

DRAFT

**LEROY STREET
ROAD SAFETY ASSESSMENT**

**CITY OF BINGHAMTON
BINGHAMTON METROPOLITAN TRANSPORTATION STUDY
AUGUST 2024**



OVERVIEW

The city of Binghamton requested that a Road Safety Assessment (RSA) be conducted for Leroy Street. An RSA is a proactive, low-cost tool to identify safety issues of roads and intersections. An RSA involves a performance examination of an existing or planned transportation facility by an independent multidisciplinary team. The assessment team considers the safety of all users and suggests opportunities where safety can be improved. Leroy Street was chosen as a good candidate for an RSA given safety concerns identified by the City and the potential to improve safety through implementation of safety countermeasures.

BACKGROUND

Leroy Street is a local street, owned and maintained by the city of Binghamton. It serves as an urban collector street by attracting traffic from local streets in the surrounding residential neighborhood and channeling it into the primary arterial road system. The entire corridor has two travel lanes, one eastbound and one westbound. On-street parking is permitted on both sides of Leroy Street, except when alternate side street parking rules are in effect. Leroy Street, between Front and Beethoven Street, serves as a bus line for BC Transit and BU's OCCT.

The decision to conduct a road safety assessment at this location was made in response to the following items:

1. The number of crashes that have occurred over the past 3 to 5 years, including 1 fatality at Chapin Street.
2. Safety concerns expressed by residents related to traffic speeds and vehicle and pedestrian safety.

Primary Goals

1. Improve vehicle, pedestrian and bicycle safety
2. Reduce crashes at intersections by:
 - Reducing vehicle speeds
 - Improving adherence to traffic control devices

ROAD SAFETY ASSESSMENT PROCESS

BMTS staff conducted a crash analysis for the three-year period between March 21, 2021 and March 31, 2024. Over this three-year period there were 89 total crashes. Two crashes involved pedestrians, one of which involved the pedestrian walking during the 'do not walk' pedestrian light phase at Front Street and one where the pedestrian was crossing outside of the crosswalk near Chestnut Street. Thirty-nine of the crashes, or nearly 40 percent of the total, were right angle. Based on the crash diagrams it appears that most of these right-angle crashes occurred

when vehicles traveling on the minor streets failed to yield the right of way to vehicles traveling along Leroy Street.

On July 16 and September 26, 2024 the RSA Team conducted walking audits of the corridor. To familiarize everyone with the process and purpose of a Road Safety Assessment a brief was held onsite with the RSA Team.

The RSA Team was composed of the following individuals:

- Megan Heiman, Binghamton Deputy Mayor
- Jasmin Mujcic, Binghamton Police Department
- Joshua Paludi, Binghamton Commissioner of Public Works
- Hadassah Mativetsky, Binghamton City Council President
- Kinya Middleton, Binghamton Council Member 2nd District
- Robert Cavanaugh, Binghamton Council Member 3rd District
- Duane Kozak, Leroy St neighbor
- Marlene Lausen, Chapin St neighbor
- Paul Suhadolnik, Leroy St neighbor
- Jennifer Yonkoski, BMTS
- Scott Reigle, BMTS
- Leigh McCullen, BMTS



Following the walking audits, this report was prepared by BMTS staff and circulated to the city of Binghamton before being finalized.

STUDY AREA CHARACTERISTICS, OPERATIONS AND SAFETY ISSUES

The study area involves Leroy Street from Front Street to Crestmont Avenue. The average annual daily traffic (AADT) of Leroy Street is approximately 4,000 (source: NYSDOT Traffic Data Viewer). The posted speed limit is 30 mph. A double yellow center line divides the two travel lanes along Leroy Street. Parking is permitted on both sides of the road. ‘No Parking Here to Corner’ signs are located at most intersections, but in some cases are missing. Many of these signs need replacing and, in some cases, need to be relocated to meet the City’s Traffic Code.

For the purposes of conducting the walking audit the corridor has been separated into two character areas based upon land use and parking, west Leroy and east Leroy. West Leroy, from Millard west, is primarily single-family residential. This section of the corridor contains 7 four-way intersections, 3 of which are all-way stop controlled and 4 two-way stop controlled on the minor streets, and one T-intersection (Westland Court).

East Leroy, from Millard east to Front Street, transitions from single-family and two-family residential from Millard to Chestnut, to a mixture of commercial and medium density residential buildings. On-street parking demand on east Leroy is near capacity during the

academic year at Binghamton University, with demand drastically decreasing during summer break. This section of the corridor contains 7 four-way intersections and one T-intersection (Florence). Three of these intersections are controlled by traffic signals and one is an all-way stop control (Oak Street). The four other intersections, Walnut, Chapin, and Murray have stop signs controlling the minor streets (Walnut, Chapin and Murray). Traffic on Leroy does not stop at these intersections. Walnut, Chapin, and Murray Street all change from two-way traffic south of Leroy Street to one-way traffic north of Leroy Street.

Observationally, on-street parking usage is higher between Front and Chestnut and dissipates westward to near zero usage on most occasions west of Rotary.

Sidewalks are located throughout the study area; however, some sections of sidewalk need replacing to mitigate tripping hazards. Painted crosswalks, a vital component of pedestrian access and safety, are missing at many intersections. Curb ramps are also missing or non-compliant with ADA standards at many intersections, particularly east of St. John. During the walking audit, several pedestrians were observed crossing at intersections, particularly across Leroy near bus stops, where pedestrian facilities are lacking.

SAFETY ISSUES AND CRASH ANALYSIS

Accidents from a three-year period between March 2021 and March 2024 were reviewed and evaluated for potential patterns and contributing factors. Right angle crashes were the most frequent, primarily due to vehicles on cross streets not yielding the right of way to through traffic on Leroy Street. The conditions and placement of regulatory signs, lack of pavement markings, limited lines of sight due vegetation and vehicles parked too close to intersections are likely contributing factors to these crashes.

The crash histories at all intersections were reviewed to determine specific crash patterns that could potentially be reduced with specific FHWA (Federal Highway Administration) safety countermeasures. Most of the intersections did not have a clear crash pattern, in these cases basic safety improvements are recommended. The intersections at Millard and Chapin had the highest percentage of right-angle crashes compared to total crashes at these locations, representing a clear crash pattern. These intersections were therefore further evaluated against the MUTCD warrants for all way stop control.

ALL-WAY STOP CONTROL EVALUATION – CHAPIN AND MILLARD

The Transportation Research Board Guidance for Implementation of the Strategic Highway Safety Plan states that all-way stop control can reduce right-angle and turning collisions at unsignalized intersections by providing more orderly movement at an intersection, reducing through and turning speeds, and minimizing the safety effect of any sight distance restrictions that may be present.

The potential for installation of an all-way stop control at Chapin and Leroy was discussed during the walking audit and has been evaluated against the MUTCD warrants for an all-way stop control. Millard was also evaluated for an all-way stop due its right-angle crash pattern. Two of the five warrants have been met at both of these intersections (see details below).

It is important to note that the MUTCD states that the satisfaction of an all-way stop control warrant or warrants shall not in itself require the installation of all-way stop control at an unsignalized intersection. Further, the Transportation Research Board Guidance states that all-way stop control is suitable only at intersections with moderate and relatively balanced volume levels on the intersection approaches. Under other conditions, the use of all-way stop control may create unnecessary delays and aggressive driver behavior (i.e., deliberate ignoring of the stop control).

Traffic volumes are not balanced at the intersection approaches, with Chapin and Millard having significantly less traffic than Leroy Street. There is therefore the potential that implementation of all way stops at these intersections could result in unnecessary delays and aggressive driver behavior which could result in crashed.

CHAPIN AND LEROY INTERSECTION SAFETY ANALYSIS

Chapin Street carries one travel lane southbound north of Leroy Street and permits two-way traffic south of Leroy Street. Chapin Street is controlled by stop signs and Leroy Street does not have to stop. Curb ramps are not compliant across Chapin Street and are missing across Leroy. There are no crosswalks. No parking here to corner pavement markings area present but likely do not meet standards on Chapin.

There was a total of 12 crashes at the intersection as follows:

- 8 right-angle caused by vehicles traveling southbound on Chapin failing to yield the right of way to vehicles traveling east bound on Leroy
- 1 left turn against traffic caused by a vehicle traveling westbound on Leroy turning left into oncoming eastbound traffic
- 1 right angle caused by northbound Chapin vehicle turning left onto Leroy failing to yield right-of-way to east bound vehicle
- 2 tree strikes

A member of the walking audit team indicated that they have difficulty seeing oncoming traffic at this intersection whether they are on foot or in a vehicle, due to vehicles parked along Leroy Street. A large shrub at the northwest corner of Leroy Street was also observed to be blocking sight lines during the audit. Many of the vehicle operators involved in crashes reported that they were unable to see oncoming traffic, therefore lack of adequate sight distance is likely a contributing factor to at least some of the right-angle crashes.

MUTCD All-Way Stop Control Warrant Analysis for Chapin at Leroy

Warrant A: Crash Experience – *All-way stop control may be installed at an intersection where an engineering study indicates that: For a four-leg intersection, there are five or more reported crashes in a 12-month period or six or more reported crashes in a 36-month period that were of a type susceptible to correction by the installation of all-way stop control.*

Warrant Met – there were 12 total crashes 7 of which were right angle during a 36-month period

Warrant B: Sight Distance - *All-way stop control may be installed at an intersection where an engineering study indicates that sight distance on the minor-road approaches controlled by a STOP sign is not adequate for a vehicle to turn onto or cross the major (uncontrolled) road. At such a location, a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop.*

Warrant met: As discussed above sight distance has been found to be a potential contributing factor. However, as a first step sight distance could potentially be improved by increase the distance from the intersection that vehicles can park and by trimming/removing encroaching vegetation.

Warrant C: Transition to Signal Control or Transition to Yield Control at a Circular Intersection

Not applicable

Warrant D: 8-Hour Volume (Vehicles, Pedestrians, Bicycles)

Warrant not met, traffic volumes not exceeded

E: Other Factors: *All-way stop control may be installed at an intersection where an engineering study indicates that all-way stop control is needed due to other factors not addressed in the other all-way stop control warrants. Such other factors may include, but are not limited to, the following: A. The need to control left-turn conflicts, B. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where all-way stop control would improve traffic operational characteristics of the intersection, or C. Where pedestrian and/or bicyclist movements support the installation of all-way stop control*

No other factors have been identified at this time.

MILLARD AND LEROY INTERSECTION SAFETY ANALYSIS

Millard and Leroy is a two-way stop-controlled intersection, with stop signs controlling movements on Millard. The intersection does not have any crosswalks and no parking here to corner signs and pavement markings are missing on Leroy Street.

There was a total of 7 crashes at the intersection as follows:

- 6 right-angle caused by vehicles traveling northbound on Millard failing to yield the right of way to vehicles traveling west bound on Leroy
- 1 caused by a vehicle overtaking another along Leroy Street

Many of the vehicle operators involved in crashes reported that they were unable to see oncoming traffic, therefore lack of adequate sight distance is likely a contributing factor to the 8 right angle crashes.

A large shrub at the southeast corner of Leroy Street was also observed to be blocking sight lines during the walking audit. Since the right-angle crashes involve northbound vehicles failing to yield the right of way to west bound vehicles it is feasible that the shrub is blocking sight distance. Lower branches of a tree to the east of the intersection may also impede views looking eastbound toward westbound traffic. Smaller shrubs at the southwest corner may also impede views of vehicles with lower vertical clearance.

MUTCD All-Way Stop Control Warrant Analysis for Chapin at Leroy

Warrant A: Crash Experience – *All-way stop control may be installed at an intersection where an engineering study indicates that: For a four-leg intersection, there are five or more reported crashes in a 12-month period or six or more reported crashes in a 36-month period that were of a type susceptible to correction by the installation of all-way stop control.*

Warrant Met – there were 7 total crashes 6 of which were right angle during a 36-month period

Warrant B: Sight Distance - *All-way stop control may be installed at an intersection where an engineering study indicates that sight distance on the minor-road approaches controlled by a STOP sign is not adequate for a vehicle to turn onto or cross the major (uncontrolled) road. At such a location, a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop.*

Warrant met: As discussed above sight distance has been found to be a potential contributing factor. However, as a first step sight distance could potentially be improved by trimming/removing encroaching vegetation and adding no parking here to corner signage and paving markings on Leroy Street.

Warrant C: Transition to Signal Control or Transition to Yield Control at a Circular Intersection

Not applicable

Warrant D: 8-Hour Volume (Vehicles, Pedestrians, Bicycles)

Not applicable, traffic volumes not exceeded

E: Other Factors: *All-way stop control may be installed at an intersection where an engineering study indicates that all-way stop control is needed due to other factors not addressed in the other all-way stop control warrants. Such other factors may include, but are not limited to, the following: A. The need to control left-turn conflicts, B. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where all-way stop control would improve traffic operational characteristics of the intersection, or C. Where pedestrian and/or bicyclist movements support the installation of all-way stop control*

No other factors have been identified at this time.

ALL-WAY STOP CONTROL RECOMMENDATION FOR MILLARD AND CHAPIN INTERSECTIONS

BMTS would suggest that the City implement all of the other recommendations in this report for signage, striping and clearing lines of sight as soon as possible. If these efforts fail to minimize crashes, then these intersections can be reevaluated for all-way stop control. However, the City should consider geometric traffic calming changes to the intersections, such as raised intersections throughout the corridor, in lieu of implementing all way stop controls.

The final decision to install an all-way stop control in the near term or in the future will ultimately be up to the judgement of the City's Traffic Board.

RSA FINDINGS AND RECOMMENDATIONS

CORRIDOR WIDE

OBSERVATIONS AND SAFETY CONCERNS

As discussed above, right-angle crashes represent the most significant safety concern corridor wide. This type of crash has the greatest potential to cause injury to drivers. Pedestrian safety is also a concern although crash history involving pedestrians over the three-year crash analysis period was extremely low.

Intersection Safety

Traffic Signs and Pavement Marking Deficiencies:

Stop Signs – Many stop signs are too tall. Stop signs should be posted at a height of 7 feet from the bottom of the sign to the ground.

No Parking Here to Corner Signs and Associated Pavement Markings – Many of the 'No Parking Here to Corner' signs and associated pavement markings are located less than 30 feet from intersections. According to the City's Vehicle and Traffic Code parking is prohibited within 30 feet of an intersection to allow for adequate sight distance.

Visibility at intersections – Parking and vegetation are encroaching clear lines of sight at many of the street intersections, making it difficult to observe on-coming traffic and pedestrians. This is particularly dangerous at locations where traffic on Leroy is not required to stop.

A member of the walk audit team stated that it is particularly difficult to see on-coming traffic when trying to enter Leroy Street from Chapin whether as a pedestrian or a driver, due to the location of parked vehicles. It was also noted during the audit that a large shrub at the northwest corner of Chapin and Leroy is also encroaching into the line of sight.

Other intersections with visibility issues include Murray, Walnut, Millard, and Laurel.

Pedestrian Safety

Some of the existing curb ramps are non-compliant with ADA standards or are missing, particularly between Front Street and St John Avenue. Curb ramps and painted crosswalks are also missing at intersections (see detailed analysis of intersections below). Pedestrians were observed crossing at locations that lacked curb ramps and crosswalks. Tripping hazards are present at various locations where sections of sidewalk have been displaced.

Trash and debris were observed within the right-of-way west of Chestnut, making conditions unpleasant for walkers and degrading the quality of the neighborhood.

Traffic Islands

Traffic islands are currently located through the center line of Leroy Street from Rotary Avenue to Matthews Street. Traffic islands are considered a safety counter measures by FHWA because they have the effect of narrowing travel lanes which can reduce vehicle speeds, as well as reducing turning conflicts. Since vehicle speeds was a concern raised during the study it is not recommended that the islands be removed because doing so may result in even higher speeds. However, vegetation near the ends of each of the islands is likely impacting sight distances and should be trimmed so that vehicles approaching Leroy from the minor streets can better view oncoming traffic.

Since the time of walking audit the City has trimmed the shrubs in the traffic islands to at below 3 feet. This has greatly improved sight distances. The City should maintain this height of the shrubs.

Bicycle Facilities

Sharrows were at one time painted from Front Street to St. John Avenue but have since faded and are no longer visible. The corridor does not currently have specific bicycle facilities although observationally Leroy Street is used by bicycle and other micromobility riders.

One-Way Streets

St. John, Walnut, Chapin and Murray are one-way streets north of Leroy and two-way streets south of Leroy. This change in street access may cause confusion to drivers and may be ignored by some. Walnut Street was the only one of these streets that had crashes reported that involved wrong way driving (3 crashes). The widths of these streets are approximately the same south of Seminary but are slightly narrower north of Seminary. Parking is permitted on both sides of the streets, except for Murray north of Leroy although vehicles were observed parking on both sides of Murray during the walking audit.

Converting these streets into two-way streets would address traffic safety hazards caused by wrong way driving. To address these issues effectively the conversions would need to happen along the entire length of the one-way segments of these streets which extend from Leroy to North Streets. The City would need to undertake a comprehensive analysis to see if this change is feasible. Primary issues for consideration include, but are not limited to, impacts to parking, travel lane widths, emergency vehicle response times and alterations to signage, traffic control and sight lines. Regarding parking, the city could either consider limiting parking to one-side of these streets or continue to allow parking on both sides with the understanding that when vehicles are passing through a segment at the same time one vehicle would have pull to the right and yield to allow the other car to pass (referred to as self-yielding streets). These same streets south of Leroy (and many other streets in Binghamton) are already self-yielding streets. Self-yielding street have the effect of forcing vehicles to travel at slower speeds.

Traffic Enforcement

During the walking audit neighbors express concerns regarding vehicle speeds and non-compliance with traffic control devices and the lack of traffic enforcement to help address these concerns. The City did install a variable real time speed sign for a period of time recently to alert drivers of how fast they were traveling.

The City should consider applying for traffic enforcement funds through the NYS Governor’s Traffic Safety Committee Highway Safety Grant Program. This is an annual grant program that supports local municipal traffic enforcement programs. More information about this program is available at this link:

[Law Enforcement | Governor's Traffic Safety Committee \(ny.gov\)](#)

Vehicle Speeds and Geometric Traffic Calming Techniques

One of the goals of this assessment is to identify methods to lower vehicle speeds throughout the corridor and particularly at intersections where crashes or the potential for crashes is occurring. Speed data was collected between November 19 and November 21, 2024. The average speed between Chestnut Street and Laurel Avenue was 28 mph, with 66 percent of vehicles traveling at or below the 30 mph speed limit and 44 percent of vehicles traveling over the speed limit. Between Kneeland Avenue and Crestmont Road the average speed was 24 mph, with 93 percent of vehicles traveling at or below the 30 mph speed limit and 7 percent of vehicles traveling over the speed limit (see Attachment D).

If a road is designed to allow a speed higher than the posted speed limit drivers will often drive faster than the limit whether intentional or not. Signage and pavement markings only work to the extent that drivers pay attention and obey them.

The primary way to reduce traffic speeds and calm traffic is to make geometric alterations to the roadway that force drivers to drive slower. FHWA recommends several countermeasures that involve geometric alternations, such as curb extensions, chicanes, roundabouts, speed tables, and raised crosswalks, each with differing benefits and limitations depending on where they would be applied. BMTS considered these options in the context of the existing roadway geometry, the bus routes and stops operated along Leroy by BC Transit and OCCT, the presence of stormwater inlets, on-street parking, and traffic volumes.

The following measures were determined to be potentially the most feasible along Leroy Street to address the issues identified in this assessment. It is important to note that the measures should be applied systemically along the corridor and more detailed engineering study and design would need to be undertaken to determine the best option or options. Other options not listed below could also be considered if a detailed engineering study is undertaken.

1. Raised Intersections – Most suitable treatment for Leroy Street (see Attachment A)

The following are excerpts from FHWA's Toolbox of Individual Traffic Calming Measures, see <https://highways.dot.gov/safety/speed-management/traffic-calming-epimer/module-3-part-2#3.15> for more details:

A raised intersection is a flat, raised area covering an entire intersection with ramps on all approaches. It is essentially a speed table that covers an entire intersection, including the crosswalks.

The purpose of a raised intersection is to slow vehicle traffic through the intersection and to improve safety for pedestrians. It has the advantage of calming two streets at once.

Can be an appropriate application for a primary emergency vehicle route or on street that provides access to a hospital or emergency medical services.

Can be an appropriate application for a bus transit route.

Likely requires redesign of surface drainage structures that serve the intersection and approach legs.

2. Neighborhood Traffic Circles (not roundabout) (see Attachment B)

A traffic circle is a raised island, placed within an unsignalized intersection, around which traffic circulates. A circle forces a motorist to use reduced speed when entering

and passing through an intersection, whether the vehicle path is straight through or involves a turn onto an intersecting street. A traffic circle can have Stop signs or Yield signs on the intersection approaches.

The primary benefit of a traffic circle is an expected reduction in the number of right-angle and turning collisions. An additional benefit is that it can slow high-speed traffic at the intersection.

Not appropriate along a primary emergency vehicle route or on a street that provides access to a hospital or emergency medical services.

In general, a transit route should not include a left turn at a traffic circle. Buses are currently turning left at Leroy and Beethoven, therefore this application by not be suitable.

May require redesign of surface drainage structures that serve the intersection and approach legs.

3. Corner Extensions (see Attachment C)

A curb extension is a horizontal extension of the sidewalk into the street resulting in a narrower roadway section. The effect of a corner extension on vehicle speeds is limited because of the absence of either a pronounced vertical or horizontal deflection. Its primary purpose is to "pedestrianize" an intersection. A corner extension (with a reduced corner radius) slows automobile turning speeds, shortens pedestrian crossing distance, and increases pedestrian visibility.

Can be appropriate along a primary emergency vehicle route or street that provides access to a hospital or emergency medical services (if appropriate turning radii can be provided).

May not be appropriate where a bus turns along a transit route if an adequate turning radius cannot be provided; this would currently only apply at Beethoven Street. The stop bar on the opposite travel lane on the receiving leg of the intersection may need to be moved back to accommodate frequent transit vehicles making a turn.

RECOMMENDED CORRIDOR WIDE IMPROVEMENTS (MORE DETAILED INTERSECTION COMMENTS ARE BELOW)

- Bring all existing curb ramps into ADA compliance.
- Add ADA compliant curb ramps where they are missing across Leroy Street and the minor streets at each intersection.

- Add painted high visibility ladder style crosswalks at all intersections, including across Leroy Street and the minor streets. The installations of crosswalks will need to be coordinated with the installation of curb ramps where currently missing.
- Add painted stop bars in conjunction with crosswalks at stop signs.
- Repair/replace sidewalks as needed to correct tripping hazards.
- A portion of sidewalk on the south side of Leroy Street just west of Front Street has been paved over with asphalt and should be restored to concrete to match the existing sidewalks on Leroy.
- Clear vegetation from sight lines at intersections to insure clear visibility of on-coming traffic. Much of the vegetation encroaching into sight lines is located on private property, therefore the City will need to coordinate with property owners.
- Check height of all signs (many stop signs were observed to be too tall) and correct where needed. The MUTCD (Manual of Uniform Traffic Control Devices) states that all signs should be posted with the bottom of the sign measuring 7 feet to the ground in an urban area. A supplemental sign (such as an 'all way stop' placard) can be placed below a stop sign and not adhere to the 7-foot height.
- Check for and clear visual obstructions (primarily due to trees and shrubs) from all street signs.
- Verify that 'No Parking Here to Corner' signs are setback a minimum of 30 feet from each intersection and replace/relocate non-compliant signs. According to the MUTCD the 30 feet should be measured from the crosswalk.
- In conjunction with above, repaint yellow 'no parking' zones on roadway at corner areas as needed.
- Address trash accumulation, primarily west of Millard, and the upkeep and maintenance of sidewalk areas, including utility strips/snow storage areas.
- Paint bicycle sharrows along the length of Leroy Street. Previously sharrows were painted between St. John and Front Street but have faded over time.

PRIORITY FOR CONSIDERATION

High. Many of these recommendations are low cost and would bring the corridor into compliance with ADA standards and the MUTCD, which are intended to improve traffic and pedestrian safety, and therefore should be completed as soon as possible.

INTERSECTION SPECIFIC RECOMMENDATIONS

Please note the following depictions of crosswalks and potential signage locations superimposed on aerial photographs of intersections are conceptual only and are not intended for design purposes. Actual sizes and locations of all improvements would be determined by the city of Binghamton prior to installation.

Murray Street and Leroy Street



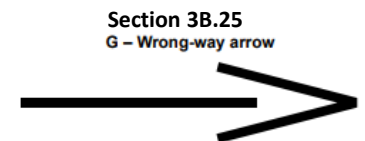
Traffic controlled by Stop Signs on Murray. Murray Street in one-way northbound north of Leroy Street. 12 total reported crashes, 6 of which were vehicles from north bound Murray failing to yield right-of-way to Leroy Street.

High Priority - Low-Cost Safety Countermeasures

1. Upgrade Stop Signs on Murray Street
 - Use Oversized Stop Signs
 - Add retroreflective strips on signposts
 - Add 'Cross Traffic Does Not Stop' (W4-4p) supplemental placard
 - Add stop bar
 - If right angle crashes attributed to north bound traffic continue to occur add advanced warning 'Stop Ahead' (W3-1 or W3-1a) signs on Millard Ave
2. Add Wrong Way signs (R5-1a) on Murray Street and consider wrong-way arrow north of Leroy Street
3. Trim shrub at northwest corner of Murray and Leroy so that it does not block the sight line looking west
4. Add 'No Parking Here to Corner' signs and associated pavement markings at all approaches, marking and signage are either missing or noncompliant with setbacks at some of the intersection approaches. The no parking setbacks should be measured from the crosswalks
5. Add 'Cross Traffic Does Not Stop' (W4-4p) supplemental placard to Stop Sign
6. Add retroreflective strips on Stop signpost and Do Not Enter signposts
7. Add ADA compliant ramps across all four legs of the intersection
8. Add high visibility ladder style crosswalks across all 4 legs of the intersection
9. Repair trip and fall hazards of sidewalks

If above does not mitigate crashes, consider the following Countermeasures:

1. Install a traffic calming element - Raised Intersection (recommended), Traffic Circle, or curb extensions – see Attachments A, B, C
2. Re-evaluate for all-way stop



Chapin Street and Leroy Street



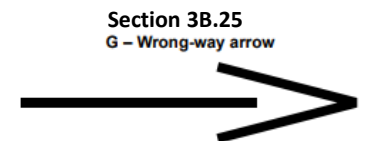
Traffic controlled by Stop Signs on Chapin. Chapin Street in one-way southbound north of Leroy Street. 12 total reported, 8 of which were vehicles from Chapin failing to yield right-of-way to Leroy Street (5 striking eastbound traffic and 3 striking westbound traffic). All crashes during daylight hours except 1.

High Priority - Low-Cost Safety Countermeasures

1. Upgrade Stop Signs on Chapin Street
 - Use Oversized Stop Signs
 - Add retroreflective strips on signposts
 - Add 'Cross Traffic Does Not Stop' (W4-4p) supplemental placard
 - Add stop bar
 - If right angle crashes attributed to north bound traffic continue to occur add advanced warning 'Stop Ahead' (W3-1 or W3-1a) signs on Chapin
2. Add Wrong Way signs (R5-1a) on Chapin Street and consider wrong-way arrow north of Leroy Street
2. Trim shrub at northwest corner of Chapin and Leroy so that it does not block the sight line looking west
3. Add 'No Parking Here to Corner' signs and associated pavement markings at all approaches, marking and signage are either missing or noncompliant with setbacks at some of the intersection approaches. The no parking setbacks should be measured at least from the crosswalks. Given the crash history consider extended the no parking areas beyond the 30-foot minimum to the nears intersecting driveways
4. Add 'Cross Traffic Does Not Stop' (W4-4p) supplemental placard to Stop Sign
5. Add retroreflective strips on Stop signpost and Do Not Enter signposts
6. Add ADA compliant ramps across all four legs of the intersection
7. Add high visibility ladder style crosswalks across all 4 legs of the intersection
8. Repair trip and fall hazards of sidewalks

If above does not mitigate crashes, consider the following Countermeasures:

1. Install a traffic calming element - Raised Intersection (recommended), Traffic Circle, or curb extensions – see Attachments A, B, C
2. Re-evaluate for all-way stop



Walnut Street and Leroy Street



Traffic controlled by Stop Sign for northbound Walnut Street only. Walnut Street in one-way northbound north of Leroy Street.

9 total reported, 3 involved wrong way driving on Walnut entering Leroy Street, and two failure to yield. All crashes during daylight hours.

High Priority - Low-Cost Safety Countermeasures

1. Upgrade Stop Signs on Chapin Street
 - Use Oversized Stop Signs
 - Add retroreflective strips on signposts
 - Add 'Cross Traffic Does Not Stop' (W4-4p) supplemental placard
 - Add stop bar
2. Add Do Not Enter (R5-1) and Wrong Way signs (R5-1a) on Walnut Street facing north board and consider a wrong-way arrow north of Leroy Street
3. Add 'No Parking Here to Corner' signs and associated pavement markings, marking and signage are either missing or noncompliant with setbacks at some of the intersection approaches
4. Add 'Cross Traffic Does Not Stop' (W4-4p) supplemental placard to Stop Sign
5. Add retroreflective strips on Stop signpost
6. Add ADA compliant curb ramps across all four legs of the intersection
7. Add high visibility ladder style crosswalks across all 4 legs of the intersection
8. Repair trip and fall hazards of sidewalks

If above does not mitigate crashes, consider the following Countermeasures:

1. Install a traffic calming element - Raised Intersection (recommended), Traffic Circle, or curb extensions – see Attachments A, B, C
2. Re-evaluate for all-way stop



R5-1



R5-1a

Section 3B.25
G – Wrong-way arrow



St. John Avenue and Leroy Street



Existing conditions

Four-way stop-controlled intersection controlled with a traffic signal
15 total reported crashes however there was no clear crash pattern other than striking of parked vehicles

High Priority - Low-Cost Safety Countermeasures

1. Add 'No Parking Here to Corner' signs and associated pavement markings, marking and signage are either missing or noncompliant with setbacks at some of the intersection approaches
 - parking is prohibited within 30 feet of an intersection per the City's Vehicle and Traffic Code

Chestnut Street and Leroy Street



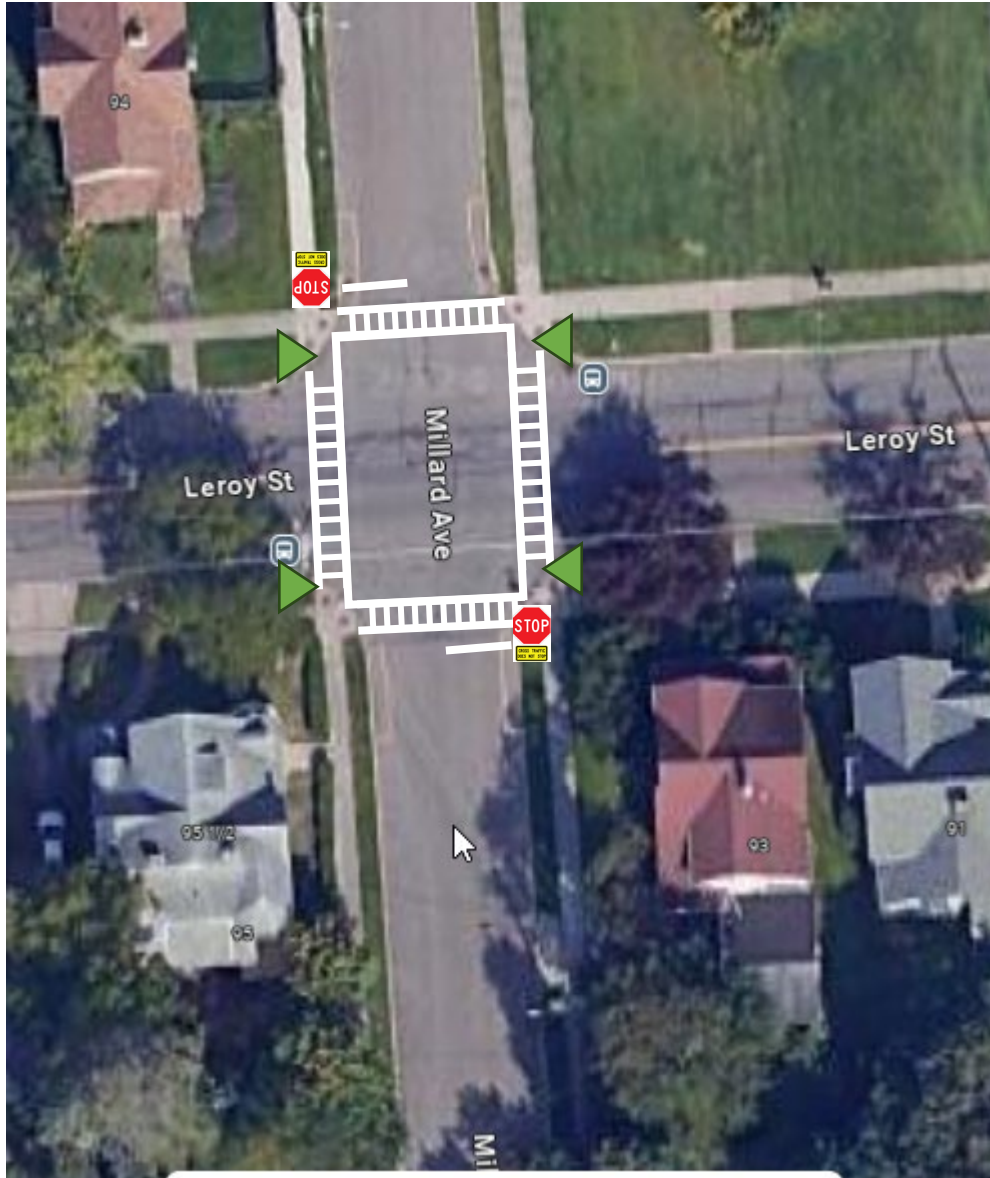
Existing conditions

Four-way stop-controlled intersection controlled with a traffic signal
15 total reported crashes however there was no clear crash pattern other than striking of parked vehicles

High Priority - Low-Cost Safety Countermeasures

1. Add 'No Parking Here to Corner' signs and associated pavement markings, marking and signage are either missing or noncompliant with setbacks at some of the intersection approaches
 - parking is prohibited within 30 feet of an intersection per the City's Vehicle and Traffic Code

Millard Ave and Leroy Street



Conceptual striping and signage

Two-way stop-controlled intersection, with stop signs controlling north and southbound Millard Ave
6 total reported crashes between June 2021 and June 2024

- 4 were right angle – vehicles heading northbound of Leroy failing to yield ROW to vehicles traveling on Leroy

High Priority - Low-Cost Safety Countermeasures

1. Upgrade Stop Signs at the Millard stop-controlled approach
 - Use Oversized Stop Signs
 - Add retroreflective strips on signposts
 - Add 'Cross Traffic Does Not Stop' (W4-4p) supplemental placard
 - If right angle crashes attributed to north bound traffic continue to occur add advanced warning 'Stop Ahead' (W3-1 or W3-1a) signs on Millard Ave
2. Add high visibility ladder style crosswalks at the Millard stop-controlled approach
Add high visibility ladder style crosswalks across Leroy with optional pedestrian warning signs (W11-2 with a W16-7P)
3. Add stop bars at the Millard stop-controlled approach
4. Clear street corners of sight distance obstructions
Shrubs at the southeast and southwest corners of Millard/Leroy need trimming to provide clearer lines of sight from Millard looking east and west along Leroy
5. Verify curb ramps are ADA compliant and upgrade as necessary
6. Add 'No Parking Here to Corner' signs and associated pavement markings
 - parking is prohibited within 30 feet of an intersection per the City's Vehicle and Traffic Code

If above does not mitigate crashes, consider the following Countermeasures:

1. Re-evaluate for all-way stop
2. Install a traffic calming element - Raised Intersection (recommended), Traffic Circle, or curb extensions – see Attachments A, B, C



Laurel Ave and Leroy Street



All-way stop-controlled intersection, with ladder-style painted crosswalks at all approaches. One crash over the 3-year study period.

High Priority - Low-Cost Safety Countermeasures

1. The 'Four Way' plaques mounted below the stop sign faces should be changed to 'ALL-WAY' (R1-3P) supplemental plaque mounted below each STOP sign to be compliant with the MUTCD.
2. Add stop bars at all approaches
3. Add 'No Parking Here to Corner' signs and associated pavement markings parking is prohibited within 30 feet of an intersection per the City's Vehicle and Traffic Code
4. Clear street corners of sight distance obstructions
5. Shrubs at the corners impact sight distance and visibility of pedestrians on the sidewalk
6. Verify curb ramps are ADA compliant and upgrade as necessary
7. The school crossing should be upgraded to School Crossing sign (S1-1) with 'Ahead' plaque (W16-9P) to comply with current MUTCD standards



Existing conditions

Beethoven Street and Leroy Street



Existing conditions

All-way stop-controlled intersection, with ladder-style painted crosswalks at all approaches. 3 crashes all right angle caused by north bound vehicles on Beethoven failing to yield the right-of-way.

High Priority - Low-Cost Safety Countermeasures

1. Upgrade Stop Signs

- Add retroreflective strips on signposts
- The 'Four Way' plaques mounted below the stop sign faces should be changed to 'ALL-WAY' (R1-3P) supplemental plaque mounted below each STOP sign to be compliant with the MUTCD.

ALL WAY

R1-3P

2. Add stop bars at all approaches

3. Verify 'No Parking Here to Corner' signs and associated pavement markings are 30 feet from the intersection per the City's Vehicle and Traffic Code and update as needed.

4. Verify curb ramps are ADA compliant and upgrade as necessary

Rotary Avenue and Leroy Street



Two-way stop-controlled intersection, with stop signs controlling north and southbound Rotary Ave. No crashes reported during the study period.

High Priority - Low-Cost Safety Countermeasures

1. Add ladder style crosswalks across the both approaches of Rotary Avenue
2. Verify 'No Parking Here to Corner' signs and associated pavement markings are 30 feet from the intersection per the City's Vehicle and Traffic Code and update as needed
3. Trim tree on Rotary that is blocking the view of the Stop Sign
4. Trim height of shrubs in median island, primarily those at the ends of the medians) of Leroy Street to improve visibility
5. Add retroreflective strips on Stop signposts
6. Add 'Cross Traffic Does Not Stop' (W4-4p) supplemental placard to stop signs



Kneeland Avenue and Leroy Street



Two-way stop-controlled intersection, with stop signs controlling north and southbound Kneeland Ave. Two crashes reported during the study period, one northbound and one southbound from Kneeland failing to yield right of way.

High Priority - Low-Cost Safety Countermeasures

1. Add ladder style crosswalks across the both approaches of Kneeland Avenue
2. Add stop bars at both approaches of Kneeland Avenue
3. Update Stop Signs
 - Use Oversized Stop Signs
 - Add retroreflective strips on signposts
 - Add 'Cross Traffic Does Not Stop' (W4-4p) supplemental placard
4. Verify 'No Parking Here to Corner' signs and associated pavement markings are 30 feet from the intersection per the City's Vehicle and Traffic Code and update as needed.
5. Trim height of shrubs in median island, primarily those at the ends of the medians) of Leroy Street to improve visibility
6. Trim shrub at west and east ends of traffic islands from Kneeland to Westland



Westland Court and Leroy Street



T intersection, with a stop sign controlling Westland. No crashes reported

High Priority - Low-Cost Safety Countermeasures

1. Add a high visibility ladder style crosswalk Westland
2. Shrubs located in the traffic island from Westland to Helen have been trimmed to below 3 feet in height, this should be maintained.

Helen Street and Leroy Street



Skewed all way stop intersection. No crashes reported.

High Priority - Low-Cost Safety Countermeasures

1. Add missing curb ramps on Leroy east of Helen
2. Add curb ramps on Leroy Street east of Helen
3. Add a high visibility ladder style crosswalks across all four legs of the intersection
4. Relocate the stop line on the Helen Street southbound approach to be closer to the intersection but behind the crosswalk. Relocate the other stop lines as necessary to accommodate crosswalks
5. In conjunction with relocated the stop line relocate the stop sign closer to the intersection
6. Maintain height of shrubs in the traffic islands between Helen and Crestmont below 3 feet.

Lower Priority

1. When a street reconstruction occurs on Leroy/Helen consider extending the curb lines so that the intersection is less skewed

Crestmont Road and Leroy Street



Existing conditions

Skewed two way stop intersection, with Crestmont Road controlled with a stop sign. 3 crashes, two of which were right angle caused by northbound Crestmont vehicle failing to yield right-of-way

High Priority - Low-Cost Safety Countermeasures

1. Upgrade Stop Signs at the Crestmont Road stop-controlled approaches
 - Use Oversized Stop Signs
 - Add retroreflective strips on signposts
 - Add 'Cross Traffic Does Not Stop' (W4-4p) supplemental placard
 - If right angle crashes attributed to north bound traffic continue to occur add advanced warning 'Stop Ahead' (W3-1 or W3-1a) signs on Crestmont Road
2. Add curb ramps across Leroy Street
3. Add a high visibility ladder style crosswalks across all four legs of the intersection
4. Relocate the stop line on the Crestmont Road southbound approach to be closer to the intersection but behind the crosswalk. Relocate the other stop lines as necessary to accommodate crosswalks
5. In conjunction with relocated the stop line relocate the stop sign closer to the intersection
6. Maintain height of shrubs in the traffic islands below 3 feet

Lower Priority

1. When a street reconstruction occurs on Leroy/Crestmont consider extending the curb lines so that the intersection is less skewed



CONCLUSIONS

This roadway assessment has been prepared to assist the city of Binghamton in identifying opportunities to improve safety within the area studied. The assessment finds that signage, sight distance limitations, and lack of pavement markings are likely impacting traffic safety. The suggestions in the report to address these issues are for the consideration by the City. They are not intended to serve as design or operational recommendations. The report does not preclude the identification of additional issues pertaining to safety by the City, or the emergence of new issues over time.

It is recommended that the city of Binghamton review the report, document their responses, and track the implementation of safety improvements prompted by this assessment.

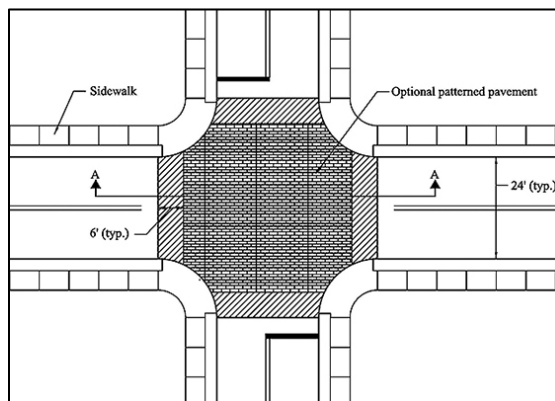
Raised Intersection

Description:

- Flat raised areas covering entire intersections, with ramps on all approaches and often with brick or other textured materials on the flat section and ramps
- Sometimes referred to as raised junctions, intersection humps, or plateaus

Applications:

- Intersections of collector, local, and residential streets
- Typically installed at signalized or all-way stop controlled intersections with high pedestrian crossing demand
- Works well with curb extensions and textured crosswalks
- Often part of an area-wide traffic calming scheme involving both intersecting streets in densely-developed urban areas



(Source: Delaware Department of Transportation)



(Source: Chuck Huffine, Phoenix AZ)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation Issues:

- Used at intersections with a maximum speed limit of 35 mph
- Typically rise to sidewalk level; appropriate if crosswalks exist on all four legs
- Appropriate if a dedicated bicycle facility passes through the intersection
- Detectable warnings and/or color contrasts must be incorporated to differentiate the roadway and the sidewalk
- May require bollards to define edge of roadway
- Storm drainage/underground utility modifications are likely necessary
- Minimum pavement slope of 1 percent to facilitate drainage

Potential Impacts:

- Reduction in through movement speeds likely at intersection
- Reduction in mid-block speeds typically less than 10 percent
- No impact on access
- Can make entire intersections more pedestrian-friendly
- No data available on volume diversion or safety impacts

Emergency Response Issues:

- Slows emergency vehicles
- Appropriate for primary emergency vehicle routes and streets with access to a hospital or emergency medical services

Typical Cost (2017 dollars):

- Costs range between \$15,000 and \$60,000

Traffic Calming Fact Sheets

May 2018 Update

Traffic Circle

Description:

- Raised islands placed in unsignalized intersections around which traffic circulates
- Approaching motorists yield to motorists already in the intersection
- Require drivers to slow to a speed that allows them to comfortably maneuver around them
- Approaches not designed to modern roundabout principals - no deflection

Applications:

- Appropriate at intersections of local streets
- One lane each direction entering intersection
- Not typically used at intersections with high volumes of large trucks or buses turning left
- appropriate for both one-way and two-way streets in urban and suburban settings



(Source: Scott Batson)



(Source: Scott Batson)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation Issues:

- Typically circular in shape but may be an oval shape
- Usually have landscaped center islands
- Recommend YIELD signs on all approaches
- Preferable for roadways to be closed-section (i.e. curb and gutter)
- Can be applied to roads with on-street parking
- Can be applied to roads both with and without dedicated bicycle facilities; bike lanes not striped in circulatory roadway
- Key design features include: offset distance (distance between projection of street curb and center island), lane width of circulatory roadway, circle diameter, and height of mountable apron for large vehicles

Potential Impacts:

- Minimal anticipated traffic diversion
- Bicyclist and motorists will share lanes at intersections because of narrowed roadway
- Large vehicles/buses usually not able to circulate around center island for left turns
- Landscaping needs to be designed to allow adequate sight distance, per AASHTO
- Minimize routing of vehicles through unmarked crosswalks on side-streets
- May require additional street lighting

Emergency Response Issues:

- Emergency vehicles maneuver intersections at slow speeds
- Constrained turning radii typically necessitates a left turn in front of the circle for large vehicles

Typical Cost (2017 dollars):

- Typical cost is \$15,000, with a range between \$10,000 and \$25,000

Corner Extension/Bulb-Out

Description:

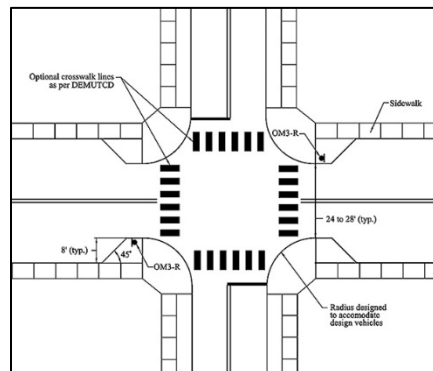
- Horizontal extension of the sidewalk into the street, resulting in a narrower roadway section
- If located at a mid-block location, it is typically called a choker

Applications:

- When combined with on-street parking, a corner extension can create protected parking bays
- Effective method for narrowing pedestrian crossing distances and increase pedestrian visibility
- Appropriate for arterials, collectors, or local streets
- Can be used on one-way and two-way streets
- Installed only on closed-section roads (i.e. curb and gutter)
- Appropriate for any speed, provided an adequate shy distance is provided between the extension and the travel lane
- Adequate turning radii must be provided to use on bus routes



(Source: James Barrera, Horrocks, New Mexico)



(Source: Delaware DOT)

ITE/FHWA Traffic Calming EPrimer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

Design/Installation Issues:

- Effects on vehicle speeds are limited due to lack of deflection
- Must check drainage due to possible gutter realignment
- Major utility relocation may be required, especially drainage inlets
- Typical width between 6 and 8 feet
- Typical offset from travel lane at least 1.5 feet
- Should not extend into bicycle lanes

Potential Impacts:

- Effects on vehicle speeds are limited due to lack of deflection
- Can achieve greater speed reduction if combined with vertical deflection
- Smaller curb radii can slow turning vehicles
- Shorter pedestrian crossing distances can improve pedestrian safety
- More pedestrian waiting areas may become available
- May require some parking removal adjacent to intersections

Emergency Response Issues:

- Retains sufficient width for ease of emergency-vehicle access
- Shortened curb radii may require large turning vehicles to cross centerlines

Typical Cost (2017 dollars):

- Cost between \$1,500 and \$20,000, depending on length and width of barriers

Type of report: Tube Count - Speed Data

LOCATION: 193 - Leroy St Btwn Chestnut St and Laurel Ave															QC JOB #: 16827309		
SPECIFIC LOCATION:															DIRECTION: EB, WB		
CITY/STATE: Binghamton, NY															DATE: Nov 19 2024		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	0	0	2	3	5	5	1	0	0	0	0	0	0	0	16	31-40	10
01:00 AM	1	0	0	4	3	1	1	0	0	0	0	0	0	0	10	26-35	7
02:00 AM	0	0	0	4	1	0	0	0	0	0	0	0	0	0	5	26-35	5
03:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	36-45	1
04:00 AM	0	0	0	3	2	1	0	0	0	0	0	0	0	0	6	26-35	5
05:00 AM	0	0	0	1	4	3	1	0	0	0	0	0	0	0	9	31-40	7
06:00 AM	8	1	7	9	12	8	1	0	0	0	0	0	0	0	46	26-35	21
07:00 AM	9	15	23	84	60	17	2	0	0	0	0	0	0	0	210	26-35	144
08:00 AM	5	6	15	77	74	27	4	0	0	0	0	0	0	0	208	26-35	151
09:00 AM	3	7	10	42	64	18	1	0	0	0	0	0	0	0	145	26-35	106
10:00 AM	5	7	8	35	70	16	0	0	0	0	0	0	0	0	141	26-35	105
11:00 AM	3	15	14	52	59	9	0	0	0	0	0	0	0	0	152	26-35	111
12:00 PM	12	7	8	46	62	15	5	0	0	1	0	0	0	0	156	26-35	108
01:00 PM	7	4	11	46	69	12	6	1	0	0	0	0	0	0	156	26-35	115
02:00 PM	19	15	11	65	81	22	4	0	0	0	0	0	0	0	217	26-35	146
03:00 PM	15	20	27	102	83	19	1	0	0	0	0	0	0	0	267	26-35	185
04:00 PM	11	16	40	70	72	13	4	0	0	0	0	0	0	0	226	26-35	142
05:00 PM	17	15	28	77	52	10	1	1	0	0	0	0	0	0	201	26-35	129
06:00 PM	14	9	22	50	44	9	1	0	0	0	0	0	0	0	149	26-35	94
07:00 PM	14	6	11	43	35	16	4	0	0	0	0	0	0	0	129	26-35	78
08:00 PM	5	3	6	21	33	7	2	1	1	0	0	0	0	0	79	26-35	54
09:00 PM	2	4	11	22	24	11	1	1	0	0	0	0	0	0	76	26-35	46
10:00 PM	7	3	6	8	15	3	0	0	0	0	0	0	0	0	42	26-35	23
11:00 PM	1	3	4	4	6	3	2	0	0	0	0	0	0	0	23	26-35	10
Day Total	158	156	264	868	930	245	43	4	1	1	0	0	0	0	2670	26-35	1798
Percent	5.9%	5.8%	9.9%	32.5%	34.8%	9.2%	1.6%	0.1%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	7:00 AM 9	7:00 AM 15	7:00 AM 23	7:00 AM 84	8:00 AM 74	8:00 AM 27	8:00 AM 4	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	7:00 AM 210		
PM Peak Volume	2:00 PM 19	3:00 PM 20	4:00 PM 40	3:00 PM 102	3:00 PM 83	2:00 PM 22	1:00 PM 6	1:00 PM 1	8:00 PM 1	12:00 PM 1	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	3:00 PM 267		
<i>Comments:</i>																	

Report generated on 12/5/2024 12:05 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 193 - Leroy St Btwn Chestnut St and Laurel Ave															QC JOB #: 16827309		
SPECIFIC LOCATION:															DIRECTION: EB, WB		
CITY/STATE: Binghamton, NY															DATE: Nov 20 2024		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	2	1	2	3	2	2	0	0	0	0	0	0	0	0	12	23-32	5
01:00 AM	0	0	2	1	2	2	1	0	0	0	0	0	0	0	8	31-40	4
02:00 AM	0	1	1	1	4	0	1	0	0	0	0	0	0	0	8	26-35	5
03:00 AM	0	2	1	3	1	0	0	0	0	0	0	0	0	0	7	23-32	4
04:00 AM	0	1	1	2	1	1	0	0	0	0	0	0	0	0	6	26-35	3
05:00 AM	1	0	1	1	3	1	0	0	0	0	0	0	0	0	7	28-37	4
06:00 AM	4	1	1	17	9	6	1	0	0	0	0	0	0	0	39	26-35	26
07:00 AM	10	6	9	61	47	16	2	0	0	0	0	0	0	0	151	26-35	108
08:00 AM	10	9	19	74	65	24	1	0	0	0	0	0	0	0	202	26-35	139
09:00 AM	10	6	14	27	62	18	2	2	0	0	0	0	0	0	141	26-35	89
10:00 AM	7	4	15	45	59	8	0	0	0	0	0	0	0	0	138	26-35	104
11:00 AM	12	12	19	58	61	13	3	0	0	0	0	0	0	0	178	26-35	119
12:00 PM	23	9	17	53	51	17	3	0	0	0	0	0	0	0	173	26-35	104
01:00 PM	18	7	22	55	67	20	0	1	0	0	0	0	0	0	190	26-35	122
02:00 PM	22	8	21	71	73	10	3	0	0	0	0	0	0	0	208	26-35	144
03:00 PM	14	12	32	105	83	22	1	0	0	0	0	0	0	0	269	26-35	188
04:00 PM	16	15	28	83	62	13	0	0	0	0	0	0	0	0	217	26-35	145
05:00 PM	23	10	19	91	62	16	3	0	0	0	0	0	0	0	224	26-35	153
06:00 PM	15	9	24	70	32	10	1	0	0	0	0	0	0	0	161	26-35	102
07:00 PM	7	12	23	51	37	6	4	0	0	0	0	0	0	0	140	26-35	88
08:00 PM	4	5	24	33	28	6	0	1	0	0	0	0	0	0	101	26-35	61
09:00 PM	11	8	11	21	12	5	1	0	0	0	0	0	0	0	69	26-35	33
10:00 PM	2	0	6	20	11	5	0	1	0	0	0	0	0	0	45	26-35	31
11:00 PM	3	2	0	9	8	5	0	0	1	0	0	0	0	0	28	26-35	17
Day Total	214	140	312	955	842	226	27	5	1	0	0	0	0	0	2722	26-35	1797
Percent	7.9%	5.1%	11.5%	35.1%	30.9%	8.3%	1%	0.2%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	11:00 AM	11:00 AM	8:00 AM	8:00 AM	8:00 AM	8:00 AM	11:00 AM	9:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	8:00 AM		
	12	12	19	74	65	24	3	2	0	0	0	0	0	0	202		
PM Peak Volume	12:00 PM	4:00 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM	7:00 PM	1:00 PM	11:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	3:00 PM		
	23	15	32	105	83	22	4	1	1	0	0	0	0	0	269		
<i>Comments:</i>																	

Report generated on 12/5/2024 12:05 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 193 - Leroy St Btwn Chestnut St and Laurel Ave															QC JOB #: 16827309		
SPECIFIC LOCATION:															DIRECTION: EB, WB		
CITY/STATE: Binghamton, NY															DATE: Nov 21 2024		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	1	2	2	6	4	2	0	0	0	0	0	0	0	0	17	26-35	10
01:00 AM	1	0	0	2	3	1	1	0	0	0	0	0	0	0	8	26-35	5
02:00 AM	1	0	2	4	4	1	0	0	0	0	0	0	0	0	12	26-35	8
03:00 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	31-40	2
04:00 AM	2	0	0	2	2	1	0	0	0	0	0	0	0	0	7	26-35	4
05:00 AM	0	0	1	3	3	2	1	0	0	0	0	0	0	0	10	26-35	6
06:00 AM	5	1	3	17	13	6	3	0	0	0	0	0	0	0	48	26-35	30
07:00 AM	15	12	17	74	47	14	2	0	0	0	0	0	0	0	181	26-35	121
08:00 AM	14	7	28	68	54	26	4	0	0	0	0	0	0	0	201	26-35	122
09:00 AM	5	5	18	51	73	19	1	1	0	0	0	0	0	0	173	26-35	124
10:00 AM	13	9	11	38	57	11	4	0	0	0	0	0	0	0	143	26-35	95
11:00 AM	6	5	26	52	57	15	2	0	0	0	0	0	0	0	163	26-35	109
12:00 PM	8	4	23	61	61	19	2	0	0	0	0	0	0	0	178	26-35	122
01:00 PM	12	6	18	70	60	17	3	0	0	0	0	0	0	0	186	26-35	130
02:00 PM	14	9	22	67	55	20	3	0	0	0	0	0	0	0	190	26-35	122
03:00 PM	23	10	36	122	99	17	1	0	0	0	0	0	1	0	309	26-35	221
04:00 PM	17	6	29	108	82	17	3	1	0	0	0	0	0	0	263	26-35	190
05:00 PM	16	20	35	91	46	4	1	0	0	0	0	0	0	0	213	26-35	137
06:00 PM	18	6	17	55	29	12	1	0	0	0	0	0	0	0	138	26-35	84
07:00 PM	6	8	15	47	36	7	1	1	0	0	0	0	0	0	121	26-35	83
08:00 PM	12	4	21	24	18	6	1	0	0	0	0	0	0	0	86	21-30	45
09:00 PM	8	2	15	26	18	8	1	1	0	0	0	0	0	0	79	26-35	44
10:00 PM	1	2	3	22	15	7	2	0	0	0	0	0	0	0	52	26-35	37
11:00 PM	3	1	2	8	5	2	2	1	1	0	0	0	0	0	25	26-35	13
Day Total	201	119	344	1018	842	235	39	5	1	0	0	0	1	0	2805	26-35	1860
Percent	7.2%	4.2%	12.3%	36.3%	30%	8.4%	1.4%	0.2%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	7:00 AM 15	7:00 AM 12	8:00 AM 28	7:00 AM 74	9:00 AM 73	8:00 AM 26	8:00 AM 4	9:00 AM 1	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	8:00 AM 201		
PM Peak Volume	3:00 PM 23	5:00 PM 20	3:00 PM 36	3:00 PM 122	3:00 PM 99	2:00 PM 20	1:00 PM 3	4:00 PM 1	11:00 PM 1	12:00 PM 0	12:00 PM 0	12:00 PM 0	3:00 PM 1	12:00 PM 0	3:00 PM 309		
<i>Comments:</i>																	

Report generated on 12/5/2024 12:05 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

SUMMARY - Tube Count - Speed Data

LOCATION: 193 - Leroy St Btwn Chestnut St and Laurel Ave														QC JOB #: 16827309			
SPECIFIC LOCATION:														DIRECTION: EB, WB			
CITY/STATE: Binghamton, NY														DATE: Nov 19 2024 - Nov 21 2024			
Speed Range	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
Grand Total	573	415	920	2841	2614	706	109	14	3	1	0	0	1	0	8197	26-35	5455
Percent	7%	5.1%	11.2%	34.7%	31.9%	8.6%	1.3%	0.2%	0%	0%	0%	0%	0%	0%			
Cumulative Percent	7%	12.1%	23.3%	57.9%	89.8%	98.4%	99.8%	99.9%	100%	100%	100%	100%	100%	100%			
ADT 2732															85th Percentile: 34 MPH Mean Speed(Average): 28 MPH Median: 28 MPH Mode: 28 MPH		
<i>Comments:</i>																	

Report generated on 12/5/2024 12:05 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

TRUE DATA TO IMPROVE MOBILITY

Type of report: Tube Count - Speed Data

LOCATION: 192 - Leroy St Btwn Kneeland Ave and Crestmont Rd															QC JOB #: 16827308		
SPECIFIC LOCATION:															DIRECTION: EB, WB		
CITY/STATE: Binghamton, NY															DATE: Nov 19 2024		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	16-25	3
01:00 AM	0	1	2	1	1	0	0	0	1	0	0	0	0	0	6	21-30	3
02:00 AM	0	1	3	4	0	0	0	0	0	0	0	0	0	0	8	21-30	7
03:00 AM	0	0	2	2	0	0	0	0	0	0	0	0	0	0	4	21-30	4
04:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	16-25	1
05:00 AM	0	1	1	2	2	0	0	0	0	0	0	0	0	0	6	26-35	4
06:00 AM	0	0	8	2	2	0	0	0	0	0	0	0	0	0	12	21-30	10
07:00 AM	0	6	12	11	5	0	0	0	0	0	0	0	0	0	34	21-30	23
08:00 AM	2	11	88	93	11	2	0	0	0	0	0	0	0	0	207	21-30	181
09:00 AM	0	14	101	104	22	1	0	0	0	0	0	0	0	0	242	21-30	205
10:00 AM	0	5	56	64	11	3	0	0	0	0	0	0	0	0	139	21-30	120
11:00 AM	0	9	57	51	8	0	0	0	0	0	0	0	0	0	125	21-30	108
12:00 PM	3	27	64	43	3	1	0	0	0	0	0	0	0	0	141	21-30	107
01:00 PM	1	6	63	50	12	0	0	0	0	0	0	0	0	0	132	21-30	113
02:00 PM	1	16	76	50	13	0	0	0	0	0	0	0	0	0	156	21-30	126
03:00 PM	0	17	93	74	11	2	0	0	0	0	0	0	0	0	197	21-30	167
04:00 PM	1	26	121	73	10	1	0	0	0	0	0	0	0	0	232	21-30	194
05:00 PM	5	20	109	76	15	1	0	0	0	0	0	0	0	0	226	21-30	185
06:00 PM	6	15	83	45	10	0	0	0	0	0	0	0	0	0	159	21-30	128
07:00 PM	2	11	61	27	7	1	0	0	0	0	0	0	0	0	109	21-30	88
08:00 PM	2	8	37	35	10	1	0	0	0	0	0	0	0	0	93	21-30	72
09:00 PM	2	5	25	21	4	1	0	0	0	0	0	0	0	0	58	21-30	46
10:00 PM	1	7	16	13	2	0	0	0	0	0	0	0	0	0	39	21-30	29
11:00 PM	0	2	13	6	1	1	0	0	0	0	0	0	0	0	23	21-30	19
Day Total	26	208	1095	847	160	15	0	0	1	0	0	0	0	0	2352	21-30	1942
Percent	1.1%	8.8%	46.6%	36%	6.8%	0.6%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	8:00 AM	9:00 AM	9:00 AM	9:00 AM	9:00 AM	10:00 AM	12:00 AM	12:00 AM	1:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	9:00 AM		
	2	14	101	104	22	3	0	0	1	0	0	0	0	0	242		
PM Peak Volume	6:00 PM	12:00 PM	4:00 PM	5:00 PM	5:00 PM	3:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	4:00 PM		
	6	27	121	76	15	2	0	0	0	0	0	0	0	0	232		
<i>Comments:</i>																	

Report generated on 12/5/2024 12:05 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 192 - Leroy St Btwn Kneeland Ave and Crestmont Rd															QC JOB #: 16827308		
SPECIFIC LOCATION:															DIRECTION: EB, WB		
CITY/STATE: Binghamton, NY															DATE: Nov 20 2024		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	1	0	6	1	1	0	0	0	0	0	0	0	0	0	9	21-30	7
01:00 AM	0	1	6	4	0	0	0	0	0	0	0	0	0	0	11	21-30	10
02:00 AM	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4	16-25	4
03:00 AM	0	0	2	1	0	0	0	0	0	0	0	0	0	0	3	21-30	3
04:00 AM	1	0	1	1	0	1	0	0	0	0	0	0	0	0	4	21-30	2
05:00 AM	1	1	0	3	1	0	0	0	0	0	0	0	0	0	6	26-35	4
06:00 AM	0	0	3	2	3	0	0	0	0	0	0	0	0	0	8	21-30	5
07:00 AM	0	2	17	11	2	0	0	0	0	0	0	0	0	0	32	21-30	28
08:00 AM	0	8	92	72	14	1	0	0	0	0	0	0	0	0	187	21-30	164
09:00 AM	0	14	87	86	24	2	0	0	0	0	0	0	0	0	213	21-30	173
10:00 AM	1	7	45	47	12	0	0	0	0	0	0	0	0	0	112	21-30	92
11:00 AM	4	8	52	41	2	0	0	0	0	0	0	0	0	0	107	21-30	93
12:00 PM	5	11	51	55	6	0	0	0	0	0	0	0	0	0	128	21-30	106
01:00 PM	0	18	79	58	6	0	0	0	0	0	0	0	0	0	161	21-30	137
02:00 PM	3	21	64	50	15	0	0	0	0	0	0	0	0	0	153	21-30	114
03:00 PM	8	21	83	68	10	1	0	0	0	0	0	0	0	0	191	21-30	151
04:00 PM	1	16	136	81	16	1	0	0	0	0	0	0	0	0	251	21-30	217
05:00 PM	0	21	123	71	11	0	0	0	0	0	0	0	0	0	226	21-30	194
06:00 PM	1	17	91	52	10	0	0	0	0	0	0	0	0	0	171	21-30	143
07:00 PM	2	12	69	45	4	0	0	0	0	0	0	0	0	0	132	21-30	114
08:00 PM	0	10	47	30	2	0	0	0	0	0	0	0	0	0	89	21-30	77
09:00 PM	2	7	41	17	5	2	0	0	0	0	0	0	0	0	74	21-30	58
10:00 PM	0	4	22	12	4	0	0	0	0	0	0	0	0	0	42	21-30	34
11:00 PM	0	6	13	10	0	1	0	0	0	0	0	0	0	0	30	21-30	23
Day Total	30	207	1132	818	148	9	0	0	0	0	0	0	0	0	2344	21-30	1950
Percent	1.3%	8.8%	48.3%	34.9%	6.3%	0.4%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	11:00 AM	9:00 AM	8:00 AM	9:00 AM	9:00 AM	9:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	9:00 AM		
	4	14	92	86	24	2	0	0	0	0	0	0	0	0	213		
PM Peak Volume	3:00 PM	2:00 PM	4:00 PM	4:00 PM	4:00 PM	9:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	4:00 PM		
	8	21	136	81	16	2	0	0	0	0	0	0	0	0	251		
<i>Comments:</i>																	

Report generated on 12/5/2024 12:05 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Speed Data

LOCATION: 192 - Leroy St Btwn Kneeland Ave and Crestmont Rd															QC JOB #: 16827308		
SPECIFIC LOCATION:															DIRECTION: EB, WB		
CITY/STATE: Binghamton, NY															DATE: Nov 21 2024		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	1	2	8	2	0	0	0	0	0	0	0	0	0	0	13	20-29	10
01:00 AM	0	2	6	1	0	0	0	0	0	0	0	0	0	0	9	16-25	8
02:00 AM	0	4	2	0	0	0	0	0	0	0	0	0	0	0	6	16-25	6
03:00 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	21-30	2
04:00 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2	16-25	2
05:00 AM	0	0	4	4	0	0	0	0	0	0	0	0	0	0	8	21-30	8
06:00 AM	0	1	3	1	1	0	0	0	0	0	0	0	0	0	6	18-27	4
07:00 AM	1	4	18	11	3	0	0	0	0	0	0	0	0	0	37	21-30	29
08:00 AM	2	7	88	91	14	2	0	0	0	0	0	0	0	0	204	21-30	179
09:00 AM	4	23	133	67	16	1	0	0	0	0	0	0	0	0	244	21-30	200
10:00 AM	1	12	62	49	8	1	0	0	0	0	0	0	0	0	133	21-30	111
11:00 AM	8	9	65	35	8	0	0	0	0	0	0	0	0	0	125	21-30	100
12:00 PM	2	9	78	53	11	2	0	0	0	0	0	0	0	0	155	21-30	131
01:00 PM	6	14	64	50	16	1	0	0	0	0	0	0	0	0	151	21-30	114
02:00 PM	1	7	73	59	6	2	0	0	0	0	0	0	0	0	148	21-30	132
03:00 PM	4	21	79	67	11	1	0	0	0	0	0	0	0	0	183	21-30	146
04:00 PM	3	26	142	91	16	2	0	0	0	0	0	0	0	0	280	21-30	233
05:00 PM	5	22	109	66	15	0	0	0	0	0	0	0	0	0	217	21-30	175
06:00 PM	0	15	83	49	10	0	0	0	0	0	0	0	0	0	157	21-30	132
07:00 PM	0	8	59	31	5	0	0	0	0	0	0	0	0	0	103	21-30	90
08:00 PM	0	9	50	27	2	2	0	0	0	0	0	0	0	0	90	21-30	77
09:00 PM	4	8	18	18	0	1	0	0	0	0	0	0	0	0	49	21-30	36
10:00 PM	2	9	12	6	2	0	0	0	0	0	0	0	0	0	31	16-25	21
11:00 PM	0	0	12	8	0	1	0	0	0	0	0	0	0	0	21	21-30	20
Day Total	44	213	1170	787	144	16	0	0	0	0	0	0	0	0	2374	21-30	1957
Percent	1.9%	9%	49.3%	33.2%	6.1%	0.7%	0%	0%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	11:00 AM	9:00 AM	9:00 AM	8:00 AM	9:00 AM	8:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	12:00 AM	9:00 AM		
	8	23	133	91	16	2	0	0	0	0	0	0	0	0	244		
PM Peak Volume	1:00 PM	4:00 PM	4:00 PM	4:00 PM	1:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	4:00 PM		
	6	26	142	91	16	2	0	0	0	0	0	0	0	0	280		
<i>Comments:</i>																	

Report generated on 12/5/2024 12:05 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

SUMMARY - Tube Count - Speed Data

LOCATION: 192 - Leroy St Btwn Kneeland Ave and Crestmont Rd														QC JOB #: 16827308			
SPECIFIC LOCATION:														DIRECTION: EB, WB			
CITY/STATE: Binghamton, NY														DATE: Nov 19 2024 - Nov 21 2024			
Speed Range	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
Grand Total	100	628	3397	2452	452	40	0	0	1	0	0	0	0	0	7070	21-30	5849
Percent	1.4%	8.9%	48%	34.7%	6.4%	0.6%	0%	0%	0%	0%	0%	0%	0%	0%			
Cumulative Percent	1.4%	10.3%	58.3%	93%	99.4%	100%	100%	100%	100%	100%	100%	100%	100%	100%			
ADT 2356															85th Percentile: 28 MPH Mean Speed(Average): 24 MPH Median: 24 MPH Mode: 23 MPH		
<i>Comments:</i>																	

Report generated on 12/5/2024 12:05 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

TRUE DATA TO IMPROVE MOBILITY