
 Northern Region Traffic Engineering Practice	No. 401.1
Pedestrian Timing at Traffic Signals	December 8, 2011

The 2009 MUTCD significantly changed the guidelines for timing pedestrian intervals at traffic signals. This practice complies with MUTCD guidelines and provides additional requirements and guidance appropriate to VDOT's Northern Region.

This practice shall be applied to new signals and to existing signals when they are retimed. All existing signals shall comply with this practice by December 31, 2014.

- LEN* = Crossing distance, in feet, measured curb to curb
- W* = Duration of walk interval, in seconds
- FDW* = Duration of flashing dont walk interval, in seconds
- Y* = Duration of yellow change interval immediately following *FDW*, in seconds
- AR* = Duration of all-red clearance interval immediately following *Y*, in seconds



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WALK INTERVAL

The duration of the walk interval shall be at or above the minimum shown in the following table:

<i>LEN</i> *	Minimum <i>W</i>
Less than 112	7**
112 or greater	$\left(\frac{LEN - 111}{21}\right) + 7$, rounded up to the next higher integer

* Where the same pedestrian phase is used for multiple pedestrian crossings, the longest crossing shall be used to determine the minimum *W*.

** The minimum *W* may be shortened, with the approval of the Regional Traffic Engineer, where indicated by pedestrian volumes and characteristics. The minimum *W* may be shortened by up to 3 seconds where $LEN \leq 55$, by up to 2 seconds where $56 \leq LEN \leq 76$, and by 1 second where $77 \leq LEN \leq 97$. **The minimum *W* shall not be shortened where $LEN > 97$.**

W may be increased above the minimum at any location.

MUTCD guidance calls for the walk interval to be lengthened if pedestrians walking at 3 feet per second are unable to cross the entire roadway from a point 6 feet from the curb during the sum of the walk and pedestrian clearance intervals.¹ In order to satisfy this guidance, the WALK interval needs to be lengthened for some crossings.

MUTCD guidance calls for a walk interval of at least 7 seconds,² but indicates that walk intervals as short as 4 seconds may be used “if pedestrian volumes and characteristics do not require a 7-second walk interval.”³ This differential is the source of the second note below the table. However, the amount of the allowable reduction in the walk interval is smaller at longer crossings, in order to comply with the 3-foot-per-second guidance in the previous paragraph.

FLASHING DONT WALK INTERVAL

Where a pedestrian phase operates concurrently with a vehicular phase, the flashing dont walk interval shall occur entirely within the green interval of the vehicular through movement.

The duration of the flashing dont walk interval shall be as shown in the following table, unless either of the exceptions noted below the table apply:

<i>LEN*</i>	<i>FDW**</i>
Less than 30	4
30 or greater	$\left(\frac{LEN}{3.5} - 5 \right)$, rounded up to the next higher integer

*** Where the same pedestrian phase is used for multiple pedestrian crossings, the longest crossing shall be used to determine *FDW*.**

**** Where $Y + AR < 5$, *FDW* shall be increased by $5 - (Y + AR)$.**

Exception 1: *Where pedestrians frequently cross slower than 3.5 feet per second, FDW should be increased.*

Exception 2: A walking speed of up to 4 feet per second may be used to evaluate the sufficiency of the pedestrian clearance time at locations where an extended pushbutton press function has been installed to provide slower pedestrians an opportunity to request and receive a longer pedestrian clearance time. Passive pedestrian detection may also be used to automatically adjust the pedestrian clearance time based on the pedestrian’s actual walking speed or actual clearance of the crosswalk.

¹ MUTCD Section 4E.06, paragraph 14

² MUTCD Section 4E.06, paragraph 11

³ MUTCD Section 4E.06, paragraph 12

The MUTCD does not explicitly refer to a flashing dont walk interval. Rather, it refers to the pedestrian change interval (the time when the signal head shows a flashing hand) and the pedestrian clearance time.

MUTCD guidance calls for the pedestrian clearance time to be calculated such that a pedestrian who leaves the curb at the end of the walk interval will be able to cross the street, walking at 3.5 feet per second, before the release of conflicting traffic.⁴ The clearance time is measured from the end of the walk interval to the beginning of the green interval for conflicting traffic.

The pedestrian change interval is a portion of the pedestrian clearance time. The MUTCD requires a buffer interval of at least 3 seconds following the pedestrian change interval, during which time the signal shall display a steady hand.⁵ The buffer interval can be included in the pedestrian clearance time.

The MUTCD allows the pedestrian change interval to extend into the yellow change interval, but it is not clear that VDOT NRO traffic signal controllers have, or will have, this capability. As such, this practice calculates the flashing dont walk interval such that it is entirely exclusive of the yellow change interval.

This practice provides a 5-second buffer interval, which is greater than the 3-second minimum MUTCD requirement, included in the pedestrian clearance time. In addition, when the sum of yellow and all-red intervals exceeds 5 seconds, as it does at most locations, this practice provides that excess time over and above the minimum pedestrian clearance time.

EXCLUSIVE PEDESTRIAN PHASES

An exclusive pedestrian phase is one where a pedestrian phase does not operate concurrently with a vehicular phase. Exclusive pedestrian phases are present, for example, at midblock pedestrian-only signals and at signals where all traffic is stopped to permit pedestrians to cross in multiple directions at the same time.

The duration of *W* and *FDW* for exclusive pedestrian phases shall be computed in the same manner prescribed above.

At an exclusive pedestrian phase, after the flashing dont walk interval ends, but prior to the green interval being displayed for conflicting vehicular traffic, a steady dont walk shall be displayed to pedestrians for 5 seconds.

⁴ MUTCD Section 4E.06, paragraph 7

⁵ MUTCD Section 4E.06, paragraph 4

COMPUTATION OF W AND FDW

The following values were computed from the tables on pages 1 and 2, assuming $Y + AR \geq 5$. These values are deemed accurate, but the tables on page 1 and 2 present the official practice.

<i>LEN</i>	Minimum <i>W</i>	<i>FDW</i>
0 to 31	7	4
32 to 35	7	5
36 to 38	7	6
39 to 42	7	7
43 to 45	7	8
46 to 49	7	9
50 to 52	7	10
53 to 56	7	11
57 to 59	7	12
60 to 63	7	13
64 to 66	7	14
67 to 70	7	15
71 to 73	7	16
74 to 77	7	17
78 to 80	7	18
81 to 84	7	19
85 to 87	7	20
88 to 91	7	21
92 to 94	7	22
95 to 98	7	23
99 to 101	7	24
102 to 105	7	25
106 to 108	7	26
109 to 111	7	27
112	8	27
113 to 115	8	28
116 to 119	8	29
120 to 122	8	30

<i>LEN</i>	Minimum <i>W</i>	<i>FDW</i>
123 to 126	8	31
127 to 129	8	32
130 to 132	8	33
133	9	33
134 to 136	9	34
137 to 140	9	35
141 to 143	9	36
144 to 147	9	37
148 to 150	9	38
151 to 153	9	39
154	10	39
155 to 157	10	40
158 to 161	10	41
161 to 164	10	42
165 to 168	10	43
169 to 171	10	44
172 to 174	10	45
175	11	45
176 to 178	11	46
179 to 182	11	47
183 to 185	11	48
186 to 189	11	49
190 to 192	11	50
193 to 195	11	51
196	12	51
197 to 199	12	52
200 to 203	12	53
203 to 205	12	54