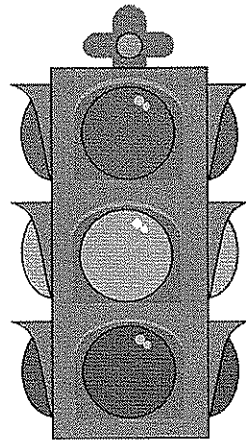


**TABLE OF CONTENTS**

Intersection Control Analysis (Warrant Study)	2
Left-Turn Analysis	26
Highway Capacity Manual 2000 Intersection Level of Service Criteria	32
Recent Highway Vehicle Accident Intersections (2008)	33
Recent Highway Vehicle Accident Intersections (2007)	37
Recent Highway Pedestrian/Vehicle Accident Intersections (2008)	41
Recent Highway Pedestrian/Vehicle Accident Intersections (2007)	45

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## INTERSECTION CONTROL ANALYSIS

---

**LOCATION**

New York City  
Department of Transportation



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## ELECTED OFFICIAL ACKNOWLEDGMENTS

Location \_\_\_\_\_

Borough \_\_\_\_\_ Reference # \_\_\_\_\_ CB# \_\_\_\_\_

Date notification was sent out \_\_\_\_\_

BOROUGH PRESIDENT \_\_\_\_\_

CONGRESS MEMBER \_\_\_\_\_

STATE SENATOR \_\_\_\_\_

ASSEMBLY MEMBER \_\_\_\_\_

COUNCIL MEMBER \_\_\_\_\_

C.B. MANAGER \_\_\_\_\_

REQUESTOR \_\_\_\_\_

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# Signal Approval

---

Location

- RECOMMENDATION
- APPROVAL
- DENIAL

---

**MELITA JAMES**  
Chief, Intersection Control Unit

---

Date

- 
- APPROVAL
  - DENIAL

---

**ERNEST ATHANAIOLOS, P.E.**  
Director of Signals and ITS Engineering

---

Date

- 
- APPROVAL
  - DENIAL

---

**ALAN BOROCK, P.E.**  
Director of Signal Operations & Street Lighting

---

Date

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# Intersection Control Unit

Location: \_\_\_\_\_

File#: \_\_\_\_\_

Request: \_\_\_\_\_

Requestor: \_\_\_\_\_

Date: \_\_\_\_\_

Determination: \_\_\_\_\_

Comments: Based upon our evaluation of data collected, it is our judgment that a traffic signal  
be approved under Warrant \_\_\_\_\_

\_\_\_\_\_  
**Melita James**  
Chief, Intersection Control Unit

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## INTRODUCTION

A comprehensive investigation of traffic conditions and physical characteristics of the location is required to determine the necessity for a signal installation and to furnish necessary data for the proper design and operation of a signal that is found to be warranted. Such data is included in this Intersection Control Analysis.

An engineering study of traffic conditions, pedestrian characteristics, and pedestrian characteristics, and physical characteristics of the location shall be performed to determine whether installation of a traffic control signal is justified at a particular location.

The investigation of the need for a traffic control signal shall include an analysis of the applicable factors contained in the following traffic signal warrants and other factors related to existing operation and safety at the study location:

Warrant 1, Eight-Hour Vehicular Volume.

Warrant 2, Four-Hour Vehicular Volume.

Warrant 3, Peak Hour

Warrant 4, Pedestrian Volume

Warrant 5, School Crossing

Warrant 6, Coordinated Signal System

Warrant 7, Crash Experience

Warrant 8, Roadway Network.

**Source:** Manual on Uniform Traffic Control Devices (MUTCD) – FHWA  
November ~~2003~~ Edition  
~~2009~~

## STUDY AREA MAP

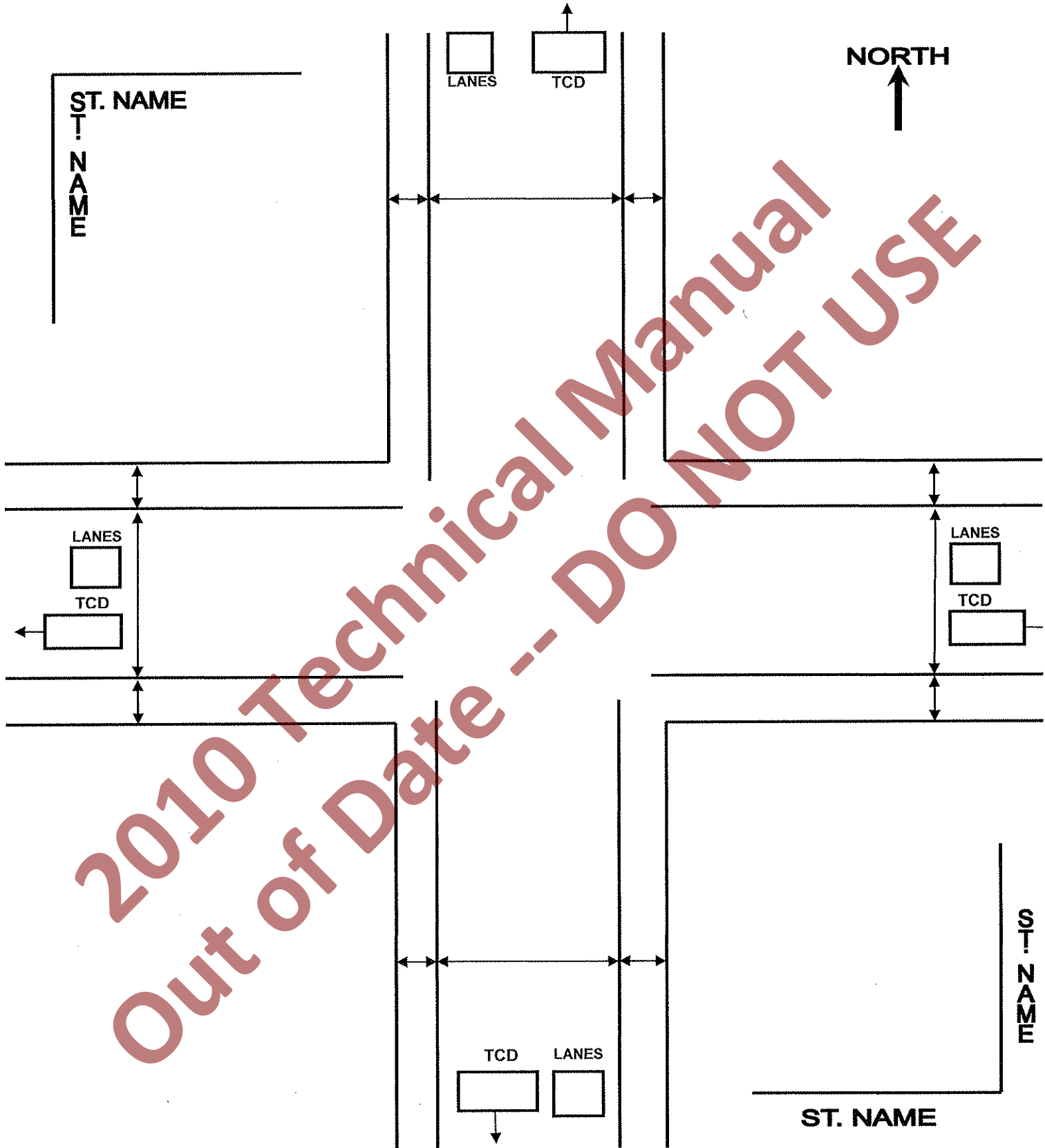
THE STUDY AREA MAP SHOULD INCLUDE THE FOLLOWING:

- A. LOCATION OF REQUESTED SIGNAL IS TO BE HIGHLIGHTED BY A RED CIRCLE.
- B. AN OFFICIAL SCHOOL MAP MAY BE USED AS A SUBSTITUTE.

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# CONDITION DIAGRAM

Ref# \_\_\_\_\_ Date: \_\_\_\_\_ Day: \_\_\_\_\_ Inspector: \_\_\_\_\_



TCD = DISTANCE TO NEAREST TRAFFIC CONTROL DEVICE (Feet)  
 LANES = NUMBER OF MOVING LANES

NOTE: Indicate all curb regulations, street furniture, curb cuts, and a pavement markings related to the intersection. The # of lane observed are the traveled lanes for each approach; parking lanes are not included. Show street direction by placing an arrow(s), indicating direction on all legs of the intersection.



CONDITION DIAGRAM

Ref# \_\_\_\_\_ Date: \_\_\_\_\_ Day: \_\_\_\_\_ Inspector: \_\_\_\_\_

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NORTH  
↑

TCD = DISTANCE TO NEAREST TRAFFIC CONTROL DEVICE (Feet)  
LANES = NUMBER OF MOVING LANES

NOTE: Indicate all curb regulations, street furniture, curb cuts, and a pavement markings related to the intersection. The # of lanes observed are the traveled lanes for each approach; parking lanes are not included. Show street direction by placing an arrow(s), indicating direction on all legs of the intersection.

Survey Sheet

The diagram shows a street layout with a vertical line representing a cross-section. A horizontal line at the top represents the street frontage. A vertical line on the left represents the street edge. A vertical line on the right represents the block front. A horizontal line with arrows at both ends is drawn across the block front, indicating the survey area. A vertical line is drawn from the top of the block front down to the horizontal line, representing a specific survey point.

Block Front Survey

Reference: \_\_\_\_\_

Borough: \_\_\_\_\_

Date: \_\_\_\_\_

Inspector: \_\_\_\_\_

Street: \_\_\_\_\_

Side of St. \_\_\_\_\_

from: \_\_\_\_\_

to: \_\_\_\_\_

Type of Parking

Passenger \_\_\_\_\_ %

Commercial \_\_\_\_\_ %

Type of Area

Residential \_\_\_\_\_ %

Commercial \_\_\_\_\_ %

Industrial \_\_\_\_\_ %

Other \_\_\_\_\_ %

Comments: \_\_\_\_\_

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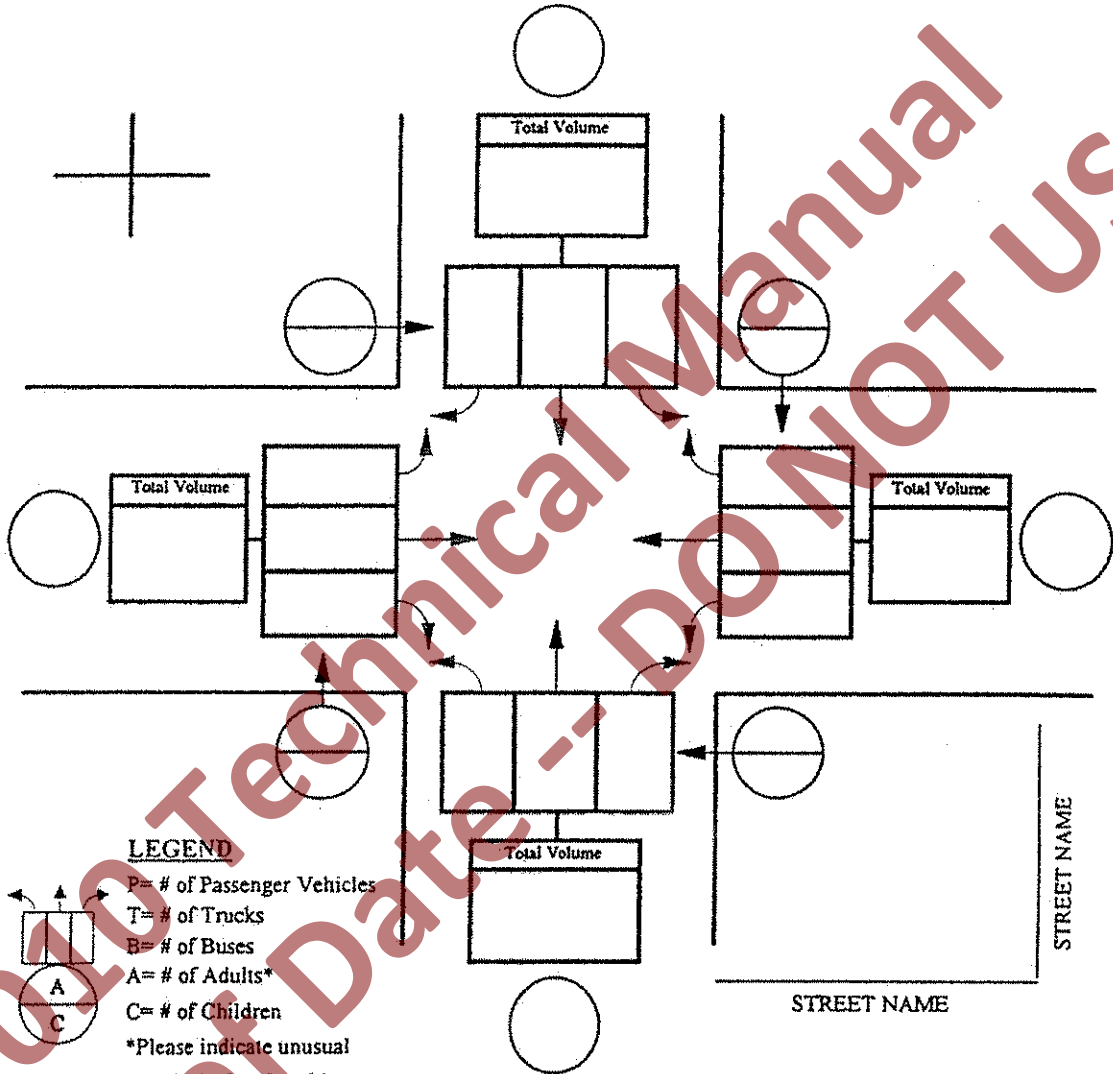
# VOLUME CLASSIFICATION AND TURNING COUNTS

DATE: \_\_\_\_\_

TIME: \_\_\_\_\_

DAY: \_\_\_\_\_

INSPECTOR: \_\_\_\_\_



COMMENTS:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

MAJOR	
MINOR	
PEDS	
SC	
Other	

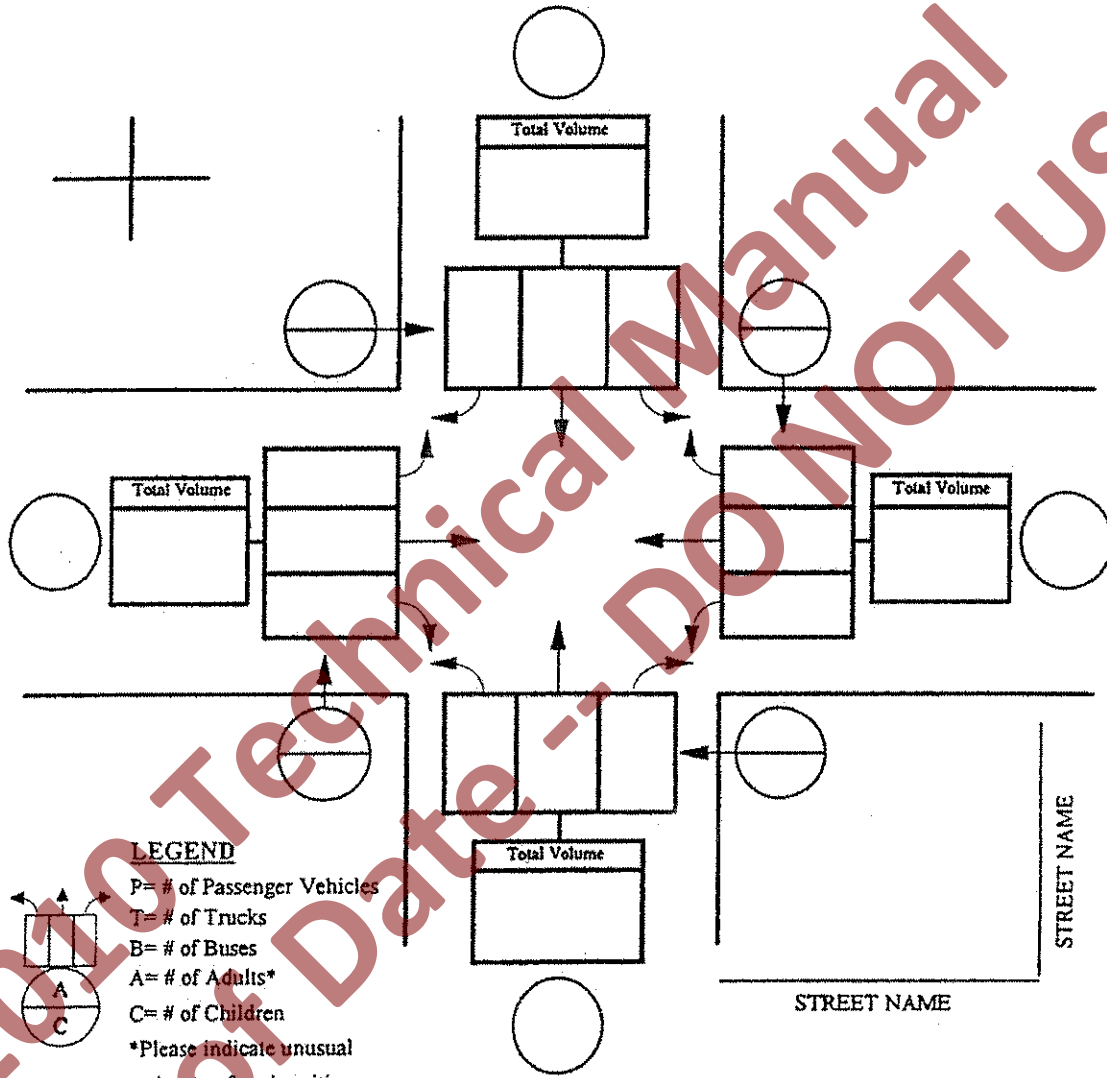
# VOLUME CLASSIFICATION AND TURNING COUNTS

DATE: \_\_\_\_\_

TIME: \_\_\_\_\_

DAY: \_\_\_\_\_

INSPECTOR: \_\_\_\_\_



COMMENTS:

---



---



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---



---

MAJOR	
MINOR	
PEDS	
SC	
Other	

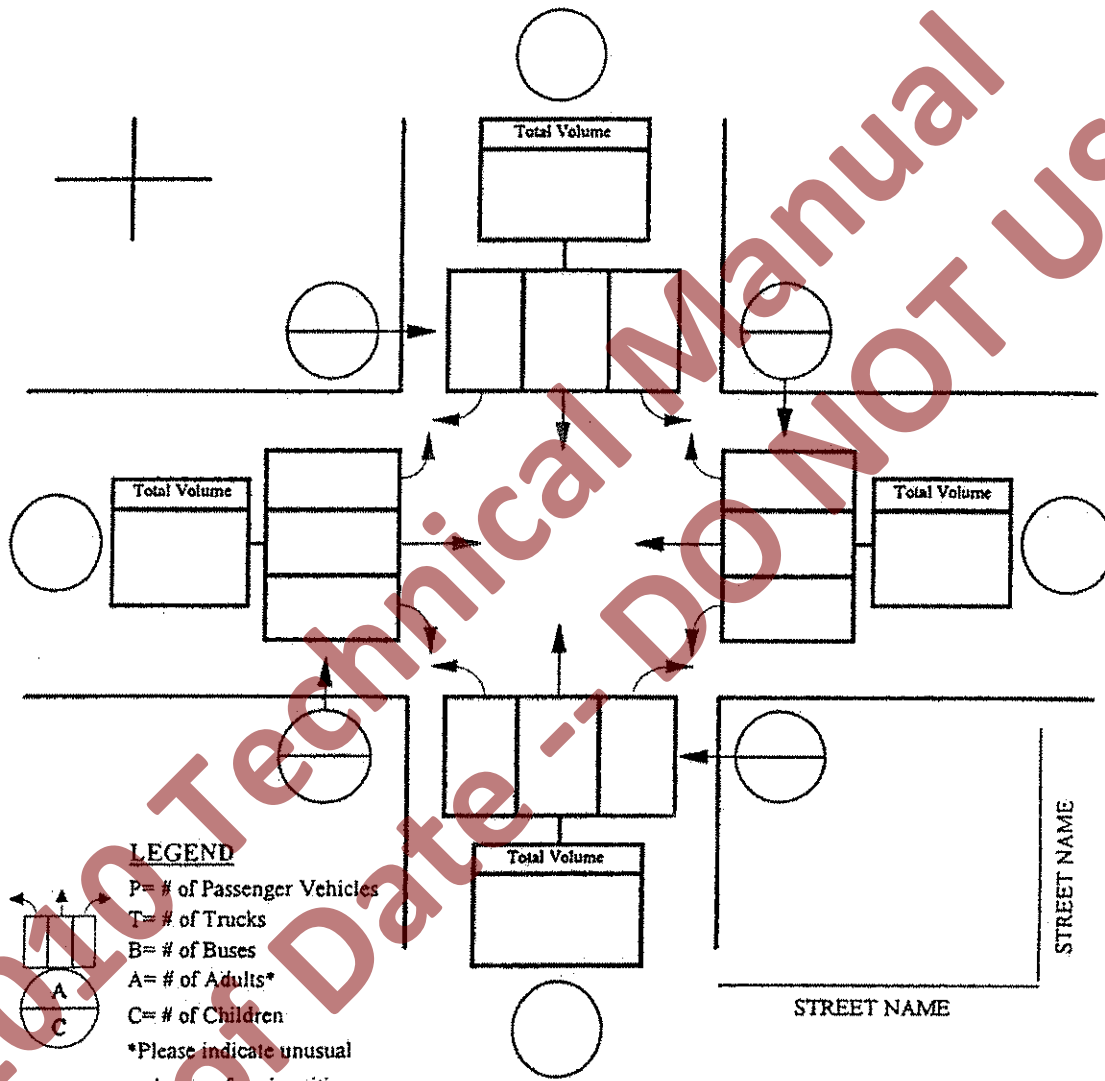
# VOLUME CLASSIFICATION AND TURNING COUNTS

DATE: \_\_\_\_\_

TIME: \_\_\_\_\_

DAY: \_\_\_\_\_

INSPECTOR: \_\_\_\_\_



COMMENTS:

---



---



---



---



---

MAJOR	
MINOR	
PEDS	
SC	
Other	

REF. \_\_\_\_\_ START: \_\_\_\_\_ END: \_\_\_\_\_  
WEATHER \_\_\_\_\_ DIRECTION: \_\_\_\_\_  
MPH SPEED LIMIT: \_\_\_\_\_ POSTED: \_\_\_\_\_  
DATE: \_\_\_\_\_ START: \_\_\_\_\_ END: \_\_\_\_\_  
DAY: \_\_\_\_\_ DIRECTION: \_\_\_\_\_  
UNPOSTED: \_\_\_\_\_



(MAJOR)

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# WARRANT ANALYSIS

INSPECTOR: \_\_\_\_\_ School X-Walk \_\_\_\_\_ GAP DATE & TIMES \_\_\_\_\_ # OF GAPS VS. # OF MIN \_\_\_\_\_

School X-ING Guard \_\_\_\_\_

LOCATION: \_\_\_\_\_   MIN

85% SPEED: \_\_\_\_\_ B= \_\_\_\_\_ B= \_\_\_\_\_   MIN

POSTED \_\_\_\_\_ MPH / UNPOSTED \_\_\_\_\_   MIN

REFERENCE# \_\_\_\_\_

ATR'S

DISTANCE TO THE NEAREST TRAFFIC CONTROL DEVICE ON MAJOR STREET \_\_\_\_\_ Feet

**Warrant 1, Eight-Hour Vehicular Volume**

Condition A - Minimum Vehicular Volume									
Number of lanes for moving traffic on each approach		MAJOR STREET VOLUMES Vehicles per hour on major street (total of both approaches)				MINOR STREET VOLUMES Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100% <sup>a</sup>	80% <sup>b</sup>	70% <sup>c</sup>	Observer	100% <sup>a</sup>	80% <sup>b</sup>	70% <sup>c</sup>	Observer
1.....	1.....	500	400	350		150	120	105	
2 or more...	1.....	600	480	420		150	120	105	
2 or more...	2 or more...	600	480	420		200	160	140	
1.....	2 or more...	500	400	350		200	160	140	

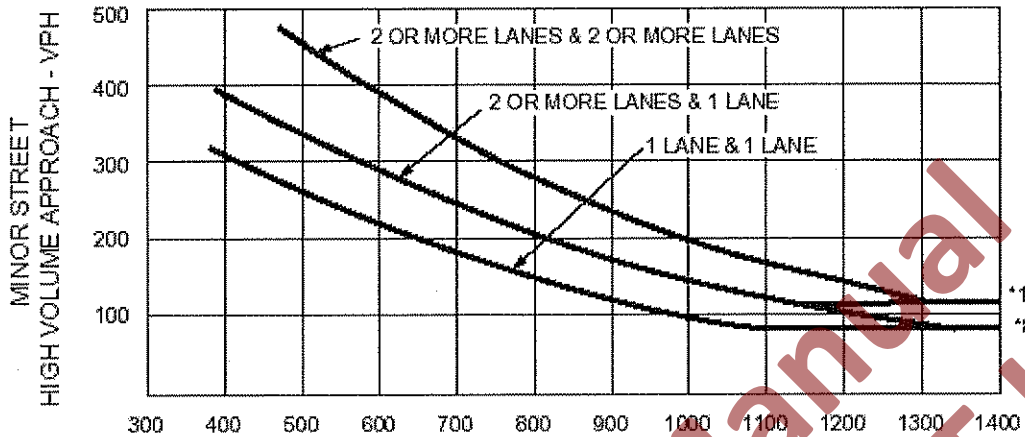
Condition B - Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		MAJOR STREET VOLUMES Vehicles per hour on major street (total of both approaches)				MINOR STREET VOLUMES Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100% <sup>a</sup>	80% <sup>b</sup>	70% <sup>c</sup>	Observer	100% <sup>a</sup>	80% <sup>b</sup>	70% <sup>c</sup>	Observer
1.....	1.....	750	600	525		75	60	53	
2 or more...	1.....	900	720	630		75	60	53	
2 or more...	2 or more...	900	720	630		100	80	70	
1.....	2 or more...	750	600	525		100	80	70	

<sup>a</sup> Basic minimum hourly volume.

<sup>b</sup> Used for combination of Conditions A and B after adequate trial of other remedial measures.

<sup>c</sup> May be used when the major street speed exceeds 70 km/h (40 mph) or in an isolated community with a population of less than 10,000.

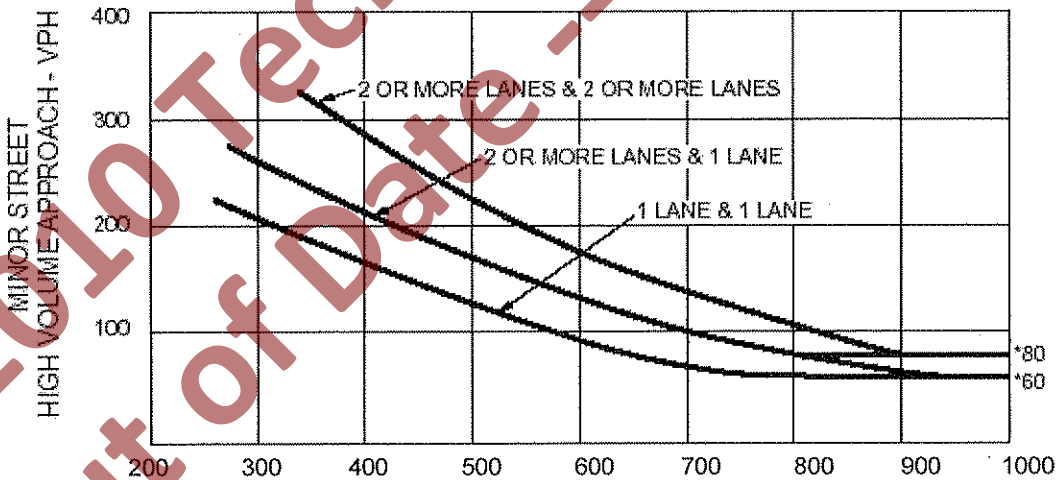
**Warrant 2 – Four-Hour Vehicular Volume**



**MAJOR STREET - TOTAL OF BOTH APPROACHES – VEHICLES PER HOUR (VPH)**

\*Note: 115 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor street approach with one lane.

**Warrant 2 - Four-Hour Vehicular Volume (70% Factor)  
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)**



**MAJOR STREET - TOTAL OF BOTH APPROACHES – VEHICLES PER HOUR (VPH)**

\*Note: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor street approach with one lane.



WARRANT 3, PEAK HOUR



INTERSECTION DELAY STUDY

TOTAL DELAY = TOTAL VEHICLES STOPPED \* SAMPLING INTERVAL

$$= \underline{\hspace{2cm}} * 15 = \underline{\hspace{2cm}} \text{ Veh. Sec.}$$

AVERAGE DELAY PER APPROACH VEHICLE =  $\frac{\text{TOTAL DELAY}}{\text{APPROACH VOLUME}}$  =  $\underline{\hspace{2cm}}$

=  $\underline{\hspace{2cm}}$  Sec.

AVERAGE DELAY FOR WARRANT 3 = AVERAGE DELAY \* PEAK HOUR VOLUME FROM MACHINE COUNTS

$$= \underline{\hspace{2cm}} * \underline{\hspace{2cm}}$$

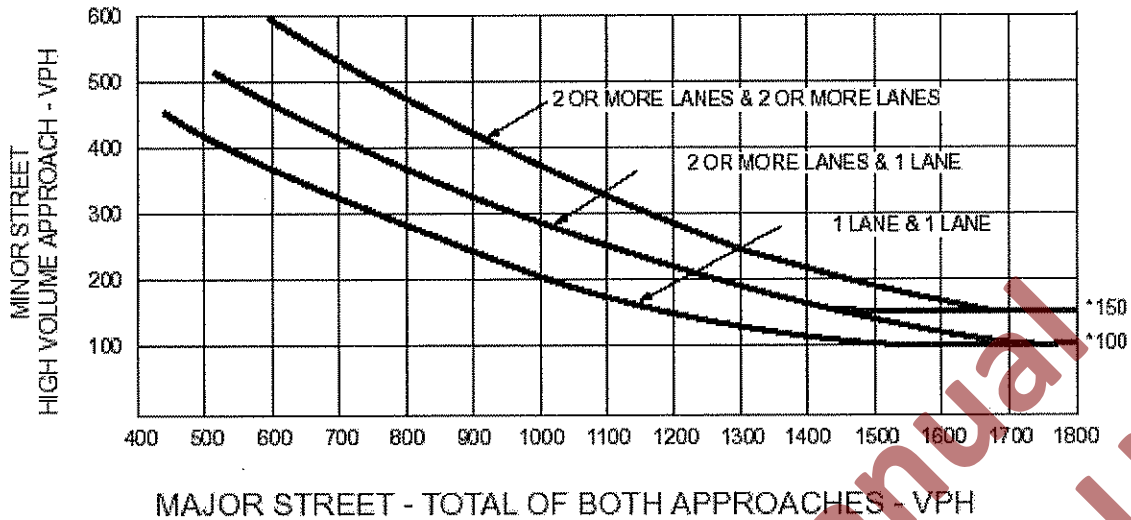
=  $\underline{\hspace{2cm}}$  Veh. -Sec.

**NOTE:**

The above information will be used for the Warrant 3 – Peak Hour analysis.

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**Warrant 3 - Peak Hour**



\*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

**Warrant 3 - Peak Hour (70% Factor)**

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)



\*Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

REVISED

**WARRANT 4, PEDESTRIAN VOLUME**

**WARRANT 5, SCHOOL CROSSING**

\*SEE LAST THREE PAGES OF DOCUMENT

DATE	TIME		VOLUMES				DEFAULTS	
			STREET		PEDESTRIANS		ALL	SCHOOL/ ELDERLY
			MAJOR	MINOR	ALL	SC/ ELDERLY	> 100	> 75
		AM						
		PM						

**WARRANT 6, COORDINATED SIGNAL SYSTEM**

The need for a traffic control signal shall be considered if an engineering study finds that one of the following criteria is met:

- A. On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning.
- B. On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.

Note: The Coordinated Signal System signal warrant should not be applied where the resultant spacing of traffic control signals would be less than 300 m (1000 ft).

**WARRANT 7, CRASH EXPERIENCE**

ACC. TIME PERIOD	ACCIDENT TYPE										PREV. Acc.'s before N.R.'s	PREV. Acc.'s after N.R.'s	
	T	NR											PEDS
12 MONTH PERIOD													

Highest # of Preventables in any 12 month period: \_\_\_/\_\_\_/\_\_\_ - \_\_\_/\_\_\_/\_\_\_ # of Preventable Accidents \_\_\_\_\_

Comments: \_\_\_\_\_

Improvements/Changes: \_\_\_\_\_

**WARRANT 8, ROADWAY NETWORK**



The need for a traffic control signal shall be considered if an engineering study finds that the common intersection of two or more major routes meets one or both of the following criteria:

A. The intersection has a total existing, or immediately projected, entering volume of at least 1,000 vehicles per hour during the peak hour of a typical weekday and has 5-year projected traffic volumes, based on an engineering study, that meet one or more of Warrants 1, 2, and 3 during an average weekday, or

B. The intersection has a total existing or immediately projected entering volume of at least 1,000 vehicles per hour for each of any 5 hours of a nonnormal business day (Saturday or Sunday).

A major route as used in this signal warrant shall have one or more of the following characteristics:

A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow, or

B. It includes rural or suburban highways outside, entering, or traversing a city, or

C. It appears as a major route on an official plan, such as a major street plan in an urban area traffic and transportation study.

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# FIELD OBSERVATION REPORT

LOCATION: \_\_\_\_\_

BOROUGH: \_\_\_\_\_

DATE: \_\_\_\_\_

TIME: \_\_\_\_\_

OBSERVER: \_\_\_\_\_

## OPERATIONAL CHECKLIST:

NO YES WHERE AND WHAT

- |   |       |       |       |
|---|-------|-------|-------|
| 1. Are there any obstructions blocking the view of opposing or conflicting vehicles?  | _____ | _____ | _____ |
| 2. Are drivers complying with intersection controls?  | _____ | _____ | _____ |
| 3. Are Speed limit signs posted?  | _____ | _____ | _____ |
| 4. Is vehicle delay causing a safety problem?   | _____ | _____ | _____ |
| 5. Is the approach grade causing safety problems?   | _____ | _____ | _____ |
| 6. Do you recommend more stringent enforcement of any regulations?  | _____ | _____ | _____ |
| 7. Are signs faded, turned or defaced?  | _____ | _____ | _____ |
| 8. Do pavement markings have to be installed or refurbished? e.g.: STOP messages, STOP lines, lane lines, crosswalks, etc.) | _____ | _____ | _____ |
| 9. Is there a need to install channelizations to reduce conflict areas?   | _____ | _____ | _____ |
| 10. Do signs exist in field match current C-Order?  | _____ | _____ | _____ |
| 11. Other   | _____ | _____ | _____ |

NOTE: (N/A) NOT APPLICABLE

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

01 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:**

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

- 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-7.

**Option:**

03 If the posted or statutory speed limit or the 85th-percentile speed on the major street 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-6 may be used in place of Figure 4C-5 to evaluate Criterion A in Paragraph 2, and Figure 4C-8 may be used in place of Figure 4C-7 to evaluate Criterion B in Paragraph 2.

**Standard:**

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

05 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 complying with the provisions set forth in Chapter 4E.

**Guidance:**

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

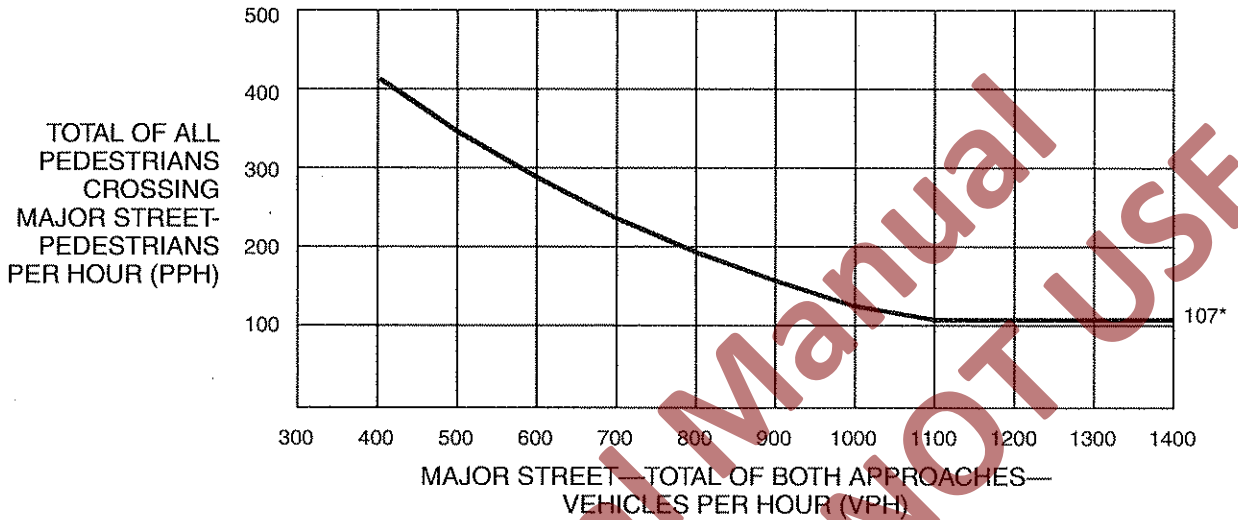
- A. If it is installed at an intersection or major driveway location, the traffic control signal should also control the minor-street or driveway traffic, should be traffic-actuated, and should include pedestrian detection.
- B. If it is installed at a non-intersection crossing, the traffic control signal should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs, and should be pedestrian-actuated. If the traffic control signal is installed at a non-intersection crossing, at least one of the signal faces should be over the traveled way for each approach, parking and other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the crosswalk or site accommodations should be made through curb extensions or other techniques to provide adequate sight distance, and the installation should include suitable standard signs and pavement markings.
- C. Furthermore, if it is installed within a signal system, the traffic control signal should be coordinated.

**Option:**

07 The criterion for the pedestrian volume crossing the major street may be reduced as much as 50 percent if the 15th-percentile crossing speed of pedestrians is less than 3.5 feet per second.

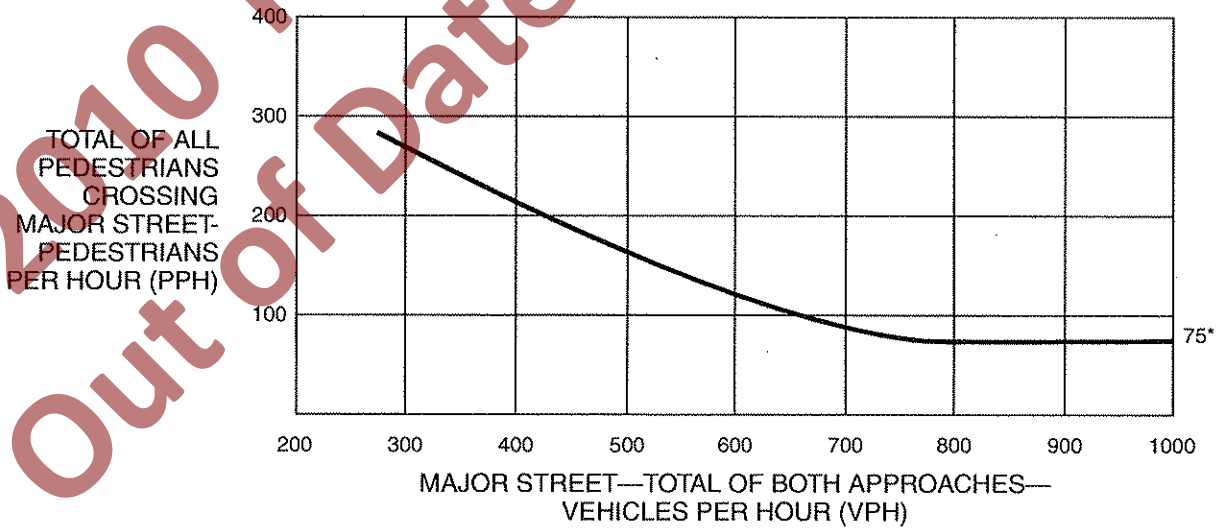
08 A traffic control signal may not be needed at the study location if adjacent coordinated traffic control signals consistently provide gaps of adequate length for pedestrians to cross the street.

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



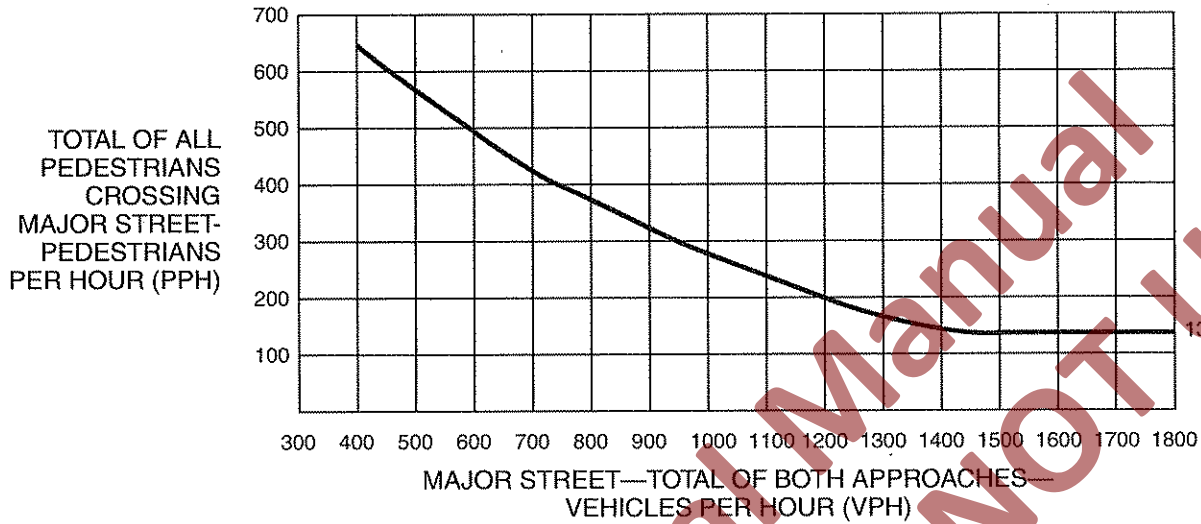
\*Note: 107 pph applies as the lower threshold volume.

Figure 4C-6. Warrant 4, Pedestrian Four-Hour Volume (70% Factor)



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

Figure 4C-7. Warrant 4, Pedestrian Peak Hour



\*Note: 133 pph applies as the lower threshold volume.

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



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



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Left Turn Signal Survey Sheet

Borough: \_\_\_\_\_ BT #: \_\_\_\_\_ Ref. #: \_\_\_\_\_

Location: \_\_\_\_\_ CB #: \_\_\_\_\_

Requestor: \_\_\_\_\_ Investigator: \_\_\_\_\_

Date Completed: \_\_\_\_\_

Date: \_\_\_\_\_  
Time: \_\_\_\_\_  
**Peak Hour  
Traffic Volume Counts**

VPH


Signal Timing				
	D1	D2	D3	D4
Green				
Yellow				
All Red				
Cycle Length:	_____ Seconds			

VPH





ft. T/S

T/S = Traffic Signal  
VPH = Vehicles / Hour  
(Total of the four 15 minute periods) = \_\_\_\_\_

Total number of Lanes (including Left Turn Bays) \_\_\_\_\_

D1  D3   
D2  D4

VPH


ft.

Street Name

Street Name

1. Separate movement with solid line.
2. Separate shared movements with dashed lines.
3. Indicate ped column with solid line.
4. Indicate movements with arrow and label as follows: L (left); T(thru); R (right); Ped (ped); U (u-turn); I (illegal) or other and specify.

Borough Engineer: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed  \_\_\_\_\_ Date: \_\_\_\_\_ Satisfied

Recommended  \_\_\_\_\_ Date: \_\_\_\_\_ Warrant #

Denied  \_\_\_\_\_ Date: \_\_\_\_\_ Not Satisfied

Left Turn Signal Survey Sheet

Borough: \_\_\_\_\_ BT #: \_\_\_\_\_ Ref. #: \_\_\_\_\_  
 Location: \_\_\_\_\_ CB #: \_\_\_\_\_  
 Requestor: \_\_\_\_\_ Investigator: \_\_\_\_\_  
 Date Completed: \_\_\_\_\_

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Peak Hour  
Traffic Volume Counts

VPH


Signal Timing				
	D1	D2	D3	D4
Green				
Yellow				
All Red				
Cycle Length: _____ Seconds				

ft. T/S →

VPH



VPH

ft.

← T/S \_\_\_\_\_ ft.

T/S = Traffic Signal

VPH = Vehicles / Hour  
(Total of the four 15 minute periods)

Total number of Lanes  
(including Left Turn Bays)

D1  D3   
D2  D4

VPH

← \_\_\_\_\_ ft. →

Street Name

Street Name

1. Separate movement with solid line.
2. Separate shared movements with dashed lines.
3. Indicate ped column with solid line.
4. Indicate movements with arrow and label as follows: L (left); T (thru); R (right); Ped (ped); U (u-turn); I (illegal) or other and specify.

Borough Engineer: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed  \_\_\_\_\_ Date: \_\_\_\_\_ Satisfied

Recommended  \_\_\_\_\_ Date: \_\_\_\_\_ Warrant #

Denied  \_\_\_\_\_ Date: \_\_\_\_\_ Not Satisfied

Left Turn Signal Warrant Sheet

**WARRANT 1** (Accident Experience)

Satisfied   
Not Satisfied

This Warrant is satisfied when a minimum of 5 related left turn accidents exist in the latest 12 month period in which accident records are available.

Year	Total Accidents	Left Turn Accidents

Accident sheets must be attached.

**WARRANT 2** (Left Turn Capacity)

Satisfied   
Not Satisfied

This Warrant is satisfied when for the analyzed direction the Left-Turn flow rate exceeds the left-turn capacity.

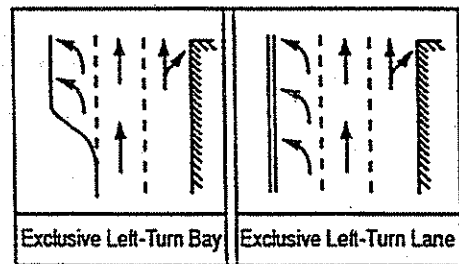
The left-turn capacity is the maximum flow rate that may be assigned to the designated phase.

- On approaches with exclusive left-turn bays / lanes, the left-turn capacity is computed by using the following equations:

(1A) 
$$C_{ELT} = (1,400 - V_o) (g/c)_{LT}$$

or

(2) 
$$C_{ELT} = 2 \text{ vehicles per signal cycle}$$



where:

$C_{ELT}$  = capacity of the left-turn protected / permitted phase, in vph;

$V_o$  = opposing thru plus right-turn service flow rate\*, in vph, and

$(g/c)_{LT}$  = effective green\*\* ratio for the protected / permitted phase, in seconds.

\* Service flow rate is the equivalent hourly rate at which vehicles pass a roadway during a given time interval less than one hour, usually 15 minutes.

Service flow rate = (highest 15 minute count) × 4.

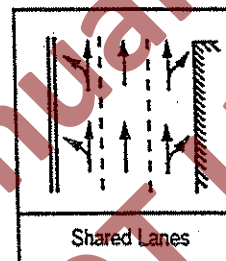
\*\* Effective green time is the time during a given phase that is effectively available to the permitted movements; this is generally taken to be the green time (G) plus the change interval (Y + AR) minus the lost time (3.0 seconds) for the designated phase.

On approaches with shared left-turn and thru vehicles, the left-turn capacity is computed by using the following equations:

(1B)  $C_{SLT} = [(1400 - V_o) (g/c)_{LT}] f_{SLT}$

Or

(2)  $C_{SLT} = 2 \text{ vehicles per signal cycle}$



where:

$C_{SLT}$  = capacity of the left-turn in the shared lane, in vph;

$f_{SLT}$  = adjustment factor for left-turn vehicles

The adjustment factor basically accounts for the fact that the left-turn movements cannot be made at the same saturation flow rates as thru movements. They consume more of the available green time, and consequently, more of the intersection's available capacity.

The adjustment factor is computed as the ratio of the left-turn flow rate (which is converted to an approximate equivalent flow of thru vehicles) to the thru vehicles that share the same lane.

The following TABLE 1 may be used to convert the left-turn vehicles to equivalent thru vehicles.

TABLE 1

TOTAL OPPOSING FLOW RATE ( $V_o$ )	CONVERSION FACTOR ( $f_{PCE}$ )	TOTAL OPPOSING FLOW RATE ( $V_o$ )	CONVERSION FACTOR ( $f_{PCE}$ )
0 - 200	1.50	1001 - 1050	5.00
201 - 500	2.00	1051 - 1075	5.50
501 - 700	2.50	1076 - 1100	6.00
701 - 800	3.00	1101 - 1125	6.50
801 - 900	3.50	1126 - 1145	7.00
901 - 950	4.00	> 1146 *	
951 - 1000	4.50		

\* Use exclusive Left-Turn lane procedure.

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**COMPUTATIONS**  
**EXCLUSIVE LEFT-TURN LANE**

Opposing Thru Plus Right Turn Service Flow Rate

Left Turn Service Flow Rate  
(Direction analyzed for Left-Turn Phase)

$$V_o = (\text{highest 15 minute count}) \times 4$$

$$V_{LT} = (\text{highest 15 minute count}) \times 4$$

$$V_o = \boxed{\phantom{000}} \times 4 = \boxed{\phantom{000}} \text{ vph}$$

$$V_{LT} = \boxed{\phantom{000}} \times 4 = \boxed{\phantom{000}} \text{ vph}$$

Left Turn Capacity

$$C_{ELT} = (1400 - V_o) (g/c)_{LT}$$

where:

$$g = [G + Y + AR - 3.0] \times f_q^* = \boxed{\phantom{000}} \times \boxed{\phantom{000}} = \boxed{\phantom{000}} \text{ seconds}$$

\* Adjustment factor used to calculate the portion of the green phase that is not blocked by an opposing queue of vehicles. The  $f_q$  factor is given for each case in TABLE 2.

$$c = \text{cycle length} = \boxed{\phantom{000}} \text{ seconds}$$

$$\text{thus, } (g/c)_{LT} = \boxed{\phantom{000}}$$

and

$$C_{ELT} = (1400 - \boxed{\phantom{000}}) (\boxed{\phantom{000}})_{LT} = \boxed{\phantom{000}} \text{ vph}$$

or

$$C_{ELT} = 2 \text{ vehicles per signal cycle}$$

$$C_{ELT} = 2 \times \frac{3600}{C} = \boxed{\phantom{000}} \text{ vph}$$

$$V_{LT} = \boxed{\phantom{000}} \text{ vph} \quad \boxed{\geq} \text{ or } \boxed{\leq} \quad C_{ELT}^{**} = \boxed{\phantom{000}} \text{ vph}$$

\*\* Select the highest left turn capacity

- If  $V_{LT}$  (left turn service flow rate) is greater than ( $\boxed{\geq}$ ) the  $C_{ELT}$  (left turn capacity), the Warrant is satisfied and a left turn phase is needed.
- If  $V_{LT}$  is less than ( $\boxed{\leq}$ ) the  $C_{ELT}$ , the Warrant is not satisfied because the signal and geometric design can accommodate the left turn volume at the intersection.

OPPOSING THRU LANES	$f_q$
1	0.85
2	0.90
$\geq 3$	0.95

**COMPUTATIONS**

**SHARED LEFT-TURN / THRU LANE**

**Adjustment Factor for Left-Turn Vehicles**  
(Opposing Thru Plus Right Turn Service Flow Rate)

**Left Turn Service Flow Rate**  
(Direction analyzed for Left-Turn Phase)

$$V_o = (\text{highest 15 minute count}) \times 4$$

$$V_{LT} = (\text{highest 15 minute count}) \times 4$$

$$V_o = \boxed{\phantom{000}} \times 4 = \boxed{\phantom{000}} \text{ vph}$$

$$V_{LT} = \boxed{\phantom{000}} \times 4 = \boxed{\phantom{000}} \text{ vph}$$

Using TABLE 1,  $f_{PCE} = \boxed{\phantom{000}}$

$$V_{PCE} = V_{LT} \times f_{PCE} = \boxed{\phantom{000}} \times \boxed{\phantom{000}} = \boxed{\phantom{000}} \text{ vph}$$

$$V_{TV} = \boxed{\phantom{000}} \times 4 = \boxed{\phantom{000}} \text{ vph}$$

$$f_{SLT} = \frac{V_{PCE}}{V_{TV} + V_{PCE}} = \frac{\boxed{\phantom{000}}}{\boxed{\phantom{000}} + \boxed{\phantom{000}}} = \boxed{\phantom{000}}$$

where:  $V_{TV}$  = Thru vehicles in the shared lane.

**Left Turn Capacity**

$$C_{SLT} = [(1400 - V_o) (g/c)_{LT}] f_{SLT}$$

OPPOSING THRU LANES	$f_q$
1	0.85
2	0.90
$\geq 3$	0.95

where:

$$g = [G + Y + AR - 3.0] \times f_q = \boxed{\phantom{000}} \times \boxed{\phantom{000}} = \boxed{\phantom{000}} \text{ seconds}$$

$$c = \text{cycle length} = \boxed{\phantom{000}} \text{ seconds} \quad \text{thus, } (g/c)_{LT} = \boxed{\phantom{000}}$$

and

$$C_{SLT} = [(1400 - \boxed{\phantom{000}}) (\boxed{\phantom{000}})_{LT}] \times \boxed{\phantom{000}} = \boxed{\phantom{000}} \text{ vph}$$

or

$$C_{SLT} = 2 \text{ vehicles per signal cycle}$$

$$C_{SLT} = 2 \times \frac{3600}{c} = \boxed{\phantom{000}} \text{ vph}$$

$$V_{LT} = \boxed{\phantom{000}} \text{ vph} \quad \boxed{>} \text{ or } \boxed{<} \quad C_{SLT}^* = \boxed{\phantom{000}} \text{ vph}$$

\* Select the highest left turn capacity

- If  $V_{LT}$  (left turn service flow rate) is greater than ( $>$ ) the  $C_{SLT}$  (left turn capacity), the Warrant is satisfied and a left turn phase is needed.
- If  $V_{LT}$  is less than ( $<$ ) the  $C_{SLT}$ , the Warrant is not satisfied because the signal and geometric design can accommodate the left turn volume at the intersection.

## HIGHWAY CAPACITY MANUAL 2000 INTERSECTION LEVEL OF SERVICE CRITERIA

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<b>Level of Service Criteria (LOS) at Signalized Intersections</b>	
<b>LOS</b>	<b>Control Delay per Vehicle (s/veh)</b>
A	$\leq 10$
B	$> 10 - 20$
C	$> 20 - 35$
D	$> 35 - 55$
E	$> 55 - 80$
F	$> 80$

Source: Transportation Research Board, *Highway Capacity Manual 2000*

<b>Level of Service Criteria at Unsignalized Intersections</b>	
<b>LOS</b>	<b>Average Control Delay (s/veh)</b>
A	0 – 10
B	$> 10 - 15$
C	$> 15 - 25$
D	$> 25 - 35$
E	$> 35 - 50$
F	$> 50$

Source: Transportation Research Board, *Highway Capacity Manual 2000*

2010 Technical Manual  
Out of Date -- DO NOT USE





# TOP HIGH ACCIDENT INTERSECTIONS 2008

INTERSECTION	NUMBER	RANK	BORO
ATLANTIC AV AND EASTERN PW EXT	43	1	BROOKLYN
TILLARY ST AND ADAMS ST	39	2	BROOKLYN
LINDEN BL AND PENNSYLVANIA AV	38	3	BROOKLYN
BUSHWICK AV AND E NEW YORK AV	36	4	BROOKLYN
NORTHERN BL AND 126TH ST	35	5	QUEENS
KINGS HW AND LINDEN BL AND REMSEN	34	6	BROOKLYN
WOODHAVEN BL AND ROCKAWAY BL	33	7	QUEENS
BRUCKNER BL AND WHITE PLAINS RD	33	7	BRONX
RMP E 138TH ST TO IN87 AND E 138 ST	32	9	BRONX
MACOMBS PL AND RMP 7TH AV TO MACOMBS	32	9	MANHATTAN
AVENUE U AND FLATBUSH AV	31	11	BROOKLYN
HYLAN BL AND NEW DORP LA	29	12	STATEN ISLAND
EMPIRE BL AND FLATBUSH AV	29	12	BROOKLYN
NEW YORK BL/ROCKAWAY BL AND 150TH RD	29	12	QUEENS
WEBSTER AV AND E FORDHAM RD	29	12	BRONX
6TH AV AND W 42ND ST	29	12	MANHATTAN
ATLANTIC AV AND IN678 SR	28	17	QUEENS
ROCKAWAY BL AND BROOKVILLE BL	27	18	QUEENS
9TH AV AND W 41ST ST	27	18	MANHATTAN
LIBERTY AV AND IN678 SR	26	20	QUEENS
NORTHERN BL AND UNION ST	26	20	QUEENS
MYRTLE AV AND GOLD ST	25	22	BROOKLYN
BUSHWICK AV AND EASTERN PW EXT	25	22	BROOKLYN
WOODHAVEN BL AND METROPOLITAN AV	25	22	QUEENS

INTERSECTION	NUMBER	RANK	BORO
1ST AV AND E 125TH ST	25	22	MANHATTAN
FLATLANDS AV AND PAERDEGAT AV S	25	22	BROOKLYN
UTICA AV AND EASTERN PW	24	27	BROOKLYN
QUEENS BL AND BROADWAY	24	27	QUEENS
BEDFORD AV AND ATLANTIC AV	24	27	BROOKLYN
LINDEN BL AND VAN SINDEREN AV	24	27	BROOKLYN
FLATBUSH AV AND GRAND ARMY PLAZA	24	27	BROOKLYN
ROCHESTER AV AND EASTERN PW	23	32	BROOKLYN
NORTHERN BL AND DOUGLASTON PW	23	32	QUEENS
ATLANTIC AV AND 4TH AV	23	32	BROOKLYN
AVENUE J AND OCEAN PW	23	32	BROOKLYN
CLARKSON ST AND WEST ST	23	32	MANHATTAN
8TH AV AND W 42ND ST	23	32	MANHATTAN
BROADWAY AND CANAL ST	22	38	MANHATTAN
BRUCKNER BL AND ROSEDALE AV	22	38	BRONX
GRAND BL AND CONCOURSE AND E 165TH ST	22	38	BRONX
3RD AV AND E 57TH ST	22	38	MANHATTAN
1ST AV AND ALLEN ST	22	38	MANHATTAN
2ND AV AND RMP 2ND AV TO QBB LOWER	22	38	MANHATTAN
WOODHAVEN BL AND UNION TP	22	38	QUEENS
8TH AV AND W 34TH ST	22	38	MANHATTAN
11TH AV AND W 40TH ST	21	46	MANHATTAN
SPRINGFIELD BL AND IN495 SR	21	46	QUEENS
LINDEN BL AND VAN SICLEN AV	21	46	BROOKLYN
LINDEN BL AND HEGEMAN AV	21	46	BROOKLYN
NOSTRAND AV AND EASTERN PW	21	46	BROOKLYN
AVENUE P AND CONEY ISLAND AV	21	46	BROOKLYN
RMP E 125TH ST TO TBB AND E 125TH ST	21	46	MANHATTAN
WEBSTER AV AND E 233RD ST	21	46	BRONX

INTERSECTION	NUMBER	RANK	BORO
WEST ST AND CANAL ST	21	46	MANHATTAN
QUEENS BL AND 69TH ST	21	46	QUEENS
PARSONS BL AND NORTHERN BL	21	46	QUEENS
BAYCHESTER AV AND BARTOW AV	21	46	BRONX
FLATBUSH AV AND CHURCH AV	20	58	BROOKLYN
HUNTS POINT AV AND CRAMES SQ	20	58	BRONX
LINDEN BL AND NOSTRAND AV	20	58	BROOKLYN
BUSHWICK AV AND CONWAY ST	20	58	BROOKLYN
CONEY ISLAND AV AND RMP GUILDER AV TO S	20	58	BROOKLYN
CLARENDON RD AND KINGS HW	20	58	BROOKLYN
FLATBUSH AV AND ATLANTIC AV	20	58	BROOKLYN
BRUCKNER BL AND BRONX RIVER AV	20	58	BRONX
BROOKVILLE BL AND S CONDUIT AV	20	58	QUEENS
ATLANTIC AV AND UTICA AV	20	58	BROOKLYN
AVENUE I AND OCEAN PW	20	58	BROOKLYN
BEDFORD AV AND EASTERN PW	20	58	BROOKLYN
ATLANTIC AV AND RALPH AV	20	58	BROOKLYN
UTICA AV AND GLENWOOD RD	20	58	BROOKLYN
COLLEGE POINT BL AND ROOSEVELT AV	20	58	QUEENS
DITMARS BL AND ASTORIA BL N	19	73	QUEENS
WEBSTER AV AND E GUN HILL RD	19	73	BRONX
FLATBUSH AV AND GLENWOOD RD	19	73	BROOKLYN
LITTLE NECK PW AND NY495 SR	19	73	QUEENS
BROADWAY AND W 96TH ST	19	73	MANHATTAN
DITMAS AV AND OCEAN PW	19	73	BROOKLYN
AVENUE U AND OCEAN PW	19	73	BROOKLYN
9TH AV AND W 23RD ST	19	73	MANHATTAN
ATLANTIC AV AND NOSTRAND AV	19	73	BROOKLYN
ELIOT AV AND 86TH ST	19	73	QUEENS

INTERSECTION	NUMBER	RANK	BORO
ATLANTIC AV AND UNDERHILL AV	19	73	BROOKLYN
E GUN HILL RD AND RMP E GUN HILL RD TO BRP	18	84	BRONX
BRONX BL AND E 233RD ST	18	84	BRONX
LINDEN BL AND UTICA AV	18	84	BROOKLYN
LINDEN BL AND ROCKAWAY PW	18	84	BROOKLYN
ESSEX ST AND DELANCEY ST	18	84	MANHATTAN
GRAND BL AND CONCOURSE AND E 183RD ST	18	84	BRONX
NEPTUNE AV AND W 8TH ST	18	84	BROOKLYN
BRUCKNER BL AND NO NAME	18	84	BRONX
GUY R BREWER BL AND BAISLEY BL	18	84	QUEENS
AVENUE P AND OCEAN PW	18	84	BROOKLYN
AMSTERDAM AV AND W 181ST ST	18	84	MANHATTAN
BRUCKNER BL AND E 138TH ST	18	84	BRONX
SOUTHERN BL AND E FORDHAM RD	18	84	BRONX
8TH AV AND W 23RD ST	18	84	MANHATTAN
SEDGWICK AV AND W FORDHAM RD	18	84	BRONX
WOODHAVEN BL AND JAMAICA AV	18	84	QUEENS
UTOPIA PW AND UNION TP	18	84	QUEENS
ROCKAWAY BL AND S CONDUIT AV	18	84	QUEENS
BOWERY AND HOUSTON ST	18	84	MANHATTAN
AVENUE H AND FLATBUSH AV	18	84	BROOKLYN
4TH AV AND 9TH ST	18	84	BROOKLYN
2ND AV AND E 14TH ST	18	84	MANHATTAN
QUEENS BL AND 39TH ST	18	84	QUEENS
SEDGWICK AV AND CEDAR AV	18	84	BRONX
FARMERS BL AND N CONDUIT AV	17	108	QUEENS
2ND AV AND CHRYSTIE ST	17	108	MANHATTAN
7TH AV AND W 145TH ST	17	108	MANHATTAN
BOSTON RD AND BRONX AND PELHAM PW	17	108	BRONX



# TOP HIGH ACCIDENT INTERSECTIONS 2007

INTERSECTION	NUMBER	RANK	BORO
QUEENS BL AND 65TH PL	41	1	QUEENS
TILLARY ST AND ADAMS ST	34	2	BROOKLYN
FLATBUSH AV AND GRAND ARMY PLAZA	31	3	BROOKLYN
BRUCKNER BL AND WHITE PLAINS RD	31	3	BRONX
WOODHAVEN BL AND UNION TP	30	5	QUEENS
ATLANTIC AV AND EASTERN PW EXT	29	6	BROOKLYN
LINDEN BL AND PENNSYLVANIA AV	29	6	BROOKLYN
ROCKAWAY BL AND BROOKVILLE BL	27	8	QUEENS
ATLANTIC AV AND PENNSYLVANIA AV	26	9	BROOKLYN
NORTHERN BL AND JACKSON AV	25	10	QUEENS
BRUCKNER BL AND HUNTS POINT AV	24	11	BRONX
UTICA AV AND EASTERN PW	24	11	BROOKLYN
ROCKAWAY BL AND FARMERS BL	24	11	QUEENS
ALLEN ST AND DELANCEY ST	24	11	MANHATTAN
BUSHWICK AV AND E NEW YORK AV	22	15	BROOKLYN
ATLANTIC AV AND NOSTRAND AV	22	15	BROOKLYN
BRONX AND PELHAM PW AND WHITE PLAINS RD	22	15	BRONX
8TH AV AND W 42ND ST	22	15	MANHATTAN
QUEENS BL AND 59TH AV AND WOODHAVEN	22	15	QUEENS
GRAND BL AND CONCOURSE AND E 183RD ST	21	20	BRONX
LINDEN BL AND ROCKAWAY AV	21	20	BROOKLYN
BRUCKNER BL AND BRONX RIVER AV	21	20	BRONX
8TH AV AND W 34TH ST	21	20	MANHATTAN
AVENUE J AND OCEAN PW	20	24	BROOKLYN

INTERSECTION	NUMBER	RANK	BORO
LINDEN BL AND KINGS HW AND REMSEN	20	24	BROOKLYN
3RD AV AND E 57TH ST	20	24	MANHATTAN
1ST AV AND E 125TH ST	20	24	MANHATTAN
VARICK ST AND CANAL ST	20	24	MANHATTAN
WOODHAVEN BL AND JAMAICA AV	20	24	QUEENS
QUEENS BL AND 69TH ST	20	24	QUEENS
AVENUE U AND FLATBUSH AV	19	31	BROOKLYN
HYLAN BL AND NEW DORP LA	18	32	STATEN ISLAND
FLATLANDS AV AND PAERDEGAT AV S	18	32	BROOKLYN
FLATBUSH AV AND LIVINGSTON ST	18	32	BROOKLYN
FLATBUSH AV EXT AND TILLARY ST	18	32	BROOKLYN
NEPTUNE AV AND OCEAN PW	18	32	BROOKLYN
WEST ST AND CANAL ST	18	32	MANHATTAN
WEBSTER AV AND E GUN HILL RD	18	32	BRONX
WOODHAVEN BL AND ROCKAWAY BL	18	32	QUEENS
ROCKAWAY BL AND S CONDUIT AV	18	32	QUEENS
NORTHERN BL AND 126TH ST	18	32	QUEENS
CROSS BAY BL AND PITKIN AV	18	32	QUEENS
E GUN HILL RD AND WHITE PLAINS RD	17	43	BRONX
ATLANTIC AV AND LOGAN ST	17	43	BROOKLYN
BUSHWICK AV AND CONWAY ST	17	43	BROOKLYN
3RD AV AND 60TH ST	17	43	BROOKLYN
UTICA AV AND WINTHROP ST	17	43	BROOKLYN
3RD AV AND E 14TH ST	17	43	MANHATTAN
10TH AV AND W 34TH ST	17	43	MANHATTAN
ESSEX ST AND DELANCEY ST	17	43	MANHATTAN
ROSEDALE AV AND IN95 SR	17	43	BRONX
5TH AV AND E 42ND ST	17	43	MANHATTAN
QUEENS BL AND VAN DAM ST AND THOMPSON	17	43	QUEENS

INTERSECTION	NUMBER	RANK	BORO
IN495 SR AND 108TH ST	17	43	QUEENS
WOODHAVEN BL AND MYRTLE AV	17	43	QUEENS
FLUSHING AV AND CLASSON AV	16	56	BROOKLYN
CRAMES SQ AND E 163RD ST	16	56	BRONX
AVENUE P AND CONEY ISLAND AV	16	56	BROOKLYN
EMPIRE BL AND TROY AV	16	56	BROOKLYN
EMPIRE BL AND FLATBUSH AV	16	56	BROOKLYN
BRUCKNER BL AND BRUSH AV	16	56	BRONX
BAYCHESTER AV AND E 233RD ST	16	56	BRONX
BOWERY AND DELANCEY ST	16	56	MANHATTAN
BROADWAY AND CANAL ST	16	56	MANHATTAN
3RD AV AND E 59TH ST	16	56	MANHATTAN
QUEENS BL AND 57TH AV	16	56	QUEENS
LEXINGTON AV AND E 125TH ST	16	56	MANHATTAN
9TH AV AND W 23RD ST	16	56	MANHATTAN
QUEENS BL AND UNION TP	16	56	QUEENS
N CONDUIT AV AND 225TH ST	16	56	QUEENS
S CONDUIT AV AND 89TH ST	16	56	QUEENS
RICHMOND AV AND RICHMOND HILL RD	15	72	STATEN ISLAND
BAYCHESTER AV AND BARTOW AV	15	72	BRONX
BAY PW AND 65TH ST	15	72	BROOKLYN
GEORGIA AV AND ATLANTIC AV	15	72	BROOKLYN
LINDEN BL AND CHURCH AV	15	72	BROOKLYN
IN87 SR AND E 233RD ST	15	72	BRONX
9TH AV AND W 42ND ST	15	72	MANHATTAN
BROADWAY AND DYCKMAN ST	15	72	MANHATTAN
BOWERY AND HOUSTON ST	15	72	MANHATTAN
WOODHAVEN BL AND 101ST AV	15	72	QUEENS
7TH AV AND W 34TH ST	15	72	MANHATTAN

INTERSECTION	NUMBER	RANK	BORO
WEBSTER AV AND E 233RD ST	15	72	BRONX
WOODHAVEN BL AND METROPOLITAN AV	15	72	QUEENS
1ST AV AND ALLEN ST	15	72	MANHATTAN
S CONDUIT AV AND 225TH ST	15	72	QUEENS
HYLAN BL AND NELSON AV	14	87	STATEN ISLAND
FOSTER AV AND E 80TH ST	14	87	BROOKLYN
UTICA AV AND CLARKSON AV	14	87	BROOKLYN
UTICA AV AND FARRAGUT RD	14	87	BROOKLYN
CHURCH AV AND KINGS HW	14	87	BROOKLYN
BOSTON RD AND CONNER ST	14	87	BRONX
ATLANTIC AV AND TROY AV	14	87	BROOKLYN
BRUCKNER BL AND E 138TH ST	14	87	BRONX
SEAVIEW AV AND ROCKAWAY PW	14	87	BROOKLYN
ROCKAWAY BL AND N CONDUIT AV	14	87	QUEENS
6TH AV AND BROADWAY	14	87	MANHATTAN
BOWERY AND CANAL ST	14	87	MANHATTAN
CHRYSITIE ST AND DELANCEY ST	14	87	MANHATTAN
GRAND CENTRAL PW SR AND 164TH ST	14	87	QUEENS
3RD AV AND E 72ND ST	14	87	MANHATTAN
10TH AV AND W 41ST ST	14	87	MANHATTAN
CHAMBERS ST AND CENTRE ST	14	87	MANHATTAN
FT GEORGE HILL AND DYCKMAN ST	14	87	MANHATTAN
BROOKVILLE BL AND S CONDUIT AV	14	87	QUEENS
FARMERS BL AND N CONDUIT AV	14	87	QUEENS
NORTHERN BL AND UNION ST	14	87	QUEENS
HYLAN BL AND STEUBEN ST	13	108	STATEN ISLAND
VICTORY BL AND MANOR RD	13	108	STATEN ISLAND
CLARKE AV AND ARTHUR KILL RD	13	108	STATEN ISLAND
NARROWS RD N AND RICHMOND RD	13	108	STATEN ISLAND





# TOP HIGH PEDESTRIAN ACCIDENT INTERSECTIONS 2008

INTERSECTION	NUMBER	RANK	BORO
WEBSTER AV AND E FORDHAM RD	14	1	BRONX
FLATBUSH AV AND CHURCH AV	13	2	BROOKLYN
8TH AV AND W 42ND ST	12	3	MANHATTAN
4TH AV AND 9TH ST	10	4	BROOKLYN
FLATBUSH AV AND GLENWOOD RD	9	5	BROOKLYN
4TH AV AND 86TH ST	9	5	BROOKLYN
PARSONS BL AND NORTHERN BL	9	5	QUEENS
6TH AV AND W 42ND ST	8	8	MANHATTAN
8TH AV AND W 34TH ST	8	8	MANHATTAN
LENOX AV AND W 125TH ST	8	8	MANHATTAN
3RD AV AND EAST FORDHAM	8	8	BRONX
9TH AV AND W 42ND ST	8	8	MANHATTAN
WEBSTER AV AND E 168TH ST	8	8	BRONX
9TH AV AND W 23RD ST	7	14	MANHATTAN
NORTHERN BL AND UNION ST	7	14	QUEENS
AMSTERDAM AV AND W 125TH ST	7	14	MANHATTAN
2ND AV AND E 14TH ST	7	14	MANHATTAN
ESSEX ST AND DELANCEY ST	7	14	MANHATTAN
QUEENS BL AND BROADWAY	7	14	QUEENS
7TH AV AND W 34TH ST	7	14	MANHATTAN
JEROME AV AND E FORDHAM RD	7	14	BRONX
PENNSYLVANIA AV AND NEW LOTS AV	7	14	BROOKLYN
71ST AV AND 108TH ST	7	14	QUEENS
LEXINGTON AV AND E 125TH ST	7	14	MANHATTAN
JEROME AV AND E BURNSIDE AV	7	14	BRONX
MADISON AV AND E 125TH ST	6	26	MANHATTAN
2ND AV AND E 106TH ST	6	26	MANHATTAN

INTERSECTION	NUMBER	RANK	BORO
UTICA AV AND CHURCH AV	6	26	BROOKLYN
PARSONS BL AND JAMAICA AV	6	26	QUEENS
7TH AV AND W 37TH ST	6	26	MANHATTAN
PARSONS BL AND HILLSIDE AV	6	26	QUEENS
ROOSEVELT AV AND BROADWAY	6	26	QUEENS
SOUTHERN BL AND E 180TH ST	6	26	BRONX
3RD AV AND E 57TH ST	6	26	MANHATTAN
PARSONS BL AND ARCHER AV	6	26	QUEENS
LEXINGTON AV AND E 42ND ST	6	26	MANHATTAN
MADISON AV AND E 42ND ST	6	26	MANHATTAN
DE KALB AV AND BEDFORD AV	6	26	BROOKLYN
ROOSEVELT AV AND UNION ST	6	26	QUEENS
3RD AV AND E 106TH ST	6	26	MANHATTAN
GRAND ST AND CHRYSTIE ST	6	26	MANHATTAN
KISSENA BL AND FRANKLIN AV	5	42	QUEENS
HILLSIDE AV AND TARGEE ST	5	42	STATEN ISLAND
JAMAICA AV AND 164TH ST	5	42	QUEENS
5TH AV AND BAY RIDGE PW	5	42	BROOKLYN
39TH AV AND UNION ST	5	42	QUEENS
3RD AV AND E 150TH ST	5	42	BRONX
5TH AV AND E 125TH ST	5	42	MANHATTAN
3RD AV AND E 14TH ST	5	42	MANHATTAN
FLATLANDS AV AND PAERDEGAT AV S	5	42	BROOKLYN
BEDFORD AV AND ATLANTIC AV	5	42	BROOKLYN
10TH AV AND W 42ND ST	5	42	MANHATTAN
BOWERY AND GRAND ST	5	42	MANHATTAN
5TH AV AND 60TH ST	5	42	BROOKLYN
GRAND BL AND CONCOURSE AND E 165TH ST	5	42	BRONX
7TH AV AND BAY RIDGE PW	5	42	BROOKLYN
TOMPKINS AV AND MYRTLE AV	5	42	BROOKLYN
2ND AV AND E 49TH ST	5	42	MANHATTAN
FOSTER AV AND NOSTRAND AV	5	42	BROOKLYN

INTERSECTION	NUMBER	RANK	BORO
PARK AV AND E 33RD ST	5	42	MANHATTAN
ST NICHOLAS AV AND W 181ST ST	5	42	MANHATTAN
CONEY ISLAND AV AND BRIGHTON BEACH AV	5	42	BROOKLYN
3RD AV AND E 32ND ST	5	42	MANHATTAN
PENNSYLVANIA AV AND HEGEMAN AV	5	42	BROOKLYN
3RD AV AND E 34TH ST	5	42	MANHATTAN
3RD AV AND E 28TH ST	5	42	MANHATTAN
3RD AV AND E 24TH ST	5	42	MANHATTAN
FLATLANDS AV AND ROCKAWAY PW	5	42	BROOKLYN
7TH AV AND W 35TH ST	5	42	MANHATTAN
1ST AV AND E 117TH ST	5	42	MANHATTAN
OCEAN AV AND ALBEMARLE RD	5	42	BROOKLYN
LEXINGTON AV AND E 34TH ST	5	42	MANHATTAN
MORRIS PARK AV AND E 180TH ST	5	42	BRONX
3RD AV AND E 141ST ST	5	42	BRONX
BOSTON RD AND E 174TH ST	5	42	BRONX
KINGS HW AND W 6TH ST	5	42	BROOKLYN
BROADWAY AND FLUSHING AV	5	42	BROOKLYN
AVENUE Z AND CONEY ISLAND AV	5	42	BROOKLYN
8TH AV AND W 50TH ST	5	42	MANHATTAN
2ND AV AND E 23RD ST	5	42	MANHATTAN
9TH AV AND W 30TH ST	5	42	MANHATTAN
LIBERTY AV AND 160TH ST	5	42	QUEENS
UTICA AV AND EASTERN PW	5	42	BROOKLYN
GUY R BREWER BL AND BAISLEY BL	5	42	QUEENS
NOSTRAND AV AND FLATBUSH AV	5	42	BROOKLYN
AVENUE M AND CONEY ISLAND AV	5	42	BROOKLYN
5TH AV AND E 135TH ST	5	42	MANHATTAN
EMPIRE BL AND FLATBUSH AV	5	42	BROOKLYN
COURTLANDT AV AND E 149TH ST	5	42	BRONX
BOSTON RD AND E 179TH ST	5	42	BRONX
FRANKLIN AV AND EASTERN PW	5	42	BROOKLYN

INTERSECTION	NUMBER	RANK	BORO
TOWNSEND AV AND E 170TH ST	5	42	BRONX
1ST AV AND E 57TH ST	5	42	MANHATTAN
AVENUE U AND FLATBUSH AV	5	42	BROOKLYN
VALENTINE AV AND E FORDHAM RD	5	42	BRONX
7TH AV AND W 55TH ST	5	42	MANHATTAN
LENOX AV AND W 144TH ST	5	42	MANHATTAN
GRAHAM AV AND MOORE ST	5	42	BROOKLYN
8TH AV AND W 57TH ST	5	42	MANHATTAN
LENOX AV AND W 124TH ST	5	42	MANHATTAN
LEXINGTON AV AND E 116TH ST	5	42	MANHATTAN
AVENUE J AND CONEY ISLAND AV	5	42	BROOKLYN
AVENUE V AND NOSTRAND AV	4	103	BROOKLYN
18TH AV AND 86TH ST	4	103	BROOKLYN
E TREMONT AV AND BOSTON RD	4	103	BRONX
AVENUE R AND CONEY ISLAND AV	4	103	BROOKLYN
ROOSEVELT AV AND 108TH ST	4	103	QUEENS
BAY PW AND 86TH ST	4	103	BROOKLYN
7TH AV AND W 145TH ST	4	103	MANHATTAN
LEXINGTON AV AND E 96TH ST	4	103	MANHATTAN
MYRTLE AV AND BROADWAY	4	103	STATEN ISLAND
SHEEPSHEAD BAY RD AND E 15TH ST	4	103	BROOKLYN
E KINGSBRIDGE RD AND E KINGSBRIDGE RD TU	4	103	BRONX
2ND AV AND E 55TH ST	4	103	MANHATTAN
E 170TH ST TU AND E 170TH ST	4	103	BRONX
BAY PW AND 65TH ST	4	103	BROOKLYN
HANSON PL AND ASHLAND PL	4	103	BROOKLYN
BROADWAY AND W 105TH ST	4	103	MANHATTAN
BROADWAY AND W 37TH ST	4	103	MANHATTAN
7TH AV AND W 33RD ST	4	103	MANHATTAN
7TH AV AND W 14TH ST	4	103	MANHATTAN
BAYCHESTER AV AND GRENADA PL	4	103	BRONX
COOPER AV AND 80TH ST	4	103	QUEENS



# TOP HIGH PEDESTRIAN ACCIDENT INTERSECTIONS 2007

INTERSECTION	NUMBER	RANK	BORO
8TH AV AND W 42ND ST	11	1	MANHATTAN
9TH AV AND W 42ND ST	7	2	MANHATTAN
EMPIRE BL AND TROY AV	7	2	BROOKLYN
BOOTH MEMORIAL AV AND MAIN ST	7	2	QUEENS
E GUN HILL RD AND WHITE PLAINS RD	7	2	BRONX
CRAMES SQ AND E 163RD ST	7	2	BRONX
8TH AV AND W 125TH ST	7	2	MANHATTAN
ST NICHOLAS AV AND W 125TH ST	7	2	MANHATTAN
7TH AV AND W 23RD ST	6	9	MANHATTAN
FLATBUSH AV EXT AND PRINCE ST	6	9	BROOKLYN
PARSONS BL AND ARCHER AV	6	9	QUEENS
FLATLANDS AV AND PAERDEGAT AV S	6	9	BROOKLYN
DE KALB AV AND FLATBUSH AV EXT	6	9	BROOKLYN
LINDEN BL AND NOSTRAND AV	6	9	BROOKLYN
AVENUE H AND FLATBUSH AV	6	9	BROOKLYN
KISSENA BL AND SANFORD AV	6	9	QUEENS
JEROME AV AND E FORDHAM RD	5	17	BRONX
WEBSTER AV AND E FORDHAM RD	5	17	BRONX
6TH AV AND W 57TH ST	5	17	MANHATTAN
9TH AV AND W 51ST ST	5	17	MANHATTAN
3RD AV AND E 14TH ST	5	17	MANHATTAN
10TH AV AND W 42ND ST	5	17	MANHATTAN
ST ANNS AV AND E 138TH ST	5	17	BRONX
10TH AV AND W 57TH ST	5	17	MANHATTAN
BROADWAY AND E 17TH ST	5	17	MANHATTAN
BROADWAY AND CANAL ST	5	17	MANHATTAN
1ST AV AND E 106TH ST	5	17	MANHATTAN

INTERSECTION	NUMBER	RANK	BORO
LEXINGTON AV AND E 125TH ST	5	17	MANHATTAN
BROADWAY AND E 14TH ST	5	17	MANHATTAN
PARK AV AND E 33RD ST	5	17	MANHATTAN
35TH AV AND UNION ST	5	17	QUEENS
3RD AV AND E 150TH ST	5	17	BRONX
LIBERTY AV AND 111TH ST	5	17	QUEENS
SMITH ST AND LIVINGSTON ST	5	17	BROOKLYN
CHURCH AV AND OCEAN AV	5	17	BROOKLYN
QUEENS BL AND 47TH ST	5	17	QUEENS
CATON AV AND ST PAULS PL	5	17	BROOKLYN
8TH AV AND W 48TH ST	5	17	MANHATTAN
AMSTERDAM AV AND W 86TH ST	5	17	MANHATTAN
2ND AV AND E 14TH ST	5	17	MANHATTAN
8TH AV AND W 39TH ST	5	17	MANHATTAN
NORTHERN BL AND 101ST ST	5	17	QUEENS
PARSONS BL AND NORTHERN BL	5	17	QUEENS
7TH AV AND W 42ND ST	5	17	MANHATTAN
9TH AV AND W 47TH ST	5	17	MANHATTAN
LEXINGTON AV AND E 116TH ST	5	17	MANHATTAN
6TH AV AND W 40TH ST	5	17	MANHATTAN
1ST AV AND E 63RD ST	5	17	MANHATTAN
7TH AV AND W 33RD ST	5	17	MANHATTAN
FT GEORGE HILL AND DYCKMAN ST	4	50	MANHATTAN
COLUMBUS AV AND W 66TH ST	4	50	MANHATTAN
8TH AV AND W 57TH ST	4	50	MANHATTAN
1ST AV AND E 86TH ST	4	50	MANHATTAN
7TH AV AND W 13TH ST	4	50	MANHATTAN
3RD AV AND E 72ND ST	4	50	MANHATTAN
3RD AV AND E 86TH ST	4	50	MANHATTAN
BROADWAY AND W 140TH ST	4	50	MANHATTAN
9TH AV AND W 23RD ST	4	50	MANHATTAN
COLUMBUS AV AND W 86TH ST	4	50	MANHATTAN

INTERSECTION	NUMBER	RANK	BORO
6TH AV AND W 55TH ST	4	50	MANHATTAN
5TH AV AND E 42ND ST	4	50	MANHATTAN
FOREST AV AND BROADWAY	4	50	STATEN ISLAND
SUTPHIN BL AND JAMAICA AV	4	50	QUEENS
PARSONS BL AND JAMAICA AV	4	50	QUEENS
ROOSEVELT AV AND 61ST ST	4	50	QUEENS
NORTHERN BL AND BOWNE ST	4	50	QUEENS
45TH AV AND BROADWAY	4	50	QUEENS
METROPOLITAN AV AND FOREST AV	4	50	QUEENS
BARCLAY AV AND UNION ST	4	50	QUEENS
3RD AV AND E 125TH ST	4	50	MANHATTAN
2ND AV AND E 116TH ST	4	50	MANHATTAN
SANFORD AV AND MAIN ST	4	50	QUEENS
5TH AV AND E 14TH ST	4	50	MANHATTAN
BAYCHESTER AV AND BOSTON RD	4	50	BRONX
E TREMONT AV AND UNIONPORT RD	4	50	BRONX
BROADWAY AND W 231ST ST	4	50	BRONX
W BURNSIDE AV AND UNIVERSITY AV	4	50	BRONX
WEBSTER AV AND E GUN HILL RD	4	50	BRONX
3RD AV AND E 169TH ST	4	50	BRONX
UNIVERSITY AV AND W 183RD ST	4	50	BRONX
JEROME AV AND E BURNSIDE AV	4	50	BRONX
WESTCHESTER AV AND ELDER AV	4	50	BRONX
5TH AV AND E 46TH ST	4	50	MANHATTAN
37TH AV AND 94TH ST	4	50	QUEENS
MORNINGSIDE AV AND W 125TH ST	4	50	MANHATTAN
9TH AV AND W 30TH ST	4	50	MANHATTAN
6TH AV AND W 53RD ST	4	50	MANHATTAN
3RD AV AND E 26TH ST	4	50	MANHATTAN
3RD AV AND E 24TH ST	4	50	MANHATTAN
7TH AV AND W 34TH ST	4	50	MANHATTAN
8TH AV AND W 23RD ST	4	50	MANHATTAN

INTERSECTION	NUMBER	RANK	BORO
AMSTERDAM AV AND W 125TH ST	4	50	MANHATTAN
ESSEX ST AND DELANCEY ST	4	50	MANHATTAN
AMSTERDAM AV AND W 145TH ST	4	50	MANHATTAN
7TH AV AND W 14TH ST	4	50	MANHATTAN
FT WASHINGTON AV AND W 178TH ST	4	50	MANHATTAN
8TH AV AND W 29TH ST	4	50	MANHATTAN
2ND AV AND E 72ND ST	4	50	MANHATTAN
5TH AV AND E 23RD ST	4	50	MANHATTAN
5TH AV AND E 125TH ST	4	50	MANHATTAN
LENOX AV AND W 132ND ST	4	50	MANHATTAN
6TH AV AND W 22ND ST	4	50	MANHATTAN
8TH AV AND W 56TH ST	4	50	MANHATTAN
ATLANTIC AV AND RALPH AV	4	50	BROOKLYN
20TH AV AND 86TH ST	4	50	BROOKLYN
EVERGREEN AV AND LINDEN ST	4	50	BROOKLYN
FOSTER AV AND E 13TH ST	4	50	BROOKLYN
UTICA AV AND LENOX RD	4	50	BROOKLYN
ROCKAWAY PW AND WINTHROP ST	4	50	BROOKLYN
EMPIRE BL AND FLATBUSH AV	4	50	BROOKLYN
AVENUE P AND CONEY ISLAND AV	4	50	BROOKLYN
RALPH AV AND MONROE ST	4	50	BROOKLYN
BROADWAY AND MYRTLE AV	4	50	BROOKLYN
CROPSEY AV AND BAY PW	4	50	BROOKLYN
EMPIRE BL AND BEDFORD AV	4	50	BROOKLYN
ATLANTIC AV AND PENNSYLVANIA AV	4	50	BROOKLYN
8TH AV AND 65TH ST	4	50	BROOKLYN
16TH AV AND 86TH ST	4	50	BROOKLYN
FLATBUSH AV AND NEVINS ST	4	50	BROOKLYN
EASTERN PW EXT AND FULTON ST	4	50	BROOKLYN
KISSENA BL AND 45TH AV	4	50	QUEENS
LIBERTY AV AND 120TH ST	4	50	QUEENS
5TH AV AND E 55TH ST	4	50	MANHATTAN