

# *Traffic Calming Study*

Cherry Street at Quicks Lane and  
Valley Road  
Town of Bedford, New York

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Prepared for Town of Bedford  
301 Adams Street  
Bedford Hills, New York

Prepared by  *Engineering, Surveying and Landscape Architecture, P.C.*  
50 Main Street, Suite 360  
White Plains, New York

## **Introduction**

VHB has been retained by the Town of Bedford, New York to conduct a traffic calming study on Cherry Street at Quicks Lane and Valley Road. The purpose of this traffic calming study is to support the Town in its effort to provide a safer environment for motorists and pedestrians at both intersections, increase the visibility of pedestrians crossing Cherry Street at Valley Road, and reduce speeds on Cherry Street.

To obtain background information VHB has met with the Town Supervisor, a Police Department Lieutenant, Director of Planning and Commissioner of Public Works to understand the safety concerns on Cherry Street. In addition, VHB has also reviewed documentation of comments from residents at the traffic safety working group meetings.

## **Quicks Lane**

In the vicinity of Quicks Lane on Cherry Street, there have been complaints of high speeds and difficulty exiting that street to turn left or right onto Cherry Street. Also, vehicles frequently strike the curb on the southwest corner of the intersection. Retroreflective tape and shoulder striping have been deployed at the southwest corner curb to reduce vehicle hits, but they have continued. Motorists should be able to see the curb under daylight and night conditions, since there is a streetlight nearby. The term "85<sup>th</sup> percentile speed" is used in this report, which is defined as the speed at which 85 percent of motorists are traveling at or below; it is used to determine the prevailing operating speed of a street. Speed surveys indicate that the 85<sup>th</sup> percentile speed is 40 miles per hour (MPH) near Quicks Lane, meaning the majority of motorists travel in excess of the posted 30 MPH speed limit, with 15 percent traveling in excess of 40 miles per hour. The natural path of southbound vehicles on Cherry Street approaching Quicks Lane is to "hug the curve," which brings their path into conflict with the southwest corner curb and encroaches on the area where vehicles exiting Quicks Lane must wait in order to see around obstructions to approaching vehicles. Therefore, there is a need to reduce vehicle speeds, reduce the tendency of southbound vehicles to hug the curve approaching Quicks Lane, and remove obstructions to sight distances on either side of Quicks Lane.

## **Valley Road**

There is a sidewalk on the north side of Valley Road as well as on the west side of Cherry Street. There are pedestrian ramps on either side of Cherry Street connecting these sidewalks where pedestrians cross Cherry Street, and there have been complaints of speeding. Motorists should be able to see pedestrians crossing under daylight and night conditions, since there is a streetlight nearby. There is a need to reduce vehicle speeds and assist pedestrians in their desire to cross Cherry Street on the north leg of the intersection.

This report has been prepared to summarize the findings of the analyses. It includes an evaluation of existing traffic volumes and speed studies, the results of several field visits and observations, analyses of all-way stop installation guidance, and recommended sight distances at the two study locations. In addition, an evaluation of the pedestrian crossing of Cherry Street at Valley Road connecting a sidewalk and pedestrian ramp on the north side of Valley Road to a pedestrian ramp and sidewalk on the west side of Cherry Street is summarized herein. At the conclusion, there are recommendations for the Town to consider for implementation.

## **Existing Traffic Volumes, Speeds and Observations**

An evaluation of existing conditions was conducted first to determine if the use of traffic calming measures and traffic control devices is warranted, and to what level of intensity. As previously stated, the study intersections include the intersections of Cherry Street at Quicks Lane and Valley Road. Cherry Street is a north-south street with one travel lane per direction in the north western region of the Town of Bedford. On-street parking is not permitted on Cherry Street in this area. The evaluation was conducted based on the Manual on Uniform Traffic Control Devices (MUTCD), 2009 and "A Policy on Geometric Design of Highways and Streets" by the American Association of State Highway and Transportation Officials (AASHTO) "Green Book."

*Cherry Street at Quicks Lane* – This is a three legged intersection with stop control on Quicks Lane, which forms the west leg of the intersection. In this area, Cherry Street is approximately 30 feet wide and consists of an 11 foot travel lane and 4 foot shoulder in each direction (except on the southbound receiving side where a sidewalk has effectively replaced the shoulder) separated by a double yellow centerline. The posted speed limit is 30 MPH on Cherry Street. A sidewalk exists along Cherry Street on the west side south of Quicks Lane. Quicks Lane is an east-west residential street with no outlet and is approximately 16 feet wide.

*Cherry Street at Valley Road* – This is a three legged intersection with stop control on Valley Road, which forms the east leg of the intersection. In this area, Cherry Street is approximately 24 feet wide south of Valley Road and 27 feet wide north of Valley Road, and consists of approximately 12 foot travel lanes in each direction separated by a double yellow centerline with no shoulder striping. The posted speed limit is 30 MPH on Cherry Street. A continuous sidewalk exists along Cherry Street on the west side. Valley Road is an east-west residential street connecting to other streets to the east, and is approximately 24 feet wide with a continuous sidewalk on the north side.

VHB conducted vehicular, pedestrian and bike counts at the two study intersections during the peak weekday AM period (7:15 AM to 9:15 AM) and PM period (4:15 PM to 6:15 PM) on Wednesday, September 3, 2014. These time periods typically reflect the heaviest weekday traffic flows coinciding with commuter peak periods. 24-hour traffic counts collected on Cherry Street at several locations during several times of year provided by the Town of Bedford Police Department were analyzed, and it can be confirmed that the highest traffic volumes occur during these time periods. The vehicular, pedestrian and bike counts were tabulated, and the peak hours are identified as occurring from 7:45 to 8:45 AM and from 4:30 PM to 5:30 PM on a typical weekday.

Cherry Street at Quicks Lane is traveled by approximately 110 vehicles per hour (vph) and 275 vph in the northbound and southbound directions, respectively during the weekday AM peak hour. During the weekday PM peak hour, northbound Cherry Street is traveled by approximately 310 vph and southbound Cherry Street is traveled by approximately 145 vph. Eastbound Quicks Lane is traveled by up to about 20 vph during both the weekday peak hours. Pedestrian activities including school children and school bus pickups were observed during the weekday AM peak period. The southwest corner sidewalk is a bus pickup spot.

Cherry Street at Valley Road is traveled by approximately 130 vph in the northbound direction and 320 vph in the southbound direction during the weekday AM peak hour. During the weekday PM peak hour, northbound Cherry Street is traveled by approximately 290 vph and southbound Cherry Street is traveled by approximately 160 vph. Westbound Valley Road is traveled by approximately 35-70 vph during both the weekday peak hours. The existing traffic volumes are shown on Figure 1 and Figure 2.

On Figures 1 and 2, it is shown that the primary travel direction of Cherry Street in the AM peak hour is southbound, and in the PM peak hour is northbound. Also, approximately 35 vph is added to southbound Cherry Street in the AM peak hour from local streets between Quicks Lane and Valley Road, which is assumed to be local resident and school trips. Further, since there are fewer driveways and cross streets between Quicks Lane and NY Route 35, it can be assumed that the majority of those trips, estimated at 250 vph, are not from local residents. It can also be assumed that the majority of those trips are not destined to homes immediately along Cherry Street or its cross streets. It is, therefore, estimated that roughly 200 vph of the 290 vph on southbound Cherry Street in the AM peak hour are through trips.

By similar reasoning it is estimated that roughly 200 to 210 vph of the 300 northbound trips on Cherry Street in the PM peak hour are through trips.

Speed data collected by the Town Police Department was analyzed in order to determine the need for all-way stop control and to analyze recommended sight distances. A summary of the posted and 85<sup>th</sup> percentile speeds is provided in Table 1.

**Table 1**  
**Speed Data Summary**

	<u>Posted Speed Limit</u>	<u>85 Percentile Speed</u> <u>(Combined NB &amp; SB)</u>
Cherry Street at Quicks Lane	30 MPH	40 MPH
Cherry Street at Valley Road	30 MPH	36 MPH

In addition to traffic volume and speed data, roadway width dimensions, sight distance measurements and sign inventories were collected by VHB at the study intersections.

In summary, although about two-thirds of traffic on Cherry Street may be through traffic not generated by local residents and destinations, peak hour volumes at the study locations can be characterized as light to moderate considering Cherry Street is a two-lane residential road connecting two state highways in a densely populated single-family neighborhood with a school in the middle and three Town government buildings on the south end. Travel speeds can be characterized as high, considering speeds are exceeded by at least five to ten miles per hour, which are 20 percent to 33 percent higher than the speed limit of 30 MPH.

#### **Pedestrian Crossing Assessment at Valley Road**

There is an existing sidewalk on the north side of Valley Road with a pedestrian ramp at Cherry Street, and a pedestrian ramp opposite Valley Road on the west sidewalk. Pedestrian and bicycle counts and observations were conducted on September 3, 2014 from 7:15 AM to 9:15 AM and 4:15 PM to 6:15 PM, and additional observations were conducted on the morning of September 17, 2014.

Pedestrian crossing activity across Cherry Street at Valley Road peaks from 7:15 to 8:15 AM with four pedestrians and from 5:15 to 6:15 PM with eight pedestrians. Bicycle activity was light but steady with three to four bikes per hour along or crossing Cherry Street during the count periods. At 7:33 AM, 8:57 AM and 9:12 AM, school buses picked up children on Cherry Street near Valley Road.

During observations, there were no pedestrian-vehicle interactions at crossings. There are relatively light pedestrian crossing volumes combined with light to moderate traffic volumes. Therefore, behavioral observations to determine if motorists properly yield to pedestrians crossing at Cherry Street and Valley Road (which is mandated by the New York State Vehicle and Traffic Law) were not able to be observed.

In summary, pedestrian and bicycle volumes crossing and along Cherry Street can be characterized as light considering the nearby density of single-family homes, school, and presence of sidewalks.

#### **All-Way Stop Control Study**

According to the MUTCD, 2009 Edition, all-way stop control can be useful as gap-providing safety measure at intersections if certain traffic conditions exist. The safety concerns that can be addressed by an all-way stop are where pedestrians, bicyclists and all road users expect other road users to stop. This traffic control device is used where the volume of traffic on the intersecting roads is approximately equal. Per the MUTCD:

*The decision to install multi-way stop control should be based on an engineering study. The following criteria should be considered in the engineering study for a multi-way stop sign installation:*

- A. *Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.*

- B. *A crash problem, as indicated by five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right- and left-turn collisions as well as right-angle collisions.*
- C. *Minimum volumes:*
  - 1. *The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day, and*
  - 2. *The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the highest hour, but*
  - 3. *If the 85th-percentile approach speed of the major street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the above values.*
- D. *Where no single criterion is satisfied, but where Criteria B, C.1, and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.*

*Other criteria that may be considered in an engineering study include:*

- 1. *The need to control left-turn conflicts;*
- 2. *The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;*
- 3. *Locations where a road user, after stopping, cannot see conflicting traffic and is not able to safely negotiate the intersection unless conflicting cross traffic is also required to stop; and*
- 4. *An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection.*

Detailed analyses were conducted for the two study intersections based on this methodology.

#### Cherry Street at Quicks Lane

The following is a summary of the minimum criteria as indicated in the MUTCD:

- B. *Collision Criteria (five or more reported crashes in a 12-month period that are susceptible to correction)*  
- There was an average of one crash per year at Quicks Lane. Therefore, the collision criterion is not met.
- C. *Minimum volumes (8-hour)* – Criteria are not met for the major street (C.1) and not met for the minor street (C.2) for at least eight hours. Also, according to the speed data, the combined (northbound and southbound) 85<sup>th</sup> percentile speed, i.e., the speed at which 85% of vehicles are traveling at or below, on Cherry Street at Quicks Lane is 40 mph, which does not meet the minimum speed criterion (C.3).
- D. Criterion D is not met as Criteria B and C.2 are not satisfied to 80 percent of the minimum values.

#### Cherry Street at Valley Road –

The following is a summary of the minimum criteria as indicated in the MUTCD:

- B. *Collision Criteria (five or more reported crashes in a 12-month period that are susceptible to correction)*  
- There was an average of two crashes per year at Valley Road. Therefore, the collision criterion is not met.
- C. *Minimum volumes (8-hour)* – Criteria are not met for the major street (C.1) and is not met for the minor street (C.2) for at least eight hours. Also, according to the speed data, the combined (northbound and southbound) 85<sup>th</sup> percentile speed on Cherry Street at Valley Road is 36 mph, which does not meet the minimum speed criterion (C.3).

D. Criterion D is not met as Criteria B and C.2 are not satisfied to 80 percent of the minimum values.

Detailed information and the summary of the all-way stop analysis are contained in Table 2. The two AM peak hours of data and two PM peak hours of data were included. For other weekday hours from 6 AM to 8 PM, hourly traffic data collected by the Town of Bedford Police Department on Cherry Street was used to prorate the minor approach traffic volumes on Quicks Lane and Valley Road based on the proportion of Cherry Street traffic during the peak hours.

**Table 2  
 All-Way Stop Analysis**

Hour	Total Traffic Volume - Major Road	Total Traffic Volume - Minor Road	8-Hrs Criteria		Speed Criterion C.3 85th % Speed > 40 mph?
			Major C.1 >=300 vph?	Minor C.2 >=200 vph?	
<b>Cherry St at Quicks Lane</b>					
6-7 am	132	6	No	No	85th percentile speed for Major Road is equal to 40 mph. Hence, criteria not met.
7-8 am	343	16	Yes	No	
8-9 am	370	19	Yes	No	
9-10 am	280	12	No	No	
10-11 am	240	18	No	No	
11am-12 pm	222	15	No	No	
12-1 pm	230	16	No	No	
1-2 pm	245	15	No	No	
2-3 pm	249	15	No	No	
3-4 pm	312	13	Yes	No	
4-5 pm	373	12	Yes	No	
5-6 pm	410	12	Yes	No	
6-7 pm	317	8	Yes	No	
7-8 pm	223	8	No	No	
<b>Cherry St at Valley Road</b>					
6-7 am	138	10	No	No	85th percentile speed for Major Road is equal to 36 mph. Hence, criteria not met.
7-8 am	326	23	Yes	No	
8-9 am	424	35	Yes	No	
9-10 am	315	23	Yes	No	
10-11 am	275	16	No	No	
11am-12 pm	242	14	No	No	
12-1 pm	262	24	No	No	
1-2 pm	280	32	No	No	
2-3 pm	284	46	No	No	
3-4 pm	327	53	Yes	No	
4-5 pm	389	61	Yes	No	
5-6 pm	426	57	Yes	No	
6-7 pm	331	14	Yes	No	
7-8 pm	237	12	No	No	

In summary, the all-way stop criteria for crashes, speed and traffic volume are not met for either intersection.

**Sight Distance Recommendations**

Two sets of sight distances were evaluated for each intersection: stopping sight distance on Cherry Street approaching each intersection, and intersection sight distance for vehicles turning in and out of Quicks Lane and Valley Road.

Stopping sight distance is defined as the distance needed for drivers to see an object on the roadway ahead and bring their vehicles to a safe stop before colliding with the object. This measurement applies to Cherry Street through-traffic approaching a vehicle stopped on Cherry Street that is waiting for a gap in oncoming traffic to turn left into Quicks Lane or Valley Road, or traffic approaching a pedestrian crossing Cherry Street.

Stopping sight distance is defined as the sum of two distances according to the AASHTO *Green Book*, 2011:

- *Reaction distance*—the distance traveled by the vehicle from the instant the driver sees an object necessitating a stop to the instant the brakes are applied; plus
- *Braking distance*—the distance traveled by the vehicle from the instant brake application begins to the instant when the vehicle has come to complete stop.

The reaction distance is based on the reaction time of the driver and the speed of the vehicle. The braking distance is dependent upon the vehicle’s 85<sup>th</sup> percentile speed, grade, and the coefficient of friction between the tires and roadway. Table 3 shows the available versus recommended stopping sight distances.

**Table 3  
 Stopping Sight Distances on Cherry Street**

	Northbound at Quicks Lane	Southbound at Quicks Lane	Northbound at Valley Road	Southbound at Valley Road
Grade (measured by Google Earth elev.)	-1%	+4%	+7%	-6%
Speed (85 <sup>th</sup> Percentile)	39 MPH	40 MPH	37 MPH	36 MPH
Recommended Distance	295 feet	305 feet	270 feet	285 feet
Available Distance	577 feet	333 feet	508 feet	673 feet
Met (Yes or No)	Yes	Yes	Yes	Yes

Note: for downhill grades, additional stopping distance was factored in, per AASHTO formulas. For uphill grades, no reduction in stopping distance was factored in, to be conservative.

Intersection sight distances were also measured and calculated for passenger vehicles. Left-turn traffic entering the cross streets from Cherry Street was evaluated for sight distance. For intersections with stop control on the minor road, such as Quicks Lane and Valley Road, proper intersection sight distance is recommended for a vehicle to safely turn left from the minor road or turn right from the minor road to enter traffic on the major road and accelerate without causing through traffic to slow unduly. The methods for determining the sight distances needed by drivers approaching intersections are based on the same principals as stopping sight distance, but incorporate modified assumptions based on observed driver behavior at intersections, according the AASHTO *Green Book*. The departure sight triangle for viewing traffic approaching from the left or right recommends a clear sight distance measured 14.5 to 18 feet from the edge of the major roadway. This is based upon studies in the AASHTO *Green Book* that show that drivers will stop their vehicle 6.5 feet or less from the edge of the roadway and that the length of the distance from the driver’s eye to the front of their vehicle is 8 feet or less.

According to observations at Quicks Lane, drivers must position the front of their vehicle on the edge of Cherry Street or slightly across the edge to see left or right. At that position, the front of the driver’s vehicle was on the edge of the traveled way (the shoulder line) and the driver’s eye was approximately 6 feet back from the

shoulder line. Sight distances were measured from that point. The sight distance looking left or right from that point is impeded by vegetation and tree limbs on the northwest corner of the intersection and by vegetation on the southwest side of the intersection. If the vegetation and tree limbs were to be trimmed, the roadway curvature and side slope looking left (to the north) out of Quicks Lane would allow for an intersection sight distance of 333 feet. If the vegetation were to be trimmed, the sight distance looking right (to the south) would allow for a sight distance of 577 feet.

Sight distances were evaluated farther back from the edge of Cherry Street, per recommendations in the AASHTO *Green Book*. The sight distance looking left or right from 10 feet into Quicks Lane is impeded by a wooden fence on the northwest corner of the intersection and by a stone pier and wrought iron fence on the southwest corner of the intersection. The sight distance looking left or right from 14.5 feet into Quicks Lane is impeded by the same wooden fence plus a large tree on the northwest corner, and by the same wrought iron fence on the southwest corner.

According to observations and measurements at Valley Road, drivers position their vehicles so that the driver's eye is between 6 and 10 feet back from the edge of Cherry Street on Valley Road. Sight distances were measured from 8 feet back and were found to be adequate.

In addition, left turns into each street were evaluated for sight distance. Table 4 shows the results of left-turn in, left-turn out and right-turn out sight distance recommendations vs. available distances.

**Table 4**  
**Intersection Sight Distances on Cherry Street**

	Left Turn In at Quicks Lane	Left Turn Out at Quicks Lane	Right Turn Out at Quicks Lane	Left Turn In at Valley Road	Left Turn Out at Valley Road	Right Turn Out at Valley Road
Major Street Speed (85 <sup>th</sup> Percentile)	40 MPH	40 MPH	40 MPH	37 MPH	37 MPH	37 MPH
Recommended Distance	325 feet	445 feet	385 feet	300 feet	410 feet	355 feet
Available Distance	465 feet	Impeded by vegetation and fence; if removed 333 feet (looking left)/577 feet (looking right)	Impeded by vegetation and fence; if removed 333 feet	568 feet	508 feet (looking left)/673 feet (looking right)	508 feet
Met (Yes or No)	Yes	No	No	Yes	Yes	Yes

Note: The grades of the minor street were at 3 percent or less, so adjustments were not factored in, per AASHTO formulas.

In summary, because of obstructions, the intersection sight distance exiting the cross street and entering Cherry Street is not sufficient to allow passenger vehicles to exit Quicks Lane to the left or right without causing motorists traveling at the 85<sup>th</sup> percentile speed of 40 MPH to slow unduly. However, it should be noted that these motorists should not be traveling at 10 MPH in excess of the speed limit to begin with. If the obstructions were removed, the intersection sight distance based on the operating speed of 40 MPH would still not be met because of the road curvature and side slope looking left (to the north) at Quicks Lane. To meet the recommended intersection sight distance without rebuilding the side slope and road curvature, the vegetation obstructions would need to be removed and the 85<sup>th</sup> percentile speed would need to be reduced from 40 MPH to 34 MPH. The intersection sight distance exiting the cross street and entering Cherry Street is met under observed conditions at Valley Road. Intersection sight distance entering the cross street for left-turning passenger vehicles on Cherry Street is met at Quicks Lane and Valley Road.

While it is desirable to provide the recommended intersection sight distances, their satisfaction is not as important as the stopping sight distance, as the stopping sight distance is required to permit traffic on Cherry Street to stop safely, if needed, while the intersection sight distance is intended to allow traffic to enter Cherry street without slowing through-traffic unduly.

The recommendations described below will lessen the intersection sight distance problem and improve the ability for vehicles exiting Quicks Lane to see oncoming traffic on Cherry Street; this will be achieved by improving sight distances from the vantage point of Quicks Lane and lowering speeds in both directions on Cherry Street approaching Quicks Lane. By slowing Cherry Street traffic, modifying the path of traffic on Cherry Street approaching Quicks Lane, and removing vegetation obstructing views from Quicks Lane, it is anticipated that intersection sight distance recommendations will be met, as measured from the driver's eye being seven feet back from the edge of the proposed traveled way. This distance would provide one additional foot back from the traveled way compared to what is currently observed to be the common practice.

### **Recommendations**

VHB recommends an incremental approach toward reducing speeds and increasing safety on Cherry Street. Improvements recommended below should be implemented first. The effectiveness of the recommendations below should be monitored for a period of at least six months following their implementation. If these improvements are ineffective, additional improvements can be investigated. They may require design, additional funding, and changing the functional classification of Cherry Street.

The functional classification of Cherry Street is a minor arterial according to the New York State Department of Transportation. The practice of placing vertical and horizontal deflection traffic calming measures such as speed humps, raised crosswalks, neighborhood traffic circles, neckdowns and chicanes is recommended by the Institute of Transportation Engineers<sup>1</sup> for residential and collector streets, and not arterial streets. VHB feels Cherry Street may be misclassified as a minor arterial. If the Town seeks to implement traffic calming improvements such as speed humps, raised crosswalks, neighborhood traffic circles, neckdowns and chicanes, the Town can seek a reclassification from the New York State Department of Transportation to a collector street. This will allow flexibility for the Town to consider speed humps and other vertical and horizontal deflection traffic calming measures. The fact that Cherry Street is an emergency service route would also need to be considered when selecting appropriate traffic calming improvements.

At Quicks Lane, it is recommended that the Town trim branches on the tree on northwest corner, trim vegetation on the west side on either side of Quicks Lane, add warning striping (hatching) with delineators on the west shoulder in advance of Quicks Lane, extend the west shoulder stripe all the way to intersection, restripe lane widths to 10.5 feet using shoulder striping (which is also recommended along all of Cherry Street as a corridor improvement), and install a permanent speed indicator sign on southbound Cherry Street in advance of Quicks Lane. If the delineators are found to be effective, a curb could be added to Cherry Street. Together, these improvements should reduce speeds and assist in increasing the sight distance available to vehicles on Quicks Lane entering Cherry Street. Furthermore, it is recommended that the effects of the improvements be monitored after a period of at least six months from implementation to allow motorists to adjust to the improved conditions. If, after the post-implementation period, travel speeds have not decreased and sight distance complaints have not decreased, it is recommended that additional traffic calming treatments be considered. Field observations after implementation will determine if the measures above will obviate the need to move fences back out of sight lines.

At Valley Road, it is recommended to stripe a high visibility crosswalk on the north leg of the intersection to raise awareness to motorists that they must yield to pedestrians in the crosswalk. In addition, advanced pedestrian warning signs in both directions and pedestrian warning signs at either side of the crosswalk are

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<sup>1</sup> <http://www.ite.org/traffic/tcdevices.asp>

recommended (four signs), along with a median “State Law: Yield to Pedestrians in Crosswalk” sign (one sign). It is also recommended to restripe lane widths to 10.5 feet using shoulder striping (which is also a corridor improvement). Together, these improvements should reduce speeds and assist in the awareness that motorists must yield to pedestrians in the crosswalk.

Table 5 below summarizes the existing data and recommended countermeasures for the two locations.

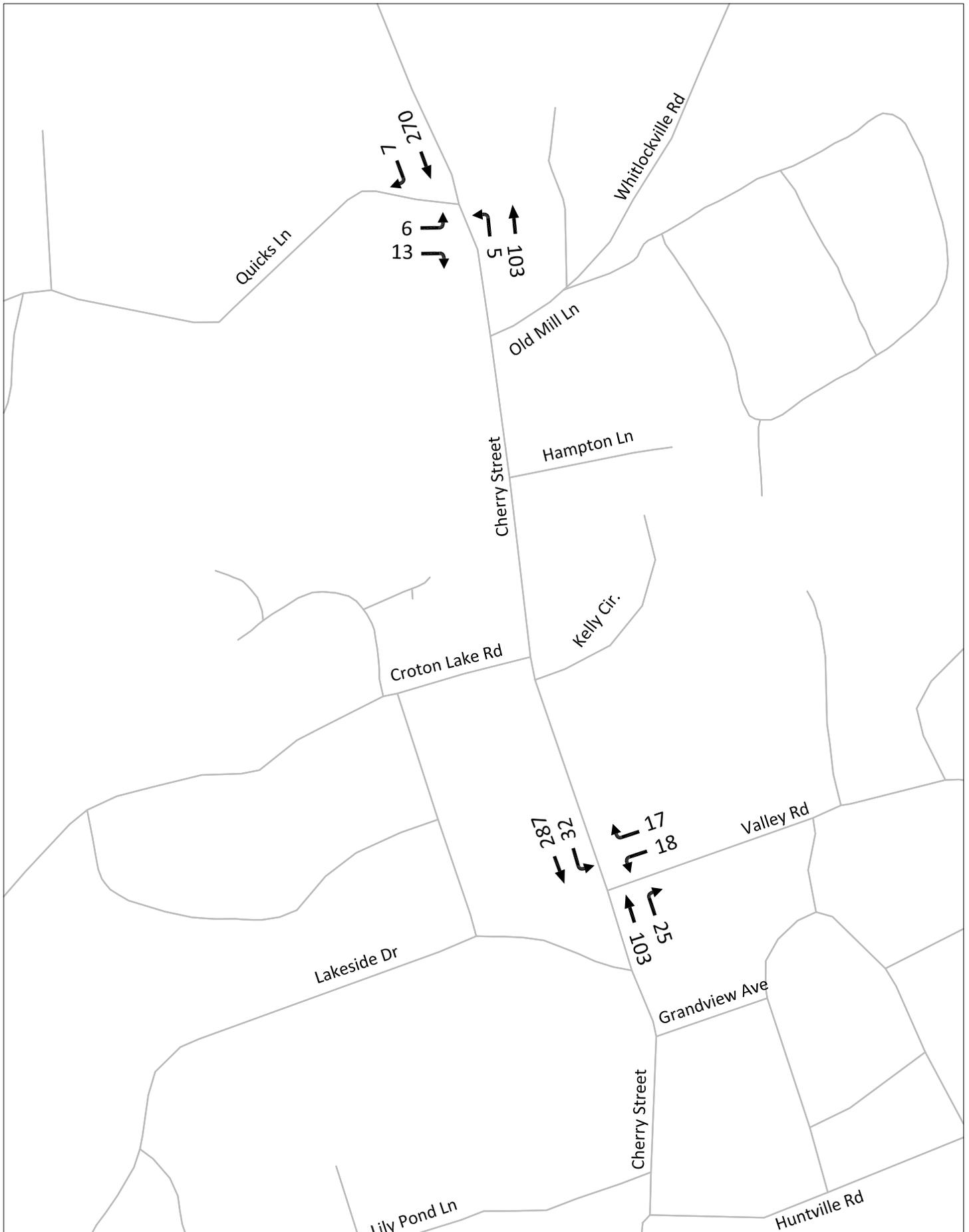
**Table 5 – Executive Summary of Data and Countermeasures**

Issue	Quicks Lane		Valley Road	
	Data	Countermeasure	Data	Countermeasure
<b>Speed</b>	85 <sup>th</sup> Percentile Speed is 40 MPH/Speed Limit is 30 MPH	Southbound approach speed indicator sign (permanent); plus, effects of lane narrowing improvements (striping) should reduce speeds. If post-implementation speed monitoring does not show decrease, consider additional traffic calming treatments.	85 <sup>th</sup> Percentile Speed is 36 MPH/Speed Limit is 30 MPH	Restripe lane widths to 10.5 feet using shoulder striping; plus, combined effects of pedestrian improvements and lane narrowing should reduce speeds
<b>Pedestrians Crossing Cherry Street</b>	0 in the AM peak hour/ 2 in the PM peak hour	There are low pedestrian volumes, a lack of crash history, and the crossing does not connect to a sidewalk on east side of Cherry Street; however, combined effects of sight distance and speed reduction improvements should make crossing distance easier/shorter	4 in the AM peak hour/ 8 in the PM peak hour	Stripe high visibility crosswalk on north leg connecting west sidewalk with Valley Road north sidewalk, add shoulder warning signage (4 signs), and add median warning signage (1 sign); also, speed reduction improvement should make crossing distance easier/shorter
<b>Traffic on Minor Approach/ Ability to Find Gaps in Cherry Street Traffic/ Stop Sign Study</b>	19 vehicles in the AM peak hour/ 12 vehicles in the PM peak hour on minor street.	There is not adequate crash history or traffic volumes on minor street to justify installing stop signs. Adequate gaps in traffic were observed and volumes are relatively low; however, combined effects of sight distance and speed reduction improvements should make it easier to turn out of Quicks Lane. Recommended to monitor effects of sight distance and speed reduction improvements to determine whether conditions are improved.	35 vehicles in the AM peak hour/ 68 vehicles in the PM peak hour on minor street.	There is not adequate crash history or traffic volumes on minor street to justify installing stop signs. Adequate gaps in traffic were observed and volumes are relatively low; however, combined effects of pedestrian and speed reduction improvements should make it easier to turn out of Valley Road. Recommended to monitor effects of pedestrian and speed reduction improvements to determine whether conditions are improved.
<b>Intersection Sight Distance</b>	Measurements indicate sight distance exiting Quicks Lane is below recommended levels for operating speed with current roadside structures.	Trim branches on tree on northwest corner, trim vegetation on west side on either side of Quicks Lane, add warning striping (hatching) with delineators (curb would be considered if delineators were found to be effective) on west shoulder north of Quicks Lane, extend west shoulder stripe to intersection, restripe lane widths to 10.5 feet using shoulder striping. Field observations after implementation will determine if the measures above will obviate the need to move fences back out of sight lines.	Measurements indicate adequate sight distance exiting Valley Road	Recommended to continue to trim lower branches of tree on southeast corner to maintain adequate sight distance
<b>Crash History</b>	Average of one per year (5+ per year indicates need for stop sign)	Combined effects of sight distance and speed reduction improvements should increase safety	Average of two per year (5+ per year indicates need for stop sign)	Combined effects of pedestrian and speed reduction improvements should increase safety

In addition to the recommendations above, it is recommended that the entirety of the street be restriped to provide 10.5-foot wide travel lanes using shoulder striping to reduce speeds, provide additional buffer between vehicles and pedestrians on the sidewalk or side of the road, as well as vehicles waiting to access Cherry Street. It is also recommended that existing stop signs and stop bar stripes on cross streets be evaluated for adequate size and location, overhead street lighting be evaluated to make sure it is not obstructed, and signage and striping along the corridor be evaluated for adequate retroreflectivity.

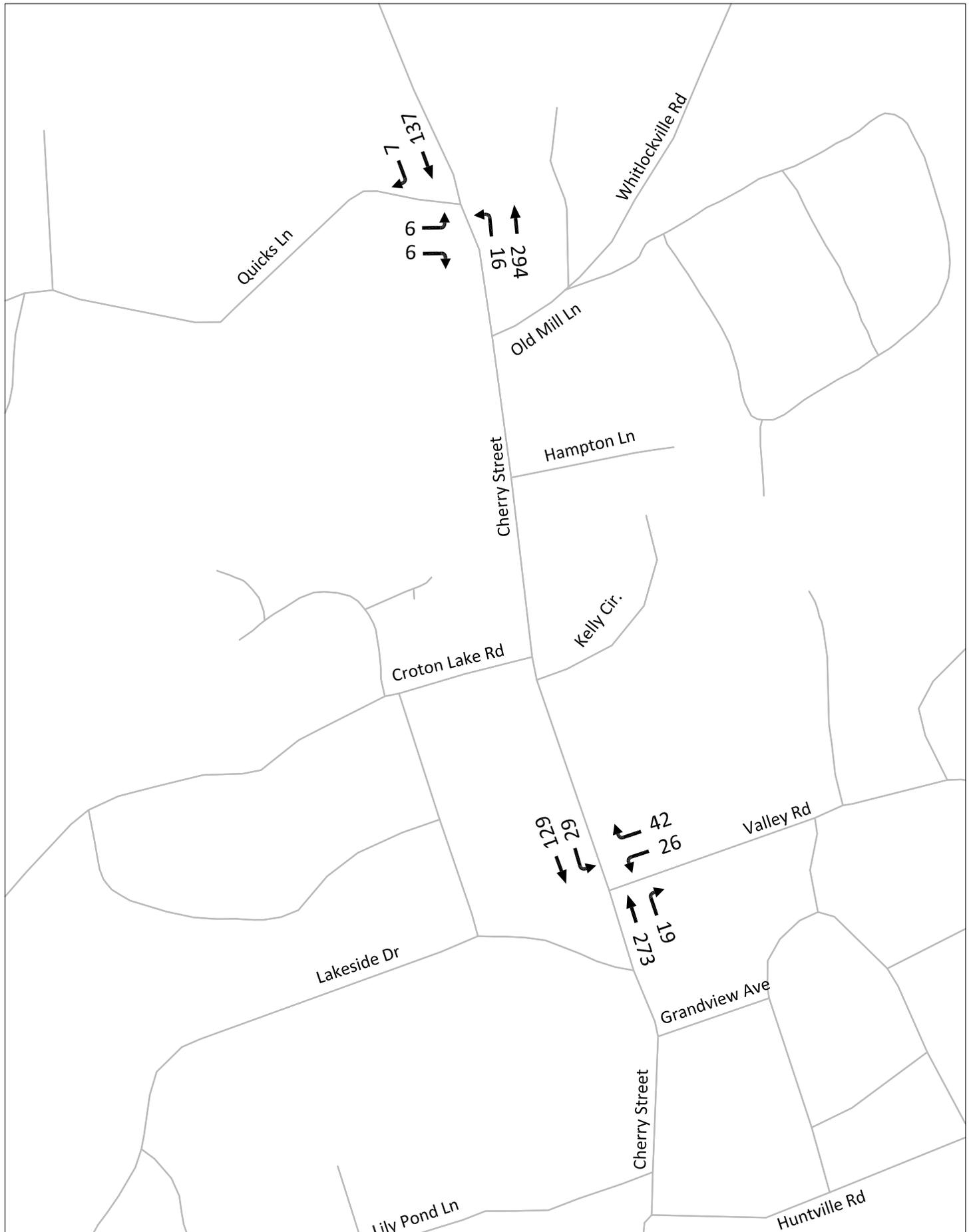
The recommendation of a resident to prohibit eastbound right turns from NY Route 35 onto Cherry Street was assessed. This measure would most likely shift traffic onto Whitlockville Road (the next closest route to southbound Cherry Street) and other streets, creating adverse impacts, and it is not recommended that this be considered.

The Federal Highway Administration Office of Safety's multidisciplinary "4-E" approach can be undertaken to maximize the effect of the traffic calming improvements. The 4 Es are Education, Enforcement, Engineering and EMS. By using proven safety education campaign materials such as lawn placards and announcements at public events/spaces, the implementation of engineering improvements can be publicized. Also, having a planned law enforcement campaign timed with the implementation of a safety education campaign and engineering improvements can maximize the impact and awareness of traffic calming efforts on Cherry Street. To maximize the awareness and effectiveness of these improvements, the Town should consider enforcement campaigns and a safety education campaign concurrent with the implementation of the engineering improvements.



**Bedford Cherry Street Traffic Calming Study**

Figure 1  
Weekday AM Peak Hour Existing Volumes



**Bedford Cherry Street Traffic Calming Study**

Figure 2  
Weekday PM Peak Hour Existing Volumes

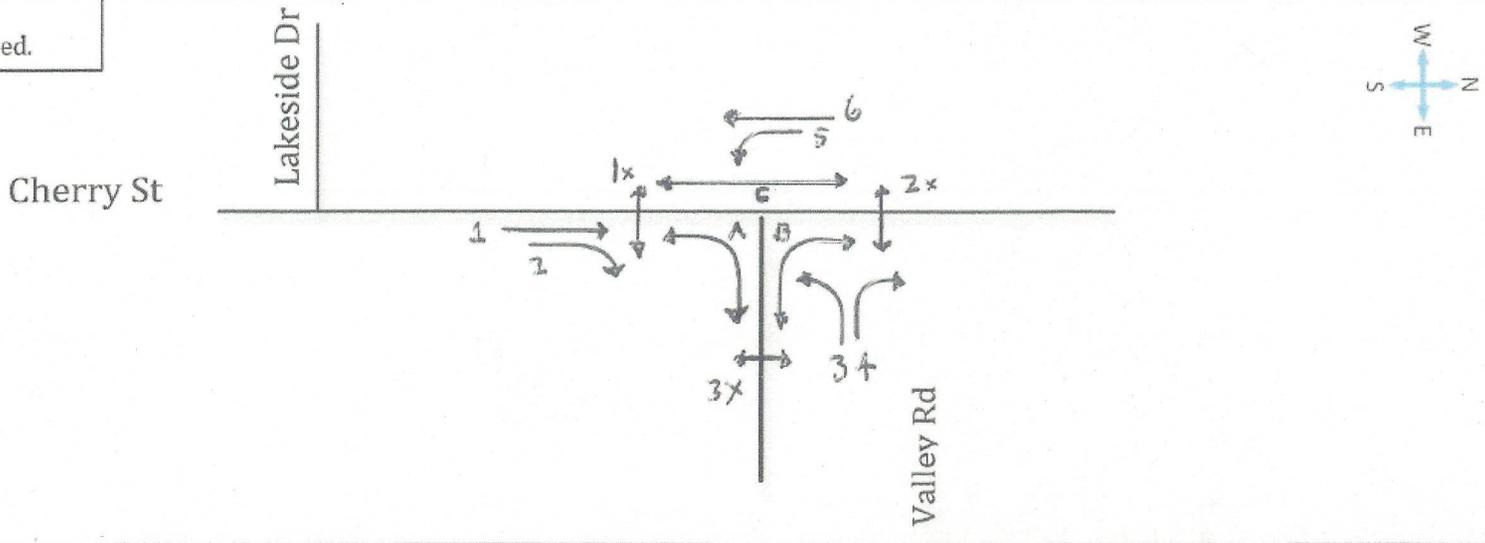
Job Title: CHERRY ST Project  
 Location: Bedford NY Sept. 3, Wednesday 2014

Weather : \_\_\_\_\_  
 Field Tech: \_\_\_\_\_

**TDC** TRAFFIC DATA COLLECTIONS  
 914-629-6815 cell914-302-6326 fax-

time	1		2		3		4		5		6		peds			bikes			peds			bikes		
	cars	bikes	1x	2x	3x	1x	2x	3x	A	B	C	A	B	C										
7:15-30a	24	1	4	-	5	-	2	1	3	-	36	-		1								1		
7:45	18	-	7	-	3	-	6	-	3	-	68	-		1							1			
8:00	25	-	7	-	5	-	4	-	10	-	72	-		2	2						1			
8:15	17	-	4	-	2	-	7	-	8	-	80	-		1							1			
8:30	25	-	5	-	2	-	3	-	12	-	67	-		1							1			
8:45	36	-	9	-	9	-	3	-	2	-	68	-		-	-						1			
9:00	20	-	3	-	2	-	6	-	10	-	62	-				3					-			
9:15	30	-	7	-	3	-	6	-	8	-	60	-									-			
time	cars	bikes	1x	2x	3x	1x	2x	3x	A	B	C	A	B	C										
4:15-30p	39	-	3	-	7	-	4	-	4	-	33	-									1			
4:45	65	-	5	-	3	-	13	-	8	-	29	-									-			
5:00	61	-	5	-	6	-	5	-	7	-	30	-	2								-			
5:15	64	-	3	-	9	-	14	-	7	-	39	1	1								1			
5:30	83	-	6	-	8	-	10	-	7	-	31	-	-	1			1				-			
5:45	68	-	7	-	7	-	6	-	4	-	27	1	-	4							1		1	
6:00	54	-	5	-	5	-	9	-	9	-	27	-	-	2							-		-	
6:15	63	-	5	-	7	-	5	-	5	-	19	-	-	-							2		2	

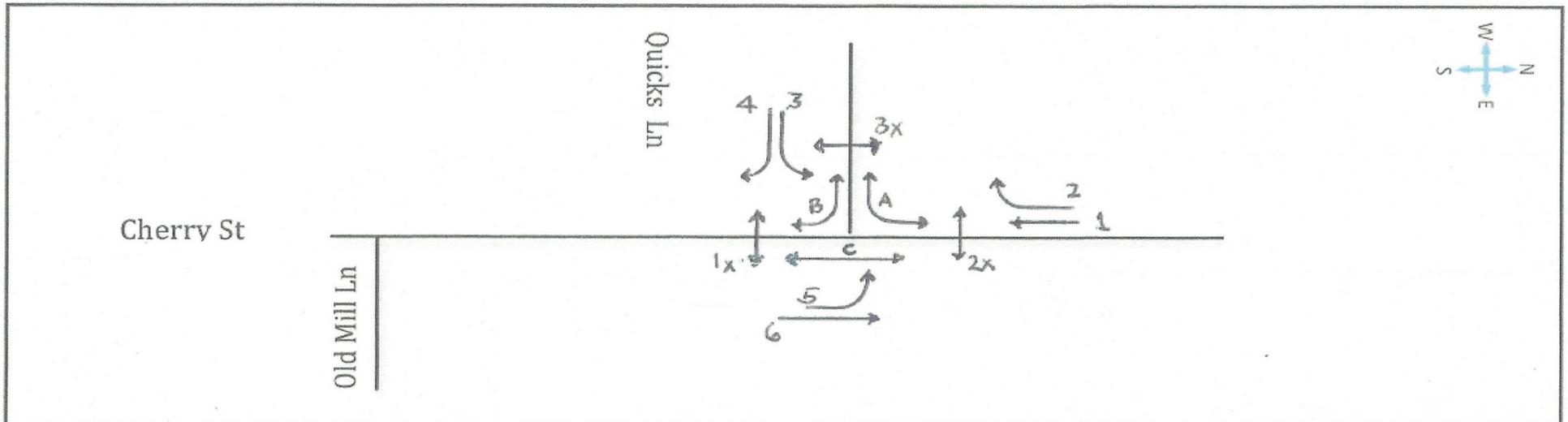
Cherry St / Valley Rd Rd  
 This intersection is **not** signalized.



Job Title: CHERRY ST Project Weather : \_\_\_\_\_  
 Location: Bedford NY Sept. 3, Wednesday 2014 Field Tech: \_\_\_\_\_

**TDC** TRAFFIC DATA COLLECTIONS  
 914-629-6815 cell914-302-6326 fax-

time	1		2		3		4		5		6		peds			bikes			peds			bikes		
	cars	bikes	1x	2x	3x	1x	2x	3x	A	B	C	A	B	C										
7:15-30a	34	-	2	-	1	-	1	-	3	2	21	-	-	-	-	-	-	-	-	-	-	-	-	-
7:45	67	-	3	-	1	-	3	-	0	-	20	-	-	-	-	-	-	-	-	1	-	-	-	
8:00	68	-	0	-	2	-	5	-	1	-	29	-	-	-	-	-	-	-	-	-	-	-	-	
8:15	74	-	1	-	2	-	1	-	1	-	19	-	-	-	-	-	-	-	-	1	-	-	-	
8:30	65	-	1	-	1	-	3	-	2	-	27	-	-	-	-	-	-	-	-	-	-	-	-	
8:45	63	-	5	-	1	-	4	-	1	-	28	-	-	-	-	-	-	-	-	-	-	-	-	
9:00	71	-	2	-	0	-	2	-	2	-	21	-	-	-	-	-	-	-	-	-	-	-	-	
9:15	43	-	2	-	2	-	9	-	0	-	37	-	-	-	-	-	-	-	-	-	-	-	-	
time	cars	bikes	1x	2x	3x	1x	2x	3x	A	B	C	A	B	C										
4:15-30p	26	-	2	-	2	-	2	-	2	-	41	-	-	-	-	-	-	-	-	-	-	-	-	
4:45	36	-	4	-	1	-	2	-	4	-	70	-	-	-	-	-	-	-	-	-	-	-	-	
5:00	24	1	1	-	1	-	3	4	1	-	68	-	-	-	-	-	-	-	1	-	-	-	-	
5:15	37	-	2	-	2	-	0	-	5	-	73	-	-	-	-	-	-	-	-	-	-	2	-	
5:30	40	-	0	-	2	-	1	-	6	-	83	-	-	-	-	-	-	-	-	-	-	-	1	
5:45	28	-	2	-	2	-	2	-	3	-	65	-	-	2	2	-	-	-	1	-	-	-	-	
6:00	26	-	1	-	2	-	1	-	2	-	45	-	-	-	-	-	-	-	-	-	-	-	-	
6:15	20	-	4	-	1	-	0	-	2	-	69	-	-	-	-	-	-	-	1	-	-	-	-	



Key to movements=

1x 2x 3x represent crossing of streets by peds and by bikes

A B & C represent bikes and peds who do not cross street but rather traverse along roadway.

## Special Note:

Cherry St Project 9/3/14

### **AM 7:15–9:15 Cherry St and Quicks Ln**

- it might be noteworthy to mention that appx 7:00am before our official study period began we observed 10 school age children accumulating at zone B. They were picked up at 7:10am by the school bus. Another school bus arrived at 7:54am and stopped shortly, neither picking up or dropping off peds. Possibly a practice run for the opening of school.
- There was significant police activity appx 50' south of our posting position at the intersection of Cherry St and Quicks Ln. 2 patrol cars with flashing lights remaining appx from 8:15–9am. The officers appeared to be measuring some portion of the roadway.

### **Cherry St and Valley Rd**

- A southbound school Bus stopped at 7:33am appx 50' north of the Valley Rd Cherry St intersection at the east-side of cherry st to pickup school children at 7:33 am
- We also observed school buses Northbound stopping at the intersection of Cherry St (west-side) and Croton Lake Rd at the following times 8:57am and 9:12am

**PM 4:15–6:15**

**no special notes**