

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2. Starfield Cutoff (NS) and Big Bear Blvd. (EW)
 Time Period: AM Peak Hour
 Lanes: Restriped

Traffic Condition: 2006 Peak Month Without Project
 Cycle Length: 100 Seconds
 (Maximum Cycle Length needed to Satisfy Pedestrians when Present: 73 Seconds)

Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	MR	ML	Total
INPUT DATA													
(1) Volume per Hour, V	32	32	35	30	322	16	365	20	122	864	58	33	1929
(2) Number of Lanes, N	0.50	0.50	1.00	1.00	0.00	1.00	2.00	0.00	1.00	1.00	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 5]	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
(5) Peak Hour Factor, PHF (1.00 for Peak Hour; 0.90 or 0.95 for Peak 15 Minutes) [See Note 9]	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
(6) 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
(7) 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
(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=Std; 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)	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 (HGM Recommended)	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													
(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 Saturation Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	34	34	37	37	371	17	405	0	128	971	0	35	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)]	0.04	0.04	0.02	0.20	0.00	0.01	0.11	0.00	0.07	0.26	0.00	0.02	0.00
(31) Minimum Green PLUS Lost Time as Proportion of Cycle [See Note 7]	0.11	0.11	0.11	0.24	0.00	0.11	0.15	0.00	0.11	0.30	0.00	0.11	0.00
(32) Critical Lane Group = [(31)'s That Are Critical]. Total is 100. [See Note 10]	0.00	0.00	0.00	0.28	0.00	0.00	0.44	0.00	0.14	0.44	0.00	0.14	0.00
(33) Green Time Allocated as Proportion of Cycle, g/C = [See Note 2]. Sum of Critical Moves = 1.00	0.29	0.29	0.14	0.28	0.00	0.13	0.45	0.00	0.14	0.44	0.00	0.14	0.00
(34) Green Time Allocated in Seconds, [(33)* Cycle Length]	28.6	28.6	13.5	28.5	0.0	13.3	44.5	0.0	14.5	43.5	0.0	13.5	0.0
(35) Minimum Ped Time needed to Cross Street [5 Seconds per 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	8	8	5	24	24	12	4	4	4	4
(37) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), c = [(33)-(4)/C]*(29)	234	234	171	465	0	168	1539	0	189	1501	0	171	0
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.14	0.14	0.21	0.80	0.00	0.10	0.26	0.00	0.68	0.65	0.00	0.20	0.00
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	28.6	28.6	43.1	53.3	0.0	40.0	18.1	0.0	68.1	25.7	0.0	42.8	0.0
(40) Percent of Vehicles Queue Length That Have to Stop [1.00 - (35)]	71	71	86	72	0	87	55	0	96	76	0	86	0
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length]/3600 * (40)	1.3	1.3	0.9	7.6	0.0	0.4	3.1	0.0	3.0	7.6	0.0	0.8	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 (36) [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	33.8 Sec; LOS = C-	33.8 Sec; LOS = C-	52.7 Sec; LOS = D-	30.2 Sec; LOS = C-	26.3 Sec; LOS = C	26.3 Sec; LOS = C	30.2 Sec; LOS = C-	26.3 Sec; LOS = C	30.2 Sec; LOS = C-	26.3 Sec; LOS = C	30.2 Sec; LOS = C-	26.3 Sec; LOS = C	30.2 Sec; LOS = C-

Signal Timing, Secs: Phase 1 = 13.5; Phase 2 = 1.0; Phase 3 = 0.0; Phase 4 = 43.5; Phase 5 = 13.3; Phase 6 = 0.2; Phase 7 = 0.0; Phase 8 = 28.5. If time = 0.0, Phase is skipped.
 Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 13.5; Phase 3 = 14.5; Phase 4 = 14.5; Phase 5 = 58.0; Phase 6 = 71.4; Phase 7 = 71.5; Phase 8 = 71.5.
 See Notes on last page. NT = Northbound Through, NR = Northbound Right, NL = Northbound Left, ST = Southbound Through, SR = Southbound Right, SL = Southbound Left

Kunzman Associates

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: 2006 Peak Month Without Project
 Cycle Length: 100 Seconds

When Present: 96 Seconds

Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	MR	WL	Total
INPUT DATA													
(1) Volume per Hour, V	24	60	51	29	234	28	1189	34	201	597	17	45	2509
(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]	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
(5) 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
(6) 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
(7) 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
(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) CBD/Other (0=0; 1=Other)	0	0	0	0	0	0	0	0	0	0	0	0	0
(11) 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
(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 [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	0	0	0	0	0	0	0	0	0	0	0	0	0
(14) Saturated Flow Rate per Hour of Green Time (10M Recommended; 1900)	1900	1900	1800	1900	1900	1900	1900	1900	1800	1900	1900	1800	1800
(15) 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
(16) 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 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 Saturation Flow Rate (in Peak 15 Minutes) in Vehicles per Hour of Green, v = [(1)*(18)/(5)]	25	63	54	277	0	29	1287	0	212	646	0	47	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	0.07	0.03	0.15	0.00	0.02	0.34	0.00	0.12	0.17	0.00	0.03	0.10
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.11	0.11	0.11	0.19	0.00	0.11	0.38	0.00	0.16	0.21	0.00	0.11	0.21
(32) Critical Lane Group = X00X	0.00	0.00	0.00	0.00	0.00	0.00	X00X	0.00	0.00	0.00	0.00	X00X	X00X
(33) Green Time Allocated as Proportion of Cycle, g/C = [See Note 2]. Sum of Critical Moves = 1.00	0.22	0.22	0.13	0.22	0.00	0.13	0.52	0.00	0.20	0.46	0.00	0.13	0.52
(34) Green Time Allocated in Seconds, [(33) * Cycle Length]	21.8	21.8	13.1	21.6	0.0	12.9	52.3	0.0	19.6	45.7	0.0	13.0	52.3
(35) Minimum Ped Time Needed to Cross Street (5 Seconds per Lane Crossed + 7 Seconds)	21	21	0	21	0	0	15	0	0	15	0	0	15
(36) Signal Phases Available to Movement. 1 = Phase 1; 15 = Phases 1 and 3. [See Note 6]	68	68	56	8	8	5	24	24	12	4	4	1	4
(37) Capacity in Vehicles per Hour (Includes Yellow Penalty Adjustment), c = [(33)-(4)/(C)*(29)]	169	169	163	335	0	160	1835	0	281	1584	0	162	1835
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.15	0.37	0.33	0.83	0.00	0.18	0.70	0.00	0.75	0.41	0.00	0.29	0.41
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	34.6	43.2	48.0	67.4	0.0	42.9	21.6	0.0	63.5	19.4	0.0	46.6	19.4
(40) Percent of Vehicles That Have to Stop [1.00 - (35)]	78	78	87	78	0	87	48	0	80	54	0	87	48
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(C) * Cycle Length / 3600 * (40)]	1.1	2.7	2.7	6.0	0.0	0.7	8.5	0.0	4.7	4.9	0.0	1.1	4.9
(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	D	E	A+	D	C+	A+	E	B-	A+	D	C-
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	43.5 Sec; LOS = D	65.0 Sec; LOS = E	27.5 Sec; LOS = C	21.3 Sec; LOS = C+	21.3 Sec; LOS = C+	21.3 Sec; LOS = C	21.3 Sec; LOS = C	21.3 Sec; LOS = C	21.3 Sec; LOS = C	21.3 Sec; LOS = C	21.3 Sec; LOS = C	21.3 Sec; LOS = C	21.3 Sec; LOS = C

Signal Timing, Secs: Phase 1 = 13.0; Phase 2 = 6.6; Phase 3 = 0.0; Phase 4 = 45.7; Phase 5 = 12.9; Phase 6 = 0.2; Phase 7 = 0.0; Phase 8 = 21.6. If time = 0.0, Phase is skipped.
 Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 13.0; Phase 3 = 19.6; Phase 4 = 19.6; Phase 5 = 65.3; Phase 6 = 78.2; Phase 7 = 78.4; Phase 8 = 78.4.
 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, MR = Westbound Right, ML = Westbound Left, Total = Total

Kurzman Associates

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: 2006 Peak Month With Project
 Cycle Length: 100 Seconds
 (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 72 Seconds)

Descriptor	NT	MR	NL	ST	SR	SL	ET	ER	EL	MT	MR	ML	Total
INPUT DATA													
(1) Volume per Hour, V	32	32	35	30	338	39	365	20	127	864	66	33	1981
(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]	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
(5) 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
(6) 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
(7) 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
(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=0db; 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)	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)	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	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)]	34	34	37	387	0	41	605	0	134	979	0	35	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	1800
(30) Flow Ratio, v/s = [(28)/(29)]	0.04	0.04	0.02	0.20	0.00	0.02	0.16	0.00	0.07	0.26	0.00	0.02	0.11
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.11	0.11	0.11	0.24	0.00	0.11	0.15	0.00	0.11	0.30	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	0.00	0.00	0.00	0.00	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	0.29	0.29	0.13	0.29	0.00	0.13	0.44	0.00	0.15	0.43	0.00	0.13	0.13
(34) Green Time Allotted in Seconds, [(33) * Cycle Length]	29.0	29.0	13.3	29.1	0.0	13.3	44.4	0.0	14.6	43.0	0.0	13.3	13.3
(35) Minimum Ped Time Needed to Cross Street [5 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]	8	8	5	78	78	57	24	24	12	4	4	1	1
(37) Capacity in Vehicles per Hour (Includes Yellow Penalty Adjustment), c = [(33)-(4)/C]*(29)	238	238	167	476	0	168	1534	0	192	1482	0	167	167
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.14	0.14	0.22	0.81	0.00	0.24	0.26	0.00	0.70	0.66	0.00	0.21	0.21
(39) Average Delay per Vehicle That Have to Stop [1.00 - (33)]	28.3	28.3	43.6	54.4	0.0	44.4	18.2	0.0	69.6	26.4	0.0	43.2	43.2
(40) Percent of Vehicle Queue Length at Beginning of Green, [(28)/(37) * Cycle Length / 3600 * (40)]	71	71	87	71	0	87	36	0	95	37	0	87	87
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(37) * Cycle Length / 3600 * (40)]	1.3	1.3	0.9	7.6	0.0	1.0	3.1	0.0	3.2	7.7	0.0	0.8	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	YES
(43) 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	33.7 Sec; LOS = C-	33.7 Sec; LOS = C-	53.4 Sec; LOS = D-	31.0 Sec; LOS = C-	27.0 Sec; LOS = C-	31.0 Sec; LOS = C-	27.0 Sec; LOS = C-	27.0 Sec; LOS = C-	27.0 Sec; LOS = C-	27.0 Sec; LOS = C-	27.0 Sec; LOS = C-	27.0 Sec; LOS = C-	27.0 Sec; LOS = C-

Signal Timing, Secs: Phase 1 = 13.3; Phase 2 = 1.4; Phase 3 = 0.0; Phase 4 = 43.0; Phase 5 = 13.3; Phase 6 = 0.0; Phase 7 = 0.0; Phase 8 = 29.0. If time = 0.0, Phase is skipped.
 Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 13.3; Phase 3 = 14.6; Phase 4 = 14.6; Phase 5 = 57.6; Phase 6 = 70.9; Phase 7 = 70.9; Phase 8 = 71.0.
 See Notes on last page. NT = Northbound Through, MR = Northbound Right, NL = Northbound Left, ST = Southbound Through, SR = Southbound Right, SL = Southbound Left, ET = Eastbound Through, ER = Eastbound Right, EL = Eastbound Left, MT = Westbound Through, MR = Westbound Right, ML = 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
 Lanes: Restriped

Traffic Condition: 2006 Peak Month With Project
 Cycle Length: 100 Seconds
 Maximum Cycle Length Needed to Satisfy Pedestrians when Present: 94 Seconds

Descriptor	NT	MR	NL	ST	SR	SL	ET	ER	EL	WT	MR	ML	Total
INPUT DATA													
(1) Volume per Hour, V	24	60	51	29	244	43	1189	34	219	597	44	45	2579
(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; ARAM-Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) 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
(5) 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
(6) 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
(7) 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
(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)	0	0	0	0	0	0	0	0	0	0	0	0	0
(11) CBD/Other (0=CBD; 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)	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 (HCM Recommendation 1900)	0	0	0	0	0	0	0	0	0	0	0	0	0
(16) Signal Progression (1=Retimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1800
(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 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 Saturation Flow Rate in Vehicles per Hour, v = [(1)*(18)/(5)]	25	63	54	287	0	45	1287	0	231	675	0	47	3800
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	950	950	1800	1900	0	1800	3800	0	1600	3800	0	1800	3800
(30) Flow Ratio, v/s = [(28)/(29)]	0.03	0.07	0.03	0.15	0.00	0.03	0.34	0.00	0.14	0.18	0.00	0.03	0.18
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.11	0.11	0.11	0.19	0.00	0.11	0.38	0.00	0.17	0.22	0.00	0.11	0.38
(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 Movs = 1.00	0.22	0.22	0.13	0.22	0.00	0.13	0.52	0.00	0.21	0.44	0.00	0.13	0.52
(34) Green Time Allocated in Seconds, [(33) * Cycle Length]	22.2	22.2	13.0	22.2	0.0	12.9	51.9	0.0	20.8	44.0	0.0	13.0	51.9
(35) Minimum Ped Time Needed to Cross Street (5 Seconds per Lane Crossed + 7 Seconds)	21	0	0	21	0	0	15	0	12	15	0	0	15
(36) Signal Phases Available to Movement. 1 = Phase 1; 13 = Phases 1 and 3. [See Note 6]	68	68	56	8	8	5	24	24	12	4	4	4	24
(37) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), c=[((33)-(4)/C)*(29)]	173	173	162	345	0	161	1819	0	303	1519	0	161	1819
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.15	0.36	0.33	0.83	0.00	0.28	0.71	0.00	0.76	0.44	0.00	0.29	0.76
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	34.1	42.3	48.3	67.2	0.0	46.3	22.1	0.0	62.1	21.0	0.0	46.8	21.0
(40) Percent of Vehicles Queue Length that Have to Stop [1.00 - (33)]	78	78	87	78	0	87	48	0	79	56	0	87	48
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(C) * Cycle Length]/3600 * (40)	1.1	2.7	2.7	6.2	0.0	1.1	8.6	0.0	5.1	5.2	0.0	1.1	8.6
(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)	C-	D	D	E	A+	D	C+	A+	E+	C+	A+	D	C-
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	43.1 Sec; LOS = D	64.4 Sec; LOS = E	28.1 Sec; LOS = C	22.7 Sec; LOS = C+	22.7 Sec; LOS = C+	22.7 Sec; LOS = C+	22.7 Sec; LOS = C+	22.7 Sec; LOS = C+	22.7 Sec; LOS = C+	22.7 Sec; LOS = C+	22.7 Sec; LOS = C+	22.7 Sec; LOS = C+	22.7 Sec; LOS = C+

Signal Timing, Secs: Phase 1 = 13.0; Phase 2 = 7.9; Phase 3 = 0.0; Phase 4 = 44.0; Phase 5 = 12.9; Phase 6 = 0.1; Phase 7 = 0.0; Phase 8 = 22.2. If time = 0.0, Phase is skipped.
 Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 13.0; Phase 3 = 20.8; Phase 4 = 20.8; Phase 5 = 64.8; Phase 6 = 77.8; Phase 7 = 77.8; Phase 8 = 77.8.
 See Notes on Last page. NT = Northbound Through, MR = Northbound Right, NL = Northbound Left, ST = Southbound Through, SR = Southbound Right, SL = Southbound Left

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 1. Starfield Cutoff (NS) and North Shore (EW)
 Time Period: AM Peak Hour
 Lanes: Existing

Traffic Condition: 2025 Average Month Without Project
 Cycle Length: 100 Seconds
 (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 26 Seconds)

Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	MR	ML	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	4.00	1.00	0.00	1.00	0.00	0.00	7.00
(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) [See Note 9]	-	-	-	-	-	-	-	-	-	-	-	-	-
(5) Peak Hour Factor, PHF (1.00 for Peak Hour; 0.90 or 0.95 for Peak 15 Minutes) [See Note 9]	4.00	4.00	4.00	4.00	4.00	4.00	0.95	0.95	0.95	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	12	12	12	12	12	12	12
(7) 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
(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)	-	-	-	-	-	-	-	-	-	-	-	-	-
(10) Buses Stopping per Hour (0; 10; 20; 30; or 40)	-	-	-	-	-	-	-	-	-	-	-	-	-
(11) CBD/Other (0=Std; 1=Other)	-	-	-	-	-	-	-	-	-	-	-	-	-
(12) Right Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Shaped 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 (ADM recommended)	0	0	0	0	0	0	0	0	0	0	0	0	0
(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	1800
(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 Saturation Flow Rate in Vehicles per Hour, v = [(1)*(18)/(5)]	61	69	60	61	61	61	25	77	0	665	0	0	0
(29) Flow Ratio, v/s = [(28)/(29)]	1900	1900	1900	1900	1900	1900	0.01	0.04	0.00	1900	0.00	0.00	0.00
(30) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.00	0.04	0.00	0.00	0.00	0.00	0.11	0.11	0.00	0.24	0.00	0.00	0.00
(31) 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
(32) Critical Lane Group = XXXX	0.00	XXXX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	XXXX	0.00	0.00	0.00
(33) Green Time All located 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 to Cross Street [Seconds] * 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	16	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	68	68	68	68	1295	1295	1295	1295	1295	1295	1295
(37) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0	0.15	0.00	0	0	0	0.02	0.06	0.00	0.36	0.00	0.00	0.00
(38) Average Delay per Vehicle in Seconds, d [See Note 5]	0.00	28.3	0.0	0.00	0.00	0.00	4.0	4.2	0.0	6.5	0.0	0.0	0.0
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	100	72	100	100	100	100	28	28	0	28	0	0	0
(41) 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	0.52
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	C	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
(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 = D+	0.0 Sec; LOS = A+	0.0 Sec; LOS = A+	0.0 Sec; LOS = A+	4.1 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	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 = 72.1; Phase 6 = 72.1; Phase 7 = 72.1; Phase 8 = 72.1.
 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: Time Period:	1- Stamford Cutoff (NS) and North Shore (EW) Lanes: Existing	Traffic Condition: 2025 Average Month Without Project Cycle Length: 100 Seconds	Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 34 Seconds										
Descriptor	NT	MR	NL	ST	SR	SL	ET	ER	EL	MT	MR	ML	Total
INPUT DATA													
(1) Volume per Hour, V	0	166	63	0	0	0	76	83	0	46	0	191	625
(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: ARQ=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 (Typical 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 If Factor = 1.00; 13; 14; 15; or 16 for 19')	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; 1; 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) Grades (-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)	-	-	-	-	-	-	-	-	-	-	-	-	-
(11) Cab/Other (0=Cab; 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)	-	-	-	-	-	-	-	-	-	-	-	-	-
(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 (H0M Recommended: 1900)	0	0	0	0	0	0	0	0	0	0	0	0	0
(16) Signal Progression (1=Retimed/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	1900	1900	1800	1900	1900	1900	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 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) Cab/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)]	66	175	0	0	0	0	80	87	0	249	0	0	0
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	1900	1900	0	1900	1900	1900	1900	1900	0	1900	0	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	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	X000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	X000	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	0.44	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 Allocated in Seconds, [(33) * Cycle Length]	0	43.5	0	0	0	0	56.5	56.5	0	56.5	0	0	0
(35) Minimum Ped Time Needed to Cross Street [3 Seconds per Lane Crossed + 7 Seconds]	16	68	0	16	8	5	24	24	12	4	0	0	0
(36) Signal Phases Available to Movement. 1 = Phase 1; 13 = Phases 1 and 3. [See Note 6]	68	751	0	0	0	0	997	997	16	997	0	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	0.00
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	50.0	18.0	0.00	50.0	50.0	0.00	10.2	10.2	0.00	12.0	0.00	0.00	17.22
(39) Average Delay per Vehicle in Seconds d [See Note 3]	100	36	0	100	100	0	44	44	0	44	0	0	0
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	1.8	2.7	0.0	1.8	1.8	0.0	1.0	1.1	0.0	3.0	0.0	0.0	1.21
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(C) * Cycle Length/3600 * (40)]	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 6]	D-	B-	A+	D-	D-	A+	B+	B+	A+	B+	A+	A+	B-
(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	27.5 Sec; LOS = C	0.0 Sec; LOS = A+	10.2 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+	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, MR = Northbound Right, NL = Northbound Left, SL = Southbound Left, ST = Southbound Through, ..., ML = Westbound Left

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 1. Starfield Cutoff (NS) and North Shore (EM)
 Time Period: AM Peak Hour
 Lanes: Existing

Traffic Condition: 2025 Average North With Project
 Cycle Length: 100 Seconds (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 26 Seconds)

Descriptor	NT	MR	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	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]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
(4) Lost Time (Yellow, All Red, Etc) in Seconds Y (Typically 2 to 4 Seconds) [See Note 9]	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
(5) Peak Hour Factor, PHF (1.00 for Peak Hour; 0.90 or 0.95 for Peak 15 Minutes)	12	12	12	12	12	12	12	12	12	12	12	12	12
(6) Lane Width (8; 9; 10; 11; 12 [Factor = 1.00]; 13; 14; 15; or 16 for 15+)	0	0	0	0	0	0	0	0	0	0	0	0	0
(7) 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
(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; 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
(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; 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 (HCM Recommendations 1900)	0	0	0	0	0	0	0	0	0	0	0	0	0
(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)]	75	69	0	0	0	0	25	118	0	465	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)]	0.04	0.04	0.00	0.00	0.00	0.00	0.01	0.06	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	0.11	0.11	0.00	0.28	0.00	0.00	0.394
(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) Green Time Allotted in Seconds, [(33) * Cycle Length]	0.00	27.9	0.00	0.00	0.00	0.00	72.1	72.1	0.00	72.1	0.00	0.00	0.00
(35) Minimum Ped Time Needed to Cross Street [5 Seconds per Lane Crossed + 7 Seconds]	16	16	0	16	0	0	16	16	0	16	0	0	0
(36) Signal Phases Available to Movement. 1 = Phase 1; 13 = Phases 1 and 3. [See Note 6]	0	68	56	0	8	5	24	24	12	24	0	0	0
(37) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), c = [(33)-(4)/C]*(29)]	0	453	0	0	0	0	1265	1265	0	1295	0	0	0
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.00	0.15	0.00	0.00	0.00	0.00	0.02	0.09	0.00	0.19	0.00	0.00	0.00
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	50.0	28.3	0.0	50.0	0.0	0.0	0.0	0.4	0.0	0.39	0.0	0.00	0.00
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	100	72	0.0	100	100	0.0	28	28	0	28	0	0	0
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length/3600 * (40)]	2.1	1.4	0.0	2.1	0.0	0.0	0.2	0.9	0.0	0.2	0.0	0.0	0.56
(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-	C	A+	D-	D-	A+	A	A	A+	A	A+	A+	B+
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	39.6 Sec; LOS = D+	0.0 Sec; LOS = D+	0.0 Sec; LOS = A+	0.0 Sec; LOS = A+	0.0 Sec; LOS = D-	0.0 Sec; LOS = A+	4.3 Sec; LOS = A	4.3 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 = 72.1; Phase 6 = 72.1; Phase 7 = 72.1; Phase 8 = 72.1.
 See Notes on last page. NT = Northbound Through, MR = Northbound Right, NL = Northbound Left, ST = Southbound Through, ..., WL = Westbound Left

Kunzman Associates

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 (FREE, 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) 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
(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 [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	0	0	0	0	0	0	0	0	0	0	0	0	0
(14) Saturated Flow Rate per Hour of Green Time (NOM Recommends 1900)	0	0	0	0	0	0	0	0	0	0	0	0	0
(15) 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
(16) 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 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)]	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	0.00	1900	0.00	0.00	1900	1900	0.00	1900	0.00	0.00	1900
(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	0.14	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 Allotted 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 Allotted 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, 3 Seconds per Lane Crossed + 7 Seconds	16	0	0	16	0	0	19	19	0	19	0	0	0
(36) Signal Phases Available to Movement, 1 = Phase 1; 15 = Phases 1 and 3. [See Note 6]	68	68	56	8	8	5	24	24	12	24	4	1	0
(37) Capacity in Vehicles per Hour (includes Yellow Penalty adjustment), c = [(35)-(4)/C]*(29)]	0	751	0	0	0	0	997	997	0	997	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	0.0	0.0	10.2	10.5	0.0	12.0	0.0	0.0	19.13
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	100	56	0	100	0	0	44	44	0	44	0	0	0
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(g) * Cycle Length/3600 * (40)]	3.2	2.7	0.0	0.0	0.0	0.0	1.0	1.4	0.0	3.0	0.0	0.0	1.17
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	B-	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	B-
(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 = C-	0.0 Sec; LOS = A+	0.0 Sec; LOS = A+	0.0 Sec; LOS = A+	10.4 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+	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 Cutoff (NS) and Big Bear Blvd. (EW)
 Time Period: AM Peak Hour
 Lanes: Existing

Traffic Condition: 2025 Average Month Without Project
 Cycle Length: 100 Seconds
 (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 91 Seconds)

Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	MR	ML	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; AROW=Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) Lost Time (Yellow, All Red, Etc) in Seconds (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	-
(5) Peak Hour Factor, PHF (Typically 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	-
(6) 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	-
(7) 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	-
(8) Grade (-6; -4; -2; 0; +2; +4; or +6)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-
(9) Parking Maneuvers per Hour (0; 1 = No Parking [Factor = 1.00]; 0; 10; 20; 30; or 40)	0	0	0	0	0	0	0	0	0	0	0	0	-
(10) Buses Stopping per Hour (0; 1 = 20; 30; or 40)	0	0	0	0	0	0	0	0	0	0	0	0	-
(11) CBD/Other (0=CBD; 1=Other)	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	-
(13) Pedestrians per Hour (0=Standard [Factor=1.00]; 50; 100; 200; 300; 400; or 500)	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	-
(15) Saturated Flow Rate per Hour of Green Time (HW 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]	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													
(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	-
(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)]	0.03	0.03	0.02	0.18	0.00	0.01	0.19	0.01	0.07	0.45	0.03	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	-
(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	0.23	0.23	0.11	0.23	0.00	0.11	0.54	0.54	0.11	0.54	0.54	0.11	-
(34) Green Time Allotted in Seconds, [(33) * Cycle Length]	23.0	23.0	11.3	23.0	0.0	11.3	54.4	54.4	11.4	54.3	54.3	11.3	-
(35) Minimum Ped Time Needed to Cross Street [3 Seconds per Lane Crossed + 7 Seconds]	68	68	56	362	8	5	26	26	12	12	12	12	-
(36) Signal Phases Available to Movement. 1 = Phase 1; 15 = Phases 1 and 3. [See Note 6]	187	181	171	97	0	131	957	957	132	956	956	131	-
(37) Capacity in Vehicles per Hour (includes Yellow Penalty adjustment), c = [(33)-(4)/(C)*(29)]	0.17	0.17	0.26	0.97	0.0	0.12	0.38	0.02	0.91	0.90	0.06	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	12.1	39.5	11.0	47.7	-
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	77	77	89	77	0	89	46	46	89	46	46	89	-
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	1.4	1.4	0.9	7.5	0.0	0.4	4.6	4.6	3.0	10.9	0.7	6.16	-
(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	-
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	C-	C-	D-	F	A+	D	B	B+	F-	D+	B+	D-	-
(43) Level of Service (LOS) Based on (39) [See Note 4]	C-	C-	D-	F	A+	D	B	B+	F-	D+	B+	D-	-
(44) Leg Average Delay per Vehicle in Seconds - Level of Service, LOS	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+	40.4 Sec; LOS = D+	38.0 Sec; LOS = D+	38.0 Sec; LOS = D+	40.4 Sec; LOS = D+	38.0 Sec; LOS = D+	38.0 Sec; LOS = D+	40.4 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 Right, NR = Northbound Through, NL = Northbound Left, ST = Southbound Through, SR = Southbound Right, SL = Southbound Left, ET = Eastbound Through, ER = Eastbound Right, EL = Eastbound Left, WT = Westbound Through, MR = Westbound Right, ML = Westbound Left.

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	WR	WL	Total
Intersection: 2. Stanfield Cutoff (NS) and Big Bear Blvd. (EW) Time Period: PM Peak Hour Lanes: Existing Traffic Condition: 2025 Average Month Without Project Cycle Length: 100 Seconds (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 128 Seconds)													
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]	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
(5) 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
(6) 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
(7) 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
(8) Grade (-6; -2; 0; +2; or +6)	0	0	0	0	0	0	0	0	0	0	0	0	0
(9) 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
(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) CB/Other (0=CB, 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 (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) CB/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]	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
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 = [See Note 1]	0.02	0.06	0.03	0.14	0.00	0.02	0.62	0.02	0.11	0.31	0.01	0.02	0.11
(30) Flow Ratio, v/s = [(28)/(29)]	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
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.00	0.00	0.00	0.00	0.00	0.00	0.66	0.00	0.00	0.00	0.00	0.00	0.00
(32) Critical Lane Group = (31)'s That Are Critical. Total is 10J. [See Note 10]	-	-	-	-	-	-	XXXX	-	-	-	-	XXXX	-
(33) Critical Lane Group = XXXX	-	-	-	-	-	-	XXXX	-	-	-	-	XXXX	-
(34) Green Time Allocated as Proportion of Cycle, g/C = [See Note 2]. Sum of Critical Moves = 1.00	0.17	0.17	0.09	0.16	0.00	0.09	0.69	0.66	0.14	0.61	0.61	0.09	0.61
(35) Minimum Ped Time Needed to Cross Street (5 Seconds per Lane Crossed + 7 Seconds)	16.6	16.6	9.0	16.3	0.0	8.7	65.7	65.7	14.1	60.6	60.6	8.9	60.6
(36) Signal Phases Available to Movement. 1 = Phase 1; 3 = Phases 1 and 3. [See Note 6]	21	68	56	21	8	5	15	24	12	15	4	4	15
(37) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), c = [(35)-(4)/C]*(29)]	68	120	91	234	0	65	1173	1173	182	1075	1075	89	1075
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.19	0.50	0.56	1.12	0.00	0.32	52.6	6.1	1.10	0.55	0.79	0.50	0.55
(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	34	157.7	15.0	15.0	72.1	15.0
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	83	83	91	84	0	91	34	34	86	39	39	91	86
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length]/3600 * (40)]	1.1	2.8	1.3	6.1	0.0	0.7	11.3	0.3	4.8	6.5	0.2	1.1	4.8
(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+	E	F-	A+	E+	D-	A	F-	B	A-	E-	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-	18.7 Sec; LOS = B-	66.4 Sec; LOS = E	18.7 Sec; LOS = B-	18.7 Sec; LOS = E	18.7 Sec; LOS = E	18.7 Sec; LOS = B-	18.7 Sec; LOS = B-	18.7 Sec; LOS = B-

Signal Timing, Secs: Phase 1 = 8.9; Phase 2 = 0.0; 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. Stamford Cutoff (NS) and Big Bear Blvd. (EW) Time Period: AM Peak Hour Lanes: Existing		Traffic Condition: 2025 Average Month With Project Cycle Length: 100 Seconds (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 88 Seconds)											
Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	MT	MR	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; ARW-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 Peak Hour; 0.90 or 0.95 for Peak 15 Minutes)	-	-	-	-	-	-	-	-	-	-	-	-	-
(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 (AW Recommends 1900)	-	-	-	-	-	-	-	-	-	-	-	-	-
(16) Signal Progression (1=Premixed/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) Parking 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 Saturation Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	32	32	35	367	0	40	363	20	126	859	66	33	1874
(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	0.00	0.23	0.00	0.00	0.00	0.00	0.11	0.49	0.00	0.00	0.45
(33) Green Time Alllocated 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	0.54	0.54	0.11	0.54	0.54	0.11	0.54
(34) Green Time Alllocated in Seconds, [(33) * Cycle Length]	23.8	23.8	11.2	23.8	0.0	11.2	53.7	53.7	11.2	53.7	53.7	11.2	53.7
(35) Minimum Ped Time Needed to Cross Street (3 Seconds per Lane Crossed + 7 Seconds)	8	8	8	8	8	8	8	8	8	8	8	8	8
(36) Capacity in Vehicles per Hour (Includes (Low Penalty adjustment), c = [(35)-(4)/(C)*(29)]	188	188	130	375	0	130	363	20	131	945	945	130	945
(37) Volume to Capacity Ratio, v/c = X = [(28)/(36)]	0.17	0.17	0.27	0.98	0.00	0.08	0.98	0.02	0.08	0.98	0.02	0.02	0.02
(38) Average Delay per Vehicle in Seconds, d [See Note 3]	33.4	33.4	48.7	91.8	0.0	50.6	15.3	10.8	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	46	46	89	46	46	89	46
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(g) * Cycle Length/3600 * (40)]	1.3	1.3	0.9	7.8	0.0	1.0	4.7	0.3	3.1	11.0	0.9	0.8	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 = D	44.6 Sec; LOS = F	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+

Signal Timing, Secs: Phase 1 = 11.2; Phase 2 = 0.1; 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)
 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: 127 Seconds)

Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	WT	MR	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	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; ARCM=Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) 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
(5) 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
(6) 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
(7) 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
(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 (-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
(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=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 (HCM Recommends 1900)	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	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	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													
(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	272	0	43	1182	34	219	594	45	44	2438
(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)]	0.02	0.06	0.03	0.14	0.00	0.02	0.62	0.02	0.12	0.31	0.02	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	0.11
(32) Critical Lane Group = [(31)'s that Are Critical]. Total is 100. [See Note 10]	0.00	0.00	0.00	0.18	0.00	0.00	0.66	0.00	0.00	0.00	0.00	0.00	0.00
(33) Critical Lane Group = XXXX				XXXX			XXXX					XXXX	
(34) Green Time Allocated as Proportion of Cycle, g/C [See Note 2]. Sum of Critical Moves = 1.00	0.17	0.17	0.09	0.16	0.00	0.09	0.66	0.66	0.15	0.59	0.59	0.09	0.09
(35) Minimum Ped Time Needed to Cross Street [3 Seconds per Lane Crossed + 7 Seconds]	16.5	16.5	9.0	16.4	0.0	8.9	65.6	65.6	15.1	59.4	59.4	9.0	9.0
(36) Signal Phases Available to Movement. 1 = Phase 1; 13 = Phases 1 and 3. [See Note 6]	21	68	56	8	0	5	24	24	12	15	4	0	0
(37) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), c = [(33)-(4)/C]*(29)	119	68	91	236	8	89	1170	1170	200	1053	1053	89	89
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.19	0.50	0.56	1.15	0.00	0.48	0.03	0.03	1.09	0.56	0.04	0.49	0.49
(39) 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	71.9
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	83	83	91	84	0	91	34	34	85	41	41	91	91
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * 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	1.1
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	F	YES	YES	NO	YES	F	YES	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-	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-	67.2 Sec; LOS = E	19.1 Sec; LOS = B-	19.1 Sec; LOS = E	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.
 Signal Offset's, 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, 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: 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	MT	MR	WL	Total
INPUT DATA													
(1) Volume per Hour, V	30	30	33	29	304	15	34.5	19	115	816	55	31	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	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)	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, W/F (1.00 for 12 ft; 0.95 for 10 ft; 0.90 for 10 ft with 15 ft shoulders)	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, P/HV (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)	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/ Shaped 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 (1000 Recommended; 1900 Recommended)	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1800
(16) Signal Progression (1=Protected/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
(28) 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	1.00
CALCULATED VALUES AND PERFORMANCE MEASURES													
(29) Adjusted Saturation Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	32	32	35	35	351	16	363	0	121	917	0	33	3800
(30) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	950	950	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1800
(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	0.24
(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	0.28
(33) Critical Lane Group = [(31)'s That Are Critical]. Total is 1.00. [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
(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	0.45
(35) Minimum Ped Time Needed to Cross Street (3 Seconds per Lane Crossed + 7 Seconds)	27.6	27.6	13.5	27.6	0.0	13.5	45.4	0.0	13.7	45.4	0.0	13.5	45.4
(36) Signal Phases Available to Movement (1 = Phase 1; 3 = Phases 1 and 3; [See Note 6])	21	21	56	21	8	9	15	24	0	15	0	9	15
(37) Capacity in Vehicles per Hour (Includes Yellow Penalty Adjustment, c = [(35)-(4)/(C)*(29)])	68	68	171	448	8	171	1574	0	175	1567	0	171	1567
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.44	0.44	0.20	0.78	0.00	0.09	0.24	0.00	0.69	0.59	0.00	0.19	0.59
(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	23.0	0.0	42.4	72.0
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	72	72	86	72	0	87	55	0	86	55	0	86	55
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(C) * Cycle Length/3600 * (40)]	1.3	1.3	1.3	0.8	0.0	0.4	2.9	0.0	2.9	0.0	0.0	0.8	2.9
(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	D-	A+	D+	B-	A+	E-	C+	A+	D	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 = C-	30.5 Sec; LOS = D-	23.7 Sec; LOS = C+	30.5 Sec; LOS = D-	30.5 Sec; LOS = D-	23.7 Sec; LOS = C+	30.5 Sec; LOS = D-	23.7 Sec; LOS = C-	30.5 Sec; LOS = D-	23.7 Sec; LOS = C+	30.5 Sec; LOS = D-

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.
 Signal Offset, Secs: Phase 1 = 0.0; Phase 2 = 13.5; Phase 3 = 13.7; Phase 4 = 13.7; 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	MT	MR	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, M	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 5]	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
(5) Peak Hour Factor, PHF (1.00 for Peak Hour; 0.90 or 0.95 for Peak 15 Minutes) [See Note 9]	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
(6) 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
(7) 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
(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=CBD; 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=Protected; 2=Protected w/ Shepherded 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=Protected; 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 (RHM Recommended)	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1800
(16) Signal Progression (1=Retimed/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 Saturation Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	23	60	51	261	0	27	1216	0	200	611	0	44	3800
(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	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	0.00	0.02	0.11
(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	0.36	0.00	0.15	0.20	0.00	0.11	0.36
(32) Critical Lane Group = [(31)'s That Are Critical]. Total is 10J. [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 Allotted 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	0.12	0.35	0.00	0.19	0.48	0.00	0.13	0.48
(34) Green Time Allotted in Seconds, [(33) * Cycle Length]	20.1	20.1	12.7	19.7	0.0	12.4	35.0	0.0	19.2	48.4	0.0	12.6	48.4
(35) Minimum Ped Time Needed to Cross Street [3 Seconds per Lane Crossed + 7 Seconds]	21	68	56	21	8	5	24	24	12	15	4	0	15
(36) Signal Phases Available to Movement: 1 = Phase 1; 15 = Phases 1 and 3. [See Note 6]	152	68	21	8	5	24	24	12	15	4	0	15	
(37) Capacity in Vehicles per Hour (includes yellow penalty adjustment), c = [(35)-(4)/C]*(29)]	152	152	152	152	152	152	152	152	152	152	152	152	152
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.15	0.39	0.32	0.87	0.00	0.18	0.63	0.00	0.73	1.688	0.00	0.29	1.688
(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	0.0	47.0	62.5
(40) Percent of Vehicles That Have to Stop [1.00 - (35)]	80	80	87	80	0	88	45	0	81	52	0	87	52
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(C) * Cycle Length/3600 * (40)]	1.0	2.7	2.8	5.8	0.0	0.7	2.6	0.0	4.5	4.4	0.0	1.1	4.4
(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	45.5 Sec; LOS = D	75.2 Sec; LOS = E-	24.3 Sec; LOS = C+	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-	19.1 Sec; LOS = B-

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 Offset's, Secs: Phase 1 = 0.0; Phase 2 = 12.6; Phase 3 = 19.2; Phase 4 = 19.2; Phase 5 = 67.6; Phase 6 = 79.9; 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, 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: 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) 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
(5) 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
(6) 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
(7) 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
(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 (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
(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=CBD; 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)	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 (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)*(18)/(5)]	32	32	35	367	0	40	383	0	126	925	0	33	
(29) Adjusted Saturation Flow Rate in Vehicles per Hour, s = [(See Note 1)]	950	950	1800	1900	0	1800	3800	0	1800	3800	0	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	
(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	
(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	0.28	0.00	0.00	.757
(33) 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	0.14	0.43	0.00	0.14	
(34) Green Time Allocated 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	
(35) Minimum Ped Time Needed to Cross Street (3 Seconds per Lane Crossed + 7 Seconds)	21	8	5	21	0	0	15	24	0	15	0	0	
(36) Signal Phases Available to Movement, 1 = Phase 1; 13 = Phases 1 and 3. [See Note 6]	236	236	177	473	0	177	1501	0	192	1468	0	176	
(37) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), c = [(33)-(4)/(C)]*(29)	0.13	0.13	0.20	0.78	0.00	0.23	0.26	0.00	0.66	0.63	0.00	0.19	
(38) Volume to Capacity Ratio, v/c = X = [(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	
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	71	71	86	71	0	86	56	0	85	57	0	86	
(40) Percent of Vehicles Queue Length that Have to Stop [1.00 - (33)]	1.2	1.2	0.8	7.3	0.0	1.0	3.0	0.0	3.0	7.4	0.0	0.8	
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(C) * Cycle Length/3600 * (40)]	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	4.15
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	C	C	D	D	A+	D	B-	A+	E	C	A+	D	
(43) Level of Service (LOS) Based on (39) [See Note 4]	C	C	D	D	A+	D	B-	A+	E	C	A+	D	
(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-	50.0 Sec; LOS = D-	30.2 Sec; LOS = C-	26.4 Sec; LOS = C-	30.2 Sec; LOS = C-	26.4 Sec; LOS = C-	30.2 Sec; LOS = C-	26.4 Sec; LOS = C-	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 = 13.8; Phase 6 = 0.0; Phase 7 = 0.0; Phase 8 = 28.8.
 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, 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
 Lanes: Restriped

Traffic Condition: 2025 Average Month With Project
 Cycle Length: 100 Seconds
 (Maximum Cycle Length Needed to Satisfy Pedestrians When Present: 103 Seconds)

Descriptor	NT	NR	NL	ST	SR	SL	ET	ER	EL	MT	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 (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=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) Saturated Flow Rate per Hour of Green Time (1=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) Left Turn Lane Type (0=Standard [Factor=1.00]; 1=Unprotected; 2=Protected w/ Separate Arrow)	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900
(16) Signal Green Time (1=PreTime/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 Saturation Flow Rate (in Peak 15 Minutes) in Vehicles per Hour, v = [(1)*(18)/(5)]	23	60	51	272	272	43	1216	0	219	639	0	44	3900
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green, s = [See Note 1]	950	950	1800	1900	1900	1800	3800	0	1800	3800	0	1800	3800
(30) Flow Ratio, v/s = (28)/(29)	0.02	0.06	0.03	0.14	0.14	0.02	0.32	0.00	0.12	0.17	0.00	0.02	0.10
(31) Minimum Green Plus Lost Time as Proportion of Cycle [See Note 7]	0.11	0.11	0.11	0.18	0.18	0.11	0.36	0.00	0.16	0.21	0.00	0.11	0.18
(32) Critical Lane Group = XXXX [See Note 10]. Total is 10J.	0.00	0.00	XXXX	XXXX	XXXX	0.00	XXXX	0.00	0.00	0.00	0.00	XXXX	XXXX
(33) Green Time All located as Proportion of Cycle, g/C = [See Note 2]. Sum of Critical Moves = 1.00	0.20	0.20	0.13	0.20	0.20	0.13	0.55	0.00	0.20	0.47	0.00	0.13	0.55
(34) Green Time All located in Seconds, [(33) * Cycle Length]	20.4	20.4	12.6	20.3	20.3	12.5	54.5	0.0	20.4	46.5	0.0	12.6	54.5
(35) Minimum Ped Time Needed to Cross Street (3 Seconds per Lane Crossed + 7 Seconds)	21	21	0	21	21	0	21	0	21	21	0	21	21
(36) Signal Phases Available to Movement. 1 = Phase 1; 15 = Phases 1 and 3. [See Note 6]	156	68	56	8	8	5	24	24	12	4	4	1	154
(37) Capacity in Vehicles per Hour (Includes Yellow Penalty adjustment), c = [(35)-(4)/(C)*(29)]	0.15	0.39	0.33	0.88	0.88	0.28	0.63	0.00	0.74	0.39	0.00	0.29	0.63
(38) Volume to Capacity Ratio, v/c = X = [(28)/(C)*(29)]	35.9	45.7	48.6	78.1	78.1	46.9	18.4	0.0	60.7	18.6	0.0	47.1	18.6
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	80	80	87	80	80	87	45	0	80	53	0	87	45
(40) Percent of Vehicles That Have to Stop [1.00 - (35)]	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
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(C) * Cycle Length/3600 * (40)]	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	D+	D	D-	E-	E-	D	B-	A+	E+	B-	A+	D	C-
(43) Level of Service (LOS) Based on (39) [See Note 4]	D	D	D-	E-	E-	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+	24.8 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+	24.8 Sec; LOS = E-	73.8 Sec; LOS = D

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 = 67.1; 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, SR = Southbound Right, SL = Southbound Left, ET = Eastbound Through, ER = Eastbound Right, EL = Eastbound Left, MT = Middlebound Through, MR = Middlebound Right, ML = Middlebound Left, WL = Westbound Through, WR = Westbound Right, WL = Westbound Left, WT = Westbound Through, WR = Westbound Right, WL = Westbound Left.

Kunzman Associates

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2, Stanfield Cutoff (NS) and Big Bear Blvd. (EW)
 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	MT	MR	ML	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	1.00	1.00	1.00	1.00	1.00	1.00	10.00
(3) Right Turns (RT) per Hour	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) Left Turns (LT) per Hour	-	-	-	-	-	-	-	-	-	-	-	-	-
(5) Lost Time Yellow (LY) in Seconds	-	-	-	-	-	-	-	-	-	-	-	-	-
(6) Peak Hour Factor, PHF	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
(7) Lane Width (W) in Feet	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
(8) Percent Heavy Vehicles (HV)	12	12	12	12	12	12	12	12	12	12	12	12	12
(9) Grade (-, 0, +)	0	0	0	0	0	0	0	0	0	0	0	0	0
(10) Parking Maneuvers per Hour	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
(11) Buses Stopping per Hour	0	0	0	0	0	0	0	0	0	0	0	0	0
(12) Right Turn Lane Type	0	0	0	0	0	0	0	0	0	0	0	0	0
(13) Pedestrians per Hour	0	0	0	0	0	0	0	0	0	0	0	0	0
(14) Left Turn Lane Type	0	0	0	0	0	0	0	0	0	0	0	0	0
(15) Saturated Flow Rate per Hour of Green Time	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1800
(16) Signal Progression (1=Protected/2=Actuated/3=Progressed)	1	1	1	1	1	1	1	1	1	1	1	1	1
(17) Minimum Green Time in Seconds	7	7	7	7	7	7	7	7	7	7	7	7	7
FACTORS FROM TABLES													
(18) Lane Utilization Factor	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	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	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	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	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	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	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	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	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	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	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 Saturation Flow Rate in Vehicles per Hour	39	39	44	438	0	20	454	24	152	1074	72	41	1800
(29) Adjusted Saturation Flow Rate in Vehicles per Hour of Green	950	950	1800	1900	0	1800	1900	1900	1800	1900	1900	1800	1800
(30) Flow Ratio, v/s	0.04	0.04	0.02	0.23	0.00	0.01	0.24	0.01	0.08	0.57	0.04	0.02	0.02
(31) Minimum Green Plus Lost Time as Proportion of Cycle	0.11	0.11	0.11	0.27	0.00	0.11	0.28	0.11	0.12	0.61	0.11	0.11	0.11
(32) Critical Lane Group = [(31)'s That Are Critical]. Total is 100%.	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.12	0.61	0.00	0.00	0.00
(33) Green Time Allocated as Proportion of Cycle, g/C	0.23	0.23	0.10	0.23	0.00	0.10	0.58	0.58	0.11	0.56	0.56	0.10	0.10
(34) Green Time Allocated in Seconds	23.4	23.4	9.5	23.4	0.0	9.5	57.5	57.5	10.8	56.2	56.2	9.5	9.5
(35) Minimum Ped Time Needed to Cross Street	68	68	56	21	8	5	26	26	12	15	15	6	6
(36) Signal Phases Available to Movement	184	184	99	369	0	99	1077	1077	123	992	992	99	99
(37) Capacity in Vehicles per Hour	921	921	64.4	157.9	0.0	49.0	14.4	9.2	223.5	82.4	10.2	61.9	86.87
(38) Volume to Capacity Ratio, v/c	0.21	0.21	0.64	1.57	0.00	0.20	1.44	1.44	0.92	0.61	0.61	0.15	0.15
(39) Average Delay per Vehicle in Seconds	35.0	35.0	77	90	0	90	42	42	89	44	44	90	90
(40) Percent of Vehicles that Have to Stop	1.7	1.7	1.1	9.3	0.0	0.5	5.4	5.4	3.8	13.1	13.1	1.0	1.0
(41) Average Vehicle Queue Length at Beginning of Green	YES	YES	YES	NO	YES	YES	YES	YES	NO	NO	YES	YES	YES
(42) Do All Vehicles Clear? [YES if (38) < 0.95]	D+	D+	E	F-	A+	D-	B	A-	F-	F+	B+	E+	F+
(43) Level of Service (LOS) Based on (39)	D+	D+	E	F-	A+	D-	B	A-	F-	F+	B+	E+	F+
(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-	77.4 Sec; LOS = E-	77.4 Sec; LOS = E-	77.4 Sec; LOS = E-	77.4 Sec; LOS = E-	77.4 Sec; LOS = E-	77.4 Sec; LOS = E-	77.4 Sec; LOS = E-	77.4 Sec; LOS = E-	77.4 Sec; LOS = E-

Signal Timing, Secs: Phase 1 = 9.5; Phase 2 = 0.0; Phase 3 = 1.3; Phase 4 = 56.2; Phase 5 = 9.5; Phase 6 = 0.0; Phase 7 = 0.0; Phase 8 = 23.4.
 Signal Offsets, Secs: Phase 1 = 0.0; Phase 2 = 0.0; 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, SR = Southbound Right, SL = Southbound Left, ET = Eastbound Through, ER = Eastbound Right, EL = Eastbound Left, MT = Middlebound Through, MR = Middlebound Right, ML = Middlebound Left, Total = Total.

INTERSECTION DELAY CALCULATION USING 1997 HIGHWAY CAPACITY MANUAL PROCEDURE

Intersection: 2. Stamford 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; AROW-Right Turn Arrow) [See Note 5]	-	-	-	-	-	-	-	-	-	-	-	-	-
(4) 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
(5) 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
(6) Lane Width (8'; 9'; 10'; 11'; 12' if Factor = 1.00; 13'; 14'; 15'; or 16' for 15x)	12	12	12	12	12	12	12	12	12	12	12	12	12
(7) 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
(8) Grade (-6; -4; -2; 0; 2; 4; or 6)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
(9) Parking Maneuvers per Hour (1 = No Parking [Factor = 1.00]; 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)	0	0	0	0	0	0	0	0	0	0	0	0	0
(11) CBD/Other (0=CBD, 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)	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 (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 Saturation Flow Rate in Vehicles per Hour, v = [(1)*(18)/(5)]	29	75	63	326	0	35	1478	42	249	742	21	56	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	1900
(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) Critical Lane Group = XXXX			XXXX	XXXX			XXXX					XXXX	
(34) 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
(35) Minimum Ped Time Needed to Cross Street [3 Seconds per Lane Crossed + 7 Seconds]	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
(36) Signal Phases Available to Movement. 1 = Phase 1; 13 = Phases 1 and 3. [See Note 6]	21	21	0	21	0	15	15	15	0	15	0	0	0
(37) Capacity in Vehicles per Hour (includes Yellow Penalty adjustment), c = [(33)-(4)/(C)*(29)]	120	68	56	8	8	63	1220	24	12	1098	4	66	1800
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	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
(39) Average Delay per Vehicle in Seconds, d [See Note 3]	44.0	72.4	165.7	25.1	0.0	92.0	123.2	5.3	254.9	17.9	7.4	143.4	119.03
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	83	83	92	84	0	93	32	32	86	38	38	92	86
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length/3600 * (40)]	1.4	3.5	1.6	7.6	0.0	0.9	13.1	0.4	5.9	7.9	0.2	1.4	8.80
(42) Do All Vehicles Clear? [YES if (38) < 0.85] [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	102.6 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	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.
 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, ML = 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: 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	NR	NL	ST	SR	SL	ET	ER	EL	WT	MR	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 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=CBD; 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 or Green Time (NOM Recommended 1900)	0	0	0	0	0	0	0	0	0	0	0	0	0
(16) Signal Progression (1=Protected/Factor=1.0; 2=Actuated/Factor=0.85; 3=Actuated & Progressed)	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1800
(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													
(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)]	39	39	44	455	0	44	454	24	157	1074	80	41	1800
(29) Adjusted Saturation Flow Rate in Vehicles per Hour, s = [See Note 1]	950	950	1800	1900	0	1800	1900	0.01	1800	1900	1900	1800	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	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	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	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	0.56	0.56	0.09	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	55.6	55.6	9.4	9.4
(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	0	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	4	4	1	1
(37) Capacity in Vehicles per Hour (includes yellow penalty adjustment), c=[((33)-(4)/C)*(29)]	190	190	98	379	8	98	1010	1010	126	980	980	98	98
(38) Volume to Capacity Ratio, v/c = X = [(28)/(37)]	0.21	0.21	0.45	1.20	0.0	0.45	0.45	0.02	1.25	1.10	1.10	0.08	0.42
(39) Average Delay per Vehicle in Seconds, d = [(28)/(38)]	34.3	34.3	65.3	161.2	0.0	65.3	14.7	9.4	227.3	87.5	10.6	62.7	62.7
(40) Percent of Vehicles That Have to Stop [1.00 - (33)]	76	76	91	76	0	91	43	43	89	44	44	91	91
(41) Average Vehicle Queue Length at Beginning of Green, [(28)/(2) * Cycle Length/3600 * (40)]	1.6	1.6	1.1	9.6	0.0	1.1	5.4	0.3	3.9	13.2	1.0	1.0	1.0
(42) Do All Vehicles Clear? [YES if (38) < 0.95] [See Note 8]	YES	YES	YES	F-	YES	YES	YES	YES	NO	NO	YES	YES	YES
(43) Level of Service (LOS) Based on (39) [See Note 4]	C-	C-	E	F-	A+	E	B	A-	F-	F	Br	E+	F
(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	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+

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 Offset/s, 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, 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, Total = Total Delay.