INTERSECTION CAPACITY UTILIZATION WORKSHEET

INTERSECTION: N/S: N Hill E/W: New York
DATE OF COUNTS: 05/27/03 **Notes:** Maranatha HS at Carey Intl Univ
ANALYSIS PERIOD: Midday Peak 520 Students, Approved Routing Plan

		Existing Conditions				Existing Plus Project			
Movemnt	No Lanes	Cap.	Vol.	Midday V/C	Crit. Mvmt.	PROJ VOL.	Vol.	Midday V/C	Crit Mvmt.
NL	#N/A	#N/A	103	#N/A	0	1	104	#N/A	0
NR	#N/A	#N/A	74	#N/A	0	2	76	#N/A	0
NT	1	1,600	173	0.219	1		173	0.221	1
SL	#N/A	#N/A	14	#N/A	1		14	#N/A	1
SR	#N/A	#N/A	4	#N/A	0		4	#N/A	0
ST	1	1,600	77	0.059	0		77	0.059	0
EL	#N/A	#N/A	10	#N/A	0		10	#N/A	0
ER	#N/A	#N/A	103	#N/A	0	3	106	#N/A	0
ET	1	1,600	460	0.358	1		460	0.360	1
WL	#N/A	#N/A	64	#N/A	1	3	67	#N/A	1
WR	#N/A	#N/A	14	#N/A	0		14	#N/A	0
WT	1	1,600	360	0.274	0		360	0.276	0
		N/S component			0.219		N/S component		0.221
		E/W component			0.358		E/W component		0.360
		Rt.Tn. comp.			0.000		Rt.Tn. comp.		0.000
		Clearance Interval			0.100		Clearance Interval		0.100
		ICU			0.677		ICU		0.681
		LOS			B		LOS		B

Critical movement identified by a 1. Project Impact: 0.004
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION WORKSHEET

INTERSECTION: N/S: N. Hill E/W: New York
DATE OF COUNTS: 05/27/03 **Notes:** Maranatha HS at Carey Intl Univ.
ANALYSIS PERIOD: 520 Students, Approved Routing Plan

		Existing Conditions				Existing Plus Project			
Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	Crit. Mvmt.	PROJ. VOL.	Vol.	AM Peak V/C	Crit. Mvmt
NL	#N/A	#N/A		#N/A	0	1	1	#N/A	0
NR	#N/A	#N/A		#N/A	0	1	1	#N/A	0
NT	1	1,600		0.000	0		0	0.001	1
SL	#N/A	#N/A		#N/A	0		0	#N/A	1
SR	#N/A	#N/A		#N/A	0		0	#N/A	0
ST	1	1,600		0.000	0		0	0.000	0
EL	#N/A	#N/A		#N/A	0		0	#N/A	0
ER	#N/A	#N/A		#N/A	0	1	1	#N/A	0
ET	1	1,600		0.000	0		0	0.001	1
WL	#N/A	#N/A		#N/A	0		0	#N/A	1
WR	#N/A	#N/A		#N/A	0		0	#N/A	0
WT	1	1,600		0.000	0		0	0.000	0
		N/S component			0.000		N/S component		0.001
		E/W component			0.000		E/W component		0.001
		Rt.Tn. comp.			0.000		Rt.Tn. comp.		0.000
		Clearance Interval			0.100		Clearance Interval		0.100
		ICU			0.100		ICU		0.102
		LOS			A		LOS		A

Critical movement identified by a 1. Project Impact: 0.002
Ten lanes for a right turn indicates free movement
NA - Not Applicable

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JAR*	Intersection	*N. Hill / Elizabeth*
Agency/Co.		Jurisdiction	*Pasadena*
Date Performed	*5/14/03*	Analysis Year	*Existing*
Analysis Time Period	*AM Peak*		
Project Description	*Maranatha H.S.*		
East/West Street:	*Elizabeth St*	North/South Street:	*N. Hill*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*4*	*241*	*169*	*52*	*555*	*0*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*4*	*241*	*169*	*52*	*555*	*0*
Percent Heavy Vehicles	*0*	–	–	*0*	–	–
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*87*	*7*	*49*	*1*	*6*	*44*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*87*	*7*	*49*	*1*	*6*	*44*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*Y*			*Y*	
Storage		*1*			*1*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*4*	*52*		*143*			*51*	
C (m) (vph)	*968*	*1144*		*658*			*845*	
v/c	*0.00*	*0.05*		*0.22*			*0.06*	
95% queue length	*0.01*	*0.14*		*0.82*			*0.19*	
Control Delay	*8.7*	*8.3*		*12.0*			*9.5*	
LOS	*A*	*A*		*B*			*A*	
Approach Delay	–	--	*12.0*			*9.5*		
Approach LOS	–	--	*B*			*A*		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JAR*	Intersection	*N. Hill / Elizabeth*
Agency/Co.		Jurisdiction	*Pasadena*
Date Performed	*5/27/03*	Analysis Year	*Existing*
Analysis Time Period	*Mid-Day*		
Project Description	*Maranatha H.S.*		
East/West Street:	*Elizabeth St*	North/South Street:	*N. Hill*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*81*	*357*	*75*	*35*	*249*	*4*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*81*	*357*	*75*	*35*	*249*	*4*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*75*	*16*	*79*	*5*	*77*	*39*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*75*	*16*	*79*	*5*	*77*	*39*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*Y*			*Y*	
Storage		*1*			*1*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*81*	*35*		*170*			*121*	
C (m) (vph)	*1255*	*1134*		*628*			*681*	
v/c	*0.06*	*0.03*		*0.27*			*0.18*	
95% queue length	*0.21*	*0.10*		*1.09*			*0.64*	
Control Delay	*8.1*	*8.3*		*12.8*			*11.4*	
LOS	*A*	*A*		*B*			*B*	
Approach Delay	--	--	*12.8*			*11.4*		
Approach LOS	--	--	*B*			*B*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JAR	Intersection	N. Hill / Elizabeth
Agency/Co.		Jurisdiction	Pasadena
Date Performed	5/27/03	Analysis Year	Existing + Ultimate Enrollment
Analysis Time Period	AM Peak		
Project Description	Maranatha H.S.		
East/West Street:	Elizabeth St	North/South Street:	N. Hill
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	241	208	52	555	6
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	4	241	208	52	555	6
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	104	7	52	1	6	44
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	104	7	52	1	6	44
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		Y			Y	
Storage		1			1	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	4	52		163			51	
C (m) (vph)	963	1107		498			824	
v/c	0.00	0.05		0.33			0.06	
95% queue length	0.01	0.15		1.41			0.20	
Control Delay	8.8	8.4		15.7			9.7	
LOS	A	A		C			A	
Approach Delay	--	--	15.7			9.7		
Approach LOS	--	--	C			A		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JAR*	Intersection	*N. Hill / Elizabeth*
Agency/Co.		Jurisdiction	*Pasadena*
Date Performed	*5/27/03*	Analysis Year	*Existing + Ultimate Enrollment*
Analysis Time Period	*Mid-Day*		
Project Description	*Maranatha H.S.*		
East/West Street:	*Elizabeth St*	North/South Street:	*N. Hill*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*81*	*357*	*82*	*36*	*249*	*4*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*81*	*357*	*82*	*36*	*249*	*4*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*86*	*16*	*81*	*5*	*77*	*39*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*86*	*16*	*81*	*5*	*77*	*39*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*Y*			*Y*	
Storage		*1*			*1*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*81*	*36*		*183*			*121*	
C (m) (vph)	*1255*	*1128*		*487*			*676*	
v/c	*0.06*	*0.03*		*0.38*			*0.18*	
95% queue length	*0.21*	*0.10*		*1.73*			*0.65*	
Control Delay	*8.1*	*8.3*		*16.8*			*11.5*	
LOS	*A*	*A*		*C*			*B*	
Approach Delay	--	--	*16.8*			*11.5*		
Approach LOS	--	--	*C*			*B*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JAR*	Intersection	*N. Hill / Howard*
Agency/Co.		Jurisdiction	*Pasadena*
Date Performed	*5/13/03*	Analysis Year	*Existing (2003)*
Analysis Time Period	*AM Peak*		

Project Description	*Maranatha H.S.*
East/West Street: *Howard*	North/South Street: *N. Hill*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*329*	*39*	*18*	*629*	*0*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*329*	*39*	*18*	*629*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*22*	*0*	*3*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*22*	*0*	*3*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*0*	*0*
Configuration		*LTR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LTR*				
v (vph)		*18*		*25*				
C (m) (vph)		*1202*		*284*				
v/c		*0.01*		*0.09*				
95% queue length		*0.05*		*0.29*				
Control Delay		*8.0*		*18.9*				
LOS		*A*		*C*				
Approach Delay	--	--		*18.9*				
Approach LOS	--	--		*C*				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JAR	Intersection	N. Hill / Howard
Agency/Co.		Jurisdiction	Pasadena
Date Performed	5/13/03	Analysis Year	Existing (2003)
Analysis Time Period	Mid-Day		

Project Description: Maranatha H.S.

East/West Street: Howard	North/South Street: N. Hill
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	417	28	17	320	0
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	417	28	17	320	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	32	0	31	0	0	0
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	32	0	31	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LTR				
v (vph)		17		63				
C (m) (vph)		1126		455				
v/c		0.02		0.14				
95% queue length		0.05		0.48				
Control Delay		8.2		14.2				
LOS		A		B				
Approach Delay	--	--	14.2					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
nalyst	*JAR*	Intersection	*N. Hill / Howard*
gency/Co.		Jurisdiction	*Pasadena*
Date Performed	*5/13/03*	Analysis Year	*Existing (2003) Plus Project*
Analysis Time Period	*AM Peak*		

roject Description *Maranatha H.S.*

ast/West Street: *Howard*	North/South Street: *N. Hill*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

ehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
olume	*0*	*368*	*47*	*18*	*646*	*0*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
ourly Flow Rate, HFR	*0*	*368*	*47*	*18*	*646*	*0*
ercent Heavy Vehicles	*0*	*--*	*--*	*0*	*--*	*--*
Median Type	*Undivided*					
T Channelized			*0*			*0*
anes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
pstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
olume	*25*	*0*	*3*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
lourly Flow Rate, HFR	*25*	*0*	*3*	*0*	*0*	*0*
ercent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
lared Approach		*N*			*N*	
torage		*0*			*0*	
RT Channelized			*0*			*0*
anes	*0*	*1*	*0*	*0*	*0*	*0*
Configuration		*LTR*				

elay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
ane Configuration		*LT*		*LTR*				
(vph)		*18*		*28*				
C (m) (vph)		*1155*		*260*				
/c		*0.02*		*0.11*				
5% queue length		*0.05*		*0.36*				
Control Delay		*8.2*		*20.5*				
OS		*A*		*C*				
Approach Delay	*--*	*--*	*20.5*					
Approach LOS	*--*	*--*	*C*					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JAR	Intersection	N. Hill / Howard
Agency/Co.		Jurisdiction	Pasadena
Date Performed	5/13/03	Analysis Year	Existing (2003) Plus Project
Analysis Time Period	Mid-Day		

Project Description: Maranatha H.S.

East/West Street: Howard	North/South Street: N. Hill
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	424	29	17	331	0
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	424	29	17	331	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	34	0	31	0	0	0
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	34	0	31	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LTR				
v (vph)		17		65				
C (m) (vph)		1118		442				
v/c		0.02		0.15				
95% queue length		0.05		0.51				
Control Delay		8.3		14.5				
LOS		A		B				
Approach Delay	--	--	14.5					
Approach LOS	--	--	B					

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: N. Hill Ave. DATE: 5/27/2003 LOCATION: City of Pasadena

E-W STREET: Elizabeth St. DAY: TUESDAY PROJECT# 03-0892-001

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	NL	NT	NR	NLEG	SL	ST	SR	SLEG	EL	ET	ER	ELEG	WL	WT	WR	WLEG	TOTAL
LANES:	0	1	0	Peds	0	1	0	Peds	0	1	0	Peds	0	1	0	Peds	
6:00 AM																	
6:15 AM																	
6:30 AM																	
6:45 AM																	
7:00 AM	1	18	7	0	1	92	0	1	0	0	4	0	5	0	1	0	129
7:15 AM	1	36	20	0	4	108	0	0	0	0	7	1	10	1	1	0	188
7:30 AM	2	62	72	0	17	166	0	0	0	2	16	1	29	1	16	0	383
7:45 AM	1	73	61	0	25	139	0	0	0	2	15	1	28	5	25	0	374
8:00 AM	0	70	16	0 0	6	142	0	1 1	1	2	6	0 3	20	0	7	0 0	270
8:15 AM	4	56	4	0	2	82	0	0	0	0	10	0	5	0	2	0	165
8:30 AM	5	42	6	0	1	79	3	0	0	3	12	0	11	4	3	2	169
8:45 AM	4	55	6	1	3	89	0	0	1	4	6	2	9	1	1	1	179
9:00 AM																	
9:15 AM																	
9:30 AM																	
9:45 AM																	
10:00 AM																	
10:15 AM																	
10:30 AM																	
10:45 AM																	
11:00 AM																	
11:15 AM																	
11:30 AM																	
11:45 AM																	
TOTAL VOLUMES =	NL 18	NT 412	NR 192	PEDS	SL 59	ST 897	SR 3	PEDS	EL 2	ET 13	ER 76	PEDS	WL 117	WT 12	WR 56	PEDS	TOTAL 1857

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =	4	241	169		52	555	0		1	6	44		87	7	49		1215
PEAK HR. FACTOR:		0.761				0.829				0.708				0.616			0.793

CONTROL: ~~Signalized~~

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: N. Hill Ave. DATE: 5/27/2003 LOCATION: City of Pasadena

E-W STREET: Elizabeth St. DAY: TUESDAY PROJECT# 03-0892-002

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
LANES:	NL 0	NT 1	NR 0	NLEG Peds	SL 0	ST 1	SR 0	SLEG Peds	EL 0	ET 1	ER 0	ELEG Peds	WL 0	WT 1	WR 0	WLEG Peds	TOTAL
1:00 PM																	
1:15 PM																	
1:30 PM																	
1:45 PM																	
2:00 PM	9	60	11	0	0	53	0	0	0	8	2	0	5	1	1	0	150
2:15 PM	18	59	11	1	2	54	0	1	0	6	5	1	5	4	1	0	165
2:30 PM	19	75	19	0	4	50	0	2	4	10	1	0	9	5	8	0	204
2:45 PM	17	89	27	0	15	71	1	0	1	10	8	0	32	4	22	1	297
3:00 PM	28	105	18	0	12	71	0	0	0	25	11	29	16	4	27	0	317
3:15 PM	14	88	21	29	4	56	0	0	1	22	10	0	13	1	14	0	244
3:30 PM	22	75	9	0 29	4	51	3 4	0 0	3	20	10	0 29	14	7	16	0 1	234
3:45 PM	21	82	8	0	6	49	0	1	1	11	14	1	10	7	8	0	217
4:00 PM	19	83	7	1	8	47	0	0	0	18	8	0	15	9	8	0	222
4:15 PM	12	77	10	0	1	43	1	0	1	15	10	0	6	8	10	0	194
4:30 PM	16	75	12	1	3	50	1	0	1	17	12	0	4	4	11	0	206
4:45 PM	12	89	8	2	0	54	1	2	2	17	12	0	7	2	9	0	213
5:00 PM	19	99	14	0	3	55	0	0	1	18	11	0	8	4	7	1	239
5:15 PM	10	104	11	0	6	43	1	0	0	20	12	0	6	8	10	0	231
5:30 PM	9	125	12	1	1	48	0	1	0	22	20	1	9	8	13	0	267
5:45 PM	20	122	8	0	0	64	1	0	2	9	15	0	8	4	11	0	264
6:00 PM																	
6:15 PM	58	450	45	1	10	210	2	1	3	69	58	1	31	24	41	1	
6:30 PM																	
6:45 PM																	
TOTAL VOLUMES =	NL 265	NT 1407	NR 206	PEDS	SL 69	ST 859	SR 9	PEDS	EL 17	ET 248	ER 161	PEDS	WL 167	WT 80	WR 176	PEDS	TOTAL 3664

PM Peak Hr Begins at: 245 PM

PEAK VOLUMES =	81	357	75		35	249	4		5	77	39		75	16	79		1092
PEAK HR. FACTOR:		0.000				0.000				0.000				0.000			0.861

CONTROL: Signalized;

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: N. Hill Ave. DATE: 5/27/2003 LOCATION: City of Pasadena

E-W STREET: New York Dr. DAY: TUESDAY PROJECT# 03-0892-002

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
LANES:	NL 0	NT 1	NR 0	NLEG Peds	SL 0	ST 1	SR 0	SLEG Peds	EL 0	ET 1	ER 0	ELEG Peds	WL 0	WT 1	WR 0	WLEG Peds	TOTAL
6:00 AM																	
6:15 AM																	
6:30 AM																	
6:45 AM																	
7:00 AM	14	6	2	0	1	29	1	1	1	40	14	0	28	50	3	1	189
7:15 AM	14	8	13	0	2	38	2	0	2	75	29	0	27	92	2	0	304
7:30 AM	28	21	13	0	11	56	3	0	3	116	32	0	23	121	4	1	431
7:45 AM	33	23	19	1	8	72	4	0	2	131	36	0	33	147	6	2	514
8:00 AM	15	30	20	1	6	55	4	1	1	112	21	1	28	116	3	0	411
8:15 AM	14	27	19	1	2	28	2	1	0	70	15	0	22	97	4	0	300
8:30 AM	15	22	17	1	3	36	4	3	1	63	13	2	19	78	2	0	273
8:45 AM	13	20	12	0	4	29	3	0	2	60	11	1	17	68	1	2	240
9:00 AM																	
9:15 AM																	
9:30 AM																	
9:45 AM																	
10:00 AM																	
10:15 AM																	
10:30 AM																	
10:45 AM																	
11:00 AM																	
11:15 AM																	
11:30 AM																	
11:45 AM																	
TOTAL VOLUMES =	NL 146	NT 157	NR 115	PEDS	SL 37	ST 343	SR 23	PEDS	EL 12	ET 667	ER 171	PEDS	WL 197	WT 769	WR 25	PEDS	TOTAL 2662

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =	90	82	65	2	27	221	13	1	8	434	118	1	111	476	15	3	1660
PEAK HR. FACTOR:		0.790				0.777				0.828				0.809			0.807

CONTROL: Signalized;

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: N. Hill Ave. DATE: 5/27/2003 LOCATION: City of Pasadena

E-W STREET: New York Dr. DAY: TUESDAY PROJECT# 03-0892-001

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
LANES:	NL 0	NT 1	NR 0	NLEG Peds	SL 0	ST 1	SR 0	SLEG Peds	EL 0	ET 1	ER 0	ELEG Peds	WL 0	WT 1	WR 0	WLEG Peds	TOTAL
1:00 PM																	
1:15 PM																	
iddaY 1:30 PM	103	173	74	1	14	77	4	1	10	460	103	29	64	360	14	0	
1:45 PM																	
2:00 PM	9	19	7	0	7	14	0	0	4	58	10	0	6	37	2	1	173
2:15 PM	14	17	9	0	3	15	3	0	2	72	8	0	11	57	1	0	212
2:30 PM	24	26	18	0	3	10	3	0	1	68	17	0	24	91	5	0	290
2:45 PM	28	38	20	1	2	14	1	0	5	108	29	0	24	92	3	0	364
3:00 PM	37	54	18	0	0	25	2	1	1	109	31	29	11	86	4	0	378
3:15 PM	20	44	23	0	9	26	0	0	1	124	20	0	15	100	4	0	386
3:30 PM	18	37	13	0	3	12	1	0	3	119	23	0	14	82	3	0	328
3:45 PM	12	31	17	0	3	17	1	1	2	100	9	0	14	81	4	0	291
4:00 PM	23	31	18	0	3	8	0	0	0	148	8	0	11	98	3	2	351
4:15 PM	25	21	17	2	5	7	0	0	1	143	11	0	16	93	8	1	347
4:30 PM	16	26	23	0	6	18	2	0	2	117	12	0	14	65	2	0	303
4:45 PM	24	38	20	0	3	17	1	0	1	100	13	0	7	92	3	0	319
5:00 PM	27	33	17	0	8	12	1	1	6	134	18	0	17	85	11	0	369
5:15 PM	30	29	18	0	1	17	1	0	6	145	10	0	14	115	8	0	394
5:30 PM	41	30	20	0	8	12	1	0	9	154	18	0	12	97	5	1	407
5:45 PM	34	38	13	1	3	22	0	0	1	109	13	0	16	118	3	0	370
6:00 PM																	
6:15 PM																	
6:30 PM																	
6:45 PM																	
TOTAL VOLUMES =	NL 382	NT 512	NR 271	PEDS	SL 67	ST 246	SR 17	PEDS	EL 45	ET 1808	ER 250	PEDS	WL 226	WT 1389	WR 69	PEDS	TOTAL 5282
PM Peak Hr Begins at:	500 PM																
PEAK VOLUMES =	132	130	68	3	20	63	3	2	22	542	59	0	59	415	27	4	1540
PEAK HR. FACTOR:		0.000				0.000				0.000				0.000			0.946

CONTROL: Signalized

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: North Hill Ave. DATE: 5/6/2003 LOCATION: City of Pasadena

E-W STREET: Howard St. DAY: TUESDAY PROJECT# 03-0773-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	0	0	1					0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM		45	2	1	96					1		0	145
7:15 AM		62	4	1	141					2		1	211
7:30 AM		78	9	3	182					6		0	278
7:45 AM		93	11	5	177					4		1	291
8:00 AM		81	12	9	148					7		0	257
8:15 AM		77	7	1	122					5		2	214
8:30 AM		60	5	2	107					3		1	178
8:45 AM		51	3	1	99					4		0	158
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	547	53	23	1072	0	0	0	0	32	0	5	1732

AM Peak Hr Begins at: 730 AM

PEAK													
VOLUMES =	0	329	39	18	629	0	0	0	0	22	0	3	1040
PEAK HR. FACTOR:		0.885			0.874			0.000			0.893		0.893

CONTROL: 1-Way Stop (WB)

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: North Hill Ave. DATE: 5/5/2003 LOCATION: City of Pasadena

E-W STREET: Howard St. DAY: MONDAY PROJECT# 03-0773-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	0	0	1					0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM		73	6	5	49					2		0	135
2:15 PM		77	5	3	63					1		0	149
2:30 PM		89	9	4	62					7		7	178
2:45 PM		125	5	4	107					10		13	264
3:00 PM		106	8	4	72					11		5	206
3:15 PM		97	6	5	79					4		6	197
3:30 PM													
3:45 PM													
4:00 PM													
4:15 PM													
4:30 PM													
4:45 PM													
5:00 PM													
5:15 PM													
5:30 PM													
5:45 PM													
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	567	39	25	432	0	0	0	0	35	0	31	1129

PM Peak Hr Begins at: 230 PM

PEAK VOLUMES =	0	417	28	17	320	0	0	0	0	32	0	31	845
PEAK HR. FACTOR:		0.856			0.759			0.000			0.685		0.800

CONTROL: 1-Way Stop (WB)

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: North Hill Ave. DATE: 5/5/2003 LOCATION: City of Pasadena

E-W STREET: Howard St. DAY: MONDAY PROJECT# 03-0773-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	0	0	1					0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM		89	5	3	73					6		2	178
4:15 PM		110	7	4	87					7		1	216
4:30 PM		65	2	1	46					5		2	121
4:45 PM		141	5	0	72					2		1	221
5:00 PM		111	6	1	66					5		5	194
5:15 PM		136	4	1	61					4		3	209
5:30 PM		138	9	3	72					1		3	226
5:45 PM		118	7	2	63					2		3	195
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	908	45	15	540	0	0	0	0	32	0	20	1560

PM Peak Hr Begins at: 445 PM

PEAK													
VOLUMES =	0	526	24	5	271	0	0	0	0	12	0	12	850
PEAK HR. FACTOR:		0.935			0.920			0.000			0.600		0.940

CONTROL: 1-Way Stop (WB)

APPENDIX C

Traffic Signal Warrant Worksheets

Figure 9-1
TRAFFIC SIGNAL WARRANTS

DIST _____ CO _____ RTE _____ KPM _____ CALC _____ DATE _____ CHK _____ DATE _____

Major St: N. Hill Critical Approach Speed _____ km/h

Minor St: Elizabeth Critical Approach Speed _____ km/h

Critical speed of major street traffic > 64 km/h ☐ or ☐ RURAL (R)

In built up area of isolated community of < 10,000 pop. ☒ URBAN (U)

WARRANT 1 - Minimum Vehicular Volume

100% SATISFIED YES ☐ NO ☒

80% SATISFIED YES ☐ NO ☒

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS) (U) 1	R	U 2 or more	R	7-8 AM	8-9 AM	2-3 PM	3-4 PM	4-5 PM	5-6 PM		
Both Apprchs. Major Street	500 (400)	350 (280)	600 (480)	420 (336)	906	675	664	747	629	775		
Highest Apprch. Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	122	63	97	137	113	130		

Hour

WARRANT 2 - Interruption of Continuous Traffic

100% SATISFIED YES ☐ NO ☒

80% SATISFIED YES ☒ NO ☐

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS) (U) 1	R	U 2 or more	R	7-8 AM	8-9 AM	2-3 PM	3-4 PM	4-5 PM	5-6 PM		
Both Apprchs. Major Street	750 (600)	525 (420)	900 (720)	630 (504)	906	675	664	747	629	775		
Highest Apprch. Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	122	63	97	137	113	130		

Hour

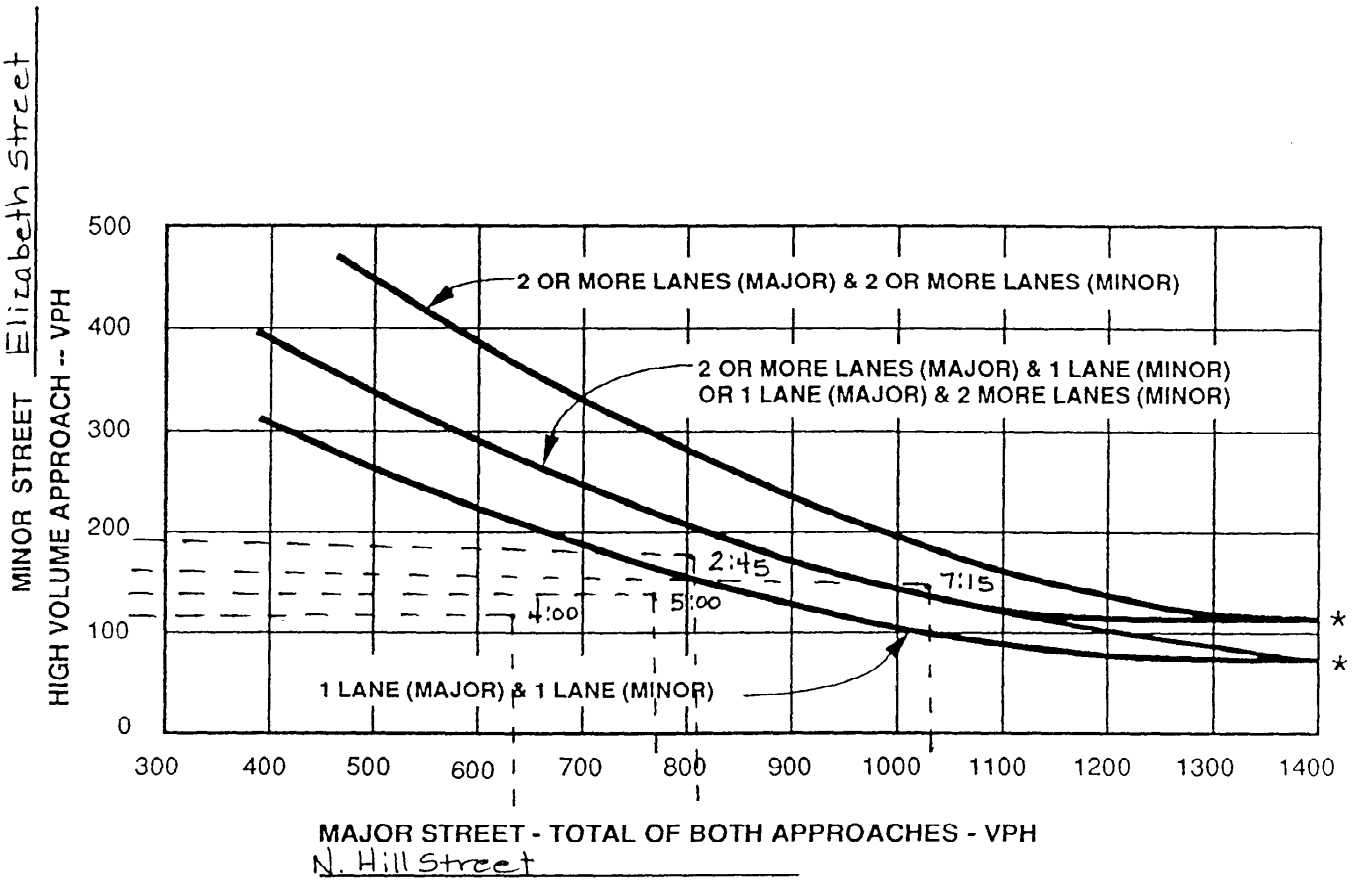
WARRANT 3 - Minimum Pedestrian Volume

100% SATISFIED YES ☐ NO ☒

REQUIREMENT	FULFILLED
Pedestrian volume crossing the major street is 100 or more for each of any four hours or is 190 or more during any one hour; AND	Yes ☐ No ☒
There are less than 60 gaps per hour in the major street traffic stream of adequate length for pedestrians to cross; AND	Yes ☐ No ☐
The nearest traffic signal along the major street is greater than 90 m; AND	Yes ☐ No ☐
The new traffic signal will not seriously disrupt progressive traffic flow on the major street.	Yes ☐ No ☐

The satisfaction of a warrant is not necessarily justification for a signal. Delay, congestion, confusion or other evidence of the need for right-of-way assignment must be shown.

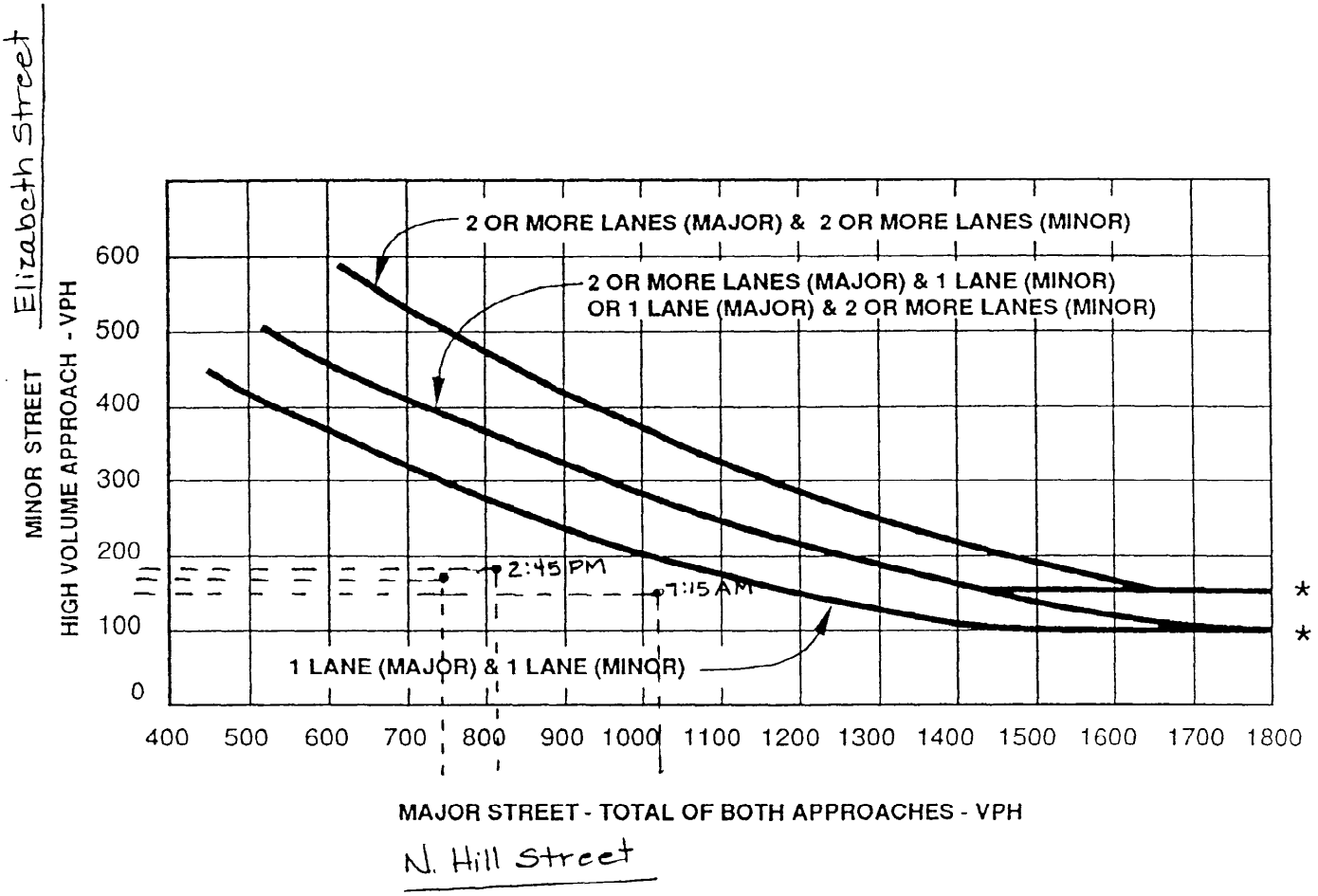
Figure 9-6
FOUR HOUR VOLUME WARRANT
(Urban Areas)



* NOTE:

115 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Figure 9-8
PEAK HOUR VOLUME WARRANT
(Urban Areas)



* NOTE:

150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Figure 9-1
TRAFFIC SIGNAL WARRANTS

DIST ____ CO ____ RTE ____ KPM ____ CALC ____ DATE ____ CHK ____ DATE ____

Major St: NORTH HILL AVE Critical Approach Speed ____ km/h

Minor St: HOWARD ST Critical Approach Speed ____ km/h

Critical speed of major street traffic > 64 km/h ☐ or In built up area of isolated community of < 10,000 pop. ☐ } RURAL (R)

☒ URBAN (U)

WARRANT 1 - Minimum Vehicular Volume

100% SATISFIED YES ☐ NO ☒

80% SATISFIED YES ☐ NO ☒

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				7-8 AM	8-9 AM	2:30-3:30 PM	4-5 PM	5-6 PM			
	(U)	R	U	R								Hour
APPROACH LANES	(1)		2 or more									
HILL AVE Both Apprchs Major Street	500 (400)	350 (280)	600 (480)	420 (336)	910	785	782	710	798			
HOWARD (WB) Highest Apprch. Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	15	22	63	26	26			

WARRANT 2 - Interruption of Continuous Traffic

100% SATISFIED YES ☐ NO ☒

80% SATISFIED YES ☐ NO ☒

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				7-8 AM	8-9 AM	2:30-3:30 PM	4-5 PM	5-6 PM			
	(U)	R	U	R								Hour
APPROACH LANES	(1)		2 or more									
HILL AVE Both Apprchs. Major Street	750 (600)	525 (420)	900 (720)	630 (504)	910	785	782	710	798			
HOWARD (WB) Highest Apprch. Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	15	22	63	26	26			

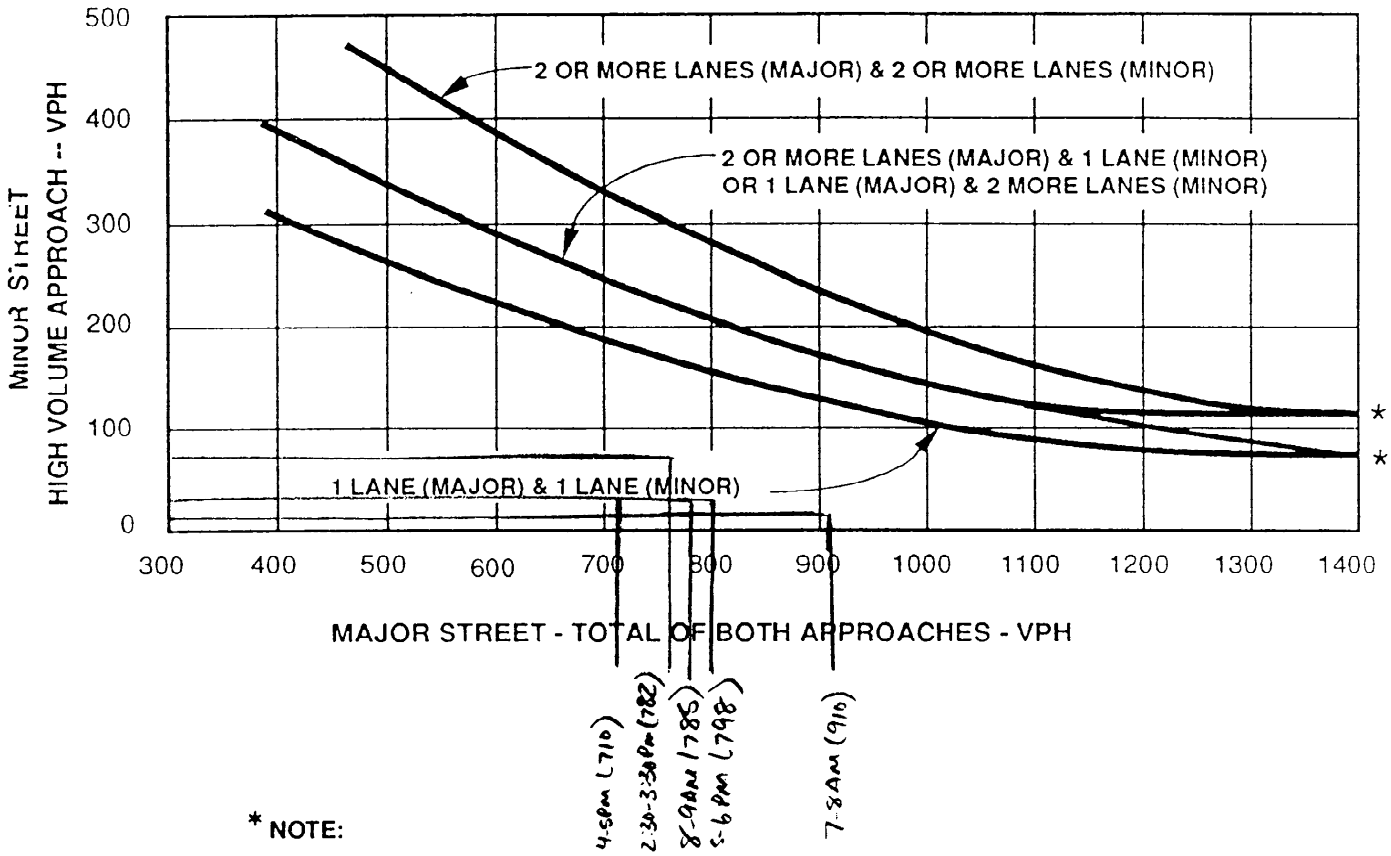
WARRANT 3 - Minimum Pedestrian Volume

100% SATISFIED YES ☐ NO ☐

REQUIREMENT	FULFILLED
Pedestrian volume crossing the major street is 100 or more for each of any four hours or is 190 or more during any one hour; AND	Yes ☐ No ☐
There are less than 60 gaps per hour in the major street traffic stream of adequate length for pedestrians to cross; AND	Yes ☐ No ☐
The nearest traffic signal along the major street is greater than 90 m; AND	Yes ☐ No ☐
The new traffic signal will not seriously disrupt progressive traffic flow on the major street.	Yes ☐ No ☐

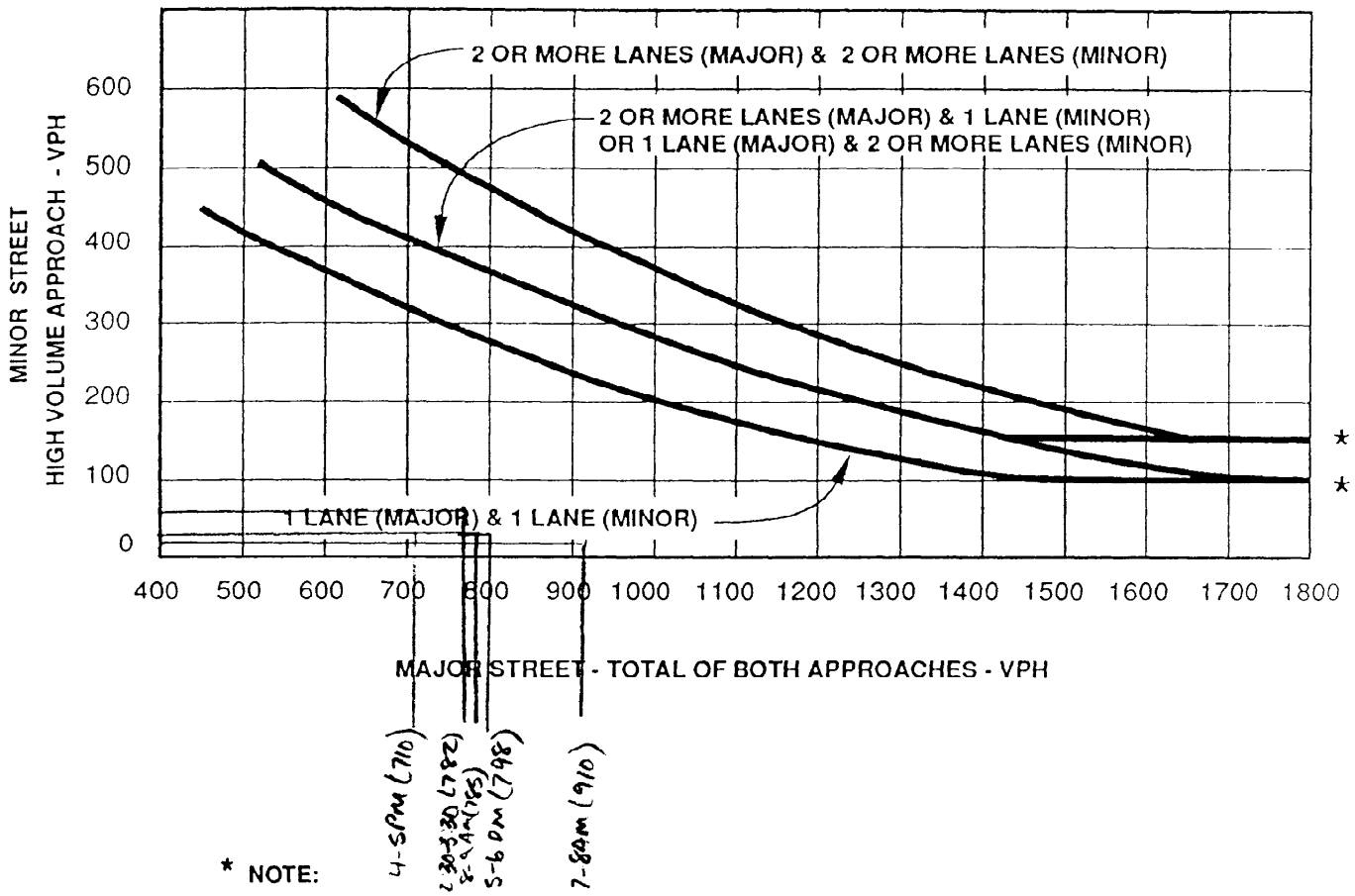
The satisfaction of a warrant is not necessarily justification for a signal. Delay, congestion, confusion or other evidence of the need for right-of-way assignment must be shown.

Figure 9-6
FOUR HOUR VOLUME WARRANT
(Urban Areas)



* NOTE:
115 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Figure 9-8
PEAK HOUR VOLUME WARRANT
(Urban Areas)



* NOTE:
150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.