

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 1. Stanfield Cutoff (NS) and North Shore (EW)		Traffic Condition: 2025 Average Month Without Project Cycle Length: 100 Seconds (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 26 Seconds)												
Time Period: AM Peak Hour		Lanes: Existing												
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL	Total	
INPUT DATA														
(1) Volume per Hour, V	0	66	58	0	0	0	24	73	0	56	0	386	663	
(2) Number of Lanes, N	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	7.00	
(3) Right Turns (FREE=Free Right Turn Lane; ARROW=Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-	
(4) Lost Time (Yellow, All Red, Etc) in Seconds Y (Typically 2 to 4 Seconds) [See Note 9]	-	-	-	-	-	-	-	-	-	-	-	-	-	
(5) Peak Hour Factor, PHF (Typically 0.90 to 0.95 for Peak 15 Minutes)	-	-	-	-	-	-	-	-	-	-	-	-	-	
(6) Lane Width (8; 9; 10; 11; 12 [Factor = 1.00]; 13; 14; 15; or 16 for 15+)	-	-	-	-	-	-	-	-	-	-	-	-	-	
(7) Percent Heavy Vehicles (0; 2; 4; 6; 8; 10; 15; 20; 25; or 30; Typically 4 or 6)	-	-	-	-	-	-	-	-	-	-	-	-	-	
(8) Grade (-6; -4; -2; 0; +2; +4; or +6)	-	-	-	-	-	-	-	-	-	-	-	-	-	
(9) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-	
(10) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-	
(11) CBD/Other (0=0-300; 1=Other)	-	-	-	-	-	-	-	-	-	-	-	-	-	
(12) Right Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Shared Lane)	-	-	-	-	-	-	-	-	-	-	-	-	-	
(13) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	-	-	-	-	-	-	-	-	-	-	-	-	-	
(14) Left Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	-	-	-	-	-	-	-	-	-	-	-	-	-	
(15) Saturated Flow Rate per Hour of Green Time (1000 recommended)	-	-	-	-	-	-	-	-	-	-	-	-	-	
(16) Signal Progression (1=Pre-timed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	-	-	-	-	-	-	-	-	-	-	-	-	-	
(17) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	-	-	-	-	-	-	-	-	-	-	-	-	-	
FROM TABLES														
(18) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(19) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(20) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(21) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(22) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(23) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(24) CBD/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(25) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(26) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(27) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(27a) Progression k Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
CALCULATED VALUES AND PERFORMANCE MEASURES														
(28) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	61	69	0	0	0	0	25	77	0	465	0	0	0	
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	1900	1900	0	1900	0	0	1900	1900	0	1900	0	0	0	
(30) Flow Ratio, v/s = [(28)/(29)]	0.03	0.04	0.00	0.00	0.00	0.00	0.01	0.04	0.00	0.24	0.00	0.00	0.00	
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.00	0.11	0.00	0.00	0.00	0.00	0.11	0.11	0.00	0.28	0.00	0.00	0.00	
(32) Critical Lane Group = [(31)'s That Are Critical]. Total is 100. [See Note 10]	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00	
(33) Green Time Allotted as Proportion of Cycle, g/C = [See Note 2]. Sum of Critical Moves = 1.00	0.00	0.28	0.00	0.00	0.00	0.00	0.72	0.72	0.00	0.72	0.00	0.00	0.00	
(34) Minimum Ped Time Needed in Seconds, [(33) * Cycle Length]	0.0	27.9	0.0	0.0	0.0	0.0	72.1	72.1	0.0	72.1	0.0	0.0	0.0	
(35) Signal Phases Available to Movement: 1 = Phase 1; 15 = Phases 1 and 3. [See Note 6]	16	68	56	8	8	5	24	24	12	4	4	1	0	
(36) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), c = [(33)-(4)/C]*(29)	68	68	56	8	8	5	1295	1295	0	1295	0	0	0	
(37) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.00	0.15	0.00	0.00	0.00	0.00	0.02	0.06	0.00	0.36	0.00	0.00	0.00	
(38) Average Delay per Vehicle in Seconds, d [See Note 3]	50.0	28.3	0.0	50.0	50.0	0.0	4.0	4.2	0.0	6.5	0.0	0.0	0.0	
(39) Percent of Vehicles That Have to Stop [1.00 - (33)]	100	72	0	100	100	0	28	28	0	28	0	0	0	
(40) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length/3600 * (40)]	1.7	1.4	0.0	0.0	0.0	0.0	0.2	0.6	0.0	3.6	0.0	0.0	0.0	
(41) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 4]	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
(42) Level of Service (LOS) Based on (39) [See Note 4]	D-	C	A+	D-	D-	A+	A	A	A+	A	A+	A+	B+	
(43) Level of Service (LOS) Based on (39) [See Note 4]	D-	C	A+	D-	D-	A+	A	A	A+	A	A+	A+	B+	
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	38.5 Sec; LOS = D+	0.0 Sec; LOS = A+	0.0 Sec; LOS = A+	0.0 Sec; LOS = D-	0.0 Sec; LOS = D-	0.0 Sec; LOS = A+	4.1 Sec; LOS = A	6.5 Sec; LOS = A	6.5 Sec; LOS = A	6.5 Sec; LOS = A	6.5 Sec; LOS = A	6.5 Sec; LOS = A	B+	
Signal Timing, Secs: Phase 1 = 0.0; Phase 2 = 0.0; Phase 3 = 0.0; Phase 4 = 72.1; Phase 5 = 0.0; Phase 6 = 0.0; Phase 7 = 0.0; Phase 8 = 0.0. If time = 0.0, Phase is skipped.														
Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 0.0; Phase 3 = 0.0; Phase 4 = 0.0; Phase 5 = 0.0; Phase 6 = 72.1; Phase 7 = 72.1; Phase 8 = 72.1. If time = 0.0, Phase is skipped.														
See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, SR = Southbound Right, SL = Southbound Left, ET = Eastbound Through, ER = Eastbound Right, EL = Eastbound Left, WT = Westbound Through, WR = Westbound Right, WL = Westbound Left														
Kunzman Associates														

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 1. Stanfield Cutoff (NS) and North Shore (EW)		Traffic Condition: 2025 Average Month Without Project (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 34 Seconds)										
Time Period: PM Peak Hour		Cycle Length: 100 Seconds										
Lanes: Existing												
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WL	Total
INPUT DATA												
(1) Volume per Hour, V	0	166	63	0	0	0	76	83	0	46	0	625
(2) Number of Lanes, N	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	7.00
(3) Right Turns (FREE-Right Turn Lane: ARROW-Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-
(4) Lost Time (Yellow, All Red, Etc.) in Seconds, Y (Typically 2 to 4 Seconds)	-	-	-	-	-	-	-	-	-	-	-	-
(5) Peak Hour Factor, PHF (Typically 0.90 or 0.95 for Peak 15 Minutes)	-	-	-	-	-	-	-	-	-	-	-	-
(6) Lane Width (8; 9; 10; 11; 12 If Factor = 1.00; 13; 14; 15; or 16 for 13'-)	-	-	-	-	-	-	-	-	-	-	-	-
(7) Percent Heavy Vehicles (0; 1; 2; 3; 4; 5; 6; 7; 8; 9; 10; 11; 12; 13; 14; 15; or 16 for 13'-)	-	-	-	-	-	-	-	-	-	-	-	-
(8) Grade (-6; -4; -2; 0; 2; 4; or 6%)	-	-	-	-	-	-	-	-	-	-	-	-
(9) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-
(10) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-
(11) CbD/Other (0=CbD; 1=Other)	-	-	-	-	-	-	-	-	-	-	-	-
(12) Right Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Shared Lane)	-	-	-	-	-	-	-	-	-	-	-	-
(13) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	-	-	-	-	-	-	-	-	-	-	-	-
(14) Left Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	-	-	-	-	-	-	-	-	-	-	-	-
(15) Saturated Flow Rate per Hour of Green Time (H0M Recommends 1900)	-	-	-	-	-	-	-	-	-	-	-	-
(16) Signal Progression (1=Retimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	-	-	-	-	-	-	-	-	-	-	-	-
(17) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	-	-	-	-	-	-	-	-	-	-	-	-
FACTORS												
(18) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(19) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(20) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(21) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(22) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(23) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(24) CbD/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(25) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(26) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27a) Progression k Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CALCULATED VALUES AND PERFORMANCE MEASURES												
(28) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	66	175	0	0	0	0	80	87	0	249	0	0
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	1900	1900	0	0	0	0	1900	1900	0	1900	0	0
(30) Flow Ratio, v/s = [(28)/(29)]	0.03	0.09	0.00	0.00	0.00	0.00	0.04	0.05	0.00	0.13	0.00	0.00
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.00	0.13	0.00	0.00	0.00	0.00	0.11	0.11	0.00	0.17	0.00	0.00
(32) Critical Lane Group = [(31)'s That Are Critical]. Total is 100. [See Note 10]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(33) Green Time Allocated as Proportion of Cycle, g/C = [See Note 2]. Sum of Critical Moves = 1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56	0.56	0.00	0.56	0.00	0.00
(34) Green Time Allocated in Seconds, [(33) * Cycle Length]	0.0	43.5	0.0	0.0	0.0	0.0	56.5	56.5	0.0	56.5	0.0	0.0
(35) Minimum Ped Time Needed to Cross Street [3 Seconds per Lane Crossed + 7 Seconds]	16	68	56	8	8	5	24	24	12	19	4	1
(36) Signal Phases Available to Movement. 1 = Phase 1; 13 = Phases 1 and 3. [See Note 6]	0	751	0	0	0	0	997	997	0	997	0	0
(37) Capacity in Vehicles per Hour (includes Yellow Penalty adjustment), c = [(33)-(4)/(C)*(29)]	0.00	0.23	0.00	0.00	0.00	0.00	0.08	0.09	0.00	0.25	0.00	0.00
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.00	0.23	0.00	0.00	0.00	0.00	0.08	0.09	0.00	0.25	0.00	0.00
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	50.0	18.9	0.0	0.0	0.0	0.0	10.2	10.2	0.0	12.0	0.0	0.0
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	100	2.7	0.0	0.0	0.0	0.0	44	44	0	44	0	0
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(C) * Cycle Length/3600 * (40)]	1.8	0.6	0.0	0.0	0.0	0.0	1.0	1.1	0.0	3.0	0.0	1.21
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 6]	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
(43) Level of Service (LOS) Based on (39) [See Note 4]	D-	B-	A+	D-	D-	A+	B+	B+	A+	B+	A+	B-
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	27.5 Sec; LOS = C	0.0 Sec; LOS = A+	0.0 Sec; LOS = C	0.0 Sec; LOS = D-	0.0 Sec; LOS = D-	0.0 Sec; LOS = A+	10.2 Sec; LOS = B+	10.2 Sec; LOS = B+	12.0 Sec; LOS = B+	12.0 Sec; LOS = B+	12.0 Sec; LOS = B+	B-
Signal Timing, Secs: Phase 1 = 0.0; Phase 2 = 0.0; Phase 3 = 0.0; Phase 4 = 56.5; Phase 5 = 0.0; Phase 6 = 0.0; Phase 7 = 0.0; Phase 8 = 0.0. If time = 0.0, Phase is skipped.												
Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 0.0; Phase 3 = 0.0; Phase 4 = 0.0; Phase 5 = 56.5; Phase 6 = 56.5; Phase 7 = 56.5; Phase 8 = 56.5.												
See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, ... , WL = Westbound Left												

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 1. Starfield Cutoff (NS) and North Shore (EW)														Traffic Condition: 2025 Average Month With Project													
Time Period: AM Peak Hour														Cycle Length: 100 Seconds													
Lanes: Existing														Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 26 Seconds)													
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL	Total														
INPUT DATA																											
(1) Volume per Hour, V	0	66	71	0	0	0	24	112	0	56	0	386	715														
(2) Number of Lanes, N	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	7.00														
(3) Right Turns (FREE-Free Right Turn Lane; ARROW-Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-														
(4) Lost Time (Yellow, All Red, Etc) in Seconds, Y (Typically 2 to 4 Seconds) [See Note 9]	-	-	-	-	-	-	-	-	-	-	-	-	-														
(5) Peak Hour Factor, PHF (1.00 for Peak Hour; 0.90 or 0.95 for Peak 15 Minutes)	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00														
(6) Lane Width (8; 9; 10; 11; 12 [Factor = 1.00]; 13; 14; 15; or 16 for 15+)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95														
(7) Percent Heavy Vehicles (0; 2; 4; 6; 8; 10; 15; 20; 25; or 30; Typically 4 or 6)	12	12	12	12	12	12	12	12	12	12	12	12	12														
(8) Grade (-6; -4; -2; 0; +2; +4; or +6)	0	0	0	0	0	0	0	0	0	0	0	0	0														
(9) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1														
(10) Buses Stopping per Hour (0; 10; 20; 30; or 40)	0	0	0	0	0	0	0	0	0	0	0	0	0														
(11) CBD/Other (0=0.00; 1=0.00; 2=0.00; 3=0.00; 4=0.00; 5=0.00; 6=0.00; 7=0.00; 8=0.00; 9=0.00; 10=0.00; 11=0.00; 12=0.00; 13=0.00; 14=0.00; 15=0.00; 16=0.00; 17=0.00; 18=0.00; 19=0.00; 20=0.00; 21=0.00; 22=0.00; 23=0.00; 24=0.00; 25=0.00; 26=0.00; 27=0.00; 28=0.00; 29=0.00; 30=0.00; 31=0.00; 32=0.00; 33=0.00; 34=0.00; 35=0.00; 36=0.00; 37=0.00; 38=0.00; 39=0.00; 40=0.00; 41=0.00; 42=0.00; 43=0.00; 44=0.00; 45=0.00; 46=0.00; 47=0.00; 48=0.00; 49=0.00; 50=0.00; 51=0.00; 52=0.00; 53=0.00; 54=0.00; 55=0.00; 56=0.00; 57=0.00; 58=0.00; 59=0.00; 60=0.00; 61=0.00; 62=0.00; 63=0.00; 64=0.00; 65=0.00; 66=0.00; 67=0.00; 68=0.00; 69=0.00; 70=0.00; 71=0.00; 72=0.00; 73=0.00; 74=0.00; 75=0.00; 76=0.00; 77=0.00; 78=0.00; 79=0.00; 80=0.00; 81=0.00; 82=0.00; 83=0.00; 84=0.00; 85=0.00; 86=0.00; 87=0.00; 88=0.00; 89=0.00; 90=0.00; 91=0.00; 92=0.00; 93=0.00; 94=0.00; 95=0.00; 96=0.00; 97=0.00; 98=0.00; 99=0.00; 100=0.00; 101=0.00; 102=0.00; 103=0.00; 104=0.00; 105=0.00; 106=0.00; 107=0.00; 108=0.00; 109=0.00; 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710=0.00; 711=0.00; 712=0.00; 713=0.00; 714=0.00; 715=0.00; 716=0.00; 717=0.00; 718=0.00; 719=0.00; 720=0.00; 721=0.00; 722=0.00; 723=0.00; 724=0.00; 725=0.00; 726=0.00; 727=0.00; 728=0.00; 729=0.00; 730=0.00; 731=0.00; 732=0.00; 733=0.00; 734=0.00; 735=0.00; 736=0.00; 737=0.00; 738=0.00; 739=0.00; 740=0.00; 741=0.00; 742=0.00; 743=0.00; 744=0.00; 745=0.00; 746=0.00; 747=0.00; 748=0.00; 749=0.00; 750=0.00; 751=0.00; 752=0.00; 753=0.00; 754=0.00; 755=0.00; 756=0.00; 757=0.00; 758=0.00; 759=0.00; 760=0.00; 761=0.00; 762=0.00; 763=0.00; 764=0.00; 765=0.00; 766=0.00; 767=0.00; 768=0.00; 769=0.00; 770=0.00; 771=0.00; 772=0.00; 773=0.00; 774=0.00; 775=0.00; 776=0.00; 777=0.00; 778=0.00; 779=0.00; 780=0.00; 781=0.00; 782=0.00; 783=0.00; 784=0.00; 785=0.00; 786=0.00; 787=0.00; 788=0.00; 789=0.00; 790=0.00; 791=0.00; 792=0.00; 793=0.00; 794=0.00; 795=0.00; 796=0.00; 797=0.00; 798=0.00; 799=0.00; 800=0.00; 801=0.00; 802=0.00; 803=0.00; 804=0.00; 805=0.00; 806=0.00; 807=0.00; 808=0.00; 809=0.00; 810=0.00; 811=0.00; 812=0.00; 813=0.00; 814=0.00; 815=0.00; 816=0.00; 817=0.00; 818=0.00; 819=0.00; 820=0.00; 821=0.00; 822=0.00; 823=0.00; 824=0.00; 825=0.00; 826=0.00; 827=0.00; 828=0.00; 829=0.00; 830=0.00; 831=0.00; 832=0.00; 833=0.00; 834=0.00; 835=0.00; 836=0.00; 837=0.00; 838=0.00; 839=0.00; 840=0.00; 841=0.00; 842=0.00; 843=0.00; 844=0.00; 845=0.00; 846=0.00; 847=0.00; 848=0.00; 849=0.00; 850=0.00; 851=0.00; 852=0.00; 853=0.00; 854=0.00; 855=0.00; 856=0.00; 857=0.00; 858=0.00; 859=0.00; 860=0.00; 861=0.00; 862=0.00; 863=0.00; 864=0.00; 865=0.00; 866=0.00; 867=0.00; 868=0.00; 869=0.00; 870=0.00; 871=0.00; 872=0.00; 873=0.00; 874=0.00; 875=0.00; 876=0.00; 877=0.00; 878=0.00; 879=0.00; 880=0.00; 881=0.00; 882=0.00; 883=0.00; 884=0.00; 885=0.00; 886=0.00; 887=0.00; 888=0.00; 889=0.00; 890=0.00; 891=0.00; 892=0.00; 893=0.00; 894=0.00; 895=0.00; 896=0.00; 897=0.00; 898=0.00; 899=0.00; 900=0.00; 901=0.00; 902=0.00; 903=0.00; 904=0.00; 905=0.00; 906=0.00; 907=0.00; 908=0.00; 909=0.00; 910=0.00; 911=0.00; 912=0.00; 913=0.00; 914=0.00; 915=0.00; 916=0.00; 917=0.00; 918=0.00; 919=0.00; 920=0.00; 921=0.00; 922=0.00; 923=0.00; 924=0.00; 925=0.00; 926=0.00; 927=0.00; 928=0.00; 929=0.00; 930=0.00; 931=0.00; 932=0.00; 933=0.00; 934=0.0																											

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 1. Stanfield Cutoff (NS) and North Shore (EW) Time Period: PM Peak Hour Lanes: Existing										Traffic Condition: 2025 Average Month With Project Cycle Length: 100 Seconds (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 34 Seconds)									
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL	Total						
INPUT DATA																			
(1) Volume per Hour, V	0	166	108	0	0	0	76	108	0	46	0	191	695						
(2) Number of Lanes, N	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	7.00						
(3) Right Turns (FREE-Free Right Turn Lane; ARROW-Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-						
(4) Lost Time (Yellow, All Red, Etc) in Seconds Y (Typically 2 to 4 Seconds) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-						
(5) Peak Hour Factor, PHF (Typically 0.90 to 0.95 for Peak 15 Minutes)	-	-	-	-	-	-	-	-	-	-	-	-	-						
(6) Lane Width (ft) 11; 12 [Factor = 1.00]; 13; 14; 15; or 16 for 15+)	-	-	-	-	-	-	-	-	-	-	-	-	-						
(7) Percent Heavy Vehicles (0; 2; 4; 6; 8; 10; 15; 20; 25; or 30; Typically 4 or 6)	-	-	-	-	-	-	-	-	-	-	-	-	-						
(8) Grade (-6; -4; -2; 0; +2; +4; or +6)	-	-	-	-	-	-	-	-	-	-	-	-	-						
(9) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-						
(10) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-						
(11) CSD/Other (0-500; 1-Other)	-	-	-	-	-	-	-	-	-	-	-	-	-						
(12) Right Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Shared Lane)	-	-	-	-	-	-	-	-	-	-	-	-	-						
(13) Pedestrians per Hour Conflicting With Right Turns (0; 50; 100; 200; 300; 400; or 500)	-	-	-	-	-	-	-	-	-	-	-	-	-						
(14) Left Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	-	-	-	-	-	-	-	-	-	-	-	-	-						
(15) Saturated Flow Rate per Hour of Green Time (NOM Recommends 1900)	-	-	-	-	-	-	-	-	-	-	-	-	-						
(16) Signal Progression (1=Pretimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	-	-	-	-	-	-	-	-	-	-	-	-	-						
(17) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900						
FROM TABLES																			
(18) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
(19) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
(20) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
(21) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
(22) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
(23) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
(24) CSD/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
(25) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
(26) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
(27) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
(27a) Progression k Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50						
CALCULATED VALUES AND PERFORMANCE MEASURES																			
(28) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	114	175	0	0	0	0	80	114	0	269	0	0	0						
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	1900	1900	0	1900	1900	0	1900	1900	0	1900	0	0	0						
(30) Flow Ratio, v/s = [(28)/(29)]	0.06	0.09	0.00	0.00	0.00	0.00	0.04	0.06	0.00	0.13	0.00	0.00	0.00						
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.00	0.13	0.00	0.00	0.00	0.00	0.11	0.11	0.00	0.17	0.00	0.00	0.00						
(32) Critical Lane Group = [(31)'s That Are Critical]. Total is 100. [See Note 10]	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00						
(33) Green Time Allotment as Proportion of Cycle, g/C = [See Note 2]. Sum of Critical Moves = 1.00	0.00	0.44	0.00	0.00	0.00	0.00	0.56	0.56	0.00	0.56	0.00	0.00	0.00						
(34) Green Time Allotment in Seconds, [(33) * Cycle Length]	0.00	43.5	0.00	0.00	0.00	0.00	56.5	56.5	0.00	56.5	0.00	0.00	0.00						
(35) Minimum Ped Time Needed to Cross Street 15 Seconds per Lane Crossed + 7 Seconds	16	68	0	16	8	0	24	24	0	24	0	0	0						
(36) Signal Phases Available to Movement. 1 = Phase 1; 15 = Phases 1 and 3. [See Note 6]	68	751	0	68	8	0	997	997	0	997	0	0	0						
(37) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), c = [(33)-(43)/C]*(29)	0	0	0	0	0	0	0	0	0	0	0	0	0						
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.00	0.23	0.00	0.00	0.00	0.00	0.08	0.11	0.00	0.25	0.00	0.00	0.00						
(39) Average Delay per Vehicle in Seconds, d = [See Note 3]	50.0	18.9	0.0	50.0	50.0	0.0	10.2	10.5	0.0	12.0	0.0	0.0	0.0						
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	100	56	0	100	100	0	44	44	0	44	0	0	0						
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length/3600 * (40)]	3.2	2.7	0.0	3.2	0.0	0.0	1.0	1.4	0.0	3.0	0.0	0.0	0.0						
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES						
(43) Level of Service (LOS) Based on (39) [See Note 4]	D-	B-	A+	D-	D-	A+	B+	B+	A+	B+	A+	A+	B-						
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	31.2 Sec; LOS = C-	0.0 Sec; LOS = A+	0.0 Sec; LOS = B+	10.4 Sec; LOS = B+	12.0 Sec; LOS = B+	12.0 Sec; LOS = B+	12.0 Sec; LOS = B+	12.0 Sec; LOS = B+	12.0 Sec; LOS = B+	12.0 Sec; LOS = B+	12.0 Sec; LOS = B+	12.0 Sec; LOS = B+	12.0 Sec; LOS = B+						
Signal Timing, Secs: Phase 1 = 0.0; Phase 2 = 0.0; Phase 3 = 0.0; Phase 4 = 56.5; Phase 5 = 0.0; Phase 6 = 0.0; Phase 7 = 0.0; Phase 8 = 0.0. If time = 0.0, Phase is skipped.																			
Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 0.0; Phase 3 = 0.0; Phase 4 = 0.0; Phase 5 = 56.5; Phase 6 = 56.5; Phase 7 = 56.5; Phase 8 = 56.5. See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, SR = Southbound Right, SL = Southbound Left, ET = Eastbound Through, ER = Eastbound Right, EL = Eastbound Left, WT = Westbound Through, WR = Westbound Right, WL = Westbound Left.																			

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2, Stanfield Outoff (NS) and Big Bear Blvd. (EW)		Traffic Condition: 2025 Average Month Without Project Cycle Length: 100 Seconds										Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 91 Seconds)	
Time Period: AM Peak Hour		Lanes: Existing											
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL	Total
INPUT DATA													
(1) Volume per Hour, V	30	30	33	29	304	15	345	19	115	816	55	31	1822
(2) Number of Lanes, N	0.50	0.50	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.00
(3) Right Turns (FREE=Free Right Turn Lane; ARQ=Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) Lost Time (Yellow, All Red, Etc) in Seconds, Y (Typically 2 to 4 Seconds)	-	-	-	-	-	-	-	-	-	-	-	-	-
(5) Peak Hour Factor, PHF (1.00 for Peak Hour, 0.90 or 0.95 for Peak 15 Minutes)	-	-	-	-	-	-	-	-	-	-	-	-	-
(6) Lane Width (8', 9', 10', 11', 12' for Factor = 1.00; 13', 14', 15', or 16' for 15+)	-	-	-	-	-	-	-	-	-	-	-	-	-
(7) Percent Heavy Vehicles (0; 2; 4; 6; 8; 10; 15; 20; 25; or 30; Typically 4 or 6)	-	-	-	-	-	-	-	-	-	-	-	-	-
(8) Grade (-6; -4; -2; 0; +2; +4; or +6)	-	-	-	-	-	-	-	-	-	-	-	-	-
(9) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-
(10) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-
(11) CBD/Other (0=CBD; 1=Other)	-	-	-	-	-	-	-	-	-	-	-	-	-
(12) Right Turn Lane Type (0=Standard (Factor=1.00); 1=Unprotected; 2=Protected w/ Shared Lane)	-	-	-	-	-	-	-	-	-	-	-	-	-
(13) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	-	-	-	-	-	-	-	-	-	-	-	-	-
(14) Left Turn Lane Type (0=Standard (Factor=1.00); 1=Unprotected; 2=Protected w/ Separate Arrow)	-	-	-	-	-	-	-	-	-	-	-	-	-
(15) Saturated Flow Rate per Hour of Green Time (H ₀ Recommends 1900)	-	-	-	-	-	-	-	-	-	-	-	-	-
(16) Signal Progression (1=PreTimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	-	-	-	-	-	-	-	-	-	-	-	-	-
(17) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	-	-	-	-	-	-	-	-	-	-	-	-	-
FACTORS													
(18) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(19) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(20) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(21) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(22) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(23) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(24) CBD/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(25) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(26) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27a) Progression k Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CALCULATED VALUES AND PERFORMANCE MEASURES													
(28) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	32	32	35	351	0	16	363	20	121	859	58	33	1800
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	950	950	1800	1900	0	1800	1900	1900	1800	1900	1900	1800	1800
(30) Flow Ratio, v/s = [(28)/(29)]	0.03	0.03	0.02	0.18	0.00	0.01	0.19	0.01	0.07	0.45	0.03	0.02	0.02
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.11	0.11	0.11	0.22	0.00	0.11	0.23	0.11	0.11	0.49	0.11	0.11	0.11
(32) Critical Lane Group = [(31)'s That Are Critical]. Total is 100. [See Note 10]	0.00	0.00	0.11	0.22	0.00	0.00	0.00	0.00	0.11	0.49	0.00	0.00	0.00
(33) Green Time Allocated as Proportion of Cycle, g/C [See Note 2]. Sum of Critical Moves = 1.00	0.23	0.23	0.11	0.23	0.00	0.11	0.54	0.54	0.11	0.54	0.54	0.11	0.11
(34) Green Time Allocated in Seconds, [(33) * Cycle Length]	23.0	23.0	11.3	23.0	0.0	11.3	54.4	54.4	11.4	54.4	54.4	11.3	11.3
(35) Minimum Ped Time Needed to Cross Street [3 Seconds per Lane Crossed + 7 Seconds]	21	21	56	8	0	5	26	26	12	26	26	12	12
(36) Signal Phases Available to Movement. 1 = Phase 1; 15 = Phases 1 and 3. [See Note 6]	181	181	131	362	0	131	957	957	132	956	956	131	131
(37) Capacity in Vehicles per Hour (includes Yellow Penalty adjustment), c = [(33)-(4)/(C)*(29)]	0.17	0.17	0.26	0.97	0.00	0.12	0.38	0.02	0.17	0.90	0.06	0.02	0.02
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	34.3	34.3	48.4	91.1	0.0	42.9	15.0	10.6	12.7	39.5	11.0	47.7	47.7
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	77	77	89	7.5	0.0	89	46	46	89	46	46	89	89
(40) Percent of Vehicles That Have to Stop [1.00 (See 33)]	1.4	1.4	0.9	7.5	0.0	0.4	4.6	0.3	3.0	10.9	0.7	0.8	0.8
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length/3600 * (40)]	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES
(43) Level of Service (LOS) Based on (39) [See Note 4]	C-	C-	D-	F	A+	D	B	B+	F-	D+	B+	D	D-
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	39.3 Sec; LOS = D+	39.3 Sec; LOS = D+	89.0 Sec; LOS = F	40.4 Sec; LOS = D+	38.0 Sec; LOS = D+	38.0 Sec; LOS = D+	38.0 Sec; LOS = D+	38.0 Sec; LOS = D+	38.0 Sec; LOS = D+	38.0 Sec; LOS = D+	38.0 Sec; LOS = D+	38.0 Sec; LOS = D+	38.0 Sec; LOS = D+

Signal Timing, Secs: Phase 1 = 11.3; Phase 2 = 0.1; Phase 3 = 0.0; Phase 4 = 54.3; Phase 5 = 11.3; Phase 6 = 0.0; Phase 7 = 0.0; Phase 8 = 23.0. If time = 0.0, Phase is skipped.
Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 11.3; Phase 3 = 11.4; Phase 4 = 11.4; Phase 5 = 65.7; Phase 6 = 77.0; Phase 7 = 77.0; Phase 8 = 77.0.
See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, SR = Southbound Right, SL = Southbound Left, ET = Eastbound Through, ER = Eastbound Right, EL = Eastbound Left, WT = Westbound Through, WR = Westbound Right, WL = Westbound Left.

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2. Stanfield Cutoff (NS) and Big Bear Blvd. (EW) Time Period: PM Peak Hour		Traffic Condition: 2025 Average Month Without Project (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 128 Seconds) Cycle Length: 100 Seconds												
Lanes: Existing		NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL	Total
INPUT DATA														
(1) Volume per Hour, V	-	22	57	48	27	221	26	1123	32	190	564	16	42	2368
(2) Number of Lanes, N	-	0.50	0.50	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.00
(3) Right Turns (FREE=Free Right Turn Lane; ARROW=Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) Lost Time (Yellow, All Red, Etc) in Seconds, Y (Typically 2 to 4 Seconds) [See Note 9]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(5) Peak Hour Factor, PHF (1.00 for Peak Hour; 0.90 or 0.95 for Peak 15 Minutes)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(6) Lane Width (8; 9; 10; 11; 12 [Factor = 1.00]; 13; 14; 15; or 16 for 15+)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(7) Percent Heavy Vehicles (0; 2; 4; 6; 8; 10; 15; 20; 25; or 30; Typically 4 or 6)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(8) Grade (-6; -4; -2; 0; +2; +4; or +6)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(9) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(10) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(11) CBD/Other (0=CBD; 1=Other)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(12) Right Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Shared Lane)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(13) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(14) Left Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(15) Saturated Flow Rate per Hour of Green Time (HQM Recommends 1900)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(16) Signal Progression (1=Pretimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(17) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FACTORS FROM TABLES														
(18) Lane Utilization Factor [Table 9-4]	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(19) Lane Width Factor [Table 9-5]	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(20) Heavy Vehicles Factor [Table 9-6]	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(21) Grade Factor [Table 9-7]	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(22) Parking Maneuvers Factor [Table 9-8]	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(23) Buses Stopping Factor [Table 9-9]	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(24) CBD/Other Factor [Table 9-10]	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(25) Right Turn Lane Factor [Table 9-11]	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(26) Left Turn Lane Factor [Table 9-12]	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27) Progression Adjustment Factor [Table 9-13]	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27a) Progression k Value [Table 9-14]	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CALCULATED VALUES AND PERFORMANCE MEASURES														
(28) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, $V = [(1) * (18) / (5)]$	-	23	60	51	261	0	27	1182	34	200	594	17	44	1800
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, $s = [(28) * (1)]$	-	950	950	1800	1900	0	1800	1900	1900	1800	1900	1900	1800	1900
(30) Flow Ratio, $v/s = [(28) / (29)]$	-	0.02	0.06	0.03	0.14	0.00	0.02	0.62	0.02	0.11	0.31	0.01	0.02	0.02
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	-	0.11	0.11	0.11	0.18	0.00	0.11	0.66	0.11	0.15	0.35	0.11	0.11	0.11
(32) Critical Lane Group = (31)'s That Are Critical. Total is 100. [See Note 10]	-	0.00	0.00	0.11	0.18	0.00	0.00	0.66	0.00	0.00	0.00	0.00	0.11	1.05
(32a) Critical Lane Group = XXXX	-	-	-	XXXX	XXXX	-	-	XXXX	-	-	-	-	XXXX	-
(33) Green Time Allocated as Proportion of Cycle, $g/C = [(32) * (29)]$. Sum of Critical Moves = 1.00	-	0.17	0.17	0.09	0.16	0.00	0.09	0.66	0.66	0.14	0.61	0.61	0.09	-
(34) Green Time Allocated in Seconds, $[(33) * (29)]$	-	16.6	16.6	9.0	16.3	0.0	8.7	65.7	65.7	14.1	60.6	60.6	8.9	-
(35) Minimum Ped Time Needed to Cross Street (5 Seconds per Lane Crossed + 7 Seconds)	-	21	21	0	21	0	5	15	24	0	15	0	0	-
(36) Signal Phases Available to Movement. 1 = Phase 1; 13 = Phases 1 and 3. [See Note 6]	-	68	68	56	234	8	8	1173	24	182	1075	4	89	-
(37) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), $c = [(33) * (4) / (C)] * (29)$	-	120	120	91	354	0	0	52.6	1.01	1.10	0.55	0.02	0.50	-
(38) Volume to Capacity Ratio, $v/c = X = [(28) / (37)]$	-	0.19	0.50	0.33	0.39	0.00	0.32	1.01	0.03	0.10	0.55	0.02	0.50	-
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	-	41.7	60.2	78.3	151.6	0.0	58.3	52.6	6.1	157.7	15.0	7.9	72.1	-
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	-	83	83	91	84	0.0	91	34	34	86	35	39	91	-
(41) Average Vehicle Queue Length at Beginning of Green, $[(28) / (2) * (29) * (40)]$	-	1.1	2.8	1.3	6.1	0.0	0.7	11.3	0.3	4.8	0.2	0.2	1.1	-
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	-	YES	YES	YES	NO	YES	YES	NO	YES	NO	YES	YES	YES	-
(43) Level of Service (LOS) Based on (39) [See Note 4]	-	D	E+	E-	F-	A+	E+	D-	A	F-	B	A-	E-	-
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	-	63.9 Sec; LOS = E	142.7 Sec; LOS = F-	66.4 Sec; LOS = E	18.7 Sec; LOS = B-	18.7 Sec; LOS = B-	66.4 Sec; LOS = E	18.7 Sec; LOS = B-	66.4 Sec; LOS = E	18.7 Sec; LOS = B-	66.4 Sec; LOS = E	18.7 Sec; LOS = B-	66.4 Sec; LOS = E	-

Signal Timing, Secs: Phase 1 = 8.9; Phase 2 = 5.1; Phase 3 = 0.0; Phase 4 = 60.6; Phase 5 = 8.7; Phase 6 = 0.3; Phase 7 = 0.0; Phase 8 = 16.3.
Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 8.9; Phase 3 = 14.1; Phase 4 = 14.1; Phase 5 = 74.7; Phase 6 = 83.4; Phase 7 = 83.7; Phase 8 = 83.7.
See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, ... , WL = Westbound Left

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2. Stanfield Cutoff (NS) and Big Bear Blvd. (EW) Time Period: AM Peak Hour		Traffic Condition: 2025 Average Month With Project Cycle Length: 100 Seconds		Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 88 Seconds									
Lanes: Existing													
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL	Total
INPUT DATA													
(1) Volume per Hour, V	30	30	33	29	320	38	345	19	120	816	63	31	1874
(2) Number of Lanes, N	0.50	0.50	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.00
(3) Right Turns (FREE-Free Right Turn Lane; ARROW-Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) Lost Time (Yellow, All Red, Etc.) in Seconds, L (Typically 2 to 4 Seconds) [See Note 9]	-	-	-	-	-	-	-	-	-	-	-	-	-
(5) Peak Hour Factor, PHF (1.00 for Peak Hour; 0.90 or 0.95 for Peak 15 Minutes)	-	-	-	-	-	-	-	-	-	-	-	-	-
(6) Lane Width (8', 9', 10', 11', 12' for Factor = 1.00; 13', 14', 15', or 16' for 15+)	-	-	-	-	-	-	-	-	-	-	-	-	-
(7) Percent Heavy Vehicles (0; 2; 4; 6; 8; 10; 15; 20; 25; or 30; Typically 4 or 6)	-	-	-	-	-	-	-	-	-	-	-	-	-
(8) Grade (-6; -4; -2; 0; +2; +4; or +6)	-	-	-	-	-	-	-	-	-	-	-	-	-
(9) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-
(10) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-
(11) CBD/Other (0=CBD; 1=Other)	-	-	-	-	-	-	-	-	-	-	-	-	-
(12) Right Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Shared Lane)	-	-	-	-	-	-	-	-	-	-	-	-	-
(13) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	-	-	-	-	-	-	-	-	-	-	-	-	-
(14) Left Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	-	-	-	-	-	-	-	-	-	-	-	-	-
(15) Saturated Flow Rate per Hour of Green Time (HCM Recommends 1900)	-	-	-	-	-	-	-	-	-	-	-	-	-
(16) Signal Progression (1=Pretimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	-	-	-	-	-	-	-	-	-	-	-	-	-
(17) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	1	1	1	1	1	1	1	1	1	1	1	1	1
FACTORS FROM TABLES													
(18) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(19) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(20) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(21) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(22) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(23) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(24) CBD/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(25) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(26) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27a) Progression K Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CALCULATED VALUES AND PERFORMANCE MEASURES													
(28) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, $v = [(1) \cdot (18) / (5)]$	32	32	35	367	0	40	363	20	126	859	66	33	1800
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, $s =$ [See Note 1]	950	950	1800	1900	0	1800	1900	1900	1800	1900	1900	1800	1800
(30) Flow Ratio, $v/s = [(28) / (29)]$	0.03	0.03	0.02	0.19	0.00	0.02	0.19	0.01	0.07	0.45	0.03	0.02	0.02
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.11	0.11	0.11	0.23	0.00	0.11	0.23	0.11	0.11	0.49	0.11	0.11	0.11
(32) Critical Lane Group = [(31)'s That Are Critical]. Total is 100% [See Note 10]	0.00	0.00	0.11	0.23	0.00	0.00	0.00	0.00	0.11	0.49	0.00	0.00	0.00
(33) Green Time Allocated as Proportion of Cycle, $g/c =$ [See Note 2]. Sum of Critical Moves = 1.00	0.24	0.24	0.11	0.24	0.00	0.11	0.24	0.54	0.11	0.54	0.54	0.11	0.11
(34) Green Time Allotted in Seconds, $[(33) \cdot \text{Cycle Length}]$	23.8	23.8	11.2	23.8	0.0	11.2	23.8	53.8	11.2	53.8	53.8	11.2	11.2
(35) Minimum Ped Time Needed to Cross Street (3 Seconds per Lane Crossed + 7 Seconds)	-	-	-	-	-	-	-	-	-	-	-	-	-
(36) Signal Phases Available to Movement. 1 = Phase 1; 13 = Phases 1 and 3. [See Note 6]	-	-	-	-	-	-	-	-	-	-	-	-	-
(37) Capacity in Vehicles per Hour (Includes Left Lane Penalty adjustment), $c = [(35) - (4) \cdot (C) \cdot (29)]$	188	188	130	375	0	130	375	24	131	945	945	130	130
(38) Volume to Capacity Ratio, $v/c = X = [(28) / (37)]$	0.17	0.17	0.27	0.98	0.00	0.08	0.98	0.02	0.08	0.47	0.07	0.08	0.08
(39) Average Delay per Vehicle in Seconds, $d =$ [See Note 3]	33.4	33.4	48.7	91.8	0.0	50.6	91.8	15.3	134.2	41.5	11.4	48.0	50.81
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	76	76	89	76	0	89	76	46	89	46	89	46	89
(41) Average Vehicle Queue Length at Beginning of Green, $[(28) / (2) \cdot \text{Cycle Length} / 3600 \cdot (40)]$	1.3	1.3	0.9	7.8	0.0	1.0	7.8	4.7	3.1	11.0	0.9	4.7	6.10
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	NO	YES	YES	YES	YES	NO	YES	YES	YES	NO
(43) Level of Service (LOS) Based on (39) [See Note 4]	C-	C-	D-	F	A+	D-	B	B+	F-	D+	B+	D	D-
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	38.8 Sec; LOS = D+	38.8 Sec; LOS = D+	87.8 Sec; LOS = F	44.6 Sec; LOS = D	39.6 Sec; LOS = D+	39.6 Sec; LOS = D+	39.6 Sec; LOS = D+	39.6 Sec; LOS = D+	39.6 Sec; LOS = D+	39.6 Sec; LOS = D+	39.6 Sec; LOS = D+	39.6 Sec; LOS = D+	39.6 Sec; LOS = D+

Signal Timing, Secs: Phase 1 = 11.2; Phase 2 = 0.0; Phase 3 = 0.0; Phase 4 = 53.7; Phase 5 = 11.2; Phase 6 = 0.0; Phase 7 = 0.0; Phase 8 = 23.8. If time = 0.0, Phase is skipped.
Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 11.2; Phase 3 = 11.3; Phase 4 = 11.3; Phase 5 = 65.0; Phase 6 = 76.2; Phase 7 = 76.2; Phase 8 = 76.2.
See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, SR = Southbound Right, SL = Southbound Left

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2. Stamford Cutoff (NS) and Big Bear Blvd. (EW)		Traffic Condition: 2025 Average Month With Project Cycle Length: 100 Seconds										When Present: 127 Seconds	
Time Period: PM Peak Hour		Lanes: Existing											
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL	Total
INPUT DATA													
(1) Volume per Hour, V	22	57	48	27	231	41	1123	32	208	564	43	42	2438
(2) Number of Lanes, N	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.00
(3) Right Turns (FREE=Free Right Turn Lane; ARROW=Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) Lost Time (Yellow, All Red, Etc) in Seconds, Y (Typically 2 to 4 Seconds) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-
(5) Peak Hour Factor, PHF (1.00 for Peak Hour; 0.90 or 0.95 for Peak 15 Minutes)	-	-	-	-	-	-	-	-	-	-	-	-	-
(6) Lane Width (8', 9', 10', 11', 12' [Factor = 1.00]; 13', 14', 15', or 16' for 15+')	-	-	-	-	-	-	-	-	-	-	-	-	-
(7) Percent Heavy Vehicles (0; 2; 4; 6; 8; 10; 15; 20; 25; or 30; Typically 4 or 6)	-	-	-	-	-	-	-	-	-	-	-	-	-
(8) Grade (-6; -4; -2; 0; +2; +4; or +6)	-	-	-	-	-	-	-	-	-	-	-	-	-
(9) Parking Maneuvers per Hour (-1 = No Parking [Factor = 1.00]; 0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-
(10) Buses Stopping per Hour (-1 = 0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-
(11) CBD/Other (0=CBD; 1=Other)	-	-	-	-	-	-	-	-	-	-	-	-	-
(12) Right Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Shared Lane)	-	-	-	-	-	-	-	-	-	-	-	-	-
(13) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	-	-	-	-	-	-	-	-	-	-	-	-	-
(14) Left Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	-	-	-	-	-	-	-	-	-	-	-	-	-
(15) Saturated Flow Rate per Hour of Green Time (HCM Recommends 1900)	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	
(16) Signal Progression (1=PreTimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	1	1	1	1	1	1	1	1	1	1	1	1	
(17) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	7	7	7	7	7	7	7	7	7	7	7	7	
FACTORS FROM TABLES													
(18) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(19) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(20) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(21) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(22) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(23) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(24) CBD/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(25) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(26) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(27) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(27a) Progression k Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
CALCULATED VALUES AND PERFORMANCE MEASURES													
(28) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, $v = [(1) * (18) / (5)]$	23	60	51	272	0	43	1182	34	219	594	45	44	
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, $s = [See Note 1]$	950	950	1800	1900	0	1800	1900	1900	1800	1900	1900	1800	
(30) Flow Ratio, $v/s = [(28) / (29)]$	0.02	0.06	0.03	0.14	0.00	0.02	0.62	0.02	0.12	0.31	0.02	0.02	
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.11	0.11	0.11	0.18	0.00	0.11	0.66	0.11	0.16	0.35	0.11	0.11	
(32) Critical Lane Group = [(31)'s That Are Critical]. Total is 100. [See Note 10]	0.00	0.00	0.11	0.18	0.00	0.00	0.66	0.00	0.00	0.00	0.00	0.00	1.06
(33) Critical Lane Group = XXXX			XXXX	XXXX			XXXX					XXXX	
(34) Green Time Allocated as Proportion of Cycle, $g/C = [See Note 2]. \text{Sum of Critical Moves} = 1.00$	0.17	0.17	0.09	0.16	0.00	0.09	0.66	0.06	0.15	0.59	0.59	0.09	
(35) Minimum Ped Time Allocated in Seconds, $[(33) * \text{Cycle Length}]$	16.5	16.5	9.0	16.4	0.0	8.9	65.6	6.6	15.1	59.4	59.4	9.0	
(36) Minimum Ped Time Needed to Cross Street [3 Seconds per Lane Crossed + 7 Seconds]	21	21	0	21	0	0	15	0	0	15	0	0	
(37) Signal Phases Available to Movement. 1 = Phase 1; 13 = Phases 1 and 3. [See Note 6]	68	68	56	8	0	5	24	24	12	4	4	1	
(38) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), $c = [(33) - (4) / C] * (29)$	119	119	91	236	0	89	1170	1170	200	1053	1053	89	
(39) Volume to Capacity Ratio, $v/c = X = [(28) / (37)]$	0.19	0.50	0.56	1.15	0.00	0.48	1.01	0.03	1.09	0.56	0.04	0.49	
(40) Average Delay per Vehicle in Seconds, d [See Note 3]	41.8	60.7	78.1	162.3	0.0	70.9	53.4	6.1	150.9	15.9	8.6	71.9	64.33
(41) Percent of Vehicles That Have to Stop [1.00 - (33)]	83	83	91	84	0	91	34	34	85	41	41	91	
(42) Average Vehicle Queue Length at Beginning of Green, $[(28) / (2) * \text{Cycle Length} / 3600 * (40)]$	1.1	2.8	1.3	6.3	0.0	1.1	11.3	0.3	5.2	6.7	0.5	1.1	7.42
(43) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	NO	YES	YES	NO	YES	NO	YES	YES	YES	NO
(44) Level of Service (LOS) Based on (39)	D	E+	E-	F-	A+	E	D-	A	F-	B	A-	E-	E
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	64.0 Sec; LOS = E	149.8 Sec; LOS = F-	67.2 Sec; LOS = E	19.1 Sec; LOS = B-	19.1 Sec; LOS = B-	19.1 Sec; LOS = B-	19.1 Sec; LOS = B-	19.1 Sec; LOS = B-	19.1 Sec; LOS = B-	19.1 Sec; LOS = B-	19.1 Sec; LOS = B-	19.1 Sec; LOS = B-	
Signal Timing, Secs: Phase 1 = 9.0; Phase 2 = 6.2; Phase 3 = 0.0; Phase 4 = 59.4; Phase 5 = 8.9; Phase 6 = 0.1; Phase 7 = 0.0; Phase 8 = 16.4. If time = 0.0, Phase is skipped.													
Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 9.0; Phase 3 = 15.1; Phase 4 = 15.1; Phase 5 = 74.5; Phase 6 = 83.5; Phase 7 = 83.6; Phase 8 = 83.6.													
See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, ... , WL = Westbound Left													

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2. Stanfield Cutoff (NS) and Big Bear Blvd. (EW) Time Period: AM Peak Hour Lanes: Restriped												
Traffic Condition: 2025 Average Month Without Project Cycle Length: 100 Seconds (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 76 Seconds)												
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WL	Total
INPUT DATA												
(1) Volume per Hour, V	30	30	33	29	304	15	34.5	19	115	816	55	1822
(2) Number of Lanes, N	0.50	0.50	1.00	1.00	0.00	1.00	2.00	0.00	1.00	2.00	0.00	10.00
(3) Right Turns (RT) per Hour	-	-	-	-	-	-	-	-	-	-	-	-
(4) Left Turns (LT) per Hour	-	-	-	-	-	-	-	-	-	-	-	-
(5) Lost Time (Yellow, All Red, Etc) in Seconds (Typically 2 to 4 Seconds) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-
(6) Peak Hour Factor, PHF (Typically 0.90 to 0.95 for Peak 15 Minutes)	-	-	-	-	-	-	-	-	-	-	-	-
(7) Lane Width (ft), W (Typically 12, 14, 15, or 16 for 15+)	-	-	-	-	-	-	-	-	-	-	-	-
(8) Percent Heavy Vehicles (HVs), P _{HV} (Typically 4 or 6)	-	-	-	-	-	-	-	-	-	-	-	-
(9) Grade (-6; -4; -2; 0; +2; +4; or +6)	-	-	-	-	-	-	-	-	-	-	-	-
(10) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-
(11) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-
(12) CSD/Other (0=CSD; 1=Other)	-	-	-	-	-	-	-	-	-	-	-	-
(13) Right Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Shared Lane)	-	-	-	-	-	-	-	-	-	-	-	-
(14) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	-	-	-	-	-	-	-	-	-	-	-	-
(15) Left Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	-	-	-	-	-	-	-	-	-	-	-	-
(16) Saturated Flow Rate per Hour of Green Time (ft/min Recommendations 1900)	-	-	-	-	-	-	-	-	-	-	-	-
(17) Signal Progression (1=Pretimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	-	-	-	-	-	-	-	-	-	-	-	-
(18) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	-	-	-	-	-	-	-	-	-	-	-	-
FACTORS FROM TABLES												
(19) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(20) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(21) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(22) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(23) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(24) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(25) CSD/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(26) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(28) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(29) Progression k Value [Table 9-14]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CALCULATED VALUES AND PERFORMANCE MEASURES												
(30) Adjusted Saturation Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	32	32	35	351	0	16	383	0	121	917	0	33
(31) Flow Ratio, v/s = [(28)/(29)]	0.03	0.03	0.02	0.18	0.00	0.01	0.10	0.00	0.07	0.24	0.00	0.02
(32) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.11	0.11	0.11	0.22	0.00	0.11	0.14	0.00	0.11	0.28	0.00	0.11
(33) Critical Lane Group = [(31)'s That Are Critical]. Total is 100% [See Note 10]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(34) Green Time Allocated as Proportion of Cycle, g/C [See Note 2]. Sum of Critical Moves = 1.00	0.28	0.28	0.14	0.28	0.00	0.13	0.45	0.00	0.14	0.45	0.00	0.14
(35) Minimum Ped Time Needed to Cross Street [3 Seconds per Lane Crossed + 7 Seconds]	21	21	21	21	0	5	15	0	12	15	0	12
(36) Signal Phases Available to Movement 1 = Phase 1; 3 = Phases 1 and 3 [See Note 6]	68	68	68	68	8	17	15	24	12	15	4	17
(37) Capacity in Vehicles per Hour (includes Yellow Penalty adjustment, c=[(33)-(4)/C]*(29))	224	224	171	448	0	171	1574	0	69	1567	0	171
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.14	0.14	0.20	0.78	0.00	0.09	0.24	0.00	0.20	0.23	0.00	0.19
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	29.4	29.4	42.7	53.1	0.0	39.6	17.3	0.0	72.0	55	0.0	42.4
(40) Percent of Vehicles that Have to Stop [1.00 - (33)]	72	72	86	72	0.0	87	55	0.0	86	55	0.0	86
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length/3600 * (40)]	1.3	1.3	0.8	7.1	0.0	0.4	2.9	0.0	2.9	7.0	0.0	0.8
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
(43) Level of Service (LOS) Based on (39) [See Note 4]	C	C	D	D-	A+	D+	B-	A+	E-	C+	A+	C-
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	34.2 Sec; LOS = C-	34.2 Sec; LOS = C-	52.5 Sec; LOS = D-	30.5 Sec; LOS = C-	23.7 Sec; LOS = C+	31.50	4.04	YES	C-			

Signal Timing, Secs: Phase 1 = 13.5; Phase 2 = 0.2; Phase 3 = 0.0; Phase 4 = 45.2; Phase 5 = 13.5; Phase 6 = 0.0; Phase 7 = 0.0; Phase 8 = 27.6. If time = 0.0, Phase is skipped.
Signal Offset, Secs: Phase 1 = 0.0; Phase 2 = 13.5; Phase 3 = 13.5; Phase 4 = 13.5; Phase 5 = 58.9; Phase 6 = 72.4; Phase 7 = 72.4; Phase 8 = 72.4.
See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, SR = Southbound Right, SL = Southbound Left

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2. Starfield Cutoff (NS) and Big Bear Blvd. (EW) Time Period: PM Peak Hour Lanes: Restriped										
Traffic Condition: 2025 Average Month Without Project Cycle Length: 100 Seconds (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 106 Seconds)										
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT
INPUT DATA										
(1) Volume per Hour, V	22	57	48	27	221	26	1123	32	190	564
(2) Number of Lanes, N	0.50	0.50	1.00	1.00	0.00	1.00	2.00	0.00	1.00	42
(3) Right Turns (FREE-Free Right Turn Lane; ARROW-Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	16
(4) Lost Time (Yellow, All Red, Etc.) in Seconds Y (Typically 2 to 4 Seconds) [See Note 9]	-	-	-	-	-	-	-	-	-	2.00
(5) Peak Hour Factor, PHF (1.00 for Peak Hour; 0.90 or 0.95 for Peak 15 Minutes) [See Note 9]	-	-	-	-	-	-	-	-	-	0.00
(6) Lane Width Factor, WLF (1.00 for 11' or 12' Factor = 1.00; 13', 14', 15', or 16' for 15+)	-	-	-	-	-	-	-	-	-	4.00
(7) Percent Heavy Vehicles (0; 2; 4; 6; 8; 10; 15; 20; 25; or 30; Typically 4 or 6)	-	-	-	-	-	-	-	-	-	0.95
(8) Grade (-6; -4; -2; 0; +2; +4; or +6)	-	-	-	-	-	-	-	-	-	12
(9) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	0
(10) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	0
(11) CBO/Other (0=CBO; 1=Other)	-	-	-	-	-	-	-	-	-	0
(12) Right Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Shaped Lane)	-	-	-	-	-	-	-	-	-	0
(13) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	-	-	-	-	-	-	-	-	-	0
(14) Left Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	-	-	-	-	-	-	-	-	-	0
(15) Saturated Flow Rate per Hour of Green Time (HOM Recommends 1900)	-	-	-	-	-	-	-	-	-	0
(16) Signal Progression (1=Pretimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	-	-	-	-	-	-	-	-	-	0
(17) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900
FACTORS FROM TABLES										
(18) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(19) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(20) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(21) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(22) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(23) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(24) CBO/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(25) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(26) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27a) Progression K Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CALCULATED VALUES AND PERFORMANCE MEASURES										
(28) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	23	60	51	261	0	27	1216	0	200	611
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	950	950	1800	1900	0	1800	3600	0	1800	3600
(30) Flow Ratio, v/s = [(28)/(29)]	0.02	0.06	0.03	0.14	0.00	0.02	0.32	0.00	0.11	0.16
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	-	-	-	-	-	-	-	-	-	-
(32) Critical Lane Group = [(31)'s That Are Critical]. Total is 10. [See Note 10]	-	-	-	-	-	-	-	-	-	-
(33) Green Time Allocated as Proportion of Cycle, g/C = [See Note 2]. Sum of Critical Moves = 1.00	-	-	-	-	-	-	-	-	-	-
(34) Green Time Allocated in Seconds, [(33) * Cycle Length]	20.1	20.1	12.7	19.7	0.0	12.4	55.0	0.0	19.2	48.4
(35) Minimum Ped Time Needed to Cross Street (3 Seconds per Lane Crossed + 7 Seconds)	21	21	0	21	0	0	15	0	0	15
(36) Signal Phases Available to Movement: 1 = Phase 1; 15 = Phases 1 and 3. [See Note 6]	-	-	-	-	-	-	-	-	-	-
(37) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), c = [(33)-(4)/C]*(29)]	152	68	56	299	0	151	1937	0	273	1688
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.15	0.99	0.32	0.87	0.00	0.18	0.63	0.00	0.73	0.36
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	36.4	46.6	48.5	78.5	0.0	43.5	18.0	0.0	62.5	17.1
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	-	-	-	-	-	-	-	-	-	-
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length/3600 * (40)]	80	80	87	80	0.0	88	45	0	81	52
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
(43) Level of Service (LOS) Based on (39) [See Note 4]	D+	D	D-	E-	A+	D	B-	A+	E+	B-
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	45.5 Sec; LOS = D	75.2 Sec; LOS = E-	24.3 Sec; LOS = C+	19.1 Sec; LOS = B-	C					

Signal Timing, Secs: Phase 1 = 12.6; Phase 2 = 6.6; Phase 3 = 0.0; Phase 4 = 48.4; Phase 5 = 12.4; Phase 6 = 0.3; Phase 7 = 0.0; Phase 8 = 19.7. If time = 0.0, Phase is skipped.
 Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 12.6; Phase 3 = 19.2; Phase 4 = 19.2; Phase 5 = 67.6; Phase 6 = 79.6; Phase 7 = 80.3; Phase 8 = 80.3.
 See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, ... , WL = Westbound Left

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2. Stanfield Cutoff (NS) and Big Bear Blvd. (EW)													
Time Period: AM Peak Hour													
Lanes: Restriped													
Traffic Condition: 2025 Average Month With Project													
Cycle Length: 100 Seconds													
Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 72 Seconds													
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL	Total
INPUT DATA													
(1) Volume per Hour, V	30	30	33	29	320	38	345	19	120	816	63	31	1874
(2) Number of Lanes, N	0.50	0.50	1.00	1.00	0.00	1.00	2.00	0.00	1.00	2.00	0.00	1.00	10.00
(3) Right Turns (FREE=Free Right Turn Lane; AROW=Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) Left Turns (FREE=Free Left Turn Lane; AROW=Left Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-
(5) Lost Time (Yellow, All Red, Etc.) in Seconds, Y (Typically 2 to 4 Seconds) [See Note 9]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
(6) Peak Hour Factor, PHF (1.00 for Peak Hour; 0.90 or 0.95 for Peak 15 Minutes)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
(7) Lane Width (8; 9; 10; 11; 12 [Factor = 1.00]; 13; 14; 15; or 16 for 15+)	12	12	12	12	12	12	12	12	12	12	12	12	12
(8) Percent Heavy Vehicles (0; 2; 4; 6; 8; 10; 15; 20; 25; or 30; Typically 4 or 6)	0	0	0	0	0	0	0	0	0	0	0	0	0
(9) Grade (-6; -4; -2; 0; +2; +4; or +6)	0	0	0	0	0	0	0	0	0	0	0	0	0
(10) Parking Maneuvers per Hour (1 = No Parking [Factor = 1.00]; 0; 10; 20; 30; or 40)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
(11) Buses Stopping per Hour (0; 10; 20; 30; or 40)	0	0	0	0	0	0	0	0	0	0	0	0	0
(12) CBD/Other (0=CBD, 1=Other)	0	0	0	0	0	0	0	0	0	0	0	0	0
(13) Right Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Shared Lane)	0	0	0	0	0	0	0	0	0	0	0	0	0
(14) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	0	0	0	0	0	0	0	0	0	0	0	0	0
(15) Left Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	0	0	0	0	0	0	0	0	0	0	0	0	0
(16) Saturated Flow Rate per Hour of Green Time (HCM Recommends 1900)	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900
(17) Signal Progression (1=PreTimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	1	1	1	1	1	1	1	1	1	1	1	1	1
(18) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	7	7	7	7	7	7	7	7	7	7	7	7	7
FROM TABLES													
(18) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(19) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(20) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(21) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(22) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(23) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(24) CBD/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(25) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(26) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27a) Progression k Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CALCULATED VALUES AND PERFORMANCE MEASURES													
(28) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	32	32	35	367	0	40	383	0	126	925	0	33	33
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	950	950	1800	1900	0	1800	3800	0	1800	3800	0	1800	1800
(30) Flow Ratio, v/s = [(28)/(29)]	0.03	0.03	0.02	0.19	0.00	0.02	0.10	0.00	0.07	0.24	0.00	0.02	0.02
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.11	0.11	0.11	0.23	0.00	0.11	0.14	0.00	0.11	0.28	0.00	0.11	0.11
(32) Critical Lane Group = [(31)*s That Are Critical]. Total is 1.00. [See Note 10]	0.00	0.00	0.11	0.23	0.00	0.00	0.00	0.00	0.11	0.28	0.00	0.00	0.00
(33) Critical Lane Group = XXXXX			XXXX	XXXX					XXXX	XXXX			
(34) Green Time Allocated as Proportion of Cycle, g/C=[See Note 2]. Sum of Critical Moves = 1.00	0.29	0.29	0.14	0.29	0.00	0.14	0.44	0.00	0.15	0.43	0.00	0.14	0.14
(35) Minimum Time Needed in Seconds, [(33) * Cycle Length]	28.8	28.8	13.8	28.9	0.0	13.9	43.5	0.0	14.7	42.6	0.0	13.8	13.8
(36) Minimum Ped Time Needed to Cross Street [3 Seconds per Lane Crossed + 7 Seconds]	21	21	0	21	0	0	15	0	0	15	0	0	0
(37) Signal Phases Available to Movement, 1 = Phase 1; 13 = Phases 1 and 3. [See Note 6]	8	8	5	78	0	57	1501	0	12	1468	0	176	176
(38) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), c=[(33)-(4)/C]*(29)	236	236	177	473	0	177	1501	0	192	1468	0	176	176
(39) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.13	0.13	0.20	0.50	0.00	0.23	0.26	0.00	0.66	0.63	0.00	0.19	0.19
(40) Average Delay per Vehicle in Seconds, d = [(28)/(37)]	28.2	28.2	42.2	50.8	0.0	43.0	18.6	0.0	65.5	25.8	0.0	41.9	41.9
(41) Percent of Vehicles That Have to Stop [1.00 - (33)]	71	71	86	71	0.0	86	56	0.0	85	57	0.0	86	86
(42) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length/3600 * (40)]	1.2	1.2	0.8	7.3	0.0	1.0	3.0	0.0	3.0	7.4	0.0	0.8	0.8
(43) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
(44) Level of Service (LOS) Based on (39) [See Note 4]	C	C	D	D-	A+	D	B-	A+	E	C	A+	D	C-
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	33.2 Sec; LOS = C-	33.2 Sec; LOS = C-	50.0 Sec; LOS = D-	30.2 Sec; LOS = C-	26.4 Sec; LOS = C	C-							
Signal Timing, Secs: Phase 1 = 13.8; Phase 2 = 0.9; Phase 3 = 0.0; Phase 4 = 42.6; Phase 5 = 57.3; Phase 6 = 0.0; Phase 7 = 0.0; Phase 8 = 28.8. If time = 0.0, Phase is skipped.													
Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 13.8; Phase 3 = 14.7; Phase 4 = 14.7; Phase 5 = 71.1; Phase 6 = 71.1; Phase 7 = 71.1; Phase 8 = 71.2.													
See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, SR = Southbound Right, SL = Southbound Left, ET = Eastbound Through, ER = Eastbound Right, EL = Eastbound Left, WT = Westbound Through, WR = Westbound Right, WL = Westbound Left													

Signal Timing, Secs: Phase 1 = 13.8; Phase 2 = 0.9; Phase 3 = 0.0; Phase 4 = 42.6; Phase 5 = 13.8; Phase 6 = 0.0; Phase 7 = 0.0; Phase 8 = 28.8. If time = 0.0, Phase is skipped.
Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 13.8; Phase 3 = 14.7; Phase 4 = 14.7; Phase 5 = 57.3; Phase 6 = 71.1; Phase 7 = 71.1; Phase 8 = 71.2.
See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, ... , WL = Westbound Left

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2. Stanfield Cutoff (NS) and Big Bear Blvd. (EW)		Traffic Condition: 2025 Average Month With Project										Cycle Length: 100 Seconds		Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 103 Seconds	
Time Period: PM Peak Hour		Lanes: Restriped													
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL	Total		
INPUT DATA															
(1) Volume per Hour, V	22	57	48	27	231	41	1123	32	208	564	43	42	2438		
(2) Number of Lanes, N	0.50	0.50	1.00	1.00	0.00	1.00	2.00	0.00	1.00	2.00	0.00	1.00	10.00		
(3) Right Turns (FREE=Free Right Turn Lane; ARROW=Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-		
(4) Lost Time (Yellow, All Red, Etc) in Seconds, Y (Typically 2 to 4 Seconds) [See Note 9]	-	-	-	-	-	-	-	-	-	-	-	-	-		
(5) Peak Hour Factor, PHF (1.00 for Peak Hour; 0.90 or 0.95 for Peak 15 Minutes)	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00		
(6) Lane Width Factor, WLF (1.00 for 12 ft; 0.95 for 10 ft; 0.90 for 10 ft or less)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		
(7) Percent Heavy Vehicles, H _v (0; 2; 4; 6; 8; 10; 15; 20; 25; or 30; Typically 4 or 6)	12	12	12	12	12	12	12	12	12	12	12	12	12		
(8) Grade (-6; -4; -2; 0; +2; or +6)	0	0	0	0	0	0	0	0	0	0	0	0	0		
(9) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-		
(10) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-		
(11) CBD/Other (0=CBD; 1=Other)	1	1	1	1	1	1	1	1	1	1	1	1	1		
(12) Right Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Shared Lane)	0	0	0	0	0	0	0	0	0	0	0	0	0		
(13) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	0	0	0	0	0	0	0	0	0	0	0	0	0		
(14) Left Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	0	0	0	0	0	0	0	0	0	0	0	0	0		
(15) Saturated Flow Rate per Hour of Green Time (HDM Recommends 1900)	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900		
(16) Signal Progression (1=Pretimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	1	1	1	1	1	1	1	1	1	1	1	1	1		
(17) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	7	7	7	7	7	7	7	7	7	7	7	7	7		
FACTORS FROM TABLES															
(18) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
(19) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
(20) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
(21) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
(22) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
(23) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
(24) CBD/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
(25) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
(26) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
(27) Progression k Value [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
(27a) Progression k Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		
CALCULATED VALUES AND PERFORMANCE MEASURES															
(28) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	23	60	51	272	0	43	1216	0	219	639	0	44	1800		
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	950	950	1800	1900	0	1800	3800	0	1800	3800	0	1800	3800		
(30) Flow Ratio, v/s = [(28)/(29)]	0.02	0.06	0.03	0.14	0.00	0.02	0.32	0.00	0.12	0.17	0.00	0.02	0.02		
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.01	0.11	0.11	0.18	0.00	0.11	0.36	0.00	0.16	0.21	0.00	0.11	0.11		
(32) Critical Lane Group = [(31)]'s That Are Critical. Total is 100. [See Note 10]	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.11	0.11		
(33) Green Time Alllocated as Proportion of Cycle, g/C=[See Note 2]. Sum of Critical Moves = 1.00	0.20	0.20	0.13	0.20	0.00	0.13	0.55	0.00	0.20	0.47	0.00	0.13	0.13		
(34) Green Time Alllocated in Seconds, [(33) * Cycle Length]	20.4	20.4	12.6	20.3	0.0	12.5	54.5	0.0	20.4	46.6	0.0	12.6	12.6		
(35) Minimum Ped Time Needed to Cross Street (3 Seconds per Lane Crossed + 7 Seconds)	21	21	15	21	8	15	24	0	12	15	0	15	15		
(36) Signal Phases Available to Movement. 1 = Phase 1; 13 = Phases 1 and 3. [See Note 6]	156	68	56	310	8	154	1920	24	296	1620	4	154	154		
(37) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), c=[(35)-(4)/(C)*(29)]	156	156	156	310	8	154	1920	24	296	1620	4	154	154		
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.15	0.39	0.33	0.88	0.00	0.28	0.63	0.00	0.74	0.39	0.00	0.29	0.29		
(39) Average Delay per Vehicle in Seconds, d = [(38)] * (37)	35.9	45.7	48.6	78.1	0.0	46.9	18.4	0.0	60.7	18.6	0.0	47.1	47.1		
(40) Percent of Vehicles That Have to Stop [1.00 - (35)]	80	80	87	80	0.0	87	45	0.0	80	53	0.0	87	87		
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length/3600 * (40)]	1.0	2.7	1.2	6.0	0.0	1.0	7.7	0.0	4.8	4.7	0.0	1.1	1.1		
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES		
(43) Level of Service (LOS) Based on (39) [See Note 4]	D+	D	D-	E-	A+	D	B-	A+	E+	B-	A+	D	C-		
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	45.1 Sec; LOS = D	73.8 Sec; LOS = E-	24.8 Sec; LOS = C+	20.5 Sec; LOS = C+	20.5 Sec; LOS = C+	20.5 Sec; LOS = C+	20.5 Sec; LOS = C+	20.5 Sec; LOS = C+	20.5 Sec; LOS = C+	20.5 Sec; LOS = C+	20.5 Sec; LOS = C+	20.5 Sec; LOS = C+	20.5 Sec; LOS = C+		

Signal Timing, Secs: Phase 1 = 12.6; Phase 2 = 7.9; Phase 3 = 0.0; Phase 4 = 46.6; Phase 5 = 12.5; Phase 6 = 0.1; Phase 7 = 0.0; Phase 8 = 20.3. If time = 0.0, Phase is skipped.

Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 12.6; Phase 3 = 20.4; Phase 4 = 20.4; Phase 5 = 67.1; Phase 6 = 79.6; Phase 7 = 79.7; Phase 8 = 79.7.

See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, ... , WL = Westbound Left

Signal Timing, Secs: Phase 1 = 12.6; Phase 2 = 7.9; Phase 3 = 0.0; Phase 4 = 46.6; Phase 5 = 12.5; Phase 6 = 0.1; Phase 7 = 0.0; Phase 8 = 20.3. If time = 0.0, Phase is skipped.
 Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 12.6; Phase 3 = 20.4; Phase 4 = 20.4; Phase 5 = 67.1; Phase 6 = 79.6; Phase 7 = 79.7; Phase 8 = 79.7.
 See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, SL = Southbound Left

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2. Stanfield Cutoff (NS) and Big Bear Blvd. (EW) Time Period: AM Peak Hour Lanes: Existing											
Traffic Condition: 2025 Peak Month Without Project Cycle Length: 100 Seconds Needed to Satisfy Pedestrians When Present: 89 Seconds											
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WL
INPUT DATA											
(1) Volume per Hour, V	37	37	42	36	380	19	431	23	144	1020	68
(2) Number of Lanes, N	0.50	0.50	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
(3) Right Turns (RT) per Hour, RT	-	-	-	-	-	-	-	-	-	-	-
(4) Left Turns (LT) per Hour, LT	-	-	-	-	-	-	-	-	-	-	-
(5) Lost Time Yellow, All Red, etc. in Seconds, Y (Typically 2 to 4 Seconds) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-
(6) Peak Hour Factor, PHF (Typically 0.90 to 0.95 for Peak 15 Minutes)	-	-	-	-	-	-	-	-	-	-	-
(7) Lane Width Factor, WLF (Typically 1.00 for 12 ft, 0.95 for 10 ft, 0.90 for 8 ft)	-	-	-	-	-	-	-	-	-	-	-
(8) Percent Heavy Vehicles, P _{HV} (Typically 0 to 10%)	-	-	-	-	-	-	-	-	-	-	-
(9) Grade (-6; -4; -2; 0; +2; +4; or +6)	-	-	-	-	-	-	-	-	-	-	-
(10) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-
(11) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-
(12) Right Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Shared Lane)	-	-	-	-	-	-	-	-	-	-	-
(13) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	-	-	-	-	-	-	-	-	-	-	-
(14) Left Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	-	-	-	-	-	-	-	-	-	-	-
(15) Saturated Flow Rate per Hour of Green Time (1000 Recommended)	-	-	-	-	-	-	-	-	-	-	-
(16) Signal Progression (1=Unprotected/Factor=1.00; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	-	-	-	-	-	-	-	-	-	-	-
(17) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	-	-	-	-	-	-	-	-	-	-	-
FACTORS FROM TABLES											
(18) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(19) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(20) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(21) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(22) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(23) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(24) C&D/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(25) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(26) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27a) Progression k Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CALCULATED VALUES AND PERFORMANCE MEASURES											
(28) Adjusted Saturation Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	39	39	44	438	0	20	454	24	152	1074	41
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	950	950	1800	1900	0	1800	1900	1900	1800	1900	1800
(30) Flow Ratio, v/s = [(28)/(29)]	0.04	0.04	0.02	0.23	0.00	0.01	0.24	0.01	0.08	0.57	0.02
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.11	0.11	0.11	0.27	0.00	0.11	0.28	0.11	0.12	0.61	0.11
(32) Critical Lane Group = [(31)'s That Are Critical]. Total is 100% [See Note 10]	0.00	0.00	0.11	0.27	0.00	0.00	0.00	0.00	0.12	0.61	0.00
(33) Green Time Allocated as Proportion of Cycle, g/C [See Note 2]. Sum of Critical Moves = 1.00	0.23	0.23	0.10	0.23	0.00	0.10	0.58	0.58	0.11	0.56	0.10
(34) Green Time Allocated in Seconds, [(33) * Cycle Length]	23.4	23.4	9.5	23.4	0.0	9.5	57.5	57.5	10.8	56.2	9.5
(35) Minimum Ped Time Needed to Cross Street (3 Seconds)	3	3	3	3	3	3	3	3	3	3	3
(36) Signal Phases Available to Movement. 1 = Phase 1; 2 = Phases 1 and 3 [See Note 6]	1	1	1	1	1	1	1	1	1	1	1
(37) Capacity in Vehicles per Hour (includes Yellow Penalty adjustment), c = [(33)-(4)/C*(29)]	184	184	184	369	0	99	1077	1077	123	992	99
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.21	0.21	0.11	0.62	0.00	0.11	0.22	0.22	0.09	0.52	0.11
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	35.0	35.0	64.4	157.9	0.0	20.0	44.0	44.0	223.5	82.4	10.2
(40) Percent of Vehicles that Have to Stop [1.00 - (35)]	77	77	90	77	0	90	42	42	89	44	90
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length/3600 * (40)]	1.7	1.7	1.1	9.3	0.0	0.5	5.4	5.4	3.8	13.1	1.0
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	NO	YES	YES	YES	YES	NO	NO	YES
(43) Level of Service (LOS) Based on (39) [See Note 4]	D+	D+	E	F-	A+	D-	B	A-	F-	F+	E+
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	45.7 Sec; LOS = D	153.1 Sec; LOS = F-	64.6 Sec; LOS = E	77.4 Sec; LOS = E-	F+						

Signal Timing, Secs: Phase 1 = 9.5; Phase 2 = 1.3; Phase 3 = 0.0; Phase 4 = 56.2; Phase 5 = 9.5; Phase 6 = 0.0; Phase 7 = 0.0; Phase 8 = 23.4. If time = 0.0, Phase is skipped.
 Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 9.5; Phase 3 = 10.8; Phase 4 = 10.8; Phase 5 = 67.1; Phase 6 = 76.6; Phase 7 = 76.6; Phase 8 = 76.6.
 See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, SL = Southbound Left

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2, Stanfield Cutoff (NS) and Big Bear Blvd. (EW)													
Time Period: PM Peak Hour													
Lanes: Existing													
Traffic Condition: 2025 Peak Month Without Project													
Cycle Length: 100 Seconds (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 128 Seconds)													
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL	Total
INPUT DATA													
(1) Volume per Hour, V	28	71	60	34	276	33	1404	40	237	705	20	53	2961
(2) Number of Lanes, N	0.50	0.50	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.00
(3) Right Turns (FREE=Free Right Turn Lane; ARROW=Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) Lost Time (Yellow, All Red, Etc.) in Seconds, Y (Typically 2 to 4 Seconds) [See Note 9]	-	-	-	-	-	-	-	-	-	-	-	-	-
(5) Peak Hour Factor, PHF (1.00 for Peak Hour; 0.90 or 0.95 for Peak 15 Minutes)	-	-	-	-	-	-	-	-	-	-	-	-	-
(6) Lane Width (8'; 9'; 10'; 11'; 12' if Factor = 1.00; 13'; 14'; 15'; or 16' for 15')	-	-	-	-	-	-	-	-	-	-	-	-	-
(7) Percent Heavy Vehicles (0; 2; 4; 6; 8; 10; 15; 20; 25; or 30; Typically 4 or 6)	-	-	-	-	-	-	-	-	-	-	-	-	-
(8) Grade (-6; -4; -2; 0; 2; 4; or 6)	-	-	-	-	-	-	-	-	-	-	-	-	-
(9) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-
(10) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-
(11) CBD/Other (0=CBD, 1=Other)	-	-	-	-	-	-	-	-	-	-	-	-	-
(12) Right Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Shared Lane)	-	-	-	-	-	-	-	-	-	-	-	-	-
(13) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	-	-	-	-	-	-	-	-	-	-	-	-	-
(14) Left Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	-	-	-	-	-	-	-	-	-	-	-	-	-
(15) Saturated Flow Rate per Hour of Green Time (HCM Recommends 1900)	-	-	-	-	-	-	-	-	-	-	-	-	-
(16) Signal Progression (1=PreTimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	-	-	-	-	-	-	-	-	-	-	-	-	-
(17) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	-	-	-	-	-	-	-	-	-	-	-	-	-
FACTORS FROM TABLES													
(18) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(19) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(20) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(21) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(22) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(23) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(24) CBD/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(25) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(26) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27a) Progression k Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CALCULATED VALUES AND PERFORMANCE MEASURES													
(28) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	29	75	63	326	0	35	1478	42	249	742	21	56	2961
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	950	950	1800	1900	0	1800	1900	1900	1800	1900	1900	1800	1800
(30) Flow Ratio, v/s = [(28)/(29)]	0.03	0.08	0.04	0.17	0.00	0.02	0.78	0.02	0.14	0.39	0.01	0.03	0.03
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.12	0.12	0.11	0.21	0.00	0.11	0.82	0.11	0.18	0.43	0.11	0.11	0.11
(32) Critical Lane Group = [(31)'s That Are Critical], Total is 100. [See Note 10]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(33) Green Time Allocated as Proportion of Cycle, g/C [See Note 2]. Sum of Critical Moves = 1.00	0.17	0.17	0.08	0.16	0.00	0.07	0.68	0.68	0.14	0.62	0.62	0.08	0.08
(34) Green Time Allocated in Seconds, [(33) * Cycle Length]	16.6	16.6	7.8	16.3	0.0	7.5	68.2	68.2	14.1	61.8	61.8	7.7	7.7
(35) Minimum Ped Time Needed to Cross Street [3 Seconds per Lane Crossed + 7 Seconds]	21	21	0	21	0	5	24	24	12	15	15	0	0
(36) Signal Phases Available to Movement. 1 = Phase 1; 13 = Phases 1 and 3. [See Note 6]	120	68	56	234	0	63	1220	1220	182	1098	1098	66	66
(37) Capacity in Vehicles per Hour (includes Yellow Penalty adjustment), c = [(33)-(4)/(C)*(29)]	0.25	0.62	0.93	1.39	0.0	0.56	1.21	0.03	1.37	0.68	0.02	0.84	0.84
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	44.0	72.4	165.7	255.1	0.0	92.0	123.2	5.3	254.9	17.9	7.4	143.4	143.4
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	83	83	92	84	0.0	93	32	32	86	38	38	92	92
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	1.4	3.5	1.6	7.6	0.0	0.9	13.1	0.4	5.9	7.9	0.2	1.4	1.4
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length/3600 * (40)]	YES	YES	YES	NO	YES	YES	NO	YES	NO	YES	YES	YES	YES
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	D	E	F	F	A+	F	F	A	F	B-	A-	F	F
(43) Level of Service (LOS) Based on (39) [See Note 4]	-	-	-	-	-	-	-	-	-	-	-	-	-
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	102.6 Sec; LOS = F-	102.6 Sec; LOS = F-	239.4 Sec; LOS = F-	139.0 Sec; LOS = F-	26.2 Sec; LOS = C	26.2 Sec; LOS = C	26.2 Sec; LOS = C	26.2 Sec; LOS = C	26.2 Sec; LOS = C	26.2 Sec; LOS = C	26.2 Sec; LOS = C	26.2 Sec; LOS = C	26.2 Sec; LOS = C
Signal Timing, Secs: Phase 1 = 7.7; Phase 2 = 6.4; Phase 3 = 0.0; Phase 4 = 61.8; Phase 5 = 7.5; Phase 6 = 0.3; Phase 7 = 0.0; Phase 8 = 16.3. If time = 0.0, Phase is skipped. Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 7.7; Phase 3 = 14.1; Phase 4 = 14.1; Phase 5 = 75.9; Phase 6 = 83.4; Phase 7 = 83.7; Phase 8 = 83.7. See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, SR = Southbound Right, SL = Southbound Left, ET = Eastbound Through, ER = Eastbound Right, EL = Eastbound Left, WT = Westbound Through, WR = Westbound Right, WL = Westbound Left													

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2. Stanfield Cutoff (NS) and Big Bear Blvd. (EW) Time Period: AM Peak Hour Lanes: Existing														Traffic Condition: 2025 Peak Month With Project Cycle Length: 100 Seconds (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 87 Seconds)													
Descriptor	NT	MR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL	Total														
INPUT DATA																											
(1) Volume per Hour, V	37	37	42	36	396	42	431	23	149	1020	76	39	2328														
(2) Number of Lanes, N	0.50	0.50	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.00														
(3) Right Turns (FREE=Free Right Turn Lane; ARROW=Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-														
(4) Lost Time (Yellow, All Red, Etc) in Seconds, Y (Typically 2 to 4 Seconds) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-														
(5) Peak Hour Factor, PHF (Typically 0.90 to 0.95 for Peak 15 Minutes)	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00														
(6) Lane Width (ft), W (Typically 12 for Peak Hour; 10 for 15 Minutes)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95														
(7) Percent Heavy Vehicles (0; 2; 4; 6; 8; 10; 15; 20; 25; or 30; Typically 4 or 6)	12	12	12	12	12	12	12	12	12	12	12	12	12														
(8) Grade (-6; -4; -2; 0; +2; +4; or +6)	0	0	0	0	0	0	0	0	0	0	0	0	0														
(9) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	0	0	0	0	0	0	0	0	0	0	0	0	0														
(10) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1														
(11) CBD/Other (0=CBD; 1=Other)	1	1	1	1	1	1	1	1	1	1	1	1	1														
(12) Right Turn Lane Type (0=Standard; 1=Protected; 2=Protected w/ Shared Lane)	-	-	-	-	-	-	-	-	-	-	-	-	-														
(13) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	-	-	-	-	-	-	-	-	-	-	-	-	-														
(14) Left Turn Lane Type (0=Standard; 1=Protected; 2=Protected w/ Separate Arrow)	-	-	-	-	-	-	-	-	-	-	-	-	-														
(15) Saturated Flow Rate per Hour of Green Time (HCM Recommends 1900)	0	0	0	0	0	0	0	0	0	0	0	0	0														
(16) Signal Progression (1=Pretimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900														
(17) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	7	7	7	7	7	7	7	7	7	7	7	7	7														
FACTORS																											
(18) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00														
(19) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00														
(20) Heavy Vehicle Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00														
(21) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00														
(22) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00														
(23) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00														
(24) CBD/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00														
(25) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00														
(26) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00														
(27) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00														
(27a) Progression k Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50														
CALCULATED VALUES AND PERFORMANCE MEASURES																											
(28) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	39	39	44	455	0	44	454	24	157	1074	80	41	1.12														
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	950	950	1800	1900	0	1800	1900	1900	1800	1900	1900	1800															
(30) Flow Ratio, v/s = [(28)/(29)]	0.04	0.04	0.02	0.24	0.00	0.02	0.24	0.01	0.09	0.57	0.04	0.02															
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.11	0.11	0.11	0.28	0.00	0.11	0.28	0.11	0.13	0.61	0.11	0.11															
(32) Critical Lane Group = [(31)'s That Are Critical]. Total is 101. [See Note 10]	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.13	0.61	0.00	0.00															
(33) Green Time Allocated as Proportion of Cycle, g/C=[See Note 2]. Sum of Critical Moves = 1.00	0.24	0.24	0.09	0.24	0.00	0.09	0.57	0.57	0.11	0.36	0.56	0.09															
(34) Green Time Allocated in Seconds, [(33) * Cycle Length]	24.0	24.0	9.4	24.0	0.0	9.4	57.1	57.1	11.0	35.6	55.6	9.4															
(35) Minimum Ped Time Needed to Cross Street [3 Seconds per Lane Crossed + 7 Seconds]	21	21	0	21	0	0	15	15	0	15	0	0															
(36) Signal Phases Available to Movement. 1 = Phase 1; 15 = Phases 1 and 3. [See Note 6]	68	68	56	379	8	5	24	24	12	980	4	1															
(37) Capacity in Vehicles per Hour (includes Yellow Penalty Adjustment), c=[(33)-(4)/C]*(29)]	34.3	34.3	16.2	161.2	0.0	65.3	14.7	14.7	9.4	227.3	10.6	62.7															
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.21	0.21	0.45	1.20	0.00	0.45	0.45	0.45	1.25	1.10	0.44	0.42															
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	76	76	91	76	0.0	91	43	43	89	87.5	44	91	90.44														
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	1.6	1.6	1.1	9.6	0.0	1.1	5.4	5.4	3.9	13.2	1.0	1.0															
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length/3600 * (40)]	YES	YES	YES	NO	YES	YES	YES	YES	NO	NO	YES	YES	7.34														
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	F-	A+	YES	B	A-	F-	F+	YES	YES	F														
(43) Level of Service (LOS) Based on (39) [See Note 4]	C-	C-	E	F-	A+	E	B	A-	F-	F+	B+	E+															
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	45.6 Sec; LOS = D	45.6 Sec; LOS = D	152.7 Sec; LOS = F-	152.7 Sec; LOS = F-	67.0 Sec; LOS = E	81.5 Sec; LOS = F-	81.5 Sec; LOS = F+	81.5 Sec; LOS = F+	81.5 Sec; LOS = F+	81.5 Sec; LOS = F+	81.5 Sec; LOS = F+	81.5 Sec; LOS = F+	F														
Signal Timing, Secs: Phase 1 = 9.4; Phase 2 = 1.5; Phase 3 = 0.0; Phase 4 = 55.6; Phase 5 = 9.4; Phase 6 = 0.0; Phase 7 = 0.0; Phase 8 = 24.0. If time = 0.0, Phase is skipped. Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 9.4; Phase 3 = 11.0; Phase 4 = 11.0; Phase 5 = 66.6; Phase 6 = 76.0; Phase 7 = 76.0; Phase 8 = 76.0. See Notes on last page. NT = Northbound Through, MR = Northbound Right, NL = Northbound Left, ST = Southbound Through, ... , WL = Westbound Left																											

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2. Starfield Cutoff (NS) and Big Bear Blvd. (EW)													
Lanes: Existing													
Traffic Condition: 2025 Peak Month With Project													
Cycle Length: 100 Seconds (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 127 Seconds)													
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL	Total
INPUT DATA													
(1) Volume per Hour, V	28	71	60	34	286	48	1404	40	255	705	47	53	3031
(2) Number of Lanes, N	0.50	0.50	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.00
(3) Right Turns (FREE=Free Right Turn Lane; ARROW=Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) Lost Time (Yellow, All Red, Etc) in Seconds, Y (Typically 2 to 4 Seconds) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-
(5) Peak Hour Factor, PHF (1.00 for Peak Hour; 0.90 or 0.95 for Peak 15 Minutes)	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
(6) Lane Width (ft; 9; 10; 11; 12 (Factor = 1.00); 13; 14; 15; or 16 for 15+)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
(7) Percent Heavy Vehicles (v/h; 2; 4; 6; 8; 10; 15; 20; 25; or 30; Typically 4 or 6)	12	12	12	12	12	12	12	12	12	12	12	12	12
(8) Grade (-6; -4; -2; 0; +2; +4; or +6)	-	-	-	-	-	-	-	-	-	-	-	-	-
(9) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-
(10) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-
(11) CBD/Other (0=CBD; 1=Other)	-	-	-	-	-	-	-	-	-	-	-	-	-
(12) Right Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Shared Lane)	-	-	-	-	-	-	-	-	-	-	-	-	-
(13) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	-	-	-	-	-	-	-	-	-	-	-	-	-
(14) Left Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	-	-	-	-	-	-	-	-	-	-	-	-	-
(15) Saturated Flow Rate per Hour of Green Time (HDM Recommends 1900)	-	-	-	-	-	-	-	-	-	-	-	-	-
(16) Signal Progression (1=Pre-timed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900
(17) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	7	7	7	7	7	7	7	7	7	7	7	7	7
FACTORS FROM TABLES													
(18) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(19) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(20) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(21) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(22) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(23) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(24) CBD/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(25) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(26) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27a) Progression k Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CALCULATED VALUES AND PERFORMANCE MEASURES													
(28) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	29	75	63	337	0	51	1478	42	268	742	49	56	1800
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	950	950	1800	1900	0	0	1900	1900	1900	1900	1900	1900	1900
(30) Flow Ratio, v/s = [(28)/(29)]	0.03	0.08	0.04	0.18	0.00	0.03	0.78	0.02	0.15	0.39	0.03	0.03	0.03
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.12	0.12	0.11	0.22	0.00	0.11	0.82	0.11	0.19	0.43	0.11	0.11	0.11
(32) Critical Lane Group = [(31)]'s That Are Critical. Total is 100. [See Note 10]	0.00	0.00	0.11	0.22	0.00	0.00	0.82	0.00	0.19	0.43	0.00	0.08	0.08
(33) Green Time Allocated as Proportion of Cycle, g/C = [See Note 2]. Sum of Critical Moves = 1.00	0.17	0.17	0.08	0.16	0.00	0.08	0.68	0.68	0.15	0.61	0.61	0.08	0.08
(34) Green Time Allocated in Seconds, [(33) * Cycle Length]	16.6	16.6	7.8	16.4	0.0	7.6	68.1	68.1	15.0	60.8	60.8	7.7	7.7
(35) Minimum Ped Time Needed to Cross Street [5 Seconds for Lane Crossed + 7 Seconds]	21	21	0	21	0	0	15	0	0	15	0	0	0
(36) Signal Phases Available to Movement. 1 = Phase 1; 13 = Phases 1 and 3. [See Note 6]	68	68	56	236	8	66	1218	24	12	1079	1079	67	67
(37) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), c = [(33)-(4)/C]*(29)	119	119	68	8	8	5	24	24	198	1079	1079	0.84	0.84
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.25	0.63	0.93	1.43	0.00	0.77	1.21	0.03	1.36	0.69	0.05	0.84	0.84
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	44.1	72.9	165.1	268.2	0.0	128.2	124.2	5.3	246.8	18.9	8.0	142.8	121.15
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	83	83	92	84	0	92	32	32	85	39	39	92	92
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(12) * Cycle Length/3600 * (40)]	1.4	3.5	1.6	7.8	0.0	1.3	13.1	0.4	6.3	8.1	0.5	1.4	8.75
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	NO	YES	YES	NO	YES	NO	YES	YES	YES	NO
(43) Level of Service (LOS) Based on (39) [See Note 4]	D	E	F	F	A+	F	F	A	F	B	A-	F	F
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	102.7 Sec; LOS = F-	250.0 Sec; LOS = F-	139.8 Sec; LOS = F-	26.5 Sec; LOS = C	26.5 Sec; LOS = C	26.5 Sec; LOS = C	26.5 Sec; LOS = C	26.5 Sec; LOS = C	26.5 Sec; LOS = C	26.5 Sec; LOS = C	26.5 Sec; LOS = C	26.5 Sec; LOS = C	26.5 Sec; LOS = C
Signal Timing, Secs: Phase 1 = 7.7; Phase 2 = 7.3; Phase 3 = 0.0; Phase 4 = 60.8; Phase 5 = 7.6; Phase 6 = 0.1; Phase 7 = 0.0; Phase 8 = 16.4. If time = 0.0, Phase is skipped.													
Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 7.7; Phase 3 = 15.0; Phase 4 = 15.0; Phase 5 = 75.8; Phase 6 = 83.4; Phase 7 = 83.6; Phase 8 = 83.6.													
See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, ... , WL = Westbound Left													

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2. Stanfield Cutoff (NS) and Big Bear Blvd. (EW)													
Time Period: AM Peak Hour													
Lanes: Restrained													
Traffic Condition: 2025 Peak Month Without Project													
Cycle Length: 100 Seconds (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 68 Seconds)													
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL	Total
INPUT DATA													
(1) Volume per Hour, V	37	37	42	36	380	19	431	23	144	1020	68	39	2276
(2) Number of Lanes, N	0.50	0.50	1.00	1.00	0.00	1.00	2.00	0.00	1.00	2.00	0.00	1.00	10.00
(3) Right Turns (FREE=Free Right Turn Lane; ARROW=Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) Lost Time (Yellow, All Red, Etc.) in Seconds, L (Typically 2 to 4 Seconds) [See Note 9]	-	-	-	-	-	-	-	-	-	-	-	-	-
(5) Peak Hour Factor, PHF (1.00 for Peak Hour; 0.90 or 0.95 for Peak 15 Minutes)	-	-	-	-	-	-	-	-	-	-	-	-	-
(6) Lane Width (ft), W (Typically 11 to 12 ft for Peak Hour; 0.90 or 0.95 for Peak 15 Minutes)	-	-	-	-	-	-	-	-	-	-	-	-	-
(7) Percent Heavy Vehicles, P_h (Typically 0 to 10%) [See Note 10]	-	-	-	-	-	-	-	-	-	-	-	-	-
(8) Grade (%), G (-4 to +2; or +4 to +6)	-	-	-	-	-	-	-	-	-	-	-	-	-
(9) Parking Maneuvers per Hour (0 to 40)	-	-	-	-	-	-	-	-	-	-	-	-	-
(10) Buses Stopping per Hour (0 to 40)	-	-	-	-	-	-	-	-	-	-	-	-	-
(11) CBD/Other (0=Standard; 1=Other)	-	-	-	-	-	-	-	-	-	-	-	-	-
(12) Right Turn Lane Type (0=Standard; 1=Unprotected; 2=Protected w/ Shared Lane)	-	-	-	-	-	-	-	-	-	-	-	-	-
(13) Pedestrians per Hour Conflicting with Right Turns (0 to 500)	-	-	-	-	-	-	-	-	-	-	-	-	-
(14) Left Turn Lane Type (0=Standard; 1=Unprotected; 2=Protected w/ Separate Arrow)	-	-	-	-	-	-	-	-	-	-	-	-	-
(15) Saturated Flow Rate per Hour of Green Time (HCM Recommends 1900)	-	-	-	-	-	-	-	-	-	-	-	-	-
(16) Signal Progression (1=Pretimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	-	-	-	-	-	-	-	-	-	-	-	-	-
(17) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	-	-	-	-	-	-	-	-	-	-	-	-	-
FACTORS FROM TABLES													
(18) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(19) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(20) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(21) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(22) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(23) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(24) CBD/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(25) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(26) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27a) Progression k Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CALCULATED VALUES AND PERFORMANCE MEASURES													
(28) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, $v = [(1) \times (18) / (5)]$	39	39	44	438	0	20	478	0	152	1145	0	41	846
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, $s = [(28) / (25)]$	950	950	1800	1900	0	1800	3800	0	1800	3800	0	1800	3800
(30) Flow Ratio, $v/s = [(28) / (25)]$	0.04	0.04	0.02	0.23	0.00	0.01	0.13	0.00	0.08	0.30	0.00	0.02	0.02
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.11	0.11	0.11	0.27	0.00	0.11	0.17	0.00	0.12	0.34	0.00	0.11	0.11
(32) Critical Lane Group = [(31)'s That Are Critical]. Total is 100% [See Note 10]	0.00	0.00	0.11	0.27	0.00	0.00	0.00	0.00	0.12	0.34	0.00	0.00	0.00
(33) Green Time Allocated as Proportion of Cycle, $g/c = [(32) \times \text{Cycle Length}] / 3600$	0.31	0.31	0.12	0.31	0.00	0.12	0.44	0.00	0.14	0.43	0.00	0.12	0.12
(34) Green Time Allocated in Seconds, $g = [(33) \times \text{Cycle Length}]$	30.7	30.7	12.5	30.7	0.0	12.5	44.3	0.0	14.2	42.6	0.0	12.5	12.5
(35) Minimum Ped Time Needed to Cross Street (5 Seconds per Lane Crossed + 7 Seconds)	21	21	5	21	8	5	24	24	12	15	4	1	1
(36) Signal Phases Available to Movement: 1 = Phase 1; 15 = Phases 1 and 3; [See Note 6]	68	68	153	508	0	153	1531	0	183	1467	0	153	153
(37) Capacity in Vehicles per Hour (includes Yellow Penalty adjustment), $c = [(35) - (4)] / C \times (29)$	254	254	473	583	0	473	1819	0	89.2	31.3	0	46.5	37.93
(38) Volume to Capacity Ratio, $v/c = X = [(28) / (37)]$	0.15	0.15	0.29	0.86	0.00	0.13	0.31	0.00	0.85	0.78	0.00	0.27	0.27
(39) Average Delay per Vehicle in Seconds, $d = [(38) \times \text{Cycle Length}] / 3600$	27.3	27.3	27.3	58.3	0	27.3	58.3	0	86	57	0	88	88
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	69	69	88	69	0	88	56	0	3.6	9.1	0	1.0	1.0
(41) Average Vehicle Queue Length at Beginning of Green, $[(28) / (2) \times \text{Cycle Length} / 3600 \times (40)]$	1.5	1.5	1.1	8.4	0.0	0.5	3.7	0.0	0.5	3.6	0.0	0.5	0.5
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
(43) Level of Service (LOS) Based on (39) [See Note 4]	C	C	D	E+	A+	D	B-	A+	F	C-	A+	D	D+
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	34.5 Sec; LOS = C-	34.5 Sec; LOS = C-	34.5 Sec; LOS = C-	57.6 Sec; LOS = E+	35.8 Sec; LOS = D+	35.8 Sec; LOS = D+	35.8 Sec; LOS = D+	35.8 Sec; LOS = D+	35.8 Sec; LOS = D+	31.8 Sec; LOS = C-	31.8 Sec; LOS = C-	31.8 Sec; LOS = C-	D+

Signal Timing, Secs: Phase 1 = 12.5; Phase 2 = 1.7; Phase 3 = 0.0; Phase 4 = 42.6; Phase 5 = 12.5; Phase 6 = 0.0; Phase 7 = 0.0; Phase 8 = 30.7. If time = 0.0, Phase is skipped.

Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 12.5; Phase 3 = 14.2; Phase 4 = 14.2; Phase 5 = 56.8; Phase 6 = 69.3; Phase 7 = 69.3; Phase 8 = 69.3.

See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, ... , WL = Westbound Left

Signal Timing, Secs: Phase 1 = 12.5; Phase 2 = 1.7; Phase 3 = 0.0; Phase 4 = 42.6; Phase 5 = 12.5; Phase 6 = 0.0; Phase 7 = 0.0; Phase 8 = 30.7. If time = 0.0, Phase is skipped.
 Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 12.5; Phase 3 = 14.2; Phase 4 = 14.2; Phase 5 = 56.8; Phase 6 = 69.3; Phase 7 = 69.3; Phase 8 = 69.3.
 See Notes on Last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, SR = Southbound Right, SL = Southbound Left

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2. Stanfield Cutoff (NS) and Big Bear Blvd. (EW) Time Period: PM Peak Hour Lanes: Restrict		Traffic Condition: 2025 Peak Month Without Project Cycle Length: 100 Seconds (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 94 Seconds)											
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL	Total
INPUT DATA													
(1) Volume per Hour, V	28	71	60	34	276	33	1404	40	237	705	20	53	2961
(2) Number of Lanes, N	0.50	0.50	1.00	1.00	0.00	1.00	2.00	0.00	1.00	0.00	0.00	1.00	10.00
(3) Right Turns (FREE=Free Right Turn Lane; ARROW=Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) Lost Time (Yellow, All Red, etc.) in Seconds, Y (Typically 2 to 4 Seconds) [See Note 9]	-	-	-	-	-	-	-	-	-	-	-	-	-
(5) Peak Time Factor, PF (Typically 0.90 or 0.95 for Peak 15 Minutes)	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
(6) Lane Width (ft), W (Typically 10, 12, 14, 15, or 16 for 15+)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
(7) Percent Heavy Vehicles ($0; 2; 4; 6; 8; 10; 15; 20; 25; 30$; Typically 4 or 6)	0	0	0	0	0	0	0	0	0	0	0	0	0
(8) Grade ($-6; -4; -2; 0; +2; +4; +6$)	0	0	0	0	0	0	0	0	0	0	0	0	0
(9) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-
(10) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-
(11) Right Turn Lane Type (0=Standard; 1=Other)	0	0	0	0	0	0	0	0	0	0	0	0	0
(12) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	0	0	0	0	0	0	0	0	0	0	0	0	0
(13) Left Turn Lane Type (0=Standard; 1=Other)	0	0	0	0	0	0	0	0	0	0	0	0	0
(14) Saturated Flow Rate per Hour of Green Time (ft/min) (Minimum Recommended 1900)	0	0	0	0	0	0	0	0	0	0	0	0	0
(15) Signal Progression (1=Retimed/Factor=1.0; 2=Actuated/Factor=0.65; 3=Actuated & Progressed)	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900
(16) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	1	1	1	1	1	1	1	1	1	1	1	1	1
FACTORS													
(17) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(18) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(19) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(20) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(21) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(22) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(23) CBD/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(24) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(25) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(26) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27) Progression k Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CALCULATED VALUES AND PERFORMANCE MEASURES													
(28) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, $v = [(1) * (18) / (5)]$	29	75	63	326	0	35	1520	0	249	763	0	56	871
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, $s = [See Note 1]$	950	950	1800	1900	0	1800	3800	0	1800	3800	0	1800	3800
(30) Flow Ratio, $v/s = [(28) / (29)]$	0.03	0.08	0.04	0.17	0.00	0.02	0.40	0.00	0.14	0.20	0.00	0.03	0.23
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.12	0.12	0.11	0.21	0.00	0.11	0.44	0.00	0.18	0.24	0.00	0.11	0.23
(32) Critical Lane Group = $[(31)]$'s That Are Critical. Total is 10. [See Note 10]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(33) Green Time Allocated as Proportion of Cycle, $g/C = [See Note 2]$. Sum of Critical Moves = 1.00	0.22	0.22	0.22	0.22	0.00	0.12	0.54	0.00	0.20	0.46	0.00	0.12	0.54
(34) Minimum Pad Time Needed to Cross Street (3 Seconds per Lane Crossed + 7 Seconds)	22.4	22.4	22.4	22.4	0.0	11.6	54.3	0.0	20.0	46.0	0.0	11.7	54.3
(35) Signal Phases Available to Movement. 1 = Phase 1; 15 = Phases 1 and 3. [See Note 6]	21	68	56	8	8	5	24	24	12	15	4	1	139
(36) Capacity in Vehicles per Hour (Includes Yellow Penalty Adjustment), $c = [(33) * (4) / C] * (29)$	174	174	140	346	0	137	1910	0	288	1597	0	139	1910
(37) Volume to Capacity Ratio, $v/c = X = [(28) / (37)]$	0.17	0.43	0.45	0.94	0.00	0.25	0.80	0.00	0.87	0.48	0.00	0.40	0.87
(38) Average Delay per Vehicle in Seconds, $d = [(37) * (36)]$	34.7	45.3	57.1	86.9	0.0	47.3	24.0	0.0	78.4	20.3	0.0	54.2	78.4
(39) Percent of Vehicles That Have to Stop [1.00 - (33)]	1.00	0.57	0.55	0.06	1.00	0.75	0.46	1.00	0.13	0.54	1.00	0.88	0.54
(40) Average Vehicle Queue Length at Beginning of Green, $[(28) / (2) * Cycle Length / 3600 * (40)]$	1.3	3.2	1.5	7.1	0.0	0.9	9.7	0.0	5.5	5.7	0.0	1.4	9.7
(41) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
(42) Level of Service (LOS) Based on (39) [See Note 4]	C-	D	E+	F+	A+	D	C+	A+	E-	C+	A+	D-	D+
(43) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	47.9 Sec; LOS = D	83.1 Sec; LOS = F+	31.7 Sec; LOS = C-	22.6 Sec; LOS = C+	22.6 Sec; LOS = C+	22.6 Sec; LOS = C+	22.6 Sec; LOS = C+	22.6 Sec; LOS = C+	22.6 Sec; LOS = C+	22.6 Sec; LOS = C+	22.6 Sec; LOS = C+	22.6 Sec; LOS = C+	22.6 Sec; LOS = C+
Signal Timing, Secs: Phase 1 = 11.7; Phase 2 = 8.2; Phase 3 = 0.0; Phase 4 = 46.0; Phase 5 = 11.6; Phase 6 = 0.2; Phase 7 = 0.0; Phase 8 = 22.2. If time = 0.0, Phase is skipped.													
Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 11.7; Phase 3 = 20.0; Phase 4 = 20.0; Phase 5 = 66.0; Phase 6 = 77.6; Phase 7 = 77.8. See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, ... , WL = Westbound Left													

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2. Stanfield Cutoff (NS) and Big Bear Blvd. (EW) Time Period: AM Peak Hour Lanes: Restrained												
Traffic Condition: 2025 Peak Month with Project Cycle Length: 100 Seconds (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 67 Seconds)												
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WL	Total
INPUT DATA												
(1) Volume per Hour, V	37	37	42	36	396	42	431	23	149	1020	76	2328
(2) Number of Lanes, N	0.50	0.50	1.00	1.00	0.00	1.00	2.00	0.00	1.00	2.00	1.00	10.00
(3) Right Turns (FREE=Free Right Turn Lane; ARROW=Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-
(4) Lost Time (Yellow, All Red, Etc) in Seconds Y (Typically 2 to 4 Seconds) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-
(5) Peak Hour Factor, PHF (Typically 0.90 to 0.95 for Peak 15 Minutes) [See Note 9]	-	-	-	-	-	-	-	-	-	-	-	-
(6) Lane Width (ft), W (Typically 10, 12, 14, 15, or 16 for 15+)	-	-	-	-	-	-	-	-	-	-	-	-
(7) Percent Heavy Vehicles (0; 2; 4; 6; 8; 10; 15; 20; 25; or 30; typically 4 or 6)	-	-	-	-	-	-	-	-	-	-	-	-
(8) Grade (-6; -4; -2; 0; +2; +4; or +6)	-	-	-	-	-	-	-	-	-	-	-	-
(9) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-
(10) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-
(11) CDD/Other (0=CDD; 1=Other)	-	-	-	-	-	-	-	-	-	-	-	-
(12) Right Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Shared Lane)	-	-	-	-	-	-	-	-	-	-	-	-
(13) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	-	-	-	-	-	-	-	-	-	-	-	-
(14) Left Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	-	-	-	-	-	-	-	-	-	-	-	-
(15) Saturated Flow Rate per Hour or Green Time (d) (d = 1900 / (1 + %HV)) [See Note 10]	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1800	1800
(16) Signal Progression (1=Pretimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	1	1	1	1	1	1	1	1	1	1	1	1
(17) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	7	7	7	7	7	7	7	7	7	7	7	7
FACTORS FROM TABLES												
(18) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(19) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(20) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(21) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(22) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(23) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(24) CDD/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(25) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(26) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(28) Progression k Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CALCULATED VALUES AND PERFORMANCE MEASURES												
(29) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	39	39	44	455	0	44	478	0	157	1154	0	41
(30) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	950	950	1800	1900	0	1800	3800	0	1800	3800	0	1800
(31) Flow Ratio, v/s = [(28)/(29)]	0.04	0.04	0.02	0.24	0.00	0.02	0.13	0.00	0.09	0.30	0.00	0.02
(32) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.11	0.11	0.11	0.28	0.00	0.11	0.17	0.00	0.13	0.34	0.00	0.11
(33) Critical Lane Group = (31)'s That Are Critical. Total is 10. [See Note 10]	0.00	0.00	0.11	0.28	0.00	0.11	0.17	0.00	0.13	0.34	0.00	0.11
(34) Green Time Allocated as Proportion of Cycle, g/C=[See Note 2]. Sum of Critical Moves = 1.00	0.31	0.31	0.12	0.31	0.00	0.12	0.44	0.00	0.14	0.42	0.00	0.12
(35) Green Time Allocated in Seconds, [(33) * Cycle Length]	31.3	31.3	12.3	31.3	0.0	12.3	44.1	0.0	14.3	42.1	0.0	12.3
(36) Minimum Ped Time Needed to Cross Street [3 Seconds per Lane Crossed + 7 Seconds]	21	21	0	21	0	0	15	0	12	15	0	0
(37) Signal Phases Available to Movement: 1 = Phase 1; 13 = Phases 1 and 3. [See Note 6]	68	68	56	518	8	5	1525	24	185	1449	4	150
(38) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), c=[(33)/(4)/C]*(29)]	259	259	150	888	0	150	331	0	92.0	32.5	0	27.0
(39) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.15	0.15	0.30	0.88	0.00	0.30	0.31	0.00	0.85	0.80	0.00	0.27
(40) Average Delay per Vehicle in Seconds, d [See Note 3]	26.8	26.8	47.9	59.8	0.0	47.9	19.0	0.0	86	58	0.0	88
(41) Percent of Vehicles That Have to Stop [1.00 - (33)]	69	69	88	69	0	88	56	0	3.7	9.3	0.0	1.0
(42) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length/3600 * (40)]	1.5	1.5	1.1	8.7	0.0	1.1	3.7	0.0	YES	YES	YES	YES
(43) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
(44) Level of Service (LOS) Based on (39) [See Note 4]	C	C	D	E+	A+	D	B-	A+	F	C-	A+	D+
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	34.4 Sec; LOS = C-	34.4 Sec; LOS = C-	34.4 Sec; LOS = C-	58.7 Sec; LOS = E+	37.0 Sec; LOS = D+	33.0 Sec; LOS = C-	33.0 Sec; LOS = C-	33.0 Sec; LOS = C-	33.0 Sec; LOS = C-	33.0 Sec; LOS = C-	33.0 Sec; LOS = C-	D+
Signal Timing, Secs: Phase 1 = 12.3; Phase 2 = 2.0; Phase 3 = 0.0; Phase 4 = 42.1; Phase 5 = 12.3; Phase 6 = 0.0; Phase 7 = 0.0; Phase 8 = 31.3. If time = 0.0, Phase is skipped. Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 14.3; Phase 3 = 14.3; Phase 4 = 14.3; Phase 5 = 56.4; Phase 6 = 68.7; Phase 7 = 68.7; Phase 8 = 68.7. See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, SR = Southbound Right, SL = Southbound Left												

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2. Stanfield Cutoff (NS) and Big Bear Blvd. (EW)													
Time Period: PM Peak Hour													
Lanes: Restriped													
Traffic Condition: 2025 Peak Month With Project													
Cycle Length: 100 Seconds													
Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 92 Seconds													
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL	Total
INPUT DATA													
(1) Volume per Hour, V	28	71	60	34	286	48	1404	40	255	705	47	53	3031
(2) Number of Lanes, N	0.50	0.50	1.00	1.00	0.00	1.00	2.00	0.00	1.00	2.00	0.00	1.00	10.00
(3) Right Turns (FREE=Free Right Turn Lane; ARROW=Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) Lost Time (Yellow, All Red, Etc) in Seconds Y (Typically 2 to 4 Seconds) [See Note 9]	-	-	-	-	-	-	-	-	-	-	-	-	-
(5) Peak Hour Factor, PHF (1.00 for Peak Hour; 0.90 or 0.95 for Peak 15 Minutes)	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
(6) Lane Width (8; 9; 10; 11; 12 [Factor = 1.00]; 13; 14; 15; or 16 for 15+)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
(7) Percent Heavy Vehicles (0; 2; 4; 6; 8; 10; 15; 20; 25; or 30; Typically 4 or 6)	12	12	12	12	12	12	12	12	12	12	12	12	12
(8) Grade (-6; -4; -2; 0; +2; +4; or +6)	0	0	0	0	0	0	0	0	0	0	0	0	0
(9) Parking Maneuvers per Hour (0; 10; 20; 30; or 40)	0	0	0	0	0	0	0	0	0	0	0	0	0
(10) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
(11) CBD/Other (0=0.00; 1=other)	0	0	0	0	0	0	0	0	0	0	0	0	0
(12) Right Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Shared Lane)	1	1	1	1	1	1	1	1	1	1	1	1	1
(13) Pedestrians per Hour Conflicting with Right Turns (0; 50; 100; 200; 300; 400; or 500)	0	0	0	0	0	0	0	0	0	0	0	0	0
(14) Left Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	0	0	0	0	0	0	0	0	0	0	0	0	0
(15) Saturated Flow Rate per Hour of Green Time (HCM Recommends 1900)	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900
(16) Signal Progression (1=Pretimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	1	1	1	1	1	1	1	1	1	1	1	1	1
(17) Minimum Green Time in Seconds (Usually 7 to 10 seconds)	7	7	7	7	7	7	7	7	7	7	7	7	7
FACTORS FROM TABLES													
(18) Lane Utilization Factor [Table 9-4]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(19) Lane Width Factor [Table 9-5]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(20) Heavy Vehicles Factor [Table 9-6]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(21) Grade Factor [Table 9-7]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(22) Parking Maneuvers Factor [Table 9-8]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(23) Buses Stopping Factor [Table 9-9]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(24) CBD/Other Factor [Table 9-10]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(25) Right Turn Lane Factor [Table 9-11]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(26) Left Turn Lane Factor [Table 9-12]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27) Progression Adjustment Factor [Table 9-13]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(27a) Progression k Value [Table 9-14]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CALCULATED VALUES AND PERFORMANCE MEASURES													
(28) Adjusted Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*Y*(18)/(5)]	29	75	63	337	0	51	1520	0	268	792	0	56	3800
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	950	950	1800	1900	0	1800	3800	0	1800	3800	0	1800	3800
(30) Flow Ratio, v/s = [(28)/(29)]	0.03	0.08	0.04	0.18	0.00	0.03	0.40	0.00	0.15	0.21	0.00	0.03	0.03
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.12	0.12	0.11	0.22	0.00	0.11	0.44	0.00	0.19	0.25	0.00	0.11	0.11
(32) Critical Lane Group = [(31)'s That Are Critical]. Total is 1.00. [See Note 10]	0.00	0.00	0.00	0.22	0.00	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.00
(33) Green Time Allocated as Proportion of Cycle, g/C = [See Note 2]. Sum of Critical Moves = 1.00	0.23	0.23	0.12	0.23	0.00	0.12	0.54	0.00	0.21	0.45	0.00	0.12	0.877
(34) Green Time Allocated in Seconds, [(33) * Cycle Length]	22.7	22.7	11.7	22.7	0.0	11.7	53.9	0.0	21.1	44.5	0.0	11.7	87.7
(35) Minimum Ped Time Needed to Cross Street (3 Seconds per Lane Crossed + 7 Seconds)	21	21	0	21	0	0	15	0	15	15	0	0	0
(36) Signal Phases Available to Movement. 1 = Phase 1; 15 = Phases 1 and 3. [See Note 6]	68	68	56	355	8	5	1896	24	307	1539	4	138	37.11
(37) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), c = [(33)-(4)/C]*(29)	178	178	139	87.2	0	138	246	0	87.2	22.0	0	54.5	37.11
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.17	0.42	0.45	0.95	0.00	0.37	0.80	0.00	0.87	0.51	0.00	0.40	0.40
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	34.2	44.4	57.5	87.2	0.0	52.5	96.0	0.0	77.1	22.0	0.0	88.0	6.66
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	77	77	88	77	0.0	88	46	0.0	79	55	0.0	88	1.4
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length/3600 * (40)]	1.3	3.2	1.5	7.2	0.0	1.2	9.7	0.0	5.9	6.1	0.0	1.4	6.66
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
(43) Level of Service (LOS) Based on (39) [See Note 4]	C-	D	E+	F+	A+	D-	C+	A+	E-	C+	A+	D-	D+
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	47.5 Sec; LOS = D	82.6 Sec; LOS = F+	32.4 Sec; LOS = F+	32.4 Sec; LOS = C-	24.1 Sec; LOS = C+	D+							

Signal Timing, Secs: Phase 1 = 11.7; Phase 2 = 9.4; Phase 3 = 0.0; Phase 4 = 44.5; Phase 5 = 11.7; Phase 6 = 0.1; Phase 7 = 0.0; Phase 8 = 22.7. If time = 0.0, Phase is skipped.

Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 11.7; Phase 3 = 21.1; Phase 4 = 21.1; Phase 5 = 65.6; Phase 6 = 77.3; Phase 7 = 77.3; Phase 8 = 77.3.

See Notes on Last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, ... , WL = Westbound Left

Signal Timing, Secs: Phase 1 = 11.7; Phase 2 = 9.4; Phase 3 = 0.0; Phase 4 = 44.5; Phase 5 = 11.7; Phase 6 = 0.1; Phase 7 = 0.0; Phase 8 = 22.7. If time = 0.0, Phase is skipped.
Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 11.7; Phase 3 = 21.1; Phase 4 = 21.1; Phase 5 = 65.6; Phase 6 = 77.3; Phase 7 = 77.3; Phase 8 = 77.3.
See Notes on last page. NT = Northbound Through, NL = Northbound Left, ST = Southbound Through, ... , WL = Westbound Left

NOTES

Note 4 = Level of Service Definition

Note 5 = Right Turn Arrow

Note 6 = Signal Phases are numbered as follows:

Phase	NR				SR				ER				LR			
	NT		NL		ST		SL		ET		EL		WT		WL	
	Std	Free Arrow	Std	Free Arrow	Std	Free Arrow	Std	Free Arrow	Std	Free Arrow	Std	Free Arrow	Std	Free Arrow	Std	Free Arrow
Phase 1: EL and WL		*	*	*		*	*	*		*	*	*	*	*	*	*
Phase 2: EL and ET		*	*	*		*	*	*		*	*	*	*	*	*	*
Phase 3: WL and WL		*	*	*		*	*	*		*	*	*	*	*	*	*
Phase 4: ET and ER and WL and LR		*	*	*		*	*	*		*	*	*	*	*	*	*
Phase 5: NL and SL		*	*	*	*	*	*	*		*	*	*	*	*	*	*
Phase 6: NL and NT and NR	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Phase 7: SL and ST and SR	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Phase 8: NT and NR and ST and SR	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

ote 10 = ICU is the sum of the critical moves in (32). ICU LOS's are as follows: 0.600=LOS A, 0.601-0.700=LOS B, 0.701-0.800=LOS C, 0.801-0.900=LOS D, 0.901-1.000=LOS E, 1.001+=LOS F.

() = Variable Number. This number corresponds to the variable number as identified in intersection delay calculation tables.

Kunzman Associates

1997 HIGHWAY CAPACITY MANUAL DELAY METHOD NOTES

NOTES

Note 1: Adjusted Saturation Flow Rate, $s = [(15)*(2)*(19)*(20)*(21)*(22)*(23)*(24)*(25)*(26)]$

Note 2: Green Time Allocation, $g/C = [(31)/\text{Sum of Criticals from (32)}]$, approximately

Note 3: Delay per Vehicle, $d = [0.50 * C * [(1 - (33)) * (1 - (33)) / (1 - (33) * (38) * (27)) + [173 * (38) * (38) * (((38) - 1) + (((38) - 1) * ((38) - 1)) + (8 * k * 1 * ((38) - 1)) * ((37) * (25))) * (51)]]$
OR
Where: C = Cycle Length; g = green time in seconds; v = volume per hour; c = capacity in vehicles per hour; X = v/c = volume to capacity ratio; k = k value;
and pf = Progression Factor.

Note 4 = Level of Service Definition
0 to 10 Seconds of Delay per Vehicle = Level of Service A A = 3.4-6.7 seconds; A- = 6.8-10.0 seconds
10.1 to 20 Seconds of Delay per Vehicle = Level of Service B B = 13.4-16.7 seconds; B- = 16.8-20.0 seconds
20.1 to 30 Seconds of Delay per Vehicle = Level of Service C C = 23.1-30.0 seconds; C- = 30.1-35.0 seconds
35.1 to 55 Seconds of Delay per Vehicle = Level of Service D D = 41.8-48.3 seconds; D- = 48.4-55.0 seconds
55.1 to 80 Seconds of Delay per Vehicle = Level of Service E E = 63.4-71.7 seconds; E- = 71.8-80.0 seconds
80.1 and up Seconds of Delay per Vehicle = Level of Service F F = 88.4-96.7 seconds; F- = 96.7 seconds and up

Note 5 = Right Turn Arrow
It has been assumed that a right turn arrow is on during the time that the overlapping left turns occur. Overlapping left turns are as follows:
For northbound right, the overlapping left turn is westbound left.
For eastbound right, the overlapping left turn is northbound left.
For westbound right, the overlapping left turn is southbound left.

Note 6 = Signal Phases are numbered as follows:

Phase	NR		SR		ER		WR	
	NT	Std Free Arrow	SL	ST	Free Arrow	EL	WT	Std Free Arrow
Phase 1: EL and WL	*	*	*	*	*	*	*	*
Phase 2: EL and ET	*	*	*	*	*	*	*	*
Phase 3: WL and WT	*	*	*	*	*	*	*	*
Phase 4: ET and ER	*	*	*	*	*	*	*	*
Phase 5: NL and SL	*	*	*	*	*	*	*	*
Phase 6: SL and NT	*	*	*	*	*	*	*	*
Phase 7: SL and ST	*	*	*	*	*	*	*	*
Phase 8: NT and NR	*	*	*	*	*	*	*	*

Phase order is 1, 2, 3, 4, 5, 6, 7, and 8. Some phases will be skipped. Phases 2 and 3 will never both be used, and phases 6 and 7 will never both be used. Either phase 2 or 3 will be used, and either phase 6 or 7 will be used. An 8 phase controller is assumed. If less than 8 phases are needed such as at a Tee intersection, the 8 phase controller is still assumed except that several phases will be skipped.

Note 7 = The Minimum Green Times always meet the following criteria: Larger of (30) + (4) / Cycle, or ((7) + (4)) / Cycle. It also always meets any requirements for right turning vehicles to have enough green time for pedestrians to clear. If possible, it also meets the amount of time needed for pedestrians to walk across the street. If the Maximum Cycle Length Needed to Satisfy Pedestrians When Present is less than the Cycle Length, then that criteria has also been met.

Note 8 = Use of a v/c ratio of 0.95 to determine whether a movement clears is an arbitrary assumption. If an intersection has a v/c ratio of 0.95, its volume could randomly fluctuate by more than 5 percent and the vehicles would still clear. If one movement's random fluctuation was greater than 5 percent, and all other intersection movements were average, the green times would adjust and the intersection would still clear. Using a v/c of 0.95 to estimate whether an intersection clears will be valid a high percentage of the time.

Note 9 = Lost Time in seconds includes unused part of yellow time, all red time, and start up time less extension of effective green time.

Note 10 = ICU is the sum of the critical moves in (32). ICU LOS's are as follows: 0-0.600=LOS A, 0.601-0.700=LOS B, 0.701-0.800=LOS C, 0.801-0.900=LOS D, 0.901-1.000=LOS E, 1.001+=LOS F.

ABBREVIATIONS: NT = Northbound Through; NR = Northbound Right; NL = Northbound Left; EL = Eastbound Through; ER = Eastbound Right; WL = Westbound Through; WR = Westbound Right; SL = Southbound Left; WL = Westbound Left.

() = Variable Number. This number corresponds to the variable number as identified in intersection delay calculation tables.

CALCULATION FOR UNSIGNALIZED FOUR-LEG INTERSECTION WITH MINOR STREET STOPPING

Intersection: _____ Conditions: 2001 Average Month W/o Project
 MAJOR STREET: North Shore Drive (EW)
 MINOR STREET: Stanfield Cutoff (NS)

MORNING PEAK HOUR

PASSENGER CAR PEAK HOUR ADJUSTMENT FACTOR (1/PHF) = 1.37

SHARED-LANE CAPACITY

Csh = $\frac{V_i + V_j}{(V_i/C_{mi}) + (V_j/C_{mj})}$ where 2 movements share a lane

Csh = $\frac{V_i + V_j + V_k}{(V_i/C_{mi}) + (V_j/C_{mj}) + (V_k/C_{mk})}$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7,8,9

Movement	V(pcpH)	Cm(pcpH)	Csh(pcpH)	Cr=Csh-V	LOS
AM 7 NL --- SHARED ---	64	590	590 590	526 526	A
AM 8 NT	0	660	660	660	A
AM 9 NR	73	1152	1152	1079	A

MINOR STREET APPROACH MOVEMENTS 10,11,12

Movement	V(pcpH)	Cm(pcpH)	Csh(pcpH)	Cr=Csh-V	LOS
AM 10 SL --- SHARED ---	0	510	510 570	510 570	A
AM 11 ST	0	640	640	640	A
AM 12 SR	0	1152	1152	1152	A

MAJOR STREET LEFT TURNS 1,4

Movement	V(pcpH)	Cm(pcpH)	Cr=Csh-V	LOS
AM 1 EL	0	1308	1308	A
AM 4 WL	426	1308	882	A

TURNING MOVEMENT VOLUMES AND LANE GEOMETRICS:

	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL
AM	0	53	47	0	0	0	19	59	0	45	0	311
PM	0	0	0	0	0	0	0	0	0	0	0	0
GEOMETRICS	1	1	0	1	1	0	1	1	0	1	0	0

Fawnskin 92 Single Family Homes