

**As approved by the  
National Committee  
June 30, 2006.**

**TECHNICAL COMMITTEE RECOMMENDATION**

**TECHNICAL COMMITTEE:** Signals Technical Committee

**DATE OF ACTION:** January 19, 2006

**TOPIC:** **Section 4C.05 Warrant 4, Pedestrian Volume**

**ORIGIN OF REQUEST:** Signals Technical Committee

**DISCUSSION:** There has been an increased emphasis on improving pedestrian safety and increasing pedestrian trips. The emphasis extends to areas typically seen as being non-pedestrian friendly, such as higher speed and wider streets. With traffic conditions changing as traffic volumes and congestion increase, pedestrians' ability to cross many streets is affected. There is concern that the existing traffic signal pedestrian warrant may need to be modified. For example, state and local transportation agencies often have difficulty justifying the installation of traffic signals at pedestrian-crossing locations. Many of these locations are experiencing traffic volume increases, along with reductions in vehicle gaps that provide opportunities for the crossing of pedestrians.

Transit stops may exist on both sides of these streets, creating challenging pedestrian crossing conditions. Many transit stops are not located at signalized intersections, so transit riders must cross the street at least once each day while walking to and from transit services. Positioning transit stops only at signalized intersections forces potential patrons to walk long distances and discourages ridership. Positioning a transit stop at a midblock or unsignalized intersection reduces walking distance but sometimes places transit customers at a difficult crossing location. In these (often suburban) locations, meeting the pedestrian volumes specified in the current warrant is rarely possible.

A recent research project jointly sponsored by the Transit Cooperative Research Program (TCRP) and the National Cooperative Highway Research Program (NCHRP) was initiated to address this particular need. The research team for the TCRP/NCHRP D-08/3-71 study developed and presented recommendations to the Signal Technical

Committee of the National Committee on Uniform Traffic Control Devices. The proposed revisions to the MUTCD pedestrian warrant for traffic control signals were derived from other vehicle-based traffic signal warrants and supplemented with data gathered during the study. The basis for the proposed pedestrian warrant revisions is that the number of pedestrians waiting to cross a street should be no greater than the number of vehicles waiting to cross or enter a street. Once this basis was accepted, then the existing vehicle-based warrants were used to derive comparable warrants for crossing pedestrians. The net effect of the proposed revisions is as follows: a) the pedestrian warrant will be slightly easier to meet with lower pedestrian volumes on streets with high vehicle volumes, and b) the pedestrian warrant will be slightly more difficult to meet on streets with low vehicle volumes.

The Signals Technical Committee recommends that the National Committee submit the following proposed MUTCD changes to sponsors for comments.

**COMMITTEE ACTION :**

See following pages for proposed text. New text is shown in blue underline. Deleted text is shown as ~~red double strikethrough~~.

**VOTE:**

|             |      |
|-------------|------|
| For         | - 32 |
| Opposed     | - 1  |
| Abstentions | - 0  |

**REFERENCE TO AFFECTED  
PAGE NUMBERS IN MUTCD:**

Page 4C-6, 2003 Edition of MUTCD, Rev. 1

## Section 4C.05 Warrant 4, Pedestrian Volume

Support:

The Pedestrian Volume signal warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

Standard:

The need for a traffic control signal at an intersection or midblock crossing shall be considered if an engineering study finds that **both one** of the following criteria **are is** met:

- ~~A. The pedestrian volume crossing the major street at an intersection or midblock location during an average day is 100 or more for each of any 4 hours or 100 or more during any 1 hour; and~~
- ~~B. There are fewer than 60 gaps per hour in the traffic stream of adequate length to allow pedestrians to cross during the same period when the pedestrian volume criterion is satisfied. Where there is a divided street having a median of sufficient width for pedestrians to wait, the requirement applies separately to each direction of vehicular traffic.~~

- A. For each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) all fall above the curve in Figure 4C-5; or
- B. For 1 hour (any four consecutive 15-minute periods) of an average day, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) falls above the curve in Figure 4C-6.

The Pedestrian Volume signal warrant shall not be applied at locations where the distance to the nearest traffic control signal or STOP sign controlling ~~along~~ the ~~major~~ street that pedestrians desire to cross is less than 90 m (300 ft), unless the proposed traffic control signal will not restrict the progressive movement of traffic.

If this warrant is met and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads conforming to requirements set forth in Chapter 4E.

Option:

If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 60 km/h or exceeds 35 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-7 may be used in place of Figure 4C-5 to satisfy Criterion A in the Standard above, and Figure 4C-8 may be used in place of Figure 4C-6 to satisfy Criterion B in the Standard above.

Guidance:

If this warrant is met and a traffic control signal is justified by an engineering study, then:

- A. If at an intersection, the traffic control signal should be traffic-actuated and should include pedestrian ~~detectors~~ activation.
- B. If at a nonintersection crossing, the traffic control signal should be pedestrian-actuated, parking and other sight obstructions should be prohibited for at least 30 m (100 ft) in advance of and at least 6.1 m (20 ft) beyond the crosswalk, and the installation should include suitable standard signs and pavement markings.
- C. Furthermore, if installed within a signal system, the traffic control signal should be coordinated.

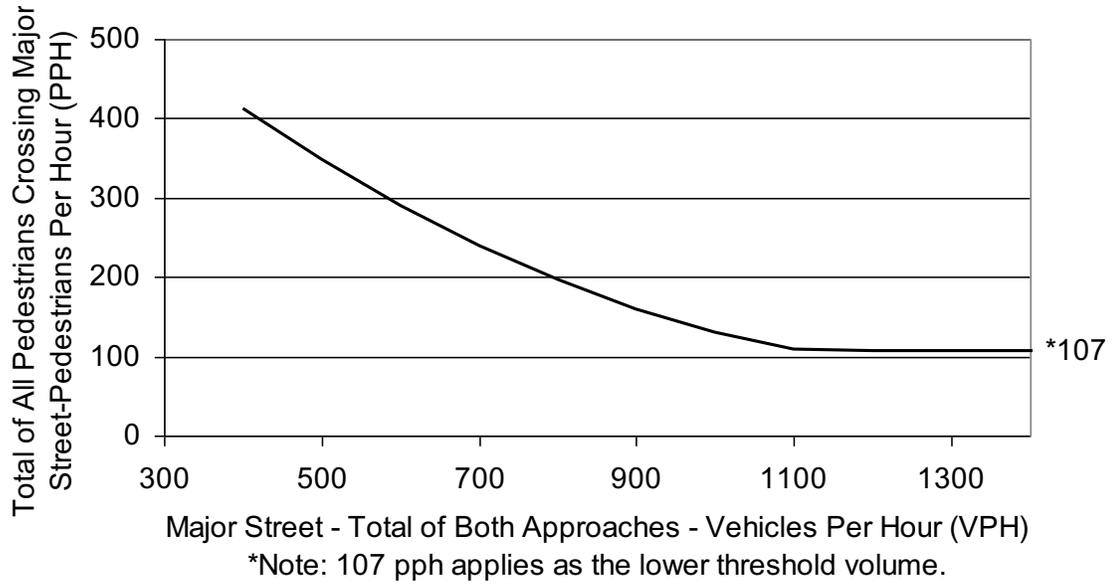
Option:

The criterion for the pedestrian volume crossing the major ~~roadway~~ street may be reduced as much as 50 percent if the ~~average~~ 15th-percentile crossing speed of pedestrians is less than ~~4.2~~ 1.1 m/sec (~~4~~ 3.5 ft/sec).

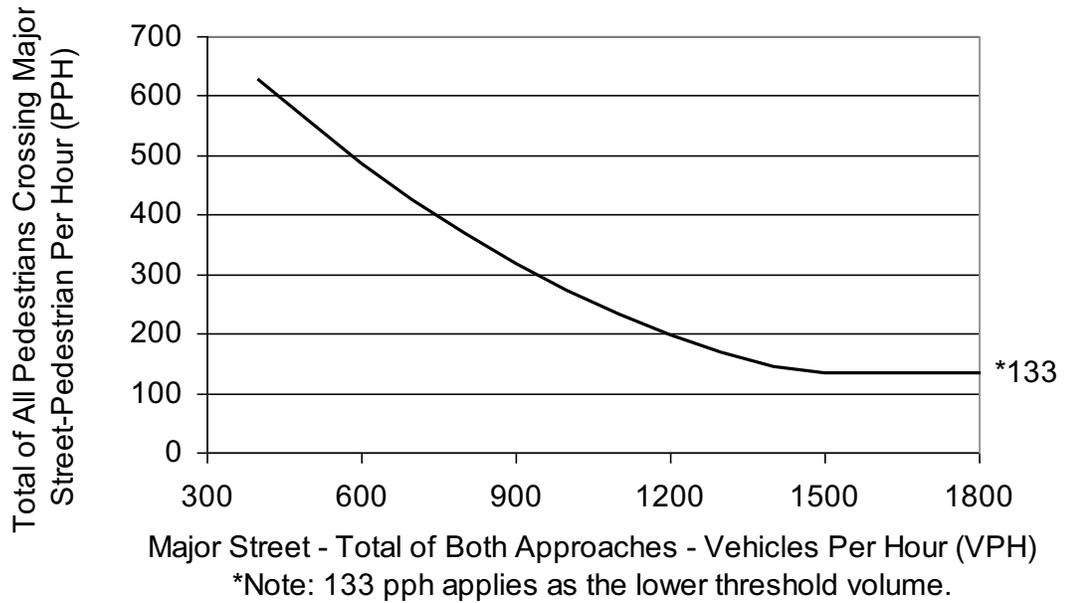
A traffic control signal may not be needed at the study location if adjacent coordinated traffic control signals consistently provide gaps of adequate length for pedestrians to cross the street, ~~even if the rate of gap occurrence is less than one per minute.~~

Note: The following figures are new.

**Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume**

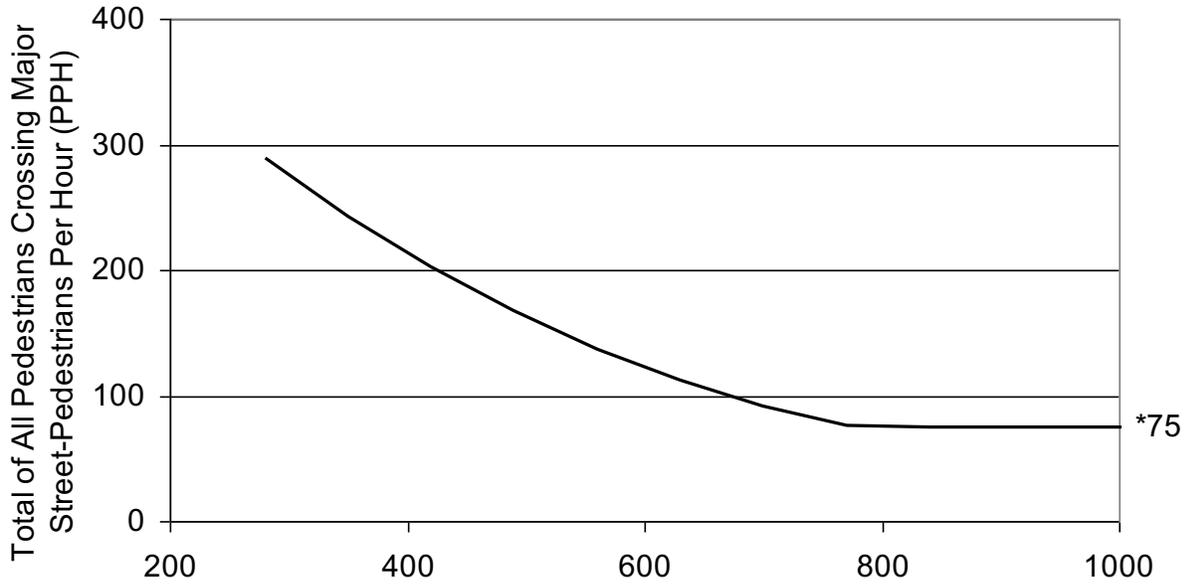


**Figure 4C-6. Warrant 4, Pedestrian Peak Hour**



**Figure 4C-7. Warrant 4, Pedestrian Four-Hour Volume (70% Factor)**

Community less than 10,000 population or above 60 km/h or above 35 mph on major street

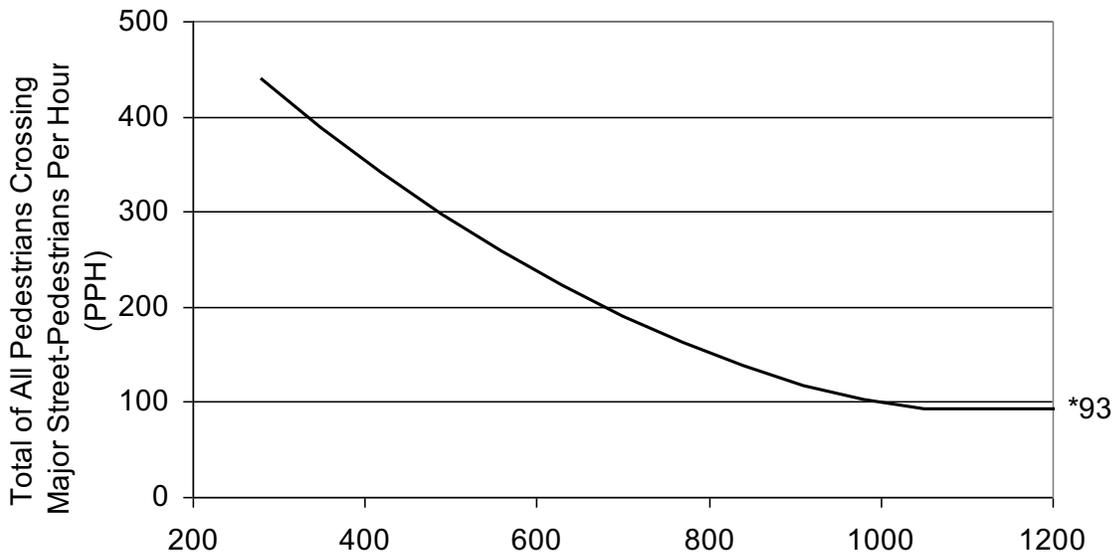


Major Street - Total of Both Approaches - Vehicles Per Hour (VPH)

\*Note: 75 pph applies as the lower threshold volume.

**Figure 4C-8. Warrant 4, Pedestrian Peak Hour (70% Factor)**

Community less than 10,000 population or above 60 km/h or above 35 mph on major street



Major Street - Total of Both Approaches - Vehicles Per Hour (VPH)

\*Note: 93 pph applies as the lower threshold volume.