# COUNCIL POLICY STATEMENT

Policy No:          2
General Subject     Public Safety
Specific Subject    Use of Adult School Crossing Guards
Date Approved       May 20, 1974

## PURPOSE

To establish standards for the assignment of adult school crossing guards. The consistent and impartial application of these standards will assure elementary school children of adequate safety protection by evaluation the seriousness of traffic hazards and assigning guards at the most critical locations.

## RATIONALE

Every parent naturally is concerned that his child be able to travel safely to and from school. The City shares this concern and recognizes that need for adequate safety protection. Since the City must respond to numerous suggestions on this subject, which come form, many sources, it is necessary that standards as outlined in this policy statement be approved so that all residents and students are assured of an equal level of protection. Lack of such standards might lead to decisions that would tend to be based largely on emotional considerations and which would result in disparities in levels of service not justified by existing conditions.

## POLICY STATEMENT

1.  The City will conduct necessary studies of conditions along approved school routes to determine the extent of conflict between pedestrian and vehicular movements. The study shall measure the amount of unobstructed time or "gap" available for safe pedestrian crossing. The study shall be performed in accordance with procedures outlined by the Institute of Traffic Engineers in "A Program of School Crossing Protection" with the exceptions of the table of Adequate Gap Times, and the graph for Determining the Need for Traffic Control at School Crossings as printed. In lieu thereof the City will use a modified, more conservative evaluation as described in the attached sheets describing procedure, gap times, delay time and conclusions.

2.  Wherever the results of the study indicate "gaps" exist to permit safe crossing at a particular location.

3.  Elementary school age children will be expected to travel to and from school along the approved "school route plan" and the City assumes the responsibility for adequate protection measures only along such routes. Students in junior and senior high school are judged to be mature enough to travel to and from school without the assistance of adult school guards.

4.	Any alderman or school principal may request the Department of Public Works to conduct a "gap" study at any location where there is doubt about the existence of adequate "gaps."

5.	The Police Department shall be responsible for adequately training and supervising adult guards and shall also encourage the various elementary schools to provide adequate instruction to school patrol students.

**PROCEDURES FOR MAKING FIELD STUDIES FOR DETERMINING**

**THE NEED FOR AN ADULT SCHOOL CROSSING GUARD**

**DEFINITIONS**

G    =        Adequate Gap Time in Seconds

W    =        Total roadway width in feet

N    =        Number of rows of pedestrians walking five abreast

D    =        the actual pedestrian delay time in percent

Da    =        the maximum allowable delay time that is acceptable to a pedestrian, and is equivalent to the green and yellow # vehicle signal interval of a hypothetical traffic signal in percent

C    =        Traffic signal cycle length

t    =        Total time of all gaps in which pedestrians could cross, in seconds

T    =        Total survey time in seconds

**COMPUTATIONS**

**ACTUAL PEDESTRIAN DELAY**

$$D = \frac{T-t}{T} \; 100$$

**ALLOWABLE PEDESTRIAN DELAY TIME**

$$DA = \left[ \frac{\frac{W}{3.0 \text{ ft./sec.}} + 4.0 \text{ sec.} + (N-1)\,2}{C} \right]$$

**DETERMINATION OF "N"**

Pedestrian counts, using the appropriate form entitled "Pedestrian Group Size Study" should be made on a normal school day during the heaviest hours of crossing activity in the morning and afternoon.

It is assumed that five pedestrians will walk abreast when a group crosses a roadway. Therefore, if the group is determined and divided by five, the required number of rows will be obtained. The 85th percentile group size is used so as to include most situations.

**Determination of "W"**

This is the curb-to-curb width in feet as measured at the crossing under study.

**Determination of "D"**

This information is developed in a field survey based on information obtained in the "Pedestrian Group Size Survey." This study actually measures the time intervals between passing vehicles. Those intervals or traffic gaps that are equal to or greater than the Adequate Gap time are the periods during which children must cross the roadway. The intervals between these gaps are the delay periods, the sum of which is the Actual Pedestrian Delay.

Traffic gaps are measured with a stopwatch, in seconds of time from one vehicle to the next vehicle. The total time of all gaps (t) which is equal to or greater than the Adequate Gap Time (G) and the total time of survey are used in the analysis of the crossing.

The tally of gap times should be made using the survey form "Pedestrian Delay Time Study." The survey should be conducted immediately before and after the period in which the children are using the crosswalk, so that they will not affect he vehicular traffic pattern. A survey of both morning and afternoon gaps will be made.

When the field survey is completed, the Adequate Gap Time can be selected from the Park Ridge Table of "Adequate Gap Times," or it can be computed using the following equation:

$$G = \frac{W}{3.0 \text{ ft./sec.}} + 4.0 \text{ sec.} + (N-1)2$$

Where W = Total roadway width in feet divided by 3.0ft./second = walking rate plus 4.0 sec. = Perception and Reaction Time plus (N-1) 2.

Where N = Number of Rows of Pedestrians walking five abreast.

Where 1 represents the first row and 2 is the time interval between rows.

The computation of "D" the Actual Pedestrian Delay is the total time of all gaps in which pedestrians could cross, is found by adding the length, in second, of each gap which is equal to or greater than the Adequate Gap time (G). This figure is known as "t" and is subtracted from the total survey time in seconds (T).

The following equation is then used to determine the percentage of actual pedestrian delay "D":

$$\frac{T-t}{}$$

D in %     T

=

When D has been determined for a crossing at a non-signalized intersection, the determination of Need for Traffic Control can be determined by using the Park Ridge graph.

Certain school crossings may be located at complicated and congested signalized intersections where heaving turning movements create confusion and hazard, particularly for small children.  Hazard is created as right and left turning vehicles (moving on the same green interval as the children (traverse the pedestrian crosswalk being used by the children.  This hazard is determined by measuring those gaps, which are equal to or greater than the Adequate Gap Time (G) in the traffic turning across the crosswalk. Except for one further consideration, the need for additional traffic control is calculated in the same manner and with the same equations as above.

The additional item of information, which must be considered, is the cycle length "C" of the traffic control signals.

$$Da = ((C-G)/C)100$$

Since $\quad G = \dfrac{W}{3.0} + 4.0 + (N-1)2$

The equation can be written as:

$$Da = \left[ 1 - \frac{\dfrac{W}{3.0 \text{ ft./sec.}} + 4.0 \text{ sec.} + (N-1)\,2}{C} \right] 100$$

If "C" does not equal 60, it will be necessary to calculate "Da" using the above equation.

To determine whether or not a special form of protection or control is needed, the calculated "Da" is compared with "D" the actual percentage of pedestrian delay, as found by the field study.  If "D" is less than "Da" no control is needed.  Conversely, if "D" is greater than "Da" then control is needed.

In cases where "D" is greater than "Da" the difference can be used to establish priorities for control among several locations.

## TABLE OF ADEQUATE GAP TIMES
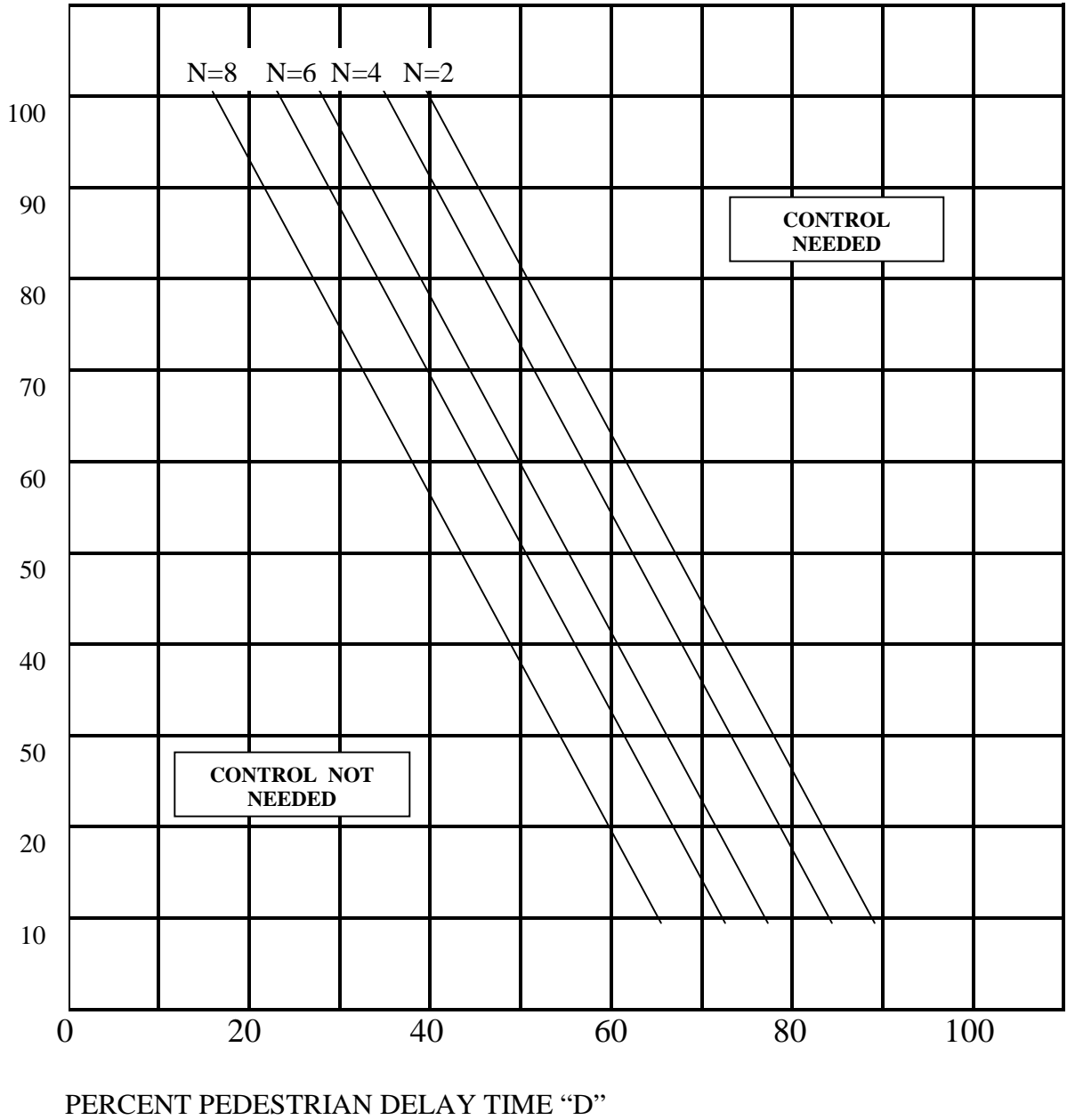### (In Seconds)

Number of Rows – "N"

| Roadway Width "W" | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 16-19 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 |
| 20-22 | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 25 | 27 | 29 |
| 23-26 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 |
| 27-29 | 13 | 15 | 17 | 19 | 21 | 23 | 25 | 27 | 29 | 31` |
| 30-33 | 15 | 17 | 19 | 21 | 23 | 25 | 27 | 29 | 31 | 33 |
| 34-36 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 |
| 37-40 | 17 | 19 | 21 | 23 | 25 | 27 | 29 | 31 | 33 | 35 |
| 41-43 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 |
| 44-47 | 19 | 21 | 23 | 25 | 27 | 29 | 31 | 33 | 35 | 37 |
| 48-50 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | 38 |
| 51-54 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 |
| 55-57 | 23 | 25 | 27 | 29 | 31 | 33 | 35 | 37 | 39 | 41 |
| 58-61 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 | 42 |
| 65-68 | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 | 42 | 44 |
| 75-80 | 30 | 32 | 34 | 36 | 38 | 40 | 42 | 44 | 46 | 48 |

Adequate Gap Time:

$$G \text{ (in seconds)} = \frac{W}{3.0 \text{ ft./sec}} + 4.0 \text{ sec.} + (N-1)2$$

Where W = roadway width divided by 3.0 ft./second = Walking Rate + 4.0 sec. = Perception and Reaction Time + (N-1) 2.

Where N = Number of Rows, 1 represents the first row and 2 is the time interval.

# DETERMINATION OF NEED FOR TRAFFIC CONTROL
## AT
## SCHOOL CROSSINGS



PERCENT PEDESTRIAN DELAY TIME "D"

# PEDESTRIAN DELAY TIME STUDY

Study Date _____ Location _____ Crosswalk Across_____

End of Survey (nearest minute)_____          No. of Rows – "N"_____

Start of Survey (nearest minute)_____  `       Roadway Width – "W"_____

Total Survey Time (minutes)_____          Adequate Gap Time – "G"_____

| Gap Size (Seconds) | Number of Gaps Tally | " Totals | Multiply by Gap Size | Computation |
|---|---|---|---|---|
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 10 | | | | |
| 20 | | | | |
| 21 | | | | |
| 22 | | | | |
| 23 | | | | |
| 24 | | | | |
| 25 | | | | |
| 26 | | | | |
| 27 | | | | |
| 28 | | | | T = Total Su |
| 30 | | | | $\quad$ Time X 6 |
| 31 | | | | |
| 32 | | | | $D = \dfrac{(T\text{-}t)\, 100}{T}$ |
| 33 | | | | |
| 34 | | | | |
| 35 | | | | |
| 36 | | | | |
| 37 | | | | |
| 38 | | | | |
| 39 | | | | |
| 40 | | | | |
| 41 | | | | |
| 42 | | | | |
| 43 | | | | |

"g" (Total time of all gaps equal or greater than "G")          _____Secs.          D=_____

# PEDESTRIAN GROUP SIZE STUDY

Study date_____          Time: From_____ to_____
       Location_____

Crosswalk across_____          Curb to curb
distance_____

Divided roadway?          Yes          No          Width of
Island_____

| Group Size | Number of Rows (N) | Number of Groups Tally | Number of Groups Total | Cumulative | Co |
|---|---|---|---|---|---|
| 46-50 | 10 | | | | |
| 41-45 | 9 | | | | |
| 36-40 | 8 | | | | |
| 31-35 | 7 | | | | |
| 26-30 | 6 | | | | |
| 21-25 | 5 | | | | |
| 16-20 | 4 | | | | |
| 11-15 | 3 | | | | |
| 6-10 | 2 | | | | |
| 5 or less | 1 | | | | |
| | | Total Number of Groups | | X 0.15 | N = |