

City of Albany



Neighborhood Traffic Calming Program (NTCP)

Information and Application Packet

Introduction

INTRODUCTION

If you have requested a copy of this information and application packet, you are probably concerned with speeding or traffic on your neighborhood street. The Neighborhood Traffic Calming Program (NTCP) is designed to assist you and the City in both identifying and remedying these problems. Please read through this information packet carefully before you begin. We encourage you to speak with your neighbors about your concerns and enlist them in your efforts. If you have any questions before you begin, please call the City of Albany Public Works Department at 917-7655.

BACKGROUND

The Neighborhood Traffic Calming Program (NTCP) was adopted by the Albany City Council in June, 2001. The NTCP is an element of the *Albany Transportation System Plan* and is a cooperative process between the City and the neighborhoods. It provides the citizens of the Albany a process for addressing their concerns about neighborhood traffic issues. The program also provides the City with a tool for evaluating the need for traffic calming as a result of traffic impacts in a neighborhood. Prior to implementation of this program, there was neither a standard for traffic calming devices nor a method to determine when a traffic calming device was warranted.

The NTCP is a program to assist neighborhoods in solving problems with traffic speed and volume. However, not all types of traffic problems belong in the traffic calming program. The City will assist the applicant to determine if the NTCP is the correct place to resolve the issue. The flow chart documenting this decision process is included on the next page of this application. **If at least fifty-one percent of the adjacent property owners are willing to participate in the cost of the device**, the problem meets the minimum requirements, and the plan receives both neighborhood and Traffic Safety Commission approval; the traffic calming device is installed according to City standards. In cases where the problem does not meet the minimum standards established in this program, the City will work with the applicant to see if the problem can be corrected through education or enforcement.

CONTENTS

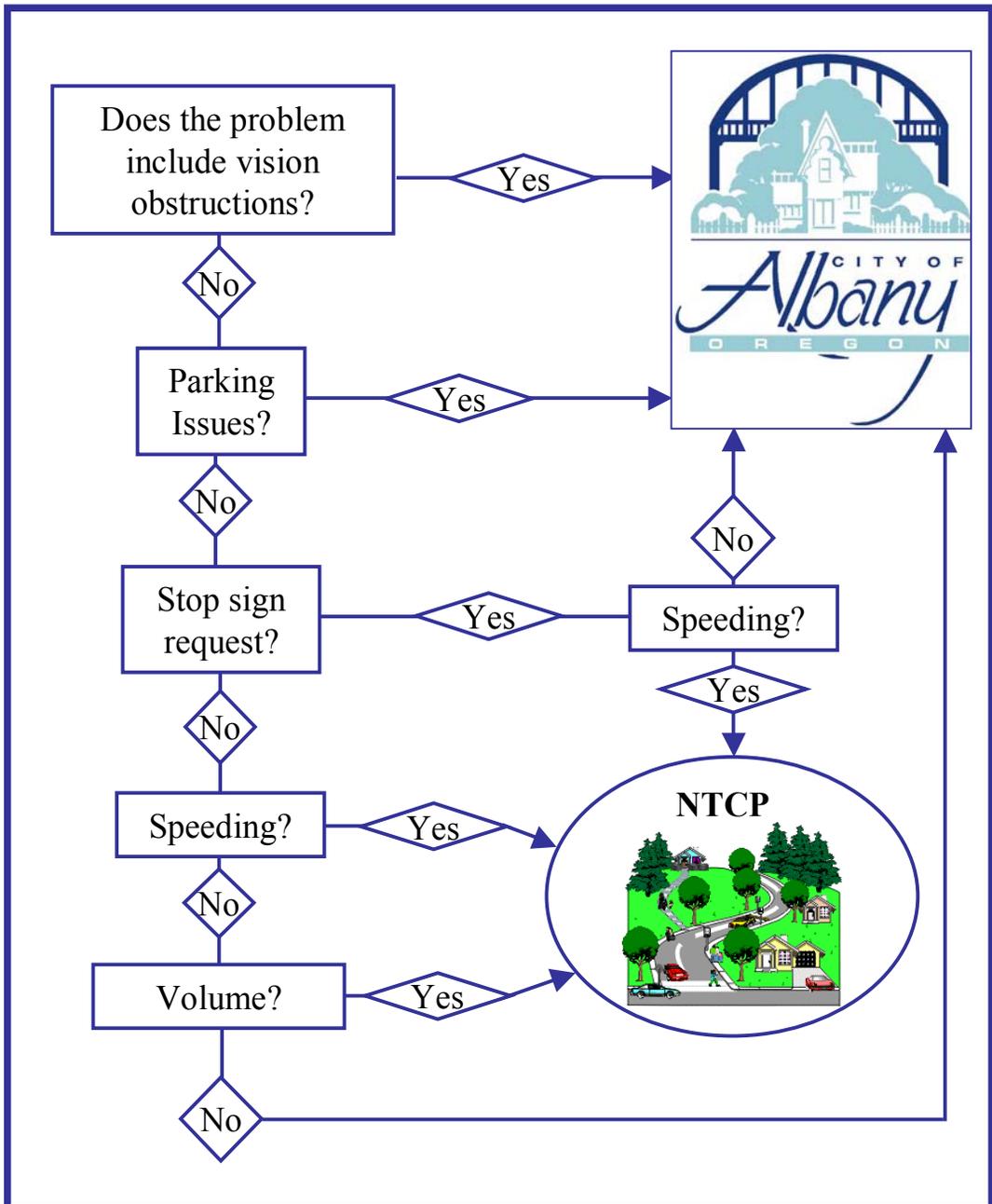
This information packet contains the following:

- An overview of the process.
- A step-by-step description of the process.
- The NTCP application form (yellow)
- The NTCP data collection forms (blue, red)
- Examples of Construction Mitigation Measures (lavender)
- Examples of Self-Help Mitigation Measures (orange)
- A Primary Emergency Response Route Map (inside back cover)

This packet will serve as the documentation for the project. All applicable information should remain with this packet until the project is completed and filed.

Is Neighborhood Traffic Calming Appropriate?

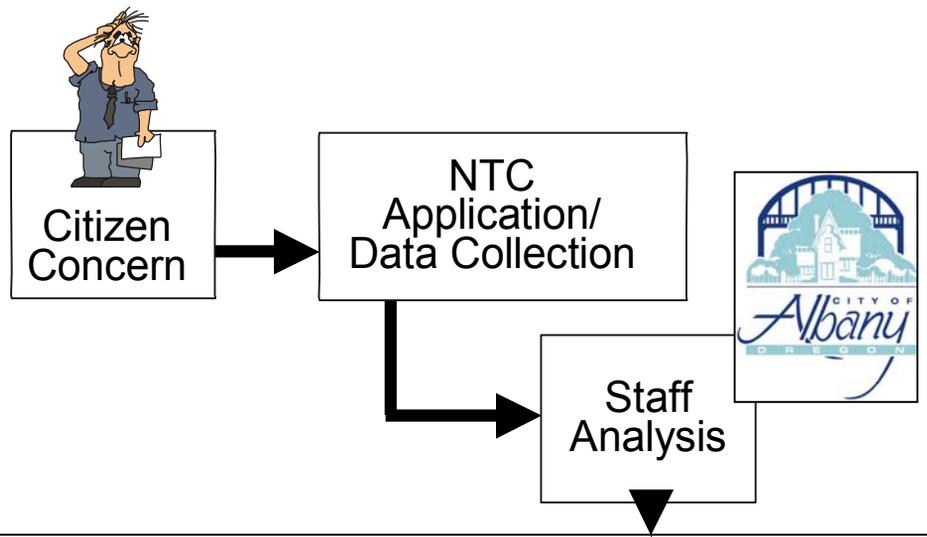
The flow chart on this page is designed to provide the applicant with a way to determine whether or not a problem should be processed through the NTCP, or if it should be forwarded to the City for evaluation and/or resolution. High traffic volumes and consistent speeding on residential streets are appropriate issues for the NTCP. Issues that are not appropriate for the NTCP include safety hazards (except speeding), street or sign maintenance requests, commuter or illegal parking, vision clearance problems, and proposals for changes in traffic signing or striping. If you have any questions about whether a problem is appropriate for NTCP that cannot be answered by the chart, please contact the Albany Public Works Department at 917-7655.



STEP

1

Project Request and Preliminary Review



Step 1 - Project Request and Preliminary Review

When citizens have concerns about a specific traffic problem, they can contact the City of Albany at 917-7655 to obtain a copy of the application and information packet for the Neighborhood Traffic Calming Program (NTCP).

The application is the first sheet of this packet and has a yellow border. Instructions for filling out the application/checklist are located on the back of the form.

The next step in the process is to fill out the first section of the form and submit the application/checklist to the City.

The City will review the first section for completeness and fill the appropriate information in Section 2. The City will also evaluate the problem to ensure that the NTCP is the correct forum to solve the problem. There are some issues such as parking and stop signs that do not necessarily belong in the NTCP. If another program would be more appropriate, the City will provide the correct contact information to the applicant.

Once the City has determined that the application is complete and belongs in the NTCP, the applicant will be asked to perform preliminary data collection. Volume and speed counts will be required. The forms containing instructions for collecting the data are also included in this packet and are the forms with blue and green borders. It is the responsibility of the applicant to collect the data.

Once the data has been collected and submitted to the City, staff will perform another review of the problem. This review is to determine whether or not the problem meets the minimum criteria of the program. If additional data is required, the City may request additional information from the applicant or obtain the necessary information.

The City will contact the applicant to inform them of the status of the project after the determination has been made. If the problem DOES NOT meet minimum criteria, the project will not move forward in the program. The application will be returned to the applicant with the reason that the project did not move forward, in addition to recommendations that may be appropriate to help resolve the problem outside the NTCP. These recommendations might include education or enforcement options.

STEP

2

Project Acceptance/ Ranking and Petition to Study



Step 2 - Project Acceptance/Ranking and Petition to Study

Minimum criteria for the problem are identified in the table below.

Minimum Criteria Table

Street Type	Median Speed	Volume	Fronting Land Use
Local	> 25 MPH	>1250vpd*	> 75% residential and institutional (including parks)
Collector	≥ Posted Speed	None	> 75% residential and institutional (including parks)
Arterial	≥ Posted Speed	None	> 75% residential and institutional (including parks)

* vpd = vehicles per day

The residential restriction is to ensure that Neighborhood Traffic Calming can be implemented in neighborhoods. There are no volume restrictions on arterials or collectors, as these roadways are identified to carry higher volumes of traffic.

Appeals of the minimum criteria determination will be directed to the Traffic Safety Commission.

If the problem DOES meet the minimum criteria, the project will be ranked. Ranking will be accomplished by assigning a score to each project. The score will be calculated based on the roadway classification, speeds, volumes, proximity to a school, and availability of sidewalks. A breakdown of the values of each component are shown on the following page. Included in the table is a brief discussion of how the individual scores will be calculated.

If there are more than five projects in the program, only the top five ranked projects will be active. The remaining projects will remain active in the queue for up to two years. If they have not progressed in two years, they will be reevaluated to determine whether the problem has changed or been mitigated by some other factor. If a project is removed from the program, the next highest ranked project will become active.

STEP

2 (Continued)

Project Acceptance/ Ranking and Petition to Study



Step 2 - Project Acceptance/Ranking and Petition to Study Continued

Ranking Table

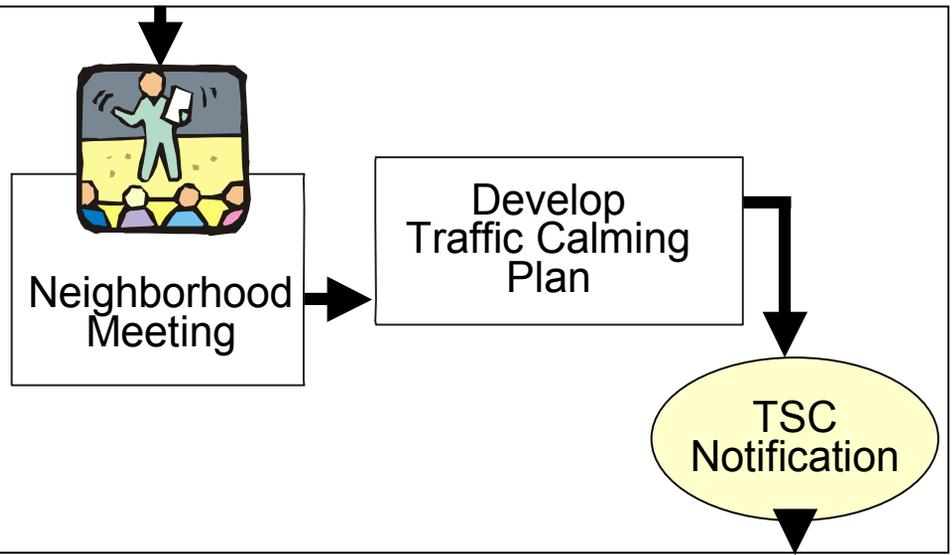
Criteria	Local Street Score	Collector Street Score	Arterial Street Score
Average Speed (4 pts per mph above speed limit (SL) to SL + 5 mph) (6 pts per mph above SL + 5 mph)	50 (Maximum)	60 (Maximum)	60 (Maximum)
Volume (2 pts per 100 vpd over min. volume)	30 (Maximum)	0	0
No Sidewalks (100% for no sidewalks in project area) (50% for sidewalks one side or partial sidewalks)	5	15	15
School (full points for school or school crossing within project)	15	25	25
Total Score	100	100	100

Once a project has been ranked and is on the active project list, a petition will be distributed by the applicant to all property owners in the project area. The majority (at least 51%) of the property owners identified in the project area must agree that a project is necessary and they will participate in the cost of the construction of the project. The distribution of costs are identified on page 9 and vary depending on the classification of the project roadway. If less than fifty-one percent of the owners agree, the project is no longer considered active.

STEP

3

Plan Development



Step 3 - Plan Development

Not all traffic calming devices will be appropriate for some types of problems. No devices that prohibit the flow of traffic will be constructed on streets classified as collector or arterial streets in the *Albany Transportation System Plan*. The types of measures constructed on collectors or arterials will be limited to devices designed to reduce vehicle speeds and increase pedestrian safety. Emergency Response Routes, whether classified as residential, collector or arterial streets, will also have a limited list of measures that can be installed.

Examples of traffic calming devices that the City will install are included as a part of this document, on pages 29 through 33. This chart also includes any restrictions assigned to those specific devices.

Once a project has met the review criteria, the City will hold a neighborhood meeting. All property owners in the project area will be invited. At this neighborhood meeting, the City will identify the types of traffic calming devices that are effective in resolving the problems identified in the project area, in addition to any restrictions.

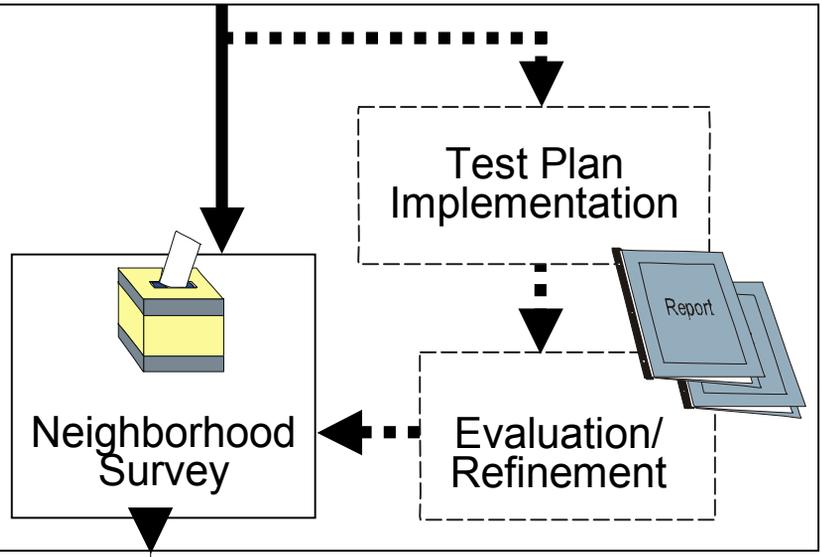
The City will work with the neighbors to obtain their preferences for types of devices and possible installation locations to maximize the benefit of the preferred devices.

The City will then develop a Traffic Calming Plan. A representative from the neighborhood and the Albany Fire Department will also be included on the Plan team. The Plan will include the type of device(s), location(s) of installation, an anticipated schedule for construction, maintenance responsibility, and estimated project costs.

STEP

4

Initial Evaluation and Neighborhood Survey



Step 4 - Initial Evaluation and Neighborhood Survey

There are some traffic calming devices that require a significant change in driver behavior. A traffic circle at an intersection is one example. In some cases, the City may choose to implement a test device. Devices that do not require a significant change in driver behavior may not require the test phase and would move immediately to the neighborhood survey.

The intent behind installing a test device is to allow the neighborhood to experience the traffic calming device and the changes to neighborhood traffic patterns prior to a permanent installation. This gives the City and the neighborhood an opportunity to determine the impacts of the installation prior to the expenditure of significant construction costs. It also allows easy removal of the device if the neighborhood decides that the device does not meet expectations.

Whether a test device is implemented or not, the neighborhood will be given an opportunity to review the traffic calming plan and discuss the installation of the device. The intent of the survey is to ensure that the adjacent neighbors know of the proposed modification and have an opportunity to comment on the device installation. The majority of the neighborhood must agree with the device installation. The survey also provides an opportunity to reaffirm with the property owners in the project area that they are willing to their share of the construction costs, with a more accurate cost estimate available. The cost distribution will be as follows:

Street Type	Neighborhood Contribution	City Contribution
Local	50%	50%
Collector	37.5%	62.5%
Arterial	25%	75%

STEP

5

Traffic Safety Commission Approval



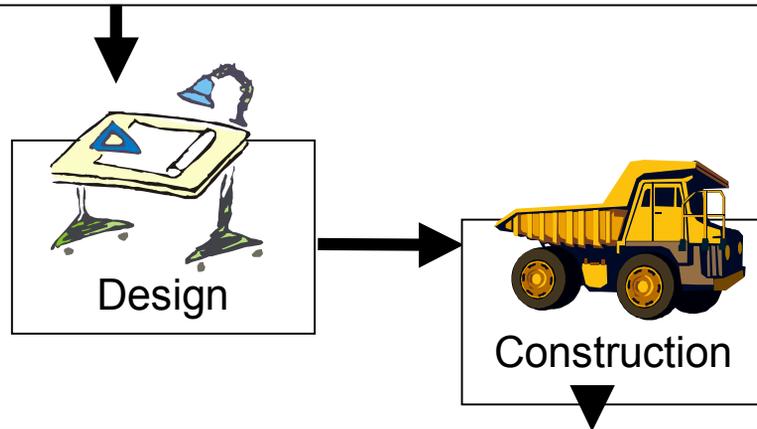
Step 5 - Traffic Safety Commission Approval

Once the neighborhood has given support of the project, the Traffic Calming Plan will be forwarded to the Traffic Safety Commission for review and approval. A member of the Traffic Safety Commission will be invited to attend the neighborhood meetings; however, this forum provides the entire commission the opportunity to review the Traffic Calming Plan prior to implementation.

STEP

6

Design and Construction



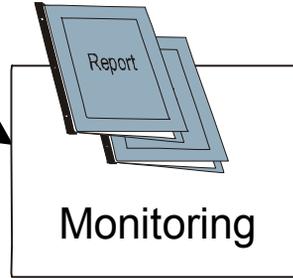
Step 6 - Design and Construction

If approved by the Traffic Safety Commission, the City will perform the design, contract advertisement, contract administration and construction inspection of the traffic calming device(s) indicated by the Traffic Calming Plan.

STEP

7

Monitoring and Follow-Up



Step 7 - Monitoring and Follow-Up

Once the device is installed and construction is complete, the City will conduct two sets of data collection to determine the impacts of the device installed. The data collection will occur two months and six months after project completion. This data will be used to determine the effectiveness of the devices installed. The results of the analysis will be shared with the neighborhood.

Subsequent updates to the NTCP will occur as staff discovers that some devices are more or less effective than others. Other updates will occur to update procedural deficiencies or include additional alternatives as they are developed.

Section 1 (To be completed by Applicant)

Applicant Name: _____ Daytime Telephone: _____
Applicant Mailing Address: _____ Evening Telephone: _____

Location of Problem: _____
(For intersections, list both streets. For roads, indicate name/problem limits. e.g. 24th Ave. between Geary & Hill.)

Description of Problem: _____
(e.g. Excessive speeding on street, high volumes, etc.)

Section 2 (To be completed by City)

Street Classification: _____ Parking: _____
Roadway Width: _____ Speed Limit: _____
Ortho Photo Attached Emergency Response Route: _____

Section 3 (To be completed by Applicant)

Volume: _____ Speed: _____
(Submit Blue Count Forms) (Submit Red Speed Forms)

Section 4 (To be completed by City)

TCP Evaluation

[] YES
(Meets Initial Evaluation Criteria)
Additional Data Collected? _____
Project Rank: _____
Date Survey Sent: _____
Survey Results: _____
Neighborhood Meeting Date: _____
TSC Notification Date: _____
Date Neighborhood Ballot Sent: _____
Neighborhood Ballot Results: _____
TSC Approval: _____
Design Complete: _____
Construction Complete: _____

[] NO
(Does Not Meet Evaluation Criteria)
Reason: _____
Other Recommendations (if any): _____

Section 5 (City Follow-Up)

Device Installed: _____
Six month Volume: _____ Six month Speed: _____
One Year Volume: _____ One Year Speed: _____

Instructions for Application/Checklist

This form is to serve as the application for the Neighborhood Traffic Calming Program (NTCP), in addition to providing a summary sheet checklist for the project. To start the application process, please follow these steps:

1. Fill out Section 1 of the form. It is important to include a brief but thorough description of the problem including the start and end points.
2. Submit the form to the City of Albany (City) at 333 Broadalbin SW, P.O. Box 490, Albany, OR 97321. The application can either be mailed or dropped off.
3. Once the City has received the form, it will be reviewed to ensure that the problem is appropriate for NTCP. The applicant may be contacted for clarification if necessary. If the problem is not appropriate for NTCP, the applicant will be provided with contact information for the correct agency to notify.
4. If the City determines the problem is appropriate for NTCP, the applicant will be responsible for gathering data. Data regarding the traffic volumes and traffic speed must be gathered for the next step in the process. The forms provided in this packet will instruct and assist you in gathering this data.
5. Once all of the data has been collected, Section 3 of the application form must be completed.
6. Upon completion of Section 3, the packet is returned to the City with all of the appropriate documentation. The City will review the data submitted .
7. If the submitted data indicates that the problem **DOES** meet the criteria for the NTCP, the City will proceed to implement the program. The program steps are outlined on the following page and a full text description of each step is included in this information packet.
8. If the submitted data indicates that the problem **DOES NOT** meet the criteria for the NTCP, the City will notify the applicant that the project will not proceed. The City will also include the reason for the denial in addition to any alternative ways of addressing the problem that may be appropriate.

NTCP Intersection Count Worksheet

Section 1 (To be completed prior to start of data collection)

North/South Roadway Name: _____ Count Date: _____

East/West Roadway Name: _____ Count Time (Two-Hour): _____

Counter Name: _____ Weather Conditions: _____

Sketch the Intersection:

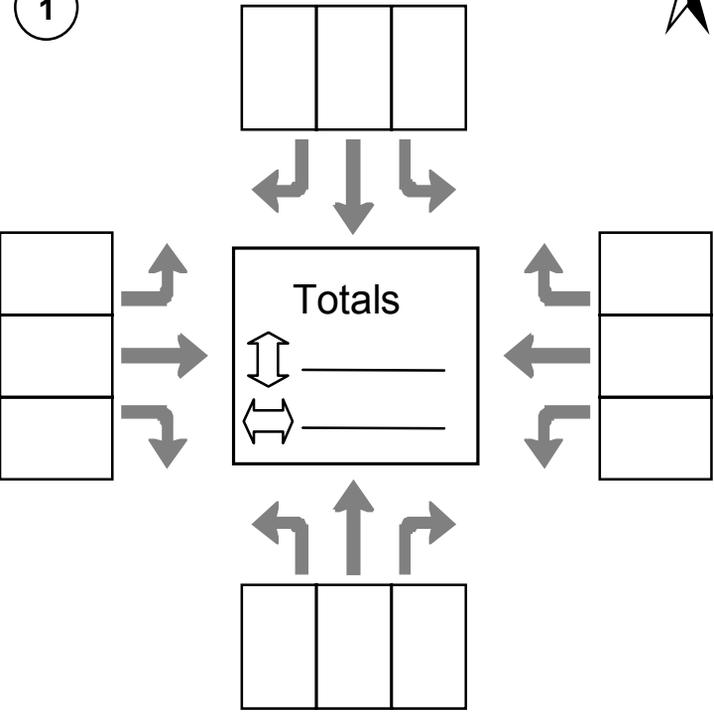


Section 2 (To be completed during data collection)

15 Minute Interval: _____



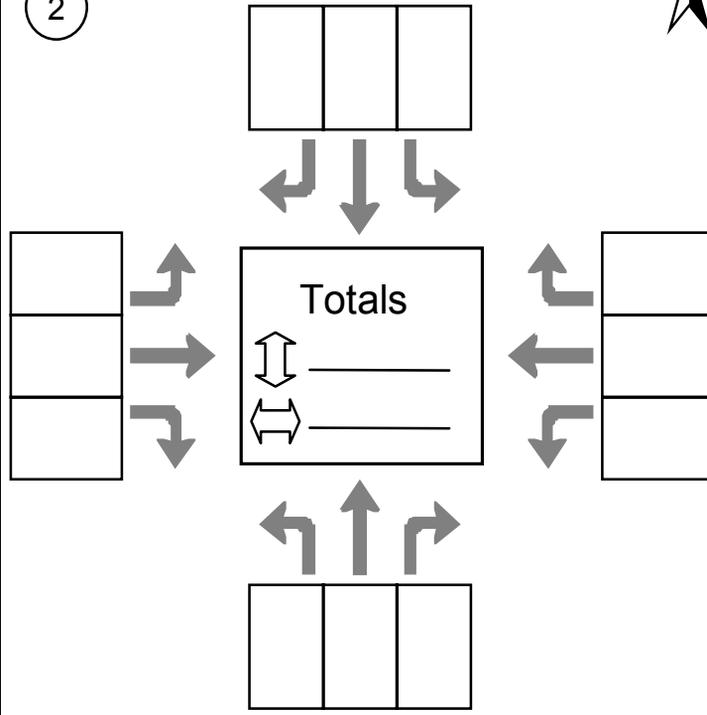
1



15 Minute Interval: _____



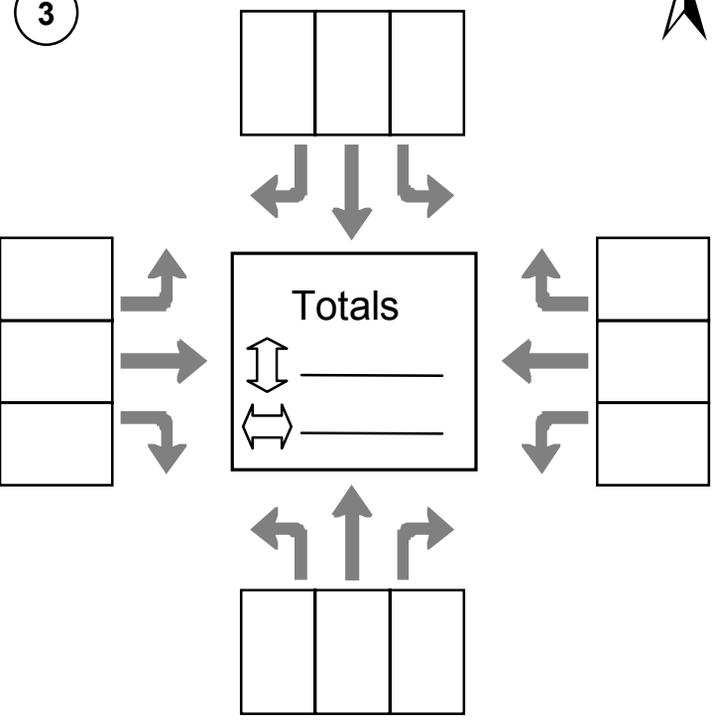
2



15 Minute Interval: _____



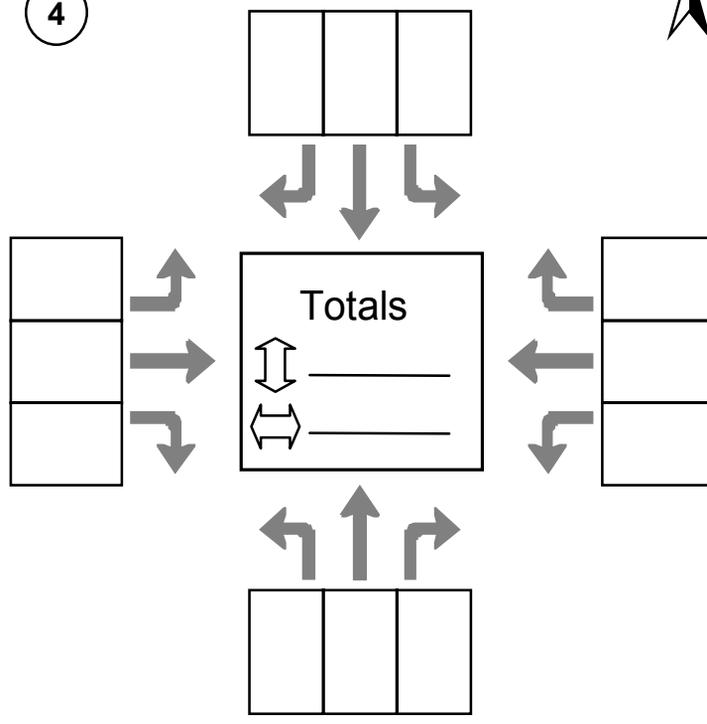
3



15 Minute Interval: _____



4



Section 2 Continued

15 Minute Interval: _____

N



5

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Totals	
⇅	_____
⇆	_____



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15 Minute Interval: _____

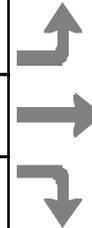
N



6

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Totals	
⇅	_____
⇆	_____



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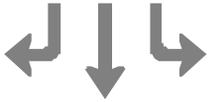
15 Minute Interval: _____

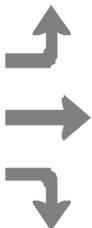
N



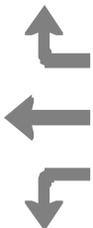
7

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Totals	
⇅	_____
⇆	_____



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15 Minute Interval: _____

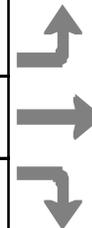
N



8

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Totals	
⇅	_____
⇆	_____



--	--	--

Section 3 (To be completed after data collection)

Add the totals for:

1, 2, 3 and 4: ⇅ _____ ⇆ _____

2, 3, 4 and 5: ⇅ _____ ⇆ _____

3, 4, 5 and 6: ⇅ _____ ⇆ _____

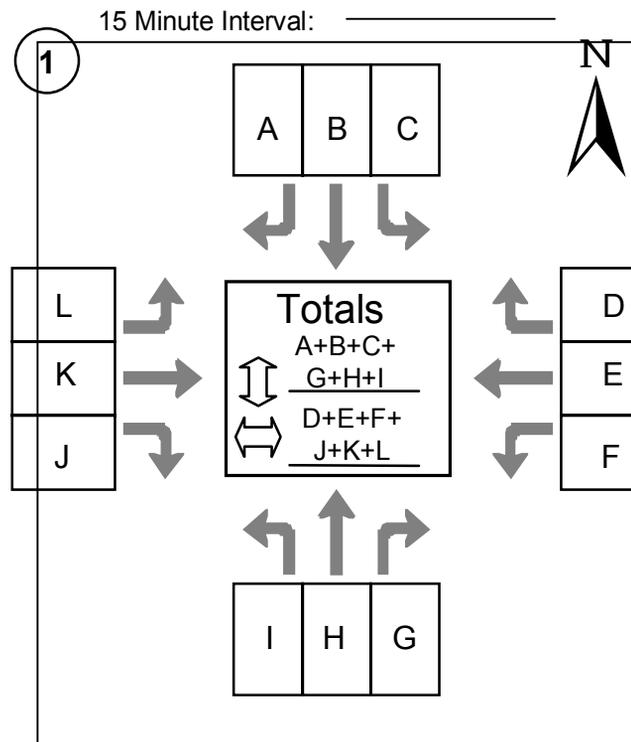
4, 5, 6 and 7: ⇅ _____ ⇆ _____

5, 6, 7 and 8: ⇅ _____ ⇆ _____

NTCP Intersection Count Instructions

To Estimate the Traffic Volumes on at a specific intersection, follow these steps:

1. Note that this is a two-page, double-sided form. Make sure to have all four components including these instructions. The sample comprises the additional third page.
2. Near the identified intersection, select a safe place to sit for two hours that provides adequate vision clearances to count all vehicles entering the intersection.
3. Identify a two-hour window for the time of day when the problem seems to be the most pronounced.
4. If the traffic volumes are low, a single counter may be adequate. It may be advisable to have two different counters, one for each direction of travel.
5. Select a day to perform the counts. If the counts are simply to identify the intersection volumes, the best time to conduct the counts is on a Tuesday, Wednesday or Thursday evening between the hours of 4 and 6 PM. If the counts are to identify a specific problem, pick the day and time to correspond.
6. Fill out Section 1 of the form with all of the appropriate information.
7. Bring some sort of timing device that will provide a minimum of a minute breakdown.
8. Be in place approximately 10 minutes before the two-hour window begins. This will ensure if there are any problems, they can be resolved before the counts start.
9. At the beginning of the two-hour window, begin counting the vehicles that pass through the intersection.
10. It is important to correctly record each direction of travel through the intersection for the vehicles (ie. eastbound turning left versus eastbound through or eastbound turning right).
11. At 15 minute intervals, move to the next box for data recording.
12. At the end of the two-hour count, tally up the numbers for each 15 minute record.
13. Fill out Section 3 of the form. This will provide an estimated daily volume for the intersection counted.



NTCP Intersection Count Worksheet

Example

Section 1 (To be completed prior to start of data collection)

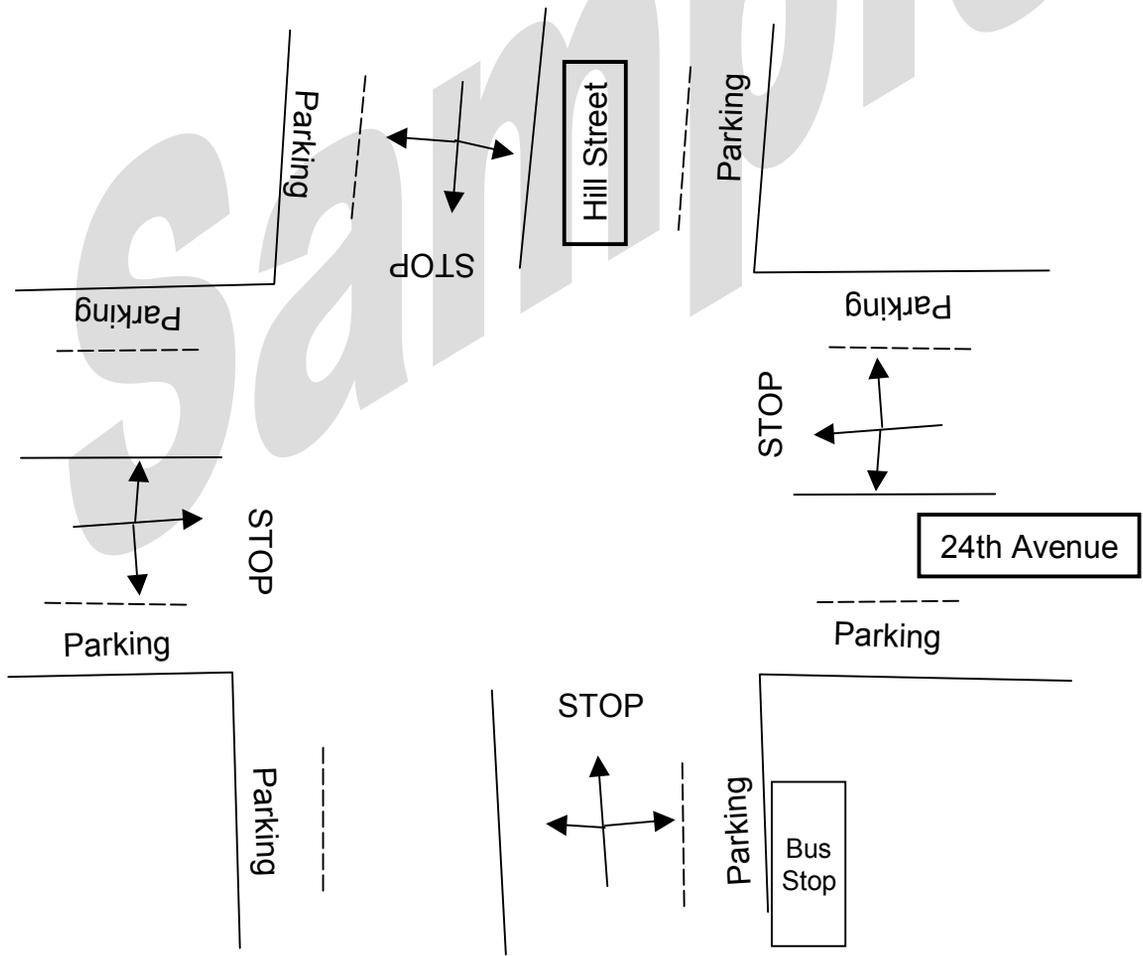
North/South Roadway Name: 24th Avenue Count Date: 1/14/01

East/West Roadway Name: Hill Street Count Time (Two-Hour): 4-6 PM

Counter Name: Betty Rubble

Weather Conditions: Raining

Sketch the Intersection:



Section 2 Example Continued

5 Minute Interval: 5:00-5:15

5

$$\begin{array}{l} 3+5+2+ \\ 1+4+1=16 \end{array}$$

$$\begin{array}{l} 4+8+4+ \\ 3+6+5=30 \end{array}$$

Totals

↑↓ 16

↔ 30

15 Minute Interval: 5:15-5:30

6

$$\begin{array}{l} 2+7+1+ \\ 1+4+3=18 \end{array}$$

$$\begin{array}{l} 7+8+4+ \\ 4+6+4=33 \end{array}$$

Totals

↑↓ 18

↔ 33

5 Minute Interval: 5:30-5:45

7

$$\begin{array}{l} 0+3+1+ \\ 0+2+1=7 \end{array}$$

$$\begin{array}{l} 3+5+2+ \\ 1+4+3=18 \end{array}$$

Totals

↑↓ 7

↔ 18

15 Minute Interval: 5:45-6:00

8

$$\begin{array}{l} 2+4+1+ \\ 1+2+2=12 \end{array}$$

$$\begin{array}{l} 5+6+1+ \\ 2+4+2=20 \end{array}$$

Totals

↑↓ 12

↔ 20

Section 3 (To be completed after data collection)

Add the totals for:

2, 3 and 4: ↑↓ _____ ↔ _____

3, 4 and 5: ↑↓ _____ ↔ _____

3, 4, 5 and 6: ↑↓ _____ ↔ _____

4, 5, 6 and 7: ↑↓ _____ ↔ _____

5, 6, 7 and 8: ↑↓ $16+18+7+12=53$ ↔ $30+33+18+20=101$

NTCP Roadway Count Worksheet

Section 1 (To be completed prior to start of data collection)

Roadway Name: _____ Count Date: _____

Counter Name: _____ Count Time (Two-Hour): _____

Weather Conditions: _____

Section 2 (To be completed during data collection)

Row	15 Minute Interval (e.g. 4:15 to 4:30)	Direction/Count: (e.g. Eastbound/1111)	Direction/Count: (e.g. Westbound/1111)	Roadway Totals	Pedestrian Counts (optional)
1					
2					
3					
4					
5					
6					
7					
8					

Section 3 (To be completed after data collection)

Add Totals for Rows 1, 2, 3, and 4: _____
 Rows 2, 3, 4, and 5: _____
 Rows 3, 4, 5, and 6: _____
 Rows 4, 5, 6, and 7: _____
 Rows 5, 6, 7, and 8: _____
 Select Highest Value: _____

Multiply the Highest Value by 10

This value is the approximate Average Daily Traffic (ADT) for the roadway.



NTCP

Roadway Count Instructions

To Estimate the Traffic Volumes on a Specific Roadway, follow these steps:

1. Identify a location on the roadway where the traffic will represent the problem.
2. Near the identified location, select a safe place to sit for two hours that provides adequate vision clearances to count all oncoming vehicles.
3. Identify a two-hour window for the time of day when the problem seems to be the most pronounced.
4. If the traffic volumes are low, a single counter may be adequate. It may be advisable to have two different counters, one for each direction of travel.
5. Select a day to perform the counts. If the counts are simply to identify the roadway volume, the best time to conduct the counts is on a Tuesday, Wednesday or Thursday evening between the hours of 4 and 6 PM. If the counts are to identify a specific problem, pick the day and time to correspond.
6. Fill out Section 1 of the opposite side of this form with all of the appropriate information.
7. Bring some sort of timing device that will provide a minimum of a minute breakdown.
8. Be in place approximately 10 minutes before the two-hour window begins. This will ensure if there are any problems, they can be resolved before the counts start.
9. At the beginning of the two-hour window, begin counting the vehicles that approach on the roadway. Pedestrian counts may be taken, but are not usually required.
10. It is important to differentiate the direction of travel for the vehicles (ie. eastbound versus westbound traffic.) The distribution of traffic may be used to determine which mitigation measures, if any, are appropriate.
11. At 15 minute intervals, move to the next box for data recording.
12. At the end of the two-hour count, tally up the number for each 15 minute record.
13. Fill out Section 3 of the form. This will provide an estimated daily volume for the roadway counted.

NTCP Roadway Count Worksheet Example

Section 1 (To be completed prior to start of data collection)

Roadway Name: 24th Avenue (between Geary & Hill) Count Date: 1/13/01

Counter Name: Betty Rubble Count Time (Two-Hour): 4-6 PM

Weather Conditions: Slightly cloudy, occasional showers

Section 2 (To be completed during data collection)

Row	15 Minute Interval (e.g. 4:15 to 4:30)	Direction/Count: (e.g. Eastbound/1111)	Direction/Count: (e.g. Westbound/1111)	Roadway Totals	Pedestrian Counts (optional)
1	4:00-4:15	Eastbound 5	Westbound 4	9	
2	4:15-4:30	9	7	16	
3	4:30-4:45	7	5	12	
4	4:45-5:00	8	7	15	
5	5:00-5:15	18	9	27	
6	5:15-5:30	13	7	20	
7	5:30-5:45	10	3	13	
8	5:45-6:00	4	5	9	

Section 3 (To be completed after data collection)

Add Totals for Rows 1, 2, 3, and 4: $9+16+12+15=52$
 Rows 2, 3, 4, and 5: $16+12+15+27=70$
 Rows 3, 4, 5, and 6: $12+15+27+20=74$
 Rows 4, 5, 6, and 7: $15+27+20+13=75$
 Rows 5, 6, 7, and 8: $27+20+13+9=69$
 Select Highest Value: 75

Multiply the Highest Value by 10

$75 \times 10 = 750$

This value is the approximate Average Daily Traffic (ADT) for the roadway.

NTCP Speed Data Worksheet

Section 1 (To be completed prior to start of data collection)

Roadway Name: _____ Count Date: _____

Counter Name(s): _____ Count Time (Two-Hour): _____

Weather Conditions: _____

Section 2 (To be completed during data collection)

	Totals	_____ bound	Speed	_____ bound	Total	
			Above 39 MPH			
			39 MPH			
			38 MPH			
			37 MPH			
			36 MPH			
			35 MPH			
			34 MPH			
			33 MPH			
			32 MPH			
			31 MPH			
			30 MPH			
			29 MPH			
			28 MPH			
			27 MPH			
			26 MPH			
			25 MPH			
			24 MPH			
			23 MPH			
			22 MPH			
			21 MPH			
			Below 21 MPH			

Actual Count Time:

_____ bound Total:
_____ X 0.50 = _____

_____ bound Total:
_____ X 0.50 = _____

_____ bound
50th % Speed

_____ bound
50th % Speed

NTCP

Speed Count Instructions

To Estimate the Traffic Speed on a Specific Roadway, follow these steps:

1. Identify a location on the roadway where the traffic will represent the problem.
2. Near the identified location, select a safe place to sit for two hours that provides adequate vision clearances to monitor all oncoming vehicles.
3. Identify a two-hour window for the time of day when the problem seems to be the most pronounced. Pick any time during the day except the AM Peak (between 6:30 AM and 8:30 AM) or the PM Peak (between 4:00 PM and 6:00 PM) to conduct the study. If the AM Peak or PM Peak is designated as the problem, two sets of counts must be made. One off-peak to determine the average roadway speed and the second during the peak hour that is indicative of the problem.
4. If the traffic volumes are low, a single counter may be adequate. Two people may be required, one to operate the radar gun, the other to record the data.
5. Obtain the radar gun from the Albany Police Department at 917-3208. The radar guns can be borrowed for up to a week. Valid picture identification (a driver's license) is required to borrow the gun.
6. Fill out Section 1 of the opposite side of this form with all of the appropriate information.
7. Bring some sort of timing device that will let you know when two hours are over.
8. Be in place approximately 10 minutes before the two-hour window begins. This will ensure if there are any problems, they can be resolved before the counts start. Make sure to play with the radar gun in advance so you know how it works.
9. At the beginning of the two-hour window, begin recording the speed of the vehicles that approach on the roadway.
10. It is important to differentiate the direction of travel for the vehicles (ie. eastbound versus westbound traffic.) The distribution of traffic may be used to determine which mitigation measures, if any, are appropriate.
11. Data must be collected for either two hours or 50 vehicles in both directions - whichever comes first. On a typical local street, the two hour limit will probably be met. If you collect 50 vehicles in one direction, but the other direction has not reached 50, continue to collect data in both directions until you reach 50 vehicles in the other direction or two hours has elapsed, whichever comes first.
12. At the end of the count, total the number of vehicles for each speed.
13. Calculate the 50% speed for each direction of travel by completing these steps: Add the total number of vehicles recorded for each direction and multiply by 0.50. Round to the nearest whole number. In the far left and right columns of the table, add the total number of vehicles - starting from the bottom. (See the example sheet, the columns with the large circles in them.) When you total to the number you calculated, circle that number and record the speed associated with that number. This speed is the 50th percentile speed.

NTCP Speed Data Worksheet Example

Section 1 (To be completed prior to start of data collection)

Roadway Name: 24th Avenue (between Geary & Hill)

Count Date: 1/14/01

Counter Name(s): Betty Rubble

Count Time (Two-Hour): 2-4 PM

Weather Conditions: Slightly cloudy, occasional showers

Section 2 (To be completed during data collection)

	Totals	East bound	Speed	West bound	Total	
28	1		Above 39 MPH		2	53
27	1		39 MPH		1	51
26	2		38 MPH		3	50
24	0		37 MPH		3	47
24	3		36 MPH		4	44
21	3		35 MPH		5	40
18	1		34 MPH		3	35
17	5		33 MPH		5	32
12	2		32 MPH		2	27
10	3		31 MPH		4	25
7	2		30 MPH		3	21
5	0		29 MPH		5	18
5	2		28 MPH		3	13
3	1		27 MPH		2	10
2	2		26 MPH		2	8
0	0		25 MPH		1	6
0	0		24 MPH		2	5
0	0		23 MPH		1	3
0	0		22 MPH		1	2
0	0		21 MPH		0	0
0	0		Below 21 MPH		1	1

Actual Count Time:
2:02-4:02 PM

East bound Total
28 X 0.50 = 14

West bound Total
53 X 0.50 = 27

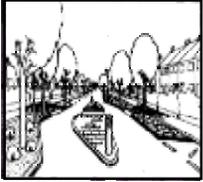
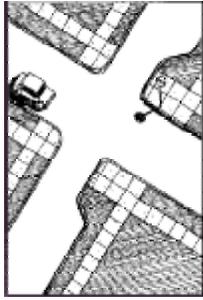
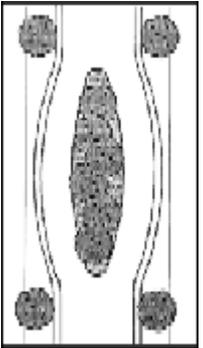
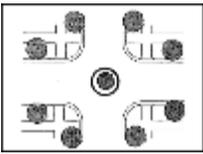
East bound
50th % Speed

33

West bound
50th % Speed

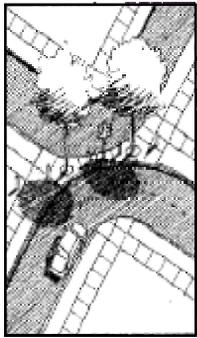
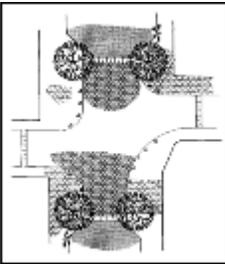
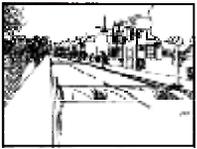
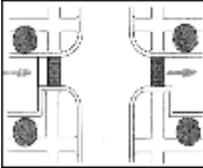
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Typical Constructed Mitigation Measures

Measure	Graphic	Description	Speed Reduction	Volume Reduction	Cost	Road Type
Chicane		Channelization or curb extensions that realign the straight path of a street, deflection of straight vehicle movement.	3 to 4 MPH	Low volume reduction and diversion	\$3,000 to \$20,000	R = Yes C = Yes A = Yes ER = Yes
Choker (Curb Extension)		A roadway narrowing. This could be a curb extension at an intersection (also called bulb-outs, neckdowns and throating) to reduce the roadway width at a selected location.	3.3 MPH	Moderate volume reduction and diversion	\$3,000 to \$15,000	R = Yes C = Yes A = Yes ER = Yes
Choker (Median)		A roadway narrowing. With a median, the narrowing of the roadway comes from placing an island in the middle of the road. Some cities have used large raised pavement markers on the centerline at intersections to reduce speed of turning traffic. Medians can also be used for pedestrian refuge and/or access control to restrict turning movements. For access control it is important that medians are long enough to effectively create right-in/right-out restrictions.	3.3 MPH	Moderate volume reduction and diversion	\$3,000 to 10,000	R = Yes C = Yes A = Yes ER = Yes
Choker (Pinch Point)		A roadway narrowing. Curb lines are extended into the street area (usually landscaped islands or pedestrian extensions) to narrow the roadway.	3.3 MPH	Moderate volume reduction and diversion	\$5,000 to \$15,000	R = Yes C = Yes A = Yes ER = Yes
Circles		A round island in the middle of an intersection	5.7 MPH	Low volume reduction and diversion	\$5,000 to \$15,000	R = Yes C = No A = No ER = Maybe

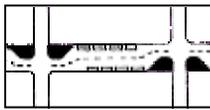
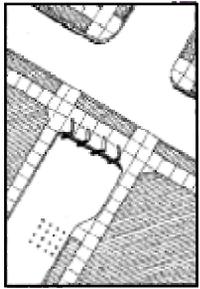
For Road Types: R = Residential, C = Collector, A = Arterial, ER = Emergency Response. Maybe = To be evaluated on a case-by-case basis.

Typical Constructed Mitigation Measures

Measure	Graphic	Description	Speed Volume Reduction		Cost	Road Type
			Speed	Volume		
Diverters		Channelization or islands that restrict movements at an intersection. Typically, allows right turns, not through traffic. There are full and partial diverters depending upon the number of movements restricted or diverted at an intersection.	0.4 MPH	High volume reduction, high diversion impact	\$3,000 to \$15,000	R = Yes C = No A = No ER = No
Entry Treatments		Generally use of landscaping and architectural elements at the roadway entrance to a neighborhood. Can include curb extensions and pavement texturing.	3.3 MPH	Moderate volume reduction and diversion	\$5,000 to \$25,000	R = Yes C = Yes A = Yes ER = Yes
Humps		Raising of pavement surface about 3 inches over about 10 to 20 feet (an undulation). Similar to this measure are speed tables, raised pedestrian crossings and raised intersections.	7 MPH	Low volume reduction and diversion	\$3,000 to \$5,000	R = Yes C = No A = No ER = No
Intersection Realignments/ Route Modification		Takes a standard 3 or 4 leg intersection and skews it to deflect traffic while maintaining safe design characteristics. Modify a route to make it less direct.	5.7 MPH	Low volume reduction and diversion	\$4,000 to \$20,000	R = Yes C = No A = No ER = Maybe
One Way Streets		Takes the entry to a neighborhood area and makes the access road one way (typically out). Similar in some respects to a diverter. Can be used in connection with entry treatments.	No Data	Significant volume reduction and diversion	\$5,000 to \$30,000	R = Yes C = Maybe A = Maybe ER = Maybe

For Road Types: R = Residential, C = Collector, A = Arterial, ER = Emergency Response. Maybe = To be evaluated on a case-by-case basis.

Typical Constructed Mitigation Measures

Measure	Graphic	Description	Speed Volume Reduction		Cost	Road Type
			Speed	Volume		
Pavement Texture/ Pavement Markings		Instead of smooth pavement surface, create roughness by using raised markers, pavers, colored concrete with patterns. Can be used to emphasize pedestrian crossing location. Sometimes paint is used to create channelization or narrowing. Increases driver awareness of changed conditions (entering a neighborhood or pedestrian zone).	Limited	Limited volume reduction	\$1,000 to \$15,000	R = Yes C = Maybe A = No ER = Maybe
Parking On-street		By allowing parking, the traveled way is narrowed. Speeds must be slower for safe sight distance	No Data	Limited volume reduction	\$0 to \$1,000	R = Yes C = No A = No ER = Maybe
Part Time Restrictions (PTR)		Use signs to limit vehicle movements during key times (typically school times or peak hours). Can be turn restrictions, truck restrictions, through traffic restrictions, etc. Very difficult and expensive to enforce and can have high violation rates.	Moderate speed reduction (if through traffic removed)	Moderate volume reduction (if restrictions enforced)	\$500 to \$5,000	R = Yes C = Yes A = Yes ER = Yes
Road Closure		Uses islands or barricades to close the end of a street. Creates a cul-de-sac for vehicles, pedestrians and bicycles can go through. Contrary to TPR emphasis on connectivity. Special consideration will be given for emergency response.	Speed reduction limited to site of closure.	Significant volume reduction and diversion	\$2,000 to \$15,000	R = Yes C = No A = No ER = Maybe

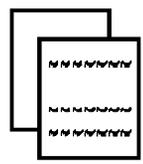
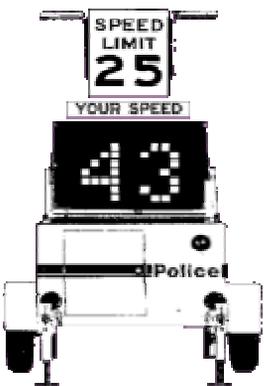
For Road Types: R = Residential, C = Collector, A = Arterial, ER = Emergency Response. Maybe = To be evaluated on a case-by-case basis.

Source for graphics:

Traffic Calming, American Planning Association, Planning Advisory Service, Report Number 456, July 1995
Handbook for Walkable Communities, Burden and Wallwork.

Civilized Street: A Guide to Traffic Calming, Environmental & Transport Planning Brighton, Great Britain, 1992.

Education and Enforcement Mitigation Measures

Measure	Graphic	Description	Contact
Enforcement (selective)		Police issuing tickets to vehicles violating speed limits. Can be effectively combined with other NTC elements such as public awareness, education, speed trailer and signs/banners.	City of Albany Police Department 917-7680
Signs		Yard signs have been typically used as part of a public awareness or education program.	City of Albany Public Works 917-7655
Neighborhood Flyers		In neighborhoods where the speeding problem is caused by neighbors, a flyer distribution can be used to educate neighbors.	City of Albany Public Works 917-7655
Public Awareness/ Traffic Watch		Campaigns typically organized by agency to involve neighbors. Speed watch can include neighbors using a radar speed measuring device to identify speeders who receive a standard letter. Public awareness can include education activities, but also newsletters, neighborhood organization activities, etc...	City of Albany Police Department 917-7683
Speed Trailer		A trailer unit with a reader board that indicates the approaching vehicle speeds. Portable and can be moved from site to site. Can be reinforced with actual police enforcement on a selective basis.	City of Albany Police Department 917-7683
Enforcement (automated)		Use of photo or video enforcement to ticket violators in speed zones. Red light running photo enforcement is also available.	Not Currently Available

Emergency Response Routes

