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2023

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Bethlehem, NH

BETHLEHEM

TRAFFIC CALMING POP-UP PROJECT

NORTH COUNTRY COUNCIL

Acknowledgments

Thank you to the Town of Bethlehem Staff, local leaders, businesses, and residents for assisting in monitoring installations, connecting the community, providing feedback, and distributing information.

Prepared For:

Town of Bethlehem
2155 Main Street
Bethlehem, NH 03574
https://bethlehemnh.org/

Prepared By:

North Country Council
161 Main Street
Littleton, NH 03561
www.nccouncil.org

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EXECUTIVE SUMMARY

The Bethlehem traffic calming pop-up project was developed to build upon previous studies and plans focused on increasing the safety and livability of Bethlehem's Main Street. The overarching goal of this project was to improve the safety of vehicles, pedestrians, and cyclists through town by reducing speeds and increasing the visibility of pedestrian crossings and intersections.

What is a "Pop-up"?
Low-cost, low-risk, and temporary way for citizens and agencies to work together to collect data and demonstrate safer street designs for all people using the street. They include installing temporary design features that affect travel behavior and the safety of all people. Design features can include curb extensions, traffic circles, shared or separated bicycle lanes, and crosswalk improvements.

The components of this project included:

- A demonstration of how traffic calming measures on Main Street can improve pedestrian and cyclist safety and impact vehicle speeds,
- Create opportunity for the Town, residents, businesses, and visitors to experience temporary changes to the vehicular, pedestrian, and cyclist roadway network, and
- Collection of traffic data that local, regional, and state agencies can use to analyze the impact of temporary traffic calming infrastructure.

What is Traffic Calming?

Traffic calming reduces automobile speeds or volumes, mainly through the use of physical measures, to improve the quality of life in both residential and commercial areas and increase the safety and comfort of walking and bicycling.

Bethlehem's Main Street is US-302, a major east-west connector through New Hampshire and Northern New England. It connects with US Route 3, which connects Northern New England, and Canada. The route also connects with Interstate 93 and other significant connections for points south. This route has a wide variety of vehicle types and destinations. As such, speed has been a significant concern due to the high traffic volume through Bethlehem's Main Street.

In the past few years, Bethlehem's village center has seen significant new business activity. This has included a new brewery, ice cream shop, and insurance agency. This recent activity has brought new vehicle traffic and increased pedestrian and bicycle use. Multiple buildings are also being rehabilitated for new uses in the village center as well as the potential redevelopment of the vacant Sinclair Lot. The village center's new activities and future development opportunities highlight the need for new, safe infrastructure for vehicles, pedestrians, and cyclists as traffic and usage increase for all modes.

Traffic Speeds: The project showed an average 4.96MPH reduction in vehicle speed during the pop-up event.

This project included data from speed counters, community feedback, and observations. Feedback both from the observations of the project area and the feedback survey showed clear opinions on the need for speed reduction, law enforcement support, and needing something to be done to improve safety.

Introduction

Projects that improve Main Street for cyclists and pedestrians have been highlighted in multiple local plans and reports over the past 25 years. Most recently, the Bethlehem Parking Committee report from September 2019 highlighted possible treatments and strategies to address parking and traffic and increase support for non-motorized travel. There has also been activity in connecting the schools of Bethlehem and Franconia through the Profile Safe Routes to School bicycle route and improving trail connections for walking and bicycling around town. Local officials in Bethlehem, with the assistance of North County Council, determined that a temporary pop-up was the best way to test out the many treatments and recommendations in prior studies. The work was focused on making progress toward the possible implementation of treatments that will alleviate traffic concerns and improve road safety along Main Street. Data compiled in this report will allow the Bethlehem Select Board to make informed decisions about future safety improvements along Main Street.

Common Pop-Up Materials
Traffic cones
Washable tempera paint
Hay bales
Flower planters
Lane delineators
Pavement tape

From August 28th to September 5th, 2023, the North Country Council worked with local leaders to implement a temporary traffic calming demonstration project or "pop-up" on Main Street, US-302 in Bethlehem. The Town of Bethlehem Selectboard sought assistance from the Council to develop a project that could slow traffic on Main Street and increase the safety of pedestrians, cyclists, and all travelers along this critical section of the roadway. The project scope and design were developed over several months by the North Country Council, the Town of Bethlehem, Selectboard and Staff, the NHDOT Bureau of Traffic, and NHDOT Maintenance District 1.

Important Takeaways
- Any permanent roadway treatments will require NHDOT approval.
- Permanent treatments will require engineering and technical design before construction.
- The community will be responsible for maintaining roadway shoulder areas with traffic-calming treatments and structures.

The project focused on pedestrian and bicyclist safety by calming traffic through the installation of features that visually narrowed the road and brought attention to crosswalk locations and street intersections. It is important to note that none of the features were placed in the vehicle travel lane: the space between the center yellow lines and white shoulder line. The installation focused on just over a 1/2 mile of Main Street. Temporary features were installed from just west of the intersection of Lewis Hill Road to just east of the Post Office. This installation utilized traffic cones and delineators, flower planters, and taped curb extensions to display a temporary concept for potential future solutions. The pop-up project also included setting vehicle speed counts in three locations to gauge how traffic calming measures impacted travel speeds. These counts were conducted before and during the pop-up to provide an accurate comparison. Signs along Main Street and flyers were distributed throughout town, allowing residents and non-residents to give feedback on the pop-up through a short survey. Daily observations were performed by Council staff to determine how these measures impacted travel along Main Street for vehicles, pedestrians, and bicyclists.

This project was delayed by the challenge of the record rain during this summer. Increased chance of rain also impacted the materials that could be used during the pop-up, with staff opting not to utilize temporary tempura paints for curb markings in favor of pavement tape and traffic cones and delineators.

Traffic Calming Examples

Visually narrowing travel lanes
Extending curbs and sidewalks
Speed feedback signs
Speed bumps
Pedestrian signage

The pop-up is to support the permanent installation of features that will increase the livability and vitality of residential and commercial areas through the improvements in non-motorist safety, mobility, and comfort. These objectives are typically achieved by reducing vehicle speeds or volumes on a single street or a street network. Treatments like those tested in the pop-up that improve the non-motorized network of crosswalks, sidewalks, signage, and markings through the town center create a safer environment for pedestrians, cyclists, and drivers, as well as create more cohesive areas for people to stop, visit, and spend their time.

How to Use this Report

This report is best used as a reference for the pop-up results and a resource to guide future decisions on the transportation infrastructure along the Main Street of Bethlehem.

The report describes the current conditions of Main Street, the temporary elements installed, as well as the observations and data collected during the pop-up. This report offers possible approaches for calming traffic and improving safety along areas of Main Street.

This report compiles information in the following manner:

- Existing Conditions of the Main Street of Bethlehem,
- Public engagement strategies used,
- Overview of the features deployed,
- Traffic speed data collected before and during the pop-up,
- Observations
- Public input and feedback, and
- Recommendations

All materials used in the installations were temporary, needed to withstand outdoor elements, and had to have approval from the NHDOT and local government. As well as be able to be quickly, easily, and completely removed when the project was completed.

Nothing in this report represents a final decision by the Town of Bethlehem to implement any project and spend money; ultimately, the Town must decide which installations and strategies, if any, are most appropriate and important to fund and implement.

Geographic Scope of the Project

The project covered approximately 3,100 linear feet of Main Street. Starting just west of the intersection of Main Street / US Route 302 and Lewis Hill Road (the top of Long Hill) and ending at the Post Office at 2159 Main Street / US Route 302. Three (3) traffic counters were installed and programmed to capture speed data. Counters were installed just east of the Lewis Hill Rd and US-302 Intersection, just west of the Congress St and US-302 intersection, and one just east of the Bethlehem Elementary School. The Bethlehem Police Department also set a temporary speed feedback sign further east of the elementary school on August 28th that functioned for an estimated two (2) to three (3) days before malfunctioning.

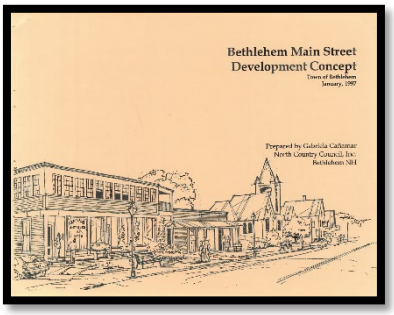
During the planning and design phase, Council staff decided that the best course of action was to install traffic calming elements at as many locations as possible out of the many potential locations along Main Street. This created some redundancy of installations and some locations that would not be effective long term. Staff recognized early on that these locations may not be viable long term but determined that feedback on these different locations would be valuable even if they were not feasible or desirable for a permanent installation.

Source: Google Earth

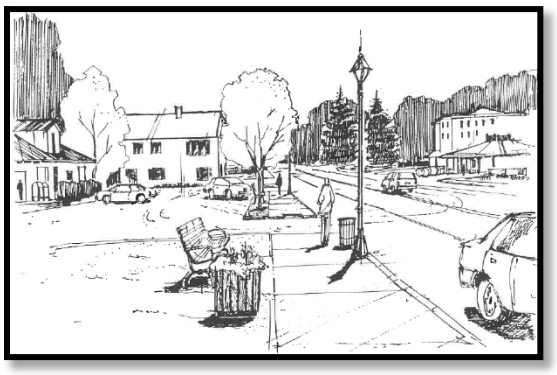
Previous Plans, Reports, and Studies

The following plans, reports, and studies were reviewed before the traffic calming demonstration project was implemented.

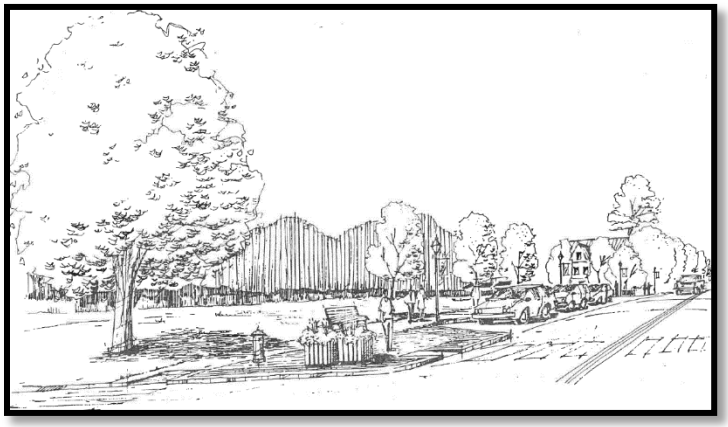
Bethlehem Main Street Development Concept – January 1997



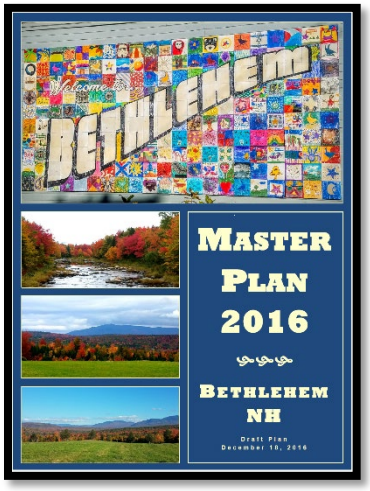
- In 1996, the Town of Bethlehem requested the assistance of the North Country Council regarding Main Street improvements in the downtown, the preparation of an Integrated Trail network System Map, and updated demographic information. This report highlights opportunities for improvement, one which aligns with the current project is "turning Bethlehem into a "walking village" that would communicate vitality, color, excitement, and hospitality."
- Recommendations of the 1997 concept that align with the traffic calming demonstration project.
  - Post Office Parking Lot – " A "visual edge" composed of a sidewalk and trees delineating the street should be provided. This would help to organize the parking lot and increase its efficiency in terms of the number of available spaces and clearer circulation pattern with identifiable entrance and exit. **By providing a sidewalk with clear crosswalks, pedestrian conditions would be safer.**"
  - East Entrance to Downtown – "A walking village should accommodate pedestrians in every sense. An extension of the north sidewalk from downtown to the Elementary School would make a safer pedestrian corridor, allowing people to walk on both sides of the street. This would also make a formal and defined entry to the downtown area."



  - Block Ends – A sense of enclosure is important and trying to create an inviting pedestrian environment. The width of the street and the heights of the buildings needs to have certain portions to achieve this. Providing parallel parking would visually reduce the separation between the North and South sides of Main Street. This would also allow for a wider sidewalk with more pedestrian amenities. The creation of "block ends" would increase pedestrian safety and crosswalks by reducing the distance to be crossed.



Bethlehem Master Plan 2016



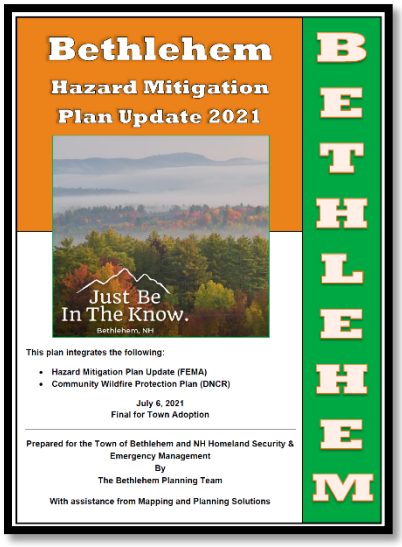
- The Bethlehem Master Plan was developed to guide the growth and development of the Community for the future. As stated in the Master Plan "The resulting Plan will help to improve developmental stability and help to ensure the economic well-being of the Community." In the 2016 Master Plan, the community identified a Vision Statement that incorporated five vision principles, number three (3): *"Strive for the creation of a lively and walkable Village District where residents can find businesses and activities to improve their quality of life."* Each chapter of the master plan identifies goals and objectives that are then linked to an implementation plan table that identifies the goal, responsible entities, and timeframe. The following includes those that align with the traffic calming demonstration project.

The majority of respondents indicated that **traffic speed is a problem** in the downtown area on US Route 302; Lewis Hill Road, Agassiz Street & NH Route 142 also were mentioned as having too much "speed."

2016 Master Plan Survey

- Provide a safe, functional, and well-maintained transportation system which implements the land use plan. It should include roads, parking, sidewalks, and non-motorized opportunities.
- Work with the Police Department to seek grant funding to obtain a portable speed monitoring sign.
- Continue law enforcement in front of the school to enforce the speed limit.
- Work with NH DOT, the Bethlehem School Board, and other entities to pursue a solution for improving pedestrian access in downtown Bethlehem, with particular emphasis on access to the Library and the Bethlehem Elementary School.

Bethlehem Hazard Mitigation Plan – 2021



- The Bethlehem Hazard Mitigation Plan, Update 2021, was compiled to assist the Town of Bethlehem in reducing and mitigating future losses from natural, technological, or human-caused hazardous events. The Bethlehem Hazard Mitigation Planning Team (HMPT), interested stakeholders, the general public, and Mapping and Planning Solutions (MAPS) developed the plan. The plan contains the tools necessary to identify specific hazards and aspects of existing and future mitigation efforts. This plan is an update to the 2014 Bethlehem Hazard Mitigation Plan. The planning team used the 2014 plan as a foundation, building on that plan to provide updated data, information, and recommendations. It is essential to note that the proposed mitigation actions listed in Table 8.1 on page 99 are vital to reducing personal injury or damage to property; they all do not necessarily align with the traffic calming demonstration project.

Bethlehem Parking Committee Presentation – 2019

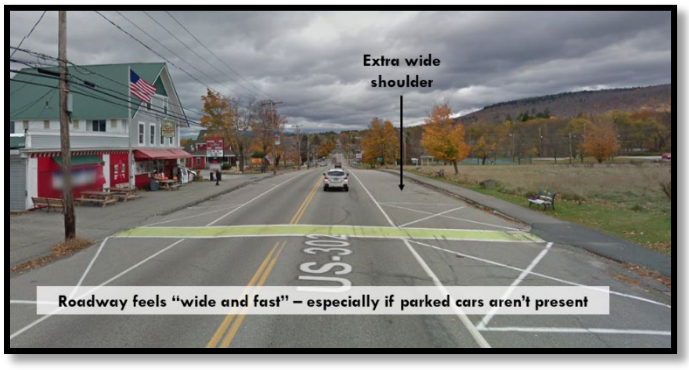
- The Bethlehem Parking Committee was formed in 2019 as a temporary committee to study the parking situation along Main Street. The committee included six (6) members who met over six weeks. The Committee was tasked with:
  - Looking for ways to slow traffic down on Main Street
  - Finding additional parking in the center of town, and
  - Considering parking spots for sub-compact cars on Main Street where the line of vision is difficult.

- North Country Council developed a final presentation for the committee based on their meetings and work. One major challenge noted in the report was sightlines at intersecting roads with Main Street. Areas where parked cars and wide shoulders/roadways may impact sightlines and the rate of vehicle travel may exacerbate the safety issue. It identified that the areas of Main Street are wide and straight, with curb-to-curb measurements of 40' to 50'.

The report highlighted multiple short-, medium-, and long-term parking and pedestrian network treatments that could improve safety for users, increase parking options, and decrease traffic speed along this multi-modal corridor.

Some of the goals in the 2019 Presentation align with the traffic calming demonstration project.

- Alerting drivers entering Bethlehem Village along US 302/Main Street to change in speed limit (40 MPH -> 30 MPH) and increased pedestrian/parking activity
- Slowing vehicle speeds and increasing driver awareness of pedestrians and parking vehicles
- Improving sightlines at intersections with Main Street
- Improving pedestrian safety and reducing the distance to cross Main Street
- Utilizing municipal property for additional parking and overflow parking



EXISTING CONDITIONS

Main Street, US-302, is a major East-West corridor for freight, commerce, tourism, recreation, and general travel by people who live here. It is an essential connector for the North Country region and the wider northern New England region, connecting Maine, New Hampshire, Vermont, and Canada as well as many other highways and arterial routes.

This section of US-302 sees an average of 6,497 vehicles daily. The majority of vehicles through the study area are going over the posted speed limit, with some moving well above the posted speed limit. US-302 has a high vehicle volume, various vehicle types, heavy trucks, and high speeds. This traffic intermingles with the pedestrians, school children, visitors, and cyclists interacting with the services and institutions of the traditionally developed village center. This has caused long-term concerns over vehicle volume, speed, and safety.

Council staff installed traffic counters at three (3) locations before and during the pop-up project to understand the average travel speeds with and without roadway treatments installed. Staff also collected and analyzed crash data for the project area to understand the causes and timing of crashes. The following section highlights the existing data for the project area and the need for roadway treatments to boost the safety of users of the Bethlehem Village Center.

Existing Data

Average Daily Traffic Count (NH DOT Transportation Data Management System)

- Counts collected by North Country Council on behalf of NHDOT on a three-year cycle capture an average of 6,497 vehicles daily on Main Street of Bethlehem. This is 2022 data. https://nhdot.public.ms2soft.com/tcds/tsearch.asp?loc=nhdot

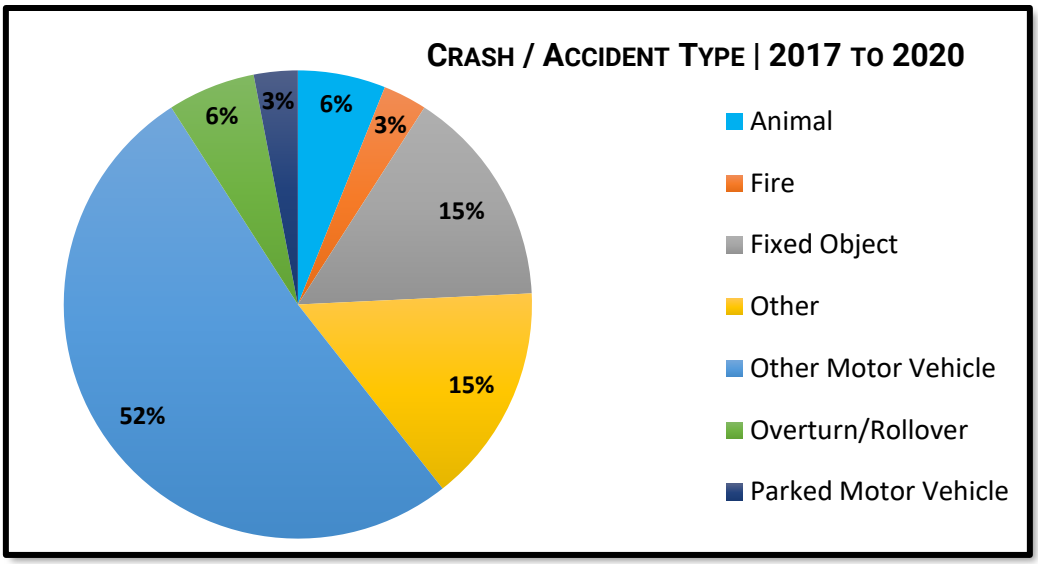
Pre-Demonstration Speed Data collected at three (3) locations

- Main Street/US Rt 302 East of Lewis Hill Road
  - The average speed of combined east and west vehicles is 34 MPH.
  - 79% of vehicles traveling past this location were traveling over the posted speed limit.
  - 30 MPH speed limit
- 2194 Main Street/US Rt 302 East of Circle K
  - The average speed of combined east and west vehicles is 29 MPH.
  - 45% of vehicles traveling past this location were traveling over the posted speed limit.
  - 30 MPH speed limit
- Main Street/US Rt 302 East of Bethlehem Elementary School
  - The average speed of combined east and west vehicles is 39 MPH.
  - 36% of vehicles traveling past this location were traveling over the posted speed limit.
  - 30 MPH speed limit / when school is in session 20 MPH speed limit from 7 – 8 am to 2:30 – 3:30 pm; note Bethlehem Elementary School started August 28, 2023.
- Total Number of Crosswalks: Six (6)
  - West of Arlington Street
    - Approximate width of crossing 40’ +/-
  - Strawberry Hill Road and Log Cabin Lane
    - Approximate width of crossing 40’ +/-
  - The Colonial Theater
    - Approximate width of crossing 50’ +/-
  - The Bethlehem Fountain
    - Approximate width of crossing 50’ +/-
  - US Rt 302/ Main Street and Rt 142 South / Agassiz Junction
    - Approximate width of crossing 50’ +/-
  - The Bethlehem Town Hall
    - Approximate width of crossing 45’ +/-

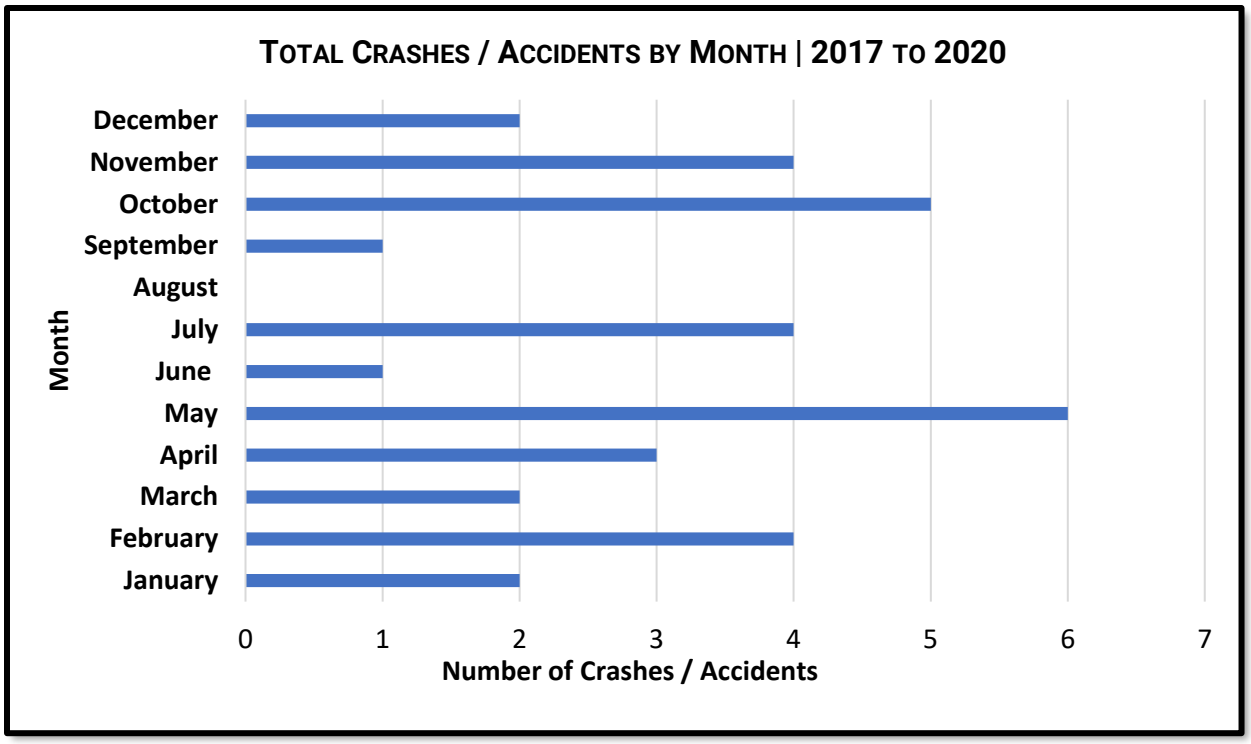
  Intersections with Main Street /US Route 302, State and with Town roads
  - Total of nine (9) East intersections and six (6) West
- Facilities and Amenities located on a stretch of road include:
  - Restaurants
  - Retail shops
  - Elementary School
  - Residential housing
  - Church & Synagogue
  - Town Hall
  - Post Office
  - Library

Vehicle Crash / Accident Data

- According to data collected from the NHDOT, there were 33 accident reports filed that occurred on Main Street, US-302, Bethlehem. These crashes occurred between 2017 and 2020 and were within the traffic calming demonstration project. Approximately 52% of Main Street crashes were between two (2) or more motor vehicles. Other common reasons for crashes include hitting a fixed object such as a tree or telephone pole. Over the four years, the most significant number of crashes occurred in May and October, with six (6) and five (5) total crashes per month, respectively.



In the picture above, crash sites are indicated by red dots. Dots are clustered together representing multiple crashes in multiple years.



Public Engagement

North Country Council staff engaged the public in multiple ways before, during, and after the pop-up. Council staff met with the Bethlehem Town Administrator and Selectman Bruce Caplain numerous times to discuss existing Main Street and town center concerns and previous planning work, noting traffic volume, speed, parking, pedestrian, and bicycle infrastructure issues. These conversations developed into the traffic calming demonstration project to test the recommendations in previous plans and studies. The Council also met with the full selectboard in July of 2023 to present the project scope, concept map, and approval to proceed.

Due to the project's location, it was essential to receive input and approval on the design, elements, and materials used in the project from NHDOT. Council staff connected with officials from the NHDOT Bureau of Safety throughout the summer to help craft a concept design that would meet NHDOT standards, including installations that could be translated to permanent treatments if the town sought to do so. These conversations with NHDOT included significant discussions about the materials to be used, especially any proposed paints and spray paints, as all elements and materials deployed needed to be completely removable at the end of the pop-up.

Council staff reached out via email to a core list of thirty-two (32) town center contacts that included businesses, residents, and institutions in advance of the project. Council staff shared details about the pop-up, a project flyer, and a link to the feedback survey. Staff updated that group as the project was rescheduled and reminded them to share any feedback about the project. Before the project installation, Council staff walked the town center and provided physical copies of the flyer to businesses.

Meetings and Connections

- 5/25/2023 – Met with Selectman Caplain and Town Administrator to discuss previous Main Street Area planning efforts for parking and safety.
- 6/29/2023 – Met with Selectman Caplain and Town Administrator to discuss the pop-up concept and next steps.
- 7/13/2023 – Call with the NHDOT Bureau of Safety engineer to discuss conceptual design and proposed treatments (element installations).
- 7/31/2023 – Presented Pop-Up scope, concept map, and budget to Bethlehem Selectboard.
- 8/10/2023 – Met with Selectman Caplain and Town Administrator to discuss weather setbacks for pop-up installation and determination for deployment.

Survey

A short survey was developed to allow people to provide feedback on the pop-up. This survey was distributed via email, website links, in the Town newsletter, on Social Media, and provided on the project flyers and yard signs. The survey gauged respondent opinions on the treatments' safety and effectiveness and provided an open-ended section to provide their thoughts.

Community Market

North Country Council staff set up a table at the Community Market on Saturday, September 2nd. This was announced on the Community Market Facebook page. Despite a slow market day, staff connected with eight (8) individuals and distributed flyers and guidance sheets about traffic calming and related efforts.

Connections with Businesses

Email outreach was conducted on August 4th to thirty-two (32) businesses and groups along Main Street. This email included pop-up details, including what elements would be set up, the timeline of installation, and breakdown. It also had the project flyer containing a survey link. Council staff later reached out to the town center contacts to update them on the project installation date due to the rainy conditions. Staff, in addition, connected with eleven (11) businesses along Main Street to follow up with physical copies of the flyer and answer any questions they may have.

Observation and Monitoring

Staff walked the pop-up area multiple times leading up to installation. Staff identified locations to set up traffic calming treatments, install traffic counters, and note areas of concern. During these preliminary walk-throughs, staff also took reference pictures. Staff noted local activity at essential intersections and crosswalks and the traffic behavior throughout the project area.

Recent, Planned, or Potential Projects with Impacts

Recent, planned, or potential projects that may impact the future speed or patterns of traffic along Bethlehem Main Street. North Country Council staff reviewed Bethlehem's Master Plan, Hazard Mitigation Plan, 2019 Parking Committee Presentation, and NHDOT Draft TYP. No significant projects identified within these plans indicate an impact on speed or traffic patterns. It is essential to recognize that this is not an exhaustive list and in no way means or suggests that a future project or development does not have the potential of occurring that could potentially shift traffic, speed, patterns, vehicle classification, or volume.

During the Demonstration

The 2023 Summer season was the wettest on record for New Hampshire. The state saw more than 21 inches of rainfall in June, July, and August. This is about 8 inches more than the average and the most since recordkeeping started in 1895. This increased rainfall caused Council staff to rethink the materials used in the pop-up, opting for pavement marking tape over temporary tempura or chalk-based paints. This rainfall was a point of concern also for set-up, as it impacted the pavement tape staying adhered to the roadway shoulders. Staff removed broken sections multiple times throughout the week and repaired and replaced many sections of tape as it came up or got washed away by rainfall.

Council staff postponed the demonstration for two weeks due to weather concerns.

Features Deployed

Below provides details of the different temporary traffic calming features deployed during the demonstration. These features include traffic cones, delineators, flower planter boxes, and temporary pavement tape. The chart below details the intersection/location, a picture of the treatment used, notes on what was used, and the purpose of the treatment at that location.

Intersection/Location	Picture	Notes	Purpose
Main Street / US-302 **West of Lewis Hill Road**		Four traffic cones	Slightly narrow EB and WB travel lanes to reduce speed provide awareness to drivers of the crest of the hill and incoming town center.

Main Street / US-302 **East of Lewis Hill Road Crosswalk**		Pavement tape curb extensions (2 rectangles), six traffic cones.	Narrow travel lanes to reduce speeds, increase the visibility of crosswalk, and create a "protected" area that shortens crossing distance.
Main Street / US-302 at the **Intersection of Prospect Street**		Pavement tape curb extensions (2 triangles, one rectangle), four traffic cones.	Increase the visibility of corners and create blocks to lessen vehicles cutting over the sidewalk at the corner.

Main Street / US-302 at the **Intersection of Strawberry Hill Road and Log Cabin Lane**		Pavement tape curb extension (rectangle), four traffic cones.	Increase the visibility of the crosswalk. Squaring off the turning radius for vehicles for ingress and egress from side streets.
Main Street / US-302 at the **Intersection of Jefferson Street**		Pavement tape curb extensions and two traffic delineators.	Increase the visibility of the side street, square off ingress, and egress turn to decrease vehicle speed in this area of high pedestrian activity.

Colonial Theater Crosswalk		Three traffic delineators, Pavement tape curb extensions (3), flower planters (6), and one traffic cone.	Increase the visibility of the crosswalk to create a safer space for pedestrians to cross. Create a visible "protected" area that shortens the distance for pedestrians to cross. Decrease speed in areas with high pedestrian activity by visually narrowing the vehicle travel lane.
Main Street / US-302 at the **Intersection of Church Street**		Pavement tape curb extensions and two traffic delineators.	Squaring off the turning radius for vehicles entering and exiting Church St. Increase intersection visibility with delineators.

Bethlehem Village Store / Fountain Crosswalk		Pavement t ape curb extensions, six flower planters, three traffic delineators	Increase the visibility of the crosswalk and create a safer space for pedestrians to cross. Create a visible "protected" area that shortens the distance for pedestrians to cross.
Main Street / US-302 at the **Crosswalk and Intersection of Agassiz St** (Westbound)		Pavement tape curb extensions (2 triangles), two traffic delineators, and four planter boxes.	Increase the visibility of the crosswalk, reduce the crossing distance for pedestrians at the crosswalk, and delineate the road shoulder. Block the shoulder lane from being used as a cut-around by westbound vehicles.

Main Street / US-302 at the **Crosswalk and Intersection of Agassiz St** (Eastbound)		Pavement tape curb extension (1 large rectangle with three cones), two traffic cones.	Block the shoulder lane from being used as a cut-around by eastbound vehicles, increase the corners' visibility to reduce turning radii, and block vehicles from cutting across the sidewalk.
Main Street / US-302 at the **Intersection of Maple Street**		Three traffic cones.	Increase the visibility of the corner and reduce corner radii to decrease speeds and vehicles cutting across the sidewalk.

Town Hall Crosswalk		Pavement Tape curb extensions (3 triangles), four traffic delineators, and three flower planters.	Increase the visibility of the crosswalk, block the shoulder to create a safe space for pedestrians, and reduce the chance of vehicles cutting into the shoulder to Circle K.
Main Street / US-302 at the **Intersection of Maia Papaya and Post Office East entrance.**		Pavement tape curb extension (triangle), one traffic cone	Narrow travel lane entering the town center / walkable area to reduce speed

Traffic Count Data

North Country Council Staff installed three (3) traffic counters throughout the pop-up project area. These counters were set up twice, first from August 14th to 21st and again from August 28th to September 5th. These two collection periods provided a set of speed data of the existing conditions that we could use to compare with the data collected during the demonstration project. While the data was collected between this timeframe for comparison purposes, we identified the days of August 16th to August 20th and August 30th to September 3rd as our timeframe to compare data.

What Did the Data Tell Us?

Quantifiable data was important to collect in order to compare the existing conditions with the test conditions of the demonstration. Traffic data was collected at three (3) locations throughout the project area before and during the event. JAMAR Pinnacle traffic counter units collected data on vehicle volume, speed, and classification during both collection periods. The three data collection locations included:

- Main Street, East of Lewis Hill Road
- 2194 Main Street, West of Corner of Congress St.
- Main Street, East of Bethlehem Elementary School

Traffic Counters were installed from Monday, August 14th, to Monday, August 21st and from Monday August 28th to Tuesday, September 5th. There is a slight variation in total vehicle volume and other parameters due to the tourist and regular Summer activity of the mid-August count, compared with the demonstration period count which took place after some area schools were back in session.

Council staff utilized JAMAR StarNEXT reporting software to analyze and present the collected data. The report presents multiple data parameters in an easy to read format. The report presents the following data points, comparing the data from before and during the demonstration:

- Total # of Vehicles analyzed,
- Average Vehicle Speeds,
- % of vehicles speeding (comparing Eastbound and Westbound travel), and
- % of "Enforceable Violations" (speeds over the set speed limit)

Overall, the charts below and the reports on the following pages reveal that the pop-up had a positive effect on speeds for vehicles travelling through the village center. The project area saw an average 37.3% reduction in enforceable violations and an average speed reduction of 5MPH. Council staff did not install any traffic calming treatments in or around the Elementary School, which may explain its less effective reduction in enforceable violations and average speeds. While not every treatment may have been effective at its location, the treatments were successful in overall slowing speeds across the village center.

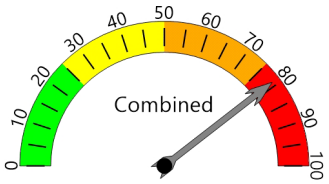
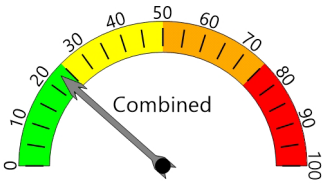
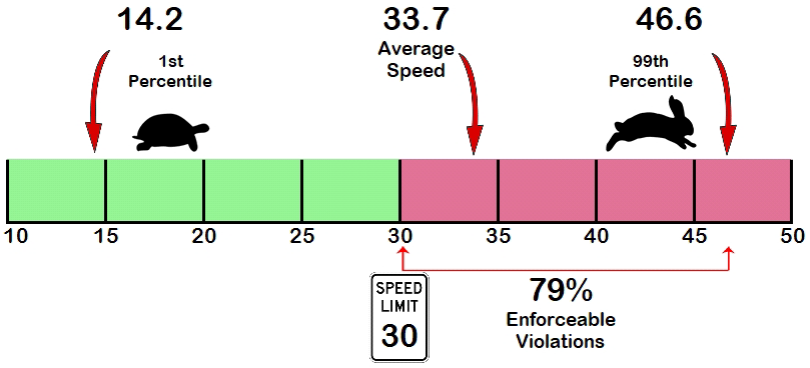
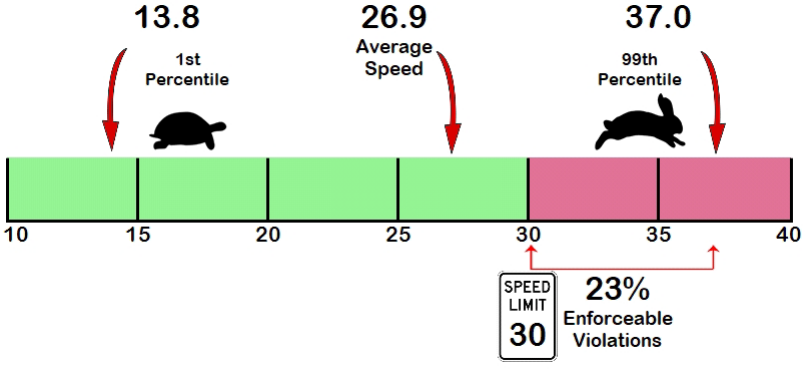
PERCENTAGE SPEEDING OR VEHICLES WITHIN ENFORCEABLE VIOLATIONS

Location	Before Pop-Up	During Pop-Up	Percent Change in Enforceable Violations
Main Street East of Lewis Hill Road	79%	23%	↓ 56%
2149 Main Street East of Circle K	45%	5%	↓ 40%
Main Street East of BES	36%	20%	↓ 16%

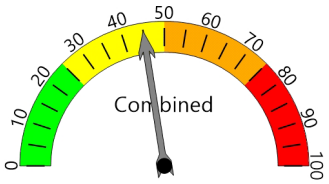
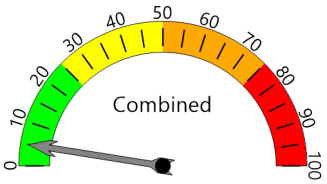
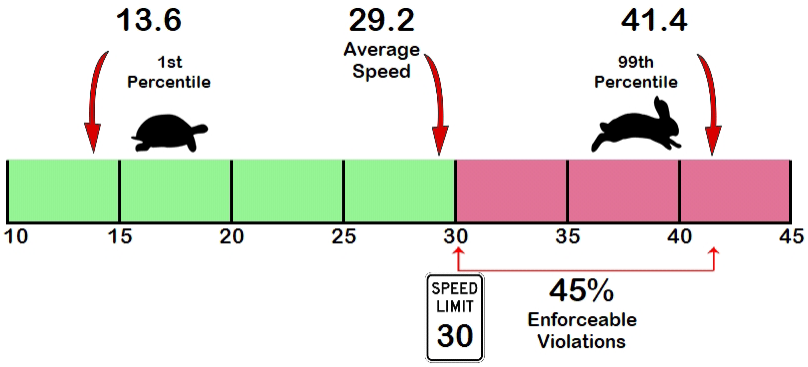
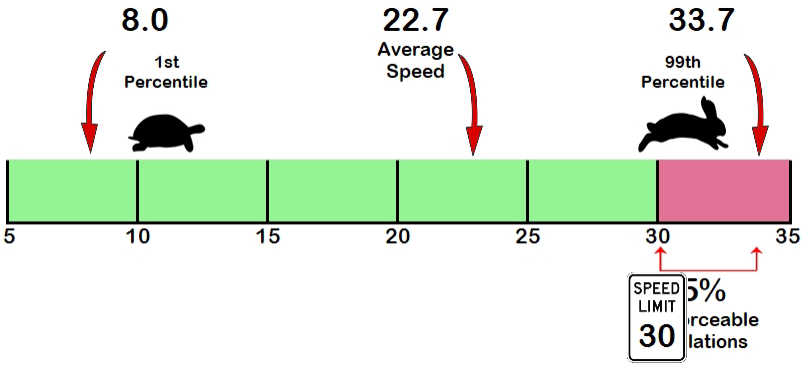
AVERAGE SPEED OF VEHICLES

Location	Before Pop-Up	During Pop-Up	Change in mile-per-hour travel
Main Street East of Lewis Hill Road	34 MPH	27 MPH	↓ 7MPH
2149 Main Street East of Circle K	29 MPH	23 MPH	↓ 6MPH
Main Street East of BES	29 MPH	27 MPH	↓ 2MPH

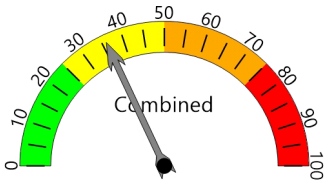
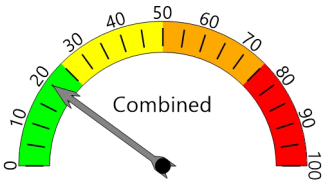
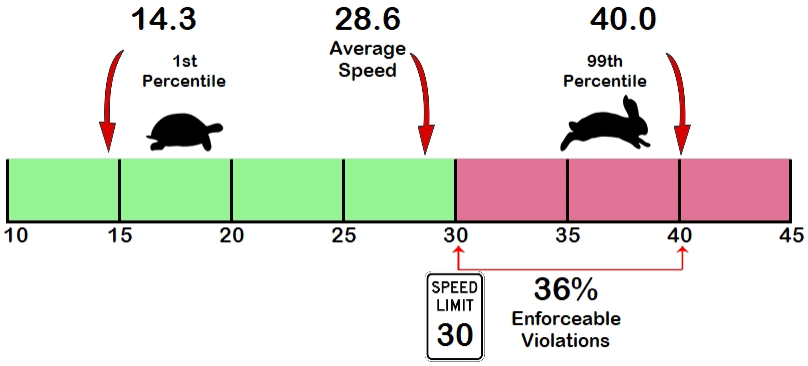
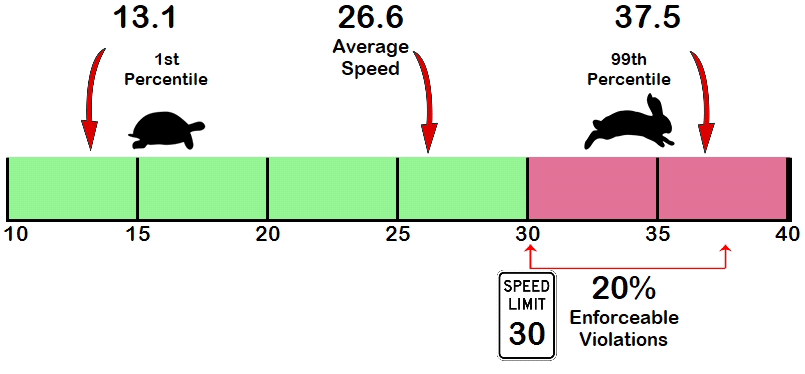
Main Street East of Lewis Hill Road

	Before	During	
Vehicles Analyzed	**39,646**	**37,995**	
Average Speed	**34 MPH**	**27 MPH**	↓
Percent Speeding	**79%** 	**23%** 	↓
Traveling East toward Carroll	**83%**	**16%**	↓
Traveling West toward Littleton	**75%**	**30%**	↓
Before Pop-Up			
During Pop-Up			

2149 Main Street East of Circle K

	Before	During	
Vehicles Analyzed	**34,849**	**32,765**	
Average Speed	**29 MPH**	**23 MPH**	↓
Percent Speeding	**45%** 	**5%** 	↓
Traveling East toward Carroll	**37%**	**7%**	↓
Traveling West toward Littleton	**53%**	**4%**	↓
Before Pop-Up			
During Pop-Up			

Main Street East of Bethlehem Elementary School

	Before	During	
Vehicles Analyzed	**31,971**	**30,254**	
Average Speed	**29 MPH**	**27 MPH**	↓
Percent Speeding	**36%** 	**20%** 	↓
Traveling East toward Carroll	**32%**	**24%**	↓
Traveling West toward Littleton	**40%**	**16%**	↓
Before Pop-Up			
During Pop-Up			

Observations

Council staff recognized early on that regular site monitoring and observation would be necessary for the project's success. Daily observations were performed by various Council staff throughout the deployment week, from Tuesday, August 29th to Monday, September 4th. Staff conducted daily windshield surveys, with the occasional foot survey, at 8 AM, 12 PM, 3 PM, and 5 PM. Staff would walk the site to remove damaged items and relocate them as necessary.

Overall, observations of the site monitored how traffic calming measures affected travel for vehicles, pedestrians, and cyclists along Main Street. Council staff took brief notes during their observations and managed the different treatment items (cones, tape, etc.) to ensure they were placed correctly. They also removed any pavement tape or cones damaged by the weather or traffic. Selectboard member Bruce Caplain assisted staff with observations, toured the site throughout the demonstration, and provided email updates to Council staff on the calming measures and notes on project effectiveness.

During the scheduled observation times, Council staff would:

- Review the curb extensions, cones, and planters,
- Note general vehicle travel patterns and pedestrian use,
- Relocate any delineators, cones, or planters that may have shifted throughout the day,
- Remove any damaged or peeling pavement tape, and
- Talk to visitors, residents, and businesses interested in the pop-up.

Additionally, on Saturday, September 2nd, Council staff set up a table at the Bethlehem Community Market and conducted multiple circuits of the project area. Staff tabling the community market met with approximately eight (8) people and provided them with flyers and information about the project. Community Market attendees were positive about the measures that were demonstrated. Community members in attendance noted the overall positive impact they saw in traffic downtown, with minor notes on certain intersections that needed rethinking (Prospect Street, Church Street). Attendees at the Market also noted that they approved of the cones and planter boxes at the crosswalks and indicated that speed was a definite issue downtown. Attendees also wanted bike lanes and markings to be more defined if they were used in the future.

Besides the regular staff notes about the status of traffic calming measures, staff also recorded feedback from community members and their experiences with the features as they drove and walked the site. Staff Observations included:

- Certain intersections had cones and delineators moved consistently throughout the week,
- Pavement tape near curb/gutters impacted heavily by rain,

- Vehicles tended to slow and stop more often at improved crosswalks,
- Increased law enforcement presence needed downtown (conversation with residents)
- Repeated need to relocate cones and repair specific pavement tape segments.
- Need to focus efforts of the pop-up on essential areas.
- Certain intersections had little impact / caused more headaches than help

Council staff met with community members during their circuits in the project area. These meetings were as short as "I like the planters" or as long as 5-10 minute conversations. Some of the critical observations from community members both in the field and via email included:

- Pedestrian X-ing signs are needed at crossings,
- Planters and cones bring attention to crossings,
- Bike sharrows need to be more visible and meet MUTCD,
- Speed has been a long-term issue along Main Street,
- Need for increased Law Enforcement presence downtown and
- Vehicle speed was reduced overall through downtown due to calming measures.
- Crossing at Colonial Theater, Village Store are wide
- The Colonial crossing westbound to the Colonial pedestrian is blocked by parked vehicles
- Increased and updated school zone signage is needed to draw attention to the school zone as the are an increasing number of vehicles that are not slowing or stopping in this area.

An extremely important observation staff made was the impact of the curb extension and cones on the Eastbound shoulder at the corner of Main Street and Agassiz St (NH-142). This curb extension and cones blocked drivers from passing on the left of drivers who were slowed/stopped near the intersection. This has been a noted point of concern with the very wide shoulder. This is a hazard, as vehicles travel at speed around cars and then through the crosswalk. The Main Street and Agassiz St (NH-142) intersection, as well as the crosswalks at the Colonial Theater and the Village store, were where staff saw the most considerable value for travelers, as they increased visibility, narrowed the roadway, and slowed vehicles near these high activity areas.

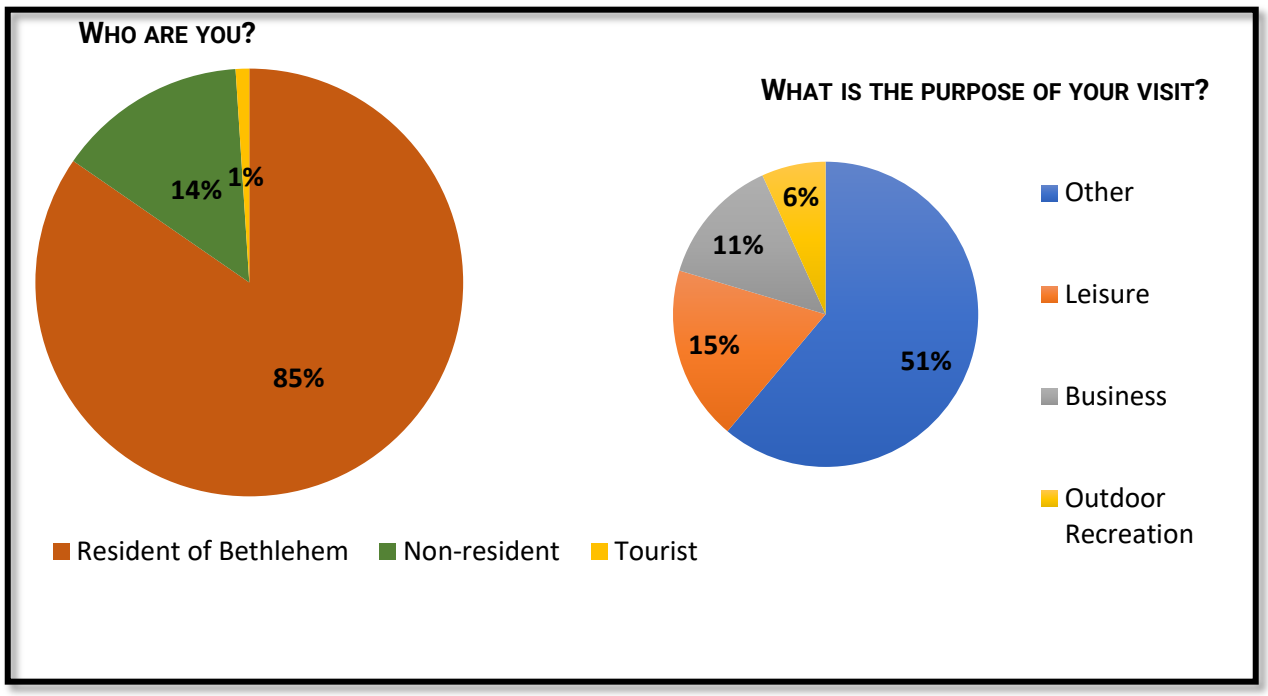
Council staff received feedback from NHDOT District 1 maintenance staff regarding the pop-up treatments. Maintenance staff noted that if specific curb extensions were put in place where they were tested, they would pose difficulties for winter plowing operations and significantly impact the current drainage system. Maintenance Staff also noted that some of the geometric designs of the extensions would need to be reversed or squared off to flow with roadway traffic. Additionally, some extensions may pose an issue to truck traffic turning on and off Main Street.

From these, Council staff want to highlight that any future permanent treatments proposed for the Village Center will include engineering for drainage/runoff, turning radii for large vehicles, and updated geometric designs that work with the current roadway design. The town administration will be required to submit any proposed plans to NHDOT for review and approval before construction. With this in mind, collaborating and coordinating with NHDOT Maintenance District 1, the Bureau of Traffic, and Highway Design staff is paramount.

Public Input

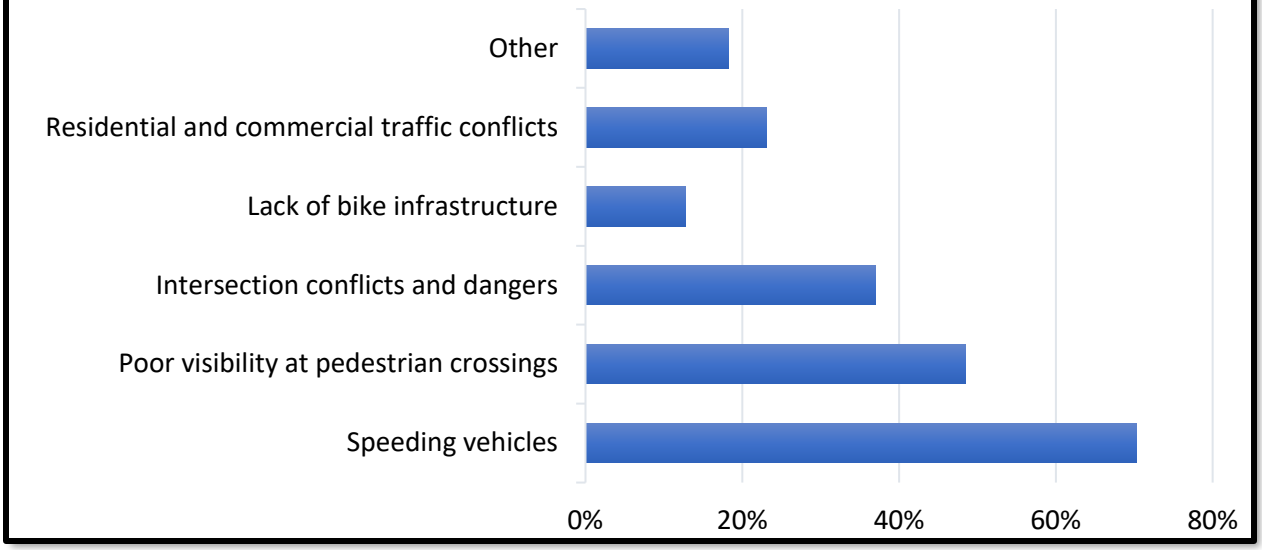
As part of the project, a brief survey was released to receive public input and better understand perspectives, interactions with, and support for traffic calming measures. Understanding the public's opinion offers insight into future implementation support, effectiveness, and places for improvement. Flyers and yard signs with the survey link and QR code were distributed throughout the local businesses and Main Street.

In total, 195 responses were received between August 1st and September 12th of 2023. Residents of Bethlehem predominantly took the survey and interacted with the Pop-Up through day-to-day life activities. The survey responses submitted by Bethlehem residents totaled 165, with the remaining 30 responses from non-residents.



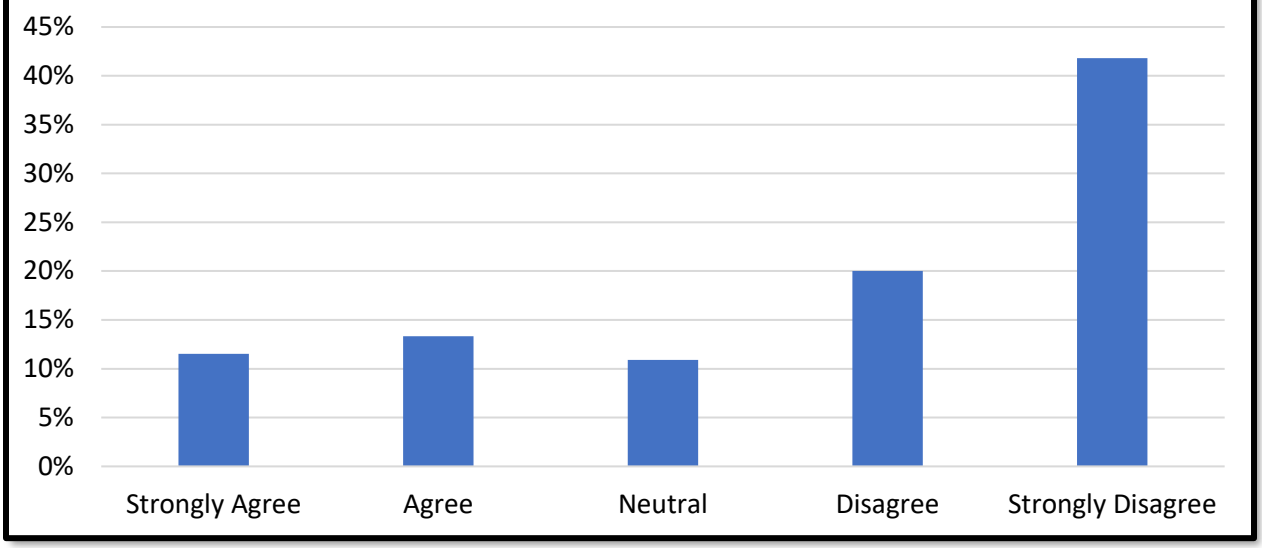
Bethlehem Residents (165) Response to...

WHAT ARE THE MAIN SAFETY ISSUES ON MAIN STREET?

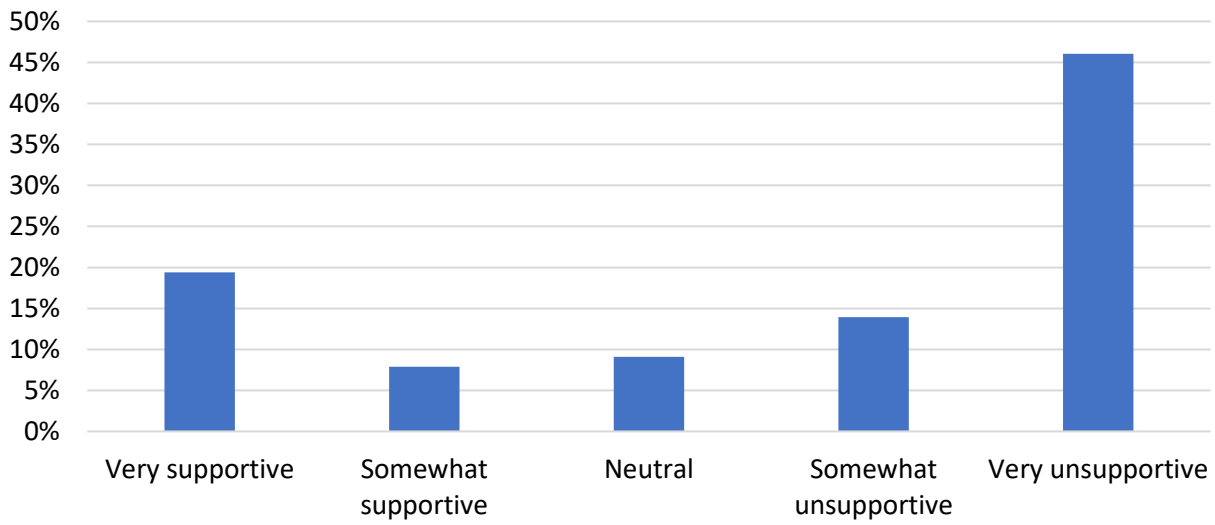


Bethlehem Residents (165) Response to...

HOW MUCH DO YOU AGREE WITH THE FOLLOWING QUESTION
THESE CURB EXTENSIONS MADE ME FEEL SAFER TRAVELING ON MAIN STREET?



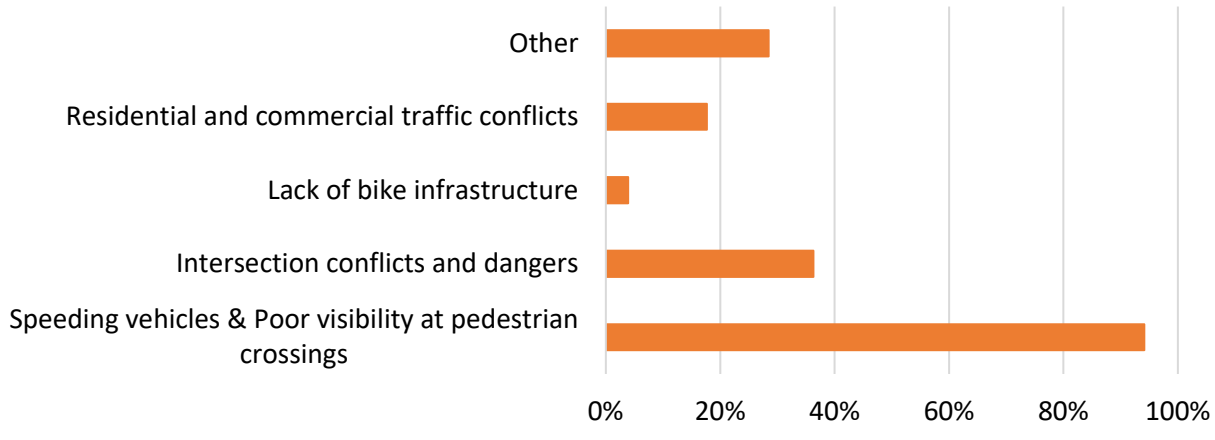
Bethlehem Residents (165) Response to...
HOW SUPPORTIVE WOULD YOU BE OF A PERMANENT INSTALLATION OF THIS PROJECT?



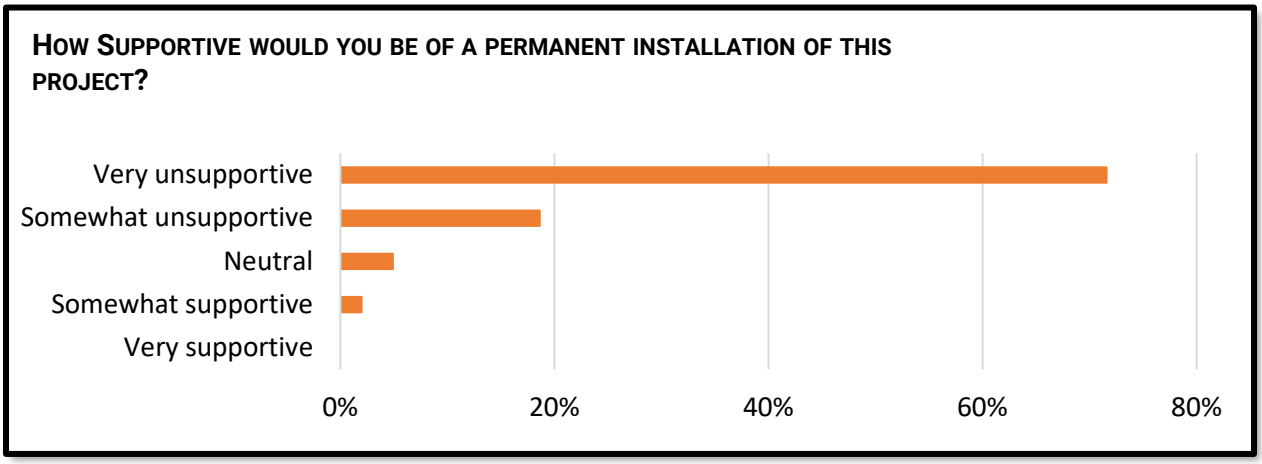
Bethlehem Residents were asked ***"How much do you agree with the following question - These curb extensions made me feel safer traveling on Main Street?"*** Of the participants who are residents, 63% responded that they disagree or strongly disagree that the curb extensions made them feel safer.

However, of those who responded that they disagreed or strongly disagreed that the curb extension made them feel safer, 94% also identified speeding vehicles or pedestrian visibility at crosswalks as ***the primary safety concerns on Main Street*** *(see graph below)*. This relationship is interesting since curb extensions are proven to reduce vehicle speeds. Additionally, curb extensions increase pedestrian safety, as they align pedestrians with adjacent parking lanes, reducing the distance to cross the road and removing blind spots for oncoming traffic that can be caused by cars parked close to crosswalks.

Of the Bethlehem Residents who responded that they disagree or strongly disagree that the curb extensions made them feel safer...
THEY IDENTIFIED THE FOLLOWING AS THE MAIN SAFETY ISSUES ON MAIN STREET.



Approximately 90% of Bethlehem residents who responded that they disagreed or strongly disagreed that the curb extension made them feel safer also indicated they would not support a future installation of traffic calming measures. However, it is essential to keep in mind that this same group that identified the primary safety issues of Main Street to be ones that are solved with curb extensions and shortening crossing lengths.



Many respondents called out other methods they would support to aid in calming traffic. Among the top were the enforcement of traffic laws, crosswalk updates, signage, painting, and additional measures to increase pedestrian visibility.

Within the same group of respondents, some mentioned that they disagreed with how many elements were deployed for this Pop-Up. Some indicated only the crosswalks should receive traffic calming measures, and others had concerns with the ability to turn into and out of side streets due to the traffic calming measures making the turn radius too narrow.

In the future, it is unlikely nor feasible that all deployed elements would transition into permanent traffic calming measures. Instead, elements were tested at multiple intersections within Main Street to ensure all possible avenues of traffic calming were explored.

The residents of Bethlehem were, overall, not in favor of the permanent installation of traffic calming measures. It is important again to mention that while unsupportive, the safety concerns identified by residents clearly showed speeding vehicles and poor pedestrian visibility as the primary safety issues of Main Street.

Among those who were unsupportive of the project, there were several comments on the aesthetic of the Pop-up itself instead of what a permanent installation would consist of. However, when asked how to improve this project, residents noted the need for increased law enforcement presence on Main Street to hold drivers accountable, additional signs to enforce speed and alert drivers of crosswalks, upgrades to parking, improvements to crosswalks, and efforts to improve pedestrian visibility. Different responses of those who were unsupportive of the Pop-up offered no feedback on what would be acceptable for traffic calming measures on Main Street.

RECOMMENDATIONS

This section presents Recommendations for possible treatments to improve traffic safety in the Bethlehem Village Center. Recommendations describe broad strategies to achieve the goals and priorities of the project and that build upon the previous visioning and planning documents prepared over the past 25 years. These recommendations were developed through observing the pop-up, feedback from residents, and research on best practices for traffic safety nationwide. Each recommended treatment includes its Name, time frame, Approximate Cost, Important notes, detailed Description, and a Picture.

The recommendations presented do not represent a final decision by the Town of Bethlehem to implement a project or spend money; ultimately, the Town administration and residents must decide which projects and strategies are most appropriate and important to fund and implement.

Some recommendations below mention the "Village Center" or the "Village Gateway." These terms are shorthand for the different areas of the town center. Below are some short descriptions that Council staff have used to develop recommendations for different areas of the town center:

- Village Center Zone: Strawberry Hill Rd to Bethlehem Elementary School/ Turner St.
- Village Gateway Zone (West): Lewis Hill Rd to Strawberry Hill Rd
- Village Gateway Zone (East): Hedgerose Ln to Turner St (before Elementary School)

Timeframe – Recommendations were grouped into the following categories for the timeframe for possible implementation:

- Short-term: Implemented within 1-2 years
- Medium-term: Implemented within 2-5 years
- Long-term: Implemented beyond five years
- Ongoing: No specific timeframe or completion date, generally a regular/continuous activity

Cost - this report does not attempt to assign specific costs to recommendations. Instead, the relative costs of each recommendation are assigned to the following qualitative categories:

- **None:** Recommendation can be implemented using existing operational or capital funds dedicated to management or maintenance.
- **Low cost (>$10,000):** Small, one-off projects that can likely be completed using or warrant articles with minimal or no tax impact.
- **Medium cost ($10,000-$250,000):** These projects may require larger expenditures, larger warrant articles with low or moderate tax impact, or multi-year budgeting.
- **High cost (>$250,000):** These projects will likely require multi-year budgeting, warrant articles with higher tax impact, grants, and/or other outside funding assistance

TREATMENT	TIMEFRAME	COST
Paint Slow "SLOW XXMPH" Pavement Legends at Village Gateway Areas	Short Term	Low

DESCRIPTION

Some communities paint the speed limit on the roadway to remind drivers of the speed limit or to indicate a transition zone. The use of wording on the pavement surface is more dramatic than only using signing, which can get lost in the clutter of the streetscape. Speed-limit legends would be placed on the pavement in the same locations as speed limit signs.

Advantages: Inexpensive, Can be implemented rapidly, No increase in noise, No impact to emergency vehicles, No adverse effect on vehicle operations.
Disadvantages: Maintenance, Less effective in winter, Can present problems for bicycles and motorcycles.

NOTES

It will require annual maintenance by the municipality and coordination with the NHDOT District on necessary approvals.

Photo Source: Canva, City of Boston

TREATMENT	TIMEFRAME	COST
Install pedestrian crossing signs (R1-6) at the Village Center Zone crosswalks.	Short Term	Low

DESCRIPTION

In-street pedestrian crossing signs (MUTCD R1-6 or R1-6a) are placed within the roadway between travel lanes or in a median. The sign may remind road users of laws regarding right-of-way at an unsignalized pedestrian crossing. The legends “STOP FOR” or “YIELD TO” may be used in conjunction with the appropriate symbol. This countermeasure is used with other crosswalk visibility enhancements to indicate optimal or preferred locations for people to cross and to help reinforce the driver requirement to yield the right-of-way to pedestrians at crossing locations. Other substantial crossing improvements are needed to prevent increased pedestrian crash potential.

NOTES

Provide added visibility of the crossing and narrow the travel roadway. Signage can be removed to allow for maintenance operations.

Photo Source: www.pedbikeimages.org Dan Burden, www.pedbikeimages.org Peter Speer

TREATMENT	TIMEFRAME	COST
Install additional high visibility vehicle and pedestrian traffic signs throughout the Village Center	Short or Medium Term	Low

DESCRIPTION

Regulatory signs, such as STOP, YIELD, or turn restriction signs such as NO TURN ON RED require compliant driver actions and can be enforced. Warning signs can provide helpful information, especially to motorists and pedestrians unfamiliar with an area. Advance pedestrian warning signs should be used where pedestrian crossings may not be expected by motorists, especially if there are many motorists who are unfamiliar with the area.

NOTES

Sign use and movement should be done judiciously, as overuse may breed noncompliance and disrespect. Too many signs may also create visual clutter where their conspicuity is diminished. Signage should be used in gateway / transition zones to provide motorists advance warning of an upcoming pedestrian crossing or that they are entering a speed zone will alert them to the potential of pedestrians crossing the street and modify their speed.

Photo Source: North Country Council Staff, www.pedbikeimages.org Dan Burden

TREATMENT	TIMEFRAME	COST
Install and maintain speed feedback signs at Village Gateway Areas	Short Term	Low

DESCRIPTION

A Speed Feedback sign is an interactive sign, generally constructed of a series of LEDs, that displays actual vehicle speed to drivers as they approach the sign. This sign aims to reduce vehicle speeds by making drivers aware of their speed relative to the posted speed limit. Studies have found that Speed Feedback signs can effectively reduce mean and 85th percentile speeds in various situations.

NOTES

Provides feedback for drivers as to Speed limit, will impact certain drivers, best to use in conjunction with physical calming measures that will directly impact driver behavior.

Photo Source: www.pedbikeimages.org Dan Burden, Canva

TREATMENT	TIMEFRAME	COST
Continue to stripe high-visibility crosswalks in the Village Center	Ongoing	Low or None

DESCRIPTION

High-visibility crosswalks use patterns (i.e., bar pairs, continental, ladder) that are visible to both the driver and pedestrian from farther away compared to traditional transverse line crosswalks. They should be considered at all midblock pedestrian crossings and uncontrolled intersections. Agencies should use materials such as inlay or thermoplastic tape instead of paint or brick for highly reflective crosswalk markings.

NOTES

Use in conjunction with additional pedestrian crossing signs and markings.

Photo Source: www.pedbikeimages.org Dan Burden, www.pedbikeimages.org Brandon Whyte

TREATMENT	TIMEFRAME	COST
Install temporary/semi-Permanent curb extensions at key intersections and crosswalks in the Village Center.	Medium Term	Low to Moderate

DESCRIPTION

Temporary Curb Extensions extend the sidewalk or curb line out into the parking lane with temporary or semi-permanent materials to reduce the effective street width. Temporary or semi-permanent curb extensions can be constructed with paint, flexible delineator posts, stone bollards, planter boxes, and other materials. Temporary curb extensions allow a municipality to utilize curb extensions for a short-medium term and enable them to be removed during the winter months or during roadway maintenance. This countermeasure improves pedestrian crossings by reducing the pedestrian crossing distance, reducing the time that pedestrians are in the street, visually and physically narrowing the roadway, and enhancing the ability of pedestrians and motorists to see each other.

NOTES

Semi-permanent treatments could be removed in winter to allow for maintenance operations; this requires coordination with the NHDOT.

Photo Source: www.pedbikeimages.org Kristen Brookshire, Bethel Better Block Initiative, Seattle, WA ROW Improvements Manual

TREATMENT	TIMEFRAME	COST
Expand and improve gateway signage at Gateway Zones	Medium Term	Low

DESCRIPTION

A gateway is a physical or geometric landmark that indicates a change in environment from a higher-speed arterial or collector road to a lower-speed residential or commercial district. They often emphasize aesthetics and are frequently used to identify neighborhood and commercial areas within a larger urban setting. Gateways may be a combination of street narrowing, medians, signing, archways, roundabouts, or other identifiable features. Gateways should send a clear message to motorists that they have reached a specific place and must reduce speeds. This can help achieve the goal of meeting expectations and preparing motorists for a different driving environment.

NOTES

Gateways are only an introduction, and slower speeds are not likely to be maintained unless the entire area has been redesigned or other traffic-calming features are used.

Photo Source: North Country Council Staff, www.pedbikeimages.org Linda Shephard Salzer

TREATMENT	TIMEFRAME	COST
Construct new curbing along sidewalks and near crossings with cast-in-place concrete or granite slabs.	Medium Term	Moderate

DESCRIPTION

Curbs contribute to pedestrian safety by delineating between the road and the sidewalk and by offering a drainage channel for water runoff. Without a curb, pedestrians are more likely to be hit by vehicles. Curbs are also used to channel runoff water from rain or melted snow and ice into storm drains. Clear, dry sidewalks offer pedestrians a safe place to walk, and when used in parking lot islands, they keep drivers safe from ice or flooding.

NOTES

New curbing can reduce curb rollovers and vehicles taking corners at speed. Provides vehicles, pedestrians, and cyclists with a clear roadway edge.

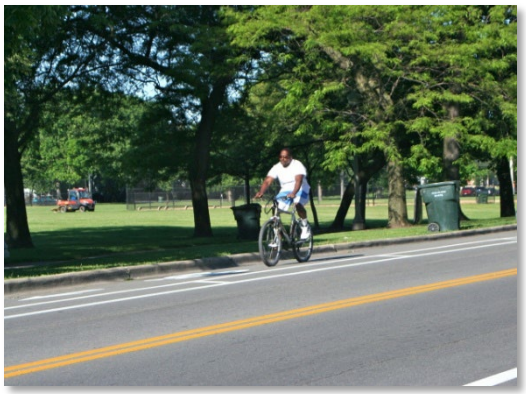


Photo Source: www.pedbikeimages.org Dan Burden, www.pedbikeimages.org CDOT

TREATMENT	TIMEFRAME	COST
Narrow vehicle travel lanes through the Village Center	Medium Term	Moderate

DESCRIPTION

Narrowing lane widths (i.e., lane diet) can help improve safety and comfort for pedestrians, bicyclists, transit riders, and motor vehicles on roadways with safety and speeding problems, and vehicle lane widths are greater than the recommended minimums. Lane diets provide multiple benefits, including lowering vehicle speeds, reducing crossing widths and pedestrian exposure to motor vehicle traffic, and redistributing roadway space for other users. With the additional space created from narrowing travel lanes, space can be redistributed for the following uses:

- Bicycle lanes or cycle tracks, parking lanes, or transit lanes
- Widened sidewalks, landscaped buffers with street trees, and curb extensions at crossings where on-street parking is present
- Pedestrian islands

NOTES

Lane Narrowing must follow all applicable state roadway design requirements. It will require coordination/study with NHDOT. Should be used in conjunction with improved Gateway Signage

Photo Source: www.pedbikeimages.org Josh Mellow, www.pedbikeimages.org Dan Burden

TREATMENT	TIMEFRAME	COST
Study angled parking on Main Street between curb extensions	Long Term	High

DESCRIPTION

Angled parking provides on-street vehicle parking while narrowing the effective travel lane width, reducing the pedestrian crossing area, increasing the amount of pedestrian area, and providing a buffer between vehicle traffic and pedestrians and cyclists along the sidewalk. Angled or Diagonal parking may require more attention to improve visibility at crossings and intersections, and it should not be used on high-speed or busy streets. Municipalities should also consider back-in angled parking due to safety concerns about the line of sight, pedestrian time near travel lanes, and trunk access via the curb.

NOTES

Significant safety and design challenges exist – traffic calming treatments are needed in conjunction with angled parking. Drainage and runoff must be managed, there may not have adequate roadway width, and requires approval from the NHDOT Commissioner.

Photo Source: www.pedbikeimages.org Dan Burden

TREATMENT	TIMEFRAME	COST
Install permanent concrete or landscaped curb extensions at key intersections in the Village Center.	Long Term	High

DESCRIPTION

Curb extensions extend the sidewalk or curb line out into the parking lane and reduce the effective street width. Curb extensions must not extend into travel lanes and should not extend across bicycle lanes. Motorists are encouraged to travel more slowly at intersections or midblock locations with curb extensions, as the reduced street width sends a visual cue to motorists. Turning speeds at intersections can be reduced with curb extensions (curb radii should be as tight as is practicable). Additionally, curb extensions at an intersection prevent motorists from parking in or too close to a crosswalk and from blocking a curb ramp or crosswalk. Motor vehicles parked too close to corners present a threat to pedestrian safety since they block sightlines, obscure the visibility of pedestrians and other vehicles, and make turning particularly difficult for emergency vehicles and trucks.

NOTES

The town will need to assume snow removal and other maintenance for road shoulder/parking lanes. Must work with NHDOT on these official responsibilities and for design approval.

Photo Source: www.pedbikeimages.org Kristen Brookshire, www.pedbikeimages.org Carl Sundstrom, www.pedbikeimages.org Dan Burden

TREATMENT	TIMEFRAME	COST
Widen sidewalks throughout the Village Center.	Long Term	High

DESCRIPTION

Sidewalks separated from the roadway are the preferred accommodation for pedestrians. Sidewalks provide many benefits, including safety, mobility, and healthier communities. By providing more comfortable facilities, you can increase the number of trips made by walking, particularly in areas with mixed land uses. Improved and expanded sidewalks also better serve residents who cannot drive and rely on walking, cycling, or public transportation.

Providing sidewalks, widened paved shoulders, or stabilized shoulders — particularly when providing access to transit and schools — can increase the transportation options for these individuals.

Providing expanded sidewalks creates more public pedestrian spaces for activities, greenspace, benches, and other items. Research also indicates that people will walk for recreational purposes if a facility is provided.

NOTES

Narrows roadway creates more public pedestrian space, boosts visibility of crosswalks, narrows parking lanes.

Photo Source: www.pedbikeimages.org Laura Sandt, www.pedbikeimages.org Carl Sundstrom, www.pedbikeimages.org Dan Burden

TREATMENT	TIMEFRAME	COST
Installation of Bike Lane along Main Street through Gateway Zones and Village Center	Long Term	High

DESCRIPTION

Bicycle facilities (Bike Lanes) provide a shared or exclusive space to indicate where bicyclists can predictably travel along streets. Shared bicycle and motor vehicle travel lanes, as well as bicycle lanes, are typically designated by striping, symbols, and/or signage. Designing streets for bicycle use helps create a more predictable traffic environment by reducing conflicts between all modes of travel, whether the conflict is between bicyclists and motor vehicles or pedestrians and bicyclists. Bicycle Lanes on the roadway also help provide a buffer between pedestrians and motor vehicle traffic, encourage lower motor vehicle speeds, and reduce pedestrian exposure to motor vehicles at crossings.

NOTES

Requires lane narrowing and removal of parking spaces. Significant engineering and collaboration with NHDOT are needed. The municipality would need a contingency plan for parking relocation.

Photo Source: www.pedbikeimages.org Dan Burden, www.pedbikeimages.org Austin Brown, www.pedbikeimages.org Kristen Langford

TREATMENT	TIMEFRAME	COST
Expand the Sidewalk network to connect to community services and amenities.	Long Term	High

DESCRIPTION

Sidewalks and walkways are "pedestrian lanes" that provide people with space to travel within the public right-of-way, separated from roadway vehicles. They provide places for children to walk, run, skate, ride bikes, and play. Roadways without sidewalks are more than twice as likely to have pedestrian crashes as sites with sidewalks on both sides of the street. Providing sidewalks on both sides of the street can eliminate numerous midblock crossing crashes. Such facilities also improve pedestrian mobility and provide access for all types of pedestrian travel: to and from home, work, parks, schools, shopping areas, and transit stops. Walkways should be part of every new and renovated road facility, and every effort should be made to retrofit streets that currently do not have sidewalks.

NOTES

Expansion of an accessible pedestrian network can assist with traffic calming at crossings. Presents potential ROW and driveway access challenges. Drainage and runoff considerations must be studied.

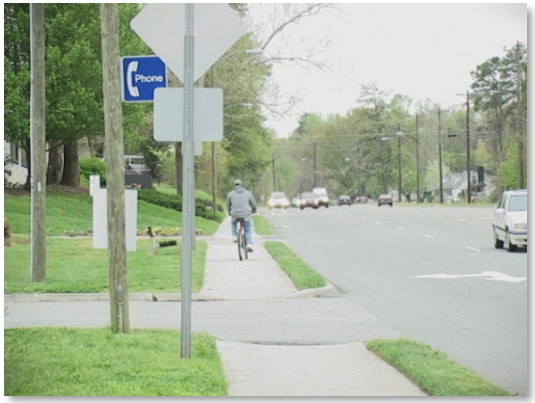


Photo Source: www.pedbikeimages.org Dan Burden, www.pedbikeimages.org Charles Hamlet