

Memorandum

To: SEE ATTACHED

Date: April 13, 1998

File:

From: DEPARTMENT OF TRANSPORTATION
Traffic Operations
Mail Station 36

Subject: Yellow Change Interval

This memorandum is being issued to supersede the June 12, 1997 memorandum on Revision to Chapter 9 of the Traffic Manual. After consultation with the Traffic Signal Committee, it was agreed upon that Section 9-04.5, "Yellow Change Intervals," in the Metric version of the Traffic Manual shall read as follows:

9-04.5 Yellow Change Intervals

The purpose of the yellow signal indication is to warn traffic approaching the signal that the related green movement is ending or that a red indication will be exhibited immediately thereafter and traffic will be required to stop when the red signal is exhibited.

The length of the yellow change interval is dependent upon the speed of approaching traffic. Suggested yellow change intervals are shown below:

Approach Speed		Yellow
(mph)	(km/h)	(seconds)
25 or less	40	3.0
30	48	3.2
35	56	3.6
40	64	3.9
45	72	4.3
50	80	4.7
55	89	5.0
60	97	5.4
65	105	5.8

A revised Section 9-04.5 will be sent to all registered holders of the Traffic Manual by the California Department of Transportation Publication Distribution Unit. If you have any questions, please call Mr. Sam Ehsan at (916) 654-5039 or Calnet 464-5039.

SOMPOL CHATUSRIPITAK, Chief
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Development and Support

Table 4D-101 (CA). Suggested Detector Setbacks From Limitline

Deceleration Rate $d = 3.05 \text{ m/sec}^2$ (10 ft/sec²)

Reaction Time $t_R = 1.00 \text{ sec}$

Reaction Distance = Vt_R

Deceleration Distance = $\frac{1}{2}dt^2$ or $\frac{1}{2}Vt$ or $\frac{V^2}{2d}$

Deceleration Time = $\frac{V}{d}$

Detector Setback = Deceleration Distance + Reaction Distance = $\frac{V^2}{2d} + Vt_R$

V = Deceleration Speed (m/sec or ft/sec)

t_D = Deceleration Time (sec)

Note: Speed must be expressed in feet per second and the Deceleration Setback will be measured in feet.

SPEED				DEC. TIME	DECELERATION DISTANCE		TOTAL TIME	DETECTOR SETBACK			
mph	km/h	m/s	feet/s		Meters	Feet		Meters	Feet	Meters	Feet
25	40	11.18	36.68	3.67	20.49	66.93	4.67	31.67	103.90	30	105
30	48	13.42	44.00	4.40	29.51	96.82	5.40	42.93	140.80	45	140
35	56	15.65	51.35	5.13	40.17	131.80	6.13	55.82	183.10	55	185
40	64	17.89	58.69	5.87	52.46	204.90	6.87	70.35	230.80	70	230
45	72	20.13	66.04	6.60	66.40	217.80	7.60	86.52	283.90	85	285
50	80	22.36	73.36	7.33	81.97	268.90	8.33	104.33	342.30	105	345
55	89	24.60	80.71	8.06	99.18	325.40	9.06	123.78	406.10	125	405
60	97	26.83	88.00	8.80	118.04	387.30	9.80	144.87	475.30	145	475
65	105	29.07	95.37	9.53	138.53	454.50	10.53	167.60	549.90	170	550
70	113	31.29	102.7	10.27	160.50	526.60	11.27	191.79	649.30	190	650

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Table 4D-102 (CA). Minimum Yellow Light Change Interval Timing

$$\text{Yellow Time} = \frac{\text{Detector Setback Distance}}{\text{Speed}}$$

$$T = \frac{D}{V} = \text{The minimum yellow light change interval (sec)}$$

V = Posted speed or prima facie Speed (m/sec or ft/sec)

d = Deceleration Rate (3.05 m/sec² or 10 ft/sec²)

t_R = Reaction Time (1 sec)

Reaction Distance = Vt_R

Deceleration Distance = $\frac{1}{2}dt^2$ or $\frac{1}{2}Vt$ or $\frac{V^2}{2d}$

D = Detector Setback = Deceleration Distance + Reaction Distance = $\frac{V^2}{2d} + Vt_R$

$$T = \frac{\frac{V^2}{2d} + Vt_R}{V}$$

$$T = \frac{V}{2d} + t_R$$

POSTED SPEED or PRIMA FACIE SPEED		MINIMUM YELLOW INTERVAL
mph	km/h	Seconds
25 or less	40 or less	3.0
30	48	3.2
35	56	3.6
40	64	3.9
45	72	4.3
50	80	4.7
55	89	5.0
60	97	5.4
65	105	5.8