

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.91	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	1.00	1.00	0.95	0.95
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1789	3579	1601	1628	3370	1601	1789	3324	1789	1791	1789	1791
Flt Permitted	0.95	1.00	1.00	0.95	0.54	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1789	3579	1601	1628	1852	1601	1789	3324	1789	1791	1789	1791
Volume (vph)	102	545	75	461	435	435	29	160	144	235	176	86
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	110	586	81	496	468	468	31	172	155	253	189	92
RTOR Reduction (vph)	0	0	52	0	0	252	0	139	0	0	15	0
Lane Group Flow (vph)	110	586	29	248	716	216	31	188	0	253	266	0
Turn Type	Prot		Perm	Prot		Perm	Split			Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2			6						
Actuated Green, G (s)	9.2	36.6	36.6	20.0	47.4	47.4	10.7	10.7		19.6	19.6	
Effective Green, g (s)	9.2	36.6	36.6	20.0	47.4	47.4	10.7	10.7		19.6	19.6	
Actuated g/C Ratio	0.09	0.36	0.36	0.19	0.46	0.46	0.10	0.10		0.19	0.19	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	160	1273	569	316	1148	737	186	346		341	341	
v/s Ratio Prot	c0.06	0.16		c0.15	0.12		0.02	c0.06		0.14	c0.15	
v/s Ratio Perm			0.02		c0.17	0.13						
v/c Ratio	0.69	0.46	0.05	0.78	0.62	0.29	0.17	0.54		0.74	0.78	
Uniform Delay, d1	45.5	25.5	21.8	39.4	21.0	17.3	42.0	43.8		39.3	39.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.6	1.2	0.2	12.0	1.1	1.0	0.4	1.7		8.4	10.7	
Delay (s)	57.1	26.7	21.9	51.5	22.1	18.3	42.5	45.5		47.7	50.3	
Level of Service	E	C	C	D	C	B	D	D		D	D	
Approach Delay (s)		30.5			25.9			45.3			49.1	
Approach LOS		C			C			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay			33.3			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			102.9			Sum of lost time (s)		16.0				
Intersection Capacity Utilization			67.4%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

Intersection Capacity Utilization  
 C:\PR-54\PR-54 Existente PM.sy7

2: PR-54 & PR-3  
 12/21/2008

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	102	545	75	461	435	435	29	160	144	235	176	86
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right	No			No			No			No		
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120											
Volume Combined (vph)	102	545	75	0	896	435	29	304	0	235	262	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	0.97	0.85	0.95	0.93	0.85	0.95	0.95	0.85
Saturated Flow (vph)	1805	3618	1615	0	5287	1615	1805	3361	0	1805	1806	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00		0.00		0.00		0.00		0.00	
Protected Option Allowed	No			No			Yes			Yes		
Reference Time (s)	5.6			32.3			1.9			10.9		
Adj Reference Time (s)	9.6			36.3			8.0			14.9		
Permitted Option												
Adj Saturation A (vph)	120	1809	0	176	120	1680	120	1806	120	1806	120	1806
Reference Time A (s)	101.7	18.1	0.0	313.9	28.9	10.9	234.3	17.4	234.3	17.4	234.3	17.4
Adj Saturation B (vph)	NA	NA	NA	NA	NA	NA						
Reference Time B (s)	NA	NA	NA	NA	NA	NA						
Reference Time (s)	101.7		313.9		28.9		234.3		234.3		234.3	
Adj Reference Time (s)	105.7		317.9		32.9		238.3		238.3		238.3	
Split Option												
Ref Time Combined (s)	6.8	18.1	0.0	20.3	1.9	10.9	15.6	17.4	15.6	17.4	15.6	17.4
Ref Time Separate (s)	6.8	18.1	15.3	14.4	1.9	5.7	15.6	11.7	15.6	11.7	15.6	11.7
Reference Time (s)	18.1	18.1	20.3	20.3	10.9	10.9	17.4	17.4	17.4	17.4	17.4	17.4
Adj Reference Time (s)	22.1	22.1	24.3	24.3	14.9	14.9	21.4	21.4	21.4	21.4	21.4	21.4
Summary												
	NW SE		NE SW		Combined							
Protected Option (s)	NA		34.5									
Permitted Option (s)	317.9		238.3									
Split Option (s)	46.4		36.3									
Minimum (s)	46.4		34.5		80.9							
Right Turns												
	SER		NWR									
Adj Reference Time (s)	9.6		36.3									
Cross Thru Ref Time (s)	21.4		14.9									
Oncoming Left Ref Time (s)	24.3		22.1									
Combined (s)	55.3		73.3									
Intersection Summary												
Intersection Capacity Utilization	67.4%		ICU Level of Service		C							
Reference Times and Phasing Options do not represent an optimized timing plan.												

													
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	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		0.95			0.95		
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.88			0.93		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			0.98		
Satd. Flow (prot)	1789	3579	1601	1789	3579	1601		3154			3277		
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00			0.98		
Satd. Flow (perm)	1789	3579	1601	1789	3579	1601		3154			3277		
Volume (vph)	140	845	34	279	931	148	37	85	408	214	108	264	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	151	909	37	300	1001	159	40	91	439	230	116	284	
RTOR Reduction (vph)	0	0	24	0	0	90	0	340	0	0	135	0	
Lane Group Flow (vph)	151	909	13	300	1001	69	0	230	0	0	495	0	
Turn Type	Prot		Perm	Prot		Perm	Split				Split		
Protected Phases	5	2		1	6		8	8			4	4	
Permitted Phases			2			6							
Actuated Green, G (s)	11.9	34.0	34.0	20.6	42.7	42.7		11.9			21.4		
Effective Green, g (s)	11.9	34.0	34.0	20.6	42.7	42.7		11.9			21.4		
Actuated g/C Ratio	0.11	0.33	0.33	0.20	0.41	0.41		0.11			0.21		
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0			3.0		
Lane Grp Cap (vph)	205	1171	524	355	1471	658		361			675		
v/s Ratio Prot	0.08	c0.25		c0.17	0.28			c0.07			c0.15		
v/s Ratio Perm			0.01			0.04							
v/c Ratio	0.74	0.78	0.03	0.85	0.68	0.10		0.64			0.73		
Uniform Delay, d1	44.5	31.5	23.7	40.1	25.0	18.8		43.9			38.6		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00		
Incremental Delay, d2	12.9	5.1	0.1	16.6	2.6	0.3		3.7			4.1		
Delay (s)	57.4	36.6	23.8	56.7	27.6	19.2		47.6			42.7		
Level of Service	E	D	C	E	C	B		D			D		
Approach Delay (s)		39.0			32.7			47.6			42.7		
Approach LOS		D			C			D			D		
<b>Intersection Summary</b>													
HCM Average Control Delay			38.5			HCM Level of Service					D		
HCM Volume to Capacity ratio			0.76										
Actuated Cycle Length (s)			103.9			Sum of lost time (s)					16.0		
Intersection Capacity Utilization			86.5%			ICU Level of Service					E		
Analysis Period (min)			15										
c Critical Lane Group													

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	140	845	34	279	931	148	37	85	408	214	108	264	
Pedestrians													
Ped Button													
Pedestrian Timing (s)													
Free Right			No			No			No			No	
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Refr Cycle Length (s)	120												
Volume Combined (vph)	140	845	34	279	931	148	0	530	0	0	586	0	
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Turning Factor (vph)	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.88	0.85	0.95	0.92	0.85	
Saturated Flow (vph)	1805	3618	1615	1805	3618	1615	0	3189	0	0	3312	0	
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Pedestrian Frequency (%)	0.00				0.00				0.00		0.00		
Protected Option Allowed	Yes				Yes				No		No		
Reference Time (s)	9.3	28.0	2.5	18.5	30.9	11.0			0.0			0.0	
Adj Reference Time (s)	13.3	32.0	8.0	22.5	34.9	15.0			0.0			0.0	
Permitted Option													
Adj Saturation A (vph)	120	1809		120	1809		0	405		0	110		
Reference Time A (s)	139.6	28.0		278.2	30.9		0.0	56.6		0.0	232.6		
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA		
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA		
Reference Time (s)		139.6			278.2			56.6			232.6		
Adj Reference Time (s)		143.6			282.2			60.6			236.6		
Split Option													
Ref Time Combined (s)	9.3	28.0		18.5	30.9		0.0	19.9		0.0	21.2		
Ref Time Separate (s)	9.3	28.0		18.5	30.9		2.5	3.2		14.2	4.0		
Reference Time (s)	28.0	28.0		30.9	30.9		19.9	19.9		21.2	21.2		
Adj Reference Time (s)	32.0	32.0		34.9	34.9		23.9	23.9		25.2	25.2		
Summary													
	EB WB		NB SB		Combined								
Protected Option (s)	54.6		NA										
Permitted Option (s)	282.2		236.6										
Split Option (s)	66.9		49.2										
Minimum (s)	54.6		49.2		103.8								
Right Turns													
	EBR		WBR										
Adj Reference Time (s)	8.0		15.0										
Cross Thru Ref Time (s)	25.2		23.9										
Oncoming Left Ref Time (s)	22.5		13.3										
Combined (s)	55.8		52.2										
Intersection Summary													
Intersection Capacity Utilization	86.5%		ICU Level of Service		E								
Reference Times and Phasing Options do not represent an optimized timing plan.													



Intersection Capacity Utilization  
 C:\PR-54\PR-54 Existente PM.sy7

12: PR-54 & Ave. Marcelino Blondet  
 12/21/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	131	1108	543	94	716	21	294	149	230	127	173	74
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120											
Volume Combined (vph)	131	1651	0	94	737	0	0	673	0	0	374	0
Lane Utilization Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.95	0.85	0.95	1.00	0.85	0.95	0.93	0.85	0.95	0.95	0.85
Saturated Flow (vph)	1805	4920	0	1805	5153	0	0	5036	0	0	3451	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		Yes			Yes			No			No	
Reference Time (s)	8.7	40.3	0.0	6.2	17.2	0.0			0.0			0.0
Adj Reference Time (s)	12.7	44.3	0.0	10.2	21.2	0.0			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	120	1640		120	1718		0	168		0	115	
Reference Time A (s)	130.6	40.3		93.7	17.2		0.0	210.2		0.0	132.5	
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		130.6			93.7			210.2			132.5	
Adj Reference Time (s)		134.6			97.7			214.2			136.5	
Split Option												
Ref Time Combined (s)	8.7	40.3		6.2	17.2		0.0	16.0		0.0	13.0	
Ref Time Seperate (s)	8.7	27.0		6.2	16.7		9.8	5.4		8.4	6.0	
Reference Time (s)	40.3	40.3		17.2	17.2		16.0	16.0		13.0	13.0	
Adj Reference Time (s)	44.3	44.3		21.2	21.2		20.0	20.0		17.0	17.0	
Summary												
	EB WB		NB SB		Combined							
Protected Option (s)	54.5		NA									
Permitted Option (s)	134.6		214.2									
Split Option (s)	65.4		37.0									
Minimum (s)	54.5		37.0		91.6							
Right Turns												
Adj Reference Time (s)												
Cross Thru Ref Time (s)												
Oncoming Left Ref Time (s)												
Combined (s)												
Intersection Summary												
Intersection Capacity Utilization	76.3%		ICU Level of Service						D			
Reference Times and Phasing Options do not represent an optimized timing plan.												

												
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
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		1.00	0.95	1.00		1.00				1.00
Frt	1.00	0.98		1.00	1.00	0.85		0.98				0.96
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98				0.98
Satd. Flow (prot)	1789	5016		1789	3579	1601		1813				1789
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98				0.98
Satd. Flow (perm)	1789	5016		1789	3579	1601		1813				1789
Volume (vph)	173	995	193	68	772	96	84	103	31	63	87	54
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	186	1070	208	73	830	103	90	111	33	68	94	58
RTOR Reduction (vph)	0	20	0	0	0	66	0	5	0	0	12	0
Lane Group Flow (vph)	186	1258	0	73	830	37	0	229	0	0	208	0
Turn Type	Prot			Prot		Perm	Split				Split	
Protected Phases	5	2		1	6		8	8			4	4
Permitted Phases						6						
Actuated Green, G (s)	14.2	43.4		7.0	36.2	36.2		17.3				16.5
Effective Green, g (s)	14.2	43.4		7.0	36.2	36.2		17.3				16.5
Actuated g/C Ratio	0.14	0.43		0.07	0.36	0.36		0.17				0.16
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0				4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0				3.0
Lane Grp Cap (vph)	254	2173		125	1293	578		313				295
v/s Ratio Prot	c0.10	0.25		0.04	c0.23			c0.13				c0.12
v/s Ratio Perm						0.02						
v/c Ratio	0.73	0.58		0.58	0.64	0.06		0.73				0.71
Uniform Delay, d1	41.2	21.5		45.2	26.6	20.9		39.3				39.6
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00				1.00
Incremental Delay, d2	10.4	1.1		6.8	2.5	0.2		8.5				7.5
Delay (s)	51.6	22.6		52.0	29.1	21.1		47.8				47.1
Level of Service	D	C		D	C	C		D				D
Approach Delay (s)		26.3			29.9			47.8				47.1
Approach LOS		C			C			D				D
<b>Intersection Summary</b>												
HCM Average Control Delay			30.8				HCM Level of Service					C
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			100.2				Sum of lost time (s)		16.0			
Intersection Capacity Utilization			58.2%				ICU Level of Service					B
Analysis Period (min)			15									
c	Critical Lane Group											

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	173	995	193	68	772	96	84	103	31	63	87	54
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120											
Volume Combined (vph)	173	1188	0	68	772	96	0	218	0	0	204	0
Lane Utilization Factor	1.00	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	1.00	0.85	0.95	0.96	0.85	0.95	0.95	0.85
Saturated Flow (vph)	1805	5049	0	1805	3618	1615	0	1824	0	0	1796	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00				0.00				0.00		0.00	
Protected Option Allowed	Yes				Yes				No		No	
Reference Time (s)	11.5	28.2	0.0	4.5	25.6	7.1			0.0			0.0
Adj Reference Time (s)	15.5	32.2	0.0	8.5	29.6	11.1			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	120	1683		120	1809		0	1263		0	1487	
Reference Time A (s)	172.5	28.2		67.8	25.6		0.0	20.7		0.0	16.5	
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		172.5			67.8			20.7			16.5	
Adj Reference Time (s)		176.5			71.8			24.7			20.5	
Split Option												
Ref Time Combined (s)	11.5	28.2		4.5	25.6		0.0	14.3		0.0	13.6	
Ref Time Seperate (s)	11.5	23.6		4.5	25.6		5.6	6.7		4.2	5.8	
Reference Time (s)	28.2	28.2		25.6	25.6		14.3	14.3		13.6	13.6	
Adj Reference Time (s)	32.2	32.2		29.6	29.6		18.3	18.3		17.6	17.6	
Summary												
	EB WB		NB SB		Combined							
Protected Option (s)	45.1		NA									
Permitted Option (s)	176.5		24.7									
Split Option (s)	61.8		36.0									
Minimum (s)	45.1		24.7		69.8							
Right Turns												
	WBR											
Adj Reference Time (s)	11.1											
Cross Thru Ref Time (s)	18.3											
Oncoming Left Ref Time (s)	15.5											
Combined (s)	45.0											
Intersection Summary												
Intersection Capacity Utilization	58.2%		ICU Level of Service		B							
Reference Times and Phasing Options do not represent an optimized timing plan.												

---

**ANEJO 3**

**ANALISIS DEL TRANSITO 2009**

**SIN PROYECTO**

---

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	0.91	0.91	1.00	1.00	0.95		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3579	1601	1628	3365	1601	1789	3331		1789	1839	
Flt Permitted	0.95	1.00	1.00	0.95	0.60	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1789	3579	1601	1628	2058	1601	1789	3331		1789	1839	
Volume (vph)	104	747	74	660	547	382	31	255	218	251	295	55
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%
Adj. Flow (vph)	112	801	79	708	587	410	33	274	234	269	317	59
RTOR Reduction (vph)	0	0	49	0	0	209	0	130	0	0	5	0
Lane Group Flow (vph)	112	801	30	354	941	201	33	378	0	269	371	0
Turn Type	Prot		Perm	Prot		Perm	Split			Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2			6						
Actuated Green, G (s)	9.1	33.4	33.4	27.7	52.0	52.0	15.4	15.4		25.8	25.8	
Effective Green, g (s)	9.1	33.4	33.4	27.7	52.0	52.0	15.4	15.4		25.8	25.8	
Actuated g/C Ratio	0.08	0.28	0.28	0.23	0.44	0.44	0.13	0.13		0.22	0.22	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	138	1010	452	381	1211	704	233	434		390	401	
v/s Ratio Prot	0.06	c0.22		c0.22	0.18		0.02	c0.11		0.15	c0.20	
v/s Ratio Perm			0.02		c0.16	0.13						
v/c Ratio	0.81	0.79	0.07	0.93	0.89dl	0.29	0.14	0.87		0.69	0.92	
Uniform Delay, d1	53.8	39.3	31.1	44.3	28.2	21.2	45.6	50.5		42.6	45.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	29.1	6.4	0.3	28.5	3.2	1.0	0.3	16.7		5.0	26.7	
Delay (s)	82.9	45.6	31.3	72.9	31.4	22.3	45.9	67.2		47.6	72.0	
Level of Service	F	D	C	E	C	C	D	E		D	E	
Approach Delay (s)		48.7			37.8			65.9			61.8	
Approach LOS		D			D			E			E	

Intersection Summary

HCM Average Control Delay	48.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	118.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Intersection Capacity Utilization

2: PR-54 & PR-3

C:\PR-54\PR-54 sin proyecto año 2009(1.03) AM.sy7

12/21/2008

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	107	769	76	680	563	393	32	263	225	259	304	57
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120											
Volume Combined (vph)	107	769	76	0	1243	393	32	487	0	259	361	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	0.97	0.85	0.95	0.93	0.85	0.95	0.98	0.85
Saturated Flow (vph)	1805	3618	1615	0	5278	1615	1805	3368	0	1805	1855	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00				0.00				0.00		0.00	
Protected Option Allowed	No				No				Yes		Yes	
Reference Time (s)			5.7				29.2		2.1		17.4	
Adj Reference Time (s)			9.7				33.2		8.0		21.4	
Permitted Option												
Adj Saturation A (vph)	120	1809			0	176			120	1684	120	1855
Reference Time A (s)	106.8	25.5			0.0	463.7			31.8	17.4	257.8	23.3
Adj Saturation B (vph)	NA	NA			NA	NA			NA	NA	NA	NA
Reference Time B (s)	NA	NA			NA	NA			NA	NA	NA	NA
Reference Time (s)	106.8				463.7				31.8		257.8	
Adj Reference Time (s)	110.8				467.7				35.8		261.8	
Split Option												
Ref Time Combined (s)	7.1	25.5			0.0	28.3			2.1	17.4	17.2	23.3
Ref Time Seperate (s)	7.1	25.5			22.6	18.7			2.1	9.4	17.2	19.7
Reference Time (s)	25.5	25.5			28.3	28.3			17.4	17.4	23.3	23.3
Adj Reference Time (s)	29.5	29.5			32.3	32.3			21.4	21.4	27.3	27.3
Summary												
	NW SE		NE SW		Combined							
Protected Option (s)	NA		42.5									
Permitted Option (s)	467.7		261.8									
Split Option (s)	61.8		48.7									
Minimum (s)	61.8		42.5		104.3							
Right Turns												
	SER		NWR									
Adj Reference Time (s)	9.7		33.2									
Cross Thru Ref Time (s)	27.3		21.4									
Oncoming Left Ref Time (s)	32.3		29.5									
Combined (s)	69.2		84.1									
Intersection Summary												
Intersection Capacity Utilization	86.9%		ICU Level of Service		E							
Reference Times and Phasing Options do not represent an optimized timing plan.												

HCM Signalized Intersection Capacity Analysis

6: PR-54 & Ave. Centro de Convenciones

C:\PR-54\PR-54 sin proyecto año 2009(1.03) AM.sy7

12/21/2008

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
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		0.95			0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.88			0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			0.98	
Satd. Flow (prot)	1789	3579	1601	1789	3579	1601		3140			3285	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00			0.98	
Satd. Flow (perm)	1789	3579	1601	1789	3579	1601		3140			3285	
Volume (vph)	210	995	36	198	1025	276	33	107	569	153	118	225
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%
Adj. Flow (vph)	225	1068	39	212	1100	296	35	115	610	164	127	241
RTOR Reduction (vph)	0	0	22	0	0	130	0	285	0	0	134	0
Lane Group Flow (vph)	225	1068	17	212	1100	166	0	475	0	0	398	0
Turn Type	Prot		Perm	Prot		Perm	Split				Split	
Protected Phases	5	2		1	6		8	8			4	4
Permitted Phases			2			6						
Actuated Green, G (s)	15.8	41.2	41.2	14.9	40.3	40.3		19.7			18.8	
Effective Green, g (s)	15.8	41.2	41.2	14.9	40.3	40.3		19.7			18.8	
Actuated g/C Ratio	0.14	0.37	0.37	0.13	0.36	0.36		0.18			0.17	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	256	1333	596	241	1304	583		559			558	
v/s Ratio Prot	c0.13	0.30		0.12	c0.31			c0.15			c0.12	
v/s Ratio Perm			0.01			0.10						
v/c Ratio	0.88	0.80	0.03	0.88	0.84	0.28		1.06dr			0.71	
Uniform Delay, d1	46.5	31.0	22.0	47.0	32.3	24.9		44.0			43.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d2	27.0	5.1	0.1	28.4	6.8	1.2		11.5			4.3	
Delay (s)	73.5	36.2	22.1	75.3	39.0	26.1		55.6			47.7	
Level of Service	E	D	C	E	D	C		E			D	
Approach Delay (s)		42.1			41.5			55.6			47.7	
Approach LOS		D			D			E			D	

Intersection Summary

HCM Average Control Delay	45.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	110.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.9%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Intersection Capacity Utilization

6: PR-54 & Ave. Centro de Convenciones

C:\PR-54\PR-54 sin proyecto año 2009(1.03) AM.sy7

12/21/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	216	1025	37	204	1056	284	34	110	586	158	122	232
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120											
Volume Combined (vph)	216	1025	37	204	1056	284	0	730	0	0	511	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.88	0.85	0.95	0.92	0.85
Saturated Flow (vph)	1805	3618	1615	1805	3618	1615	0	3175	0	0	3319	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00				0.00				0.00		0.00	
Protected Option Allowed	Yes				Yes				No		No	
Reference Time (s)	14.4	34.0	2.8	13.6	35.0	21.1			0.0			0.0
Adj Reference Time (s)	18.4	38.0	8.0	17.6	39.0	25.1			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	120	1809		120	1809		0	589		0	111	
Reference Time A (s)	215.7	34.0		203.4	35.0		0.0	60.5		0.0	170.9	
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		215.7			203.4			60.5			170.9	
Adj Reference Time (s)		219.7			207.4			64.5			174.9	
Split Option												
Ref Time Combined (s)	14.4	34.0		13.6	35.0		0.0	27.6		0.0	18.5	
Ref Time Separate (s)	14.4	34.0		13.6	35.0		2.3	4.2		10.5	4.5	
Reference Time (s)	34.0	34.0		35.0	35.0		27.6	27.6		18.5	18.5	
Adj Reference Time (s)	38.0	38.0		39.0	39.0		31.6	31.6		22.5	22.5	
Summary												
	EB WB		NB SB		Combined							
Protected Option (s)	57.4		NA									
Permitted Option (s)	219.7		174.9									
Split Option (s)	77.0		54.1									
Minimum (s)	57.4		54.1		111.5							
Right Turns												
	EBR		WBR									
Adj Reference Time (s)	8.0		25.1									
Cross Thru Ref Time (s)	22.5		31.6									
Oncoming Left Ref Time (s)	17.6		18.4									
Combined (s)	48.0		75.1									
Intersection Summary												
Intersection Capacity Utilization	92.9%		ICU Level of Service		F							
Reference Times and Phasing Options do not represent an optimized timing plan.												

												
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
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0			4.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	0.91	0.91				0.95
Flt	1.00	0.95		1.00	1.00	0.85	1.00	0.96				0.95
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.99				0.99
Satd. Flow (prot)	1789	4892		1789	3579	1601	1628	3239				3375
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.99				0.99
Satd. Flow (perm)	1789	4892		1789	3579	1601	1628	3239				3375
Volume (vph)	186	1194	570	317	1066	46	348	194	123	135	272	181
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%
Adj. Flow (vph)	200	1281	612	340	1144	49	373	208	132	145	292	194
RTOR Reduction (vph)	0	70	0	0	0	21	0	29	0	0	44	0
Lane Group Flow (vph)	200	1823	0	340	1144	28	229	455	0	0	587	0
Turn Type	Prot		Prot		Perm	Split		Split				
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases					6							
Actuated Green, G (s)	14.0	39.1		18.0	43.1	43.1	16.0	16.0			25.1	
Effective Green, g (s)	14.0	39.1		18.0	43.1	43.1	16.0	16.0			25.1	
Actuated g/C Ratio	0.12	0.34		0.16	0.38	0.38	0.14	0.14			0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	219	1675		282	1351	604	228	454			742	
v/s Ratio Prot	0.11	c0.37		c0.19	c0.32		c0.14	0.14			c0.17	
v/s Ratio Perm					0.02							
v/c Ratio	0.91	1.09		1.21	0.85	0.05	1.00	1.00			0.79	
Uniform Delay, d1	49.5	37.6		48.1	32.5	22.5	49.1	49.1			42.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	37.7	50.3		121.1	6.7	0.1	60.7	42.7			5.7	
Delay (s)	87.2	87.9		169.2	39.2	22.7	109.8	91.8			47.8	
Level of Service	F	F		F	D	C	F	F			D	
Approach Delay (s)	87.8				67.5		97.6				47.8	
Approach LOS	F				E		F				D	

Intersection Summary

HCM Average Control Delay	77.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	114.2	Sum of lost time (s)	20.0
Intersection Capacity Utilization	99.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Intersection Capacity Utilization

12: PR-54 & Ave. Marcelino Blondet

C:\PR-54\PR-54 sin proyecto año 2009(1.03)\_AM.sy7

12/21/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	192	1230	587	327	1098	47	358	200	127	139	280	186
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120											
Volume Combined (vph)	192	1817	0	327	1098	47	0	685	0	0	606	0
Lane Utilization Factor	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.95	0.85	0.95	1.00	0.85	0.95	0.95	0.85	0.95	0.94	0.85
Saturated Flow (vph)	1805	4925	0	1805	3618	1615	0	5138	0	0	3411	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00				0.00		0.00		0.00	
Protected Option Allowed	Yes		Yes				No				No	
Reference Time (s)	12.7	44.3	0.0	21.7	36.4	3.5			0.0			0.0
Adj Reference Time (s)	16.7	48.3	0.0	25.7	40.4	8.0			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	120	1642		120	1809		0	171		0	114	
Reference Time A (s)	191.0	44.3		325.6	36.4		0.0	251.2		0.0	146.8	
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		191.0			325.6			251.2			146.8	
Adj Reference Time (s)		195.0			329.6			255.2			150.8	
Split Option												
Ref Time Combined (s)	12.7	44.3		21.7	36.4		0.0	16.0		0.0	21.3	
Ref Time Seperate (s)	12.7	30.0		21.7	36.4		11.9	7.0		9.2	9.9	
Reference Time (s)	44.3	44.3		36.4	36.4		16.0	16.0		21.3	21.3	
Adj Reference Time (s)	48.3	48.3		40.4	40.4		20.0	20.0		25.3	25.3	
Summary												
	EB WB		NB SB		Combined							
Protected Option (s)	74.0		NA									
Permitted Option (s)	329.6		255.2									
Split Option (s)	88.7		45.3									
Minimum (s)	74.0		45.3		119.3							
Right Turns												
	WBR											
Adj Reference Time (s)	8.0											
Cross Thru Ref Time (s)	20.0											
Oncoming Left Ref Time (s)	16.7											
Combined (s)	44.7											
Intersection Summary												
Intersection Capacity Utilization	99.4%		ICU Level of Service		F							
Reference Times and Phasing Options do not represent an optimized timing plan.												

												
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
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		1.00	0.95	1.00		1.00				1.00
Frt	1.00	0.97		1.00	1.00	0.85		0.98				0.98
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98				0.99
Satd. Flow (prot)	1789	4971		1789	3579	1601		1808				1827
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.71				0.77
Satd. Flow (perm)	1789	4971		1789	3579	1601		1314				1432
Volume (vph)	199	795	226	195	1370	283	136	107	34	74	152	31
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%
Adj. Flow (vph)	214	853	242	209	1470	304	146	115	36	79	163	33
RTOR Reduction (vph)	0	40	0	0	0	130	0	4	0	0	4	0
Lane Group Flow (vph)	214	1055	0	209	1470	174	0	293	0	0	271	0
Turn Type	Prot			Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8				4
Permitted Phases						6	8			4		
Actuated Green, G (s)	15.8	41.7		18.1	44.0	44.0		24.0				20.0
Effective Green, g (s)	15.8	41.7		18.1	44.0	44.0		24.0				20.0
Actuated g/C Ratio	0.13	0.35		0.15	0.37	0.37		0.20				0.17
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0				4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0				3.0
Lane Grp Cap (vph)	236	1730		270	1314	588		263				239
v/s Ratio Prot	c0.12	0.21		0.12	c0.41							
v/s Ratio Perm						0.11		c0.22				c0.19
v/c Ratio	0.91	0.61		0.77	1.12	0.30		1.11				1.13
Uniform Delay, d1	51.3	32.3		48.9	37.9	26.9		47.9				49.9
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00				1.00
Incremental Delay, d2	34.3	1.6		12.9	64.2	1.3		89.6				98.8
Delay (s)	85.6	33.9		61.8	102.1	28.2		137.5				148.7
Level of Service	F	C		E	F	C		F				F
Approach Delay (s)		42.4			86.5			137.5				148.7
Approach LOS		D			F			F				F

Intersection Summary

HCM Average Control Delay	79.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	119.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection Capacity Utilization

7: PR-54 & PR-744

C:\PR-54\PR-54 sin proyecto año 2009(1.03)\_AM.sy7

12/21/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	205	819	233	201	1411	291	140	110	35	76	157	32
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120											
Volume Combined (vph)	205	1052	0	201	1411	291	0	285	0	0	265	0
Lane Utilization Factor	1.00	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.97	0.85	0.95	1.00	0.85	0.95	0.96	0.85	0.95	0.97	0.85
Saturated Flow (vph)	1805	5004	0	1805	3618	1615	0	1819	0	0	1839	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00				0.00				0.00		0.00	
Protected Option Allowed	Yes				Yes				No		No	
Reference Time (s)	13.6	25.2	0.0	13.4	46.8	21.7			0.0			0.0
Adj Reference Time (s)	17.6	29.2	0.0	17.4	50.8	25.7			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	120	1668		120	1809		0	1069		0	1683	
Reference Time A (s)	204.4	25.2		200.3	46.8		0.0	32.0		0.0	18.9	
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		204.4			200.3			32.0			18.9	
Adj Reference Time (s)		208.4			204.3			36.0			22.9	
Split Option												
Ref Time Combined (s)	13.6	25.2		13.4	46.8		0.0	18.8		0.0	17.3	
Ref Time Seperate (s)	13.6	19.6		13.4	46.8		9.3	7.2		5.1	10.1	
Reference Time (s)	25.2	25.2		46.8	46.8		18.8	18.8		17.3	17.3	
Adj Reference Time (s)	29.2	29.2		50.8	50.8		22.8	22.8		21.3	21.3	
Summary												
	EB WB		NB SB		Combined							
Protected Option (s)	68.4		NA									
Permitted Option (s)	208.4		36.0									
Split Option (s)	80.0		44.1									
Minimum (s)	68.4		36.0		104.5							
Right Turns												
	WBR											
Adj Reference Time (s)	25.7											
Cross Thru Ref Time (s)	22.8											
Oncoming Left Ref Time (s)	17.6											
Combined (s)	66.1											
Intersection Summary												
Intersection Capacity Utilization	87.1%		ICU Level of Service		E							
Reference Times and Phasing Options do not represent an optimized timing plan.												

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.91	0.91	1.00	1.00	0.95		1.00	1.00	
Frnt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3579	1601	1628	3370	1601	1789	3325		1789	1791	
Flt Permitted	0.95	1.00	1.00	0.95	0.59	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1789	3579	1601	1628	2030	1601	1789	3325		1789	1791	
Volume (vph)	102	545	75	461	435	435	29	160	144	235	176	86
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor (vph)	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%
Adj. Flow (vph)	113	604	83	511	482	482	32	177	159	260	195	95
RTOR Reduction (vph)	0	0	58	0	0	259	0	137	0	0	22	0
Lane Group Flow (vph)	113	604	25	256	737	223	32	199	0	260	268	0
Turn Type	Prot		Perm	Prot		Perm	Split			Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2			6						
Actuated Green, G (s)	5.1	21.4	21.4	9.1	25.4	25.4	9.3	9.3		16.1	16.1	
Effective Green, g (s)	5.1	21.4	21.4	9.1	25.4	25.4	9.3	9.3		16.1	16.1	
Actuated g/C Ratio	0.07	0.30	0.30	0.13	0.35	0.35	0.13	0.13		0.22	0.22	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	127	1065	477	206	887	566	231	430		401	401	
v/s Ratio Prot	c0.06	0.17		c0.16	0.11		0.02	c0.06		0.15	c0.15	
v/s Ratio Perm			0.02		c0.19	0.14						
v/c Ratio	0.89	0.57	0.05	1.24	1.18dl	0.39	0.14	0.46		0.65	0.67	
Uniform Delay, d1	33.1	21.3	18.0	31.4	21.3	17.5	27.7	29.0		25.3	25.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	47.3	2.2	0.2	143.3	6.7	2.0	0.3	0.8		3.6	4.2	
Delay (s)	80.4	23.5	18.2	174.7	28.0	19.5	28.0	29.8		28.9	29.7	
Level of Service	F	C	B	F	C	B	C	C		C	C	
Approach Delay (s)		31.0			50.7			29.6			29.3	
Approach LOS		C			D			C			C	

Intersection Summary

HCM Average Control Delay	39.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	71.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Intersection Capacity Utilization

2: PR-54 & PR-3

C:\PR-54\PR-54 sin proyecto año 2009(1.03) PM.sy7

12/21/2008

													
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations													
Volume (vph)	105	561	77	475	448	448	30	165	148	242	181	89	
Pedestrians													
Ped Button													
Pedestrian Timing (s)													
Free Right			No			No			No			No	
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120												
Volume Combined (vph)	105	561	77	0	923	448	30	313	0	242	270	0	
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	0.97	0.85	0.95	0.93	0.85	0.95	0.95	0.85	0.85
Saturated Flow (vph)	1805	3618	1615	0	5287	1615	1805	3361	0	1805	1806	0	
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00		0.00
Protected Option Allowed		No			No			Yes			Yes		Yes
Reference Time (s)			5.7			33.3	2.0	11.2	0.0	16.1	17.9	0.0	
Adj Reference Time (s)			9.7			37.3	8.0	15.2	0.0	20.1	21.9	0.0	
Permitted Option													
Adj Saturation A (vph)	120	1809		0	176		120	1680		120	1806		
Reference Time A (s)	104.8	18.6		0.0	323.3		29.8	11.2		241.4	17.9		
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA		
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA		
Reference Time (s)		104.8			323.3			29.8			241.4		
Adj Reference Time (s)		108.8			327.3			33.8			245.4		
Split Option													
Ref Time Combined (s)	7.0	18.6		0.0	20.9		2.0	11.2		16.1	17.9		
Ref Time Separate (s)	7.0	18.6		15.8	14.9		2.0	5.9		16.1	12.0		
Reference Time (s)	18.6	18.6		20.9	20.9		11.2	11.2		17.9	17.9		
Adj Reference Time (s)	22.6	22.6		24.9	24.9		15.2	15.2		21.9	21.9		
Summary													
		NW SE		NE SW		Combined							
Protected Option (s)		NA		35.3									
Permitted Option (s)		327.3		245.4									
Split Option (s)		47.6		37.1									
Minimum (s)		47.6		35.3		82.8							
Right Turns													
		SER		NWR									
Adj Reference Time (s)		9.7		37.3									
Cross Thru Ref Time (s)		21.9		15.2									
Oncoming Left Ref Time (s)		24.9		22.6									
Combined (s)		56.6		75.1									
Intersection Summary													
Intersection Capacity Utilization		69.0%		ICU Level of Service		C							
Reference Times and Phasing Options do not represent an optimized timing plan.													

HCM Signalized Intersection Capacity Analysis

6: PR-54 & Ave. Centro de Convenciones

C:\PR-54\PR-54 sin proyecto año 2009(1.03)\_PM.sy7

12/21/2008

												
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
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		0.95			0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.88			0.93	0.93
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			0.98	0.98
Satd. Flow (prot)	1789	3579	1601	1789	3579	1601		3154			3277	3277
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00			0.98	0.98
Satd. Flow (perm)	1789	3579	1601	1789	3579	1601		3154			3277	3277
Volume (vph)	140	845	34	279	931	148	37	85	408	214	108	264
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor (vph)	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%
Adj. Flow (vph)	155	936	38	309	1031	164	41	94	452	237	120	292
RTOR Reduction (vph)	0	0	24	0	0	90	0	322	0	0	134	0
Lane Group Flow (vph)	155	936	14	309	1031	74	0	265	0	0	515	0
Turn Type	Prot		Perm	Prot		Perm	Split				Split	
Protected Phases	5	2		1	6		8	8			4	4
Permitted Phases			2			6						
Actuated Green, G (s)	12.5	34.3	34.3	21.2	43.0	43.0		12.8			22.6	22.6
Effective Green, g (s)	12.5	34.3	34.3	21.2	43.0	43.0		12.8			22.6	22.6
Actuated g/C Ratio	0.12	0.32	0.32	0.20	0.40	0.40		0.12			0.21	0.21
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	209	1148	514	355	1440	644		378			693	693
v/s Ratio Prot	0.09	c0.26		c0.17	0.29			c0.08			c0.16	c0.16
v/s Ratio Perm			0.01			0.05						
v/c Ratio	0.74	0.82	0.03	0.87	0.72	0.11		0.87dr			0.74	0.74
Uniform Delay, d1	45.6	33.4	24.9	41.5	26.8	20.0		45.2			39.4	39.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	13.2	6.4	0.1	20.1	3.1	0.4		5.8			4.3	4.3
Delay (s)	58.9	39.8	25.0	61.6	29.9	20.4		51.0			43.7	43.7
Level of Service	E	D	C	E	C	C		D			D	D
Approach Delay (s)		41.9			35.4			51.0			43.7	43.7
Approach LOS		D			D			D			D	D

Intersection Summary

HCM Average Control Delay	41.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	106.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Intersection Capacity Utilization

6: PR-54 & Ave. Centro de Convenciones

C:\PR-54\PR-54 sin proyecto año 2009(1.03) PM.sy7

12/21/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	144	870	35	287	959	152	38	88	420	220	111	272
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120											
Volume Combined (vph)	144	870	35	287	959	152	0	546	0	0	604	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.88	0.85	0.95	0.92	0.85
Saturated Flow (vph)	1805	3618	1615	1805	3618	1615	0	3189	0	0	3312	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00				0.00				0.00		0.00	
Protected Option Allowed	Yes				Yes				No		No	
Reference Time (s)	9.6	28.9	2.6	19.1	31.8	11.3			0.0			0.0
Adj Reference Time (s)	13.6	32.9	8.0	23.1	35.8	15.3			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	120	1809		120	1809		0	405		0	110	
Reference Time A (s)	143.8	28.9		286.6	31.8		0.0	58.3		0.0	239.6	
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		143.8			286.6			58.3			239.6	
Adj Reference Time (s)		147.8			290.6			62.3			243.6	
Split Option												
Ref Time Combined (s)	9.6	28.9		19.1	31.8		0.0	20.5		0.0	21.9	
Ref Time Seperate (s)	9.6	28.9		19.1	31.8		2.5	3.3		14.7	4.1	
Reference Time (s)	28.9	28.9		31.8	31.8		20.5	20.5		21.9	21.9	
Adj Reference Time (s)	32.9	32.9		35.8	35.8		24.5	24.5		25.9	25.9	
Summary												
	EB WB		NB SB		Combined							
Protected Option (s)	56.0		NA									
Permitted Option (s)	290.6		243.6									
Split Option (s)	68.7		50.4									
Minimum (s)	56.0		50.4		106.4							
Right Turns												
	EBR		WBR									
Adj Reference Time (s)	8.0		15.3									
Cross Thru Ref Time (s)	25.9		24.5									
Oncoming Left Ref Time (s)	23.1		13.6									
Combined (s)	57.0		53.5									
Intersection Summary												
Intersection Capacity Utilization	88.7%		ICU Level of Service		E							

Reference Times and Phasing Options do not represent an optimized timing plan.

												
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
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		1.00	0.91		0.91	0.91			0.95	
Flt	1.00	0.95		1.00	1.00		1.00	0.93			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.98	
Satd. Flow (prot)	1789	4888		1789	5120		1628	3159			3414	
Flt Permitted	0.95	1.00		0.95	1.00		0.51	0.73			0.59	
Satd. Flow (perm)	1789	4888		1789	5120		872	2333			2048	
Volume (vph)	131	1108	543	94	716	21	294	149	230	127	173	74
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor (vph)	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%
Adj. Flow (vph)	145	1227	601	104	793	23	326	165	255	141	192	82
RTOR Reduction (vph)	0	73	0	0	3	0	0	118	0	0	18	0
Lane Group Flow (vph)	145	1755	0	104	813	0	163	465	0	0	397	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	14.0	47.0		8.0	41.0		23.6	23.6			24.5	
Effective Green, g (s)	14.0	47.0		8.0	41.0		23.6	23.6			24.5	
Actuated g/C Ratio	0.12	0.39		0.07	0.34		0.20	0.20			0.21	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	210	1929		120	1763		173	462			421	
v/s Ratio Prot	0.08	c0.36		c0.06	0.16							
v/s Ratio Perm							0.19	c0.20			c0.19	
v/c Ratio	0.69	0.91		0.87	0.46		0.94	1.01			1.76dl	
Uniform Delay, d1	50.5	34.0		55.0	30.4		47.1	47.7			46.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	9.4	7.9		43.8	0.9		51.5	43.6			29.5	
Delay (s)	59.9	41.9		98.8	31.3		98.5	91.3			76.1	
Level of Service	E	D		F	C		F	F			E	
Approach Delay (s)		43.2			38.9			92.9			76.1	
Approach LOS		D			D			F			E	

Intersection Summary

HCM Average Control Delay	54.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	119.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group



												
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
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		1.00	0.95	1.00		1.00				1.00
Fr <sub>t</sub>	1.00	0.98		1.00	1.00	0.85		0.98				0.96
Fl <sub>t</sub> Protected	0.95	1.00		0.95	1.00	1.00		0.98				0.98
Satd. Flow (prot)	1789	5016		1789	3579	1601		1813				1788
Fl <sub>t</sub> Permitted	0.95	1.00		0.95	1.00	1.00		0.78				0.69
Satd. Flow (perm)	1789	5016		1789	3579	1601		1435				1260
Volume (vph)	173	995	193	68	772	96	84	103	31	63	87	54
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor (vph)	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%
Adj. Flow (vph)	192	1102	214	75	855	106	93	114	34	70	96	60
RTOR Reduction (vph)	0	22	0	0	0	71	0	5	0	0	11	0
Lane Group Flow (vph)	192	1294	0	75	855	35	0	236	0	0	215	0
Turn Type	Prot			Prot		Perm	Perm				Perm	
Protected Phases	5	2		1	6			8				4
Permitted Phases						6	8			4		
Actuated Green, G (s)	14.9	43.9		7.7	36.7	36.7		21.2				21.9
Effective Green, g (s)	14.9	43.9		7.7	36.7	36.7		21.2				21.9
Actuated g/C Ratio	0.13	0.40		0.07	0.33	0.33		0.19				0.20
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0				4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0				3.0
Lane Grp Cap (vph)	241	1989		124	1187	531		275				249
v/s Ratio Prot	c0.11	0.26		0.04	c0.24							
v/s Ratio Perm						0.02		c0.16				c0.17
v/c Ratio	0.80	0.65		0.60	0.72	0.07		0.86				0.86
Uniform Delay, d <sub>1</sub>	46.4	27.2		50.0	32.5	25.3		43.3				42.9
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00				1.00
Incremental Delay, d <sub>2</sub>	16.5	1.7		8.1	3.8	0.2		22.4				25.1
Delay (s)	62.9	28.8		58.1	36.3	25.5		65.7				68.0
Level of Service	E	C		E	D	C		E				E
Approach Delay (s)		33.2			36.8			65.7				68.0
Approach LOS		C			D			E				E

Intersection Summary

HCM Average Control Delay	39.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	110.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection Capacity Utilization

7: PR-54 & PR-744

C:\PR-54\PR-54 sin proyecto año 2009(1.03) PM.sy7

12/21/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	178	1025	199	70	795	99	87	106	32	65	90	56
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120											
Volume Combined (vph)	178	1224	0	70	795	99	0	225	0	0	210	0
Lane Utilization Factor	1.00	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	1.00	0.85	0.95	0.96	0.85	0.95	0.95	0.85
Saturated Flow (vph)	1805	5049	0	1805	3618	1615	0	1824	0	0	1796	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		Yes			Yes			No			No	
Reference Time (s)	11.8	29.1	0.0	4.7	26.4	7.3			0.0			0.0
Adj Reference Time (s)	15.8	33.1	0.0	8.7	30.4	11.3			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	120	1683		120	1809		0	1263		0	1487	
Reference Time A (s)	177.7	29.1		69.8	26.4		0.0	21.3		0.0	17.0	
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		177.7			69.8			21.3			17.0	
Adj Reference Time (s)		181.7			73.8			25.3			21.0	
Split Option												
Ref Time Combined (s)	11.8	29.1		4.7	26.4		0.0	14.8		0.0	14.0	
Ref Time Seperate (s)	11.8	24.4		4.7	26.4		5.8	6.9		4.3	6.0	
Reference Time (s)	29.1	29.1		26.4	26.4		14.8	14.8		14.0	14.0	
Adj Reference Time (s)	33.1	33.1		30.4	30.4		18.8	18.8		18.0	18.0	
Summary												
	EB WB		NB SB		Combined							
Protected Option (s)	46.2		NA									
Permitted Option (s)	181.7		25.3									
Split Option (s)	63.5		36.8									
Minimum (s)	46.2		25.3		71.6							
Right Turns												
	WBR											
Adj Reference Time (s)	11.3											
Cross Thru Ref Time (s)	18.8											
Oncoming Left Ref Time (s)	15.8											
Combined (s)	46.0											
Intersection Summary												
Intersection Capacity Utilization	59.6%		ICU Level of Service		B							
Reference Times and Phasing Options do not represent an optimized timing plan.												

---

**ANEJO 4**

**ANALISIS DEL TRANSITO 2009**

**CON PROYECTO**

---

													
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.91	0.91	1.00	1.00	0.95				0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93				0.99	0.99
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00				0.98	0.98
Satd. Flow (prot)	1789	3579	1601	1628	3365	1601	1789	3331				3457	3457
Flt Permitted	0.95	1.00	1.00	0.95	0.62	1.00	0.95	1.00				0.98	0.98
Satd. Flow (perm)	1789	3579	1601	1628	2110	1601	1789	3331				3457	3457
Volume (vph)	104	751	74	671	557	388	31	255	219	252	295	55	55
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%
Adj. Flow (vph)	112	806	79	720	598	416	33	274	235	270	317	59	59
RTOR Reduction (vph)	0	0	48	0	0	199	0	130	0	0	7	0	0
Lane Group Flow (vph)	112	806	31	360	958	217	33	379	0	0	639	0	0
Turn Type	Prot		Perm	Prot		Perm	Split				Split		
Protected Phases	5	2		1	6		8	8			4	4	
Permitted Phases			2			6							
Actuated Green, G (s)	8.0	27.1	27.1	26.1	45.2	45.2	15.2	15.2			25.8	25.8	
Effective Green, g (s)	8.0	27.1	27.1	26.1	45.2	45.2	15.2	15.2			25.8	25.8	
Actuated g/C Ratio	0.07	0.25	0.25	0.24	0.41	0.41	0.14	0.14			0.23	0.23	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0	
Lane Grp Cap (vph)	130	880	394	386	1163	657	247	459			809	809	
v/s Ratio Prot	0.06	c0.23		c0.22	0.20		0.02	c0.11			c0.18	c0.18	
v/s Ratio Perm			0.02		0.14	0.14							
v/c Ratio	0.86	0.92	0.08	0.93	0.82	0.33	0.13	0.83			0.79	0.79	
Uniform Delay, d1	50.6	40.4	31.9	41.2	29.0	22.2	41.7	46.2			39.7	39.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	
Incremental Delay, d2	40.5	15.7	0.4	29.2	4.9	1.3	0.2	11.5			5.2	5.2	
Delay (s)	91.1	56.2	32.3	70.4	33.8	23.5	42.0	57.7			44.8	44.8	
Level of Service	F	E	C	E	C	C	D	E			D	D	
Approach Delay (s)		58.2			38.9			56.8			44.8	44.8	
Approach LOS		E			D			E			D	D	

Intersection Summary

HCM Average Control Delay	47.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	110.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection Capacity Utilization

2: PR-54 & PR-3

C:\PR-54\PR-54 con proyecto año 2009(1.03) AM.sy7

12/21/2008

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	107	774	76	691	574	400	32	263	226	260	304	57
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120											
Volume Combined (vph)	107	774	76	0	1265	400	32	488	0	0	620	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	0.97	0.85	0.95	0.93	0.85	0.95	0.97	0.85
Saturated Flow (vph)	1805	3618	1615	0	5278	1615	1805	3367	0	0	3493	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			5.7			29.7			0.0			0.0
Adj Reference Time (s)			9.7			33.7			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	120	1809		0	176		120	1683		0	116	
Reference Time A (s)	106.8	25.7		0.0	471.4		31.8	17.4		0.0	267.5	
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		106.8			471.4			31.8			267.5	
Adj Reference Time (s)		110.8			475.4			35.8			271.5	
Split Option												
Ref Time Combined (s)	7.1	25.7		0.0	28.8		2.1	17.4		0.0	21.3	
Ref Time Seperate (s)	7.1	25.7		23.0	19.0		2.1	9.4		17.3	10.3	
Reference Time (s)	25.7	25.7		28.8	28.8		17.4	17.4		21.3	21.3	
Adj Reference Time (s)	29.7	29.7		32.8	32.8		21.4	21.4		25.3	25.3	
Summary		NW SE		NE SW		Combined						
Protected Option (s)		NA		NA								
Permitted Option (s)		475.4		271.5								
Split Option (s)		62.4		46.7								
Minimum (s)		62.4		46.7		109.1						
Right Turns		SER		NWR								
Adj Reference Time (s)		9.7		33.7								
Cross Thru Ref Time (s)		25.3		21.4								
Oncoming Left Ref Time (s)		32.8		29.7								
Combined (s)		67.7		84.8								
Intersection Summary												
Intersection Capacity Utilization		90.9%		ICU Level of Service		E						
Reference Times and Phasing Options do not represent an optimized timing plan.												

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
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		0.95			0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.90			0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			0.99	
Satd. Flow (prot)	1789	3579	1601	1789	3579	1601		3197			3295	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00			0.99	
Satd. Flow (perm)	1789	3579	1601	1789	3579	1601		3197			3295	
Volume (vph)	210	995	42	198	1025	277	60	196	569	153	137	225
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%
Adj. Flow (vph)	225	1068	45	212	1100	297	64	210	610	164	147	241
RTOR Reduction (vph)	0	0	25	0	0	133	0	274	0	0	123	0
Lane Group Flow (vph)	225	1068	20	212	1100	164	0	610	0	0	429	0
Turn Type	Prot		Perm	Prot		Perm	Split				Split	
Protected Phases	5	2		1	6		8	8			4	4
Permitted Phases			2			6						
Actuated Green, G (s)	15.1	37.4	37.4	14.9	37.2	37.2		24.6			19.8	
Effective Green, g (s)	15.1	37.4	37.4	14.9	37.2	37.2		24.6			19.8	
Actuated g/C Ratio	0.13	0.33	0.33	0.13	0.33	0.33		0.22			0.18	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	240	1188	531	237	1181	528		698			579	
v/s Ratio Prot	c0.13	0.30		0.12	c0.31			c0.19			c0.13	
v/s Ratio Perm			0.01			0.10						
v/c Ratio	0.94	0.90	0.04	0.89	0.93	0.31		0.97dr			0.74	
Uniform Delay, d1	48.3	35.9	25.5	48.1	36.5	28.2		42.5			44.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d2	40.8	10.9	0.1	31.8	14.2	1.5		11.7			5.1	
Delay (s)	89.1	46.7	25.6	79.9	50.7	29.7		54.2			49.1	
Level of Service	F	D	C	E	D	C		D			D	
Approach Delay (s)		53.1			50.7			54.2			49.1	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	52.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	112.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Intersection Capacity Utilization

6: PR-54 & Ave. Centro de Convenciones

C:\PR-54\PR-54 con proyecto año 2009(1.03) AM.sy7

12/21/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	216	1025	43	204	1056	285	62	202	586	158	141	232
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right	No			No			No			No		
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120											
Volume Combined (vph)	216	1025	43	204	1056	285	0	850	0	0	530	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.89	0.85	0.95	0.92	0.85
Saturated Flow (vph)	1805	3618	1615	1805	3618	1615	0	3232	0	0	3330	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00				0.00				0.00		0.00	
Protected Option Allowed	Yes			Yes			No			No		
Reference Time (s)	14.4	34.0	3.2	13.6	35.0	21.2			0.0			0.0
Adj Reference Time (s)	18.4	38.0	8.0	17.6	39.0	25.2			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	120	1809		120	1809		0	392		0	111	
Reference Time A (s)	215.7	34.0		203.4	35.0		0.0	92.2		0.0	170.4	
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		215.7			203.4			92.2			170.4	
Adj Reference Time (s)		219.7			207.4			96.2			174.4	
Split Option												
Ref Time Combined (s)	14.4	34.0		13.6	35.0		0.0	31.6		0.0	19.1	
Ref Time Seperate (s)	14.4	34.0		13.6	35.0		4.1	7.5		10.5	5.2	
Reference Time (s)	34.0	34.0		35.0	35.0		31.6	31.6		19.1	19.1	
Adj Reference Time (s)	38.0	38.0		39.0	39.0		35.6	35.6		23.1	23.1	
Summary	EB WB		NB SB		Combined							
Protected Option (s)	57.4		NA									
Permitted Option (s)	219.7		174.4									
Split Option (s)	77.0		58.7									
Minimum (s)	57.4		58.7		116.1							
Right Turns	EBR		WBR									
Adj Reference Time (s)	8.0		25.2									
Cross Thru Ref Time (s)	23.1		35.6									
Oncoming Left Ref Time (s)	17.6		18.4									
Combined (s)	48.7		79.1									
Intersection Summary												
Intersection Capacity Utilization	96.7%		ICU Level of Service		F							
Reference Times and Phasing Options do not represent an optimized timing plan.												

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
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	0.91	0.91			0.95	
Fr't	1.00	0.95		1.00	1.00	0.85	1.00	0.95			0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.99	
Satd. Flow (prot)	1789	4892		1789	3579	1601	1628	3229			3389	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.99	
Satd. Flow (perm)	1789	4892		1789	3579	1601	1628	3229			3389	
Volume (vph)	186	1194	570	368	1066	46	348	355	229	135	316	181
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%	103%
Adj. Flow (vph)	200	1281	612	395	1144	49	373	381	246	145	339	194
RTOR Reduction (vph)	0	72	0	0	0	22	0	58	0	0	36	0
Lane Group Flow (vph)	200	1821	0	395	1144	27	317	625	0	0	642	0
Turn Type	Prot			Prot		Perm	Split				Split	
Protected Phases	5	2		1	6		8	8			4	4
Permitted Phases						6						
Actuated Green, G (s)	16.0	39.0		21.0	44.0	44.0	24.0	24.0			20.0	
Effective Green, g (s)	16.0	39.0		21.0	44.0	44.0	24.0	24.0			20.0	
Actuated g/C Ratio	0.13	0.32		0.18	0.37	0.37	0.20	0.20			0.17	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	239	1590		313	1312	587	326	646			565	
v/s Ratio Prot	0.11	c0.37		c0.22	0.32		c0.19	0.19			c0.19	
v/s Ratio Perm						0.02						
v/c Ratio	0.84	1.15		1.26	0.87	0.05	0.97	0.97			1.14	
Uniform Delay, d1	50.7	40.5		49.5	35.4	24.5	47.7	47.6			50.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	21.7	73.5		141.0	8.2	0.2	42.1	27.3			81.5	
Delay (s)	72.4	114.0		190.5	43.6	24.6	89.8	74.9			131.5	
Level of Service	E	F		F	D	C	F	E			F	
Approach Delay (s)		110.0			79.5			79.6			131.5	
Approach LOS		F			E			E			F	

Intersection Summary

HCM Average Control Delay	98.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	108.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Intersection Capacity Utilization

12: PR-54 & Ave. Marcelino Blondet

C:\PR-54\PR-54 con proyecto año 2009(1.03)\_AM.sy7

12/21/2008

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	192	1230	587	379	1098	47	358	366	236	139	325	186
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120											
Volume Combined (vph)	192	1817	0	379	1098	47	0	960	0	0	651	0
Lane Utilization Factor	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.95	0.85	0.95	1.00	0.85	0.95	0.95	0.85	0.95	0.95	0.85
Saturated Flow (vph)	1805	4925	0	1805	3618	1615	0	5129	0	0	3425	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00				0.00		0.00		0.00	
Protected Option Allowed	Yes		Yes				No		No		No	
Reference Time (s)	12.7	44.3	0.0	25.2	36.4	3.5			0.0			0.0
Adj Reference Time (s)	16.7	48.3	0.0	29.2	40.4	8.0			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	120	1642		120	1809		0	171		0	114	
Reference Time A (s)	191.0	44.3		378.0	36.4		0.0	251.6		0.0	146.1	
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		191.0			378.0			251.6			146.1	
Adj Reference Time (s)		195.0			382.0			255.6			150.1	
Split Option												
Ref Time Combined (s)	12.7	44.3		25.2	36.4		0.0	22.5		0.0	22.8	
Ref Time Seperate (s)	12.7	30.0		25.2	36.4		11.9	12.9		9.2	11.4	
Reference Time (s)	44.3	44.3		36.4	36.4		22.5	22.5		22.8	22.8	
Adj Reference Time (s)	48.3	48.3		40.4	40.4		26.5	26.5		26.8	26.8	
Summary												
	EB WB		NB SB		Combined							
Protected Option (s)	77.5		NA									
Permitted Option (s)	382.0		255.6									
Split Option (s)	88.7		53.3									
Minimum (s)	77.5		53.3		130.7							
Right Turns												
	WBR											
Adj Reference Time (s)	8.0											
Cross Thru Ref Time (s)	26.5											
Oncoming Left Ref Time (s)	16.7											
Combined (s)	51.2											
Intersection Summary												
Intersection Capacity Utilization	108.9%		ICU Level of Service		G							
Reference Times and Phasing Options do not represent an optimized timing plan.												