

CITY OF OMAHA

TRAFFIC ENGINEERING DIVISION

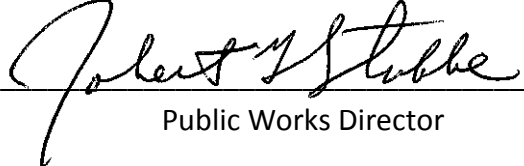


GUIDELINES and REGULATIONS FOR CROSSWALK LOCATION, DESIGN and MAINTENANCE

February 19, 2016

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Approved this 19th day of February, 2016


Public Works Director

1. Introduction

By legal definition, there are three or more crosswalks at every intersection whether marked or unmarked. A marked crosswalk should be installed at an intersection where an unmarked crosswalk would not be clearly discernable due to peculiar geometrics or other physical characteristics.

When warranted and located properly, a marked pedestrian crosswalk may achieve the following results:

- Act, in a limited manner, as a warning device and reminder to motorists that pedestrian conflicts can be expected.
- Point out to the pedestrian the safest crossing path.
- Limit pedestrian crossings to specific locations.
- Aid in enforcing pedestrian crossing regulations.

Unjustified or poorly located marked crosswalks may, and often do, have the following effects:

- Increase crash frequency by lulling both pedestrians and drivers into a false sense of security.
- Cause the pedestrian to think that the motorist can and will stop in all cases.
- Create a lack of credibility for all traffic control devices.
- Result in unnecessary installation and maintenance costs.
- Cause a greater number of rear-end and associated collisions due to pedestrians not waiting for adequate gaps in traffic.

Marked crosswalks are a useful traffic control device but should not be installed unless the anticipated benefits clearly outweigh their associated risks.

Crosswalks maintained by the Public Works Department are repainted twice annually, or once in some locations. Crosswalks marked with cold plastic tape usually last several years and are monitored for quality to determine when they need to be reapplied. Marked crosswalks meeting the following criteria are maintained by Public Works:

- Designated school crossings
- Downtown signalized intersections
- Major signalized intersections in areas with heavy pedestrian activity (South Omaha, Benson, Old Market, etc)
- Mid-block crossings, where warranted
- Intersections with high crash rates involving pedestrians
- Locations where an engineering study recommends crosswalk markings

2. DESIGN STANDARDS

Crosswalk markings in the City of Omaha shall comply with the MUTCD standards in Section 3B.18.

Locations where decorative crosswalks have been installed using brick pavers, colored or textured concrete or similar materials will not be considered for standard crosswalk markings.

3. REQUESTS FOR NEW MARKED CROSSWALKS

Public Works receives several requests from citizens, neighborhood groups, business owners and other entities to install a marked crosswalk at an existing intersection or mid-block location. Consistent with policies for traffic calming and parking restrictions, there shall be a requirement to circulate a petition to the property owners within 300 feet of the proposed marked crosswalk. Petitions need to have greater than two thirds affirmative support (based on the number of parcels) for the city to evaluate the warrants for a proposed crosswalk. If the proposed crosswalk is in a commercial area with an active Business Improvement District, or similar entity, their support of the proposed marked crosswalk is also mandatory.

Crosswalks at intersections will be evaluated using the warrants listed below. Marked mid-block crosswalks may be installed if they meet the crosswalk warrants and satisfy the following conditions:

- The length of the block between intersections shall be at least 1000 feet;
- There shall be a high pedestrian volume generator nearby; and
- There shall be a reasonable demand by the pedestrians to cross within a concentrated area at least 400 feet from the nearest intersection.

The following warrants are based on a point system evaluation incorporating gap time, pedestrian volumes, vehicle approach speed, and general conditions.

No crosswalks shall be installed at an unsignalized location unless the motorist has an unrestricted view of the pavement surface at the proposed crosswalk site for distances as shown in the following table:

STOPPING SIGHT DISTANCE

Posted Approach Speed (mph)	Sight Distance (feet)
20	125
25	150
30	200
35	250
40	325
45	400

All roadways having a raised or painted median at least six feet wide for curbed sections and ten feet wide for uncurbed sections shall be considered as two separate roadways. Roadways having two-way left turn lanes may be considered as two separate roadways when, in the judgment of the engineer, it is appropriate.

PEDESTRIAN CROSSWALK WARRANTS

Warrant	Maximum Points
A. Gap Time Warrant	10
B. Pedestrian Volume Warrant	10
C. Approach Speed Warrant	5
D. General Conditions Warrant	8
Maximum Total Points	33

The minimum warrant for the installation of a marked crosswalk at an unsignalized location is satisfied when 16 or more points are accrued, one of which shall be for pedestrian volumes. A Crosswalk Warrant Evaluation Form is provided in the appendix.

A. Gap Time Warrant

Point assignment is based on the one-hour period during the day when the vehicle-pedestrian conflicts are at maximum and, thus, gap availability would be most critical. Crossings controlled by Stop or Yield signs shall receive no points for this warrant as adequate gaps are created when vehicles are stopped.

Average Gaps Per 5-Minute Period	Points
0 - 0.99	10
1 - 1.99	8
2 - 2.99	6
3 - 3.99	4
4 - 4.99	2
5 or over	0
Maximum	10

B. Pedestrian Volume Warrant

Points are assigned in accordance with the total number of times that individual or groups of pedestrians cross the street under study during the hour of maximum vehicle-pedestrian conflict. For unsignalized locations, this includes activity in both crosswalks at an intersection. Crosswalks shall not be installed where ten or fewer crossings are made by individual or groups of pedestrians during the study period.

Pedestrian Volume Warrant

Total Crossings	Points
over 100	10
91 - 100	8
61 - 90	6
31 - 60	4
11 -30	2
0-10	0
Maximum	10

A Pedestrian Volume and Usable Gap Time Form is provided in the appendix.

C. Approach Speed Warrant

Points are assigned in accordance with the vehicular approach speed from both directions of travel as determined through engineering speed studies or the posted speed limit. No marked crosswalks at unsignalized locations shall be installed on roadways having posted speeds in excess of 45 mph. If an approach is stop controlled, no points will be given for the approach speed warrant.

Approach Speed	Points
under 20 mph	1
20 to 28 mph	3
29 to 37 mph	5
38 to 45 mph	1
over 45 mph	0
Maximum	5

D. General Conditions Warrant

Points are assigned only if, by the determination of the City Traffic Engineer a marked crosswalk would:

	Points
(1) Clarify and define pedestrian routes across complex intersections	2
(2) Channelize pedestrians into a significantly shorter path	2
(3) Position pedestrians to be seen better by motorists	2
(4) Position pedestrians to expose them to fewer vehicles	2
Maximum	8

APPENDIX

FORMULAS

A. Pedestrian Crossing Time = $\frac{\text{Street Width Curb to Curb}}{\text{Walking Rate}}$

In which the walking rate may be considered as:

- Three feet per second for locations where use by very young, elderly, and/or handicapped pedestrians predominates, or
- Four feet per second for locations with typical pedestrians.

B. Average Number of Gaps per 5-minute period = $\frac{\text{Total Usable Gap Time in Seconds}}{\text{Pedestrian Crossing Time} \times 12}$

SURVEY METHODS AND FIELD FORMS

A. Survey Methods

1. Personnel Requirements: One person.
2. Duration of Survey: One hour during the period of maximum conflict between vehicles and pedestrians (when gap availability is most critical). When the period of maximum conflict is unknown, a longer survey may be required to capture the maximum conflict period.
3. Equipment: Stop watch and field data forms.
4. Type of Survey:
 - a. Pedestrian count within the crosswalk area during the one-hour study period.
 - b. Usable gap time count during the same study period. Each gap time that is equal to or exceeds the calculated pedestrian crossing time is defined as a usable gap time and is entered on the field data form as such.
 - c. Speed samples should be obtained.

B. Use of the Crosswalk Warrant Field Form

1. Compute the pedestrian crossing time and enter the figure (in seconds) in the appropriate space.
2. Begin the usable gap time recording by entering on the field data sheet the length (in seconds) of those gap times equal to or exceeding the calculated pedestrian crossing time.
3. Total the usable gap times in seconds, and compute the average number of gaps per 5-minute period.
4. Record the one-hour pedestrian volume, the approach speed, and the existing general conditions.
5. Evaluate the individual warrants, assign points as merited, and tabulate to determine if a marked crosswalk installation is justified.

The location and marking of pedestrian crosswalks shall be approved by the City Traffic Engineer.

City of Omaha, Public Works Department
Traffic Engineering Division

Crosswalk Warrant Evaluation

Intersection: _____ Date: _____

Investigator: _____ Time: _____

Pedestrian Crossing Time	
Width of Street	_____
Walking Rate	_____
_____ = _____ = _____	

Average number of gaps per five-minute period	
Total usable gap time (seconds)	_____
Pedestrian crossing time X 12	_____
_____ = _____ = _____	

Approach Speed	
Posted: _____ mph	Measured speed: _____ mph

General Conditions	
1. Clarify and define pedestrian routes across complex intersections	Points: _____
2. Channelize pedestrians into a significantly shorter path	Points: _____
3. Position pedestrians to be seen better by motorists	Points: _____
4. Position pedestrians to expose them to fewer vehicles	Points: _____

Summary

Warrant	Points	Maximum Points
Gap Time	_____	_____10_____
Pedestrian Volume	_____	_____10_____
Approach Speed	_____	_____5_____
General Conditions	_____	_____8_____
TOTAL	_____	

