR-177 ESTE CON RAMPA PR-52
FUTURO, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
1	S_L		A	B	4	0.132	0.147	17.2
10	W_L		B	C	4	0.226	0.251	26.6
5	E_T		C	A	4	0.291	0.324	33.1
		Total:			12	0.650	0.722	77.0

Cycle Time:

Minimum	Maximum	Practical	Chosen
30	150	43	90

(Program-determined Optimum Cycle Time)

Intersection Level of Service	=	B
Worst movement Level of Service	=	D
Average intersection delay (s/pers)	=	17.8
Largest average movement delay (s)	=	48.8
Largest cycle-average queue, mean (m)	=	30
Performance Index	=	133.17
Degree of saturation (highest)	=	0.754
Practical Spare Capacity (lowest)	=	19 %
Effective intersection capacity, (veh/h)	=	7731
Total vehicle flow (veh/h)	=	5827
Total person flow (pers/h)	=	8741
Total vehicle delay (veh-h/h)	=	28.74
Total person delay (pers-h/h)	=	43.11
Total effective vehicle stops (veh/h)	=	3752
Total effective person stops (pers/h)	=	5627
Total vehicle travel (veh-km/h)	=	3543.2
Total cost ($/h)	=	2916.92
Total fuel (L/h)	=	390.7
Total CO2 (kg/h)	=	976.87

Table S.4 - Phase Information
PR-177 ESTE CON RAMPA PR-52

FUTURO, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	4	4	16	20	4	20	22%
B	20	4	24	27	51	4	31	34%
C	51	4	55	35	90	4	39	43%

Current Phase Sequence: ACTUAL
Input phase sequence: A B C
Output phase sequence: A B C

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 Cycle (vehs)	Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: Rampa Salida desde PR-52									
1 L	6.89	10.34	48.8	1.00	0.89	2.9	20	20.33	25.7
2 T	0.01	0.02	40.9	1.00	0.89	2.9	20	0.04	28.3
3 R	0.58	0.87	7.6		0.60	4.6#		4.32	49.8
East: PR-177 Este									
5 T	12.69	19.04	26.3	0.93	0.84	4.2	30	50.98	34.8
6 R	1.75	2.63	7.6		0.60	13.8#		13.01	49.7
West: PR-177 Oeste									
10 L	3.63	5.44	39.7	0.90	0.89	2.9	20	11.45	28.7
11 T	3.19	4.78	5.3	0.45	0.41	1.1	7	33.05	52.3

Largest density (passenger cars per km or mile) for any lane

Table S.6 - Intersection Performance
PR-177 ESTE CON RAMPA PR-52
FUTURO, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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: Rampa Salida desde PR-52									
784	0.744	7.48	11.22	34.4	0.65	0.79	32	24.69	31.0
East: PR-177 Este									
2563	0.749	14.44	21.67	20.3	0.63	0.76	97	63.99	38.6
West: PR-177 Oeste									
2480	0.754	6.81	10.22	9.9	0.51	0.48	20	44.50	47.2
ALL VEHICLES:									
5827	0.754	28.74	43.11	17.8	0.58	0.64	30	133.17	40.4
INTERSECTION (persons):									
8741	0.754		43.11	17.8	0.58	0.64		133.17	40.4

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PR-177 ESTE CON RAMPA PR-52
FUTURO, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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 Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
South: Rampa Salida desde PR-52												
1 L	74	16	0	0	254	342	0.744	48.8	0.89	2.9	20.2	110.0T
2 LT	74	16	0	0	255	342	0.744	48.8	0.89	2.9	20.2	500.0
3 R	0	90	0	0	275	1972	0.139	7.6	0.60	4.6#		110.0T
East: PR-177 Este												
1 T	55	35	0	0	578	772	0.749	26.3	0.84	4.2	29.6	500.0
2 T	55	35	0	0	578	772	0.749	26.3	0.84	4.2	29.6	500.0
3 T	55	35	0	0	578	772	0.749	26.3	0.84	4.2	29.6	500.0
4 R	0	90	0	0	828	2020	0.410	7.6	0.60	13.8#		100.0T
West: PR-177 Oeste												
1 L	63	27	0	0	329	436	0.754	39.7	0.89	2.9	20.2	75.0T
2 T	24	66	0	0	717	1445	0.496	5.3	0.41	1.1	7.4	500.0
3 T	24	66	0	0	717	1445	0.496	5.3	0.41	1.1	7.4	500.0
4 T	24	66	0	0	717	1445	0.496	5.3	0.41	1.1	7.4	500.0

Density (passenger cars per km or mile)
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
PR-177 ESTE CON RAMPA PR-52
FUTURO, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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: Rampa Salida desde PR-52												

1	L	254	0	0	254	4.00	2020	1924	0	0	342	0.744	100
2	LT	254	1	0	255	4.00	2020	1924	0	0	342	0.744	100
3	R	0	0	275	275	4.50	2071	1972	0	0	1972	0.139	100
East: PR-177 Este													
1	T	0	578	0	578	3.65	1985	1985	0	0	772	0.749	100
2	T	0	578	0	578	3.65	1985	1985	0	0	772	0.749	100
3	T	0	578	0	578	3.65	1985	1985	0	0	772	0.749	100
4	R	0	0	828	828	5.00	2121	2020	0	0	2020	0.410	100
West: PR-177 Oeste													
1	L	329	0	0	329	4.20	2040	1455<	0	0	436	0.754	100
2	T	0	717	0	717	3.50	1970	1970	0	0	1445	0.496	100
3	T	0	717	0	717	3.50	1970	1970	0	0	1445	0.496	100
4	T	0	717	0	717	3.50	1970	1970	0	0	1445	0.496	100

< Reduced saturation flow due to a short lane effect

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
PR-177 ESTE CON RAMPA PR-52
FUTURO, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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	Cycle Average Queue (veh)	Perf. Index
South: Rampa Salida desde PR-52											
1 L		508	683	100	0.744	16*		48.8	0.89	2.9	20.33
2 T		1	1	100	0.703	16		40.9	0.89	2.9	0.04
3 R	(Con)	275	1972	100	0.139	90		7.6	0.60	4.6 #	4.32
East: PR-177 Este											
5 T		1735	2316	100	0.749	35*		26.3	0.84	4.2	50.98
6 R	(Con)	828	2020	100	0.410	90		7.6	0.60	13.8 #	13.01
West: PR-177 Oeste											
10 L		329	437<	100	0.754*	27*		39.7	0.89	2.9	11.45
11 T		2151	4334	100	0.496	66		5.3	0.41	1.1	33.05

< Reduced capacity due to a short lane effect
* Maximum degree of saturation, or critical green periods
# Largest density (passenger cars per km or mile) for any lane

Table S.14 - Summary of Input and Output Data
PR-177 ESTE CON RAMPA PR-52
FUTURO, PM
Intersection ID: 01

Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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: Rampa Salida desde PR-52												
1 L	254			254	0	2020	16		0.744	48.8	20	110
2 LT	254	1		255	0	2020	16		0.744	48.8	20	500
3 R			275	275	0	2070	90		0.139	7.6		110
	508	1	275	784	0				0.744	34.4	20	
East: PR-177 Este												
1 T		578		578	0	1985	35		0.749	26.3	30	500
2 T		578		578	0	1985	35		0.749	26.3	30	500
3 T		578		578	0	1985	35		0.749	26.3	30	500
4 R			828	828	0	2120	90		0.410	7.6		100
	0	1735	828	2563	0				0.749	20.3	30	
West: PR-177 Oeste												
1 L	329			329	0	2040	27		0.754	39.7	20	75
2 T		717		717	0	1970	66		0.496	5.3	7	500
3 T		717		717	0	1970	66		0.496	5.3	7	500
4 T		717		717	0	1970	66		0.496	5.3	7	500
	329	2151	0	2480	0				0.754	9.9	20	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	5827	0	90	0.754	17.8	30

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average 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
PR-177 ESTE CON RAMPA PR-52
FUTURO, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	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	Longest Queue Cycle (vehs)	Aver. (m)
South: Rampa Salida desde PR-52										
1 L		0.178*		508	683	0.744	48.8	D	2.9	20

2 T		0.178	1	1	0.703	40.9	D	2.9	20
3 R	(Con)	1.000	275	1972	0.139	7.6	A#	4.6#	
East: PR-177 Este									
5 T		0.389*	1735	2316	0.749	26.3	C	4.2	30
6 R	(Con)	1.000	828	2020	0.410	7.6	C#	13.8#	
West: PR-177 Oeste									
10 L		0.300*	329	437<	0.754*	39.7	D	2.9	20
11 T		0.733	2151	4334	0.496	5.3	A	1.1	7
ALL VEHICLES:			5827		0.754	17.8	B	4.2	30
INTERSECTION (persons):			8741			17.8		4.2	30

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.
\# Continuous movements: Level Of Service based on density,
Density (passenger cars per km or mile) instead of queue.
< 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 S.21 - Optimum Cycle Time Results
PR-177 ESTE CON RAMPA PR-52
FUTURO, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	0.754	90
Average Delay	17.8	90
Stop Rate	0.64	100
Max. Queue for Any Movement	4.2	90
Perf. Index	133.2	90
Cost	2916.9	90

Performance Measure	Largest Value	Cycle Time
Eff. Inters. Cap.	7731	90
Prac. Spare Cap.	19	90

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 D.3A - Lane Queues (veh)
PR-177 ESTE CON RAMPA PR-52
FUTURO, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Lane	Deg. Satn	Ovrfl. Queue	Average (veh)			Percentile (veh)				Queue Stor. Ratio
No.	x	No	Nc1	Nc2	Nc	70%	85%	90%	95%	98%	
South: Rampa Salida desde PR-52											
1 L	0.744	0.2	2.8	0.1	2.9	3.6	5.0	6.1	7.4	8.4	0.44
2 LT	0.744	0.2	2.8	0.1	2.9	3.6	5.0	6.1	7.4	8.4	0.10
East: PR-177 Este											
1 T	0.749	0.1	4.1	0.1	4.2	5.2	7.1	8.4	9.9	11.1	0.19
2 T	0.749	0.1	4.1	0.1	4.2	5.2	7.1	8.4	9.9	11.1	0.19
3 T	0.749	0.1	4.1	0.1	4.2	5.2	7.1	8.4	9.9	11.1	0.19
West: PR-177 Oeste											
1 L	0.754	0.3	2.6	0.2	2.9	3.5	5.0	6.1	7.4	8.4	0.75
2 T	0.496	0.0	1.1	0.0	1.1	1.3	2.0	2.5	3.5	4.1	0.11
3 T	0.496	0.0	1.1	0.0	1.1	1.3	2.0	2.5	3.5	4.1	0.11
4 T	0.496	0.0	1.1	0.0	1.1	1.3	2.0	2.5	3.5	4.1	0.11

Values printed in this table are cycle-average queues (vehicles).

Table D.3B - Lane Queues (metres)
PR-177 ESTE CON RAMPA PR-52
FUTURO, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Lane	Deg. Satn	Ovrfl. Queue	Average (metres)			Percentile (metres)					Queue Stor. Ratio
No.	x	No	Ncl	Nc2	Nc	70%	85%	90%	95%	98%	
South: Rampa Salida desde PR-52											
1 L	0.744	1.2	19.3	0.9	20.2	24.9	34.9	42.6	52.0	58.9	0.44
2 LT	0.744	1.2	19.3	0.9	20.2	24.9	34.9	42.6	52.0	58.9	0.10
East: PR-177 Este											
1 T	0.749	1.0	28.8	0.8	29.6	36.1	49.6	59.1	69.3	77.4	0.19
2 T	0.749	1.0	28.8	0.8	29.6	36.1	49.6	59.1	69.3	77.4	0.19
3 T	0.749	1.0	28.8	0.8	29.6	36.1	49.6	59.1	69.3	77.4	0.19
West: PR-177 Oeste											
1 L	0.754	2.1	18.5	1.7	20.2	24.8	34.8	42.5	51.9	58.8	0.75
2 T	0.496	0.0	7.4	0.0	7.4	9.4	13.8	17.6	24.4	28.5	0.11
3 T	0.496	0.0	7.4	0.0	7.4	9.4	13.8	17.6	24.4	28.5	0.11
4 T	0.496	0.0	7.4	0.0	7.4	9.4	13.8	17.6	24.4	28.5	0.11

Values printed in this table are cycle-average queues (metres).

Table V.21 - Intersection Summary for Optimum Cycle Time
PR-177 ESTE CON RAMPA PR-52
FUTURO, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Cycle Time (sec)	Eff. Int. Cap.	Intersn Deg. of Satn	Prac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
90	7731	0.754	19	17.8	0.64	4.2	133.2	2916.9	
100	7411	0.786	14	19.5	0.64	4.9	138.8	2994.7	
110	7200	0.809	11	21.9	0.65	5.8	146.7	3102.5	
120	6976	0.835	8	24.5	0.66	6.8	155.5	3222.4	
130	6769	0.861	5	27.4	0.67	7.9	165.1	3354.2	
140	6571	0.887	1	30.3	0.67	9.1	174.5	3483.7	
150	6400	0.910	-1	33.3	0.67	10.4	184.6	3622.9	

Site: 01 PR-177 Este y Rampa PR-52 FP
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M0276, Traffic Consulting Group, Large Office
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Output Tables
Output Tables
PLAZA CENTRO PR 30 NORTE
BASE AM

Run Information
Cycle Time = 92 (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: TCG Standard Right
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: Cycle average 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)

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PLAZA CENTRO PR 30 NORTE
BASE AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: AVENIDA CORDERO SUR							
	North	2	Thru	1	0	1.00	1.00
	West	1	Left	800	0	1.00	1.00
East: RAMPA PR 30 ESTE							
	South	4	Left	1820	0	1.00	1.00
	North	6	Right	1	0	1.00	1.00
North: GRAVERO							
	South	8	Thru	12	0	1.00	1.00
	West	9	Right	1	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PLAZA CENTRO PR 30 NORTE
BASE AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

Mov ID	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program						
South: AVENIDA CORDERO SUR						
1 L	800	0	0	0	0	0
2 T	0	0	1	0	0	0
East: RAMPA PR 30 ESTE						
4 L	1820	0	0	0	0	0
6 R	0	0	0	0	1	0
North: GRAVERO						
8 T	0	0	12	0	0	0
9 R	0	0	0	0	1	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
PLAZA CENTRO PR 30 NORTE
BASE AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

Mov ID	Mov Typ	PHASE MATRIX First Green Fr	First Green To	First Green Op Pr	Second Green Fr	Second Green To	Second Green Op Pr	Lost Tim 1st Grn	Lost Tim 2nd Grn	Req.Mov.Time 1st Grn	Req.Mov.Time 2nd Grn	Eff. Grn
South: AVENIDA CORDERO SUR												
1 L	*B	C						4		25.9		40
2 T	B	C						4		24.4		40

```
 ------------------------------------------------------------------------------
---------
 East: RAMPA PR 30 ESTE
    4 L       *C     A                                    4        53.6
30
    6 R        A     C      Y      C     A                4    4   20.0Min  47.1
54   30
 ------------------------------------------------------------------------------
---------
 North: GRAVERO
    8 T        A     B                                    4        10.0Min
10
    9 R       *A     B             B     A      Y         4   18   10.0Min
20.0Min  10   60
 ------------------------------------------------------------------------------
---------
 ------------------------------------------------------------------------------
---------
    Current Phase Sequence: actual
    Input phase sequence: A B C
    Output phase sequence: A B C
 ------------------------------------------------------------------------------
---------
    *  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
PLAZA CENTRO PR 30 NORTE
BASE AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

Mov ID	Dem Flow (veh /h)	HV (%)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: AVENIDA CORDERO SUR											
1 L	800	0.0	3729		0.215		1621	0.90	82	100	0.493
2 T	1	0.0	5		0.200		2	0.90	96	100	0.460
East: RAMPA PR 30 ESTE											
4 L	1820	0.0	3751		0.485		1223	0.90	-40	100	1.488*
6 R	1	0.0	0	2	0.000	0.500	1	0.90	12	100	0.807
North: GRAVERO											
8 T	12	0.0	3646		0.003		396	0.90	2872	100	0.030
9 R	1	0.0	249	9	0.004	0.000	33	0.90	2864	100	0.030

Table S.3 - Intersection Parameters
PLAZA CENTRO PR 30 NORTE
BASE AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
9	N_R	1st	A	B	10	-	-	10.0Min
1	S_L		B	C	4	0.215	0.238	25.9
4	E_L		C	A	4	0.485	0.539	53.6
				Total:	18	0.700	0.777	89.5

\- 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
30	150	81	92

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

Intersection Level of Service	=	F
Worst movement Level of Service	=	F
Average intersection delay (s/pers)	=	201.8
Largest average movement delay (s)	=	279.3
Largest cycle-average queue, mean (m)	=	482
Performance Index	=	341.52
Degree of saturation (highest)	=	1.488
Practical Spare Capacity (lowest)	=	-40 %
Effective intersection capacity, (veh/h)	=	1771
Total vehicle flow (veh/h)	=	2635
Total person flow (pers/h)	=	3953
Total vehicle delay (veh-h/h)	=	147.72
Total person delay (pers-h/h)	=	221.58
Total effective vehicle stops (veh/h)	=	4634
Total effective person stops (pers/h)	=	6951
Total vehicle travel (veh-km/h)	=	1585.5
Total cost ($/h)	=	5157.51
Total fuel (L/h)	=	406.6
Total CO2 (kg/h)	=	1016.59

Table S.4 - Phase Information
PLAZA CENTRO PR 30 NORTE
BASE AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	4	4	10	14	4	14	15%
B	14	4	18	40	58	4	44	48%
C	58	4	62	30	92	4	34	37%

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

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 Cycle (vehs)	Longest Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: AVENIDA CORDERO SUR									
1 L	6.32	9.48	28.5	0.77	0.83	2.3	16	22.51	33.6
2 T	0.01	0.01	20.1	0.77	0.67	2.3	16	0.03	38.6
East: RAMPA PR 30 ESTE									
4 L	141.19	211.79	279.3	1.00	2.18	68.9	482	318.40	6.9
6 R	0.08	0.12	277.9	1.00	2.15	68.9	482	0.17	6.9
North: GRAVERO									
8 T	0.11	0.17	33.9	0.91	0.60	0.1	1	0.39	31.1
9 R	0.01	0.01	34.8	0.91	0.66	0.0	0	0.03	30.6

Table S.6 - Intersection Performance
PLAZA CENTRO PR 30 NORTE
BASE AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (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: AVENIDA CORDERO SUR									
801	0.493	6.33	9.49	28.4	0.77	0.83	16	22.53	33.6
East: RAMPA PR 30 ESTE									
1821	1.488	141.27	211.91	279.3	1.00	2.18	482	318.57	6.9
North: GRAVERO									
13	0.030	0.12	0.18	34.0	0.91	0.61	1	0.42	31.0
ALL VEHICLES:									
2635	1.488	147.72	221.58	201.8	0.93	1.76	482	341.52	9.1
INTERSECTION (persons):									
3953	1.488		221.58	201.8	0.93	1.76		341.52	9.1

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PLAZA CENTRO PR 30 NORTE
BASE AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (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 Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
South: AVENIDA CORDERO SUR												
1 L	52	40	0	0	394	799	0.493	28.5	0.83	2.2	15.4	500.0
2 LT	52	40	0	0	407	824	0.493	28.4	0.83	2.3	15.9	500.0
East: RAMPA PR 30 ESTE												
1 L	62	30	0	0	901	606	1.488	280.5	2.20	68.1	476.8	500.0
2 LR	4	1	57	30	920	618	1.488	278.1	2.15	68.9	482.5	500.0
North: GRAVERO												
1 T	82	10	0	0	6	212	0.030	40.2	0.61	0.1	0.5	500.0
2 TR	63	10	18	1	7	217	0.030	27.8	0.61	0.0	0.3	500.0

Table S.8 - Lane Flow and Capacity Information
PLAZA CENTRO PR 30 NORTE
BASE AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (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: AVENIDA CORDERO SUR												
1 L	394	0	0	394	3.10	1930	1838	0	0	799	0.493	100
2 LT	406	1	0	407	3.70	1990	1896	0	0	824	0.493	100
East: RAMPA PR 30 ESTE												
1 L	901	0	0	901	3.30	1950	1857	0	0	606	1.488	100
2 LR	919	0	1	920	3.70	1990	4	1895	39	618	1.488	100
North: GRAVERO												
1 T	0	6	0	6	3.30	1950	1950	0	0	212	0.030	100
2 TR	0	6	1	7	3.30	1950	1935	645	39	217	0.030	100

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
PLAZA CENTRO PR 30 NORTE
BASE AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (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	Cycle Average Queue (veh)	Perf. Index
South: AVENIDA CORDERO SUR											
1	L	800	1621	100	0.493	40*		28.5	0.83	2.3	22.51
2	T	1	2	100	0.460	40		20.1	0.67	2.3	0.03
East: RAMPA PR 30 ESTE											
4	L	1820	1223	100	1.488*	30*		279.3	2.18	68.9	318.40
6	R	1	1	100	0.807	54	30	277.9	2.15	68.9	0.17
North: GRAVERO											
8	T	12	396	100	0.030	10		33.9	0.60	0.1	0.39
9	R	1	33	100	0.030	10*	60	34.8	0.66	0.0	0.03

* Maximum degree of saturation, or critical green periods

Table S.14 - Summary of Input and Output Data
PLAZA CENTRO PR 30 NORTE
BASE AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (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: AVENIDA CORDERO SUR												
1 L	394			394	0	1929	40		0.493	28.5	15	500
2 LT	406	1		407	0	1990	40		0.493	28.4	16	500
	800	1	0	801	0				0.493	28.4	16	
East: RAMPA PR 30 ESTE												
1 L	901			901	0	1949	30		1.488	280.5	477	500
2 LR	919		1	920	0	1990	1	30	1.488	278.1	482	500
	1820	0	1	1821	0				1.488	279.3	482	
North: GRAVERO												
1 T		6		6	0	1949	10		0.030	40.2	1	500
2 TR		6	1	7	0	1950	10	1	0.030	27.8	0	500
	0	12	1	13	0				0.030	34.0	1	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	2635	0	92	1.488	201.8	482

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average 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
PLAZA CENTRO PR 30 NORTE
BASE AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

Mov ID	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	Longest Queue Cycle (vehs)	Aver. (m)
South: AVENIDA CORDERO SUR										
1	L	0.435*		800	1621	0.493	28.5	C	2.3	16
2	T	0.435		1	2	0.460	20.1	C	2.3	16
East: RAMPA PR 30 ESTE										
4	L	0.326*		1820	1223	1.488*	279.3	F	68.9	482
6	R	0.587	0.326	1	1	0.807	277.9	F	68.9	482
North: GRAVERO										
8	T	0.109		12	396	0.030	33.9	C	0.1	1
9	R	0.109*	0.652	1	33	0.030	34.8	C	0.0	0
ALL VEHICLES:				2635		1.488	201.8	F	68.9	482
INTERSECTION (persons):				3953			201.8		68.9	482

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.

* 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.3A - Lane Queues (veh)
PLAZA CENTRO PR 30 NORTE
BASE AM

Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Ncl	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: AVENIDA CORDERO SUR											
1 L	0.493	0.0	2.2	0.0	2.2	2.7	3.9	4.8	6.1	7.0	0.11
2 LT	0.493	0.0	2.3	0.0	2.3	2.8	4.0	4.9	6.2	7.1	0.11
East: RAMPA PR 30 ESTE											
1 L	1.488	39.8	8.5	59.6	68.1	81.7	109.0	122.6	143.0	156.7	0.93
2 LR	1.488	40.7	7.9	61.0	68.9	82.7	110.3	124.1	144.7	158.5	0.93
North: GRAVERO											
1 T	0.030	0.0	0.1	0.0	0.1	0.1	0.1	0.2	0.3	0.3	0.00
2 TR	0.030	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.00

Values printed in this table are cycle-average queues (vehicles).

Table D.3B - Lane Queues (metres)
PLAZA CENTRO PR 30 NORTE
BASE AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (metres) Ncl	Nc2	Nc	Percentile (metres) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: AVENIDA CORDERO SUR											
1 L	0.493	0.0	15.4	0.0	15.4	19.2	27.2	33.7	42.7	48.8	0.11
2 LT	0.493	0.0	15.9	0.0	15.9	19.7	28.0	34.6	43.6	49.8	0.11
East: RAMPA PR 30 ESTE											
1 L	1.488	278.7	59.3	417.5	476.8	572.1	762.8	858.2	1001.2	1096.6	0.93
2 LR	1.488	284.9	55.6	426.9	482.5	578.9	771.9	868.4	1013.2	1109.7	0.93
North: GRAVERO											
1 T	0.030	0.0	0.5	0.0	0.5	0.7	1.0	1.3	2.0	2.4	0.00
2 TR	0.030	0.0	0.3	0.0	0.3	0.4	0.7	0.9	1.4	1.6	0.00

Values printed in this table are cycle-average queues (metres).

Site: 02-PLAZA CENTRO PR 30 NORTE BA
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren base.aap
Processed Jun 14, 2007 03:37:15PM

M0276, Traffic Consulting Group, Large Office
Produced by SIDRA Intersection 3.1.061208.34

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Output Tables
Output Tables
PLAZA CENTRO PR 30 NORTE
BASE PM

Run Information
Cycle Time = 92 (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: TCG Standard Right
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: Cycle average 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)

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PLAZA CENTRO PR 30 NORTE
BASE PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: AVENIDA CORDERO SUR							
	North	2	Thru	1	0	1.00	1.00
	West	1	Left	1620	0	1.00	1.00
East: RAMPA PR 30 ESTE							
	South	4	Left	1008	0	1.00	1.00
	North	6	Right	1	0	1.00	1.00
North: GRAVERO							
	South	8	Thru	1	0	1.00	1.00
	West	9	Right	1	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PLAZA CENTRO PR 30 NORTE
BASE PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

Mov ID	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program						
South: AVENIDA CORDERO SUR						
1 L	1620	0	0	0	0	0
2 T	0	0	1	0	0	0
East: RAMPA PR 30 ESTE						
4 L	1008	0	0	0	0	0
6 R	0	0	0	0	1	0
North: GRAVERO						
8 T	0	0	1	0	0	0
9 R	0	0	0	0	1	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
PLAZA CENTRO PR 30 NORTE
BASE PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

Mov ID	Mov Typ	PHASE MATRIX First Green Fr	First Green To	First Green Op Pr	Second Green Fr	Second Green To	Second Green Op Pr	Lost Tim 1st Grn	Lost Tim 2nd Grn	Req.Mov.Time 1st Grn	Req.Mov.Time 2nd Grn	Eff. Grn
South: AVENIDA CORDERO SUR												
1 L	B		C					4		48.4		40
2 T	*B		C					4		55.1		40

```
East: RAMPA PR 30 ESTE
   4 L        C     A                                  4        31.5
30
   6 R        A     C      Y     *C     A              4    4   23.8     31.5
54   30
North: GRAVERO
   8 T        A     B                                  4        10.0Min
10
   9 R       *A     B             B      A      Y       4   43   10.0Min
20.0Min  10   35
```

```
   Current Phase Sequence: ACTUAL
   Input phase sequence: A B C
   Output phase sequence: A B C
```

```
   *  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
PLAZA CENTRO PR 30 NORTE
BASE PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

Mov ID	Dem Flow (veh /h)	HV (%)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: AVENIDA CORDERO SUR											
1 L	1620	0.0	3731		0.434		1622	0.90	-10	100	0.999
2 T	1	0.0	2		0.500		1	0.90	-22	100	1.150*
East: RAMPA PR 30 ESTE											
4 L	1008	0.0	3749		0.269		1223	0.90	9	100	0.825
6 R	1	0.0	0	3	0.193	0.269	2	0.90	41	100	0.639
North: GRAVERO											
8 T	1	0.0	1950		0.001		212	0.90	****	100	0.005
9 R	1	0.0	1857	1166	0.001	0.000	645	0.90	****	33	0.002

Table S.3 - Intersection Parameters
PLAZA CENTRO PR 30 NORTE
BASE PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
9 N_R	1st		A	B	10	-	-	10.0Min
2 S_T			B	C	4	0.500	0.556	55.1
6 E_R	2nd		C	A	4	0.269	0.299	31.5
		Total:			18	0.769	0.854	96.6

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

   Cycle Time:
     Minimum   Maximum   Practical   Chosen
        30       150         124       92
     (Phase times user specified, cycle time = sum of phase times)

   Intersection Level of Service                =        E
   Worst movement Level of Service              =        E
   Average intersection delay (s/pers)          =     61.2
   Largest average movement delay (s)           =     71.1
   Largest cycle-average queue, mean (m)        =      100
   Performance Index                            =   126.66
   Degree of saturation (highest)               =    1.150
   Practical Spare Capacity (lowest)            =      -22 %
   Effective intersection capacity, (veh/h)     =     2289
   Total vehicle flow (veh/h)                   =     2632
   Total person flow (pers/h)                   =     3948
   Total vehicle delay (veh-h/h)                =    44.75
   Total person delay (pers-h/h)                =    67.12
   Total effective vehicle stops (veh/h)        =     3036
   Total effective person stops (pers/h)        =     4554
   Total vehicle travel (veh-km/h)              =   1584.1
   Total cost ($/h)                             =  2246.29
   Total fuel (L/h)                             =    245.5
   Total CO2 (kg/h)                             =   613.79
```

Table S.4 - Phase Information
PLAZA CENTRO PR 30 NORTE
BASE PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	4	4	10	14	4	14	15%
B	14	4	18	40	58	4	44	48%
C	58	4	62	30	92	4	34	37%

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

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 Cycle Aver. (vehs)	Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: AVENIDA CORDERO SUR									
1 L	32.01	48.01	71.1	1.00	1.27	14.3	100	87.95	20.2
2 T	0.02	0.03	62.6	1.00	1.27	14.3	100	0.05	22.1
East: RAMPA PR 30 ESTE									
4 L	12.69	19.04	45.3	0.99	0.97	5.4	38	38.56	26.6
6 R	0.01	0.02	46.0	0.99	0.97	5.4	38	0.04	26.4
North: GRAVERO									
8 T	0.01	0.02	39.5	0.91	0.54	0.0	0	0.04	28.8
9 R	0.01	0.01	18.9	0.52	0.64	0.0	0	0.02	39.4

Table S.6 - Intersection Performance
PLAZA CENTRO PR 30 NORTE
BASE PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (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: AVENIDA CORDERO SUR									
1621	1.150	32.03	48.04	71.1	1.00	1.27	100	88.00	20.2
East: RAMPA PR 30 ESTE									
1009	0.825	12.70	19.05	45.3	0.99	0.97	38	38.60	26.6
North: GRAVERO									
2	0.005	0.02	0.02	29.2	0.72	0.59	0	0.06	33.2
ALL VEHICLES:									
2632	1.150	44.75	67.12	61.2	0.99	1.15	100	126.66	22.3
INTERSECTION (persons):									
3948	1.150		67.12	61.2	0.99	1.15		126.66	22.3

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PLAZA CENTRO PR 30 NORTE
BASE PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (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 Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
South: AVENIDA CORDERO SUR												
1 L	52	40	0	0	798	799	0.999	71.4	1.27	14.0	97.8	500.0
2 LT	52	40	0	0	823	824	0.999	70.9	1.27	14.3	100.1	500.0
East: RAMPA PR 30 ESTE												
1 L	62	30	0	0	499	606	0.825	44.4	0.97	5.0	35.0	500.0
2 LR	4	1	57	30	510	618	0.825	46.2	0.97	5.4	37.5	500.0
North: GRAVERO												
1 T	82	10	0	0	1	212	0.005	39.5	0.54	0.0	0.1	500.0
2 R	4	10	43	35	1	645	0.002	18.9	0.64	0.0	0.0	500.0

Table S.8 - Lane Flow and Capacity Information
PLAZA CENTRO PR 30 NORTE
BASE PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (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 lst (veh)	Aver 2nd (veh)	End Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %
South: AVENIDA CORDERO SUR												
1 L	798	0	0	798	3.10	1930	1838	0	0	799	0.999	100
2 LT	822	1	0	823	3.70	1990	1896	0	0	824	0.999	100
East: RAMPA PR 30 ESTE												
1 L	499	0	0	499	3.30	1950	1857	0	0	606	0.825	100
2 LR	509	0	1	510	3.70	1990	7	1895	39	618	0.825	100
North: GRAVERO												
1 T	0	1	0	1	3.30	1950	1950	0	0	212	0.005	100
2 R	0	0	1	1	3.30	1950	1857	1166	39	645	0.002	33P

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
PLAZA CENTRO PR 30 NORTE
BASE PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (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	Cycle Average Queue (veh)	Perf. Index
South: AVENIDA CORDERO SUR											
1	L	1620	1622	100	0.999	40		71.1	1.27	14.3	87.95
2	T	1	1	100	1.150*	40*		62.6	1.27	14.3	0.05
East: RAMPA PR 30 ESTE											
4	L	1008	1223	100	0.825	30		45.3	0.97	5.4	38.56
6	R	1	2	100	0.639	54	30*	46.0	0.97	5.4	0.04
North: GRAVERO											
8	T	1	212	100	0.005	10		39.5	0.54	0.0	0.04
9	R	1	645	33	0.002	10*	35	18.9	0.64	0.0	0.02

* Maximum degree of saturation, or critical green periods

Table S.14 - Summary of Input and Output Data
PLAZA CENTRO PR 30 NORTE
BASE PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (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: AVENIDA CORDERO SUR												
1 L	798			798	0	1929	40		0.999	71.4	98	500
2 LT	822	1		823	0	1990	40		0.999	70.9	100	500
	1620	1	0	1621	0				0.999	71.1	100	
East: RAMPA PR 30 ESTE												
1 L	499			499	0	1949	30		0.825	44.4	35	500
2 LR	509		1	510	0	1990	1	30	0.825	46.2	38	500
	1008	0	1	1009	0				0.825	45.3	38	
North: GRAVERO												
1 T		1		1	0	1950	10		0.005	39.5	0	500
2 R			1	1	0	1950	10	35	0.002	18.9	0	500
	0	1	1	2	0				0.005	29.2	0	
ALL VEHICLES				Total Flow 2632	% HV 0		Cycle Time 92		Max X 1.150	Aver. Delay 61.2	Max Queue 100	

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average 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
PLAZA CENTRO PR 30 NORTE
BASE PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

Mov ID	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	Longest Cycle (vehs)	Queue Aver. (m)
South: AVENIDA CORDERO SUR										
1	L	0.435		1620	1622	0.999	71.1	E	14.3	100
2	T	0.435*		1	1	1.150*	62.6	E	14.3	100
East: RAMPA PR 30 ESTE										
4	L	0.326		1008	1223	0.825	45.3	D	5.4	38
6	R	0.587	0.326*	1	2	0.639	46.0	D	5.4	38
North: GRAVERO										
8	T	0.109		1	212	0.005	39.5	D	0.0	0
9	R	0.109*	0.380	1	645	0.002	18.9	B	0.0	0
ALL VEHICLES:				2632		1.150	61.2	E	14.3	100
INTERSECTION (persons):				3948			61.2		14.3	100

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.

* 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.3A - Lane Queues (veh)
PLAZA CENTRO PR 30 NORTE
BASE PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

Lane	Deg. Satn	Ovrfl. Queue	Average (veh)			Percentile (veh)				Queue Stor.
No.	x	No	Ncl	Nc2	Nc	70%	85%	90%	95%	98%	Ratio
South: AVENIDA CORDERO SUR											
1 L	0.999	7.4	6.2	7.7	14.0	16.8	22.4	25.3	29.4	32.2	0.44
2 LT	0.999	7.5	6.4	7.9	14.3	17.2	22.9	25.8	30.1	32.9	0.46
East: RAMPA PR 30 ESTE											
1 L	0.825	0.8	4.3	0.7	5.0	6.1	8.3	9.7	11.3	12.6	0.20
2 LR	0.825	0.8	4.7	0.7	5.4	6.5	8.8	10.4	12.0	13.3	0.20
North: GRAVERO											
1 T	0.005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.00
2 R	0.002	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 cycle-average queues (vehicles).

Table D.3B - Lane Queues (metres)
PLAZA CENTRO PR 30 NORTE
BASE PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 92 (Sum of User-given Phase Times)

Lane	Deg. Satn	Ovrfl. Queue	Average (metres)			Percentile (metres)				Queue Stor.
No.	x	No	Ncl	Nc2	Nc	70%	85%	90%	95%	98%	Ratio
South: AVENIDA CORDERO SUR											
1 L	0.999	51.8	43.6	54.2	97.8	117.4	156.6	176.8	205.6	225.2	0.44
2 LT	0.999	52.7	44.9	55.2	100.1	120.2	160.3	180.9	210.4	230.5	0.46
East: RAMPA PR 30 ESTE											
1 L	0.825	5.3	30.2	4.7	35.0	42.4	57.8	68.2	79.2	87.9	0.20
2 LR	0.825	5.4	32.7	4.9	37.5	45.5	61.8	72.6	83.9	93.0	0.20
North: GRAVERO											
1 T	0.005	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.00
2 R	0.002	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.00

Values printed in this table are cycle-average queues (metres).

Site: 02-PLAZA CENTRO PR 30 NORTE BP
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Processed Jun 14, 2007 03:14:27PM

Output Tables
Output Tables
PLAZA CENTRO PR 30 NORTE
FUTURO AM

Run Information
Cycle Time = 170 (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: TCG Standard Right
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: Cycle average 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)

* 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 B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PLAZA CENTRO PR 30 NORTE
FUTURO AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: AVENIDA CORDERO SUR							
	North	2	Thru	1	0	1.00	1.00
	West	1	Left	934	0	1.00	1.00
East: RAMPA PR 30 ESTE							
	South	4	Left	2125	0	1.00	1.00
	North	6	Right	1	0	1.00	1.00
North: GRAVERO							
	South	8	Thru	14	0	1.00	1.00
	West	9	Right	1	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PLAZA CENTRO PR 30 NORTE
FUTURO AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Mov ID		Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program							
South: AVENIDA CORDERO SUR							
1	L	934	0	0	0	0	0
2	T	0	0	1	0	0	0
East: RAMPA PR 30 ESTE							
4	L	2125	0	0	0	0	0
6	R	0	0	0	0	1	0
North: GRAVERO							
8	T	0	0	14	0	0	0
9	R	0	0	0	0	1	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
PLAZA CENTRO PR 30 NORTE
FUTURO AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Mov ID	Mov Typ	PHASE MATRIX First Green Fr	First Green To	First Green Op Pr	Second Green Fr	Second Green To	Second Green 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

```
South: AVENIDA CORDERO SUR
   1 L      *B     C                                  4        53.0Min
49
   2 T       B     C                                  4        53.0Min
49
East: RAMPA PR 30 ESTE
   4 L      *C     A                                  4       111.0
103
   6 R       A     C      Y     C     A               4    4  63.0Min  68.9
59  103
North: GRAVERO
   8 T       A     B                                  4        10.0Min
6
   9 R      *A     B            B     A      Y       4   44   10.0Min
63.0Min   6  116
   Current Phase Sequence: actual
   Input phase sequence: A B C
   Output phase sequence: A B C
   * 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
PLAZA CENTRO PR 30 NORTE
FUTURO AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Mov ID	Dem Flow (veh /h)	HV (%)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: AVENIDA CORDERO SUR											
1 L	934	0.0	3730		0.250		1075	0.90	4	100	0.869
2 T	1	0.0	4		0.250		1	0.90	4	100	0.867
East: RAMPA PR 30 ESTE											
4 L	2125	0.0	3751		0.567		2273	0.90	-4	100	0.935*
6 R	1	0.0	0	2	0.000	0.500	2	0.90	40	100	0.642
North: GRAVERO											
8 T	14	0.0	3712		0.004		131	0.90	742	100	0.107
9 R	1	0.0	196	4	0.005	0.000	10	0.90	768	100	0.104

Table S.3 - Intersection Parameters
PLAZA CENTRO PR 30 NORTE
FUTURO AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
9 N_R	1st		A	B	10	-	-	10.0Min
1 S_L			B	C	53	-	-	53.0Min
4 E_L			C	A	4	0.567	0.629	111.0
		Total:			67	0.567	0.629	174.0

\- 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
73	170	170	170

(Program-determined Optimum Cycle Time)

Intersection Level of Service	=	E
Worst movement Level of Service	=	E
Average intersection delay (s/pers)	=	59.7
Largest average movement delay (s)	=	77.2
Largest cycle-average queue, mean (m)	=	92
Performance Index	=	142.65
Degree of saturation (highest)	=	0.935
Practical Spare Capacity (lowest)	=	-4 %
Effective intersection capacity, (veh/h)	=	3290
Total vehicle flow (veh/h)	=	3076
Total person flow (pers/h)	=	4614
Total vehicle delay (veh-h/h)	=	50.99
Total person delay (pers-h/h)	=	76.49
Total effective vehicle stops (veh/h)	=	3049
Total effective person stops (pers/h)	=	4573
Total vehicle travel (veh-km/h)	=	1850.9
Total cost ($/h)	=	2560.38
Total fuel (L/h)	=	276.3
Total CO2 (kg/h)	=	690.66

Table S.4 - Phase Information
PLAZA CENTRO PR 30 NORTE
FUTURO AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	4	4	6	10	4	10	6%
B	10	4	14	49	63	4	53	31%
C	63	4	67	103	170	4	107	63%

Current Phase Sequence: actual
Input phase sequence: A B C
Output phase sequence: A B C

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 Cycle (vehs)	Longest Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: AVENIDA CORDERO SUR									
1 L	20.02	30.03	77.2	1.00	0.97	9.0	63	52.26	19.1
2 T	0.02	0.03	68.6	1.00	0.97	9.0	63	0.05	20.8
East: RAMPA PR 30 ESTE									
4 L	30.63	45.95	51.9	0.99	1.00	13.1	92	89.48	24.6
6 R	0.01	0.02	52.2	0.99	1.00	0.0	0	0.04	24.6
North: GRAVERO									
8 T	0.29	0.43	74.0	0.99	0.66	0.2	1	0.77	19.8
9 R	0.02	0.03	65.0	0.99	0.66	0.1	1	0.05	21.5

Table S.6 - Intersection Performance
PLAZA CENTRO PR 30 NORTE
FUTURO AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

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: AVENIDA CORDERO SUR									
935	0.869	20.04	30.06	77.2	1.00	0.97	63	52.32	19.1
East: RAMPA PR 30 ESTE									
2126	0.935	30.65	45.97	51.9	0.99	1.00	92	89.52	24.6
North: GRAVERO									
15	0.107	0.31	0.46	73.4	0.99	0.66	1	0.82	19.9
ALL VEHICLES:									
3076	0.935	50.99	76.49	59.7	1.00	0.99	92	142.65	22.6
INTERSECTION (persons):									
4614	0.935		76.49	59.7	1.00	0.99		142.65	22.6

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PLAZA CENTRO PR 30 NORTE
FUTURO AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

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 Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
South: AVENIDA CORDERO SUR												
1 L	121	49	0	0	460	530	0.869	77.4	0.97	8.8	61.8	500.0
2 LT	121	49	0	0	475	546	0.869	76.9	0.97	9.0	63.3	500.0
East: RAMPA PR 30 ESTE												
1 L	67	103	0	0	1052	1125	0.935	51.3	1.01	12.6	87.9	500.0
2 LR	4	1	62	103	1074	1148	0.935	52.4	1.00	13.1	92.0	500.0
North: GRAVERO												
1 T	164	6	0	0	7	69	0.107	89.5	0.65	0.2	1.3	500.0
2 TR	119	6	44	1	8	72	0.107	57.9	0.66	0.1	0.8	500.0

Table S.8 - Lane Flow and Capacity Information
PLAZA CENTRO PR 30 NORTE
FUTURO AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

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: AVENIDA CORDERO SUR												
1 L	460	0	0	460	3.10	1930	1838	0	0	530	0.869	100
2 LT	474	1	0	475	3.70	1990	1896	0	0	546	0.869	100
East: RAMPA PR 30 ESTE												
1 L	1052	0	0	1052	3.30	1950	1857	0	0	1125	0.935	100
2 LR	1073	0	1	1074	3.70	1990	3	1895	21	1148	0.935	100

North: GRAVERO													
1 T	0	7	0	7	3.30	1950	1950	0	0	69	0.107	100	
2 TR	0	7	1	8	3.30	1950	1937	542	21	72	0.107	100	

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
PLAZA CENTRO PR 30 NORTE
FUTURO AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

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	Cycle Average Queue (veh)	Perf. Index
South: AVENIDA CORDERO SUR											
1	L	934	1075	100	0.869	49*		77.2	0.97	9.0	52.26
2	T	1	1	100	0.867	49		68.6	0.97	9.0	0.05
East: RAMPA PR 30 ESTE											
4	L	2125	2273	100	0.935*	103*		51.9	1.00	13.1	89.48
6	R	1	2	100	0.642	59	103	52.2	1.00	0.0	0.04
North: GRAVERO											
8	T	14	131	100	0.107	6		74.0	0.66	0.2	0.77
9	R	1	10	100	0.104	6*	116	65.0	0.66	0.1	0.05

* Maximum degree of saturation, or critical green periods

Table S.14 - Summary of Input and Output Data
PLAZA CENTRO PR 30 NORTE
FUTURO AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

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: AVENIDA CORDERO SUR												
1 L	460			460	0	1929	49		0.869	77.4	62	500
2 LT	474	1		475	0	1990	49		0.869	76.9	63	500
	934	1	0	935	0				0.869	77.2	63	
East: RAMPA PR 30 ESTE												
1 L	1052			1052	0	1949	103		0.935	51.3	88	500
2 LR	1073		1	1074	0	1990	1	103	0.935	52.4	92	500
	2125	0	1	2126	0				0.935	51.9	92	
North: GRAVERO												
1 T		7		7	0	1949	6		0.107	89.5	1	500
2 TR		7	1	8	0	1950	6	1	0.107	57.9	1	500
	0	14	1	15	0				0.107	73.4	1	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	3076	0	170	0.935	59.7	92

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average 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
PLAZA CENTRO PR 30 NORTE
FUTURO AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Mov ID	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	Longest Queue Cycle (vehs)	Aver. (m)
South: AVENIDA CORDERO SUR										
1	L	0.288*		934	1075	0.869	77.2	E	9.0	63
2	T	0.288		1	1	0.867	68.6	E	9.0	63
East: RAMPA PR 30 ESTE										
4	L	0.606*		2125	2273	0.935*	51.9	D	13.1	92
6	R	0.347	0.606	1	2	0.642	52.2	D	0.0	0
North: GRAVERO										
8	T	0.035		14	131	0.107	74.0	E	0.2	1
9	R	0.035*	0.682	1	10	0.104	65.0	E	0.1	1
ALL VEHICLES:				3076		0.935	59.7	E	13.1	92
INTERSECTION (persons):				4614			59.7		13.1	92

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.
* 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 S.21 - Optimum Cycle Time Results
PLAZA CENTRO PR 30 NORTE
FUTURO AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	0.935	170
Average Delay	59.7	170
Stop Rate	0.99	170
Max. Queue for Any Movement	13.1	170
Perf. Index	142.7	170
Cost	2560.4	170

Performance Measure	Largest Value	Cycle Time
Eff. Inters. Cap.	3290	170
Prac. Spare Cap.	-4	170

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 D.3A - Lane Queues (veh)
PLAZA CENTRO PR 30 NORTE
FUTURO AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nc1	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: AVENIDA CORDERO SUR											
1 L	0.869	1.0	7.9	1.0	8.8	10.6	14.2	16.3	18.7	20.6	0.33
2 LT	0.869	1.0	8.1	1.0	9.0	10.9	14.6	16.6	19.2	21.1	0.34
East: RAMPA PR 30 ESTE											
1 L	0.935	3.2	9.4	3.2	12.6	15.1	20.1	22.8	26.4	28.9	0.74
2 LR	0.935	3.1	10.1	3.1	13.1	15.8	21.1	23.8	27.6	30.3	0.75
North: GRAVERO											
1 T	0.107	0.0	0.2	0.0	0.2	0.2	0.4	0.5	0.7	0.9	0.01
2 TR	0.107	0.0	0.1	0.0	0.1	0.2	0.2	0.3	0.5	0.6	0.00

Values printed in this table are cycle-average queues (vehicles).

Table D.3B - Lane Queues (metres)
PLAZA CENTRO PR 30 NORTE
FUTURO AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (metres) Nc1	Nc2	Nc	Percentile (metres) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: AVENIDA CORDERO SUR											
1 L	0.869	7.2	55.0	6.8	61.8	74.3	99.6	113.8	131.2	144.1	0.33
2 LT	0.869	7.1	56.7	6.7	63.3	76.2	102.0	116.5	134.4	147.5	0.34
East: RAMPA PR 30 ESTE											
1 L	0.935	22.2	65.5	22.4	87.9	105.5	140.9	159.3	184.9	202.6	0.74
2 LR	0.935	21.4	70.4	21.6	92.0	110.4	147.4	166.5	193.5	211.9	0.75
North: GRAVERO											
1 T	0.107	0.0	1.3	0.0	1.3	1.7	2.5	3.3	5.0	6.0	0.01
2 TR	0.107	0.0	0.8	0.0	0.8	1.1	1.7	2.2	3.4	4.0	0.00

Values printed in this table are cycle-average queues (metres).

Table V.21 - Intersection Summary for Optimum Cycle Time
PLAZA CENTRO PR 30 NORTE
FUTURO AM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Cycle Time (sec)	Eff. Int. Cap.	Intersn Deg. of Satn	Prac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
73	446	6.893	-87	1882.7	2.18	808.2	3278.4	45650.2	
75	579	5.311	-83	1390.1	2.25	595.4	2437.8	34043.4	
80	882	3.486	-74	822.2	2.29	349.8	1467.9	20669.4	
85	1150	2.675	-66	570.4	2.24	240.8	1036.8	14742.1	
90	1388	2.217	-59	428.7	2.14	179.3	793.0	11403.4	
95	1600	1.922	-53	338.2	2.03	139.9	636.4	9266.0	
100	1792	1.717	-48	275.5	1.92	112.5	527.4	7783.9	
105	1965	1.565	-43	229.8	1.81	92.4	447.5	6698.7	
110	2123	1.449	-38	195.1	1.71	77.0	386.4	5872.5	
115	2266	1.357	-34	168.1	1.61	64.9	338.6	5224.7	
120	2398	1.283	-30	146.5	1.52	55.2	300.1	4705.4	
125	2519	1.221	-26	129.0	1.44	47.3	268.8	4281.8	
130	2631	1.169	-23	114.6	1.37	40.6	242.9	3931.6	
135	2735	1.125	-20	102.6	1.29	35.1	221.2	3613.0	
140	2831	1.086	-17	92.6	1.22	30.5	202.9	3367.6	
145	2921	1.053	-15	84.2	1.16	26.6	187.5	3161.0	
150	3004	1.024	-12	77.1	1.11	23.1	174.5	2987.3	
155	3083	0.998	-10	73.0	1.07	21.0	166.8	2884.8	
160	3156	0.975	-8	67.6	1.04	18.1	157.0	2753.2	
165	3225	0.954	-6	63.2	1.01	15.5	149.0	2645.7	
170	3290	0.935	-4	59.7	0.99	13.1	142.7	2560.4	

Run Information
Cycle Time = 170 (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: TCG Standard Right
  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: Cycle average 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)

* 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 B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PLAZA CENTRO PR 30 NORTE
FUTURO PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: AVENIDA CORDERO SUR							
	North	2	Thru	1	0	1.00	1.00
	West	1	Left	1891	0	1.00	1.00
East: RAMPA PR 30 ESTE							
	South	4	Left	1177	0	1.00	1.00
	North	6	Right	1	0	1.00	1.00

North: GRAVERO							
	South	8	Thru	1	0	1.00	1.00
	West	9	Right	1	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PLAZA CENTRO PR 30 NORTE
FUTURO PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Mov ID	Left		Through		Right	
	LV	HV	LV	HV	LV	HV
Demand flows in veh/hour as used by the program						
South: AVENIDA CORDERO SUR						
1 L	1891	0	0	0	0	0
2 T	0	0	1	0	0	0
East: RAMPA PR 30 ESTE						
4 L	1177	0	0	0	0	0
6 R	0	0	0	0	1	0
North: GRAVERO						
8 T	0	0	1	0	0	0
9 R	0	0	0	0	1	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
PLAZA CENTRO PR 30 NORTE
FUTURO PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (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 Grn	2nd Grn
South: AVENIDA CORDERO SUR													
1 L	*B	C								4		99.7	92
2 T	B	C								4		98.4	92
East: RAMPA PR 30 ESTE													
4 L	C	A								4		64.0Min	60
6 R	A	C	Y	*C	A					4	4	20.0Min	64.0Min 102 60
North: GRAVERO													
8 T	A	B								4		10.0Min	6
9 R	*A	B		B	A	Y				4	84	10.0Min	74.0Min 6 76

Current Phase Sequence: ACTUAL
Input phase sequence: A B C
Output phase sequence: A B C

* 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
PLAZA CENTRO PR 30 NORTE
FUTURO PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Mov ID	Dem Flow (veh /h)	HV (%)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: AVENIDA CORDERO SUR											
1 L	1891	0.0	3732		0.507		2020	0.90	-4	100	0.936*
2 T	1	0.0	2		0.500		1	0.90	-3	100	0.924

East: RAMPA PR 30 ESTE												
4	L	1177	0.0	3749		0.314		1323	0.90	1	100	0.890
6	R	1	0.0	0	3	0.000	0.333	2	0.90	49	100	0.603
North: GRAVERO												
8	T	1	0.0	1950		0.001		69	0.90	6094	100	0.015
9	R	1	0.0	1857	1014	0.001	0.000	519	0.90	****	13	0.002

Table S.3 - Intersection Parameters
PLAZA CENTRO PR 30 NORTE
FUTURO PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
9	N_R	1st	A	B	10	-	-	10.0Min
1	S_L		B	C	4	0.507	0.563	99.7
6	E_R	2nd	C	A	64	-	-	64.0Min
				Total:	78	0.507	0.563	173.7

- 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
84	170	170	170

(Program-determined Optimum Cycle Time)

Intersection Level of Service	=	E
Worst movement Level of Service	=	F
Average intersection delay (s/pers)	=	65.0
Largest average movement delay (s)	=	87.4
Largest cycle-average queue, mean (m)	=	96
Performance Index	=	151.87
Degree of saturation (highest)	=	0.936
Practical Spare Capacity (lowest)	=	-4 %
Effective intersection capacity, (veh/h)	=	3281
Total vehicle flow (veh/h)	=	3072
Total person flow (pers/h)	=	4608
Total vehicle delay (veh-h/h)	=	55.49
Total person delay (pers-h/h)	=	83.24
Total effective vehicle stops (veh/h)	=	3095
Total effective person stops (pers/h)	=	4643
Total vehicle travel (veh-km/h)	=	1849.0
Total cost ($/h)	=	2687.38
Total fuel (L/h)	=	283.7
Total CO2 (kg/h)	=	709.16

Table S.4 - Phase Information
PLAZA CENTRO PR 30 NORTE
FUTURO PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	4	4	6	10	4	10	6%
B	10	4	14	92	106	4	96	56%
C	106	4	110	60	170	4	64	38%

Current Phase Sequence: ACTUAL
Input phase sequence: A B C
Output phase sequence: A B C

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 Cycle Aver. (vehs)	Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: AVENIDA CORDERO SUR									
1 L	31.54	47.31	60.0	1.00	1.02	13.7	96	88.41	22.5
2 T	0.01	0.02	51.3	1.00	1.02	13.7	96	0.04	24.9
East: RAMPA PR 30 ESTE									
4 L	23.88	35.82	73.0	1.00	0.99	10.8	75	63.27	19.8
6 R	0.02	0.03	73.3	1.00	0.99	10.8	75	0.05	19.9
North: GRAVERO									
8 T	0.02	0.04	87.4	0.98	0.57	0.0	0	0.06	17.6
9 R	0.01	0.01	29.9	0.53	0.65	0.0	0	0.03	32.9

Table S.6 - Intersection Performance
PLAZA CENTRO PR 30 NORTE
FUTURO PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

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: AVENIDA CORDERO SUR									
1892	0.936	31.55	47.33	60.0	1.00	1.02	96	88.45	22.5
East: RAMPA PR 30 ESTE									
1178	0.890	23.90	35.86	73.1	1.00	0.99	75	63.33	19.8
North: GRAVERO									

2	0.015	0.03	0.05	58.6	0.76	0.61	0	0.09	22.9
ALL VEHICLES:									
3072	0.936	55.49	83.24	65.0	1.00	1.01	96	151.87	21.4
INTERSECTION (persons):									
4608	0.936		83.24	65.0	1.00	1.01		151.87	21.4

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PLAZA CENTRO PR 30 NORTE
FUTURO PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Lane No.	Effective Green (sec) R1	Red and Times (sec) G1	R2	G2	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue Cycle (vehs)	Aver. (m)	Lane Length (m)
South: AVENIDA CORDERO SUR												
1 L	78	92	0	0	931	995	0.936	60.5	1.02	13.5	94.5	500.0
2 LT	78	92	0	0	961	1026	0.936	59.6	1.02	13.7	95.8	500.0
East: RAMPA PR 30 ESTE												
1 L	110	60	0	0	583	655	0.889	72.6	0.99	10.4	72.8	500.0
2 LR	4	1	105	60	595	669	0.889	73.5	0.99	10.8	75.3	500.0
North: GRAVERO												
1 T	164	6	0	0	1	69	0.015	87.4	0.57	0.0	0.2	500.0
2 R	4	6	84	76	1	519	0.002	29.9	0.65	0.0	0.0	500.0

Table S.8 - Lane Flow and Capacity Information
PLAZA CENTRO PR 30 NORTE
FUTURO PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

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: AVENIDA CORDERO SUR												
1 L	931	0	0	931	3.10	1930	1838	0	0	995	0.936	100
2 LT	960	1	0	961	3.70	1990	1896	0	0	1026	0.936	100
East: RAMPA PR 30 ESTE												
1 L	583	0	0	583	3.30	1950	1857	0	0	655	0.889	100
2 LR	594	0	1	595	3.70	1990	6	1895	21	669	0.889	100
North: GRAVERO												
1 T	0	1	0	1	3.30	1950	1950	0	0	69	0.015	100
2 R	0	0	1	1	3.30	1950	1857	1014	21	519	0.002	13P

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
PLAZA CENTRO PR 30 NORTE
FUTURO PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

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	Cycle Average Queue (veh)	Perf. Index
South: AVENIDA CORDERO SUR											
1	L	1891	2020	100	0.936*	92*		60.0	1.02	13.7	88.41
2	T	1	1	100	0.924	92		51.3	1.02	13.7	0.04
East: RAMPA PR 30 ESTE											
4	L	1177	1323	100	0.890	60		73.0	0.99	10.8	63.27
6	R	1	2	100	0.603	102	60*	73.3	0.99	10.8	0.05
North: GRAVERO											
8	T	1	69	100	0.015	6		87.4	0.57	0.0	0.06
9	R	1	519	13	0.002	6*	76	29.9	0.65	0.0	0.03

* Maximum degree of saturation, or critical green periods

Table S.14 - Summary of Input and Output Data
PLAZA CENTRO PR 30 NORTE
FUTURO PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

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: AVENIDA CORDERO SUR												
1 L	931			931	0	1929	92		0.936	60.5	94	500
2 LT	960	1		961	0	1990	92		0.936	59.6	96	500
	1891	1	0	1892	0				0.936	60.0	96	

East: RAMPA PR 30 ESTE												
1 L	583			583	0	1949	60		0.889	72.6	73	500
2 LR	594		1	595	0	1990	1	60	0.889	73.5	75	500
	1177	0	1	1178	0				0.889	73.1	75	
North: GRAVERO												
1 T		1		1	0	1950	6		0.015	87.4	0	500
2 R			1	1	0	1950	6	76	0.002	29.9	0	500
	0	1	1	2	0				0.015	58.6	0	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	3072	0	170	0.936	65.0	96

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average 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
PLAZA CENTRO PR 30 NORTE
FUTURO PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Mov ID	Mov Typ	Green Ratio 1st grn	Green Ratio 2nd grn	Time (g/C)	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Longest Queue Aver. (m)
South: AVENIDA CORDERO SUR											
1	L	0.541*			1891	2020	0.936*	60.0	E	13.7	96
2	T	0.541			1	1	0.924	51.3	D	13.7	96
East: RAMPA PR 30 ESTE											
4	L	0.353			1177	1323	0.890	73.0	E	10.8	75
6	R	0.600	0.353*		1	2	0.603	73.3	E	10.8	75
North: GRAVERO											
8	T	0.035			1	69	0.015	87.4	F	0.0	0
9	R	0.035*	0.447		1	519	0.002	29.9	C	0.0	0
ALL VEHICLES:					3072		0.936	65.0	E	13.7	96
INTERSECTION (persons):					4608			65.0		13.7	96

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.
* 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 S.21 - Optimum Cycle Time Results
PLAZA CENTRO PR 30 NORTE
FUTURO PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	0.936	170
Average Delay	65.0	170
Stop Rate	1.01	170
Max. Queue for Any Movement	13.7	170
Perf. Index	151.9	170
Cost	2687.4	170

Performance Measure	Largest Value	Cycle Time
Eff. Inters. Cap.	3281	170
Prac. Spare Cap.	-4	170

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 D.3A - Lane Queues (veh)
PLAZA CENTRO PR 30 NORTE
FUTURO PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nc1	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: AVENIDA CORDERO SUR											

1 L	0.936	3.6	9.9	3.6	13.5	16.2	21.6	24.4	28.4	31.1
0.69										
2 LT	0.936	3.5	10.2	3.5	13.7	16.4	21.9	24.7	28.8	31.5
0.70										
East: RAMPA PR 30 ESTE										
1 L	0.889	1.5	8.9	1.5	10.4	12.5	16.7	19.0	22.0	24.1
0.42										
2 LR	0.889	1.5	9.3	1.5	10.8	12.9	17.3	19.6	22.7	24.9
0.43										
North: GRAVERO										
1 T	0.015	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
0.00										
2 R	0.002	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 cycle-average queues (vehicles).

Table D.3B - Lane Queues (metres)
PLAZA CENTRO PR 30 NORTE
FUTURO PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Lane	Deg. Satn	Ovrfl. Queue	Average (metres)			Percentile (metres)				Queue Stor. Ratio
No.	x	No	Nc1	Nc2	Nc	70%	85%	90%	95%	98%
South: AVENIDA CORDERO SUR										
1 L	0.936	25.0	69.3	25.2	94.5	113.4	151.3	170.9	198.6	217.6
0.69										
2 LT	0.936	24.2	71.4	24.4	95.8	115.0	153.4	173.2	201.3	220.5
0.70										
East: RAMPA PR 30 ESTE										
1 L	0.889	10.6	62.6	10.2	72.8	87.5	116.9	132.8	153.7	168.5
0.42										
2 LR	0.889	10.6	65.1	10.2	75.3	90.5	121.0	137.3	158.9	174.2
0.43										
North: GRAVERO										
1 T	0.015	0.0	0.2	0.0	0.2	0.2	0.3	0.4	0.7	0.8
0.00										
2 R	0.002	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2
0.00										

Values printed in this table are cycle-average queues (metres).

Table V.21 - Intersection Summary for Optimum Cycle Time
PLAZA CENTRO PR 30 NORTE
FUTURO PM
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 170 (Optimum Cycle Time)

Cycle Time (sec)	Eff. Int. Cap.	Intersn Deg. of Satn	Prac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
84	433	7.094	-87	1739.8	1.91	749.0	3025.6	42227.0	
85	499	6.153	-85	1478.7	1.95	635.8	2580.6	36077.0	
90	808	3.800	-76	826.2	2.01	352.8	1468.2	20719.1	
95	1085	2.832	-68	558.2	1.99	236.4	1010.3	14414.0	
100	1334	2.303	-61	412.7	1.92	172.9	760.8	10988.3	
105	1559	1.970	-54	321.6	1.84	133.0	604.0	8842.3	
110	1764	1.742	-48	259.6	1.75	105.7	496.5	7376.3	
115	1951	1.575	-43	214.8	1.66	85.9	418.6	6315.2	
120	2122	1.448	-38	181.2	1.57	70.8	359.6	5515.0	
125	2280	1.348	-33	155.2	1.48	59.1	313.8	4893.3	
130	2425	1.267	-29	134.6	1.40	49.7	277.4	4399.5	
135	2560	1.200	-25	118.1	1.33	42.0	247.9	4000.8	
140	2685	1.144	-21	104.7	1.26	35.7	223.9	3675.4	
145	2801	1.097	-18	93.8	1.20	30.4	204.2	3389.0	
150	2910	1.056	-15	84.8	1.14	26.0	187.9	3170.0	
155	3012	1.020	-12	77.9	1.09	22.3	175.2	3000.0	
160	3107	0.989	-9	72.5	1.06	19.0	165.4	2867.9	
165	3197	0.961	-6	68.0	1.03	16.1	157.4	2760.4	
170	3281	0.936	-4	65.0	1.01	13.7	151.9	2687.4	

Site: 02-PLAZA CENTRO PR 30 NORTE FP
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren futuro.aap
Processed Jun 15, 2007 09:03:34AM

M0276, Traffic Consulting Group, Large Office
Produced by SIDRA Intersection 3.1.061208.34

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Output Tables
Output Tables
PLAZA CENTRO PR 30 SUR
BASE AM

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
Model Defaults: TCG Standard Right
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: Cycle average queue, Average

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PLAZA CENTRO PR 30 SUR
BASE AM
Intersection ID: 06
Stop Sign Controlled Intersection

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: AVENIDA CORDERO SUR							
	East	3	Right	484	0	1.00	1.00
	North	2	Thru	712	0	1.00	1.00
North: AVENIDA CORDERO NORTE							
	South	8	Thru	1500	0	1.00	1.00
	East	7	Left	64	0	1.00	1.00
West: RAMPA PR 30 OESTE							
	South	12	Right	756	0	1.00	1.00
	East	11	Thru	1	0	1.00	1.00
	North	10	Left	20	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PLAZA CENTRO PR 30 SUR
BASE AM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID		Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program							
South: AVENIDA CORDERO SUR							
2	T	0	0	712	0	0	0
3	R	0	0	0	0	484	0
North: AVENIDA CORDERO NORTE							
7	L	64	0	0	0	0	0
8	T	0	0	1500	0	0	0
West: RAMPA PR 30 OESTE							
10	L	20	0	0	0	0	0
11	T	0	0	1	0	0	0
12	R	0	0	0	0	756	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.2 - Movement Capacity Parameters
PLAZA CENTRO PR 30 SUR
BASE AM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID		Demand Flow (veh/h)	HV (%)	Opposing Movement Flow (veh/h)	Opposing Movement HV (%)	Adjust. Flow (pcu/h)	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: AVENIDA CORDERO SUR											
2	T	712	0.0	0			3900	0.80	338	100	0.183
3	R	484	0.0	0			1950	0.80	222	100	0.248
North: AVENIDA CORDERO NORTE											
7	L	64	0.0	712	0.0	712	665	0.80	731	100	0.096
8	T	1500	0.0	0			3900	0.80	108	100	0.385
West: RAMPA PR 30 OESTE											
10	L	20	0.0	2276	0.0	2276	113	0.80	352	100	0.177
11	T	1	0.0	2760	0.0	2760	6	0.80	380	100	0.167
12	R	756	0.0	0			1950	0.80	106	100	0.388*

Table S.3 - Intersection Parameters
PLAZA CENTRO PR 30 SUR
BASE AM

Intersection ID: 06
Stop Sign Controlled Intersection

Intersection Level of Service	=	NA
Worst movement Level of Service	=	F
Average intersection delay (s/pers)	=	3.3
Largest average movement delay (s)	=	78.9
Largest cycle-average queue, mean (m)	=	1
Performance Index	=	44.17
Degree of saturation (highest)	=	0.388
Practical Spare Capacity (lowest)	=	106 %
Effective intersection capacity, (veh/h)	=	9123
Total vehicle flow (veh/h)	=	3537
Total person flow (pers/h)	=	5306
Total vehicle delay (veh-h/h)	=	3.26
Total person delay (pers-h/h)	=	4.89
Total effective vehicle stops (veh/h)	=	822
Total effective person stops (pers/h)	=	1233
Total vehicle travel (veh-km/h)	=	2155.1
Total cost ($/h)	=	1313.52
Total fuel (L/h)	=	181.4
Total CO2 (kg/h)	=	453.60

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table S.15 or Movement Displays for individual movement LOS values.

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 Cycle (vehs)	Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: AVENIDA CORDERO SUR										
2	T	0.00	0.00	0.0	0.00	0.00	0.0	0	7.20	60.0
3	R	1.02	1.53	7.6	0.00	0.60	0.0	0	7.60	49.8
North: AVENIDA CORDERO NORTE										
7	L	0.22	0.33	12.4	0.58	0.84	0.1	1	1.23	44.7
8	T	0.00	0.00	0.0	0.00	0.00	0.0	0	15.16	60.0
West: RAMPA PR 30 OESTE										
10	L	0.40	0.60	71.5	0.97	1.00	0.2	1	1.05	20.6
11	T	0.02	0.03	78.9	0.97	1.00	0.2	1	0.06	19.5
12	R	1.60	2.40	7.6		0.60	12.6#		11.88	49.7

Largest density (passenger cars per km or mile) for any lane

Table S.6 - Intersection Performance
PLAZA CENTRO PR 30 SUR
BASE AM
Intersection ID: 06
Stop Sign Controlled Intersection

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: AVENIDA CORDERO SUR									
1196	0.248	1.02	1.53	3.1	0.00	0.24	0	14.80	55.4
North: AVENIDA CORDERO NORTE									
1564	0.385	0.22	0.33	0.5	0.02	0.03	1	16.39	59.2
West: RAMPA PR 30 OESTE									
777	0.388	2.02	3.03	9.4	0.03	0.61	88	12.98	47.9
ALL VEHICLES:									
3537	0.388	3.26	4.89	3.3	0.02	0.23	1	44.17	55.0
INTERSECTION (persons):									
5306	0.388		4.89	3.3	0.02	0.23		44.17	55.0

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PLAZA CENTRO PR 30 SUR
BASE AM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane No.		Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
South: AVENIDA CORDERO SUR									
1	T	356	1950	0.183	0.0	0.00	0.0	0.0	500.0
2	T	356	1950	0.183	0.0	0.00	0.0	0.0	500.0
3	R	484	1950	0.248	7.6	0.60	0.0	0.0	100.0
North: AVENIDA CORDERO NORTE									
1	L	64	665	0.096	12.4	0.84	0.1	0.5	30.0T
2	T	750	1950	0.385	0.0	0.00	0.0	0.0	500.0
3	T	750	1950	0.385	0.0	0.00	0.0	0.0	500.0
West: RAMPA PR 30 OESTE									
1	L	11	65	0.177	67.2	1.01	0.2	1.3	500.0
2	LT	10	54	0.177	77.3	1.00	0.2	1.2	500.0
3	R	756	1950	0.388	7.6	0.60	12.6#		100.0

Density (passenger cars per km or mile)
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
PLAZA CENTRO PR 30 SUR
BASE AM

Intersection ID: 06
Stop Sign Controlled Intersection

Lane No.	Dem Flow (veh/h) Lef	Thru	Rig	Tot	Min Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %
South: AVENIDA CORDERO SUR								
1 T	0	356	0	356	356	1950	0.183	100
2 T	0	356	0	356	356	1950	0.183	100
3 R	0	0	484	484	484	1950	0.248	100
North: AVENIDA CORDERO NORTE								
1 L	64	0	0	64	60	665	0.096	100
2 T	0	750	0	750	750	1950	0.385	100
3 T	0	750	0	750	750	1950	0.385	100
West: RAMPA PR 30 OESTE								
1 L	11	0	0	11	11	65	0.177	100
2 LT	9	1	0	10	10	54	0.177	100
3 R	0	0	756	756	756	1950	0.388	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.

Table S.10 - Movement Capacity and Performance Summary
PLAZA CENTRO PR 30 SUR
BASE AM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Cycle Average Queue (veh)	Perf. Index
South: AVENIDA CORDERO SUR									
2 T		712	3900	100	0.183	0.0	0.00	0.0	7.20
3 R	(Slp)	484	1950	100	0.248	7.6	0.60	0.0	7.60
North: AVENIDA CORDERO NORTE									
7 L		64	665	100	0.096	12.4	0.84	0.1	1.23
8 T		1500	3900	100	0.385	0.0	0.00	0.0	15.16
West: RAMPA PR 30 OESTE									
10 L		20	113	100	0.177	71.5	1.00	0.2	1.05
11 T		1	6	100	0.167	78.9	1.00	0.2	0.06
12 R	(Con)	756	1950	100	0.388*	7.6	0.60	12.6 #	11.88

* Maximum degree of saturation

\# Largest density (passenger cars per km or mile) for any lane

Table S.14 - Summary of Input and Output Data
PLAZA CENTRO PR 30 SUR
BASE AM
Intersection ID: 06
Stop Sign Controlled Intersection

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: AVENIDA CORDERO SUR												
1 T		356		356	0				0.183	0.0	0	500
2 T		356		356	0				0.183	0.0	0	500
3 R			484	484	0				0.248	7.6	0	100
	0	712	484	1196	0				0.248	3.1		
North: AVENIDA CORDERO NORTE												
1 L	64			64	0				0.096	12.4	1	30
2 T		750		750	0				0.385	0.0	0	500
3 T		750		750	0				0.385	0.0	0	500
	64	1500	0	1564	0				0.385	0.5	1	
West: RAMPA PR 30 OESTE												
1 L	11			11	0				0.177	67.2	1	500
2 LT	9	1		10	0				0.177	77.3	1	500
3 R			756	756	0	1950			0.388	7.6		100
	20	1	756	777	0				0.388	9.4	1	

ALL VEHICLES	Total Flow	% HV	Max X	Aver. Delay	Max Queue
	3537	0	0.388	3.3	1

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

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

Table S.15 - Capacity and Level of Service
PLAZA CENTRO PR 30 SUR
BASE AM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Mov Typ	Total Flow (veh	Total Cap. (veh	Deg. of Satn	Aver. Delay	LOS	Longest Queue Cycle (vehs)	Aver. (m)

			/h)	/h)	(v/c)	(sec)			
South: AVENIDA CORDERO SUR									
2	T		712	3900	0.183	0.0	A	0.0	0
3	R	(Slp)	484	1950	0.248	7.6	A	0.0	0
North: AVENIDA CORDERO NORTE									
7	L		64	665	0.096	12.4	B	0.1	1
8	T		1500	3900	0.385	0.0	A	0.0	0
West: RAMPA PR 30 OESTE									
10	L		20	113	0.177	71.5	F	0.2	1
11	T		1	6	0.167	78.9	F	0.2	1
12	R	(Con)	756	1950	0.388*	7.6	C#	12.6#	
ALL VEHICLES:			3537		0.388	3.3	NA	0.2	1

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.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

\# Continuous movements: Level Of Service based on density, Density (passenger cars per km or mile) instead of queue.

* 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.3A - Lane Queues (veh)
PLAZA CENTRO PR 30 SUR
BASE AM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nc1	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: AVENIDA CORDERO SUR											
1 T	0.183	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2 T	0.183	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 R	0.248	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
North: AVENIDA CORDERO NORTE											
1 L	0.096	0.0	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.03
2 T	0.385	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 T	0.385	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
West: RAMPA PR 30 OESTE											
1 L	0.177	0.0	0.2	0.0	0.2	0.2	0.4	0.5	0.6	0.7	0.00
2 LT	0.177	0.0	0.2	0.0	0.2	0.2	0.4	0.5	0.6	0.7	0.00

Values printed in this table are cycle-average queues (vehicles).

Table D.3B - Lane Queues (metres)
PLAZA CENTRO PR 30 SUR
BASE AM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane	Deg. Satn x	Ovrfl. Queue No	Average (metres) Nc1	Nc2	Nc	Percentile (metres) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: AVENIDA CORDERO SUR											
1 T	0.183	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2 T	0.183	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 R	0.248	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
North: AVENIDA CORDERO NORTE											
1 L	0.096	0.0	0.5	0.0	0.5	0.6	1.0	1.3	1.6	2.1	0.03
2 T	0.385	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 T	0.385	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
West: RAMPA PR 30 OESTE											

1 L	0.177	0.1	1.2	0.1	1.3	1.5	2.5	3.2	4.0	5.2
0.00										
2 LT	0.177	0.1	1.2	0.1	1.2	1.5	2.5	3.2	3.9	5.2
0.00										

Values printed in this table are cycle-average queues (metres).

Site: 03-PLAZA CENTRO PR 30 SUR BA
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren base.aap
Processed Jun 14, 2007 04:15:51PM

MO276, Traffic Consulting Group, Large Office
Produced by SIDRA Intersection 3.1.061208.34

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Output Tables
Output Tables
PLAZA CENTRO PR 30 SUR
BASE PM

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
Model Defaults: TCG Standard Right
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: Cycle average queue, Average

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PLAZA CENTRO PR 30 SUR
BASE PM
Intersection ID: 06
Stop Sign Controlled Intersection

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: AVENIDA CORDERO SUR							
	East	3	Right	1904	0	1.00	1.00
	North	2	Thru	1612	0	1.00	1.00
North: AVENIDA CORDERO NORTE							
	South	8	Thru	1004	0	1.00	1.00
	East	7	Left	4	0	1.00	1.00
West: RAMPA PR 30 OESTE							
	South	12	Right	1240	0	1.00	1.00
	East	11	Thru	1	0	1.00	1.00
	North	10	Left	8	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PLAZA CENTRO PR 30 SUR
BASE PM
Intersection ID: 06

Stop Sign Controlled Intersection

Mov ID	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program						
South: AVENIDA CORDERO SUR						
2 T	0	0	1612	0	0	0
3 R	0	0	0	0	1904	0
North: AVENIDA CORDERO NORTE						
7 L	4	0	0	0	0	0
8 T	0	0	1004	0	0	0
West: RAMPA PR 30 OESTE						
10 L	8	0	0	0	0	0
11 T	0	0	1	0	0	0
12 R	0	0	0	0	1240	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.2 - Movement Capacity Parameters
PLAZA CENTRO PR 30 SUR
BASE PM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Demand Flow (veh/h)	HV (%)	Opposing Flow (veh/h)	Opposing HV (%)	Movement Adjust. Flow (pcu/h)	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: AVENIDA CORDERO SUR										
2 T	1612	0.0	0			3900	0.80	94	100	0.413
3 R	1904	0.0	0			1950	0.80	-18	100	0.976*
North: AVENIDA CORDERO NORTE										
7 L	4	0.0	1612	0.0	1612	145	0.80	2800	100	0.028
8 T	1004	0.0	0			3900	0.80	211	100	0.257
West: RAMPA PR 30 OESTE										
10 L	8	0.0	2620	0.0	2620	56	0.80	460	100	0.143
11 T	1	0.0	2620	0.0	2620	7	0.80	460	100	0.143
12 R	1240	0.0	0			1950	0.80	26	100	0.636

Table S.3 - Intersection Parameters
PLAZA CENTRO PR 30 SUR
BASE PM
Intersection ID: 06
Stop Sign Controlled Intersection

Intersection Level of Service	=	NA
Worst movement Level of Service	=	F
Average intersection delay (s/pers)	=	4.4
Largest average movement delay (s)	=	119.3
Largest cycle-average queue, mean (m)	=	1
Performance Index	=	76.66
Degree of saturation (highest)	=	0.976
Practical Spare Capacity (lowest)	=	-18 %
Effective intersection capacity, (veh/h)	=	5912
Total vehicle flow (veh/h)	=	5773
Total person flow (pers/h)	=	8660
Total vehicle delay (veh-h/h)	=	6.99
Total person delay (pers-h/h)	=	10.48
Total effective vehicle stops (veh/h)	=	1907
Total effective person stops (pers/h)	=	2860
Total vehicle travel (veh-km/h)	=	3526.9
Total cost ($/h)	=	2225.80
Total fuel (L/h)	=	315.9
Total CO2 (kg/h)	=	789.67

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table S.15 or Movement Displays for individual movement LOS values.

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 Cycle (vehs)	Longest Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: AVENIDA CORDERO SUR									
2 T	0.00	0.00	0.0	0.00	0.00	0.0	0	16.29	60.0
3 R	4.01	6.01	7.6	0.00	0.60	0.0	0	29.90	49.8
North: AVENIDA CORDERO NORTE									
7 L	0.04	0.05	31.9	0.90	0.97	0.0	0	0.12	31.9
8 T	0.00	0.00	0.0	0.00	0.00	0.0	0	10.15	60.0
West: RAMPA PR 30 OESTE									
10 L	0.26	0.39	117.6	0.98	1.00	0.1	1	0.62	14.3
11 T	0.03	0.05	119.3	0.98	1.00	0.1	1	0.08	14.4
12 R	2.65	3.98	7.7		0.60	20.8#		19.49	49.6

Largest density (passenger cars per km or mile) for any lane

Table S.6 - Intersection Performance
PLAZA CENTRO PR 30 SUR
BASE PM
Intersection ID: 06
Stop Sign Controlled Intersection

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: AVENIDA CORDERO SUR									
3516	0.976	4.01	6.01	4.1	0.00	0.33	0	46.20	54.0
North: AVENIDA CORDERO NORTE									
1008	0.257	0.04	0.05	0.1	0.00	0.00	0	10.27	59.8
West: RAMPA PR 30 OESTE									
1249	0.636	2.95	4.42	8.5	0.01	0.60	145	20.19	48.8
ALL VEHICLES:									
5773	0.976	6.99	10.48	4.4	0.00	0.33	1	76.66	53.6
INTERSECTION (persons):									
8660	0.976		10.48	4.4	0.00	0.33		76.66	53.6

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PLAZA CENTRO PR 30 SUR
BASE PM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane No.	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
South: AVENIDA CORDERO SUR								
1 T	806	1950	0.413	0.0	0.00	0.0	0.0	500.0
2 T	806	1950	0.413	0.0	0.00	0.0	0.0	500.0
3 R	1904	1950	0.976	7.6	0.60	0.0	0.0	100.0
North: AVENIDA CORDERO NORTE								
1 L	4	145	0.028	31.9	0.97	0.0	0.2	30.0T
2 T	502	1950	0.257	0.0	0.00	0.0	0.0	500.0
3 T	502	1950	0.257	0.0	0.00	0.0	0.0	500.0
West: RAMPA PR 30 OESTE								
1 L	5	31	0.143	117.6	1.00	0.1	0.9	500.0
2 LT	5	31	0.143	118.0	1.00	0.1	0.9	500.0
3 R	1240	1950	0.636	7.7	0.60	20.8#		100.0

Density (passenger cars per km or mile)
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
PLAZA CENTRO PR 30 SUR
BASE PM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane No.	Dem Flow (veh/h) Lef	Thru	Rig	Tot	Min Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %
South: AVENIDA CORDERO SUR								
1 T	0	806	0	806	806	1950	0.413	100
2 T	0	806	0	806	806	1950	0.413	100
3 R	0	0	1904	1904	1904	1950	0.976	100
North: AVENIDA CORDERO NORTE								
1 L	4	0	0	4	4	145	0.028	100
2 T	0	502	0	502	502	1950	0.257	100
3 T	0	502	0	502	502	1950	0.257	100
West: RAMPA PR 30 OESTE								
1 L	5	0	0	5	5	31	0.143	100
2 LT	4	1	0	5	5	31	0.143	100
3 R	0	0	1240	1240	1240	1950	0.636	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.

Table S.10 - Movement Capacity and Performance Summary
PLAZA CENTRO PR 30 SUR
BASE PM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Cycle Average Queue (veh)	Perf. Index
South: AVENIDA CORDERO SUR									
2 T		1612	3900	100	0.413	0.0	0.00	0.0	16.29
3 R	(Slp)	1904	1950	100	0.976*	7.6	0.60	0.0	29.90
North: AVENIDA CORDERO NORTE									
7 L		4	145	100	0.028	31.9	0.97	0.0	0.12
8 T		1004	3900	100	0.257	0.0	0.00	0.0	10.15
West: RAMPA PR 30 OESTE									
10 L		8	56	100	0.143	117.6	1.00	0.1	0.62
11 T		1	7	100	0.143	119.3	1.00	0.1	0.08
12 R	(Con)	1240	1950	100	0.636	7.7	0.60	20.8 #	19.49

* Maximum degree of saturation

Largest density (passenger cars per km or mile) for any lane

Table S.14 - Summary of Input and Output Data
PLAZA CENTRO PR 30 SUR
BASE PM
Intersection ID: 06
Stop Sign Controlled Intersection

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: AVENIDA CORDERO SUR												
1 T		806		806	0				0.413	0.0	0	500
2 T		806		806	0				0.413	0.0	0	500
3 R			1904	1904	0				0.976	7.6	0	100
	0	1612	1904	3516	0				0.976	4.1		
North: AVENIDA CORDERO NORTE												
1 L	4			4	0				0.028	31.9	0	30
2 T		502		502	0				0.257	0.0	0	500
3 T		502		502	0				0.257	0.0	0	500
	4	1004	0	1008	0				0.257	0.1	0	
West: RAMPA PR 30 OESTE												
1 L	5			5	0				0.143	117.6	1	500
2 LT	4	1		5	0				0.143	118.0	1	500
3 R			1240	1240	0	1950			0.636	7.7		100
	8	1	1240	1249	0				0.636	8.5	1	

ALL VEHICLES	Total Flow	% HV	Max X	Aver. Delay	Max Queue
	5773	0	0.976	4.4	1

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

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

Table S.15 - Capacity and Level of Service
PLAZA CENTRO PR 30 SUR
BASE PM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Mov Typ	Total Flow (veh/h)	Total Cap. (veh/h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
South: AVENIDA CORDERO SUR								
2 T		1612	3900	0.413	0.0	A	0.0	0
3 R	(Slp)	1904	1950	0.976*	7.6	A	0.0	0
North: AVENIDA CORDERO NORTE								
7 L		4	145	0.028	31.9	D	0.0	0
8 T		1004	3900	0.257	0.0	A	0.0	0
West: RAMPA PR 30 OESTE								
10 L		8	56	0.143	117.6	F	0.1	1
11 T		1	7	0.143	119.3	F	0.1	1
12 R	(Con)	1240	1950	0.636	7.7	D#	20.8#	
ALL VEHICLES:		5773		0.976	4.4	NA	0.1	1

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.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

Continuous movements: Level Of Service based on density, Density (passenger cars per km or mile) instead of queue.
* 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.3A - Lane Queues (veh)
PLAZA CENTRO PR 30 SUR
BASE PM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nc1	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: AVENIDA CORDERO SUR											
1 T	0.413	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2 T	0.413	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 R	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

North: AVENIDA CORDERO NORTE										
1 L	0.028	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
0.01										
2 T	0.257	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.00										
3 T	0.257	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.00										
West: RAMPA PR 30 OESTE										
1 L	0.143	0.0	0.1	0.0	0.1	0.2	0.3	0.3	0.4	0.6
0.00										
2 LT	0.143	0.0	0.1	0.0	0.1	0.2	0.3	0.3	0.4	0.6
0.00										

Values printed in this table are cycle-average queues (vehicles).

Table D.3B - Lane Queues (metres)
PLAZA CENTRO PR 30 SUR
BASE PM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane	Deg. Satn x	Ovrfl. Queue No	Average (metres) Nc1	Nc2	Nc	Percentile (metres) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: AVENIDA CORDERO SUR											
1 T	0.413	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2 T	0.413	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 R	0.976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
North: AVENIDA CORDERO NORTE											
1 L	0.028	0.0	0.2	0.0	0.2	0.2	0.4	0.5	0.6	0.8	0.01
2 T	0.257	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 T	0.257	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
West: RAMPA PR 30 OESTE											
1 L	0.143	0.0	0.9	0.0	0.9	1.1	1.9	2.4	3.0	3.9	0.00
2 LT	0.143	0.0	0.9	0.0	0.9	1.1	1.9	2.4	3.0	3.9	0.00

Values printed in this table are cycle-average queues (metres).

Site: 03-PLAZA CENTRO PR 30 SUR BP
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren base.aap
Processed Jun 14, 2007 04:50:46PM

Output Tables
Output Tables
PLAZA CENTRO PR 30 SUR
FUTURO AM

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
Model Defaults: TCG Standard Right
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: Cycle average queue, Average

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: AVENIDA CORDERO SUR							
	East	3	Right	565	0	1.00	1.00
	North	2	Thru	831	0	1.00	1.00
North: AVENIDA CORDERO NORTE							
	South	8	Thru	1751	0	1.00	1.00
	East	7	Left	75	0	1.00	1.00
West: RAMPA PR 30 OESTE							
	South	12	Right	883	0	1.00	1.00
	East	11	Thru	1	0	1.00	1.00
	North	10	Left	23	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program						
South: AVENIDA CORDERO SUR						
2 T	0	0	831	0	0	0
3 R	0	0	0	0	565	0
North: AVENIDA CORDERO NORTE						
7 L	75	0	0	0	0	0
8 T	0	0	1751	0	0	0
West: RAMPA PR 30 OESTE						
10 L	23	0	0	0	0	0
11 T	0	0	1	0	0	0
12 R	0	0	0	0	883	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2B - Flow Rates (Total Vehicles and Percent Heavy)
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Left Total	Left %HV	Through Total	Through %HV	Right Total	Right %HV
Demand flows in veh/hour as used by the program						
South: AVENIDA CORDERO SUR						
2 T	0	0.0	831	0.0	0	0.0
3 R	0	0.0	0	0.0	565	0.0
North: AVENIDA CORDERO NORTE						
7 L	75	0.0	0	0.0	0	0.0
8 T	0	0.0	1751	0.0	0	0.0
West: RAMPA PR 30 OESTE						
10 L	23	0.0	0	0.0	0	0.0
11 T	0	0.0	1	0.0	0	0.0
12 R	0	0.0	0	0.0	883	0.0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.2 - Movement Capacity Parameters
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Demand Flow (veh/h)	HV (%)	Opposing Flow (veh/h)	HV (%)	Movement Adjust. Flow (pcu/h)	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: AVENIDA CORDERO SUR										
2 T	831	0.0	0			3900	0.80	275	100	0.213
3 R	565	0.0	0			1950	0.80	176	100	0.290
North: AVENIDA CORDERO NORTE										
7 L	75	0.0	831	0.0	831	567	0.80	505	100	0.132
8 T	1751	0.0	0			3900	0.80	78	100	0.449
West: RAMPA PR 30 OESTE										
10 L	23	0.0	2657	0.0	2657	49	0.80	70	100	0.469
11 T	1	0.0	3222	0.0	3222	2	0.80	60	100	0.500*
12 R	883	0.0	0			1950	0.80	77	100	0.453

Table S.3 - Intersection Parameters
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

Intersection Level of Service	=	NA
Worst movement Level of Service	=	F
Average intersection delay (s/pers)	=	4.1
Largest average movement delay (s)	=	225.9
Largest cycle-average queue, mean (m)	=	4
Performance Index	=	53.30
Degree of saturation (highest)	=	0.500
Practical Spare Capacity (lowest)	=	60 %
Effective intersection capacity, (veh/h)	=	8258
Total vehicle flow (veh/h)	=	4129
Total person flow (pers/h)	=	6194
Total vehicle delay (veh-h/h)	=	4.66
Total person delay (pers-h/h)	=	6.99
Total effective vehicle stops (veh/h)	=	964
Total effective person stops (pers/h)	=	1445
Total vehicle travel (veh-km/h)	=	2515.7
Total cost ($/h)	=	1557.04
Total fuel (L/h)	=	212.9
Total CO2 (kg/h)	=	532.37

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

See Table S.15 or Movement Displays for individual movement LOS values.

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 Cycle (vehs)	Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: AVENIDA CORDERO SUR									
2 T	0.00	0.00	0.0	0.00	0.00	0.0	0	8.40	60.0
3 R	1.19	1.78	7.6	0.00	0.60	0.0	0	8.87	49.8
North: AVENIDA CORDERO NORTE									
7 L	0.28	0.43	13.6	0.64	0.89	0.1	1	1.52	43.6
8 T	0.00	0.00	0.0	0.00	0.00	0.0	0	17.70	60.0
West: RAMPA PR 30 OESTE									
10 L	1.25	1.88	196.3	0.99	1.02	0.6	4	2.80	9.4
11 T	0.06	0.09	225.9	0.99	1.02	0.6	4	0.14	8.5
12 R	1.87	2.81	7.6		0.60	14.7#		13.87	49.7

Largest density (passenger cars per km or mile) for any lane

Table S.6 - Intersection Performance
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

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: AVENIDA CORDERO SUR									
1396	0.290	1.19	1.78	3.1	0.00	0.24	0	17.27	55.4
North: AVENIDA CORDERO NORTE									
1826	0.449	0.28	0.43	0.6	0.03	0.04	1	19.21	59.1
West: RAMPA PR 30 OESTE									
907	0.500	3.19	4.78	12.7	0.03	0.61	103	16.81	44.7
ALL VEHICLES:									
4129	0.500	4.66	6.99	4.1	0.02	0.23	4	53.30	54.0
INTERSECTION (persons):									
6194	0.500		6.99	4.1	0.02	0.23		53.30	54.0

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PLAZA CENTRO PR 30 SUR
FUTURO AM

Intersection ID: 06
Stop Sign Controlled Intersection

Lane No.	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
South: AVENIDA CORDERO SUR								
1 T	416	1950	0.213	0.0	0.00	0.0	0.0	500.0
2 T	416	1950	0.213	0.0	0.00	0.0	0.0	500.0
3 R	565	1950	0.290	7.6	0.60	0.0	0.0	100.0
North: AVENIDA CORDERO NORTE								
1 L	75	567	0.132	13.6	0.89	0.1	0.8	30.0T
2 T	876	1950	0.449	0.0	0.00	0.0	0.0	500.0
3 T	876	1950	0.449	0.0	0.00	0.0	0.0	500.0
West: RAMPA PR 30 OESTE								
1 L	14	29	0.470	177.1	1.02	0.6	4.4	500.0
2 LT	10	22	0.470	224.3	1.02	0.6	4.3	500.0
3 R	883	1950	0.453	7.6	0.60	14.7#		100.0

\# Density (passenger cars per km or mile)
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane No.	Dem Flow (veh/h) Lef	Thru	Rig	Tot	Min Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %
South: AVENIDA CORDERO SUR								
1 T	0	416	0	416	416	1950	0.213	100
2 T	0	416	0	416	416	1950	0.213	100
3 R	0	0	565	565	565	1950	0.290	100
North: AVENIDA CORDERO NORTE								
1 L	75	0	0	75	60	567	0.132	100
2 T	0	876	0	876	876	1950	0.449	100
3 T	0	876	0	876	876	1950	0.449	100
West: RAMPA PR 30 OESTE								
1 L	14	0	0	14	14	29	0.470	100
2 LT	9	1	0	10	10	22	0.470	100
3 R	0	0	883	883	883	1950	0.453	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.

Table S.10 - Movement Capacity and Performance Summary
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Cycle Average Queue (veh)	Perf. Index
South: AVENIDA CORDERO SUR									
2 T		831	3900	100	0.213	0.0	0.00	0.0	8.40
3 R	(Slp)	565	1950	100	0.290	7.6	0.60	0.0	8.87
North: AVENIDA CORDERO NORTE									
7 L		75	567	100	0.132	13.6	0.89	0.1	1.52
8 T		1751	3900	100	0.449	0.0	0.00	0.0	17.70
West: RAMPA PR 30 OESTE									
10 L		23	49	100	0.469	196.3	1.02	0.6	2.80
11 T		1	2	100	0.500*	225.9	1.02	0.6	0.14
12 R	(Con)	883	1950	100	0.453	7.6	0.60	14.7 #	13.87

* Maximum degree of saturation
\# Largest density (passenger cars per km or mile) for any lane

Table S.12A - Fuel Consumption, Emissions and Cost (TOTAL)
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Fuel Total L/h	Cost Total $/h	HC Total kg/h	CO Total kg/h	NOX Total kg/h	CO2 Total kg/h
South: AVENIDA CORDERO SUR						
2 T	35.8	276.17	0.124	2.59	0.163	89.6
3 R	36.3	241.29	0.152	7.00	0.215	90.8
	72.2	517.46	0.276	9.58	0.378	180.4
North: AVENIDA CORDERO NORTE						
7 L	5.3	35.61	0.023	1.10	0.032	13.2
8 T	75.5	581.92	0.260	5.45	0.343	188.8
	80.8	617.54	0.284	6.55	0.375	202.0

West: RAMPA PR 30 OESTE						
10 L	3.2	42.87	0.016	0.40	0.012	8.0
11 T	0.2	2.10	0.001	0.02	0.001	0.4
12 R	56.6	377.06	0.238	10.89	0.335	141.6
	60.0	422.04	0.255	11.31	0.347	150.0
INTERSECTION:	212.9	1557.04	0.815	27.44	1.100	532.4

PARAMETERS USED IN COST CALCULATIONS

Pump price of fuel ($/L)	=	1.200
Fuel resource cost factor	=	0.50
Ratio of running cost to fuel cost	=	3.0
Average income ($/h)	=	28.00
Time value factor	=	0.60
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

Table S.12B - Fuel Consumption, Emissions and Cost (RATE)
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Fuel Rate L/100km	Cost Rate $/km	HC Rate g/km	CO Rate g/km	NOX Rate g/km	CO2 Rate g/km
South: AVENIDA CORDERO SUR						
2 T	7.1	0.55	0.245	5.13	0.323	177.8
3 R	10.5	0.69	0.439	20.13	0.618	261.3
	8.5	0.61	0.324	11.26	0.444	211.9
North: AVENIDA CORDERO NORTE						
7 L	11.7	0.79	0.516	24.38	0.703	292.2
8 T	7.1	0.55	0.245	5.13	0.323	177.8
	7.3	0.56	0.256	5.92	0.338	182.5
West: RAMPA PR 30 OESTE						
10 L	23.0	3.09	1.184	28.84	0.878	575.8
11 T	24.4	3.39	1.267	29.04	0.891	610.9
12 R	10.4	0.69	0.438	20.06	0.616	260.9
	10.8	0.76	0.457	20.29	0.623	269.2
INTERSECTION:	8.5	0.62	0.324	10.91	0.437	211.6

Table S.14 - Summary of Input and Output Data
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

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: AVENIDA CORDERO SUR												
1 T		416		416	0				0.213	0.0	0	500
2 T		416		416	0				0.213	0.0	0	500
3 R			565	565	0				0.290	7.6	0	100
	0	831	565	1396	0				0.290	3.1		
North: AVENIDA CORDERO NORTE												
1 L	75			75	0				0.132	13.6	1	30
2 T		876		876	0				0.449	0.0	0	500
3 T		876		876	0				0.449	0.0	0	500
	75	1751	0	1826	0				0.449	0.6	1	
West: RAMPA PR 30 OESTE												
1 L	14			14	0				0.470	177.1	4	500
2 LT	9	1		10	0				0.470	224.3	4	500
3 R			883	883	0	1950			0.453	7.6		100
	23	1	883	907	0				0.470	12.7	4	

ALL VEHICLES	Total Flow	% HV	Max X	Aver. Delay	Max Queue
	4129	0	0.500	4.1	4

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

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

Table S.15 - Capacity and Level of Service
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)

South: AVENIDA CORDERO SUR								
2	T		831	3900	0.213	0.0	A	0.0	0
3	R	(Slp)	565	1950	0.290	7.6	A	0.0	0
North: AVENIDA CORDERO NORTE									
7	L		75	567	0.132	13.6	B	0.1	1
8	T		1751	3900	0.449	0.0	A	0.0	0
West: RAMPA PR 30 OESTE									
10	L		23	49	0.469	196.3	F	0.6	4
11	T		1	2	0.500*	225.9	F	0.6	4
12	R	(Con)	883	1950	0.453	7.6	C#	14.7#	
ALL VEHICLES:			4129		0.500	4.1	NA	0.6	4

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.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

\# Continuous movements: Level Of Service based on density, Density (passenger cars per km or mile) instead of queue.
* 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.0 - Geometric Delay Data
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

From Approach	To Approach	Turn	Negn Radius (m)	Negn Speed (km/h)	Negn Dist. (m)	Appr. Dist. (m)	Downstream Dist. (m)	Distance User Spec?
South: AVENIDA CORDERO SUR								
	East	Right	20.0	26.2	31.4	500	115	No
	North	Thru	S	60.0	15.3	500	106	No
North: AVENIDA CORDERO NORTE								
	South	Thru	S	60.0	15.3	500	106	No
	East	Left	7.7	18.3	12.1	500	102	No
West: RAMPA PR 30 OESTE								
	South	Right	20.0	26.2	31.4	500	115	No
	East	Thru	S	20.0	30.2	500	119	No
	North	Left	9.8	20.0	15.3	500	104	No

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.

Table D.1 - Lane Delays
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane No.	Deg. Satn x	Stop-line Delay 1st d1	2nd d2	Total dSL	Acc. Dec. dn	Queuing Total dq	MvUp dqm	Stopd (Idle) di	Geom dig	Control dic
South: AVENIDA CORDERO SUR										
1 T	0.213	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 T	0.213	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 R	0.290	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6	7.6
North: AVENIDA CORDERO NORTE										
1 L	0.132	5.3	0.0	5.3	2.4	2.9	0.0	2.9	8.4	13.6
2 T	0.449	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 T	0.449	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West: RAMPA PR 30 OESTE										
1 L	0.470	116.7	49.7	166.4	2.0	164.4	0.5	163.9	10.6	177.1
2 LT	0.470	147.6	65.9	213.5	2.0	211.4	0.4	211.0	10.8	224.3
3 R	0.453			0.1					7.6	7.6

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

Table D.2 - Lane Stops
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane No.	Deg. Satn x	Effective Stop Rate -- he1	he2	Geom. hig	Overall h	Prop. Queued pq	Queue Move-up Rate hqm
South: AVENIDA CORDERO SUR							
1 T	0.213	0.00	0.00	0.00	0.00	0.000	0.00
2 T	0.213	0.00	0.00	0.00	0.00	0.000	0.00
3 R	0.290	0.00	0.00	0.60	0.60	0.000	0.00
North: AVENIDA CORDERO NORTE							
1 L	0.132	0.64	0.00	0.25	0.89	0.640	0.00
2 T	0.449	0.00	0.00	0.00	0.00	0.000	0.00
3 T	0.449	0.00	0.00	0.00	0.00	0.000	0.00

West: RAMPA PR 30 OESTE							
1 L	0.470	0.99	0.02	0.01	1.02	0.989	0.12
2 LT	0.470	0.99	0.02	0.01	1.02	0.991	0.10
3 R	0.453			0.60	0.60		

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

Table D.3A - Lane Queues (veh)
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane	Deg. Satn	Ovrfl. Queue	Average (veh)			Percentile (veh)				Queue Stor. Ratio
No.	x	No	Nc1	Nc2	Nc	70%	85%	90%	95%	98%	
South: AVENIDA CORDERO SUR											
1 T	0.213	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2 T	0.213	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 R	0.290	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
North: AVENIDA CORDERO NORTE											
1 L	0.132	0.0	0.1	0.0	0.1	0.1	0.2	0.3	0.4	0.5	0.05
2 T	0.449	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 T	0.449	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
West: RAMPA PR 30 OESTE											
1 L	0.470	0.1	0.4	0.2	0.6	0.7	1.2	1.6	2.0	2.6	0.01
2 LT	0.470	0.1	0.4	0.2	0.6	0.7	1.2	1.6	1.9	2.5	0.01

Values printed in this table are cycle-average queues (vehicles).

Table D.3B - Lane Queues (metres)
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane	Deg. Satn	Ovrfl. Queue	Average (metres)			Percentile (metres)				Queue Stor. Ratio
No.	x	No	Nc1	Nc2	Nc	70%	85%	90%	95%	98%	
South: AVENIDA CORDERO SUR											
1 T	0.213	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2 T	0.213	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 R	0.290	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
North: AVENIDA CORDERO NORTE											
1 L	0.132	0.0	0.8	0.0	0.8	0.9	1.5	2.0	2.5	3.2	0.05
2 T	0.449	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 T	0.449	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
West: RAMPA PR 30 OESTE											
1 L	0.470	0.9	3.1	1.3	4.4	5.2	8.7	11.2	13.8	18.1	0.01
2 LT	0.470	0.9	3.0	1.3	4.3	5.2	8.5	11.0	13.6	17.8	0.01

Values printed in this table are cycle-average queues (metres).

Table D.4 - Movement Speeds (km/h) and Geometric Delay
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	App. Speeds		Exit Speeds		Queue Move-up		Av. Section Spd		Geom Delay (sec)
	Cruise	Negn	Negn	Cruise	1st Grn	2nd Grn	Running	Overall	
South: AVENIDA CORDERO SUR									

2	T	60.0	60.0	60.0	60.0		60.0	60.0	0.0
3	R	60.0	26.2	26.2	60.0		49.8	49.8	7.6
North: AVENIDA CORDERO NORTE									
7	L	60.0	18.3	18.3	60.0		46.2	43.6	8.4
8	T	60.0	60.0	60.0	60.0		60.0	60.0	0.0
West: RAMPA PR 30 OESTE									
10	L	60.0	0.0	20.0	60.0	9.6	45.9	9.4	10.6
11	T	60.0	0.0	20.0	60.0	9.1	44.6	8.5	12.4
12	R	60.0	26.2	26.2	60.0		49.7	49.7	7.6

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

Table D.6 - Gap Acceptance Parameters
PLAZA CENTRO PR 30 SUR
FUTURO AM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Mov Type	Opng Flow (pcu/h)	Crit Gap (s)	Foll-up Headway (s)	Entry HV Equiv
South: AVENIDA CORDERO SUR					
No opposed movements on this approach					
North: AVENIDA CORDERO NORTE					
7	L Normal	831	4.50	2.50	2.0
West: RAMPA PR 30 OESTE					
10	L Normal	2657	4.50	2.50	2.0
11	T Normal	3222	4.50	2.50	2.0

Values in this table are adjusted for heavy vehicles in the entry stream.

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
Model Defaults: TCG Standard Right
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: Cycle average queue, Average

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: AVENIDA CORDERO SUR							
	East	3	Right	2223	0	1.00	1.00
	North	2	Thru	1882	0	1.00	1.00
North: AVENIDA CORDERO NORTE							
	South	8	Thru	1172	0	1.00	1.00
	East	7	Left	5	0	1.00	1.00
West: RAMPA PR 30 OESTE							
	South	12	Right	1448	0	1.00	1.00
	East	11	Thru	1	0	1.00	1.00
	North	10	Left	9	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06

Stop Sign Controlled Intersection

Mov ID		Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program							
South: AVENIDA CORDERO SUR							
2	T	0	0	1882	0	0	0
3	R	0	0	0	0	2223	0
North: AVENIDA CORDERO NORTE							
7	L	5	0	0	0	0	0
8	T	0	0	1172	0	0	0
West: RAMPA PR 30 OESTE							
10	L	9	0	0	0	0	0
11	T	0	0	1	0	0	0
12	R	0	0	0	0	1448	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2B - Flow Rates (Total Vehicles and Percent Heavy)
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID		Left Total	Left %HV	Through Total	Through %HV	Right Total	Right %HV
Demand flows in veh/hour as used by the program							
South: AVENIDA CORDERO SUR							
2	T	0	0.0	1882	0.0	0	0.0
3	R	0	0.0	0	0.0	2223	0.0
North: AVENIDA CORDERO NORTE							
7	L	5	0.0	0	0.0	0	0.0
8	T	0	0.0	1172	0.0	0	0.0
West: RAMPA PR 30 OESTE							
10	L	9	0.0	0	0.0	0	0.0
11	T	0	0.0	1	0.0	0	0.0
12	R	0	0.0	0	0.0	1448	0.0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.2 - Movement Capacity Parameters
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID		Demand Flow (veh/h)	Demand HV (%)	Opposing Movement Flow (veh/h)	Opposing Movement HV (%)	Adjust. Flow (pcu/h)	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: AVENIDA CORDERO SUR											
2	T	1882	0.0	0			3900	0.80	66	100	0.483
3	R	2223	0.0	0			1950	0.80	-30	100	1.140*
North: AVENIDA CORDERO NORTE											
7	L	5	0.0	1882	0.0	1882	76	0.80	1116	100	0.066
8	T	1172	0.0	0			3900	0.80	166	100	0.301
West: RAMPA PR 30 OESTE											
10	L	9	0.0	3059	0.0	3059	19	0.80	69	100	0.474
11	T	1	0.0	3059	0.0	3059	2	0.80	60	100	0.500
12	R	1448	0.0	0			1950	0.80	8	100	0.743

Table S.3 - Intersection Parameters
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

Intersection Level of Service	=	NA
Worst movement Level of Service	=	F
Average intersection delay (s/pers)	=	25.6
Largest average movement delay (s)	=	429.6
Largest cycle-average queue, mean (m)	=	272
Performance Index	=	161.62
Degree of saturation (highest)	=	1.140
Practical Spare Capacity (lowest)	=	-30 %
Effective intersection capacity, (veh/h)	=	5912
Total vehicle flow (veh/h)	=	6740
Total person flow (pers/h)	=	10110
Total vehicle delay (veh-h/h)	=	47.97
Total person delay (pers-h/h)	=	71.95
Total effective vehicle stops (veh/h)	=	884
Total effective person stops (pers/h)	=	1326
Total vehicle travel (veh-km/h)	=	4116.8
Total cost ($/h)	=	3714.96
Total fuel (L/h)	=	431.8
Total CO2 (kg/h)	=	1079.44

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

See Table S.15 or Movement Displays for individual movement LOS values.

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 Cycle Aver. (vehs)	Longest Queue Cycle Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: AVENIDA CORDERO SUR										
2	T	0.00	0.00	0.0	0.00	0.00	0.0	0	19.02	60.0
3	R	43.58	65.37	70.6	1.00	0.00	38.9	272	105.27	20.6
North: AVENIDA CORDERO NORTE										
7	L	0.07	0.11	52.9	0.95	0.98	0.1	0	0.21	24.3
8	T	0.00	0.00	0.0	0.00	0.00	0.0	0	11.85	60.0
West: RAMPA PR 30 OESTE										
10	L	1.07	1.60	427.9	1.00	1.01	0.6	4	2.25	4.7
11	T	0.12	0.18	429.6	1.00	1.01	0.6	4	0.25	4.8
12	R	3.13	4.69	7.8		0.60	24.3#		22.76	49.5

Largest density (passenger cars per km or mile) for any lane

Table S.6 - Intersection Performance
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

	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: AVENIDA CORDERO SUR	4105	1.140	43.58	65.37	38.2	0.54	0.00	272	124.29	29.4
North: AVENIDA CORDERO NORTE	1177	0.301	0.07	0.11	0.2	0.00	0.00	0	12.06	59.6
West: RAMPA PR 30 OESTE	1458	0.743	4.32	6.47	10.7	0.01	0.60	170	25.27	46.5
ALL VEHICLES:	6740	1.140	47.97	71.95	25.6	0.33	0.13	272	161.62	35.3
INTERSECTION (persons):	10110	1.140		71.95	25.6	0.33	0.13		161.62	35.3

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PLAZA CENTRO PR 30 SUR
FUTURO PM

Intersection ID: 06
Stop Sign Controlled Intersection

Lane No.		Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue Cycle Aver. (vehs)	Queue Cycle Aver. (m)	Lane Length (m)
South: AVENIDA CORDERO SUR									
1	T	941	1950	0.483	0.0	0.00	0.0	0.0	500.0
2	T	941	1950	0.483	0.0	0.00	0.0	0.0	500.0
3	R	2223	1950	1.140	70.6	0.00	38.9	272.3	100.0
North: AVENIDA CORDERO NORTE									
1	L	5	76	0.065	52.9	0.98	0.1	0.4	30.0T
2	T	586	1950	0.301	0.0	0.00	0.0	0.0	500.0
3	T	586	1950	0.301	0.0	0.00	0.0	0.0	500.0
West: RAMPA PR 30 OESTE									
1	L	5	11	0.462	427.9	1.01	0.6	4.1	500.0
2	LT	5	11	0.462	428.2	1.01	0.6	4.1	500.0
3	R	1448	1950	0.743	7.8	0.60	24.3#		100.0

Density (passenger cars per km or mile)
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane No.		Dem Flow (veh/h) Lef	Thru	Rig	Tot	Min Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %
South: AVENIDA CORDERO SUR									
1	T	0	941	0	941	941	1950	0.483	100
2	T	0	941	0	941	941	1950	0.483	100
3	R	0	0	2223	2223	1950	1950	1.140	100
North: AVENIDA CORDERO NORTE									
1	L	5	0	0	5	5	76	0.065	100
2	T	0	586	0	586	586	1950	0.301	100
3	T	0	586	0	586	586	1950	0.301	100
West: RAMPA PR 30 OESTE									
1	L	5	0	0	5	5	11	0.462	100
2	LT	4	1	0	5	5	11	0.462	100
3	R	0	0	1448	1448	1448	1950	0.743	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.

Table S.10 - Movement Capacity and Performance Summary
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Cycle Average Queue (veh)	Perf. Index
South: AVENIDA CORDERO SUR									
2 T		1882	3900	100	0.483	0.0	0.00	0.0	19.02
3 R	(Slp)	2223	1950	100	1.140*	70.6	0.00	38.9	105.27
North: AVENIDA CORDERO NORTE									
7 L		5	76	100	0.066	52.9	0.98	0.1	0.21
8 T		1172	3900	100	0.301	0.0	0.00	0.0	11.85
West: RAMPA PR 30 OESTE									
10 L		9	19	100	0.474	427.9	1.01	0.6	2.25
11 T		1	2	100	0.500	429.6	1.01	0.6	0.25
12 R	(Con)	1448	1950	100	0.743	7.8	0.60	24.3 #	22.76

* Maximum degree of saturation
\# Largest density (passenger cars per km or mile) for any lane

Table S.12A - Fuel Consumption, Emissions and Cost (TOTAL)
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Fuel Total L/h	Cost Total $/h	HC Total kg/h	CO Total kg/h	NOX Total kg/h	CO2 Total kg/h
South: AVENIDA CORDERO SUR						
2 T	81.2	625.46	0.280	5.86	0.369	202.9
3 R	205.0	2041.46	0.965	33.95	1.019	512.5
	286.2	2666.92	1.245	39.81	1.388	715.4
North: AVENIDA CORDERO NORTE						
7 L	0.4	3.89	0.002	0.08	0.002	1.1
8 T	50.5	389.50	0.174	3.65	0.229	126.4
	51.0	393.39	0.176	3.73	0.232	127.4
West: RAMPA PR 30 OESTE						
10 L	2.0	32.77	0.011	0.19	0.006	5.1
11 T	0.2	3.66	0.001	0.02	0.001	0.6
12 R	92.4	618.22	0.387	17.67	0.543	230.9
	94.6	654.66	0.399	17.88	0.550	236.6
INTERSECTION:	431.8	3714.96	1.821	61.41	2.169	1079.4

PARAMETERS USED IN COST CALCULATIONS

Pump price of fuel ($/L)	=	1.200
Fuel resource cost factor	=	0.50
Ratio of running cost to fuel cost	=	3.0
Average income ($/h)	=	28.00
Time value factor	=	0.60
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

Table S.12B - Fuel Consumption, Emissions and Cost (RATE)
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Fuel Rate L/100km	Cost Rate $/km	HC Rate g/km	CO Rate g/km	NOX Rate g/km	CO2 Rate g/km
South: AVENIDA CORDERO SUR						
2 T	7.1	0.55	0.245	5.13	0.323	177.8
3 R	15.0	1.49	0.706	24.83	0.745	374.9
	11.4	1.06	0.496	15.87	0.553	285.2
North: AVENIDA CORDERO NORTE						
7 L	14.2	1.29	0.667	25.76	0.750	355.9
8 T	7.1	0.55	0.245	5.13	0.323	177.8
	7.1	0.55	0.247	5.22	0.325	178.5
West: RAMPA PR 30 OESTE						
10 L	37.4	6.03	2.035	34.14	1.091	935.0
11 T	36.8	5.92	1.998	33.60	1.073	919.4
12 R	10.4	0.70	0.435	19.89	0.611	259.9
	10.6	0.73	0.446	19.99	0.615	264.5
INTERSECTION:	10.5	0.90	0.442	14.92	0.527	262.2

Table S.14 - Summary of Input and Output Data
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

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: AVENIDA CORDERO SUR												
1 T		941		941	0				0.483	0.0	0	500
2 T		941		941	0				0.483	0.0	0	500
3 R			2223	2223	0				1.140	70.6	272	100
	0	1882	2223	4105	0				1.140	38.2	272	
North: AVENIDA CORDERO NORTE												
1 L	5			5	0				0.065	52.9	0	30
2 T		586		586	0				0.301	0.0	0	500
3 T		586		586	0				0.301	0.0	0	500
	5	1172	0	1177	0				0.301	0.2	0	
West: RAMPA PR 30 OESTE												
1 L	5			5	0				0.462	427.9	4	500
2 LT	4	1		5	0				0.462	428.2	4	500
3 R			1448	1448	0	1950			0.743	7.8		100
	9	1	1448	1458	0				0.743	10.7	4	

ALL VEHICLES	Total Flow	% HV	Max X	Aver. Delay	Max Queue
	6740	0	1.140	25.6	272

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

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

Table S.15 - Capacity and Level of Service
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
South: AVENIDA CORDERO SUR								
2	T	1882	3900	0.483	0.0	A	0.0	0
3	R (Slp)	2223	1950	1.140*	70.6	F	38.9	272
North: AVENIDA CORDERO NORTE								
7	L	5	76	0.066	52.9	F	0.1	0
8	T	1172	3900	0.301	0.0	A	0.0	0
West: RAMPA PR 30 OESTE								
10	L	9	19	0.474	427.9	F	0.6	4
11	T	1	2	0.500	429.6	F	0.6	4
12	R (Con)	1448	1950	0.743	7.8	E#	24.3#	
ALL VEHICLES:		6740		1.140	25.6	NA	38.9	272

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.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

\# Continuous movements: Level Of Service based on density, Density (passenger cars per km or mile) instead of queue.
* 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.0 - Geometric Delay Data
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

From Approach	To Approach	Turn	Negn Radius (m)	Negn Speed (km/h)	Negn Dist. (m)	Appr. Dist. (m)	Downstream Dist. (m)	User Spec?
South: AVENIDA CORDERO SUR								
	East	Right	20.0	26.2	31.4	500	115	No
	North	Thru	S	60.0	15.3	500	106	No
North: AVENIDA CORDERO NORTE								
	South	Thru	S	60.0	15.3	500	106	No
	East	Left	7.7	18.3	12.1	500	102	No
West: RAMPA PR 30 OESTE								
	South	Right	20.0	26.2	31.4	500	114	No
	East	Thru	S	20.0	30.2	500	119	No
	North	Left	9.8	20.0	15.3	500	104	No

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.

Table D.1 - Lane Delays
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane 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: AVENIDA CORDERO SUR										
1 T	0.483	0.0	0.0	0.0	0.0	0.0	0.0	C.0	0.0	0.0
2 T	0.483	0.0	0.0	0.0	0.0	0.0	0.0	C.0	0.0	0.0
3 R	1.140	0.0	63.0	63.0	5.0	58.0	0.0	58.0	7.6	70.6
North: AVENIDA CORDERO NORTE										
1 L	0.065	44.6	0.0	44.6	3.6	41.0	0.0	41.0	8.4	52.9
2 T	0.301	0.0	0.0	0.0	0.0	0.0	0.0	C.0	0.0	0.0
3 T	0.301	0.0	0.0	0.0	0.0	0.0	0.0	C.0	0.0	0.0
West: RAMPA PR 30 OESTE										
1 L	0.462	288.1	129.1	417.2	2.1	415.2	0.3	414.9	10.6	427.9
2 LT	0.462	288.1	129.1	417.2	2.1	415.2	0.3	414.9	11.0	428.2
3 R	0.743			0.3					7.5	7.8

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

Table D.2 - Lane Stops
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane No.	Deg. Satn x	-- Effective Stop Rate -- he1	he2	Geom. hig	Overall h	Prop. Queued pq	Queue Move-up Rate hqm
South: AVENIDA CORDERO SUR							
1 T	0.483	0.00	0.00	0.00	0.00	0.000	0.0C
2 T	0.483	0.00	0.00	0.00	0.00	0.000	0.0C
3 R	1.140	0.00	0.00	0.00	0.00	1.000	55.2€
North: AVENIDA CORDERO NORTE							
1 L	0.065	0.95	0.00	0.03	0.98	0.950	0.0C
2 T	0.301	0.00	0.00	0.00	0.00	0.000	0.0C
3 T	0.301	0.00	0.00	0.00	0.00	0.000	0.0C
West: RAMPA PR 30 OESTE							
1 L	0.462	1.00	0.01	0.00	1.01	0.996	0.07
2 LT	0.462	1.00	0.01	0.00	1.01	0.996	0.07
3 R	0.743			0.60	0.60		

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

Table D.3A - Lane Queues (veh)
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nc1	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: AVENIDA CORDERO SUR											
1 T	0.483	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2 T	0.483	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 R	1.140	34.1	0.0	38.9	38.9	42.8	62.4	78.0	97.5	124.8	2.43
North: AVENIDA CORDERO NORTE											
1 L	0.065	0.0	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.02
2 T	0.301	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 T	0.301	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
West: RAMPA PR 30 OESTE											
1 L	0.462	0.1	0.4	0.2	0.6	0.7	1.1	1.5	1.8	2.4	0.01
2 LT	0.462	0.1	0.4	0.2	0.6	0.7	1.1	1.5	1.8	2.4	0.01

Values printed in this table are cycle-average queues (vehicles).

Table D.3B - Lane Queues (metres)

PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (metres) Ncl	Nc2	Nc	Percentile (metres) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: AVENIDA CORDERO SUR											
1 T	0.483	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2 T	0.483	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 R	1.140	238.9	0.0	272.3	272.3	299.8	436.5	545.9	682.3	873.5	2.43
North: AVENIDA CORDERO NORTE											
1 L	0.065	0.0	0.4	0.0	0.4	0.5	0.9	1.1	1.4	1.8	0.02
2 T	0.301	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3 T	0.301	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
West: RAMPA PR 30 OESTE											
1 L	0.462	0.7	2.8	1.3	4.1	4.8	8.0	10.4	12.8	16.8	0.01
2 LT	0.462	0.7	2.8	1.3	4.1	4.8	8.0	10.4	12.8	16.8	0.01

Values printed in this table are cycle-average queues (metres).

Table D.4 - Movement Speeds (km/h) and Geometric Delay
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	App. Speeds Cruise	Negn	Exit Speeds Negn	Cruise	Queue Move-up 1st Grn	2nd Grn	Av. Section Spd Running	Overall	Geom Delay (sec)
South: AVENIDA CORDERO SUR									
2 T	60.0	60.0	60.0	60.0			60.0	60.0	0.0
3 R	60.0	26.2	26.2	60.0	0.0		44.8	20.6	7.6
North: AVENIDA CORDERO NORTE									
7 L	60.0	18.3	18.3	60.0			45.1	24.3	8.4
8 T	60.0	60.0	60.0	60.0			60.0	60.0	0.0
West: RAMPA PR 30 OESTE									
10 L	60.0	0.0	20.0	60.0	9.2		46.1	4.7	10.6
11 T	60.0	0.0	20.0	60.0	9.2		44.7	4.8	12.4
12 R	60.0	26.2	26.2	60.0			49.5	49.5	7.5

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

Table D.6 - Gap Acceptance Parameters
PLAZA CENTRO PR 30 SUR
FUTURO PM
Intersection ID: 06
Stop Sign Controlled Intersection

Mov ID	Mov Type	Opng Flow (pcu/h)	Crit Gap (s)	Foll-up Headway (s)	Entry HV Equiv
South: AVENIDA CORDERO SUR					
No opposed movements on this approach					
North: AVENIDA CORDERO NORTE					
7 L	Normal	1882	4.50	2.50	2.0
West: RAMPA PR 30 OESTE					
10 L	Normal	3059	4.50	2.50	2.0
11 T	Normal	3059	4.50	2.50	2.0

Values in this table are adjusted for heavy vehicles in the entry stream.

Site: 03-PLAZA CENTRO PR 30 SUR FP
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren futuro.aap
Processed Jun 14, 2007 07:45:33PM

M0276, Traffic Consulting Group, Large Office
Produced by SIDRA Intersection 3.1.061208.34

www.sidrasolutions.com

Output Tables
Output Tables
PR 177 OESTE CON RAMPA PR 52
BASE AM

Run Information
Cycle Time = 130 (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: TCG Standard Right
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: Cycle average 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)

* Movement 4 has large x because of short lanes.
The degree of saturation of adjacent movement 5 is less than xp,
hence this solution may be satisfactory.
See Table S.7 for queue length, delay etc.

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PR 177 OESTE CON RAMPA PR 52
BASE AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
East: PR 177 ESTE							
	South	4	Left	424	0	1.00	1.00
	West	5	Thru	1200	0	1.00	1.00
West: PR 177 Oeste							
	South	12	Right	284	0	1.00	1.00
	East	11	Thru	1836	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PR 177 OESTE CON RAMPA PR 52
BASE AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Mov ID	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program						
East: PR 177 ESTE						
4 L	424	0	0	0	0	0
5 T	0	0	1200	0	0	0
West: PR 177 Oeste						
11 T	0	0	1836	0	0	0
12 R	0	0	0	0	284	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
PR 177 OESTE CON RAMPA PR 52
BASE AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Mov ID	Mov Typ	PHASE MATRIX First Green Fr	First Green To	First Green Op Pr	Second Green Fr	Second Green To	Second Green Op Pr	Lost Tim 1st Grn	Lost Tim 2nd Grn	Req.Mov.Time 1st Grn	Req.Mov.Time 2nd Grn	Eff. Grn
East: PR 177 ESTE												
4 L	*A	B	Y					4		37.3		30
West: PR 177 Oeste												
11 T	*B	A						4		49.3		92

```
   12 R  (Slp) A     B             B     A             4    4   16.0     15.5
30   92
 ---------------------------------------------------------------------------
----------
 ---------------------------------------------------------------------------
----------
   Current Phase Sequence: ACTUAL
   Input phase sequence: A B
   Output phase sequence: A B
 ---------------------------------------------------------------------------
----------
   *  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
PR 177 OESTE CON RAMPA PR 52
BASE AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Mov ID	Dem Flow (veh /h)	HV (%)	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
East: PR 177 ESTE											
4 L	194	0.0	841<		0.231		194	0.90	-10	100	1.000*
5 LT	1430E	0.0	5803		0.246		5803	0.90	265	100	0.246
West: PR 177 Oeste											
11 T	1836	0.0	5850		0.314		4140	0.90	103	100	0.443
12 R	284	0.0	1820<	1675<	0.083	0.079	1605	0.90	409	100	0.177

```
   E  "Excess" flow from the short lane of an adjacent movement
      added to normal flow
   <  Reduced saturation flow due to a short lane effect

   Movement    4 has large x because of short lanes.
   The degree of saturation of adjacent movement    5 is less than xp,
   hence this solution may be satisfactory.
   See Table S.7 for queue length, delay etc.
```

Table S.3 - Intersection Parameters
PR 177 OESTE CON RAMPA PR 52
BASE AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
4	E_L		A	B	4	0.231	0.256	37.3
11	W_T		B	A	4	0.314	0.349	49.3
				Total:	8	0.545	0.605	86.7

```
   Cycle Time:
     Minimum   Maximum   Practical   Chosen
        20       150         20        130
     (Phase times user specified, cycle time = sum of phase times)

   Intersection Level of Service                =        A
   Worst movement Level of Service              =        E
   Average intersection delay (s/pers)          =      7.8
   Largest average movement delay (s)           =     59.2
   Largest cycle-average queue, mean (m)        =       19
   Performance Index                            =    59.26
   Degree of saturation (highest)               =    1.000
   Practical Spare Capacity (lowest)            =      -10 %
   Effective intersection capacity, (veh/h)     =     3744
   Total vehicle flow (veh/h)                   =     3744
   Total person flow (pers/h)                   =     5616
   Total vehicle delay (veh-h/h)                =     8.15
   Total person delay (pers-h/h)                =    12.22
   Total effective vehicle stops (veh/h)        =     1105
   Total effective person stops (pers/h)        =     1658
   Total vehicle travel (veh-km/h)              =   2272.2
   Total cost ($/h)                             =  1523.79
   Total fuel (L/h)                             =    202.0
   Total CO2 (kg/h)                             =   505.08
```

Table S.4 - Phase Information
PR 177 OESTE CON RAMPA PR 52
BASE AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	4	4	30	34	4	34	26%
B	34	4	38	92	130	4	96	74%

```
          (Phase times specified by the user)
   Current Phase Sequence: ACTUAL
   Input phase sequence: A B
   Output phase sequence: A B
```

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 Cycle (vehs)	Longest Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
East: PR 177 ESTE									
4 L	3.19	4.78	59.2	0.98	0.84	2.7	19	8.79	22.8
5 LT	0.01	0.02	0.0		0.00	8.0#		14.46	59.9
West: PR 177 Oeste									
11 T	4.34	6.50	8.5	0.46	0.42	1.4	10	31.50	48.6
12 R	0.61	0.91	7.7	0.08	0.62	0.0	0	4.50	49.4

Largest density (passenger cars per km or mile) for any lane

Table S.6 - Intersection Performance
PR 177 OESTE CON RAMPA PR 52
BASE AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (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)
East: PR 177 ESTE									
1624	1.000	3.20	4.80	7.1	0.12	0.10	56	23.25	50.2
West: PR 177 Oeste									
2120	0.443	4.95	7.42	8.4	0.41	0.44	10	36.00	48.7
ALL VEHICLES:									
3744	1.000	8.15	12.22	7.8	0.28	0.30	19	59.26	49.4
INTERSECTION (persons):									
5616	1.000		12.22	7.8	0.28	0.30		59.26	49.4

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PR 177 OESTE CON RAMPA PR 52
BASE AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (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 Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
East: PR 177 ESTE												
1 L	100	30	0	0	194	194	1.000	59.2r	0.84	2.7	19.2<	50.0T
2 LT	0	130	0	0	469	1903	0.246	0.0	0.00	7.8#		500.0
3 T	0	130	0	0	480	1950	0.246	0.0	0.00	8.0#		500.0
4 T	0	130	0	0	480	1950	0.246	0.0	0.00	8.0#		500.0
West: PR 177 Oeste												
1 T	38	92	0	0	612	1380	0.443	8.5	0.42	1.4	10.1	500.0
2 T	38	92	0	0	612	1380	0.443	8.5	0.42	1.4	10.1	500.0
3 T	38	92	0	0	612	1380	0.443	8.5	0.42	1.4	10.1	500.0
4 R	4	30	4	92	284	1606	0.177	7.7	0.62	0.0	0.1	100.0T

< Short lane capacity is reached and there is excess flow into an adjacent lane
Density (passenger cars per km or mile)
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.
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
PR 177 OESTE CON RAMPA PR 52
BASE AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (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 %
East: PR 177 ESTE												
1 L	194	0	0	194	3.30	1950	841<	0	61	194	1.000	100
2 LT	230E	239	0	469	3.30	1950	1903	0	0	1903	0.246	100
3 T	0	480	0	480	3.30	1950	1950	0	0	1950	0.246	100
4 T	0	480	0	480	3.30	1950	1950	0	0	1950	0.246	100
West: PR 177 Oeste												
1 T	0	612	0	612	3.30	1950	1950	0	0	1380	0.443	100
2 T	0	612	0	612	3.30	1950	1950	0	0	1380	0.443	100
3 T	0	612	0	612	3.30	1950	1950	0	0	1380	0.443	100
4 R	0	0	284	284	3.30	1950	1820<	1675<	0	1606	0.177	100

E "Excess" flow from back of an adjacent short lane
< Reduced saturation flow due to a short lane effect

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
PR 177 OESTE CON RAMPA PR 52
BASE AM
Intersection ID: 04

Fixed-Time Signals, Cycle Time = 130 (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	Cycle Average Queue (veh)	Perf. Index
East: PR 177 ESTE											
4	L	194	194<	100	1.000*	30*		59.2	0.84	2.7	8.79
5	LT (Con)	1430E	5803	100	0.246	130		0.0	0.00	8.0 #	14.46
West: PR 177 Oeste											
11	T	1836	4140	100	0.443	92*		8.5	0.42	1.4	31.50
12	R (Slp)	284	1605<	100	0.177	30	92	7.7	0.62	0.0	4.50

E "Excess" flow from the short lane of an adjacent movement added to normal flow
< Reduced capacity due to a short lane effect
* Maximum degree of saturation, or critical green periods
# Largest density (passenger cars per km or mile) for any lane

Table S.14 - Summary of Input and Output Data
PR 177 OESTE CON RAMPA PR 52
BASE AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (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)
East: PR 177 ESTE												
1 L	194			194	0	1949	30		1.000	59.2r	19	50
2 LT		239		469	0	1949	130		0.246	0.0		500
3 T		480		480	0	1949	130		0.246	0.0		500
4 T		480		480	0	1949	130		0.246	0.0		500
	194	1200	0	1394	0				1.000	8.3	19	
West: PR 177 Oeste												
1 T		612		612	0	1949	92		0.443	8.5	10	500
2 T		612		612	0	1949	92		0.443	8.5	10	500
3 T		612		612	0	1949	92		0.443	8.5	10	500
4 R			284	284	0	1949	30	92	0.177	7.7	0	100
	0	1836	284	2120	0				0.443	8.4	10	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	3744	0	130	1.000	7.8	19

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

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

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.

Table S.15 - Capacity and Level of Service
PR 177 OESTE CON RAMPA PR 52
BASE AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Mov ID	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	Longest Queue Cycle (vehs)	Aver. (m)
East: PR 177 ESTE										
4	L	0.231*		194	194<	1.000*	59.2	E	2.7	19
5	LT (Con)	1.000		1430E	5803	0.246	0.0	B#	8.0#	
West: PR 177 Oeste										
11	T	0.708*		1836	4140	0.443	8.5	A	1.4	10
12	R (Slp)	0.231	0.708	284	1605<	0.177	7.7	A	0.0	0
ALL VEHICLES:				3744		1.000	7.8	A	2.7	19
INTERSECTION (persons):				5616			7.8		2.7	19

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.
Continuous movements: Level Of Service based on density, Density (passenger cars per km or mile) instead of queue.
< 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)
E "Excess" flow from the short lane of an adjacent movement added to normal flow

Table D.3A - Lane Queues (veh)
PR 177 OESTE CON RAMPA PR 52
BASE AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Lane	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nc1	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
East: PR 177 ESTE											
1 L	1.000	2.2	2.7	0.0	2.7	3.4	4.8	5.8	7.2	8.1*	1.00
West: PR 177 Oeste											
1 T	0.443	0.0	1.4	0.0	1.4	1.8	2.6	3.3	4.4	5.1	0.14
2 T	0.443	0.0	1.4	0.0	1.4	1.8	2.6	3.3	4.4	5.1	0.14
3 T	0.443	0.0	1.4	0.0	1.4	1.8	2.6	3.3	4.4	5.1	0.14
4 R	0.177	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.03

Values printed in this table are cycle-average queues (vehicles).
* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Table D.3B - Lane Queues (metres)
PR 177 OESTE CON RAMPA PR 52
BASE AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Lane	Deg. Satn x	Ovrfl. Queue No	Average (metres) Nc1	Nc2	Nc	Percentile (metres) 70%	85%	90%	95%	98%	Queue Stor. Ratio
East: PR 177 ESTE											
1 L	1.000	15.6	19.2	0.0	19.2	23.7	33.3	40.8	50.1	56.9*	1.00
West: PR 177 Oeste											
1 T	0.443	0.0	10.1	0.0	10.1	12.7	18.5	23.2	31.1	36.0	0.14
2 T	0.443	0.0	10.1	0.0	10.1	12.7	18.5	23.2	31.1	36.0	0.14
3 T	0.443	0.0	10.1	0.0	10.1	12.7	18.5	23.2	31.1	36.0	0.14
4 R	0.177	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.03

Values printed in this table are cycle-average queues (metres).
* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Site: 04- PR-177 OESTE CON RAMPA PR52 BA
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren base.aap
Processed Jun 14, 2007 03:53:50PM

Output Tables
Output Tables
PR 177 OESTE CON RAMPA PR 52
BASE PM

Run Information
Cycle Time = 130 (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: TCG Standard Right
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: Cycle average 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)

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PR 177 OESTE CON RAMPA PR 52
BASE PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
East: PR 177 ESTE							
	South	4	Left	456	0	1.00	1.00
	West	5	Thru	2024	0	1.00	1.00
West: PR 177 Oeste							
	South	12	Right	720	0	1.00	1.00
	East	11	Thru	2080	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PR 177 OESTE CON RAMPA PR 52
BASE PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Mov ID	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program						
East: PR 177 ESTE						
4 L	456	0	0	0	0	0
5 T	0	0	2024	0	0	0
West: PR 177 Oeste						
11 T	0	0	2080	0	0	0
12 R	0	0	0	0	720	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
PR 177 OESTE CON RAMPA PR 52
BASE PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Mov ID	Mov Typ	PHASE MATRIX First Green Fr	First Green To	First Green Op Pr	Second Green Fr	Second Green To	Second Green Op Pr	Lost Tim 1st Grn	Lost Tim 2nd Grn	Req.Mov.Time 1st Grn	Req.Mov.Time 2nd Grn	Eff. Grn 1st	Eff. Grn 2nd
East: PR 177 ESTE													
4 L	*A	B	Y					6		37.1		28	
West: PR 177 Oeste													
11 T	*B	A						4		55.4		92	
12 R	(Slp) A	B		B	A			4	4	34.4	33.1	30	92

Current Phase Sequence: ACTUAL
Input phase sequence: A B
Output phase sequence: A B

* 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
PR 177 OESTE CON RAMPA PR 52
BASE PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Mov ID	Dem Flow (veh /h)	HV (%)	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
East: PR 177 ESTE											
4 L	168	0.0	778		0.215		168	0.90	-10	100	1.000*
5 LT	2312E	0.0	5814		0.398		5814	0.90	126	100	0.398
West: PR 177 Oeste											
11 T	2080	0.0	5850		0.356		4140	0.90	79	100	0.502
12 R	720	0.0	1819<	1675<	0.210	0.201	1605	0.90	101	100	0.449

E "Excess" flow from the short lane of an adjacent movement added to normal flow
< Reduced saturation flow due to a short lane effect

Table S.3 - Intersection Parameters
PR 177 OESTE CON RAMPA PR 52
BASE PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Crit Mov ID	App. and Turn	Green Period Fr	Green Period To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
4	E_L	A	B	6	0.215	0.239	37.1
11	W_T	B	A	4	0.356	0.395	55.4
				10	0.571	0.634	92.5

Cycle Time:

Minimum	Maximum	Practical	Chosen
20	150	27	130

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

Intersection Level of Service	=	A
Worst movement Level of Service	=	E
Average intersection delay (s/pers)	=	6.9
Largest average movement delay (s)	=	71.0
Largest cycle-average queue, mean (m)	=	20
Performance Index	=	80.28
Degree of saturation (highest)	=	1.000
Practical Spare Capacity (lowest)	=	-10 %
Effective intersection capacity, (veh/h)	=	5280
Total vehicle flow (veh/h)	=	5280
Total person flow (pers/h)	=	7920
Total vehicle delay (veh-h/h)	=	10.14
Total person delay (pers-h/h)	=	15.21
Total effective vehicle stops (veh/h)	=	1530
Total effective person stops (pers/h)	=	2294
Total vehicle travel (veh-km/h)	=	3206.9
Total cost ($/h)	=	2113.02
Total fuel (L/h)	=	282.8
Total CO2 (kg/h)	=	706.89

Table S.4 - Phase Information
PR 177 OESTE CON RAMPA PR 52
BASE PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	4	4	30	34	4	34	26%
B	34	4	38	92	130	4	96	74%

(Phase times specified by the user)
Current Phase Sequence: ACTUAL
Input phase sequence: A B
Output phase sequence: A B

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 Cycle (vehs)	Longest Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
East: PR 177 ESTE									
4 L	3.30	4.96	71.0	1.00	0.88	2.9	20	8.73	20.3
5 LT	0.04	0.06	0.1		0.00	12.9#		23.40	59.9

West: PR 177 Oeste										
11	T	5.23	7.85	9.1	0.49	0.45	1.7	12	36.69	48.0
12	R	1.56	2.34	7.8	0.11	0.62	0.0	0	11.46	49.2

Largest density (passenger cars per km or mile) for any lane

Table S.6 - Intersection Performance
PR 177 OESTE CON RAMPA PR 52
BASE PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (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)
East: PR 177 ESTE									
2480	1.000	3.35	5.02	4.9	0.07	0.06	91	32.13	52.9
West: PR 177 Oeste									
2800	0.502	6.79	10.19	8.7	0.39	0.49	12	48.15	48.3
ALL VEHICLES:									
5280	1.000	10.14	15.21	6.9	0.24	0.29	20	80.28	50.4
INTERSECTION (persons):									
7920	1.000		15.21	6.9	0.24	0.29		80.28	50.4

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PR 177 OESTE CON RAMPA PR 52
BASE PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (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 Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
East: PR 177 ESTE												
1 L	102	28	0	0	168	168	1.000	71.0r	0.88	2.9	20.5<	50.0T
2 LT	0	130	0	0	761	1914	0.398	0.1	0.00	12.7#		500.0
3 T	0	130	0	0	776	1950	0.398	0.1	0.00	12.9#		500.0
4 T	0	130	0	0	776	1950	0.398	0.1	0.00	12.9#		500.0
West: PR 177 Oeste												
1 T	38	92	0	0	693	1380	0.502	9.1	0.45	1.7	12.2	500.0
2 T	38	92	0	0	693	1380	0.502	9.1	0.45	1.7	12.2	500.0
3 T	38	92	0	0	693	1380	0.502	9.1	0.45	1.7	12.2	500.0
4 R	4	30	4	92	720	1605	0.449	7.8	0.62	0.0	0.3	100.0T

< Short lane capacity is reached and there is excess flow into an adjacent lane
Density (passenger cars per km or mile)
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.
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
PR 177 OESTE CON RAMPA PR 52
BASE PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (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 %
East: PR 177 ESTE												
1 L	168	0	0	168	3.30	1950	778	0	61	168	1.000	100
2 LT	288E	473	0	761	3.30	1950	1914	0	0	1914	0.398	100
3 T	0	776	0	776	3.30	1950	1950	0	0	1950	0.398	100
4 T	0	776	0	776	3.30	1950	1950	0	0	1950	0.398	100
West: PR 177 Oeste												
1 T	0	693	0	693	3.30	1950	1950	0	0	1380	0.502	100
2 T	0	693	0	693	3.30	1950	1950	0	0	1380	0.502	100
3 T	0	693	0	693	3.30	1950	1950	0	0	1380	0.502	100
4 R	0	0	720	720	3.30	1950	1819<	1675<	0	1605	0.449	100

E "Excess" flow from back of an adjacent short lane
< Reduced saturation flow due to a short lane effect

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
PR 177 OESTE CON RAMPA PR 52
BASE PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (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	Cycle Average Queue (veh)	Perf. Index
East: PR 177 ESTE											

4	L	168	168	100	1.000*	28*		71.0	0.88	2.9	8.73
5	LT (Con)	2312E	5814	100	0.398	130		0.1	0.00	12.9 #	23.40
West: PR 177 Oeste											
11	T	2080	4140	100	0.502	92*		9.1	0.45	1.7	36.69
12	R (Slp)	720	1605<	100	0.449	30	92	7.8	0.62	0.0	11.46

E "Excess" flow from the short lane of an adjacent movement added to normal flow
< Reduced capacity due to a short lane effect
* Maximum degree of saturation, or critical green periods
# Largest density (passenger cars per km or mile) for any lane

Table S.14 - Summary of Input and Output Data
PR 177 OESTE CON RAMPA PR 52
BASE PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (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)
East: PR 177 ESTE													
1	L	168			168	0	1949	28		1.000	71.0r	20	50
2	LT		473		761	0	1949	130		0.398	0.1		500
3	T		776		776	0	1949	130		0.398	0.1		500
4	T		776		776	0	1949	130		0.398	0.1		500
		168	2024	0	2192	0				1.000	5.5	20	
West: PR 177 Oeste													
1	T		693		693	0	1949	92		0.502	9.1	12	500
2	T		693		693	0	1949	92		0.502	9.1	12	500
3	T		693		693	0	1949	92		0.502	9.1	12	500
4	R			720	720	0	1949	30	92	0.449	7.8	0	100
		0	2080	720	2800	0				0.502	8.7	12	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	5280	0	130	1.000	6.9	20

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

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

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.

Table S.15 - Capacity and Level of Service
PR 177 OESTE CON RAMPA PR 52
BASE PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Mov ID	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	Longest Queue Cycle (vehs)	Aver. (m)
East: PR 177 ESTE										
4	L	0.215*		168	168	1.000*	71.0	E	2.9	20
5	LT (Con)	1.000		2312E	5814	0.398	0.1	C#	12.9#	
West: PR 177 Oeste										
11	T	0.708*		2080	4140	0.502	9.1	A	1.7	12
12	R (Slp)	0.231	0.708	720	1605<	0.449	7.8	A	0.0	0
ALL VEHICLES:				5280		1.000	6.9	A	2.9	20
INTERSECTION (persons):				7920			6.9		2.9	20

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.
Continuous movements: Level Of Service based on density, Density (passenger cars per km or mile) instead of queue.
< 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)
E "Excess" flow from the short lane of an adjacent movement added to normal flow

Table D.3A - Lane Queues (veh)
PR 177 OESTE CON RAMPA PR 52
BASE PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Queue Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nc1	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Stor. Ratio

East: PR 177 ESTE										
1 L	1.000	1.9	2.7	0.2	2.9	3.6	5.0	6.1	7.5*	8.5*
1.00										
West: PR 177 Oeste										
1 T	0.502	0.0	1.7	0.0	1.7	2.2	3.1	3.9	5.1	5.9
0.17										
2 T	0.502	0.0	1.7	0.0	1.7	2.2	3.1	3.9	5.1	5.9
0.17										
3 T	0.502	0.0	1.7	0.0	1.7	2.2	3.1	3.9	5.1	5.9
0.17										
4 R	0.449	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2
0.10										

Values printed in this table are cycle-average queues (vehicles).

* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Table D.3B - Lane Queues (metres)
PR 177 OESTE CON RAMPA PR 52
BASE PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 130 (Sum of User-given Phase Times)

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (metres) Nc1	Nc2	Nc	Percentile (metres) 70%	85%	90%	95%	98%	Queue Stor. Ratio
East: PR 177 ESTE											
1 L	1.000	13.5	18.9	1.5	20.5	25.2	35.3	43.0	52.4*	59.4*	1.00
West: PR 177 Oeste											
1 T	0.502	0.0	12.2	0.0	12.2	15.3	22.0	27.4	35.9	41.4	0.17
2 T	0.502	0.0	12.2	0.0	12.2	15.3	22.0	27.4	35.9	41.4	0.17
3 T	0.502	0.0	12.2	0.0	12.2	15.3	22.0	27.4	35.9	41.4	0.17
4 R	0.449	0.0	0.3	0.0	0.3	0.4	0.6	0.8	1.2	1.5	0.10

Values printed in this table are cycle-average queues (metres).

* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Site: 04- PR-177 OESTE CON RAMPA PR52 BP
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren base.aap
Processed Jun 14, 2007 04:05:29PM

M0276, Traffic Consulting Group, Large Office
Produced by SIDRA Intersection 3.1.061208.34

www.sidrasolutions.com

Output Tables
Output Tables
PR 177 OESTE CON RAMPA PR 52
FUTURO AM

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: TCG Standard Right
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: Cycle average queue, Average

* Iteration Data:
No. of Main (Timing-Capacity) Iterations = 4
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 = 1 secs)

* 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.

* Movement 4 has large x because of short lanes.
The degree of saturation of adjacent movement 5 is less than xp, hence this solution may be satisfactory.
See Table S.7 for queue length, delay etc.

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PR 177 OESTE CON RAMPA PR 52
FUTURO AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
East: PR 177 ESTE							
	South	4	Left	441	0	1.00	1.00
	West	5	Thru	1248	0	1.00	1.00
West: PR 177 Oeste							
	South	12	Right	295	0	1.00	1.00
	East	11	Thru	1909	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PR 177 OESTE CON RAMPA PR 52
FUTURO AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program						
East: PR 177 ESTE						
4 L	441	0	0	0	0	0
5 T	0	0	1248	0	0	0
West: PR 177 Oeste						
11 T	0	0	1909	0	0	0
12 R	0	0	0	0	295	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
PR 177 OESTE CON RAMPA PR 52
FUTURO AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	Mov Typ	PHASE MATRIX First Green Fr	First Green To	First Green Op Pr	Second Green Fr	Second Green To	Second Green 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
East: PR 177 ESTE													

```
   4 L       *A     B       Y                          4         61.8
52
 ---------------------------------------------------------------------------
----------
 West: PR 177 Oeste
   11 T       *B     A                                  4         36.6
30
   12 R  (Slp) A     B              B     A             4    4    12.3      12.4
52   30
 ---------------------------------------------------------------------------
----------
 ---------------------------------------------------------------------------
----------
   Current Phase Sequence: ACTUAL
   Input phase sequence: A B
   Output phase sequence: A B
 ---------------------------------------------------------------------------
----------
   *  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
PR 177 OESTE CON RAMPA PR 52
FUTURO AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	Dem Flow (veh /h)	HV (%)	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
East: PR 177 ESTE											
4 L	398	0.0	688<		0.578		398	0.90	-10	100	1.001*
5 LT	1291E	0.0	5840		0.221		5840	0.90	307	100	0.221
West: PR 177 Oeste											
11 T	1909	0.0	5850		0.326		1950	0.90	-8	100	0.979
12 R	295	0.0	1729<	1820<	0.083	0.084	1606	0.90	390	100	0.184

E "Excess" flow from the short lane of an adjacent movement added to normal flow
< Reduced saturation flow due to a short lane effect

Movement 4 has large x because of short lanes.
The degree of saturation of adjacent movement 5 is less than xp, hence this solution may be satisfactory.
See Table S.7 for queue length, delay etc.

Table S.3 - Intersection Parameters
PR 177 OESTE CON RAMPA PR 52
FUTURO AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
4	E_L		A	B	4	0.578	0.642	61.8
11	W_T		B	A	4	0.326	0.363	36.6
				Total:	8	0.904	1.005	98.4

Cycle Time:

Minimum	Maximum	Practical	Chosen
20	150	****	90

(Program-determined Optimum Cycle Time)

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

Intersection Level of Service	=	C
Worst movement Level of Service	=	E
Average intersection delay (s/pers)	=	32.7
Largest average movement delay (s)	=	59.8
Largest cycle-average queue, mean (m)	=	74
Performance Index	=	124.34
Degree of saturation (highest)	=	1.001
Practical Spare Capacity (lowest)	=	-10 %
Effective intersection capacity, (veh/h)	=	3891
Total vehicle flow (veh/h)	=	3893
Total person flow (pers/h)	=	5840
Total vehicle delay (veh-h/h)	=	35.37
Total person delay (pers-h/h)	=	53.05
Total effective vehicle stops (veh/h)	=	2840
Total effective person stops (pers/h)	=	4261
Total vehicle travel (veh-km/h)	=	2362.2
Total cost ($/h)	=	2405.53
Total fuel (L/h)	=	284.2
Total CO2 (kg/h)	=	710.58

Table S.4 - Phase Information
PR 177 OESTE CON RAMPA PR 52
FUTURO AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split

A	0	4	4	52	56	4	56	62%
B	56	4	60	30	90	4	34	38%

Current Phase Sequence: ACTUAL
Input phase sequence: A B
Output phase sequence: A B

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 Cycle (vehs)	Aver. (m)	Perf. Index	Aver. Speed (km/h)
East: PR 177 ESTE									
4 L	3.01	4.51	27.2	0.99	0.88	2.1	15	11.06	34.3
5 LT	0.01	0.01	0.0		0.00	7.2#		13.06	60.0
West: PR 177 Oeste									
11 T	31.71	47.57	59.8	1.00	1.21	10.6	74	95.53	22.7
12 R	0.64	0.96	7.8	0.11	0.62	0.0	0	4.70	49.2

Largest density (passenger cars per km or mile) for any lane

Table S.6 - Intersection Performance
PR 177 OESTE CON RAMPA PR 52
FUTURO AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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)
East: PR 177 ESTE									
1689	1.001	3.02	4.52	6.4	0.23	0.21	50	24.12	51.0
West: PR 177 Oeste									
2204	0.979	32.35	48.53	52.8	0.88	1.13	74	100.23	24.5
ALL VEHICLES:									
3893	1.001	35.37	53.05	32.7	0.60	0.73	74	124.34	31.6
INTERSECTION (persons):									
5840	1.001		53.05	32.7	0.60	0.73		124.34	31.6

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PR 177 OESTE CON RAMPA PR 52
FUTURO AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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 Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
East: PR 177 ESTE												
1 L	38	52	0	0	398	398	1.000	27.2r	0.88	2.1	14.7<	50.0T
2 LT	0	90	0	0	429	1940	0.221	0.0	0.00	7.2#		500.0
3 T	0	90	0	0	431	1950	0.221	0.0	0.00	7.2#		500.0
4 T	0	90	0	0	431	1950	0.221	0.0	0.00	7.2#		500.0
West: PR 177 Oeste												
1 T	60	30	0	0	636	650	0.979	59.8	1.21	10.6	74.0	500.0
2 T	60	30	0	0	636	650	0.979	59.8	1.21	10.6	74.0	500.0
3 T	60	30	0	0	636	650	0.979	59.8	1.21	10.6	74.0	500.0
4 R	4	52	4	30	295	1606	0.184	7.8	0.62	0.0	0.1	100.0T

< Short lane capacity is reached and there is excess flow into an adjacent lane
Density (passenger cars per km or mile)
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.
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
PR 177 OESTE CON RAMPA PR 52
FUTURO AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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 %
East: PR 177 ESTE												
1 L	398	0	0	398	3.30	1950	688<	0	88	398	1.000	100
2 LT	43E	386	0	429	3.30	1950	1940	0	0	1940	0.221	100
3 T	0	431	0	431	3.30	1950	1950	0	0	1950	0.221	100
4 T	0	431	0	431	3.30	1950	1950	0	0	1950	0.221	100
West: PR 177 Oeste												
1 T	0	636	0	636	3.30	1950	1950	0	0	650	0.979	100
2 T	0	636	0	636	3.30	1950	1950	0	0	650	0.979	100
3 T	0	636	0	636	3.30	1950	1950	0	0	650	0.979	100
4 R	0	0	295	295	3.30	1950	1729<	1820<	0	1606	0.184	100

E "Excess" flow from back of an adjacent short lane
< Reduced saturation flow due to a short lane effect

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
PR 177 OESTE CON RAMPA PR 52
FUTURO AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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	Cycle Average Queue (veh)	Perf. Index
East: PR 177 ESTE											
4	L	398	398<	100	1.001*	52*		27.2	0.88	2.1	11.06
5	LT (Con)	1291E	5840	100	0.221	90		0.0	0.00	7.2 #	13.06
West: PR 177 Oeste											
11	T	1909	1950	100	0.979	30*		59.8	1.21	10.6	95.53
12	R (Slp)	295	1606<	100	0.184	52	30	7.8	0.62	0.0	4.70

E "Excess" flow from the short lane of an adjacent movement added to normal flow
< Reduced capacity due to a short lane effect
* Maximum degree of saturation, or critical green periods
# Largest density (passenger cars per km or mile) for any lane

Table S.14 - Summary of Input and Output Data
PR 177 OESTE CON RAMPA PR 52
FUTURO AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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)
East: PR 177 ESTE												
1 L	398			398	0	1949	52		1.000	27.2r	15	50
2 LT		386		429	0	1949	90		0.221	0.0		500
3 T		431		431	0	1949	90		0.221	0.0		500
4 T		431		431	0	1949	90		0.221	0.0		500
	398	1248	0	1646	0				1.000	6.6	15	
West: PR 177 Oeste												
1 T		636		636	0	1949	30		0.979	59.8	74	500
2 T		636		636	0	1949	30		0.979	59.8	74	500
3 T		636		636	0	1949	30		0.979	59.8	74	500
4 R			295	295	0	1949	52	30	0.184	7.8	0	100
	0	1909	295	2204	0				0.979	52.8	74	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	3893	0	90	1.001	32.7	74

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

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

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.

Table S.15 - Capacity and Level of Service
PR 177 OESTE CON RAMPA PR 52
FUTURO AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	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	Longest Queue Cycle (vehs)	Aver. (m)
East: PR 177 ESTE										
4	L	0.578*		398	398<	1.001*	27.2	C	2.1	15
5	LT (Con)	1.000		1291E	5840	0.221	0.0	B#	7.2#	
West: PR 177 Oeste										
11	T	0.333*		1909	1950	0.979	59.8	E	10.6	74
12	R (Slp)	0.578	0.333	295	1606<	0.184	7.8	A	0.0	0
ALL VEHICLES:				3893		1.001	32.7	C	10.6	74
INTERSECTION (persons):				5840			32.7		10.6	74

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.
Continuous movements: Level Of Service based on density, Density (passenger cars per km or mile) instead of queue.
< 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)
E "Excess" flow from the short lane of an adjacent movement added to normal flow

Table S.21 - Optimum Cycle Time Results
PR 177 OESTE CON RAMPA PR 52
FUTURO AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	1.000	120
Average Delay	32.7	90
Stop Rate	0.67	150
Max. Queue for Any Movement	10.6	90
Perf. Index	124.3	90
Cost	2405.5	90

Performance Measure	Largest Value	Cycle Time
Eff. Inters. Cap.	3895	120
Prac. Spare Cap.	-10	120

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 D.3A - Lane Queues (veh)
PR 177 OESTE CON RAMPA PR 52
FUTURO AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Lane	Deg. Satn	Ovrfl. Queue	Average (veh)			Percentile (veh)					Queue Stor. Ratio
	x	No	Ncl	Nc2	Nc	70%	85%	90%	95%	98%	
East: PR 177 ESTE											
1 L	1.000	5.4	2.1	0.0	2.1	2.6	3.7	4.6	5.9	6.7	1.00
West: PR 177 Oeste											
1 T	0.979	4.7	5.7	4.9	10.6	12.7	17.0	19.3	22.3	24.5	0.33
2 T	0.979	4.7	5.7	4.9	10.6	12.7	17.0	19.3	22.3	24.5	0.33
3 T	0.979	4.7	5.7	4.9	10.6	12.7	17.0	19.3	22.3	24.5	0.33
4 R	0.184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.03

Values printed in this table are cycle-average queues (vehicles).

Table D.3B - Lane Queues (metres)
PR 177 OESTE CON RAMPA PR 52
FUTURO AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Lane	Deg. Satn	Ovrfl. Queue	Average (metres)			Percentile (metres)					Queue Stor. Ratio
	x	No	Ncl	Nc2	Nc	70%	85%	90%	95%	98%	
East: PR 177 ESTE											
1 L	1.000	38.0	14.7	0.0	14.7	18.3	26.0	32.3	41.1	47.2	1.00
West: PR 177 Oeste											
1 T	0.979	32.9	40.0	34.0	74.0	88.9	118.8	134.9	156.1	171.2	0.33
2 T	0.979	32.9	40.0	34.0	74.0	88.9	118.8	134.9	156.1	171.2	0.33
3 T	0.979	32.9	40.0	34.0	74.0	88.9	118.8	134.9	156.1	171.2	0.33
4 R	0.184	0.0	0.1	0.0	0.1	0.2	0.3	0.3	0.5	0.6	0.03

Values printed in this table are cycle-average queues (metres).

Table V.21 - Intersection Summary for Optimum Cycle Time
PR 177 OESTE CON RAMPA PR 52
FUTURO AM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Cycle Time (sec)	Eff. Int. Cap.	Intersn Deg. of Satn	Prac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
90	3891	1.001	-10	32.7	0.73	10.6	124.3	2405.5	
100	3893	1.000	-10	36.1	0.73	11.8	131.7	2507.5	
110	3894	1.000	-10	35.1	0.70	11.4	129.0	2474.0	
120	3895	1.000	-10	38.2	0.70	12.5	135.7	2567.6	
130	3893	1.000	-10	41.2	0.69	13.6	142.2	2657.7	
140	3893	1.000	-10	40.6	0.67	13.4	140.3	2635.1	
150	3890	1.001	-10	43.4	0.67	14.4	146.5	2719.9	

Site: 04- PR-177 OESTE CON RAMPA PR52 FA
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren futuro.aap
Processed Jun 15, 2007 10:23:03AM

M0276, Traffic Consulting Group, Large Office
Produced by SIDRA Intersection 3.1.061208.34

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Output Tables
Output Tables
PR 177 OESTE CON RAMPA PR 52
FUTURO PM

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: TCG Standard Right
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: Cycle average queue, Average

* Iteration Data:
No. of Main (Timing-Capacity) Iterations = 4
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, 51
Critical Movements: 4, 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.

* Movement 4 has large x because of short lanes.
The degree of saturation of adjacent movement 5 is less than xp, hence this solution may be satisfactory.
See Table S.7 for queue length, delay etc.

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PR 177 OESTE CON RAMPA PR 52
FUTURO PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

From	To	Mov	Flow Rate	Flow	Peak Flow

Approach	Approach	ID	Turn	LV	HV	Scale	Factor
East: PR 177 ESTE							
	South	4	Left	474	0	1.00	1.00
	West	5	Thru	2105	0	1.00	1.00
West: PR 177 Oeste							
	South	12	Right	749	0	1.00	1.00
	East	11	Thru	2163	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PR 177 OESTE CON RAMPA PR 52
FUTURO PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	Left		Through		Right	
	LV	HV	LV	HV	LV	HV
Demand flows in veh/hour as used by the program						
East: PR 177 ESTE						
4 L	474	0	0	0	0	0
5 T	0	0	2105	0	0	0
West: PR 177 Oeste						
11 T	0	0	2163	0	0	0
12 R	0	0	0	0	749	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
PR 177 OESTE CON RAMPA PR 52
FUTURO PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	Mov Typ	P H A S E M A T R I X First Green		Second Green		Lost Tim 1st	2nd	Req.Mov.Time 1st	2nd	Eff. Grn 1st	2nd

	Fr	To	Op Pr	Fr	To	Op Pr	Grn	Grn	Grn	Grn	Grn	Grn
East: PR 177 ESTE												
4 L	*A	B	Y				6		57.1		46	
West: PR 177 Oeste												
11 T	*B	A					4		41.0		34	
12 R (Slp)	A	B		B	A		4	4	25.1	25.3	48	34

Current Phase Sequence: ACTUAL
Input phase sequence: A B
Output phase sequence: A B

* 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
PR 177 OESTE CON RAMPA PR 52
FUTURO PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	Dem Flow (veh /h)	HV (%)	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
East: PR 177 ESTE											
4 L	292	0.0	571<		0.511		292	0.90	-10	100	1.000*
5 LT	2287E	0.0	5827		0.393		5827	0.90	129	100	0.393
West: PR 177 Oeste											
11 T	2163	0.0	5850		0.370		2210	0.90	-8	100	0.979
12 R	749	0.0	1739<	1794<	0.211	0.213	1605	0.90	93	100	0.467

E "Excess" flow from the short lane of an adjacent movement added to normal flow
< Reduced saturation flow due to a short lane effect

Movement 4 has large x because of short lanes.
The degree of saturation of adjacent movement 5 is less than xp, hence this solution may be satisfactory.
See Table S.7 for queue length, delay etc.

Table S.3 - Intersection Parameters
PR 177 OESTE CON RAMPA PR 52
FUTURO PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
4	E_L		A	B	6	0.511	0.568	57.1
11	W_T		B	A	4	0.370	0.411	41.0
				Total:	10	0.881	0.979	98.1

Cycle Time:

Minimum	Maximum	Practical	Chosen
20	150	150	90

(Program-determined Optimum Cycle Time)

Intersection Level of Service	=	C
Worst movement Level of Service	=	E
Average intersection delay (s/pers)	=	25.5
Largest average movement delay (s)	=	57.8
Largest cycle-average queue, mean (m)	=	81
Performance Index	=	149.74
Degree of saturation (highest)	=	1.000
Practical Spare Capacity (lowest)	=	-10 %
Effective intersection capacity, (veh/h)	=	5490
Total vehicle flow (veh/h)	=	5491
Total person flow (pers/h)	=	8237
Total vehicle delay (veh-h/h)	=	38.89
Total person delay (pers-h/h)	=	58.33
Total effective vehicle stops (veh/h)	=	3359
Total effective person stops (pers/h)	=	5039
Total vehicle travel (veh-km/h)	=	3334.8
Total cost ($/h)	=	3064.51
Total fuel (L/h)	=	372.2
Total CO2 (kg/h)	=	930.50

Table S.4 - Phase Information
PR 177 OESTE CON RAMPA PR 52
FUTURO PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	4	4	48	52	4	52	58%
B	52	4	56	34	90	4	38	42%

Current Phase Sequence: ACTUAL
Input phase sequence: A B
Output phase sequence: A B

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 Cycle (vehs)	Longest Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
East: PR 177 ESTE									
4 L	2.45	3.67	30.2	0.95	0.88	1.8	12	8.60	32.7
5 LT	0.04	0.06	0.1		0.00	12.8#		23.14	59.9
West: PR 177 Oeste									
11 T	34.75	52.13	57.8	1.00	1.22	11.6	81	105.99	23.2
12 R	1.64	2.46	7.9	0.16	0.63	0.1	0	12.00	48.9

Largest density (passenger cars per km or mile) for any lane

Table S.6 - Intersection Performance
PR 177 OESTE CON RAMPA PR 52
FUTURO PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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)
East: PR 177 ESTE									
2579	1.000	2.49	3.73	3.5	0.11	0.10	89	31.74	54.8
West: PR 177 Oeste									
2912	0.979	36.40	54.60	45.0	0.78	1.07	81	117.99	26.8
ALL VEHICLES:									
5491	1.000	38.89	58.33	25.5	0.47	0.61	81	149.74	35.3
INTERSECTION (persons):									
8237	1.000		58.33	25.5	0.47	0.61		149.74	35.3

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PR 177 OESTE CON RAMPA PR 52
FUTURO PM

Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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 Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
East: PR 177 ESTE												
1 L	44	46	0	0	292	292	1.000	30.2r	0.88	1.8	12.5<	50.0T
2 LT	0	90	0	0	756	1927	0.393	0.1	0.00	12.6#		500.0
3 T	0	90	0	0	765	1950	0.393	0.1	0.00	12.8#		500.0
4 T	0	90	0	0	765	1950	0.393	0.1	0.00	12.8#		500.0
West: PR 177 Oeste												
1 T	56	34	0	0	721	737	0.979	57.8	1.22	11.6	81.1	500.0
2 T	56	34	0	0	721	737	0.979	57.8	1.22	11.6	81.1	500.0
3 T	56	34	0	0	721	737	0.979	57.8	1.22	11.6	81.1	500.0
4 R	4	48	4	34	749	1605	0.467	7.9	0.63	0.1	0.5	100.0T

< Short lane capacity is reached and there is excess flow into an adjacent lane
Density (passenger cars per km or mile)
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.
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
PR 177 OESTE CON RAMPA PR 52
FUTURO PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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 %
East: PR 177 ESTE												
1 L	292	0	0	292	3.30	1950	571<	0	88	292	1.000	100
2 LT	182E	574	0	756	3.30	1950	1927	0	0	1927	0.393	100
3 T	0	765	0	765	3.30	1950	1950	0	0	1950	0.393	100
4 T	0	765	0	765	3.30	1950	1950	0	0	1950	0.393	100
West: PR 177 Oeste												
1 T	0	721	0	721	3.30	1950	1950	0	0	737	0.979	100
2 T	0	721	0	721	3.30	1950	1950	0	0	737	0.979	100
3 T	0	721	0	721	3.30	1950	1950	0	0	737	0.979	100
4 R	0	0	749	749	3.30	1950	1739<	1794<	0	1605	0.467	100

E "Excess" flow from back of an adjacent short lane
< Reduced saturation flow due to a short lane effect

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
PR 177 OESTE CON RAMPA PR 52
FUTURO PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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	Cycle Average Queue (veh)	Perf. Index
East: PR 177 ESTE											
4 L		292	292<	100	1.000*	46*		30.2	0.88	1.8	8.60
5 LT	(Con)	2287E	5827	100	0.393	90		0.1	0.00	12.8 #	23.14
West: PR 177 Oeste											
11 T		2163	2210	100	0.979	34*		57.8	1.22	11.6	105.99
12 R	(Slp)	749	1605<	100	0.467	48	34	7.9	0.63	0.1	12.00

E "Excess" flow from the short lane of an adjacent movement added to normal flow
< Reduced capacity due to a short lane effect
* Maximum degree of saturation, or critical green periods
# Largest density (passenger cars per km or mile) for any lane

Table S.14 - Summary of Input and Output Data
PR 177 OESTE CON RAMPA PR 52
FUTURO PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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)
East: PR 177 ESTE												
1 L	292			292	0	1949	46		1.000	30.2r	12	50
2 LT		574		756	0	1949	90		0.393	0.1		500
3 T		765		765	0	1949	90		0.393	0.1		500
4 T		765		765	0	1949	90		0.393	0.1		500
	292	2105	0	2397	0				1.000	3.7	12	
West: PR 177 Oeste												
1 T		721		721	0	1949	34		0.979	57.8	81	500
2 T		721		721	0	1949	34		0.979	57.8	81	500
3 T		721		721	0	1949	34		0.979	57.8	81	500

4	R		749	749	0	1949	48	34	0.467	7.9	0	100
		0	2163	749	2912	0			0.979	45.0	81	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	5491	0	90	1.000	25.5	81

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

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

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.

Table S.15 - Capacity and Level of Service
PR 177 OESTE CON RAMPA PR 52
FUTURO PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	Mov Typ	Green Ratio 1st grn	Green Ratio 2nd grn	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Longest Queue Aver. (m)
East: PR 177 ESTE										
4	L	0.511*		292	292<	1.000*	30.2	C	1.8	12
5	LT (Con)	1.000		2287E	5827	0.393	0.1	C#	12.8#	
West: PR 177 Oeste										
11	T	0.378*		2163	2210	0.979	57.8	E	11.6	81
12	R (Slp)	0.533	0.378	749	1605<	0.467	7.9	A	0.1	0
ALL VEHICLES:				5491		1.000	25.5	C	11.6	81
INTERSECTION (persons):				8237			25.5		11.6	81

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.

\# Continuous movements: Level Of Service based on density, Density (passenger cars per km or mile) instead of queue.

< 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)

E "Excess" flow from the short lane of an adjacent movement added to normal flow

Table S.21 - Optimum Cycle Time Results
PR 177 OESTE CON RAMPA PR 52
FUTURO PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	1.000	100
Average Delay	25.5	90
Stop Rate	0.56	150
Max. Queue for Any Movement	11.6	90
Perf. Index	149.7	90
Cost	3064.5	90

Performance Measure	Largest Value	Cycle Time
Eff. Inters. Cap.	5493	100
Prac. Spare Cap.	-10	100

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 D.3A - Lane Queues (veh)
PR 177 OESTE CON RAMPA PR 52
FUTURO PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Ncl	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
East: PR 177 ESTE											
1 L	1.000	4.1	1.8	0.0	1.8	2.2	3.2	4.0	5.2	6.0	1.00

West: PR 177 Oeste										
1 T	0.979	5.4	6.0	5.6	11.6	13.9	18.6	21.0	24.4	26.7
0.37										
2 T	0.979	5.4	6.0	5.6	11.6	13.9	18.6	21.0	24.4	26.7
0.37										
3 T	0.979	5.4	6.0	5.6	11.6	13.9	18.6	21.0	24.4	26.7
0.37										
4 R	0.467	0.0	0.1	0.0	0.1	0.1	0.1	0.2	0.3	0.3
0.11										

Values printed in this table are cycle-average queues (vehicles).

Table D.3B - Lane Queues (metres)
PR 177 OESTE CON RAMPA PR 52
FUTURO PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

	Deg.	Ovrfl.	Average (metres)			Percentile (metres)				
Lane	Satn	Queue								Queue Stor.
No.	x	No	Nc1	Nc2	Nc	70%	85%	90%	95%	98%	Ratio
East: PR 177 ESTE										
1 L	1.000	28.7	12.5	0.0	12.5	15.6	22.4	28.0	36.5	42.0
1.00										
West: PR 177 Oeste										
1 T	0.979	37.8	42.0	39.1	81.1	97.4	130.1	147.3	170.8	187.2
0.37										
2 T	0.979	37.8	42.0	39.1	81.1	97.4	130.1	147.3	170.8	187.2
0.37										
3 T	0.979	37.8	42.0	39.1	81.1	97.4	130.1	147.3	170.8	187.2
0.37										
4 R	0.467	0.0	0.5	0.0	0.5	0.6	0.9	1.2	1.9	2.3
0.11										

Values printed in this table are cycle-average queues (metres).

Table V.21 - Intersection Summary for Optimum Cycle Time
PR 177 OESTE CON RAMPA PR 52
FUTURO PM
Intersection ID: 04
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Cycle Time (sec)	Eff. Int. Cap.	Intersn Deg. of Satn	Prac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
90	5490	1.000	-10	25.5	0.61	11.6	149.7	3064.5	
100	5493	1.000	-10	26.2	0.60	11.9	151.4	3091.2	
110	5488	1.001	-10	26.9	0.59	12.3	153.4	3121.0	
120	5487	1.001	-10	30.5	0.59	14.1	164.5	3273.8	
130	5489	1.000	-10	31.1	0.58	14.4	166.1	3297.8	
140	5493	1.000	-10	31.8	0.57	14.8	167.9	3324.3	
150	5493	1.000	-10	32.5	0.56	15.1	169.8	3352.6	

Site: 04- PR-177 OESTE CON RAMPA PR52 FP
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren futuro.aap
Processed Jun 15, 2007 10:27:09AM

Output Tables
Output Tables
05 PR1--PR30--PR52
AM BASE

Run Information
Cycle Time = 163 (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
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: Cycle average 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 B.1 - Movement Definitions and Flow Rates (Origin-Destination)
05 PR1--PR30--PR52
AM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: PR-1 Sur							
	East	3	Right	56	0	1.00	1.00
	North	2	Thru	2420	0	1.00	1.00
	SouthWest	1	Left	4	0	1.00	1.00
East: Calle Municipal							
	South	4	Left	28	0	1.00	1.00
	North	6	Right	36	0	1.00	1.00
	SouthWest	4	Left	12	0	1.00	1.00
North: PR-1 Norte							
	South	8	Thru	1152	0	1.00	1.00
	East	7	Left	20	0	1.00	1.00
	West	9	Right	3288	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
05 PR1--PR30--PR52
AM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Mov ID		Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program							
South: PR-1 Sur							
1	L	4	0	0	0	0	0
2	T	0	0	2420	0	0	0
3	R	0	0	0	0	56	0
East: Calle Municipal							
4	L	40	0	0	0	0	0
6	R	0	0	0	0	36	0
North: PR-1 Norte							
7	L	20	0	0	0	0	0
8	T	0	0	1152	0	0	0
9	R	0	0	0	0	3288	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
05 PR1--PR30--PR52
AM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Mov ID	Mov Typ	PHASE MATRIX First Green	PHASE MATRIX Second Green	Lost Tim 1st	Lost Tim 2nd	Req.Mov.Time 1st	Req.Mov.Time 2nd	Eff. Grn 1st	Eff. Grn 2nd

		Fr	To	Op	Pr	Fr	To	Op	Pr	Grn	Grn	Grn	Grn	Grn
South: PR-1 Sur														
1	L		New	P	A					4		10.0Min		15
2	T	*A		B						4		116.4		116
3	R	(Slp) A		B			B		A	4	4	10.0Min	20.0Min	116
East: Calle Municipal														
4	L		*B		New	P				4		10.0Min		20
6	R	(Slp) B		New	P		New	P	B	4	4	10.0Min	20.0Min	20
North: PR-1 Norte														
7	L		*New	P	A	Y				4		10.0Min		15
8	T		A		B					4		57.5		116

Current Phase Sequence: Actual
Input phase sequence: A B New Ph
Output phase sequence: A B New P

* 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
05 PR1--PR30--PR52
AM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Mov ID	Dem Flow (veh /h)	HV (%)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: PR-1 Sur											
1 L	4	0.0	1857		0.002		171	0.90	3745	100	0.023
2 T	2420	0.0	3900		0.621		2775	0.90	3	100	0.872
3 R	56	0.0	1857	1857	0.015	0.015	1766	0.90	2738	100	0.032
East: Calle Municipal											
4 L	40	0.0	1876		0.021		230	0.90	418	100	0.174
6 R	36	0.0	1767<	1516<	0.020	0.000	1472	0.90	3581	100	0.024
North: PR-1 Norte											
7 L	20	0.0	1581		0.013		145	0.90	555	100	0.137
8 T	1152	0.0	3900		0.295		2775	0.90	117	100	0.415
9 R	3288	0.0	3714		0.885		3714	0.90	2	100	0.885*

Table S.3 - Intersection Parameters
05 PR1--PR30--PR52
AM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
2	S_T		A	B	4	0.621	0.689	116.4
4	E_L		B	New P	10	-	-	10.0Min
7	N_L		New	PA	10	-	-	10.0Min
		Total:			24	0.621	0.689	136.4

\- 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
30	163*	77	163

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

* Cmax increased to match sum of phase times

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

Intersection Level of Service	=	A
Worst movement Level of Service	=	F
Average intersection delay (s/pers)	=	9.3
Largest average movement delay (s)	=	83.0
Largest cycle-average queue, mean (m)	=	44
Performance Index	=	119.63
Degree of saturation (highest)	=	0.885
Practical Spare Capacity (lowest)	=	2 %
Effective intersection capacity, (veh/h)	=	7925
Total vehicle flow (veh/h)	=	7016

Total person flow (pers/h)	=	10524
Total vehicle delay (veh-h/h)	=	18.10
Total person delay (pers-h/h)	=	27.15
Total effective vehicle stops (veh/h)	=	2482
Total effective person stops (pers/h)	=	3723
Total vehicle travel (veh-km/h)	=	4240.9
Total cost ($/h)	=	2934.38
Total fuel (L/h)	=	387.3
Total CO2 (kg/h)	=	968.15

Table S.4 - Phase Information
05 PR1--PR30--PR52
AM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	4	4	116	120	4	120	74%
B	120	4	124	20	144	4	24	15%
New P	144	4	148	15	163	4	19	12%

(Phase times specified by the user)
Current Phase Sequence: Actual
Input phase sequence: A B New Ph
Output phase sequence: A B New P

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 Cycle Aver. (vehs)	Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: PR-1 Sur										
1	L	0.09	0.14	81.8	0.93	0.65	0.1	1	0.23	18.4
2	T	12.58	18.87	18.7	0.83	0.79	6.3	44	60.26	39.6
3	R	0.12	0.18	7.7	0.05	0.61	0.0	0	0.89	49.5
East: Calle Municipal										
4	L	0.85	1.28	76.6	0.93	0.74	0.8	5	2.19	19.3
6	R	0.08	0.12	7.7	0.05	0.61	0.0	0	0.57	49.5
North: PR-1 Norte										
7	L	0.46	0.69	83.0	0.95	0.72	0.4	3	1.16	18.3
8	T	3.21	4.82	10.0	0.44	0.40	1.6	11	20.65	47.0
9	R	0.70	1.05	0.8		0.00	28.0#		33.69	58.7

Largest density (passenger cars per km or mile) for any lane

Table S.6 - Intersection Performance
05 PR1--PR30--PR52
AM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (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-1 Sur									
2480	0.872	12.79	19.19	18.6	0.82	0.79	44	61.37	39.7
East: Calle Municipal									
76	0.174	0.93	1.39	44.0	0.52	0.68	5	2.76	27.3
North: PR-1 Norte									
4460	0.885	4.38	6.57	3.5	0.12	0.11	196	55.50	54.7
ALL VEHICLES:									
7016	0.885	18.10	27.15	9.3	0.37	0.35	44	119.63	47.8
INTERSECTION (persons):									
10524	0.885		27.15	9.3	0.37	0.35		119.63	47.8

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
05 PR1--PR30--PR52
AM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (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 Cycle Aver. (vehs)	Queue Aver. (m)	Lane Length (m)
South: PR-1 Sur													
1	L	148	15	0	0	4	171	0.023	81.8	0.65	0.1	0.6	93.0T
2	T	47	116	0	0	1210	1388	0.872	18.7	0.79	6.3	44.0	500.0
3	T	47	116	0	0	1210	1388	0.872	18.7	0.79	6.3	44.0	500.0
4	R	4	116	4	39	56	1766	0.032	7.7	0.61	0.0	0.0	500.0T
East: Calle Municipal													
1	L	143	20	0	0	40	230	0.174	76.6	0.74	0.8	5.4	500.0
2	R	4	20	4	135	36	1473	0.024	7.7	0.61	0.0	0.0	60.0T
North: PR-1 Norte													
1	L	148	15	0	0	20	145	0.137	83.0	0.72	0.4	2.9	70.0T
2	T	47	116	0	0	576	1388	0.415	10.0	0.40	1.6	11.3	500.0
3	T	47	116	0	0	576	1388	0.415	10.0	0.40	1.6	11.3	500.0
4	R	0	163	0	0	1644	1857	0.885	0.8	0.00	28.0#		500.0
5	R	0	163	0	0	1644	1857	0.885	0.8	0.00	28.0#		45.0T

Density (passenger cars per km or mile)
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
05 PR1--PR30--PR52
AM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (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-1 Sur												
1 L	4	0	0	4	3.30	1950	1857	0	0	171	0.023	100
2 T	0	1210	0	1210	3.30	1950	1950	0	0	1388	0.872	100
3 T	0	1210	0	1210	3.30	1950	1950	0	0	1388	0.872	100
4 R	0	0	56	56	3.30	1950	1857	1857	0	1766	0.032	100
East: Calle Municipal												
1 L	40	0	0	40	3.50	1970	1876	0	0	230	0.174	100
2 R	0	0	36	36	3.30	1950	1767<	1516<	0	1473	0.024	100
North: PR-1 Norte												
1 L	20	0	0	20	3.00	1920	1581	0	49	145	0.137	100
2 T	0	576	0	576	3.30	1950	1950	0	0	1388	0.415	100
3 T	0	576	0	576	3.30	1950	1950	0	0	1388	0.415	100
4 R	0	0	1644	1644	3.30	1950	1857	0	0	1857	0.885	100
5 R	0	0	1644	1644	3.30	1950	1857	0	0	1857	0.885	100

< Reduced saturation flow due to a short lane effect

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
05 PR1--PR30--PR52
AM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (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	Cycle Average Queue (veh)	Perf. Index
South: PR-1 Sur											
1 L		4	171	100	0.023	15		81.8	0.65	0.1	0.23
2 T		2420	2775	100	0.872	116*		18.7	0.79	6.3	60.26
3 R	(Slp)	56	1766	100	0.032	116	39	7.7	0.61	0.0	0.89
East: Calle Municipal											
4 L		40	230	100	0.174	20*		76.6	0.74	0.8	2.19
6 R	(Slp)	36	1472<	100	0.024	20	135	7.7	0.61	0.0	0.57
North: PR-1 Norte											
7 L		20	145	100	0.137	15*		83.0	0.72	0.4	1.16
8 T		1152	2775	100	0.415	116		10.0	0.40	1.6	20.65
9 R	(Con)	3288	3714	100	0.885*	163		0.8	0.00	28.0 #	33.69

< Reduced capacity due to a short lane effect
* Maximum degree of saturation, or critical green periods
# Largest density (passenger cars per km or mile) for any lane

Table S.14 - Summary of Input and Output Data
05 PR1--PR30--PR52
AM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	Eff Grn (secs) 2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-1 Sur												
1 L	4			4	0	1949	15		0.023	81.8	1	93
2 T		1210		1210	0	1949	116		0.872	18.7	44	500
3 T		1210		1210	0	1949	116		0.872	18.7	44	500
4 R			56	56	0	1949	116	39	0.032	7.7	0	500
	4	2420	56	2480	0				0.872	18.6	44	
East: Calle Municipal												
1 L	40			40	0	1970	20		0.174	76.6	5	500
2 R			36	36	0	1949	20	135	0.024	7.7	0	60
	40	0	36	76	0				0.174	44.0	5	
North: PR-1 Norte												
1 L	20			20	0	1919	15		0.137	83.0	3	70
2 T		576		576	0	1949	116		0.415	10.0	11	500
3 T		576		576	0	1949	116		0.415	10.0	11	500
4 R			1644	1644	0	1949	163		0.885	0.8		500
5 R			1644	1644	0	1949	163		0.885	0.8		45
	20	1152	3288	4460	0				0.885	3.5	11	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	7016	0	163	0.885	9.3	44

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average 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
05 PR1--PR30--PR52
AM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Mov ID	Mov Typ	Green Ratio 1st grn	Green Ratio 2nd grn	Time (g/C)	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Longest Queue Aver. (m)
South: PR-1 Sur											
1 L		0.092			4	171	0.023	81.8	F	0.1	1
2 T		0.712*			2420	2775	0.872	18.7	B	6.3	44
3 R	(Slp)	0.712	0.239		56	1766	0.032	7.7	A	0.0	0
East: Calle Municipal											
4 L		0.123*			40	230	0.174	76.6	E	0.8	5
6 R	(Slp)	0.123	0.828		36	1472<	0.024	7.7	A	0.0	0
North: PR-1 Norte											
7 L		0.092*			20	145	0.137	83.0	F	0.4	3
8 T		0.712			1152	2775	0.415	10.0	B	1.6	11
9 R	(Con)	1.000			3288	3714	0.885*	0.8	E#	28.0#	
ALL VEHICLES:					7016		0.885	9.3	A	6.3	44
INTERSECTION (persons):					10524			9.3		6.3	44

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.
\# Continuous movements: Level Of Service based on density,
Density (passenger cars per km or mile) instead of queue.
< 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.3A - Lane Queues (veh)
05 PR1--PR30--PR52
AM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nc1	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: PR-1 Sur											
1 L	0.023	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.01
2 T	0.872	0.0	6.3	0.0	6.3	7.6	10.3	11.9	13.8	15.2	0.61
3 T	0.872	0.0	6.3	0.0	6.3	7.6	10.3	11.9	13.8	15.2	0.61
4 R	0.032	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
East: Calle Municipal											
1 L	0.174	0.0	0.8	0.0	0.8	1.0	1.5	1.9	2.7	3.1	0.02
2 R	0.024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01
North: PR-1 Norte											
1 L	0.137	0.0	0.4	0.0	0.4	0.5	0.8	1.0	1.5	1.8	0.09
2 T	0.415	0.0	1.6	0.0	1.6	2.0	2.9	3.6	4.8	5.6	0.16
3 T	0.415	0.0	1.6	0.0	1.6	2.0	2.9	3.6	4.8	5.6	0.16

Values printed in this table are cycle-average queues (vehicles).
* Queue length exceeds short lane length due to specification of a
percentile queue in the Tools-Options (Model tab). For calculation
of this statistic, you may specify the lane with full length.

Table D.3B - Lane Queues (metres)
05 PR1--PR30--PR52
AM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (metres) Nc1	Nc2	Nc	Percentile (metres) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: PR-1 Sur											
1 L	0.023	0.0	0.6	0.0	0.6	0.7	1.1	1.5	2.3	2.7	0.01

2 T	0.872	0.0	44.0	0.0	44.0	53.2	71.9	83.6	96.3	106.2
0.61										
3 T	0.872	0.0	44.0	0.0	44.0	53.2	71.9	83.6	96.3	106.2
0.61										
4 R	0.032	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
0.00										
East: Calle Municipal										
1 L	0.174	0.0	5.4	0.0	5.4	6.9	10.2	13.1	18.7	22.0
0.02										
2 R	0.024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.01										
North: PR-1 Norte										
1 L	0.137	0.0	2.9	0.0	2.9	3.7	5.6	7.3	10.8	12.9
0.09										
2 T	0.415	0.0	11.3	0.0	11.3	14.1	20.4	25.5	33.7	39.0
0.16										
3 T	0.415	0.0	11.3	0.0	11.3	14.1	20.4	25.5	33.7	39.0
0.16										

Values printed in this table are cycle-average queues (metres).
* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Site: 05 PR-1_PR-30_PR-52 AM B
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren pr176.aap
Processed Jun 15, 2007 01:42:29PM

M0276, Traffic Consulting Group, Large Office
Produced by SIDRA Intersection 3.1.061208.34

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Output Tables
Output Tables
05 PR1--PR30--PR52
PM BASE

Run Information
Cycle Time = 163 (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
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: Cycle average 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 B.1 - Movement Definitions and Flow Rates (Origin-Destination)
05 PR1--PR30--PR52
PM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: PR-1 Sur							
	East	3	Right	4	0	1.00	1.00
	North	2	Thru	1892	0	1.00	1.00
	SouthWest	1	Left	12	0	1.00	1.00
East: Calle Municipal							
	South	4	Left	24	0	1.00	1.00
	North	6	Right	4	0	1.00	1.00
	SouthWest	4	Left	16	0	1.00	1.00
North: PR-1 Norte							

South	8	Thru	1152	0	1.00	1.00
East	7	Left	4	0	1.00	1.00
West	9	Right	4276	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
05 PR1--PR30--PR52
PM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Mov ID	Left		Through		Right	
	LV	HV	LV	HV	LV	HV
Demand flows in veh/hour as used by the program						
South: PR-1 Sur						
1 L	12	0	0	0	0	0
2 T	0	0	1892	0	0	0
3 R	0	0	0	0	4	0
East: Calle Municipal						
4 L	40	0	0	0	0	0
6 R	0	0	0	0	4	0
North: PR-1 Norte						
7 L	4	0	0	0	0	0
8 T	0	0	1152	0	0	0
9 R	0	0	0	0	4276	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
05 PR1--PR30--PR52
PM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Mov ID	Mov Typ	P H A S E M A T R I X First Green	Second Green	Lost Tim 1st	Lost Tim 2nd	Req.Mov.Time 1st	Req.Mov.Time 2nd	Eff. Grn 1st	Eff. Grn 2nd

Mov ID	Fr	To	Op Pr	Fr	To	Op Pr	Grn	Grn	Grn	Grn
South: PR-1 Sur										
1 L	*New	P	A				4		10.0Min	15
2 T	*A		B				4		91.9	116
3 R	(Slp) A		B	B	A		4	4	10.0Min	20.0Min 116 39
East: Calle Municipal										
4 L	*B		New	P			4		10.0Min	20
6 R	(Slp) B		New	P	New	P B	4	4	10.0Min	20.0Min 20 135
North: PR-1 Norte										
7 L	New	P	A	Y			4		10.0Min	15
8 T	A		B				4		57.5	116

Current Phase Sequence: Actual
Input phase sequence: A B New Ph
Output phase sequence: A B New P

* 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
05 PR1--PR30--PR52
PM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

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

South: PR-1 Sur											
1	L	12	0.0	1857		0.006		171	0.90	1182	100	0.070
2	T	1892	0.0	3900		0.485		2775	0.90	32	100	0.682
3	R	4	0.0	1857	1857	0.001	0.001	1766	0.90	****	100	0.002
East: Calle Municipal											
4	L	40	0.0	1876		0.021		230	0.90	418	100	0.174
6	R	4	0.0	1773<	1521<	0.002	0.000	1477	0.90	****	100	0.003
North: PR-1 Norte											
7	L	4	0.0	1632		0.002		150	0.90	3279	100	0.027
8	T	1152	0.0	3900		0.295		2775	0.90	117	100	0.415
9	R	4276	0.0	3283		1.302		3283	0.90	-31	77	1.302*

Table S.3 - Intersection Parameters
05 PR1--PR30--PR52
PM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
2	S_T		A	B	4	0.485	0.539	91.9
4	E_L		B	New P	10	-	-	10.0Min
1	S_L		New	PA	10	-	-	10.0Min
				Total:	24	0.485	0.539	111.9

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

Cycle Time:

Minimum	Maximum	Practical	Chosen
30	163*	52	163

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

* Cmax increased to match sum of phase times

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

Intersection Level of Service	=	C
Worst movement Level of Service	=	F
Average intersection delay (s/pers)	=	30.8
Largest average movement delay (s)	=	82.7
Largest cycle-average queue, mean (m)	=	25
Performance Index	=	154.38
Degree of saturation (highest)	=	1.302
Practical Spare Capacity (lowest)	=	-31 %
Effective intersection capacity, (veh/h)	=	5669
Total vehicle flow (veh/h)	=	7384
Total person flow (pers/h)	=	11076
Total vehicle delay (veh-h/h)	=	63.16
Total person delay (pers-h/h)	=	94.74
Total effective vehicle stops (veh/h)	=	1592
Total effective person stops (pers/h)	=	2388
Total vehicle travel (veh-km/h)	=	4248.7
Total cost ($/h)	=	4141.25
Total fuel (L/h)	=	425.0
Total CO2 (kg/h)	=	1062.57

Table S.4 - Phase Information
05 PR1--PR30--PR52
PM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	4	4	116	120	4	120	74%
B	120	4	124	20	144	4	24	15%
New P	144	4	148	15	163	4	19	12%

(Phase times specified by the user)
Current Phase Sequence: Actual
Input phase sequence: A B New Ph
Output phase sequence: A B New P

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 Cycle (vehs)	Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: PR-1 Sur										
1	L	0.28	0.41	82.7	0.94	0.70	0.2	2	0.69	18.3
2	T	7.24	10.86	13.8	0.61	0.57	3.6	25	39.62	43.5
3	R	0.01	0.01	7.7	0.05	0.61	0.0	0	0.06	49.5
East: Calle Municipal										
4	L	0.85	1.27	76.4	0.93	0.74	0.8	5	2.19	19.4
6	R	0.01	0.01	7.7	0.05	0.61	0.0	0	0.06	49.5
North: PR-1 Norte										
7	L	0.09	0.14	81.1	0.93	0.65	0.1	1	0.23	18.6
8	T	3.21	4.82	10.0	0.44	0.40	1.6	11	20.65	47.0
9	R	51.48	77.21	43.3		0.00	132.3#		90.87	26.0

\# Largest density (passenger cars per km or mile) for any lane

Table S.6 - Intersection Performance
05 PR1--PR30--PR52
PM BASE

Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (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-1 Sur									
1908	0.682	7.53	11.29	14.2	0.61	0.57	25	40.37	43.2
East: Calle Municipal									
44	0.174	0.86	1.29	70.1	0.85	0.73	5	2.25	20.5
North: PR-1 Norte									
5432	1.302	54.78	82.17	36.3	0.09	0.09	926	111.75	29.0
ALL VEHICLES:									
7384	1.302	63.16	94.74	30.8	0.23	0.22	25	154.38	31.7
INTERSECTION (persons):									
11076	1.302		94.74	30.8	0.23	0.22		154.38	31.7

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
05 PR1--PR30--PR52
PM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (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 Cycle Aver. (vehs)	(m)	Lane Length (m)
South: PR-1 Sur												
1 L	148	15	0	0	12	171	0.070	82.7	0.70	0.2	1.7	93.0T
2 T	47	116	0	0	946	1388	0.682	13.8	0.57	3.6	25.3	500.0
3 T	47	116	0	0	946	1388	0.682	13.8	0.57	3.6	25.3	500.0
4 R	4	116	4	39	4	1766	0.002	7.7	0.61	0.0	0.0	500.0T
East: Calle Municipal												
1 L	143	20	0	0	40	230	0.174	76.4	0.74	0.8	5.4	500.0
2 R	4	20	4	135	4	1477	0.003	7.7	0.61	0.0	0.0	60.0T
North: PR-1 Norte												
1 L	148	15	0	0	4	150	0.027	81.1	0.65	0.1	0.6	70.0T
2 T	47	116	0	0	576	1388	0.415	10.0	0.40	1.6	11.3	500.0
3 T	47	116	0	0	576	1388	0.415	10.0	0.40	1.6	11.3	500.0
4 R	0	163	0	0	2419	1857	1.302	72.7	0.00	132.3#		500.0
5 R	0	163	0	0	1857	1857	1.000	5.1	0.00	35.5#	<	45.0T

< Short lane capacity is reached and there is excess flow
into an adjacent lane
Density (passenger cars per km or mile)
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
05 PR1--PR30--PR52
PM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (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-1 Sur												
1 L	12	0	0	12	3.30	1950	1857	0	0	171	0.070	100
2 T	0	946	0	946	3.30	1950	1950	0	0	1388	0.682	100
3 T	0	946	0	946	3.30	1950	1950	0	0	1388	0.682	100
4 R	0	0	4	4	3.30	1950	1857	1857	0	1766	0.002	100
East: Calle Municipal												
1 L	40	0	0	40	3.50	1970	1876	0	0	230	0.174	100
2 R	0	0	4	4	3.30	1950	1773<	1521<	0	1477	0.003	100
North: PR-1 Norte												
1 L	4	0	0	4	3.00	1920	1632	0	49	150	0.027	100
2 T	0	576	0	576	3.30	1950	1950	0	0	1388	0.415	100
3 T	0	576	0	576	3.30	1950	1950	0	0	1388	0.415	100
4 R	0	0	2419	2419	3.30	1950	1857	0	0	1857	1.302	100
5 R	0	0	1857	1857	3.30	1950	1857	0	0	1857	1.000	77P

< 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
05 PR1--PR30--PR52
PM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (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	Cycle Average Queue (veh)	Perf. Index

South: PR-1 Sur												
1	L		12	171	100	0.070	15*		82.7	0.70	0.2	0.69
2	T		1892	2775	100	0.682	116*		13.8	0.57	3.6	39.62
3	R	(Slp)	4	1766	100	0.002	116	39	7.7	0.61	0.0	0.06
East: Calle Municipal												
4	L		40	230	100	0.174	20*		76.4	0.74	0.8	2.19
6	R	(Slp)	4	1477<	100	0.003	20	135	7.7	0.61	0.0	0.06
North: PR-1 Norte												
7	L		4	150	100	0.027	15		81.1	0.65	0.1	0.23
8	T		1152	2775	100	0.415	116		10.0	0.40	1.6	20.65
9	R	(Con)	4276	3283	77	1.302*	163		43.3	0.00	132.3 #	90.87

< Reduced capacity due to a short lane effect
* Maximum degree of saturation, or critical green periods
\# Largest density (passenger cars per km or mile) for any lane

Table S.14 - Summary of Input and Output Data
05 PR1--PR30--PR52
PM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Lane No.		Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff (secs) 1st	Eff (secs) 2nd	Grn	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-1 Sur														
1	L	12			12	0	1949	15			0.070	82.7	2	93
2	T		946		946	0	1949	116			0.682	13.8	25	500
3	T		946		946	0	1949	116			0.682	13.8	25	500
4	R			4	4	0	1949	116		39	0.002	7.7	0	500
		12	1892	4	1908	0					0.682	14.2	25	
East: Calle Municipal														
1	L	40			40	0	1970	20			0.174	76.4	5	500
2	R			4	4	0	1949	20		135	0.003	7.7	0	60
		40	0	4	44	0					0.174	70.1	5	
North: PR-1 Norte														
1	L	4			4	0	1919	15			0.027	81.1	1	70
2	T		576		576	0	1949	116			0.415	10.0	11	500
3	T		576		576	0	1949	116			0.415	10.0	11	500
4	R			2419	2419	0	1949	163			1.302	72.7		500
5	R			1857	1857	0	1949	163			1.000	5.1		45
		4	1152	4276	5432	0					1.302	36.3	11	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	7384	0	163	1.302	30.8	25

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average 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
05 PR1--PR30--PR52
PM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Mov ID	Mov Typ		Green Time Ratio (g/C) 1st grn	Green Time Ratio (g/C) 2nd grn	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Cycle (vehs)	Queue Aver. (m)
South: PR-1 Sur											
1	L		0.092*		12	171	0.070	82.7	F	0.2	2
2	T		0.712*		1892	2775	0.682	13.8	B	3.6	25
3	R	(Slp)	0.712	0.239	4	1766	0.002	7.7	A	0.0	0
East: Calle Municipal											
4	L		0.123*		40	230	0.174	76.4	E	0.8	5
6	R	(Slp)	0.123	0.828	4	1477<	0.003	7.7	A	0.0	0
North: PR-1 Norte											
7	L		0.092		4	150	0.027	81.1	F	0.1	1
8	T		0.712		1152	2775	0.415	10.0	B	1.6	11
9	R	(Con)	1.000		4276	3283	1.302*	43.3	F#	132.3#	
ALL VEHICLES:					7384		1.302	30.8	C	3.6	25
INTERSECTION (persons):					11076			30.8		3.6	25

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.
\# Continuous movements: Level Of Service based on density, Density (passenger cars per km or mile) instead of queue.
< 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.3A - Lane Queues (veh)
05 PR1--PR30--PR52
PM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Ncl	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: PR-1 Sur											
1 L	0.070	0.0	0.2	0.0	0.2	0.3	0.5	0.6	0.9	1.1	0.04
2 T	0.682	0.0	3.6	0.0	3.6	4.4	6.1	7.4	8.8	9.9	0.35
3 T	0.682	0.0	3.6	0.0	3.6	4.4	6.1	7.4	8.8	9.9	0.35
4 R	0.002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
East: Calle Municipal											
1 L	0.174	0.0	0.8	0.0	0.8	1.0	1.5	1.9	2.7	3.1	0.02
2 R	0.003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
North: PR-1 Norte											
1 L	0.027	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.02
2 T	0.415	0.0	1.6	0.0	1.6	2.0	2.9	3.6	4.8	5.6	0.16
3 T	0.415	0.0	1.6	0.0	1.6	2.0	2.9	3.6	4.8	5.6	0.16

Values printed in this table are cycle-average queues (vehicles).
* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Table D.3B - Lane Queues (metres)
05 PR1--PR30--PR52
PM BASE
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 163 (Sum of User-given Phase Times)

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (metres) Ncl	Nc2	Nc	Percentile (metres) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: PR-1 Sur											
1 L	0.070	0.0	1.7	0.0	1.7	2.2	3.4	4.4	6.6	7.9	0.04
2 T	0.682	0.0	25.3	0.0	25.3	31.0	42.9	51.7	61.5	69.1	0.35
3 T	0.682	0.0	25.3	0.0	25.3	31.0	42.9	51.7	61.5	69.1	0.35
4 R	0.002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
East: Calle Municipal											
1 L	0.174	0.0	5.4	0.0	5.4	6.9	10.2	13.1	18.7	22.0	0.02
2 R	0.003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
North: PR-1 Norte											
1 L	0.027	0.0	0.6	0.0	0.6	0.7	1.1	1.5	2.3	2.7	0.02
2 T	0.415	0.0	11.3	0.0	11.3	14.1	20.4	25.5	33.7	39.0	0.16
3 T	0.415	0.0	11.3	0.0	11.3	14.1	20.4	25.5	33.7	39.0	0.16

Values printed in this table are cycle-average queues (metres).
* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Site: 05 PR-1_PR-30_PR-52 PM B
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren pr176.aap
Processed Jun 15, 2007 01:42:29PM

M0276, Traffic Consulting Group, Large Office
Produced by SIDRA Intersection 3.1.061208.34

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Output Tables
Output Tables
05 PR1--PR30--PR52
AM Futuro

Run Information
Cycle Time = 150 (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
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: Cycle average 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.

* 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.

Degree of saturation of non-critical movement 9 is greater than the critical movement degrees of saturation because of rounding of a small green time.

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
05 PR1--PR30--PR52
AM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: PR-1 Sur							
	East	3	Right	65	0	1.00	1.00
	North	2	Thru	2825	0	1.00	1.00
	SouthWest	1	Left	5	0	1.00	1.00
East: Calle Municipal							
	South	4	Left	33	0	1.00	1.00
	North	6	Right	42	0	1.00	1.00
	SouthWest	4	Left	14	0	1.00	1.00
North: PR-1 Norte							
	South	8	Thru	1345	0	1.00	1.00
	East	7	Left	23	0	1.00	1.00
	West	9	Right	3839	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
05 PR1--PR30--PR52
AM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

Mov ID	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program						
South: PR-1 Sur						
1 L	5	0	0	0	0	0
2 T	0	0	2825	0	0	0
3 R	0	0	0	0	65	0
East: Calle Municipal						
4 L	47	0	0	0	0	0
6 R	0	0	0	0	42	0
North: PR-1 Norte						
7 L	23	0	0	0	0	0
8 T	0	0	1345	0	0	0
9 R	0	0	0	0	3839	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
05 PR1--PR30--PR52
AM Futuro
Intersection ID: 05

Fixed-Time Signals, Cycle Time = 150 (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 Grn
South: PR-1 Sur													
1 L	New P A							4		10.0Min		6	
2 T	*A	B						4		124.7		126	
3 R	(Slp) A	B			B	A		4	4	10.0Min		20.0Min	126 16
East: Calle Municipal													
4 L	*B	New P						4		10.0Min		6	
6 R	(Slp) B	New P			New P	B		4	4	10.0Min		20.0Min	6 136
North: PR-1 Norte													
7 L	*New P A		Y					4		10.0Min		6	
8 T	A	B						4		61.5		126	

Current Phase Sequence: Actual
Input phase sequence: A B New Ph
Output phase sequence: A B New P

* 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
05 PR1--PR30--PR52
AM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

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-1 Sur											
1 L	5	0.0	1857		0.003		74	0.90	1237	100	0.067
2 T	2825	0.0	3900		0.724		3276	0.90	4	100	0.862
3 R	65	0.0	1857	1857	0.018	0.018	1758	0.90	2334	100	0.037
East: Calle Municipal											
4 L	47	0.0	1876		0.025		75	0.90	44	100	0.626
6 R	42	0.0	1857	1422<	0.023	0.000	1364	0.90	2822	100	0.031
North: PR-1 Norte											
7 L	23	0.0	1972		0.012		79	0.90	209	100	0.292
8 T	1345	0.0	3900		0.345		3276	0.90	119	100	0.411
9 R	3839	0.0	3597		1.067		3597	0.90	-16	94	1.067*

Degree of saturation of non-critical movement 9 is greater than the critical movement degrees of saturation because of rounding of a small green time.

Table S.3 - Intersection Parameters
05 PR1--PR30--PR52
AM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
2	S_T		A	B	4	0.724	0.805	124.7
4	E_L		B	New P	10	-	-	10.0Min
7	N_L		New	PA	10	-	-	10.0Min
				Total:	24	0.724	0.805	144.7

\- 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
30	150	123	150

(Program-determined Optimum Cycle Time)

Cycle time is at maximum and short lanes exist.

A shorter cycle time may give better results.

Intersection Level of Service	=	A
Worst movement Level of Service	=	F
Average intersection delay (s/pers)	=	9.4
Largest average movement delay (s)	=	89.7
Largest cycle-average queue, mean (m)	=	20
Performance Index	=	122.00
Degree of saturation (highest)	=	1.067
Practical Spare Capacity (lowest)	=	-16 %
Effective intersection capacity, (veh/h)	=	7675
Total vehicle flow (veh/h)	=	8191
Total person flow (pers/h)	=	12287
Total vehicle delay (veh-h/h)	=	21.36
Total person delay (pers-h/h)	=	32.04
Total effective vehicle stops (veh/h)	=	2182
Total effective person stops (pers/h)	=	3273
Total vehicle travel (veh-km/h)	=	4797.0
Total cost ($/h)	=	3298.03
Total fuel (L/h)	=	413.8
Total CO2 (kg/h)	=	1034.45

Table S.4 - Phase Information
05 PR1--PR30--PR52
AM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	4	4	126	130	4	130	87%
B	130	4	134	6	140	4	10	7%
New P	140	4	144	6	150	4	10	7%

Current Phase Sequence: Actual
Input phase sequence: A B New Ph
Output phase sequence: A B New P

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 Cycle (vehs)	Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: PR-1 Sur										
1	L	0.12	0.18	87.3	0.99	0.65	0.1	1	0.30	17.6
2	T	5.72	8.58	7.3	0.64	0.61	2.9	20	49.62	50.0
3	R	0.14	0.21	7.7	0.06	0.61	0.0	0	1.03	49.5
East: Calle Municipal										
4	L	1.17	1.76	89.7	1.00	0.77	1.1	8	2.92	17.3
6	R	0.09	0.13	7.7	0.06	0.61	0.0	0	0.66	49.5
North: PR-1 Norte										
7	L	0.56	0.84	87.9	1.00	0.71	0.5	4	1.39	17.6
8	T	1.14	1.71	3.1	0.27	0.24	0.6	4	17.70	55.3
9	R	12.42	18.62	11.6		0.00	51.0#		48.36	44.6

\# Largest density (passenger cars per km or mile) for any lane

Table S.6 - Intersection Performance
05 PR1--PR30--PR52
AM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

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-1 Sur									
2895	0.862	5.98	8.97	7.4	0.63	0.61	20	50.95	49.8
East: Calle Municipal									
89	0.626	1.26	1.89	51.0	0.55	0.70	8	3.59	25.1
North: PR-1 Norte									
5207	1.067	14.12	21.18	9.8	0.07	0.07	357	67.46	46.7
ALL VEHICLES:									
8191	1.067	21.36	32.04	9.4	0.27	0.27	20	122.00	47.3
INTERSECTION (persons):									
12287	1.067		32.04	9.4	0.27	0.27		122.00	47.3

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
05 PR1--PR30--PR52
AM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

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 Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
South: PR-1 Sur												
1 L	144	6	0	0	5	74	0.067	87.3	0.65	0.1	0.8	93.0T
2 T	24	126	0	0	1413	1638	0.862	7.3	0.61	2.9	20.0	500.0
3 T	24	126	0	0	1413	1638	0.862	7.3	0.61	2.9	20.0	500.0
4 R	4	126	4	16	65	1758	0.037	7.7	0.61	0.0	0.0	500.0T
East: Calle Municipal												
1 L	144	6	0	0	47	75	0.626	89.7	0.77	1.1	7.5	500.0

2	R	4	6	4	136	42	1363	0.031	7.7	0.61	0.0	0.0	60.0T
North: PR-1 Norte													
1	L	144	6	0	0	23	79	0.292	87.9	0.71	0.5	3.6	70.0T
2	T	24	126	0	0	673	1638	0.411	3.1	0.24	0.6	4.0	500.0
3	T	24	126	0	0	673	1638	0.411	3.1	0.24	0.6	4.0	500.0
4	R	0	150	0	0	1982	1857	1.067	17.8	0.00	51.0#		500.0
5	R	0	150	0	0	1857	1857	1.000	5.1	0.00	35.5#	<	45.0T

< Short lane capacity is reached and there is excess flow into an adjacent lane
\# Density (passenger cars per km or mile)
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
05 PR1--PR30--PR52
AM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

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-1 Sur													
1	L	5	0	0	5	3.30	1950	1857	0	0	74	0.067	100
2	T	0	1413	0	1413	3.30	1950	1950	0	0	1638	0.862	100
3	T	0	1413	0	1413	3.30	1950	1950	0	0	1638	0.862	100
4	R	0	0	65	65	3.30	1950	1857	1857	0	1758	0.037	100
East: Calle Municipal													
1	L	47	0	0	47	3.50	1970	1876	0	0	75	0.626	100
2	R	0	0	42	42	3.30	1950	1857	1422<	0	1363	0.031	100
North: PR-1 Norte													
1	L	23	0	0	23	3.00	1920	1972	0	53	79	0.292	100
2	T	0	673	0	673	3.30	1950	1950	0	0	1638	0.411	100
3	T	0	673	0	673	3.30	1950	1950	0	0	1638	0.411	100
4	R	0	0	1982	1982	3.30	1950	1857	0	0	1857	1.067	100
5	R	0	0	1857	1857	3.30	1950	1857	0	0	1857	1.000	94P

< 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

05 PR1--PR30--PR52
AM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

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	Cycle Average Queue (veh)	Perf. Index
South: PR-1 Sur											
1 L		5	74	100	0.067	6		87.3	0.65	0.1	0.30
2 T		2825	3276	100	0.862	126*		7.3	0.61	2.9	49.62
3 R	(Slp)	65	1758	100	0.037	126	16	7.7	0.61	0.0	1.03
East: Calle Municipal											
4 L		47	75	100	0.626	6*		89.7	0.77	1.1	2.92
6 R	(Slp)	42	1364<	100	0.031	6	136	7.7	0.61	0.0	0.66
North: PR-1 Norte											
7 L		23	79	100	0.292	6*		87.9	0.71	0.5	1.39
8 T		1345	3276	100	0.411	126		3.1	0.24	0.6	17.70
9 R	(Con)	3839	3597	94	1.067*	150		11.6	0.00	51.0	# 48.36

< Reduced capacity due to a short lane effect
* Maximum degree of saturation, or critical green periods
\# Largest density (passenger cars per km or mile) for any lane

Table S.14 - Summary of Input and Output Data
05 PR1--PR30--PR52
AM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

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-1 Sur													
1	L	5			5	0	1949	6		0.067	87.3	1	93
2	T		1413		1413	0	1949	126		0.862	7.3	20	500
3	T		1413		1413	0	1949	126		0.862	7.3	20	500
4	R			65	65	0	1949	126	16	0.037	7.7	0	500
		5	2825	65	2895	0				0.862	7.4	20	
East: Calle Municipal													
1	L	47			47	0	1970	6		0.626	89.7	8	500
2	R			42	42	0	1949	6	136	0.031	7.7	0	60
		47	0	42	89	0				0.626	51.0	8	
North: PR-1 Norte													
1	L	23			23	0	1919	6		0.292	87.9	4	70

2	T	673		673	0	1949	126	0.411	3.1	4	500
3	T	673		673	0	1949	126	0.411	3.1	4	500
4	R		1982	1982	0	1949	150	1.067	17.8		500
5	R		1857	1857	0	1949	150	1.000	5.1		45
		23	1345	3839	5207	0		1.067	9.8	4	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	8191	0	150	1.067	9.4	20

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average 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
05 PR1--PR30--PR52
AM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

Mov ID	Mov Typ	Green Ratio 1st grn	Green Ratio 2nd grn	Time (g/C)	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
South: PR-1 Sur											
1	L	0.040			5	74	0.067	87.3	F	0.1	1
2	T	0.840*			2825	3276	0.862	7.3	A	2.9	20
3	R	(Slp) 0.840	0.107		65	1758	0.037	7.7	A	0.0	0
East: Calle Municipal											
4	L	0.040*			47	75	0.626	89.7	F	1.1	8
6	R	(Slp) 0.040	0.907		42	1364<	0.031	7.7	A	0.0	0
North: PR-1 Norte											
7	L	0.040*			23	79	0.292	87.9	F	0.5	4
8	T	0.840			1345	3276	0.411	3.1	A	0.6	4
9	R	(Con) 1.000			3839	3597	1.067*	11.6	F#	51.0#	
ALL VEHICLES:					8191		1.067	9.4	A	2.9	20
INTERSECTION (persons):					12287			9.4		2.9	20

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.

\# Continuous movements: Level Of Service based on density, Density (passenger cars per km or mile) instead of queue.

< 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 S.21 - Optimum Cycle Time Results
05 PR1--PR30--PR52
AM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	1.067	80
Average Delay	9.4	150
Stop Rate	0.27	150
Max. Queue for Any Movement	2.9	150
Perf. Index	122.0	150
Cost	3298.0	150

Performance Measure	Largest Value	Cycle Time
Eff. Inters. Cap.	7675	80
Prac. Spare Cap.	-16	80

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 D.3A - Lane Queues (veh)
05 PR1--PR30--PR52
AM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

Lane No.	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nc1	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: PR-1 Sur											
1 L	0.067	0.0	0.1	0.0	0.1	0.1	0.2	0.3	0.4	0.5	0.02

Output Tables
Output Tables
05 PR1--PR30--PR52
PM Futuro

Run Information
Cycle Time = 150 (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
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: Cycle average 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.

* 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.

Degree of saturation of non-critical movement 9 is greater than the critical movement degrees of saturation because of rounding of a small green time.

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
05 PR1--PR30--PR52
PM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor

Output Tables
Output Tables
05 PR1--PR30--PR52
PM Futuro

Run Information
Cycle Time = 150 (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
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: Cycle average 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.

* 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.

Degree of saturation of non-critical movement 9 is greater than the critical movement degrees of saturation because of rounding of a small green time.

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
05 PR1--PR30--PR52
PM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor

South: PR-1 Sur							
	East	3	Right	5	0	1.00	1.00
	North	2	Thru	2209	0	1.00	1.00
	SouthWest	1	Left	14	0	1.00	1.00
East: Calle Municipal							
	South	4	Left	28	0	1.00	1.00
	North	6	Right	5	0	1.00	1.00
	SouthWest	4	Left	19	0	1.00	1.00
North: PR-1 Norte							
	South	8	Thru	1345	0	1.00	1.00
	East	7	Left	5	0	1.00	1.00
	West	9	Right	4942	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
05 PR1--PR30--PR52
PM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

Mov ID	Left		Through		Right	
	LV	HV	LV	HV	LV	HV
Demand flows in veh/hour as used by the program						
South: PR-1 Sur						
1 L	14	0	0	0	0	0
2 T	0	0	2209	0	0	0
3 R	0	0	0	0	5	0
East: Calle Municipal						
4 L	47	0	0	0	0	0
6 R	0	0	0	0	5	0
North: PR-1 Norte						
7 L	5	0	0	0	0	0
8 T	0	0	1345	0	0	0
9 R	0	0	0	0	4942	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
05 PR1--PR30--PR52
PM Futuro
Intersection ID: 05

Fixed-Time Signals, Cycle Time = 150 (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 Grn
South: PR-1 Sur													
1 L	*New P	A						4		10.0Min		6	
2 T	*A	B						4		98.4		126	
3 R	(Slp) A	B			B	A		4	4	10.0Min		20.0Min	126 16
East: Calle Municipal													
4 L	*B	New P						4		10.0Min		6	
6 R	(Slp) B	New P			New P	B		4	4	10.0Min		20.0Min	6 136
North: PR-1 Norte													
7 L	New P	A		Y				4		10.0Min		6	
8 T	A	B						4		61.5		126	

Current Phase Sequence: Actual
Input phase sequence: A B New Ph
Output phase sequence: A B New P

* 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
05 PR1--PR30--PR52

PM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

Mov ID	Dem Flow (veh /h)	HV (%)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: PR-1 Sur											
1 L	14	0.0	1857		0.008		74	0.90	378	100	0.188
2 T	2209	0.0	3900		0.566		3276	0.90	33	100	0.674
3 R	5	0.0	1857	1857	0.001	0.001	1758	0.90	****	100	0.003
East: Calle Municipal											
4 L	47	0.0	1876		0.025		75	0.90	44	100	0.626
6 R	5	0.0	1857	1424<	0.003	0.000	1365	0.90	****	100	0.004
North: PR-1 Norte											
7 L	5	0.0	2009		0.002		80	0.90	1346	100	0.062
8 T	1345	0.0	3900		0.345		3276	0.90	119	100	0.411
9 R	4942	0.0	2975		1.661		2975	0.90	-46	60	1.661*

Degree of saturation of non-critical movement 9 is greater than the critical movement degrees of saturation because of rounding of a small green time.

Table S.3 - Intersection Parameters
05 PR1--PR30--PR52
PM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
2	S_T		A	B	4	0.566	0.629	98.4
4	E_L		B	New P	10	-	-	10.0Min
1	S_L		New P	A	10	-	-	10.0Min
				Total:	24	0.566	0.629	118.4

- 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
30	150	65	150

(Program-determined Optimum Cycle Time)

Cycle time is at maximum and short lanes exist.

A shorter cycle time may give better results.

Intersection Level of Service	=	E
Worst movement Level of Service	=	F
Average intersection delay (s/pers)	=	60.4
Largest average movement delay (s)	=	100.7
Largest cycle-average queue, mean (m)	=	10
Performance Index	=	238.20
Degree of saturation (highest)	=	1.661
Practical Spare Capacity (lowest)	=	-46 %
Effective intersection capacity, (veh/h)	=	5160
Total vehicle flow (veh/h)	=	8572
Total person flow (pers/h)	=	12858
Total vehicle delay (veh-h/h)	=	143.91
Total person delay (pers-h/h)	=	215.87
Total effective vehicle stops (veh/h)	=	1228
Total effective person stops (pers/h)	=	1842
Total vehicle travel (veh-km/h)	=	4919.2
Total cost ($/h)	=	6753.54
Total fuel (L/h)	=	589.3
Total CO2 (kg/h)	=	1473.35

Table S.4 - Phase Information
05 PR1--PR30--PR52
PM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	4	4	126	130	4	130	87%
B	130	4	134	6	140	4	10	7%
New P	140	4	144	6	150	4	10	7%

Current Phase Sequence: Actual
Input phase sequence: A B New Ph
Output phase sequence: A B New P

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 Cycle (vehs)	Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: PR-1 Sur									
1 L	0.34	0.52	88.6	1.00	0.69	0.3	2	0.85	17.4
2 T	2.84	4.26	4.6	0.40	0.38	1.4	10	32.70	53.2
3 R	0.01	0.02	7.7	0.06	0.61	0.0	0	0.08	49.5
East: Calle Municipal									
4 L	1.17	1.75	89.4	1.00	0.77	1.1	8	2.92	17.4
6 R	0.01	0.02	7.7	0.05	0.61	0.0	0	0.08	49.5

North: PR-1 Norte									
7	L	0.12	0.18	85.7	0.99	0.64	0.1	1	0.30	17.9
8	T	1.14	1.71	3.1	0.27	0.24	0.6	4	17.70	55.3
9	R	138.28	207.42	100.7		0.00	142.9#		183.57	14.8

Largest density (passenger cars per km or mile) for any lane

Table S.6 - Intersection Performance
05 PR1--PR30--PR52
PM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

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-1 Sur									
2228	0.674	3.20	4.80	5.2	0.41	0.38	10	33.63	52.5
East: Calle Municipal									
52	0.626	1.18	1.77	81.5	0.91	0.76	8	3.00	18.5
North: PR-1 Norte									
6292	1.661	139.54	209.31	79.8	0.06	0.05	1000	201.57	17.8
ALL VEHICLES:									
8572	1.661	143.91	215.87	60.4	0.15	0.14	10	238.20	21.8
INTERSECTION (persons):									
12858	1.661		215.87	60.4	0.15	0.14		238.20	21.8

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
05 PR1--PR30--PR52
PM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

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 Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
South: PR-1 Sur												
1 L	144	6	0	0	14	74	0.188	88.6	0.69	0.3	2.2	93.0T
2 T	24	126	0	0	1105	1638	0.674	4.6	0.38	1.4	9.9	500.0
3 T	24	126	0	0	1105	1638	0.674	4.6	0.38	1.4	9.9	500.0
4 R	4	126	4	16	5	1758	0.003	7.7	0.61	0.0	0.0	500.0T
East: Calle Municipal												
1 L	144	6	0	0	47	75	0.626	89.4	0.77	1.1	7.5	500.0
2 R	4	6	4	136	5	1365	0.004	7.7	0.61	0.0	0.0	60.0T
North: PR-1 Norte												
1 L	144	6	0	0	5	80	0.062	85.7	0.64	0.1	0.8	70.0T
2 T	24	126	0	0	673	1638	0.411	3.1	0.24	0.6	4.0	500.0
3 T	24	126	0	0	673	1638	0.411	3.1	0.24	0.6	4.0	500.0
4 R	0	150	0	0	3085	1857	1.661	158.3	0.00	142.9#		500.0
5 R	0	150	0	0	1857	1857	1.000	5.1	0.00	35.5#	<	45.0T

< Short lane capacity is reached and there is excess flow into an adjacent lane
Density (passenger cars per km or mile)
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
05 PR1--PR30--PR52
PM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

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-1 Sur												
1 L	14	0	0	14	3.30	1950	1857	0	0	74	0.188	100
2 T	0	1105	0	1105	3.30	1950	1950	0	0	1638	0.674	100
3 T	0	1105	0	1105	3.30	1950	1950	0	0	1638	0.674	100
4 R	0	0	5	5	3.30	1950	1857	1857	0	1758	0.003	100
East: Calle Municipal												
1 L	47	0	0	47	3.50	1970	1876	0	0	75	0.626	100
2 R	0	0	5	5	3.30	1950	1857	1424<	0	1365	0.004	100
North: PR-1 Norte												
1 L	5	0	0	5	3.00	1920	2009	0	53	80	0.062	100
2 T	0	673	0	673	3.30	1950	1950	0	0	1638	0.411	100
3 T	0	673	0	673	3.30	1950	1950	0	0	1638	0.411	100
4 R	0	0	3085	3085	3.30	1950	1857	0	0	1857	1.661	100
5 R	0	0	1857	1857	3.30	1950	1857	0	0	1857	1.000	60P

< 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

05 PR1--PR30--PR52
PM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

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	Cycle Average Queue (veh)	Perf. Index
South: PR-1 Sur											
1 L		14	74	100	0.188	6*		88.6	0.69	0.3	0.85
2 T		2209	3276	100	0.674	126*		4.6	0.38	1.4	32.70
3 R	(Slp)	5	1758	100	0.003	126	16	7.7	0.61	0.0	0.08
East: Calle Municipal											
4 L		47	75	100	0.626	6*		89.4	0.77	1.1	2.92
6 R	(Slp)	5	1365<	100	0.004	6	136	7.7	0.61	0.0	0.08
North: PR-1 Norte											
7 L		5	80	100	0.062	6		85.7	0.64	0.1	0.30
8 T		1345	3276	100	0.411	126		3.1	0.24	0.6	17.70
9 R	(Con)	4942	2975	60	1.661*	150		100.7	0.00	142.9	#183.57

< Reduced capacity due to a short lane effect
* Maximum degree of saturation, or critical green periods
# Largest density (passenger cars per km or mile) for any lane

Table S.14 - Summary of Input and Output Data
05 PR1--PR30--PR52
PM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

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-1 Sur												
1 L	14			14	0	1949	6		0.188	88.6	2	93
2 T		1105		1105	0	1949	126		0.674	4.6	10	500
3 T		1105		1105	0	1949	126		0.674	4.6	10	500
4 R			5	5	0	1949	126	16	0.003	7.7	0	500
	14	2209	5	2228	0				0.674	5.2	10	
East: Calle Municipal												
1 L	47			47	0	1970	6		0.626	89.4	8	500
2 R			5	5	0	1949	6	136	0.004	7.7	0	60
	47	0	5	52	0				0.626	81.5	8	
North: PR-1 Norte												
1 L	5			5	0	1919	6		0.062	85.7	1	70
2 T	673			673	0	1949	126		0.411	3.1	4	500
3 T	673			673	0	1949	126		0.411	3.1	4	500
4 R		3085		3085	0	1949	150		1.661	158.3		500
5 R		1857		1857	0	1949	150		1.000	5.1		45
	5	1345	4942	6292	0				1.661	79.8	4	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	8572	0	150	1.661	60.4	10

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average 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
05 PR1--PR30--PR52
PM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

Mov ID	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	Longest Queue Cycle (vehs)	Aver. (m)
South: PR-1 Sur										
1 L		0.040*		14	74	0.188	88.6	F	0.3	2
2 T		0.840*		2209	3276	0.674	4.6	A	1.4	10
3 R	(Slp)	0.840	0.107	5	1758	0.003	7.7	A	0.0	0
East: Calle Municipal										
4 L		0.040*		47	75	0.626	89.4	F	1.1	8
6 R	(Slp)	0.040	0.907	5	1365<	0.004	7.7	A	0.0	0
North: PR-1 Norte										
7 L		0.040		5	80	0.062	85.7	F	0.1	1
8 T		0.840		1345	3276	0.411	3.1	A	0.6	4
9 R	(Con)	1.000		4942	2975	1.661*	100.7	F#	142.9#	
ALL VEHICLES:				8572		1.661	60.4	E	1.4	10
INTERSECTION (persons):				12858			60.4		1.4	10

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.
Continuous movements: Level Of Service based on density, Density (passenger cars per km or mile) instead of queue.

< 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 S.21 - Optimum Cycle Time Results
05 PR1--PR30--PR52
PM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	1.661	60
Average Delay	60.4	150
Stop Rate	0.14	150
Max. Queue for Any Movement	1.4	150
Perf. Index	238.2	150
Cost	6753.5	150

Performance Measure	Largest Value	Cycle Time
Eff. Inters. Cap.	5160	60
Prac. Spare Cap.	-46	60

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 D.3A - Lane Queues (veh)
05 PR1--PR30--PR52
PM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

Lane	Deg. Satn	Ovrfl. Queue	Average (veh)			Percentile (veh)					Queue Stor. Ratio
No.	x	No	Nc1	Nc2	Nc	70%	85%	90%	95%	98%	
South: PR-1 Sur											
1 L	0.188	0.0	0.3	0.0	0.3	0.4	0.6	0.8	1.2	1.4	0.05
2 T	0.674	0.0	1.4	0.0	1.4	1.8	2.6	3.3	4.4	5.1	0.25
3 T	0.674	0.0	1.4	0.0	1.4	1.8	2.6	3.3	4.4	5.1	0.25
4 R	0.003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
East: Calle Municipal											
1 L	0.626	0.0	1.1	0.0	1.1	1.4	2.0	2.5	3.5	4.1	0.03
2 R	0.004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
North: PR-1 Norte											
1 L	0.062	0.0	0.1	0.0	0.1	0.1	0.2	0.3	0.4	0.5	0.02
2 T	0.411	0.0	0.6	0.0	0.6	0.7	1.1	1.4	2.1	2.4	0.10
3 T	0.411	0.0	0.6	0.0	0.6	0.7	1.1	1.4	2.1	2.4	0.10

Values printed in this table are cycle-average queues (vehicles).
* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Table D.3B - Lane Queues (metres)
05 PR1--PR30--PR52
PM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

Lane	Deg. Satn	Ovrfl. Queue	Average (metres)			Percentile (metres)					Queue Stor. Ratio
No.	x	No	Nc1	Nc2	Nc	70%	85%	90%	95%	98%	
South: PR-1 Sur											
1 L	0.188	0.0	2.2	0.0	2.2	2.8	4.2	5.4	8.2	9.8	0.05
2 T	0.674	0.0	9.9	0.0	9.9	12.5	18.2	22.9	30.7	35.6	0.25
3 T	0.674	0.0	9.9	0.0	9.9	12.5	18.2	22.9	30.7	35.6	0.25
4 R	0.003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

East: Calle Municipal										
1 L	0.626	0.1	7.5	0.0	7.5	9.5	14.0	17.8	24.6	28.8
0.03										
2 R	0.004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.00										
North: PR-1 Norte										
1 L	0.062	0.0	0.8	0.0	0.8	1.0	1.5	1.9	3.0	3.6
0.02										
2 T	0.411	0.0	4.0	0.0	4.0	5.1	7.7	9.8	14.4	17.0
0.10										
3 T	0.411	0.0	4.0	0.0	4.0	5.1	7.7	9.8	14.4	17.0
0.10										

Values printed in this table are cycle-average queues (metres).
* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Table V.21 - Intersection Summary for Optimum Cycle Time
05 PR1--PR30--PR52
PM Futuro
Intersection ID: 05
Fixed-Time Signals, Cycle Time = 150 (Optimum Cycle Time)

Cycle Time (sec)	Eff. Int. Cap.	Intersn Deg. of Satn	Prac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
60	5160	1.661	-46	67.8	0.41	9.7	285.9	7343.5	
70	5160	1.661	-46	63.8	0.32	5.1	262.3	7043.0	
80	5160	1.661	-46	61.9	0.26	3.0	250.8	6897.4	
90	5160	1.661	-46	61.3	0.23	2.4	246.6	6846.7	
100	5160	1.661	-46	61.1	0.21	2.2	244.4	6821.7	
110	5160	1.661	-46	60.9	0.19	2.0	242.6	6801.9	
120	5160	1.661	-46	60.7	0.18	1.8	241.2	6785.9	
130	5160	1.661	-46	60.6	0.16	1.6	240.0	6772.9	
140	5160	1.661	-46	60.5	0.15	1.5	239.0	6762.3	
150	5160	1.661	-46	60.4	0.14	1.4	238.2	6753.5	

Site: 05 PR-1_PR-30_PR-52 PM F
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren pr176.aap
Processed Jun 15, 2007 01:42:30PM

Output Tables
Output Tables
PR 1 -- PR 176
AM BASE

Run Information
Cycle Time = 150 (User-given 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
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: Cycle average queue, Average

* Iteration Data:
No. of Main (Timing-Capacity) Iterations = 3
Comparison of last two iterations:
Difference in intersection degree of satn = 0.2 %
Largest difference in eff. green times = 1 secs
(max. value for stopping = 2 secs)
Information on Previous Iteration:
Cycle Time = 150
Phase Times: 0, 16, 77, 129
Critical Movements: 7, 3(1st), 6(1st), 12(2nd)

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

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: PR-1 SUR							
	East	3	Right	312	0	1.00	0.95
	North	2	Thru	2383	0	1.00	0.95
	West	1	Left	132	0	1.00	1.00
East: PR-176 ESTE							
	South	4	Left	93	0	1.00	0.95
	North	6	Right	55	0	1.00	0.95
	West	5	Thru	1432	0	1.00	0.95
North: PR-1 NORTE							
	South	8	Thru	1604	0	1.00	0.95
	East	7	Left	518	0	1.00	0.95
	West	9	Right	29	0	1.00	0.95
West: PR 176 OSTE							
	South	12	Right	46	0	1.00	0.95
	East	11	Thru	434	0	1.00	0.95
	North	10	Left	17	0	1.00	0.95

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Mov ID	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program						
South: PR-1 SUR						
1 L	132	0	0	0	0	0
2 T	0	0	2383	0	0	0
3 R	0	0	0	0	312	0
East: PR-176 ESTE						
4 L	93	0	0	0	0	0
5 T	0	0	1432	0	0	0
6 R	0	0	0	0	55	0
North: PR-1 NORTE						
7 L	518	0	0	0	0	0
8 T	0	0	1604	0	0	0
9 R	0	0	0	0	29	0
West: PR 176 OSTE						
10 L	17	0	0	0	0	0
11 T	0	0	434	0	0	0
12 R	0	0	0	0	46	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2B - Flow Rates (Total Vehicles and Percent Heavy)
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Mov ID	Left		Through		Right	
	Total	%HV	Total	%HV	Total	%HV
Demand flows in veh/hour as used by the program						
South: PR-1 SUR						
1 L	132	0.0	0	0.0	0	0.0
2 T	0	0.0	2383	0.0	0	0.0
3 R	0	0.0	0	0.0	312	0.0
East: PR-176 ESTE						
4 L	93	0.0	0	0.0	0	0.0
5 T	0	0.0	1432	0.0	0	0.0
6 R	0	0.0	0	0.0	55	0.0
North: PR-1 NORTE						
7 L	518	0.0	0	0.0	0	0.0
8 T	0	0.0	1604	0.0	0	0.0
9 R	0	0.0	0	0.0	29	0.0
West: PR 176 OSTE						
10 L	17	0.0	0	0.0	0	0.0
11 T	0	0.0	434	0.0	0	0.0
12 R	0	0.0	0	0.0	46	0.0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given 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-1 SUR													
1 L	A	B								6		17.8	9
2 T	B	C								6		82.8	55
3 R	*B	C			C	B	Y			6	25	82.8	113.5 55 64
East: PR-176 ESTE													
4 L	C	D								6		49.9	47
5 T	C	D								6		70.9	47
6 R	*C	D			D	C	Y			6	59	70.9	111.0 47 38
North: PR-1 NORTE													
7 L	*A	B								6		18.2	9
8 LT	B	C								6		59.2	55
9 R	B	C			C	B	Y			6	59	14.0	60.8 55 30
West: PR 176 OSTE													
10 L	D	A								6		27.1	15
11 T	D	A								6		27.1	15
12 R	A	D	Y	*D	A			55	6	153.5		27.1	74 15

Current Phase Sequence: ACTUAL
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
PR 1 -- PR 176
AM BASE
Intersection ID: 0

Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Mov ID	Dem Flow (veh /h)	HV (%)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: PR-1 SUR											
1 L	132	0.0	1857		0.071		111	0.90	-24	100	1.185
2 T	2383	0.0	5174		0.461		1897	0.90	-28	100	1.256
3 R	312	0.0	644	29	0.461	0.531	249	0.90	-28	100	1.255
East: PR-176 ESTE											
4 L	93	0.0	353<		0.263		111	0.90	7	100	0.841
5 T	1432	0.0	3675		0.390		1152	0.90	-28	100	1.244
6 R	55	0.0	0	175	0.390	0.312	45	0.90	-27	100	1.232
North: PR-1 NORTE											
7 L	268	0.0	3655		0.073		219	0.90	-26	97	1.224
8 LT	1854E	0.0	5811		0.319		2131	0.90	3	100	0.870
9 R	29	0.0	381<	1019<	0.048	0.011	344	0.90	966	100	0.084
West: PR 176 OSTE											
10 L	17	0.0	134		0.127		13	0.90	-29	100	1.269*
11 T	434	0.0	3431		0.126		343	0.90	-29	100	1.265
12 R	46	0.0	10	316	0.591	0.127	37	0.90	-29	100	1.259

E "Excess" flow from the short lane of an adjacent movement added to normal flow

Table S.3 - Intersection Parameters
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
7	N_L		A	B	6	0.073	0.082	18.2
3	S_R	1st	B	C	6	0.461	0.512	82.8
6	E_R	1st	C	D	6	0.390	0.433	70.9
12	W_R	2nd	D	A	6	0.127	0.141	27.1
				Total:	24	1.051	1.167	199.1

Cycle Time:

Minimum	Maximum	Practical	Chosen
48	150	****	150

(Cycle time specified by the user)

**** 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)	=	147.2
Largest average movement delay (s)	=	215.6
Largest cycle-average queue, mean (m)	=	332
Performance Index	=	698.64
Degree of saturation (highest)	=	1.269
Practical Spare Capacity (lowest)	=	-29 %
Effective intersection capacity, (veh/h)	=	5561
Total vehicle flow (veh/h)	=	7055
Total person flow (pers/h)	=	10583
Total vehicle delay (veh-h/h)	=	288.40
Total person delay (pers-h/h)	=	432.59
Total effective vehicle stops (veh/h)	=	9479
Total effective person stops (pers/h)	=	14219
Total vehicle travel (veh-km/h)	=	4278.8
Total cost ($/h)	=	10777.89
Total fuel (L/h)	=	921.4
Total CO2 (kg/h)	=	2303.62

Table S.4 - Phase Information
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	6	6	9	15	6	15	10%
B	15	6	21	55	76	6	61	41%
C	76	6	82	47	129	6	53	35%
D	129	6	135	15	150	6	21	14%

Current Phase Sequence: ACTUAL
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 Cycle (vehs)	Longest Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: PR-1 SUR									
1 L	6.73	10.10	183.6	1.00	1.14	6.4	45	15.34	9.9
2 T	123.74	185.60	186.9	1.00	1.62	47.5	332	292.96	9.8
3 R	16.00	24.00	184.6	1.00	1.53	44.0	308	37.08	9.9

East: PR-176 ESTE										
4	L	1.73	2.59	66.9	0.83	0.86	1.5	11	4.65	21.2
5	T	68.97	103.46	173.4	1.00	1.46	39.7	278	164.06	10.4
6	R	2.52	3.78	165.1	1.00	1.33	31.7	222	5.88	10.8
North: PR-1 NORTE										
7	L	14.27	21.40	191.3	1.00	1.15	7.3	51	32.39	9.6
8	LT	27.55	41.32	53.5	1.00	0.97	9.2	65	83.84	24.3
9	R	0.17	0.26	21.2	0.46	0.71	0.1	1	0.68	37.8
West: PR 176 OSTE										
10	L	1.02	1.53	215.6	1.00	1.31	14.2	99	2.30	8.8
11	T	23.33	35.00	193.6	1.00	1.25	14.2	99	54.06	9.5
12	R	2.37	3.56	185.7	1.00	1.17	12.4	87	5.40	9.8

Table S.6 - Intersection Performance
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

	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-1 SUR	2827	1.256	146.46	219.70	186.5	1.00	1.59	332	345.39	9.8
East: PR-176 ESTE	1580	1.244	73.22	109.83	166.8	0.99	1.42	278	174.59	10.7
North: PR-1 NORTE	2151	1.224	41.99	62.98	70.3	0.99	0.99	65	116.91	20.5
West: PR 176 OSTE	497	1.269	26.73	40.09	193.6	1.00	1.24	99	61.76	9.5
ALL VEHICLES:	7055	1.269	288.40	432.59	147.2	1.00	1.34	332	698.64	11.9
INTERSECTION (persons):	10583	1.269		432.59	147.2	1.00	1.34		698.64	11.9

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

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 (vehs)	Aver. (m)	Lane Length (m)
South: PR-1 SUR												
1 L	141	9	0	0	132	111	1.185	183.6	1.14	6.4	45.1	82.0T
2 T	95	55	0	0	898	715	1.256	190.4	1.64	47.5	332.4	500.0
3 T	95	55	0	0	898	715	1.256	190.4	1.64	47.5	332.4	500.0
4 TR	68	55	25	2	899	716	1.256	179.2	1.53	44.0	308.3	500.0
East: PR-176 ESTE												
1 L	103	47	0	0	93	111	0.840	66.9r	0.86	1.5	10.7	25.0T
2 T	103	47	0	0	760	611	1.244	188.0	1.58	39.7	277.7	500.0
3 TR	59	1	43	47	727	585	1.244	157.5	1.33	31.7	221.9	500.0
North: PR-1 NORTE												
1 L	141	9	0	0	132	111	1.185	182.9r	1.14	6.4	44.9<	65.0T
2 L	141	9	0	0	136	111	1.224	199.4r	1.17	7.3	50.8<	70.0T
3 LT	95	55	0	0	610	701	0.870	53.7	1.03	9.1	63.6	500.0
4 T	95	55	0	0	622	715	0.870	53.4	0.97	9.2	64.6	500.0
5 T	95	55	0	0	622	715	0.870	53.4	0.97	9.2	64.6	500.0
6 R	6	55	59	30	29	343	0.084	21.2	0.71	0.1	0.7	60.0T
West: PR 176 OSTE												
1 LT	135	15	0	0	246	194	1.265	208.5	1.31	14.2	99.4	500.0
2 TR	55	1	79	15	251	199	1.265	179.0	1.17	12.4	86.7	500.0

< Short lane capacity is reached and there is excess flow into an adjacent lane
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.
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

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-1 SUR												
1 L	132	0	0	132	3.30	1950	1857	0	0	111	1.185	100
2 T	0	898	0	898	3.30	1950	1950	0	0	715	1.256	100
3 T	0	898	0	898	3.30	1950	1950	0	0	715	1.256	100
4 TR	0	587	312	899	3.30	1950	1917	957	24	716	1.256	100
East: PR-176 ESTE												
1 L	93	0	0	93	3.30	1950	353<	0	0	111	0.840	100

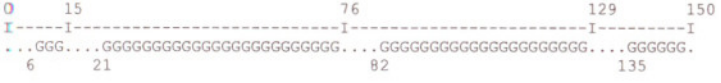
2	T	0	760	0	760	3.30	1950	1950	0	0	611	1.244	100
3	TR	0	672	55	727	3.30	1950	295	1860	24	585	1.244	100
North: PR-1 NORTE													
1	L	132	0	0	132	3.30	1950	1857	0	0	111	1.185	97P
2	L	136	0	0	136	3.30	1950	1857	0	0	111	1.224	100
3	LT	250E	360	0	610	3.30	1950	1911	0	0	701	0.870	100
4	T	0	622	0	622	3.30	1950	1950	0	0	715	0.870	100
5	T	0	622	0	622	3.30	1950	1950	0	0	715	0.870	100
6	R	0	0	29	29	3.30	1950	381<	1019<	24	343	0.084	100
West: PR 176 OSTE													
1	LT	17	229	0	246	3.30	1950	1943	0	0	194	1.265	100
2	TR	0	205	46	251	3.30	1950	807	1932	24	199	1.265	100

E "Excess" flow from back of an adjacent short lane
< 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.9 - Signal Timing Diagram
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

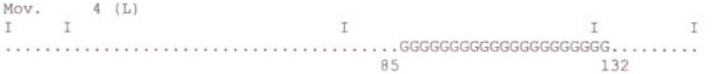
Displayed (Phase) Green Times

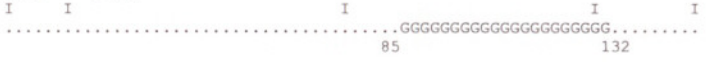


Effective (Movement) Green Times

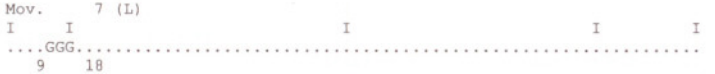
South: PR-1 SUR

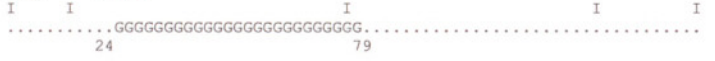
East: PR-176 ESTE



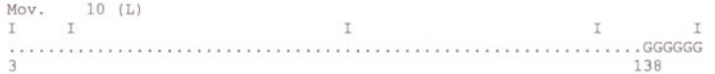


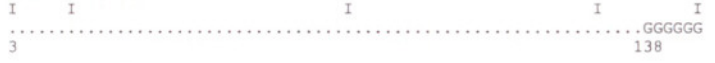
North: PR-1 NORTE





West: PR 176 OSTE





```
G.........................GGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG..GGGGGGG
3                        58                               132 138

I-----I------I------I------I------I------I------I------I------I------I---->
0     15     30     45     60     75     90     105    120    135    150

                              T I M E  (s)
```

Table S.10 - Movement Capacity and Performance Summary
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

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	Cycle Average Queue (veh)	Perf. Index
South: PR-1 SUR											
1	L	132	111	100	1.185	9		183.6	1.14	6.4	15.34
2	T	2383	1897	100	1.256	55		186.9	1.62	47.5	292.96
3	R	312	249	100	1.255	55*	64	184.6	1.53	44.0	37.08
East: PR-176 ESTE											
4	L	93	111<	100	0.841	47		66.9	0.86	1.5	4.65
5	T	1432	1152	100	1.244	47		173.4	1.46	39.7	164.06
6	R	55	45	100	1.232	47*	38	165.1	1.33	31.7	5.88
North: PR-1 NORTE											
7	L	268	219	97	1.224	9*		191.3	1.15	7.3	32.39
8	LT	1854E	2131	100	0.870	55		53.5	0.97	9.2	83.84
9	R	29	344<	100	0.084	55	30	21.2	0.71	0.1	0.68
West: PR 176 OSTE											
10	L	17	13	100	1.269*	15		215.6	1.31	14.2	2.30
11	T	434	343	100	1.265	15		193.6	1.25	14.2	54.06
12	R	46	37	100	1.259	74	15*	185.7	1.17	12.4	5.40

E "Excess" flow from the short lane of an adjacent movement added to normal flow
< Reduced capacity due to a short lane effect
* Maximum degree of saturation, or critical green periods

Table S.12A - Fuel Consumption, Emissions and Cost (TOTAL)
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Mov ID		Fuel Total L/h	Cost Total $/h	HC Total kg/h	CO Total kg/h	NOX Total kg/h	CO2 Total kg/h
South: PR-1 SUR							
1	L	18.1	236.39	0.093	2.42	0.072	45.2
2	T	362.6	4407.86	1.887	59.26	1.605	906.5
3	R	46.2	568.94	0.240	7.37	0.202	115.6
		427.0	5213.19	2.220	69.05	1.879	1067.4
East: PR-176 ESTE							
4	L	8.5	82.77	0.040	1.44	0.043	21.2
5	T	204.1	2484.05	1.053	32.26	0.892	510.3
6	R	7.5	91.35	0.038	1.15	0.032	18.7
		220.0	2658.16	1.131	34.85	0.967	550.1
North: PR-1 NORTE							
7	L	37.6	497.00	0.193	4.94	0.148	94.0
8	LT	163.7	1463.33	0.768	30.26	0.870	409.1
9	R	2.1	15.47	0.009	0.42	0.012	5.3
		203.4	1975.80	0.971	35.62	1.030	508.4
West: PR 176 OSTE							
10	L	2.6	34.79	0.013	0.33	0.010	6.4
11	T	62.1	812.82	0.321	8.45	0.247	155.3
12	R	6.4	83.13	0.033	0.86	0.025	15.9
		71.1	930.73	0.367	9.65	0.282	177.7
INTERSECTION:		921.4	10777.89	4.689	149.17	4.158	2303.6

PARAMETERS USED IN COST CALCULATIONS

Pump price of fuel ($/L)	=	1.200
Fuel resource cost factor	=	0.50
Ratio of running cost to fuel cost	=	3.0
Average income ($/h)	=	28.00
Time value factor	=	0.60
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

Table S.12B - Fuel Consumption, Emissions and Cost (RATE)
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Mov ID	Fuel Rate	Cost Rate	HC Rate	CO Rate	NOX Rate	CO2 Rate

		L/100km	$/km	g/km	g/km	g/km	g/km
South: PR-1 SUR							
1	L	22.6	2.95	1.158	30.16	0.898	564.3
2	T	25.1	3.05	1.306	41.01	1.110	627.3
3	R	24.5	3.02	1.274	39.09	1.072	613.2
		24.9	3.04	1.295	40.29	1.096	622.8
East: PR-176 ESTE							
4	L	14.9	1.46	0.702	25.29	0.750	372.5
5	T	23.5	2.86	1.212	37.15	1.027	587.6
6	R	22.5	2.75	1.152	34.50	0.972	561.3
		23.0	2.77	1.180	36.36	1.009	574.0
North: PR-1 NORTE							
7	L	23.0	3.04	1.182	30.23	0.903	575.0
8	LT	14.6	1.30	0.683	26.92	0.774	364.0
9	R	12.0	0.88	0.533	23.76	0.696	299.9
		15.6	1.51	0.744	27.29	0.789	389.6
West: PR 176 OSTE							
10	L	24.7	3.33	1.278	32.07	0.949	616.3
11	T	23.6	3.09	1.219	32.10	0.938	590.2
12	R	22.9	2.99	1.180	31.07	0.915	573.0
		23.6	3.09	1.218	32.01	0.936	589.5
INTERSECTION:		21.5	2.52	1.096	34.86	0.972	538.4

Table S.14 - Summary of Input and Output Data
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Lane No.		Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff (secs) 1st	2nd	Grn	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-1 SUR														
1	L	132			132	0	1949	9			1.185	183.6	45	82
2	T		898		898	0	1949	55			1.256	190.4	332	500
3	T		898		898	0	1949	55			1.256	190.4	332	500
4	TR		587	312	899	0	1950	55		2	1.256	179.2	308	500
		132	2383	312	2827	0					1.256	186.5	332	
East: PR-176 ESTE														
1	L	93			93	0	1949	47			0.840	66.9r	11	25
2	T		760		760	0	1949	47			1.244	188.0	278	500
3	TR		672	55	727	0	1950	1		47	1.244	157.5	222	500
		93	1432	55	1580	0					1.244	166.8	278	
North: PR-1 NORTE														
1	L	132			132	0	1949	9			1.185	182.9r	45	65
2	L	136			136	0	1949	9			1.224	199.4r	51	70
3	LT		360		610	0	1949	55			0.870	53.7	64	500
4	T		622		622	0	1949	55			0.870	53.4	65	500
5	T		622		622	0	1949	55			0.870	53.4	65	500
6	R			29	29	0	1949	55		30	0.084	21.2	1	60
		268	1604	29	1901	0					1.224	79.5	65	
West: PR 176 OSTE														
1	LT	17	229		246	0	1950	15			1.265	208.5	99	500
2	TR		205	46	251	0	1950	1		15	1.265	179.0	87	500
		17	434	46	497	0					1.265	193.6	99	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	7055	0	150	1.269	147.2	332

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

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

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.

Table S.15 - Capacity and Level of Service
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Mov ID	Mov Typ	Green Ratio 1st grn	Green Ratio 2nd grn	Time (g/C)	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Longest Queue Aver. (m)
South: PR-1 SUR											
1	L	0.060			132	111	1.185	183.6	F	6.4	45
2	T	0.367			2383	1897	1.256	186.9	F	47.5	332
3	R	0.367*	0.427		312	249	1.255	184.6	F	44.0	308
East: PR-176 ESTE											
4	L	0.313			93	111<	0.841	66.9	E	1.5	11
5	T	0.313			1432	1152	1.244	173.4	F	39.7	278

6	R	0.313*	0.253	55	45	1.232	165.1	F	31.7	222
North: PR-1 NORTE										
7	L	0.060*		268	219	1.224	191.3	F	7.3	51
8	LT	0.367		1854E	2131	0.870	53.5	D	9.2	65
9	R	0.367	0.200	29	344<	0.084	21.2	C	0.1	1
West: PR 176 OSTE										
10	L	0.100		17	13	1.269*	215.6	F	14.2	99
11	T	0.100		434	343	1.265	193.6	F	14.2	99
12	R	0.493	0.100*	46	37	1.259	185.7	F	12.4	87
ALL VEHICLES:				7055		1.269	147.2	F	47.5	332
INTERSECTION (persons):				10583			147.2		47.5	332

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)
E "Excess" flow from the short lane of an adjacent movement added to normal flow

Table S.16 - SCATS MF Parameter
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Lane No.		Stopline Flow (veh/h)	Capacity (veh/h)	SCATS Satn Flow	SCATS MF	Deg. Satn x	Lane Util. %
South: PR-1 SUR							
1	L	111	111	1857	1114	1.185	100
2	T	715	715	1950	1758	1.256	100
3	T	715	715	1950	1758	1.256	100
4	TR	716	716	1917	NA	1.256	100
East: PR-176 ESTE							
1	L	93	111	1857	1647	0.840	100
2	T	611	611	1950	1729	1.244	100
3	TR	585	585	1943	NA	1.244	100
North: PR-1 NORTE							
1	L	111	111	1857	1114	1.185	97P
2	L	111	111	1857	1114	1.224	100
3	LT	610	701	1911	1723	0.870	100
4	T	622	715	1950	1758	0.870	100
5	T	622	715	1950	1758	0.870	100
6	R	29	343	1857	1674	0.084	100
West: PR 176 OSTE							
1	LT	194	194	1943	1388	1.265	100
2	TR	199	199	1932	NA	1.265	100

NA Not Applicable - SCATS MF was not calculated for this lane due to one of the following reasons:
- the lane is not controlled by signals (slip or continuous lane)
- two movements share this lane and do not run in the same phases

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).

STOPLINE FLOW: Departure flow rate in veh/h as measured at the stop line. This cannot exceed capacity.

SCATS SATURATION FLOW: This allows for lane width, approach grade and turning vehicles. Saturation flow scale applies if specified. The effects of heavy vehicles, parking manoeuvres, number of buses stopping and conflicting pedestrian volume are not included.

SCATS MF: This emulates the MF (Maximum Flow) parameter used in the SCATS control system. It is calculated from the SCATS SATURATION FLOW parameter.

DEG. SATN: The Demand (Arrival) Flow Rate may exceed the Stopline Flow Rate, therefore x > 1 is possible.

Table D.0 - Geometric Delay Data
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

From Approach	To Approach	Turn	Negn Radius (m)	Negn Speed (km/h)	Negn Dist. (m)	Appr. Dist. (m)	Downstream Dist. (m)	Distance User Spec?
South: PR-1 SUR								
	East	Right	10.0	20.2	15.7	500	104	No
	North	Thru	S	60.0	23.1	500	106	No
	West	Left	12.8	22.2	20.1	500	107	No
East: PR-176 ESTE								
	South	Left	16.1	24.2	25.2	500	111	No
	North	Right	10.0	20.2	15.7	500	104	No
	West	Thru	S	60.0	35.0	500	106	No
North: PR-1 NORTE								
	South	Thru	S	60.0	23.1	500	106	No
	East	Left	14.2	23.1	22.4	500	109	No
	West	Right	10.0	20.2	15.7	500	104	No
West: PR 176 OSTE								

South	Right	10.0	20.2	15.7	500	104		No
East	Thru	S	60.0	35.0	500	106		No
North	Left	19.1	25.8	30.0	500	114		No

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.

Table D.1 - Lane Delays
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

					Delay (seconds/veh)					
	Deg.	Stop-line Delay			Acc.	Queuing		Stopd		
Lane	Satn	1st	2nd	Total	Dec.	Total	MvUp	(Idle)	Geom	Control
No.	x	d1	d2	dSL	dn	dq	dqm	di	dig	dic
South: PR-1 SUR										
1 L	1.185	80.4	95.2	175.6	4.4	171.2	5.6	165.6	8.0	183.6
2 T	1.256	50.6	139.7	190.4	8.6	181.8	5.1	176.7	0.0	190.4
3 T	1.256	50.6	139.7	190.4	8.6	181.8	5.1	176.7	0.0	190.4
4 TR	1.256	35.9	140.5	176.4	7.0	169.4	4.7	164.7	2.8	179.2
East: PR-176 ESTE										
1 L	0.840	42.8	16.3	59.1	3.9	55.2	1.8	53.4	7.8	66.9
2 T	1.244	55.1	132.8	188.0	8.6	179.4	5.5	173.9	0.0	188.0
3 TR	1.244	23.2	133.8	156.9	8.2	148.7	3.9	144.8	0.6	157.5
North: PR-1 NORTE										
1 L	1.185	80.4	94.6	175.0	4.5	170.5	5.5	165.0	7.9	182.9
2 L	1.224	80.4	111.1	191.5	4.5	187.0	5.9	181.1	7.9	199.4
3 LT	0.870	47.1	6.6	53.7	8.6	45.1	0.5	44.6	0.0	53.7
4 T	0.870	47.1	6.4	53.4	8.6	44.8	0.5	44.3	0.0	53.4
5 T	0.870	47.1	6.4	53.4	8.6	44.8	0.5	44.3	0.0	53.4
6 R	0.084	13.1	0.0	13.1	1.9	11.2	0.0	11.2	8.2	21.2
West: PR 176 OSTE										
1 LT	1.265	75.0	132.9	208.0	8.3	199.7	6.9	192.8	0.5	208.5
2 TR	1.265	43.9	133.6	177.5	7.7	169.8	5.1	164.7	1.5	179.0

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

Table D.2 - Lane Stops
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

		-- Effective Stop Rate --				Prop.	Move-up
	Deg.			Geom.	Overall	Queued	Rate
Lane	Satn						
No.	x	he1	he2	hig	h	pq	hqm
South: PR-1 SUR							
1 L	1.185	0.79	0.35	0.00	1.14	1.000	0.80
2 T	1.256	0.92	0.72	0.00	1.64	1.000	0.77
3 T	1.256	0.92	0.72	0.00	1.64	1.000	0.77
4 TR	1.256	0.91	0.62	0.00	1.53	1.000	0.77
East: PR-176 ESTE							
1 L	0.840	0.64	0.12	0.11	0.86	0.826	0.26
2 T	1.244	0.91	0.67	0.00	1.58	1.000	0.76
3 TR	1.244	0.91	0.43	0.00	1.33	1.000	0.76
North: PR-1 NORTE							
1 L	1.185	0.79	0.35	0.00	1.14	1.000	0.79
2 L	1.224	0.79	0.37	0.00	1.17	1.000	0.85
3 LT	0.870	0.87	0.16	0.00	1.03	1.000	0.08
4 T	0.870	0.90	0.07	0.00	0.97	1.000	0.08
5 T	0.870	0.90	0.07	0.00	0.97	1.000	0.08
6 R	0.084	0.35	0.00	0.36	0.71	0.462	0.00
West: PR 176 OSTE							
1 LT	1.265	0.83	0.49	0.00	1.31	1.000	0.87
2 TR	1.265	0.82	0.34	0.00	1.17	1.000	0.87

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

Table D.3A - Lane Queues (veh)
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

	Deg.	Ovrfl.	Average (veh)			Percentile (veh)					Queue
Lane	Satn	Queue									Stor.
No.	x	No	Nc1	Nc2	Nc	70%	85%	90%	95%	98%	Ratio
South: PR-1 SUR											
1 L	1.185	2.9	2.9	3.5	6.4	7.8	10.5	12.2*	14.0*	15.5*	0.79
2 T	1.256	27.4	12.6	34.9	47.5	57.0	76.0	85.5	99.7	109.2	0.98
3 T	1.256	27.4	12.6	34.9	47.5	57.0	76.0	85.5	99.7	109.2	0.98
4 TR	1.256	27.5	9.0	35.1	44.0	52.8	70.5	79.3	92.5	101.3	0.89

East: PR-176 ESTE										
1 L	0.840	0.6	1.1	0.4	1.5	1.9	2.8	3.5	4.6*	5.4*
1.00										
2 T	1.244	22.2	11.6	28.0	39.7	47.6	63.5	71.4	83.3	91.2
0.82										
3 TR	1.244	21.4	4.7	27.0	31.7	38.0	50.7	57.1	66.6	72.9
0.64										
North: PR-1 NORTE										
1 L	1.185	2.9	2.9	3.5	6.4	7.8	10.5*	12.2*	14.0*	15.4*
1.00										
2 L	1.224	3.4	3.0	4.2	7.3	8.7	11.8*	13.6*	15.6*	17.2*
1.00										
3 LT	0.870	1.2	8.0	1.1	9.1	10.9	14.6	16.7	19.3	21.2
0.38										
4 T	0.870	1.2	8.1	1.1	9.2	11.1	14.9	17.0	19.6	21.5
0.39										
5 T	0.870	1.2	8.1	1.1	9.2	11.1	14.9	17.0	19.6	21.5
0.39										
6 R	0.084	0.0	0.1	0.0	0.1	0.1	0.2	0.3	0.4	0.5
0.06										
West: PR 176 OSTE										
1 LT	1.265	7.1	5.1	9.1	14.2	17.0	22.7	25.7	29.8	32.7
0.26										
2 TR	1.265	7.3	3.1	9.3	12.4	14.9	19.9	22.5	26.1	28.6
0.21										

Values printed in this table are cycle-average queues (vehicles).
* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Table D.3B - Lane Queues (metres)
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

	Deg.	Ovrfl.	Average (metres)			Percentile (metres)					Queue
Lane	Satn	Queue									Stor.
No.	x	No	Nc1	Nc2	Nc	70%	85%	90%	95%	98%	Ratio
South: PR-1 SUR											
1 L	1.185	20.4	20.6	24.4	45.1	54.4	73.5	85.3*	98.2*	108.3*	0.79
2 T	1.256	191.6	88.4	244.0	332.4	398.9	531.9	598.4	698.1	764.6	0.98
3 T	1.256	191.6	88.4	244.0	332.4	398.9	531.9	598.4	698.1	764.6	0.98
4 TR	1.256	192.7	62.8	245.5	308.3	369.9	493.2	554.9	647.4	709.0	0.89
East: PR-176 ESTE											
1 L	0.840	4.2	7.7	2.9	10.7	13.4	19.4	24.4	32.4*	37.5*	1.00
2 T	1.244	155.6	81.5	196.2	277.7	333.2	444.3	499.9	583.2	638.7	0.82
3 TR	1.244	149.9	32.7	189.1	221.9	266.2	355.0	399.4	465.9	510.3	0.64
North: PR-1 NORTE											
1 L	1.185	20.5	20.6	24.3	44.9	54.3	73.3*	85.1*	98.0*	108.1*	1.00
2 L	1.224	24.1	21.3	29.5	50.8	61.2	82.4*	95.1*	109.4*	120.3*	1.00
3 LT	0.870	8.3	55.8	7.8	63.6	76.5	102.5	117.0	135.0	148.1	0.38
4 T	0.870	8.1	56.9	7.7	64.6	77.7	104.0	118.7	136.9	150.2	0.39
5 T	0.870	8.1	56.9	7.7	64.6	77.7	104.0	118.7	136.9	150.2	0.39
6 R	0.084	0.0	0.7	0.0	0.7	1.0	1.5	1.9	2.9	3.5	0.06
West: PR 176 OSTE											
1 LT	1.265	49.8	35.9	63.5	99.4	119.3	159.2	179.6	208.9	228.8	0.26
2 TR	1.265	51.1	21.4	65.3	86.7	104.1	139.0	157.2	182.4	199.9	0.21

Values printed in this table are cycle-average queues (metres).
* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Table D.4 - Movement Speeds (km/h) and Geometric Delay
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

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

Mov ID	Cruise	Negn	Negn	Cruise	1st Grn	2nd Grn	Running	Overall	Delay (sec)
South: PR-1 SUR									
1 L	60.0	22.2	22.2	60.0	22.1		40.2	9.9	8.0
2 T	60.0	60.0	60.0	60.0	55.9	0.0	39.3	9.8	0.0
3 R	60.0	20.2	20.2	60.0	55.6	7.5	40.9	9.9	8.2
East: PR-176 ESTE									
4 L	60.0	24.2	24.2	60.0	22.0		43.8	21.2	7.8
5 T	60.0	60.0	60.0	60.0	28.9	0.0	23.0	10.4	0.0
6 R	60.0	20.2	20.2	60.0	2.9	50.6	41.5	10.8	8.2
North: PR-1 NORTE									
7 L	60.0	23.1	23.1	60.0	22.1		40.1	9.6	7.9
8 T	60.0	60.0	60.0	60.0	55.8		48.0	24.3	0.0
9 R	60.0	20.2	20.2	60.0			47.0	37.8	8.2
West: PR 176 OSTE									
10 L	60.0	25.8	25.8	60.0	29.2		39.3	8.8	7.6
11 T	60.0	60.0	60.0	60.0	17.7	0.0	20.5	9.5	0.0
12 R	60.0	20.2	20.2	60.0	4.9	29.1	40.6	9.8	8.2

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

Table D.5 - Progression Factors and Actuated Signal Parameters
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

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-1 SUR									
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-176 ESTE									
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-1 NORTE									
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 176 OSTE									
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

Table D.6 - Gap Acceptance Parameters
PR 1 -- PR 176
AM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Mov ID	Mov Type	Opng Flow (pcu/h)	Crit Gap (s)	Foll-up Headway (s)	Entry HV Equiv
South: PR-1 SUR					
1 L	Normal	0	4.50	2.60	2.0
3 R	Normal	268	6.00	3.00	2.0
East: PR-176 ESTE					
4 L	Normal	0	4.50	2.60	2.0
6 R	Normal	2383	6.00	3.00	2.0
North: PR-1 NORTE					
7 L	Normal	0	4.50	2.60	2.0
9 R	Normal	132	6.00	3.00	2.0
West: PR 176 OSTE					
10 L	Normal	0	4.50	2.60	2.0
12 R	Normal	93	6.00	3.00	2.0

Values in this table are adjusted for heavy vehicles in the entry stream.

Site: PR1-PR176 AM BASE
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren pr176.aap
Processed Jun 14, 2007 03:37:04PM

M0276, Traffic Consulting Group, Large Office
Produced by SIDRA Intersection 3.1.061208.34

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Output Tables
Output Tables
PR 1 -- PR 176
PM BASE

Run Information
Cycle Time = 150 (User-given 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
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: Cycle average 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 = 0 secs
(max. value for stopping = 3 secs)

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

* Opposed turn in movement 12 has high x.
Its capacity is mainly due to end departures. Consider increasing the number of end departures, and/or specifying this as an undetected movement, since it may be affecting the timing results adversely.

Table B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PR 1 -- PR 176
PM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: PR-1 SUR							
	East	3	Right	173	0	1.00	0.95
	North	2	Thru	1592	0	1.00	0.95
	West	1	Left	188	0	1.00	1.00
East: PR-176 ESTE							
	South	4	Left	248	0	1.00	0.95
	North	6	Right	93	0	1.00	0.95
	West	5	Thru	1516	0	1.00	0.95
North: PR-1 NORTE							
	South	8	Thru	3006	0	1.00	0.95
	East	7	Left	299	0	1.00	0.95
	West	9	Right	93	0	1.00	0.95
West: PR 176 OSTE							
	South	12	Right	34	0	1.00	0.95
	East	11	Thru	1032	0	1.00	0.95
	North	10	Left	29	0	1.00	0.95

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PR 1 -- PR 176
PM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Mov ID	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program						
South: PR-1 SUR						
1 L	188	0	0	0	0	0
2 T	0	0	1592	0	0	0
3 R	0	0	0	0	173	0
East: PR-176 ESTE						
4 L	248	0	0	0	0	0
5 T	0	0	1516	0	0	0
6 R	0	0	0	0	93	0
North: PR-1 NORTE						
7 L	299	0	0	0	0	0
8 T	0	0	3006	0	0	0
9 R	0	0	0	0	93	0
West: PR 176 OSTE						
10 L	29	0	0	0	0	0
11 T	0	0	1032	0	0	0
12 R	0	0	0	0	34	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
PR 1 -- PR 176
PM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given 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 Grn	2nd Grn
South: PR-1 SUR													
1 L	*A	B						6		17.6		7	
2 LT	B	C						6		57.9		49	
3 R	B	C		C	B	Y		6	34	60.7		36.0Min	49 61
East: PR-176 ESTE													
4 L	C	D						6		54.9		44	
5 LT	C	D						6		83.8		44	
6 R	*C	D		D	C	Y		6	50	83.8	138.1	44	50
North: PR-1 NORTE													
7 L	A	B						6		16.7		7	
8 LT	*B	C						6		93.6		49	
9 R	B	C		C	B	Y		6	47	32.2	52.6	49	48
West: PR 176 OSTE													
10 L	D	A						6		52.9		26	
11 T	D	A						6		52.8		26	
12 R	A	D	Y	*D	A			61	6	163.8	52.9	57	26

Current Phase Sequence: ACTUAL
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
PR 1 -- PR 176
PM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

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-1 SUR											
1 L	129	0.0	1857		0.070		87	0.90	-40	100	1.490
2 LT	1651E	0.0	5297		0.312		1730	0.90	-6	100	0.954
3 R	173	0.0	526	24	0.329	0.000	182	0.90	-6	100	0.953
East: PR-176 ESTE											
4 L	107	0.0	366<		0.294		107	0.90	-10	100	1.001
5 LT	1657E	0.0	3547		0.467		1040	0.90	-43	100	1.592
6 R	93	0.0	0	175	0.467	0.529	59	0.90	-43	100	1.586
North: PR-1 NORTE											
7 L	234	0.0	3644		0.064		170	0.90	-35	96	1.379
8 LT	3071E	0.0	5844		0.525		1909	0.90	-44	100	1.608
9 R	93	0.0	429<	757<	0.157	0.034	382	0.90	270	100	0.243
West: PR 176 OSTE											
10 L	29	0.0	103		0.282		18	0.90	-45	100	1.624*
11 T	1032	0.0	3674		0.281		637	0.90	-44	100	1.621
12 R	34	0.0	4	112	0.617	0.282	21	0.90	-45	100	1.624*

E "Excess" flow from the short lane of an adjacent movement added to normal flow

Opposed turn in movement 12 has high x.
Its capacity is mainly due to end departures. Consider increasing the number of end departures, and/or specifying this as an undetected movement, since it may be affecting the timing results adversely.

Table S.3 - Intersection Parameters
PR 1 -- PR 176
PM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
1	S_L		A	B	6	0.070	0.077	17.6
8	N_LT		B	C	6	0.525	0.584	93.6
6	E_R	1st	C	D	6	0.467	0.519	83.8
12	W_R	2nd	D	A	6	0.282	0.313	52.9
				Total:	24	1.344	1.493	247.9

Cycle Time:

Minimum	Maximum	Practical	Chosen
48	150	****	150

(Cycle time specified by the user)

**** 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)	=	269.8
Largest average movement delay (s)	=	371.6
Largest cycle-average queue, mean (m)	=	701
Performance Index	=	1399.71
Degree of saturation (highest)	=	1.624
Practical Spare Capacity (lowest)	=	-45 %
Effective intersection capacity, (veh/h)	=	5112
Total vehicle flow (veh/h)	=	8303
Total person flow (pers/h)	=	12455
Total vehicle delay (veh-h/h)	=	622.37
Total person delay (pers-h/h)	=	933.56
Total effective vehicle stops (veh/h)	=	13508
Total effective person stops (pers/h)	=	20262
Total vehicle travel (veh-km/h)	=	4914.9
Total cost ($/h)	=	20547.06
Total fuel (L/h)	=	1496.0
Total CO2 (kg/h)	=	3739.99

Table S.4 - Phase Information
PR 1 -- PR 176
PM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	6	6	7	13	6	13	9%
B	13	6	19	49	68	6	55	37%
C	68	6	74	44	118	6	50	33%
D	118	6	124	26	150	6	32	21%

Current Phase Sequence: ACTUAL
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 Cycle (vehs)	Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: PR-1 SUR										
1	L	11.39	17.08	317.4	1.00	1.26	11.1	78	24.70	6.2
2	LT	33.21	49.82	72.4	0.96	1.06	12.9	90	92.24	19.6
3	R	4.05	6.07	84.2	1.00	1.12	12.9	90	10.52	18.1
East: PR-176 ESTE										
4	L	1.82	2.72	60.8	0.99	0.78	1.6	11	4.96	22.6
5	LT	140.34	210.51	305.0	0.92	1.66	87.5	613	311.29	5.9
6	R	8.48	12.72	328.3	1.00	1.64	74.6	522	18.53	6.0
North: PR-1 NORTE										
7	L	16.62	24.93	255.2	1.00	1.19	8.5	60	36.66	7.5
8	LT	300.21	450.32	352.0	1.00	2.05	100.2	701	666.44	5.6
9	R	0.44	0.66	17.1	0.41	0.73	0.2	2	1.98	40.7
West: PR 176 OSTE										
10	L	2.99	4.49	371.6	1.00	1.78	55.2	387	6.51	5.4
11	T	99.61	149.42	347.5	1.00	1.62	55.2	387	218.93	5.7
12	R	3.20	4.80	339.1	1.00	1.46	50.4	353	6.95	5.8

Table S.6 - Intersection Performance
PR 1 -- PR 176
PM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

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-1 SUR									
1953	1.490	48.65	72.97	89.7	0.97	1.08	90	127.46	16.9
East: PR-176 ESTE									

1857	1.592	150.64	225.96	292.0	0.92	1.61	613	334.78	6.2
North: PR-1 NORTE									
3398	1.608	317.27	475.91	336.1	0.98	1.96	701	705.08	5.9
West: PR 176 OSTE									
1095	1.624	105.81	158.71	347.9	1.00	1.62	387	232.38	5.7
ALL VEHICLES:									
8303	1.624	622.37	933.56	269.8	0.97	1.63	701	1399.71	7.0
INTERSECTION (persons):									
12455	1.624		933.56	269.8	0.97	1.63		1399.71	7.0

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PR 1 -- PR 176
PM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

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 Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
South: PR-1 SUR												
1 L	143	7	0	0	129	87	1.490	317.4r	1.26	11.1	77.7<	82.0T
2 LT	101	49	0	0	608	637	0.954	74.7	1.12	12.6	88.3	500.0
3 T	101	49	0	0	608	637	0.954	74.7	1.09	12.6	88.3	500.0
4 TR	65	49	34	2	608	638	0.954	78.4	1.12	12.9	90.0	500.0
East: PR-176 ESTE												
1 L	106	44	0	0	107	107	1.000	60.8r	0.78	1.6	11.1<	25.0T
2 LT	106	44	0	0	911	572	1.592	346.0	1.84	87.5	612.7	500.0
3 TR	50	1	55	44	839	527	1.592	321.0	1.64	74.6	522.1	500.0
North: PR-1 NORTE												
1 L	143	7	0	0	115	87	1.327	244.6r	1.18	7.6	52.9<	65.0T
2 L	143	7	0	0	119	87	1.379	265.4r	1.20	8.5	59.8<	70.0T
3 LT	101	49	0	0	1021	635	1.608	352.0	1.96	99.9	699.1	500.0
4 T	101	49	0	0	1025	637	1.608	352.0	2.05	100.2	701.2	500.0
5 T	101	49	0	0	1025	637	1.608	352.0	2.05	100.2	701.2	500.0
6 R	6	49	47	48	93	382	0.243	17.1	0.73	0.2	1.6	60.0T
West: PR 176 OSTE												
1 LT	124	26	0	0	546	337	1.621	364.4	1.78	55.2	386.7	500.0
2 TR	61	1	62	26	549	339	1.621	331.4	1.46	50.4	353.0	500.0

< Short lane capacity is reached and there is excess flow into an adjacent lane
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.
T Short lane due to specification of Turn Slot

Table S.8 - Lane Flow and Capacity Information
PR 1 -- PR 176
PM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

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-1 SUR												
1 L	129	0	0	129	3.30	1950	1857	0	0	87	1.490	100
2 LT	59E	549	0	608	3.30	1950	1950	0	0	637	0.954	100
3 T	0	608	0	608	3.30	1950	1950	0	0	637	0.954	100
4 TR	0	435	173	608	3.30	1950	1922	749	24	638	0.954	100
East: PR-176 ESTE												
1 L	107	0	0	107	3.30	1950	366<	0	0	107	1.000	100
2 LT	141E	770	0	911	3.30	1950	1950	0	0	572	1.592	100
3 TR	0	746	93	839	3.30	1950	492	1785	24	527	1.592	100
North: PR-1 NORTE												
1 L	115	0	0	115	3.30	1950	1857	0	0	87	1.327	96P
2 L	119	0	0	119	3.30	1950	1857	0	0	87	1.379	100
3 LT	65E	957	0	1021	3.30	1950	1944	0	0	635	1.608	100
4 T	0	1025	0	1025	3.30	1950	1950	0	0	637	1.608	100
5 T	0	1025	0	1025	3.30	1950	1950	0	0	637	1.608	100
6 R	0	0	93	93	3.30	1950	429<	757<	24	382	0.243	100
West: PR 176 OSTE												
1 LT	29	517	0	546	3.30	1950	1945	0	0	337	1.621	100
2 TR	0	515	34	549	3.30	1950	238	1944	24	339	1.621	100

E "Excess" flow from back of an adjacent short lane
< 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
PR 1 -- PR 176
PM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

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	Cycle Average Queue (veh)	Perf. Index
South: PR-1 SUR											
1	L	129	87	100	1.490	7*		317.4	1.26	11.1	24.70
2	LT	1651E	1730	100	0.954	49		72.4	1.06	12.9	92.24
3	R	173	182	100	0.953	49	61	84.2	1.12	12.9	10.52
East: PR-176 ESTE											
4	L	107	107<	100	1.001	44		60.8	0.78	1.6	4.96
5	LT	1657E	1040	100	1.592	44		305.0	1.66	87.5	311.29
6	R	93	59	100	1.586	44*	50	328.3	1.64	74.6	18.53
North: PR-1 NORTE											
7	L	234	170	96	1.379	7		255.2	1.19	8.5	36.66
8	LT	3071E	1909	100	1.608	49*		352.0	2.05	100.2	666.44
9	R	93	382<	100	0.243	49	48	17.1	0.73	0.2	1.98
West: PR 176 OSTE											
10	L	29	18	100	1.624*	26		371.6	1.78	55.2	6.51
11	T	1032	637	100	1.621	26		347.5	1.62	55.2	218.93
12	R	34	21	100	1.624*	57	26*	339.1	1.46	50.4	6.95

E "Excess" flow from the short lane of an adjacent movement added to normal flow

< 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
PR 1 -- PR 176
PM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

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-1 SUR												
1 L	129			129	0	1949	7		1.490	317.4r	78	82
2 LT		549		608	0	1949	49		0.954	74.7	88	500
3 T		608		608	0	1949	49		0.954	74.7	88	500
4 TR		435	173	608	0	1950	49	2	0.954	78.4	90	500
	129	1592	173	1894	0				1.490	94.8	90	
East: PR-176 ESTE												
1 L	107			107	0	1949	44		1.000	60.8r	11	25
2 LT		770		911	0	1949	44		1.592	346.0	613	500
3 TR		746	93	839	0	1950	1	44	1.592	321.0	522	500
	107	1516	93	1716	0				1.592	344.3	613	
North: PR-1 NORTE												
1 L	115			115	0	1949	7		1.327	244.6r	53	65
2 L	119			119	0	1949	7		1.379	265.4r	60	70
3 LT		957		1021	0	1949	49		1.608	352.0	699	500
4 T		1025		1025	0	1949	49		1.608	352.0	701	500
5 T		1025		1025	0	1949	49		1.608	352.0	701	500
6 R			93	93	0	1949	49	48	0.243	17.1	2	60
	234	3006	93	3333	0				1.608	342.6	701	
West: PR 176 OSTE												
1 LT	29	517		546	0	1950	26		1.621	364.4	387	500
2 TR		515	34	549	0	1950	1	26	1.621	331.4	353	500
	29	1032	34	1095	0				1.621	347.9	387	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	8303	0	150	1.624	269.8	701

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

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

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.

Table S.15 - Capacity and Level of Service
PR 1 -- PR 176
PM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Mov ID	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	Longest Queue Cycle (vehs)	Aver. (m)
South: PR-1 SUR										
1	L	0.047*		129	87	1.490	317.4	F	11.1	78
2	LT	0.327		1651E	1730	0.954	72.4	E	12.9	90
3	R	0.327	0.407	173	182	0.953	84.2	F	12.9	90
East: PR-176 ESTE										
4	L	0.293		107	107<	1.001	60.8	E	1.6	11
5	LT	0.293		1657E	1040	1.592	305.0	F	87.5	613
6	R	0.293*	0.333	93	59	1.586	328.3	F	74.6	522

North: PR-1 NORTE									
7	L	0.047		234	170	1.379	255.2	F	8.5	60
8	LT	0.327*		3071E	1909	1.608	352.0	F	100.2	701
9	R	0.327	0.320	93	382<	0.243	17.1	B	0.2	2
West: PR 176 OSTE									
10	L	0.173		29	18	1.624*	371.6	F	55.2	387
11	T	0.173		1032	637	1.621	347.5	F	55.2	387
12	R	0.380	0.173*	34	21	1.624*	339.1	F	50.4	353
ALL VEHICLES:				8303		1.624	269.8	F	100.2	701
INTERSECTION (persons):				12455			269.8		100.2	701

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)
E "Excess" flow from the short lane of an adjacent movement added to normal flow

Table D.3A - Lane Queues (veh)
PR 1 -- PR 176
PM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Lane	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nc1	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: PR-1 SUR											
1 L	1.490	5.5	3.0	8.1	11.1	13.3*	17.8*	20.2*	23.4*	25.6*	1.00
2 LT	0.954	3.6	8.9	3.7	12.6	15.1	20.2	22.9	26.5	29.1	0.45
3 T	0.954	3.6	8.9	3.7	12.6	15.1	20.2	22.9	26.5	29.1	0.45
4 TR	0.954	3.7	9.1	3.8	12.9	15.4	20.6	23.3	27.0	29.6	0.44
East: PR-176 ESTE											
1 L	1.000	1.7	1.6	0.0	1.6	2.0	2.9	3.6	4.8*	5.5*	1.00
2 LT	1.592	45.6	14.4	73.2	87.5	105.0	140.1	157.6	183.8	201.3	1.24
3 TR	1.592	42.2	6.9	67.7	74.6	89.5	119.3	134.2	156.6	171.5	0.97
North: PR-1 NORTE											
1 L	1.327	3.7	2.6	4.9	7.6	9.1	12.2*	14.1*	16.2*	17.8*	1.00
2 L	1.379	4.3	2.7	5.8	8.5	10.3*	13.8*	15.8*	18.2*	20.0*	1.00
3 LT	1.608	52.2	15.3	84.5	99.9	119.8	159.8	179.8	209.7	229.7	1.41
4 T	1.608	52.4	15.4	84.8	100.2	120.2	160.3	180.3	210.4	230.4	1.41
5 T	1.608	52.4	15.4	84.8	100.2	120.2	160.3	180.3	210.4	230.4	1.41
6 R	0.243	0.0	0.2	0.0	0.2	0.3	0.5	0.6	0.9	1.1	0.17
West: PR 176 OSTE											
1 LT	1.621	27.6	10.3	45.0	55.2	66.3	88.4	99.4	116.0	127.0	0.75
2 TR	1.621	27.8	5.2	45.3	50.4	60.5	80.7	90.8	105.9	116.0	0.66

Values printed in this table are cycle-average queues (vehicles).
* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Table D.3B - Lane Queues (metres)
PR 1 -- PR 176
PM BASE
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 150 (User-given Cycle Time)

Lane	Deg. Satn x	Ovrfl. Queue No	Average (metres) Nc1	Nc2	Nc	Percentile (metres) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: PR-1 SUR											
1 L	1.490	38.4	20.7	57.0	77.7	93.3*	124.7*	141.4*	163.8*	179.5*	1.00

2 LT	0.954	25.5	62.4	25.9	88.3	106.0	141.5	160.0	185.8	203.6	0.45
3 T	0.954	25.5	62.4	25.9	88.3	106.0	141.5	160.0	185.8	203.6	0.45
4 TR	0.954	26.2	63.4	26.6	90.0	108.0	144.2	163.0	189.3	207.4	0.44
East: PR-176 ESTE											
1 L	1.000	11.7	11.1	0.0	11.1	13.9	20.1	25.2	33.3*	38.5*	1.00
2 LT	1.592	319.5	100.7	512.1	612.7	735.3	980.4	1102.9	1286.8	1409.3	1.24
3 TR	1.592	295.5	48.4	473.7	522.1	626.5	835.3	939.7	1096.4	1200.8	0.97
North: PR-1 NORTE											
1 L	1.327	26.1	18.5	34.5	52.9	63.8	85.7*	98.7*	113.6*	124.9*	1.00
2 L	1.379	30.0	19.2	40.6	59.8	72.0*	96.5*	110.5*	127.3*	139.8*	1.00
3 LT	1.608	365.4	107.3	591.8	699.1	838.9	1118.5	1258.3	1468.0	1607.9	1.41
4 T	1.608	366.5	107.6	593.6	701.2	841.4	1121.9	1262.2	1472.5	1612.8	1.41
5 T	1.608	366.5	107.6	593.6	701.2	841.4	1121.9	1262.2	1472.5	1612.8	1.41
6 R	0.243	0.0	1.6	0.0	1.6	2.1	3.2	4.1	6.3	7.4	0.17
West: PR 176 OSTE											
1 LT	1.621	193.3	71.8	314.9	386.7	464.0	618.7	696.0	812.0	889.3	0.75
2 TR	1.621	194.5	36.2	316.9	353.0	423.6	564.9	635.5	741.4	812.0	0.66

Values printed in this table are cycle-average queues (metres).
* Queue length exceeds short lane length due to specification of a percentile queue in the Tools-Options (Model tab). For calculation of this statistic, you may specify the lane with full length.

Site: PR1-PR176 PM BASE
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren pr176.aap
Processed Jun 15, 2007 11:09:09AM

MO276, Traffic Consulting Group, Large Office
Produced by SIDRA Intersection 3.1.061208.34

Output Tables
Output Tables
PR 1 -- PR 176
FUTURO AM

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
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: Cycle average 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)

* 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 B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PR 1 -- PR 176
FUTURO AM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: PR 1 SUR							
	East	3	Right	332	0	1.00	1.00
	North	2	Thru	2684	0	1.00	1.00
North: PR 1 NORTE							
	South	8	Thru	1707	0	1.00	1.00
West: PR 176 OESTE							
	South	12	Right	49	0	1.00	1.00
	East	11	Thru	461	0	1.00	1.00
	North	10	Left	18	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PR 1 -- PR 176
FUTURO AM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program						
South: PR 1 SUR						
2 T	0	0	2684	0	0	0
3 R	0	0	0	0	332	0
North: PR 1 NORTE						
8 T	0	0	1707	0	0	0
West: PR 176 OESTE						
10 L	18	0	0	0	0	0
11 T	0	0	461	0	0	0
12 R	0	0	0	0	49	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
PR 1 -- PR 176
FUTURO AM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	Mov Typ	PHASE MATRIX First Green Fr	First Green To	First Green Op Pr	Second Green Fr	Second Green To	Second Green 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

```
---------------------------------------------------------------------------
---------
South: PR 1 SUR
   2 T        A     B                                  6        44.7
63
   3 R       *A     B             B     A      Y       6   13   45.2     16.4
63    8
---------------------------------------------------------------------------
---------
North: PR 1 NORTE
   8 T        A     B                                  6        35.2
63
---------------------------------------------------------------------------
---------
West: PR 176 OESTE
  10 L        B     A                                  6        15.0
15
  11 T        B     A                                  6        15.0
15
  12 R        A     B      Y     *B     A             17    6   45.2     15.1
52   15
---------------------------------------------------------------------------
---------
---------------------------------------------------------------------------
---------
   Current Phase Sequence: Two-phase
   Input phase sequence: A B
   Output phase sequence: A B
---------------------------------------------------------------------------
---------
   *  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
PR 1 -- PR 176
FUTURO AM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	Dem Flow (veh /h)	HV (%)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: PR 1 SUR											
2 T	2684	0.0	6935		0.387		4855	0.90	63	100	0.553*
3 R	332	0.0	824	270	0.392	0.034	601	0.90	63	100	0.553*
North: PR 1 NORTE											
8 T	1707	0.0	5850		0.292		4095	0.90	116	100	0.417
West: PR 176 OESTE											
10 L	18	0.0	201		0.090		34	0.90	67	100	0.537
11 T	461	0.0	5148		0.090		858	0.90	68	100	0.537
12 R	49	0.0	21	473	0.282	0.091	91	0.90	67	100	0.539

Table S.3 - Intersection Parameters
PR 1 -- PR 176
FUTURO AM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
3 S_R	1st	A	B		6	0.392	0.435	45.2
12 W_R	2nd	B	A		6	0.091	0.101	15.1
				Total:	12	0.483	0.537	60.3

Cycle Time:

Minimum	Maximum	Practical	Chosen
24	150	26	90

(Program-determined Optimum Cycle Time)

Intersection Level of Service	=	B
Worst movement Level of Service	=	D
Average intersection delay (s/pers)	=	10.3
Largest average movement delay (s)	=	46.3
Largest cycle-average queue, mean (m)	=	13
Performance Index	=	97.23
Degree of saturation (highest)	=	0.553
Practical Spare Capacity (lowest)	=	63 %
Effective intersection capacity, (veh/h)	=	9497
Total vehicle flow (veh/h)	=	5251
Total person flow (pers/h)	=	7877
Total vehicle delay (veh-h/h)	=	15.05
Total person delay (pers-h/h)	=	22.58
Total effective vehicle stops (veh/h)	=	2695
Total effective person stops (pers/h)	=	4042
Total vehicle travel (veh-km/h)	=	3183.6
Total cost ($/h)	=	2287.93
Total fuel (L/h)	=	317.5
Total CO2 (kg/h)	=	793.68

Table S.4 - Phase Information
PR 1 -- PR 176
FUTURO AM
Intersection ID: 0

Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	6	6	63	69	6	69	77%
B	69	6	75	15	90	6	21	23%

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

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 Cycle (vehs)	Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: PR 1 SUR										
2	T	5.20	7.80	7.0	0.53	0.48	1.5	10	44.75	50.4
3	R	1.37	2.06	14.9	0.51	0.82	1.4	10	6.85	42.5
North: PR 1 NORTE										
8	T	2.88	4.31	6.1	0.46	0.41	1.0	7	26.89	51.4
West: PR 176 OESTE										
10	L	0.23	0.35	46.3	0.96	0.81	1.8	13	0.68	26.3
11	T	4.78	7.17	37.3	0.96	0.79	1.8	13	16.25	29.6
12	R	0.59	0.89	43.6	0.96	0.85	1.8	12	1.80	27.3

Table S.6 - Intersection Performance
PR 1 -- PR 176
FUTURO AM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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 1 SUR									
3016	0.553	6.57	9.86	7.8	0.53	0.52	10	51.60	49.4
North: PR 1 NORTE									
1707	0.417	2.88	4.31	6.1	0.46	0.41	7	26.89	51.4
West: PR 176 OESTE									
528	0.539	5.61	8.41	38.2	0.96	0.80	13	18.74	29.3
ALL VEHICLES:									
5251	0.553	15.05	22.58	10.3	0.55	0.51	13	97.23	46.7
INTERSECTION (persons):									
7877	0.553		22.58	10.3	0.55	0.51		97.23	46.7

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PR 1 -- PR 176
FUTURO AM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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 Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
South: PR 1 SUR												
1 T	27	63	0	0	755	1365	0.553	7.0	0.48	1.5	10.3	500.0
2 T	27	63	0	0	755	1365	0.553	7.0	0.48	1.5	10.3	500.0
3 T	27	63	0	0	755	1365	0.553	7.0	0.48	1.5	10.3	500.0
4 TR	11	63	13	3	752	1360	0.553	10.3	0.64	1.4	9.8	500.0
North: PR 1 NORTE												
1 T	27	63	0	0	569	1365	0.417	6.1	0.41	1.0	6.7	500.0
2 T	27	63	0	0	569	1365	0.417	6.1	0.41	1.0	6.7	500.0
3 T	27	63	0	0	569	1365	0.417	6.1	0.41	1.0	6.7	500.0
West: PR 176 OESTE												
1 LT	75	15	0	0	174	323	0.537	39.0	0.79	1.8	12.9	500.0
2 T	75	15	0	0	175	325	0.537	38.1	0.78	1.8	12.9	500.0
3 TR	17	10	48	15	180	334	0.537	37.6	0.83	1.8	12.4	500.0

Table S.8 - Lane Flow and Capacity Information
PR 1 -- PR 176
FUTURO AM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Lane No.	Dem Flow (veh/h) Lef	Thru	Rig	Tot	Lane Width (m)	Saturation Flow Adj. (tcu)	Basic (veh)	Aver 1st (veh)	Aver 2nd (veh)	End Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %
South: PR 1 SUR													
1 T	0	755	0	755	3.30	1950	1950		0	0	1365	0.553	100
2 T	0	755	0	755	3.30	1950	1950		0	0	1365	0.553	100
3 T	0	755	0	755	3.30	1950	1950		0	0	1365	0.553	100
4 TR	0	420	332	752	3.30	1950	1908		735	40	1360	0.553	100
North: PR 1 NORTE													
1 T	0	569	0	569	3.30	1950	1950		0	0	1365	0.417	100
2 T	0	569	0	569	3.30	1950	1950		0	0	1365	0.417	100

3 T	0	569	0	569	3.30	1950	1950	0	0	1365	0.417	100	
West: PR 176 OESTE													
1 LT	18	156	0	174	3.30	1950	1940	0	0	323	0.537	100	
2 T	0	175	0	175	3.30	1950	1950	0	0	325	0.537	100	
3 TR	0	131	49	180	3.30	1950	124	1924	40	334	0.537	100	

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
PR 1 -- PR 176
FUTURO AM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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	Cycle Average Queue (veh)	Perf. Index
South: PR 1 SUR											
2 T		2684	4855	100	0.553*	63		7.0	0.48	1.5	44.75
3 R		332	601	100	0.553*	63*	8	14.9	0.82	1.4	6.85
North: PR 1 NORTE											
8 T		1707	4095	100	0.417	63		6.1	0.41	1.0	26.89
West: PR 176 OESTE											
10 L		18	34	100	0.537	15		46.3	0.81	1.8	0.68
11 T		461	858	100	0.537	15		37.3	0.79	1.8	16.25
12 R		49	91	100	0.539	52	15*	43.6	0.85	1.8	1.80

* Maximum degree of saturation, or critical green periods

Table S.14 - Summary of Input and Output Data
PR 1 -- PR 176
FUTURO AM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

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 1 SUR												
1 T		755		755	0	1949	63		0.553	7.0	10	500
2 T		755		755	0	1949	63		0.553	7.0	10	500
3 T		755		755	0	1949	63		0.553	7.0	10	500
4 TR		420	332	752	0	1950	63	3	0.553	10.3	10	500
	0	2684	332	3016	0				0.553	7.8	10	
North: PR 1 NORTE												
1 T		569		569	0	1949	63		0.417	6.1	7	500
2 T		569		569	0	1949	63		0.417	6.1	7	500
3 T		569		569	0	1949	63		0.417	6.1	7	500
	0	1707	0	1707	0				0.417	6.1	7	
West: PR 176 OESTE												
1 LT	18	156		174	0	1950	15		0.537	39.0	13	500
2 T		175		175	0	1950	15		0.537	38.1	13	500
3 TR		131	49	180	0	1950	10	15	0.537	37.6	12	500
	18	461	49	528	0				0.537	38.2	13	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	5251	0	90	0.553	10.3	13

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average 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
PR 1 -- PR 176
FUTURO AM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Mov ID	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	Longest Queue Cycle (vehs)	Aver. (m)
South: PR 1 SUR										
2 T		0.700		2684	4855	0.553*	7.0	A	1.5	10
3 R		0.700*	0.089	332	601	0.553*	14.9	B	1.4	10
North: PR 1 NORTE										
8 T		0.700		1707	4095	0.417	6.1	A	1.0	7
West: PR 176 OESTE										
10 L		0.167		18	34	0.537	46.3	D	1.8	13
11 T		0.167		461	858	0.537	37.3	D	1.8	13
12 R		0.578	0.167*	49	91	0.539	43.6	D	1.8	12
ALL VEHICLES:				5251		0.553	10.3	B	1.8	13
INTERSECTION (persons):				7877			10.3		1.8	13

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.
* 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 S.21 - Optimum Cycle Time Results
PR 1 -- PR 176
FUTURO AM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	0.519	150
Average Delay	10.3	90
Stop Rate	0.46	150
Max. Queue for Any Movement	1.8	90
Perf. Index	97.2	90
Cost	2287.9	90

Performance Measure	Largest Value	Cycle Time
Eff. Inters. Cap.	10109	150
Prac. Spare Cap.	73	150

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 D.3A - Lane Queues (veh)
PR 1 -- PR 176
FUTURO AM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Lane	Deg. Satn x	Ovrfl. Queue No	Average (veh) Nc1	Nc2	Nc	Percentile (veh) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: PR 1 SUR											
1 T	0.553	0.0	1.5	0.0	1.5	1.8	2.7	3.4	4.5	5.2	0.14
2 T	0.553	0.0	1.5	0.0	1.5	1.8	2.7	3.4	4.5	5.2	0.14
3 T	0.553	0.0	1.5	0.0	1.5	1.8	2.7	3.4	4.5	5.2	0.14
4 TR	0.553	0.0	1.4	0.0	1.4	1.8	2.6	3.2	4.3	5.0	0.12
North: PR 1 NORTE											
1 T	0.417	0.0	1.0	0.0	1.0	1.2	1.8	2.3	3.2	3.7	0.09
2 T	0.417	0.0	1.0	0.0	1.0	1.2	1.8	2.3	3.2	3.7	0.09
3 T	0.417	0.0	1.0	0.0	1.0	1.2	1.8	2.3	3.2	3.7	0.09
West: PR 176 OESTE											
1 LT	0.537	0.0	1.8	0.0	1.8	2.3	3.3	4.1	5.3	6.1	0.06
2 T	0.537	0.0	1.8	0.0	1.8	2.3	3.3	4.1	5.3	6.2	0.06
3 TR	0.537	0.0	1.8	0.0	1.8	2.2	3.2	4.0	5.2	6.0	0.06

Values printed in this table are cycle-average queues (vehicles).

Table D.3B - Lane Queues (metres)
PR 1 -- PR 176
FUTURO AM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Lane	Deg. Satn x	Ovrfl. Queue No	Average (metres) Nc1	Nc2	Nc	Percentile (metres) 70%	85%	90%	95%	98%	Queue Stor. Ratio
South: PR 1 SUR											
1 T	0.553	0.0	10.3	0.0	10.3	12.9	18.8	23.6	31.5	36.5	0.14
2 T	0.553	0.0	10.3	0.0	10.3	12.9	18.8	23.6	31.5	36.5	0.14

3 T	0.553	0.0	10.3	0.0	10.3	12.9	18.8	23.6	31.5	36.5
0.14										
4 TR	0.553	0.0	9.8	0.0	9.8	12.3	17.9	22.6	30.4	35.2
0.12										
North: PR 1 NORTE										
1 T	0.417	0.0	6.7	0.0	6.7	8.5	12.6	16.0	22.4	26.2
0.09										
2 T	0.417	0.0	6.7	0.0	6.7	8.5	12.6	16.0	22.4	26.2
0.09										
3 T	0.417	0.0	6.7	0.0	6.7	8.5	12.6	16.0	22.4	26.2
0.09										
West: PR 176 OESTE										
1 LT	0.537	0.0	12.9	0.0	12.9	16.1	23.1	28.8	37.3	43.0
0.06										
2 T	0.537	0.0	12.9	0.0	12.9	16.1	23.2	28.9	37.4	43.1
0.06										
3 TR	0.537	0.0	12.4	0.0	12.4	15.4	22.2	27.7	36.2	41.7
0.06										

Values printed in this table are cycle-average queues (metres).

Table V.21 - Intersection Summary for Optimum Cycle Time
PR 1 -- PR 176
FUTURO AM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 90 (Optimum Cycle Time)

Cycle Time (sec)	Eff. Int. Cap.	Intersn Deg. of Satn	Prac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
90	9497	0.553	63	10.3	0.51	1.8	97.2	2287.9	
100	9630	0.545	65	10.9	0.50	2.0	98.5	2307.6	
110	9738	0.539	67	11.5	0.49	2.2	100.0	2328.6	
120	9724	0.540	67	11.8	0.47	2.4	100.4	2337.1	
130	9874	0.532	69	12.4	0.47	2.6	102.0	2360.4	
140	10002	0.525	71	13.0	0.46	2.8	103.6	2383.6	
150	10109	0.519	73	13.6	0.46	3.0	105.3	2407.7	

Site: 06 PR1-PR176 AM FUTURO
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren pr176.aap
Processed Jun 15, 2007 02:23:55PM

Output Tables
Output Tables
PR 1 -- PR 176
FUTURO PM

Run Information
Cycle Time = 110 (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
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: Cycle average 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)

* 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 B.1 - Movement Definitions and Flow Rates (Origin-Destination)
PR 1 -- PR 176
FUTURO PM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 110 (Optimum Cycle Time)

From Approach	To Approach	Mov ID	Turn	Flow Rate LV	Flow Rate HV	Flow Scale	Peak Flow Factor
South: PR 1 SUR							
	East	3	Right	184	0	1.00	1.00
	North	2	Thru	1904	0	1.00	1.00
North: PR 1 NORTE							
	South	8	Thru	3199	0	1.00	1.00
West: PR 176 OESTE							
	South	12	Right	36	0	1.00	1.00
	East	11	Thru	1098	0	1.00	1.00
	North	10	Left	31	0	1.00	1.00

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table B.2A - Flow Rates (Separate Light and Heavy Vehicles)
PR 1 -- PR 176
FUTURO PM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 110 (Optimum Cycle Time)

Mov ID	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV
Demand flows in veh/hour as used by the program						
South: PR 1 SUR						
2 T	0	0	1904	0	0	0
3 R	0	0	0	0	184	0
North: PR 1 NORTE						
8 T	0	0	3199	0	0	0
West: PR 176 OESTE						
10 L	31	0	0	0	0	0
11 T	0	0	1098	0	0	0
12 R	0	0	0	0	36	0

Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Table S.1 - Movement Phase and Timing Parameters
PR 1 -- PR 176
FUTURO PM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 110 (Optimum Cycle Time)

Mov ID	Mov Typ	PHASE MATRIX First Green Fr	First Green To	First Green Op Pr	Second Green Fr	Second Green To	Second Green 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

```
---------------------------------------------------------------------------
----------
South: PR 1 SUR
   2 T        A     B                                  6        38.8
72
   3 R        A     B            B     A      Y       6   26   39.7
12.0Min  72    6
---------------------------------------------------------------------------
----------
North: PR 1 NORTE
   8 T       *A     B                                  6        72.8
72
---------------------------------------------------------------------------
----------
West: PR 176 OESTE
  10 L        B     A                                  6        30.3
26
  11 T        B     A                                  6        30.4
26
  12 R        A     B      Y     *B     A             51    6   72.8     30.6
27   26
---------------------------------------------------------------------------
----------
---------------------------------------------------------------------------
----------
   Current Phase Sequence: Two-phase
   Input phase sequence: A B
   Output phase sequence: A B
---------------------------------------------------------------------------
----------
   *  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
PR 1 -- PR 176
FUTURO PM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 110 (Optimum Cycle Time)

Mov ID	Dem Flow (veh /h)	HV (%)	Satn Flow 1st Grn	Satn Flow 2nd Grn	Flow Ratio 1st Grn	Flow Ratio 2nd Grn	Total Cap. (veh /h)	Prac. Deg. Satn xp	Prac. Spare Cap. (%)	Lane Util (%)	Deg. Satn x
South: PR 1 SUR											
2 T	1904	0.0	7099		0.268		4647	0.90	120	100	0.410
3 R	184	0.0	667	224	0.276	0.000	449	0.90	120	100	0.410
North: PR 1 NORTE											
8 T	3199	0.0	5850		0.547		3829	0.90	8	100	0.835
West: PR 176 OESTE											
10 L	31	0.0	156		0.199		37	0.90	7	100	0.841
11 T	1098	0.0	5510		0.199		1302	0.90	7	100	0.843
12 R	36	0.0	12	168	0.179	0.202	43	0.90	7	100	0.844*

Table S.3 - Intersection Parameters
PR 1 -- PR 176
FUTURO PM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 110 (Optimum Cycle Time)

Crit Mov ID	App. and Turn	Green Period	Phases Fr	Phases To	Adjusted Lost Time	Adjusted Flow Ratio	Required Grn Time Ratio	Required Movement Time
8 N_T			A	B	6	0.547	0.608	72.8
12 W_R	2nd		B	A	6	0.202	0.224	30.6
		Total:			12	0.748	0.832	103.5

Cycle Time:

Minimum	Maximum	Practical	Chosen
24	150	71	110

(Program-determined Optimum Cycle Time)

Intersection Level of Service	=	C
Worst movement Level of Service	=	E
Average intersection delay (s/pers)	=	21.3
Largest average movement delay (s)	=	76.2
Largest cycle-average queue, mean (m)	=	51
Performance Index	=	167.02
Degree of saturation (highest)	=	0.844
Practical Spare Capacity (lowest)	=	7 %
Effective intersection capacity, (veh/h)	=	7645
Total vehicle flow (veh/h)	=	6452
Total person flow (pers/h)	=	9678
Total vehicle delay (veh-h/h)	=	38.24
Total person delay (pers-h/h)	=	57.37
Total effective vehicle stops (veh/h)	=	4663
Total effective person stops (pers/h)	=	6994
Total vehicle travel (veh-km/h)	=	3912.2
Total cost ($/h)	=	3415.79
Total fuel (L/h)	=	448.3
Total CO2 (kg/h)	=	1120.69

Table S.4 - Phase Information
PR 1 -- PR 176
FUTURO PM
Intersection ID: 0

Fixed-Time Signals, Cycle Time = 110 (Optimum Cycle Time)

Phase	Change Time	Starting Intgrn	Green Start	Displayed Green	Green End	Terminating Intgrn	Phase Time	Phase Split
A	0	6	6	72	78	6	78	71%
B	78	6	84	26	110	6	32	29%

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

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 Cycle (vehs)	Longest Queue Aver. (m)	Perf. Index	Aver. Speed (km/h)
South: PR 1 SUR									
2 T	5.17	7.75	9.8	0.51	0.46	1.6	11	34.45	47.3
3 R	0.99	1.48	19.4	0.50	0.82	1.6	11	4.25	39.1
North: PR 1 NORTE									
8 T	13.87	20.81	15.6	0.83	0.78	4.6	32	73.91	42.0
West: PR 176 OESTE									
10 L	0.50	0.75	57.9	1.00	0.97	5.3	37	1.41	23.1
11 T	16.95	25.43	55.6	1.00	0.98	7.4	51	51.00	23.7
12 R	0.76	1.14	76.2	1.00	1.01	7.4	51	2.01	19.4

Table S.6 - Intersection Performance
PR 1 -- PR 176
FUTURO PM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 110 (Optimum Cycle Time)

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 1 SUR									
2088	0.410	6.16	9.24	10.6	0.51	0.49	11	38.70	46.4
North: PR 1 NORTE									
3199	0.835	13.87	20.81	15.6	0.83	0.78	32	73.91	42.0
West: PR 176 OESTE									
1165	0.844	18.21	27.32	56.3	1.00	0.98	51	54.41	23.6
ALL VEHICLES:									
6452	0.844	38.24	57.37	21.3	0.76	0.72	51	167.02	37.8
INTERSECTION (persons):									
9678	0.844		57.37	21.3	0.76	0.72		167.02	37.8

Queue values in this table are mean cycle-average queue (metres).

Table S.7 - Lane Performance
PR 1 -- PR 176
FUTURO PM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 110 (Optimum Cycle Time)

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 Cycle (vehs)	Queue Aver. (m)	Lane Length (m)
South: PR 1 SUR												
1 T	38	72	0	0	523	1276	0.410	9.5	0.46	1.4	9.6	500.0
2 T	38	72	0	0	523	1276	0.410	9.5	0.46	1.4	9.6	500.0
3 T	38	72	0	0	523	1276	0.410	9.5	0.46	1.4	9.6	500.0
4 TR	9	72	26	3	519	1267	0.410	14.1	0.60	1.6	11.3	500.0
North: PR 1 NORTE												
1 T	38	72	0	0	1066	1276	0.835	15.6	0.78	4.6	32.4	500.0
2 T	38	72	0	0	1066	1276	0.835	15.6	0.78	4.6	32.4	500.0
3 T	38	72	0	0	1066	1276	0.835	15.6	0.78	4.6	32.4	500.0
West: PR 176 OESTE												
1 LT	84	26	0	0	387	459	0.843	50.4	0.97	5.3	37.4	500.0
2 T	84	26	0	0	389	461	0.843	49.7	0.97	5.4	37.5	500.0
3 TR	51	3	30	26	389	462	0.843	68.7	1.01	7.4	51.5	500.0

Table S.8 - Lane Flow and Capacity Information
PR 1 -- PR 176
FUTURO PM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 110 (Optimum Cycle Time)

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 1 SUR												
1 T	0	523	0	523	3.30	1950	1950	0	0	1276	0.410	100
2 T	0	523	0	523	3.30	1950	1950	0	0	1276	0.410	100
3 T	0	523	0	523	3.30	1950	1950	0	0	1276	0.410	100
4 TR	0	335	184	519	3.30	1950	1916	455	33	1267	0.410	100
North: PR 1 NORTE												
1 T	0	1066	0	1066	3.30	1950	1950	0	0	1276	0.835	100
2 T	0	1066	0	1066	3.30	1950	1950	0	0	1276	0.835	100

3 T	0	1066	0	1066	3.30	1950	1950	0	0	1276	0.835	100	
West: PR 176 OESTE													
1 LT	31	356	0	387	3.30	1950	1942	0	0	459	0.843	100	
2 T	0	389	0	389	3.30	1950	1950	0	0	461	0.843	100	
3 TR	0	353	36	389	3.30	1950	116	1941	33	462	0.843	100	

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
PR 1 -- PR 176
FUTURO PM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 110 (Optimum Cycle Time)

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	Cycle Average Queue (veh)	Perf. Index
South: PR 1 SUR											
2	T	1904	4647	100	0.410	72		9.8	0.46	1.6	34.45
3	R	184	449	100	0.410	72	6	19.4	0.82	1.6	4.25
North: PR 1 NORTE											
8	T	3199	3829	100	0.835	72*		15.6	0.78	4.6	73.91
West: PR 176 OESTE											
10	L	31	37	100	0.841	26		57.9	0.97	5.3	1.41
11	T	1098	1302	100	0.843	26		55.6	0.98	7.4	51.00
12	R	36	43	100	0.844*	27	26*	76.2	1.01	7.4	2.01

* Maximum degree of saturation, or critical green periods

Table S.14 - Summary of Input and Output Data
PR 1 -- PR 176
FUTURO PM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 110 (Optimum Cycle Time)

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 1 SUR												
1 T		523		523	0	1949	72		0.410	9.5	10	500
2 T		523		523	0	1949	72		0.410	9.5	10	500
3 T		523		523	0	1949	72		0.410	9.5	10	500
4 TR		335	184	519	0	1950	72	3	0.410	14.1	11	500
	0	1904	184	2088	0				0.410	10.6	11	
North: PR 1 NORTE												
1 T		1066		1066	0	1949	72		0.835	15.6	32	500
2 T		1066		1066	0	1949	72		0.835	15.6	32	500
3 T		1066		1066	0	1949	72		0.835	15.6	32	500
	0	3199	0	3199	0				0.835	15.6	32	
West: PR 176 OESTE												
1 LT	31	356		387	0	1950	26		0.843	50.4	37	500
2 T		389		389	0	1950	26		0.843	49.7	38	500
3 TR		353	36	389	0	1950	3	26	0.843	68.7	51	500
	31	1098	36	1165	0				0.843	56.3	51	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	6452	0	110	0.844	21.3	51

Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average 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
PR 1 -- PR 176
FUTURO PM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 110 (Optimum Cycle Time)

Mov ID	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	Longest Queue Cycle (vehs)	Aver. (m)
South: PR 1 SUR										
2	T	0.655		1904	4647	0.410	9.8	A	1.6	11
3	R	0.655	0.055	184	449	0.410	19.4	B	1.6	11
North: PR 1 NORTE										
8	T	0.655*		3199	3829	0.835	15.6	B	4.6	32
West: PR 176 OESTE										
10	L	0.236		31	37	0.841	57.9	E	5.3	37
11	T	0.236		1098	1302	0.843	55.6	E	7.4	51
12	R	0.245	0.236*	36	43	0.844*	76.2	E	7.4	51
ALL VEHICLES:				6452		0.844	21.3	C	7.4	51
INTERSECTION (persons):				9678			21.3		7.4	51

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.
* 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 S.21 - Optimum Cycle Time Results
PR 1 -- PR 176
FUTURO PM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 110 (Optimum Cycle Time)

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	0.812	150
Average Delay	21.3	110
Stop Rate	0.69	150
Max. Queue for Any Movement	6.4	90
Perf. Index	167.0	110
Cost	3415.8	110

Performance Measure	Largest Value	Cycle Time
Eff. Inters. Cap.	7944	150
Prac. Spare Cap.	11	150

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 D.3A - Lane Queues (veh)
PR 1 -- PR 176
FUTURO PM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 110 (Optimum Cycle Time)

Lane	Deg. Satn	Ovrfl. Queue	Average (veh)			Percentile (veh)					Queue Stor. Ratio
No.	x	No	Nc1	Nc2	Nc	70%	85%	90%	95%	98%	
South: PR 1 SUR											
1 T	0.410	0.0	1.4	0.0	1.4	1.7	2.5	3.2	4.3	5.0	0.11
2 T	0.410	0.0	1.4	0.0	1.4	1.7	2.5	3.2	4.3	5.0	0.11
3 T	0.410	0.0	1.4	0.0	1.4	1.7	2.5	3.2	4.3	5.0	0.11
4 TR	0.410	0.0	1.6	0.0	1.6	2.0	2.9	3.7	4.8	5.6	0.10
North: PR 1 NORTE											
1 T	0.835	0.1	4.5	0.1	4.6	5.6	7.7	9.1	10.6	11.8	0.37
2 T	0.835	0.1	4.5	0.1	4.6	5.6	7.7	9.1	10.6	11.8	0.37
3 T	0.835	0.1	4.5	0.1	4.6	5.6	7.7	9.1	10.6	11.8	0.37
West: PR 176 OESTE											
1 LT	0.843	0.7	4.7	0.6	5.3	6.5	8.8	10.3	12.0	13.3	0.19
2 T	0.843	0.7	4.7	0.6	5.4	6.5	8.8	10.4	12.0	13.3	0.19
3 TR	0.843	0.8	6.6	0.7	7.4	8.9	11.9	13.7	15.8	17.4	0.22

Values printed in this table are cycle-average queues (vehicles).

Table D.3B - Lane Queues (metres)
PR 1 -- PR 176
FUTURO PM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 110 (Optimum Cycle Time)

Lane	Deg. Satn	Ovrfl. Queue	Average (metres)			Percentile (metres)					Queue Stor. Ratio
No.	x	No	Nc1	Nc2	Nc	70%	85%	90%	95%	98%	
South: PR 1 SUR											
1 T	0.410	0.0	9.6	0.0	9.6	12.1	17.6	22.2	29.9	34.7	0.11
2 T	0.410	0.0	9.6	0.0	9.6	12.1	17.6	22.2	29.9	34.7	0.11

3 T	0.410	0.0	9.6	0.0	9.6	12.1	17.6	22.2	29.9	34.7
0.11										
4 TR	0.410	0.0	11.3	0.0	11.3	14.1	20.4	25.6	33.8	39.1
0.10										
North: PR 1 NORTE										
1 T	0.835	0.6	31.8	0.5	32.4	39.4	53.8	63.8	74.4	82.8
0.37										
2 T	0.835	0.6	31.8	0.5	32.4	39.4	53.8	63.8	74.4	82.8
0.37										
3 T	0.835	0.6	31.8	0.5	32.4	39.4	53.8	63.8	74.4	82.8
0.37										
West: PR 176 OESTE										
1 LT	0.843	4.9	32.9	4.5	37.4	45.3	61.6	72.4	83.7	92.8
0.19										
2 T	0.843	4.9	33.0	4.5	37.5	45.5	61.8	72.6	84.0	93.0
0.19										
3 TR	0.843	5.4	46.5	5.0	51.5	62.0	83.5	96.2	110.7	121.8
0.22										

Values printed in this table are cycle-average queues (metres).

Table V.21 - Intersection Summary for Optimum Cycle Time
PR 1 -- PR 176
FUTURO PM
Intersection ID: 0
Fixed-Time Signals, Cycle Time = 110 (Optimum Cycle Time)

Cycle Time (sec)	Eff. Int. Cap.	Intersn Deg. of Satn	Prac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
90	7473	0.863	4	21.8	0.79	6.4	170.9	3459.6	
100	7551	0.854	5	21.8	0.76	6.7	170.0	3448.6	
110	7645	0.844	7	21.3	0.72	7.4	167.0	3415.8	
120	7768	0.831	8	22.3	0.71	7.6	170.0	3459.3	
130	7805	0.827	9	23.4	0.71	8.0	173.8	3512.6	
140	7835	0.824	9	24.4	0.69	8.4	176.9	3558.1	
150	7944	0.812	11	25.5	0.69	8.8	180.8	3613.2	

Site: 06 PR1-PR176 PM FUTURO
C:\Documents and Settings\Carlos M Contreras\My Documents\My Projects\Tren Caguas\caguas tren pr176.aap
Processed Jun 15, 2007 02:23:55PM

Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1616	120	200	407	405	427	698
v/c Ratio	1.00	0.14	0.74	0.29	0.88	0.88	0.66
Control Delay	63.3	18.7	97.0	54.1	75.0	74.9	25.1
Queue Delay	205.9	0.0	0.0	0.0	29.4	30.6	0.0
Total Delay	269.3	18.7	97.0	54.1	104.4	105.6	25.1
Queue Length 50th (m)	266.7	15.1	66.8	49.8	125.8	132.9	51.0
Queue Length 95th (m)	#352.4	30.5	92.6	62.6	#178.3	#185.8	74.5
Internal Link Dist (m)	155.9			102.2		146.4	
Turn Bay Length (m)		45.7	45.7				45.7
Base Capacity (vph)	1617	874	516	1415	498	522	1121
Starvation Cap Reductn	0	0	8	0	0	0	0
Spillback Cap Reductn	526	0	0	0	106	111	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.48	0.14	0.39	0.29	1.03	1.04	0.62

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↕	↱↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.2	4.8	3.0	3.5	3.7	3.7	3.7	3.7	3.3	3.3	3.7
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	0.88
Frpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		3382	1794	1652	3500					1625	1705	2818
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (perm)		3382	1794	1652	3500					1625	1705	2818
Volume (vph)	0	1487	110	184	374	0	0	0	0	400	365	642
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1616	120	200	407	0	0	0	0	435	397	698
RTOR Reduction (vph)	0	0	17	0	0	0	0	0	0	0	0	267
Lane Group Flow (vph)	0	1616	103	200	407	0	0	0	0	405	427	431
Confl. Peds. (#/hr)			20									20
Turn Type			Prot	Prot						Split		Prot
Protected Phases		7 8	7 8	6	6 7					5	5	5
Permitted Phases												
Actuated Green, G (s)		76.5	76.5	26.2	64.7					45.3	45.3	45.3
Effective Green, g (s)		76.5	76.5	26.2	64.7					45.3	45.3	45.3
Actuated g/C Ratio		0.48	0.48	0.16	0.40					0.28	0.28	0.28
Clearance Time (s)				4.0						4.0	4.0	4.0
Vehicle Extension (s)				4.7						3.0	3.0	3.0
Lane Grp Cap (vph)		1617	858	271	1415					460	483	798
v/s Ratio Prot		c0.48	0.06	c0.12	0.12					0.25	c0.25	0.15
v/s Ratio Perm												
v/c Ratio		1.00	0.12	0.74	0.29					0.88	0.88	0.54
Uniform Delay, d1		41.7	23.1	63.6	32.1					54.8	54.8	48.5
Progression Factor		1.00	1.00	1.30	1.62					1.00	1.00	1.00
Incremental Delay, d2		22.1	0.1	9.4	0.2					17.6	17.3	0.8
Delay (s)		63.8	23.2	92.1	52.3					72.3	72.1	49.3
Level of Service		E	C	F	D					E	E	D
Approach Delay (s)		61.0			65.4			0.0			61.8	
Approach LOS		E			E			A			E	

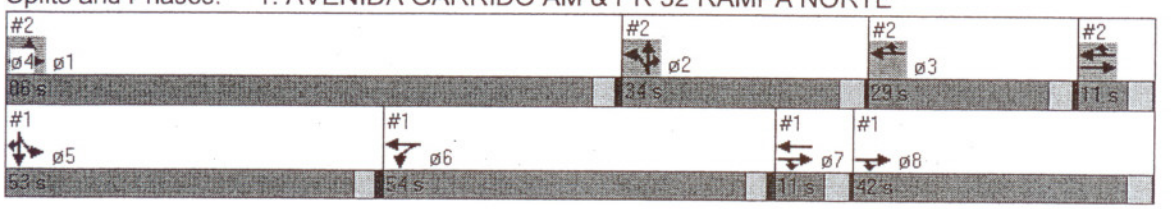
Intersection Summary			
HCM Average Control Delay	62.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	3	4	5	6	7	8
Node Number	2	2	2	2	1	1	1	1
Movement	EBTL	NBTL	WBT	EBWB	SBTL	WBTL	EBWB	EBT
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max	None	None	None	Min	Min	None
Maximum Split (s)	86	34	29	11	53	54	11	42
Maximum Split (%)	53.8%	21.3%	18.1%	6.9%	33.1%	33.8%	6.9%	26.3%
Minimum Split (s)	8	20	20	20	8.5	8	8	20
Yellow Time (s)	3	3.5	3.5	3.5	3	3	3.5	3.5
All-Red Time (s)	1	0.5	0.5	0.5	1	1	0.5	0.5
Minimum Initial (s)	4	4	4	4	4	4	4	4
Vehicle Extension (s)	4.7	4.7	3	3	3	4.7	4.7	3
Minimum Gap (s)	4.7	4.7	3	3	3	4.7	4.7	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		5	5	5				5
Flash Dont Walk (s)		11	11	11				11
Dual Entry	No	Yes	Yes	Yes	No	No	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	74	0	34	63	74	127	21	32
End Time (s)	0	34	63	74	127	21	32	74
Yield/Force Off (s)	156	30	59	70	123	17	28	70
Yield/Force Off 170(s)	156	19	48	59	123	17	28	59
Local Start Time (s)	74	0	34	63	74	127	21	32
Local Yield (s)	156	30	59	70	123	17	28	70
Local Yield 170(s)	156	19	48	59	123	17	28	59

Intersection Summary	
Cycle Length	160
Control Type	Actuated-Coordinated
Natural Cycle	150

Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green

Splits and Phases: 1: AVENIDA GARRIDO AM & PR 52 RAMPA NORTE



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	875	1176	468	196	148	732	1148
v/c Ratio	1.02	0.57	0.61	0.42	0.47	2.23	1.98
Control Delay	91.6	28.4	59.8	31.6	63.8	591.9	468.2
Queue Delay	652.3	63.6	0.0	0.0	0.0	0.0	0.0
Total Delay	743.9	92.1	59.8	31.6	63.8	591.9	468.2
Queue Length 50th (m)	~300.4	168.0	71.2	29.0	44.8	~393.8	~486.0
Queue Length 95th (m)	#300.9m	176.0	90.4	53.8	69.4	#475.0	#568.1
Internal Link Dist (m)		102.2	134.5			94.9	
Turn Bay Length (m)	45.7			45.7			45.7
Base Capacity (vph)	856	2061	755	465	312	328	581
Starvation Cap Reductn	549	1023	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	2.85	1.13	0.62	0.42	0.47	2.23	1.98

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.1	3.3	3.7	3.7	3.2	4.7	3.5	3.5	4.7	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	1671	3421			3382	1777	1662	1750	1777			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	1671	3421			3382	1777	1662	1750	1777			
Volume (vph)	805	1082	0	0	431	180	136	673	1056	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	875	1176	0	0	468	196	148	732	1148	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	68	0	0	248	0	0	0
Lane Group Flow (vph)	875	1176	0	0	468	128	148	732	900	0	0	0
Confl. Peds. (#/hr)						20			20			
Turn Type	Prot					Prot	Split		Prot			
Protected Phases	1	1 4			3 4	3 4	2	2	2			
Permitted Phases												
Actuated Green, G (s)	82.0	96.4			36.0	36.0	30.0	30.0	30.0			
Effective Green, g (s)	82.0	96.4			36.0	36.0	30.0	30.0	30.0			
Actuated g/C Ratio	0.51	0.60			0.22	0.22	0.19	0.19	0.19			
Clearance Time (s)	4.0						4.0	4.0	4.0			
Vehicle Extension (s)	4.7						4.7	4.7	4.7			
Lane Grp Cap (vph)	856	2061			761	400	312	328	333			
v/s Ratio Prot	c0.52	0.34			c0.14	0.07	0.09	0.42	c0.51			
v/s Ratio Perm												
v/c Ratio	1.02	0.57			0.61	0.32	0.47	2.23	2.70			
Uniform Delay, d1	39.0	19.3			55.8	51.8	58.0	65.0	65.0			
Progression Factor	1.96	1.41			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	20.9	0.2			1.5	0.5	5.1	564.0	775.0			
Delay (s)	97.3	27.4			57.2	52.2	63.1	629.0	840.0			
Level of Service	F	C			E	D	E	F	F			
Approach Delay (s)		57.2			55.8			707.1			0.0	
Approach LOS		E			E			F			A	

Intersection Summary			
HCM Average Control Delay	334.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1909	172	478	684	1067	1123	1301
v/c Ratio	1.77	0.29	0.97	0.51	2.14	2.15	1.24
Control Delay	382.3	33.5	95.3	56.4	547.9	549.6	154.1
Queue Delay	327.7	0.0	254.6	4.5	158.8	156.8	0.0
Total Delay	710.0	33.5	349.9	60.8	706.7	706.4	154.1
Queue Length 50th (m)	~482.4	32.1	157.6	84.2	~567.4	~597.3	~257.2
Queue Length 95th (m)	#522.6	52.9	m145.3	m77.6	#652.7	#682.7	#303.9
Internal Link Dist (m)	155.9			102.2		146.4	
Turn Bay Length (m)		45.7	45.7				45.7
Base Capacity (vph)	1079	598	516	1334	498	523	1046
Starvation Cap Reductn	0	0	213	561	0	0	0
Spillback Cap Reductn	380	0	0	0	106	112	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	2.73	0.29	1.58	0.88	2.72	2.73	1.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↰	↱↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.2	4.8	3.0	3.5	3.7	3.7	3.7	3.7	3.3	3.3	3.7
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	0.88
Frpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		3382	1794	1652	3500					1625	1709	2818
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (perm)		3382	1794	1652	3500					1625	1709	2818
Volume (vph)	0	1756	158	440	629	0	0	0	0	999	1016	1197
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1909	172	478	684	0	0	0	0	1086	1104	1301
RTOR Reduction (vph)	0	0	27	0	0	0	0	0	0	0	0	183
Lane Group Flow (vph)	0	1909	145	478	684	0	0	0	0	1067	1123	1118
Confl. Peds. (#/hr)			20									20
Turn Type			Prot	Prot						Split		Prot
Protected Phases		7 8	7 8	6	6 7					5	5	5
Permitted Phases												
Actuated Green, G (s)		51.0	51.0	48.0	61.0					49.0	49.0	49.0
Effective Green, g (s)		51.0	51.0	48.0	61.0					49.0	49.0	49.0
Actuated g/C Ratio		0.32	0.32	0.30	0.38					0.31	0.31	0.31
Clearance Time (s)				4.0						4.0	4.0	4.0
Vehicle Extension (s)				4.7						3.0	3.0	3.0
Lane Grp Cap (vph)		1078	572	496	1334					498	523	863
v/s Ratio Prot		c0.56	0.08	c0.29	0.20					0.66	c0.66	0.40
v/s Ratio Perm												
v/c Ratio		1.77	0.25	0.96	0.51					2.14	2.15	1.30
Uniform Delay, d1		54.5	40.4	55.1	38.1					55.5	55.5	55.5
Progression Factor		1.00	1.00	1.67	1.47					1.00	1.00	1.00
Incremental Delay, d2		350.7	0.4	6.0	0.1					520.8	522.6	141.5
Delay (s)		405.2	40.8	98.0	55.9					576.3	578.1	197.0
Level of Service		F	D	F	E					F	F	F
Approach Delay (s)		375.1			73.2			0.0			435.5	
Approach LOS		F			E			A			F	

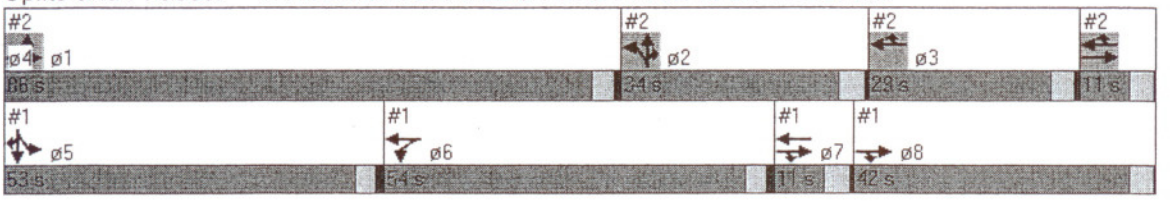
Intersection Summary			
HCM Average Control Delay	354.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.63		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	177.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	3	4	5	6	7	8
Node Number	2	2	2	2	1	1	1	1
Movement	EBTL	NBTL	WBT	EBWB	SBTL	WBTL	EBWB	EBT
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max	None	None	None	Min	Min	None
Maximum Split (s)	86	34	29	11	53	54	11	42
Maximum Split (%)	53.8%	21.3%	18.1%	6.9%	33.1%	33.8%	6.9%	26.3%
Minimum Split (s)	8	20	20	20	8.5	8	8	20
Yellow Time (s)	3	3.5	3.5	3.5	3	3	3.5	3.5
All-Red Time (s)	1	0.5	0.5	0.5	1	1	0.5	0.5
Minimum Initial (s)	4	4	4	4	4	4	4	4
Vehicle Extension (s)	4.7	4.7	3	3	3	4.7	4.7	3
Minimum Gap (s)	4.7	4.7	3	3	3	4.7	4.7	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		5	5	5				5
Flash Dont Walk (s)		11	11	11				11
Dual Entry	No	Yes	Yes	Yes	No	No	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	74	0	34	63	74	127	21	32
End Time (s)	0	34	63	74	127	21	32	74
Yield/Force Off (s)	156	30	59	70	123	17	28	70
Yield/Force Off 170(s)	156	19	48	59	123	17	28	59
Local Start Time (s)	74	0	34	63	74	127	21	32
Local Yield (s)	156	30	59	70	123	17	28	70
Local Yield 170(s)	156	19	48	59	123	17	28	59

Intersection Summary	
Cycle Length	160
Control Type	Actuated-Coordinated
Natural Cycle	150

Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green

Splits and Phases: 1: AVENIDA GARRIDO PM & PR 52 RAMPA NORTE



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	1114	1879	823	554	339	530	655
v/c Ratio	1.30	0.95	1.08	1.26	1.09	1.62	1.24
Control Delay	182.7	27.4	113.6	179.3	134.6	329.9	155.9
Queue Delay	536.7	422.4	125.1	0.0	0.0	0.0	0.0
Total Delay	719.4	449.8	238.7	179.3	134.6	329.9	155.9
Queue Length 50th (m)	~461.9	334.0	~153.4	~208.4	~127.0	~253.7	~192.8
Queue Length 95th (m)	m209.3	m78.2	#194.7	#281.8	#193.6	#329.3	#269.5
Internal Link Dist (m)		102.2	134.5			94.9	
Turn Bay Length (m)	45.7			45.7			45.7
Base Capacity (vph)	856	1988	761	439	312	328	528
Starvation Cap Reductn	547	1022	0	0	0	0	0
Spillback Cap Reductn	0	0	160	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	3.61	1.95	1.37	1.26	1.09	1.62	1.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.1	3.3	3.7	3.7	3.2	4.7	3.5	3.5	4.7	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	1671	3421			3382	1777	1662	1750	1777			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	1671	3421			3382	1777	1662	1750	1777			
Volume (vph)	1025	1729	0	0	757	510	312	488	603	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1114	1879	0	0	823	554	339	530	655	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	39	0	0	195	0	0	0
Lane Group Flow (vph)	1114	1879	0	0	823	515	339	530	460	0	0	0
Confl. Peds. (#/hr)						20			20			
Turn Type	Prot					Prot	Split		Prot			
Protected Phases	1	1 4			3 4	3 4	2	2	2			
Permitted Phases												
Actuated Green, G (s)	82.0	93.0			36.0	36.0	30.0	30.0	30.0			
Effective Green, g (s)	82.0	93.0			36.0	36.0	30.0	30.0	30.0			
Actuated g/C Ratio	0.51	0.58			0.22	0.22	0.19	0.19	0.19			
Clearance Time (s)	4.0						4.0	4.0	4.0			
Vehicle Extension (s)	4.7						4.7	4.7	4.7			
Lane Grp Cap (vph)	856	1988			761	400	312	328	333			
v/s Ratio Prot	c0.67	0.55			0.24	c0.29	0.20	c0.30	0.26			
v/s Ratio Perm												
v/c Ratio	1.30	0.95			1.08	1.29	1.09	1.62	1.38			
Uniform Delay, d1	39.0	31.1			62.0	62.0	65.0	65.0	65.0			
Progression Factor	1.55	0.82			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	136.4	1.2			56.9	147.4	76.0	290.9	189.4			
Delay (s)	196.8	26.9			118.9	209.4	141.0	355.9	254.4			
Level of Service	F	C			F	F	F	F	F			
Approach Delay (s)		90.1			155.3			264.5			0.0	
Approach LOS		F			F			F			A	

Intersection Summary			
HCM Average Control Delay	150.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	177.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1616	120	200	407	406	426	698
v/c Ratio	1.21	0.08	0.53	0.18	0.80	0.80	0.28
Control Delay	148.1	0.2	34.2	28.5	70.3	69.9	0.4
Queue Delay	11.5	0.0	4.5	1.7	4.9	4.8	0.0
Total Delay	159.6	0.2	38.7	30.2	75.1	74.7	0.4
Queue Length 50th (m)	~371.2	0.0	74.7	76.5	141.8	148.9	0.0
Queue Length 95th (m)	#412.3	0.0	m64.2	m74.5	188.9	196.3	0.0
Internal Link Dist (m)	155.9			102.2		146.4	
Turn Bay Length (m)		45.7	45.7				45.7
Base Capacity (vph)	1334	1584	376	2256	506	530	2456
Starvation Cap Reductn	0	0	113	1643	0	0	0
Spillback Cap Reductn	28	0	0	0	55	58	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.24	0.08	0.76	0.66	0.90	0.90	0.28

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

JK

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↰	↱↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.2	4.8	3.0	3.5	3.7	3.7	3.7	3.7	3.3	3.3	3.7
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	0.88
Frpb, ped/bikes		1.00	0.92	1.00	1.00					1.00	1.00	0.91
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		3382	1657	1652	3500					1625	1705	2570
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (perm)		3382	1657	1652	3500					1625	1705	2570
Volume (vph)	0	1487	110	184	374	0	0	0	0	400	365	642
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1616	120	200	407	0	0	0	0	435	397	698
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1616	120	200	407	0	0	0	0	406	426	698
Confl. Peds. (#/hr)			20									20
Turn Type			custom	Prot						Split		custom
Protected Phases		3	3	2	2 3					1 4	1 4	1 4
Permitted Phases			1 2 4									2 3
Actuated Green, G (s)		71.0	172.0	41.0	116.0					56.0	56.0	172.0
Effective Green, g (s)		71.0	172.0	41.0	116.0					56.0	56.0	172.0
Actuated g/C Ratio		0.39	0.96	0.23	0.64					0.31	0.31	0.96
Clearance Time (s)		4.0	4.0	4.0								
Lane Grp Cap (vph)		1334	1657	376	2256					506	530	2570
v/s Ratio Prot		c0.48	0.03	c0.12	0.12					0.25	c0.25	0.08
v/s Ratio Perm			0.04									0.19
v/c Ratio		1.21	0.07	0.53	0.18					0.80	0.80	0.27
Uniform Delay, d1		54.5	0.2	61.1	12.9					56.9	57.0	0.2
Progression Factor		1.00	1.00	0.55	2.20					1.00	1.00	1.00
Incremental Delay, d2		102.3	0.1	0.5	0.1					12.6	12.2	0.3
Delay (s)		156.8	0.3	33.8	28.3					69.6	69.2	0.5
Level of Service		F	A	C	C					E	E	A
Approach Delay (s)		146.0			30.1			0.0			37.9	
Approach LOS		F			C			A			D	

Intersection Summary			
HCM Average Control Delay	85.2	HCM Level of Service	F
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.9%	ICU Level of Service	G
Analysis Period (min)	15		

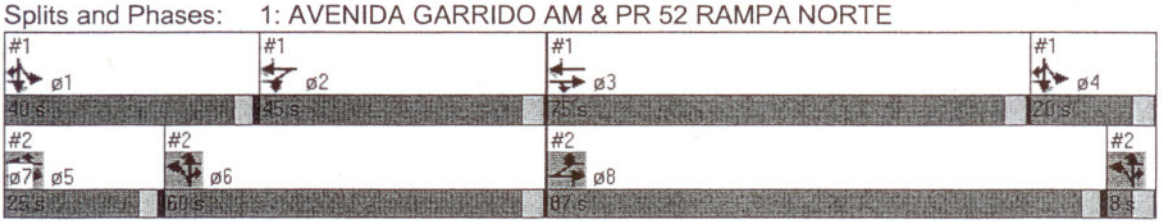
c Critical Lane Group

Phase Number	1	2	3	4	5	6	7	8
Node Number	1	1	1	1	2	2	2	2
Movement	SBTL	WBTL	EBWB	SBTL	WBEB	NBTL	NBTL	EBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Maximum Split (s)	40	45	75	20	25	60	8	87
Maximum Split (%)	22.2%	25.0%	41.7%	11.1%	13.9%	33.3%	4.4%	48.3%
Minimum Split (s)	8	20	20	20	8	20	8	8
Yellow Time (s)	3	3.5	3.5	3.5	3	3.5	3.5	3
All-Red Time (s)	1	0.5	0.5	0.5	1	0.5	0.5	1
Minimum Initial (s)	4	4	4	4	4	4	4	4
Vehicle Extension (s)	4.7	4.7	3	3	4.7	4.7	3	4.7
Minimum Gap (s)	4.7	4.7	3	3	4.7	4.7	3	4.7
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		5	5	5		5		
Flash Dont Walk (s)		11	11	11		11		
Dual Entry	No	Yes	Yes	Yes	No	Yes	No	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	140	0	45	120	140	165	132	45
End Time (s)	0	45	120	140	165	45	140	132
Yield/Force Off (s)	176	41	116	136	161	41	136	128
Yield/Force Off 170(s)	176	30	105	125	161	30	136	128
Local Start Time (s)	140	0	45	120	140	165	132	45
Local Yield (s)	176	41	116	136	161	41	136	128
Local Yield 170(s)	176	30	105	125	161	30	136	128

Intersection Summary	
Cycle Length	180
Control Type	Pretimed
Natural Cycle	150

Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green

Splits and Phases: 1: AVENIDA GARRIDO AM & PR 52 RAMPA NORTE



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	875	1176	468	196	148	732	1148
v/c Ratio	1.13	0.59	1.18	0.13	0.27	1.26	0.75
Control Delay	77.9	6.6	170.1	0.3	38.3	175.1	4.2
Queue Delay	30.4	1.8	2.6	0.0	0.1	0.0	0.0
Total Delay	108.3	8.3	172.7	0.3	38.4	175.1	4.2
Queue Length 50th (m)	~370.7	21.6	~105.8	0.0	30.7	~335.1	0.0
Queue Length 95th (m)	m18.5	m30.1	#143.4	0.0	46.1	#427.4	0.0
Internal Link Dist (m)		102.2	134.5			94.9	
Turn Bay Length (m)	45.7			45.7			45.7
Base Capacity (vph)	771	1977	395	1503	554	583	1539
Starvation Cap Reductn	45	595	0	0	0	0	0
Spillback Cap Reductn	0	0	2	0	55	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.21	0.85	1.19	0.13	0.30	1.26	0.75

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.1	3.3	3.7	3.7	3.2	4.7	3.5	3.5	4.7	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.89	1.00	1.00	0.95			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	1671	3421			3382	1574	1662	1750	1689			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	1671	3421			3382	1574	1662	1750	1689			
Volume (vph)	805	1082	0	0	431	180	136	673	1056	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	875	1176	0	0	468	196	148	732	1148	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	875	1176	0	0	468	196	148	732	1148	0	0	0
Confl. Peds. (#/hr)						20			20			
Turn Type	Prot					custom	Split		custom			
Protected Phases	8	5 8			5	5	6 7	6 7	6 7			
Permitted Phases						6 7 8			5 8			
Actuated Green, G (s)	83.0	104.0			21.0	172.0	60.0	60.0	164.0			
Effective Green, g (s)	83.0	104.0			21.0	172.0	60.0	60.0	164.0			
Actuated g/C Ratio	0.46	0.58			0.12	0.96	0.33	0.33	0.91			
Clearance Time (s)	4.0				4.0	4.0						
Lane Grp Cap (vph)	771	1977			395	1574	554	583	1689			
v/s Ratio Prot	c0.52	0.34			c0.14	0.01	0.09	c0.42	c0.23			
v/s Ratio Perm						0.11			0.45			
v/c Ratio	1.13	0.59			1.18	0.12	0.27	1.26	0.68			
Uniform Delay, d1	48.5	24.4			79.5	0.2	43.9	60.0	1.9			
Progression Factor	0.23	0.36			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	62.4	0.1			106.1	0.2	1.2	128.6	2.2			
Delay (s)	73.7	8.8			185.6	0.4	45.1	188.6	4.1			
Level of Service	E	A			F	A	D	F	A			
Approach Delay (s)		36.5			130.9			73.7			0.0	
Approach LOS		D			F			E			A	

Intersection Summary			
HCM Average Control Delay	65.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1909	172	478	684	1067	1123	1301
v/c Ratio	1.75	0.10	1.34	0.34	1.78	1.78	0.52
Control Delay	368.9	0.3	198.8	6.3	384.7	385.0	1.0
Queue Delay	174.9	0.0	0.0	2.1	130.2	129.8	0.0
Total Delay	543.8	0.3	198.8	8.4	515.0	514.7	1.0
Queue Length 50th (m)	~381.6	0.0	~139.4	33.8	~429.6	~452.4	0.0
Queue Length 95th (m)	#423.4	0.0	m43.4	m27.0	#512.6	#535.8	0.0
Internal Link Dist (m)	155.9			102.2		146.4	
Turn Bay Length (m)		45.7	45.7				45.7
Base Capacity (vph)	1093	1650	356	1992	600	631	2485
Starvation Cap Reductn	0	0	0	1126	0	0	0
Spillback Cap Reductn	199	0	0	0	84	88	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	2.14	0.10	1.34	0.79	2.07	2.07	0.52

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↑	↱↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.2	4.8	3.0	3.5	3.7	3.7	3.7	3.7	3.3	3.3	3.7
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	0.88
Frpb, ped/bikes		1.00	0.98	1.00	1.00					1.00	1.00	0.94
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		3382	1759	1652	3500					1625	1709	2647
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (perm)		3382	1759	1652	3500					1625	1709	2647
Volume (vph)	0	1756	158	440	629	0	0	0	0	999	1016	1197
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1909	172	478	684	0	0	0	0	1086	1104	1301
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1909	172	478	684	0	0	0	0	1067	1123	1301
Confl. Peds. (#/hr)			20									20
Turn Type			custom	Prot						Split		custom
Protected Phases		3	3	2	2 3					1 4	1 4	1 4
Permitted Phases			1 2 4									2 3
Actuated Green, G (s)		42.0	122.0	28.0	74.0					48.0	48.0	122.0
Effective Green, g (s)		42.0	122.0	28.0	74.0					48.0	48.0	122.0
Actuated g/C Ratio		0.32	0.94	0.22	0.57					0.37	0.37	0.94
Clearance Time (s)		4.0	4.0	4.0								
Lane Grp Cap (vph)		1093	1759	356	1992					600	631	2647
v/s Ratio Prot		c0.56	0.03	c0.29	0.20					0.66	c0.66	0.18
v/s Ratio Perm			0.07									0.31
v/c Ratio		1.75	0.10	1.34	0.34					1.78	1.78	0.49
Uniform Delay, d1		44.0	0.3	51.0	15.0					41.0	41.0	0.5
Progression Factor		1.00	1.00	1.11	0.41					1.00	1.00	1.00
Incremental Delay, d2		339.8	0.1	156.0	0.0					357.0	357.3	0.7
Delay (s)		383.8	0.4	212.8	6.2					398.0	398.3	1.1
Level of Service		F	A	F	A					F	F	A
Approach Delay (s)		352.1			91.2			0.0			250.2	
Approach LOS		F			F			A			F	

Intersection Summary			
HCM Average Control Delay	254.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.66		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	177.2%	ICU Level of Service	H
Analysis Period (min)	15		

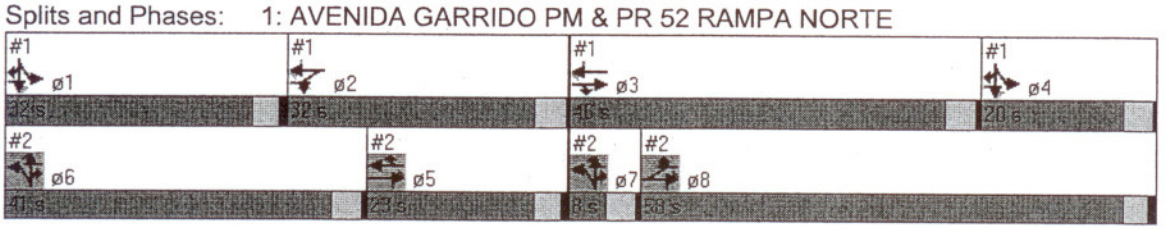
c Critical Lane Group

Phase Number	1	2	3	4	5	6	7	8
Node Number	1	1	1	1	2	2	2	2
Movement	SBTL	WBTL	EBWB	SBTL	WBEB	NBTL	NBTL	EBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Maximum Split (s)	32	32	46	20	23	41	8	58
Maximum Split (%)	24.6%	24.6%	35.4%	15.4%	17.7%	31.5%	6.2%	44.6%
Minimum Split (s)	8	20	8	20	8	20	8	8
Yellow Time (s)	3	3.5	3.5	3.5	3	3.5	3.5	3
All-Red Time (s)	1	0.5	0.5	0.5	1	0.5	0.5	1
Minimum Initial (s)	4	4	4	4	4	4	4	4
Vehicle Extension (s)	4.7	4.7	3	3	4.7	4.7	3	4.7
Minimum Gap (s)	4.7	4.7	3	3	4.7	4.7	3	4.7
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		5		5		5		
Flash Dont Walk (s)		11		11		11		
Dual Entry	No	Yes	No	Yes	No	Yes	No	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	98	0	32	78	9	98	32	40
End Time (s)	0	32	78	98	32	9	40	98
Yield/Force Off (s)	126	28	74	94	28	5	36	94
Yield/Force Off 170(s)	126	17	74	83	28	124	36	94
Local Start Time (s)	98	0	32	78	9	98	32	40
Local Yield (s)	126	28	74	94	28	5	36	94
Local Yield 170(s)	126	17	74	83	28	124	36	94

Intersection Summary	
Cycle Length	130
Control Type	Pretimed
Natural Cycle	130

Offset: 0 (0%), Referenced to phase 2:WBTL, Start of Green

Splits and Phases: 1: AVENIDA GARRIDO PM & PR 52 RAMPA NORTE



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	1114	1879	823	554	339	530	655
v/c Ratio	1.61	0.98	1.67	0.36	0.65	0.96	0.44
Control Delay	290.9	27.7	342.9	0.9	35.7	67.3	1.3
Queue Delay	214.6	113.1	28.3	0.0	2.2	0.0	0.0
Total Delay	505.5	140.8	371.2	0.9	38.0	67.3	1.3
Queue Length 50th (m)	~418.4	120.1	~161.3	0.0	62.8	121.7	0.0
Queue Length 95th (m)	m172.7	m68.1	#200.7	0.0	96.2	#195.8	0.0
Internal Link Dist (m)		102.2	134.5			94.9	
Turn Bay Length (m)	45.7			45.7			45.7
Base Capacity (vph)	694	1921	494	1527	524	552	1499
Starvation Cap Reductn	159	434	0	0	0	0	0
Spillback Cap Reductn	0	0	18	0	87	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	2.08	1.26	1.73	0.36	0.78	0.96	0.44

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.1	3.3	3.7	3.7	3.2	4.7	3.5	3.5	4.7	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.92	1.00	1.00	0.96			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	1671	3421			3382	1627	1662	1750	1709			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	1671	3421			3382	1627	1662	1750	1709			
Volume (vph)	1025	1729	0	0	757	510	312	488	603	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1114	1879	0	0	823	554	339	530	655	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	1114	1879	0	0	823	554	339	530	655	0	0	0
Confl. Peds. (#/hr)						20			20			
Turn Type	Prot					custom	Split		custom			
Protected Phases	8	5 8			5	5	6 7	6 7	6 7			
Permitted Phases						6 7 8			5 8			
Actuated Green, G (s)	54.0	73.0			19.0	122.0	41.0	41.0	114.0			
Effective Green, g (s)	54.0	73.0			19.0	122.0	41.0	41.0	114.0			
Actuated g/C Ratio	0.42	0.56			0.15	0.94	0.32	0.32	0.88			
Clearance Time (s)	4.0				4.0	4.0						
Lane Grp Cap (vph)	694	1921			494	1627	524	552	1709			
v/s Ratio Prot	c0.67	0.55			c0.24	0.05	0.20	c0.30	0.12			
v/s Ratio Perm						0.29			0.26			
v/c Ratio	1.61	0.98			1.67	0.34	0.65	0.96	0.38			
Uniform Delay, d1	38.0	27.7			55.5	0.4	38.3	43.7	1.5			
Progression Factor	0.27	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	273.0	2.9			308.5	0.6	6.1	29.6	0.7			
Delay (s)	283.1	30.6			364.0	0.9	44.3	73.3	2.1			
Level of Service	F	C			F	A	D	E	A			
Approach Delay (s)		124.6			218.0			36.3			0.0	
Approach LOS		F			F			D			A	

Intersection Summary			
HCM Average Control Delay	123.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	177.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	1	2	4	5	6	16
Node Number	1	1	1	2	2	2
Movement	WBTL	EBWB	SBTL	EBTL	WBEB	NBTL
Lead/Lag	Lag	Lead		Lead	Lag	
Lead-Lag Optimize	Yes	Yes		Yes	Yes	
Recall Mode	Max	Max	Max	Max	Max	Max
Maximum Split (s)	74	37	39	39	81	30
Maximum Split (%)	49.3%	24.7%	26.0%	26.0%	54.0%	20.0%
Minimum Split (s)	8.5	20	20	8	20	8.5
Yellow Time (s)	3	3	3	3	3	3
All-Red Time (s)	1	1	1	1	1	1
Minimum Initial (s)	4	4	4	4	4	4
Vehicle Extension (s)	4.7	4.7	3	4.7	4.7	3
Minimum Gap (s)	4.7	4.7	3	4.7	4.7	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		5	5		5	
Flash Dont Walk (s)		11	11		11	
Dual Entry	No	Yes	Yes	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	57	20	131	20	59	140
End Time (s)	131	57	20	59	140	20
Yield/Force Off (s)	127	53	16	55	136	16
Yield/Force Off 170(s)	127	42	5	55	125	16
Local Start Time (s)	148	111	72	111	0	81
Local Yield (s)	68	144	107	146	77	107
Local Yield 170(s)	68	133	96	146	66	107

Intersection Summary	
Cycle Length	150
Control Type	Pretimed
Natural Cycle	140

Offset: 59 (39%), Referenced to phase 6:WBEB, Start of Green

Splits and Phases: 1: PR-199 AM & PR 52 RAMPA NORTE

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	674	2683	1922	1543	775	408	526
v/c Ratio	1.73	0.71	0.74	1.10	1.40	1.42	0.32
Control Delay	350.8	28.2	31.0	63.7	236.2	250.1	0.7
Queue Delay	0.0	468.6	0.0	0.0	43.8	42.1	0.0
Total Delay	350.8	496.8	31.0	63.7	280.1	292.2	0.7
Queue Length 50th (m)	~277.2	311.4	161.2	~517.8	~169.0	~179.0	0.0
Queue Length 95th (m)	m#28.0	m217.1	179.0	#598.6	#211.0	#250.8	0.0
Internal Link Dist (m)		102.2	134.5			94.9	
Turn Bay Length (m)	70.0			130.0			85.0
Base Capacity (vph)	390	3802	2582	1407	552	288	1657
Starvation Cap Reductn	0	2487	0	0	0	0	0
Spillback Cap Reductn	0	0	1	0	36	18	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.73	2.04	0.74	1.10	1.50	1.51	0.32

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.1	3.3	3.7	3.7	3.5	3.5	3.5	3.5	4.7	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	1.00	0.91			0.91	1.00	0.91	0.91	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.95	1.00	1.00	0.99			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (prot)	1671	4916			5029	1486	3185	1660	1750			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (perm)	1671	4916			5029	1486	3185	1660	1750			
Volume (vph)	620	2468	0	0	1768	1420	788	300	484	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	674	2683	0	0	1922	1543	857	326	526	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	674	2683	0	0	1922	1543	775	408	526	0	0	0
Confl. Peds. (#/hr)						20			20			
Turn Type	Prot					custom	Split		custom			
Protected Phases	5	5 6			6	6	16	16	16			
Permitted Phases						5 16			5 6			
Actuated Green, G (s)	35.0	116.0			77.0	142.0	26.0	26.0	142.0			
Effective Green, g (s)	35.0	116.0			77.0	142.0	26.0	26.0	142.0			
Actuated g/C Ratio	0.23	0.77			0.51	0.95	0.17	0.17	0.95			
Clearance Time (s)	4.0				4.0	4.0	4.0	4.0	4.0			
Lane Grp Cap (vph)	390	3802			2582	1486	552	288	1750			
v/s Ratio Prot	c0.40	0.55			0.38	c0.53	0.24	c0.25	0.05			
v/s Ratio Perm						0.51			0.25			
v/c Ratio	1.73	0.71			0.74	1.04	1.40	1.42	0.30			
Uniform Delay, d1	57.5	8.5			28.7	4.0	62.0	62.0	0.3			
Progression Factor	0.39	3.26			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	328.7	0.1			2.0	33.9	192.5	206.8	0.4			
Delay (s)	351.1	27.7			30.7	37.9	254.5	268.8	0.7			
Level of Service	F	C			C	D	F	F	A			
Approach Delay (s)		92.7			33.9			179.8			0.0	
Approach LOS		F			C			F			A	

Intersection Summary			
HCM Average Control Delay	86.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	154.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	552	2604	1800	709	589	311	407
v/c Ratio	1.42	0.68	0.70	0.50	1.07	1.11	0.25
Control Delay	210.2	35.2	29.5	1.5	114.8	141.8	0.5
Queue Delay	0.0	441.6	0.0	0.0	11.5	11.3	0.0
Total Delay	210.2	476.8	29.5	1.5	126.3	153.1	0.5
Queue Length 50th (m)	~205.7	302.2	145.2	0.0	~106.0	~115.8	0.0
Queue Length 95th (m)	#162.2m	211.9	161.9	0.0	#146.0	#181.5	0.0
Internal Link Dist (m)		102.2	134.5			94.9	
Turn Bay Length (m)	70.0			130.0			85.0
Base Capacity (vph)	390	3802	2582	1407	552	280	1657
Starvation Cap Reductn	0	2487	0	0	0	0	0
Spillback Cap Reductn	0	0	12	0	15	7	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.42	1.98	0.70	0.50	1.10	1.14	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.1	3.3	3.7	3.7	3.5	3.5	3.5	3.5	4.7	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	1.00	0.91			0.91	1.00	0.91	0.91	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.95	1.00	1.00	0.99			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)	1671	4916			5029	1486	3185	1616	1750			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)	1671	4916			5029	1486	3185	1616	1750			
Volume (vph)	508	2396	0	0	1656	652	756	72	374	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	552	2604	0	0	1800	709	822	78	407	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	552	2604	0	0	1800	709	589	311	407	0	0	0
Confl. Peds. (#/hr)						20			20			
Turn Type	Prot					custom	Split		custom			
Protected Phases	5	5 6			6	6	16	16	16			
Permitted Phases						5 16			5 6			
Actuated Green, G (s)	35.0	116.0			77.0	142.0	26.0	26.0	142.0			
Effective Green, g (s)	35.0	116.0			77.0	142.0	26.0	26.0	142.0			
Actuated g/C Ratio	0.23	0.77			0.51	0.95	0.17	0.17	0.95			
Clearance Time (s)	4.0				4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	4.7				4.7	4.7	3.0	3.0	3.0			
Lane Grp Cap (vph)	390	3802			2582	1486	552	280	1750			
v/s Ratio Prot	c0.33	c0.53			c0.36	0.24	0.18	c0.19	0.04			
v/s Ratio Perm						0.23			0.19			
v/c Ratio	1.42	0.68			0.70	0.48	1.07	1.11	0.23			
Uniform Delay, d1	57.5	8.2			27.7	0.4	62.0	62.0	0.3			
Progression Factor	0.33	4.21			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	188.3	0.1			1.6	0.5	57.4	86.8	0.1			
Delay (s)	207.4	34.6			29.2	0.8	119.4	148.8	0.3			
Level of Service	F	C			C	A	F	F	A			
Approach Delay (s)		64.8			21.2			89.3			0.0	
Approach LOS		E			C			F			A	

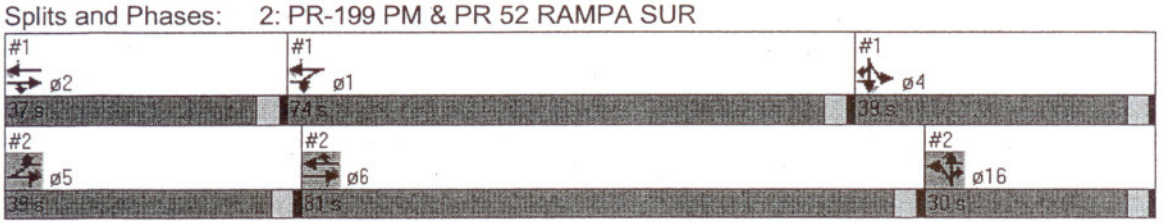
Intersection Summary			
HCM Average Control Delay	53.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	163.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Phase Number	1	2	4	5	6	16
Node Number	1	1	1	2	2	2
Movement	WBTL	EBWB	SBTL	EBTL	WBEB	NBTL
Lead/Lag	Lag	Lead		Lead	Lag	
Lead-Lag Optimize	Yes	Yes		Yes	Yes	
Recall Mode	Min	None	None	Min	C-Max	Min
Maximum Split (s)	74	37	39	39	81	30
Maximum Split (%)	49.3%	24.7%	26.0%	26.0%	54.0%	20.0%
Minimum Split (s)	8.5	20	20	8	20	8.5
Yellow Time (s)	3	3	3	3	3	3
All-Red Time (s)	1	1	1	1	1	1
Minimum Initial (s)	4	4	4	4	4	4
Vehicle Extension (s)	4.7	4.7	3	4.7	4.7	3
Minimum Gap (s)	4.7	4.7	3	4.7	4.7	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		5	5		5	
Flash Dont Walk (s)		11	11		11	
Dual Entry	No	Yes	Yes	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	57	20	131	20	59	140
End Time (s)	131	57	20	59	140	20
Yield/Force Off (s)	127	53	16	55	136	16
Yield/Force Off 170(s)	127	42	5	55	125	16
Local Start Time (s)	148	111	72	111	0	81
Local Yield (s)	68	144	107	146	77	107
Local Yield 170(s)	68	133	96	146	66	107

Intersection Summary		
Cycle Length		150
Control Type	Actuated-Coordinated	
Natural Cycle		100

Offset: 59 (39%), Referenced to phase 6:WBEB, Start of Green

Splits and Phases: 2: PR-199 PM & PR 52 RAMPA SUR



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	2622	700	624	2265	410	431	245
v/c Ratio	1.28	0.46	1.06	0.68	0.90	0.93	0.18
Control Delay	167.6	1.2	49.2	14.4	68.8	74.1	0.4
Queue Delay	28.7	0.0	17.0	19.0	154.7	173.9	0.0
Total Delay	196.3	1.2	66.2	33.4	223.5	248.0	0.4
Queue Length 50th (m)	~209.7	0.0	~165.3	78.5	106.6	113.6	0.0
Queue Length 95th (m)	#227.7	0.0	m11.2	m60.2	#167.4	#178.8	0.0
Internal Link Dist (m)	155.9			102.2		146.4	
Turn Bay Length (m)		85.0					
Base Capacity (vph)	2052	1519	586	3308	456	462	1376
Starvation Cap Reductn	0	0	23	1109	0	0	0
Spillback Cap Reductn	98	0	0	0	152	154	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.34	0.46	1.11	1.03	1.35	1.40	0.18

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↑↑	↱	↰	↑↑↑					↰	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.2	4.0	3.3	3.5	3.7	3.7	3.7	3.7	3.3	3.3	3.3
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.81	1.00	1.00	0.91					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.98	1.00	1.00					1.00	1.00	0.96
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (prot)		7209	1619	1711	5029					1625	1643	1466
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (perm)		7209	1619	1711	5029					1625	1643	1466
Volume (vph)	0	2412	644	574	2084	0	0	0	0	703	71	225
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2622	700	624	2265	0	0	0	0	764	77	245
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2622	700	624	2265	0	0	0	0	410	431	245
Confl. Peds. (#/hr)			20									20
Turn Type			custom	Prot						Split		custom
Protected Phases		3	3	2	2 3					1 4	1 4	1 4
Permitted Phases			1 2 4									2 3
Actuated Green, G (s)		37.0	122.0	44.5	85.5					36.5	36.5	122.0
Effective Green, g (s)		37.0	122.0	44.5	85.5					36.5	36.5	122.0
Actuated g/C Ratio		0.28	0.94	0.34	0.66					0.28	0.28	0.94
Clearance Time (s)		4.0	4.0	4.0								
Lane Grp Cap (vph)		2052	1619	586	3308					456	461	1466
v/s Ratio Prot		c0.36	0.12	c0.36	0.45					0.25	c0.26	0.05
v/s Ratio Perm			0.31									0.12
v/c Ratio		1.28	0.43	1.06	0.68					0.90	0.93	0.17
Uniform Delay, d1		46.5	0.4	42.8	13.9					45.0	45.6	0.3
Progression Factor		1.00	1.00	0.28	1.02					1.00	1.00	1.00
Incremental Delay, d2		128.9	0.8	33.2	0.1					23.3	28.5	0.2
Delay (s)		175.4	1.3	45.1	14.2					68.2	74.0	0.5
Level of Service		F	A	D	B					E	E	A
Approach Delay (s)		138.7			20.9			0.0			55.3	
Approach LOS		F			C			A			E	

Intersection Summary			
HCM Average Control Delay	79.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	159.7%	ICU Level of Service	H
Analysis Period (min)	15		

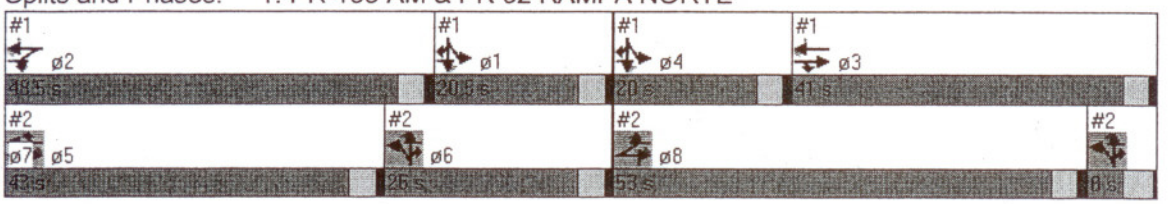
c Critical Lane Group

Phase Number	1	2	3	4	5	6	7	8
Node Number	1	1	1	1	2	2	2	2
Movement	SBTL	WBTL	EBWB	SBTL	WBEB	NBTL	NBTL	EBTL
Lead/Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Maximum Split (s)	20.5	48.5	41	20	43	26	8	53
Maximum Split (%)	15.8%	37.3%	31.5%	15.4%	33.1%	20.0%	6.2%	40.8%
Minimum Split (s)	8.5	20	8.5	20	8	20	8	8
Yellow Time (s)	3	3	3	3	3	3	3.5	3
All-Red Time (s)	1	1	1	1	1	1	0.5	1
Minimum Initial (s)	4	4	4	4	4	4	4	4
Vehicle Extension (s)	4.7	4.7	4.7	3	4.7	4.7	3	4.7
Minimum Gap (s)	4.7	4.7	4.7	3	4.7	4.7	3	4.7
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		5		5		5		
Flash Dont Walk (s)		11		11		11		
Dual Entry	No	Yes	No	Yes	No	Yes	No	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	5.5	87	46	26	87	0	79	26
End Time (s)	26	5.5	87	46	0	26	87	79
Yield/Force Off (s)	22	1.5	83	42	126	22	83	75
Yield/Force Off 170(s)	22	120.5	83	31	126	11	83	75
Local Start Time (s)	5.5	87	46	26	87	0	79	26
Local Yield (s)	22	1.5	83	42	126	22	83	75
Local Yield 170(s)	22	120.5	83	31	126	11	83	75

Intersection Summary	
Cycle Length	130
Control Type	Pretimed
Natural Cycle	150

Offset: 0 (0%), Referenced to phase 6:NBTL, Start of Green

Splits and Phases: 1: PR-199 AM & PR 52 RAMPA NORTE



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	701	2790	1999	1605	806	424	547
v/c Ratio	1.11	0.84	1.32	1.17	1.27	1.28	0.37
Control Delay	94.7	12.5	187.9	94.9	169.5	183.6	1.1
Queue Delay	0.0	2.2	0.0	0.0	0.0	0.0	0.0
Total Delay	94.7	14.6	187.9	94.9	169.5	183.6	1.1
Queue Length 50th (m)	~119.7	111.9	~242.6	~489.6	~124.6	~132.1	0.0
Queue Length 95th (m)	m64.1	m79.8	#271.5	#570.5	#164.7	#199.3	0.0
Internal Link Dist (m)		102.2	134.5			94.9	
Turn Bay Length (m)	70.0			130.0			85.0
Base Capacity (vph)	630	3328	1509	1370	637	332	1487
Starvation Cap Reductn	0	386	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.11	0.95	1.32	1.17	1.27	1.28	0.37

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.1	3.3	3.7	3.7	3.5	3.5	3.5	3.5	4.7	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	1.00	0.91			0.91	1.00	0.91	0.91	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.93	1.00	1.00	0.95			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (prot)	1671	4916			5029	1460	3185	1660	1695			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (perm)	1671	4916			5029	1460	3185	1660	1695			
Volume (vph)	645	2567	0	0	1839	1477	820	312	503	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	701	2790	0	0	1999	1605	891	339	547	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	701	2790	0	0	1999	1605	806	424	547	0	0	0
Confl. Peds. (#/hr)						20			20			
Turn Type	Prot					custom	Split		custom			
Protected Phases	8	5 8			5	5	6 7	6 7	6 7			
Permitted Phases						6 7 8			5 8			
Actuated Green, G (s)	49.0	88.0			39.0	122.0	26.0	26.0	114.0			
Effective Green, g (s)	49.0	88.0			39.0	122.0	26.0	26.0	114.0			
Actuated g/C Ratio	0.38	0.68			0.30	0.94	0.20	0.20	0.88			
Clearance Time (s)	4.0				4.0	4.0						
Lane Grp Cap (vph)	630	3328			1509	1460	637	332	1695			
v/s Ratio Prot	0.42	0.57			c0.40	c0.33	0.25	c0.26	0.06			
v/s Ratio Perm						0.77			0.26			
v/c Ratio	1.11	0.84			1.32	1.10	1.27	1.28	0.32			
Uniform Delay, d1	40.5	15.7			45.5	4.0	52.0	52.0	1.4			
Progression Factor	1.12	1.27			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	53.1	0.3			150.8	55.7	131.6	146.0	0.5			
Delay (s)	98.4	20.1			196.3	59.7	183.6	198.0	1.9			
Level of Service	F	C			F	E	F	F	A			
Approach Delay (s)		35.8			135.5			131.1			0.0	
Approach LOS		D			F			F			A	

Intersection Summary			
HCM Average Control Delay	95.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	159.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1859	982	728	1999	773	814	389
v/c Ratio	1.42	0.66	1.30	0.78	1.38	1.43	0.31
Control Delay	227.5	2.7	181.3	14.0	203.4	226.1	1.0
Queue Delay	0.0	0.0	11.6	0.3	0.0	0.0	0.0
Total Delay	227.5	2.7	192.9	14.3	203.4	226.1	1.0
Queue Length 50th (m)	~133.0	0.0	~192.7	81.8	~172.0	~188.4	0.0
Queue Length 95th (m)	#152.9	0.0	#196.7	m84.7	#306.9	#325.0	0.0
Internal Link Dist (m)	155.9			102.2		146.4	
Turn Bay Length (m)		85.0					
Base Capacity (vph)	1311	1496	560	2560	561	569	1267
Starvation Cap Reductn	0	0	11	140	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.42	0.66	1.33	0.83	1.38	1.43	0.31

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↑	↱	↰	↑↑↑					↰	↕	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.2	4.0	3.3	3.5	3.7	3.7	3.7	3.7	3.3	3.3	3.3
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.81	1.00	1.00	0.91					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.98	1.00	1.00					1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (prot)		7209	1613	1711	5029					1625	1645	1483
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (perm)		7209	1613	1711	5029					1625	1645	1483
Volume (vph)	0	1710	903	670	1839	0	0	0	0	1310	150	358
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1859	982	728	1999	0	0	0	0	1424	163	389
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1859	982	728	1999	0	0	0	0	773	814	389
Confl. Peds. (#/hr)			20									20
Turn Type			custom	Prot						Split		custom
Protected Phases		3	3	2	2 3					1 4	1 4	1 4
Permitted Phases			1 2 4									2 3
Actuated Green, G (s)		20.0	102.0	36.0	56.0					38.0	38.0	94.0
Effective Green, g (s)		20.0	102.0	36.0	56.0					38.0	38.0	94.0
Actuated g/C Ratio		0.18	0.93	0.33	0.51					0.35	0.35	0.85
Clearance Time (s)		4.0	4.0	4.0								
Lane Grp Cap (vph)		1311	1613	560	2560					561	568	1483
v/s Ratio Prot		c0.26	0.11	c0.43	0.40					0.48	c0.49	0.09
v/s Ratio Perm			0.50									0.17
v/c Ratio		1.42	0.61	1.30	0.78					1.38	1.43	0.26
Uniform Delay, d1		45.0	0.7	37.0	22.0					36.0	36.0	1.5
Progression Factor		1.00	1.00	1.48	1.09					1.00	1.00	1.00
Incremental Delay, d2		192.6	1.7	138.3	0.8					181.0	204.9	0.4
Delay (s)		237.6	2.4	193.2	24.7					217.0	240.9	1.9
Level of Service		F	A	F	C					F	F	A
Approach Delay (s)		156.3			69.7			0.0			184.5	
Approach LOS		F			E			A			F	

Intersection Summary				
HCM Average Control Delay	132.4	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.38			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	170.1%	ICU Level of Service	H	
Analysis Period (min)	15			

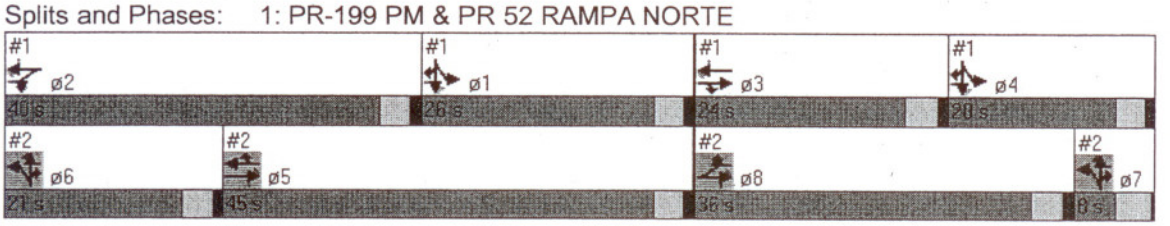
c Critical Lane Group

Phase Number	1	2	3	4	5	6	7	8
Node Number	1	1	1	1	2	2	2	2
Movement	SBTL	WBTL	EBWB	SBTL	WBEB	NBTL	NBTL	EBTL
Lead/Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Maximum Split (s)	26	40	24	20	45	21	8	36
Maximum Split (%)	23.6%	36.4%	21.8%	18.2%	40.9%	19.1%	7.3%	32.7%
Minimum Split (s)	8.5	20	8.5	20	8	20	8	8
Yellow Time (s)	3	3	3	3	3	3	3.5	3
All-Red Time (s)	1	1	1	1	1	1	0.5	1
Minimum Initial (s)	4	4	4	4	4	4	4	4
Vehicle Extension (s)	4.7	4.7	4.7	3	4.7	4.7	3	4.7
Minimum Gap (s)	4.7	4.7	4.7	3	4.7	4.7	3	4.7
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		5		5		5		
Flash Dont Walk (s)		11		11		11		
Dual Entry	No	Yes	No	Yes	No	Yes	No	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	40	0	66	90	21	0	102	66
End Time (s)	66	40	90	0	66	21	0	102
Yield/Force Off (s)	62	36	86	106	62	17	106	98
Yield/Force Off 170(s)	62	25	86	95	62	6	106	98
Local Start Time (s)	40	0	66	90	21	0	102	66
Local Yield (s)	62	36	86	106	62	17	106	98
Local Yield 170(s)	62	25	86	95	62	6	106	98

Intersection Summary	
Cycle Length	110
Control Type	Pretimed
Natural Cycle	140

Offset: 0 (0%), Referenced to phase 6:NBTL, Start of Green

Splits and Phases: 1: PR-199 PM & PR 52 RAMPA NORTE



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	574	2709	1872	737	613	323	434
v/c Ratio	1.18	0.79	1.00	0.54	0.85	0.88	0.27
Control Delay	105.1	13.0	55.4	1.8	53.0	66.8	0.6
Queue Delay	74.3	10.7	22.9	0.0	61.8	80.8	0.0
Total Delay	179.4	23.7	78.3	1.8	114.8	147.6	0.6
Queue Length 50th (m)	~153.0	67.0	145.4	0.0	69.5	73.9	0.0
Queue Length 95th (m)	m17.6	m33.4	#182.6	0.0	#98.1	#127.6	0.0
Internal Link Dist (m)		102.2	134.5			94.9	
Turn Bay Length (m)	70.0			130.0			85.0
Base Capacity (vph)	486	3441	1874	1376	724	367	1583
Starvation Cap Reductn	61	751	0	0	0	0	0
Spillback Cap Reductn	0	0	118	0	181	92	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.35	1.01	1.07	0.54	1.13	1.17	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
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95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.1	3.3	3.7	3.7	3.5	3.5	3.5	3.5	4.7	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	1.00	0.91			0.91	1.00	0.91	0.91	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.95	1.00	1.00	0.96			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)	1671	4916			5029	1484	3185	1616	1707			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)	1671	4916			5029	1484	3185	1616	1707			
Volume (vph)	528	2492	0	0	1722	678	786	75	399	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	574	2709	0	0	1872	737	854	82	434	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	574	2709	0	0	1872	737	613	323	434	0	0	0
Confl. Peds. (#/hr)						20			20			
Turn Type	Prot					custom	Split		custom			
Protected Phases	8	5 8			5	5	6 7	6 7	6 7			
Permitted Phases						6 7 8			5 8			
Actuated Green, G (s)	32.0	77.0			41.0	102.0	25.0	25.0	102.0			
Effective Green, g (s)	32.0	77.0			41.0	102.0	25.0	25.0	102.0			
Actuated g/C Ratio	0.29	0.70			0.37	0.93	0.23	0.23	0.93			
Clearance Time (s)	4.0				4.0	4.0						
Lane Grp Cap (vph)	486	3441			1874	1484	724	367	1707			
v/s Ratio Prot	c0.34	0.55			c0.37	0.19	0.19	c0.20	0.06			
v/s Ratio Perm						0.31			0.20			
v/c Ratio	1.18	0.79			1.00	0.50	0.85	0.88	0.25			
Uniform Delay, d1	39.0	11.0			34.5	0.5	40.7	41.1	0.4			
Progression Factor	0.46	1.14			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	83.6	0.2			20.5	1.2	11.7	24.7	0.4			
Delay (s)	101.5	12.7			55.0	1.7	52.4	65.8	0.7			
Level of Service	F	B			E	A	D	E	A			
Approach Delay (s)		28.2			40.0			39.2			0.0	
Approach LOS		C			D			D			A	

Intersection Summary			
HCM Average Control Delay	34.5	HCM Level of Service	C
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	170.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group