NORTHEASTERN CONNECTICUT REGIONAL TRANSPORTATION SAFETY PLAN 2021

U.S. Department of Transportation
Federal Highway Administration

neccog

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Report Terminology

TERM	DEFINITION
AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway Transportation Officials
ADT	Average Daily Traffic
Cat Tracks	Dotted lines that extend lane line markings into the intersection for enhanced delination. They are typically applied at offset, skewed, multileg, complex intersections, or curved roadways, or where multiple turn lanes are used.
Collector Road	The Federal Highway Administration defines Collector Roads as the network that gathers traffic from local roads and directs them to the Arterial network.
FHWA	Federal Highway Administration
HSIP	Highway Safety Improvement Program
Injury A	Suspected Serious Injury
Injury B	Suspected Minor Injury
Injury C	Possible Injury
Injury K	Fatal Injury
Injury O	Property Damage Only
LPI	Leading pedestrian interval. A leading pedestrian interval (LPI) gives pedestrians the opportunity to enter an intersection 3-7 seconds before vehicles are given a green indication. With this head start, pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn left.
Local Roads	The FHWA describes Local Roads as having the largest percentage of all roadways in terms of mileage. They are intended for short distance travel, except at the origin or destination end of the trip, due to their provision of direct access to abutting land. They are often designed to discourage through traffic.
LRTP	Long-Range Transportation Plan
MUTCD	Manual on Uniform Traffic Control Devices
MVMT	Million Vehicle Miles Traveled
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
Per VMT	Describes a crash rate per million vehicle miles
Per Capita	Describes a crash rate per population
Performance Measure	Indicators that enable decision-makers and other stakeholders to monitor changes in system conditions and performance against established visions, goals, and objectives.
RTSP	Regional Transportation Safety Plan
Reverse Curve	Reverse curves are two successive turns or curves that bend in opposite directions.
SHIP	State Highway Improvement Plan
SHSP	Strategic Highway Safety Plan
TIP	Transportation Improvement Program
VMT	Vehicle Miles Traveled

1. Introduction

In 2017, the Connecticut Department of Transportation (CTDOT) published the Connecticut Strategic Highway Safety Plan (SHSP) to guide the State in reducing injuries and fatalities along Connecticut roadways. This Regional Transportation Safety Plan (RTSP) is in congruence with the Connecticut SHSP. It will serve as a road map and strategy to help the Northeastern Connecticut Region and its 16 municipalities collaborate with the State in reducing injury and fatal crashes. It will also serve to increase safety awareness and allow the member towns, cities, and the region to focus on their transportation safety issues.

The approach used in this study applies similar methodology to the State plan, but it includes more local input, reflecting both the needs of each of its 16 individual communities and the region as a whole. In addition to the regional plan, each municipality has its own mini-report, which includes specific crash data and priority locations, while incorporating stakeholder feedback.

The plan is data-driven, multimodal, and multidisciplinary. It identifies the region's high-frequency crash locations and outlines effective counter-measures and strategies to reduce crashes. The purpose of listing counter-measures is to help the region prioritize its projects and better position the region for any available safety funds.

The plan was developed involving local stakeholders from the four E's of transportation safety: engineering, enforcement, education, and emergency response. The overall goal of the Northeastern CT RTSP is to reduce the number of traffic injuries and fatalities by 15% by 2026. This means a reduction from a four-year average of 382 injury and fatal crashes per year to an annual average of 325 injury and fatal crashes per year in the Northeastern Connecticut Region.

This RTSP is a living document. Federal regulations require an update for the SHSP every five years and this regional safety plan could follow the same update process. The regional plan will adhere to the same mandates, with the expectation that all updates will reflect the most current federal surface transportation legislation.

THE FOUR E'S OF TRANSPORTATION SAFETY

ENGINEERING: Highway design, traffic, maintenance, operations, and planning professionals.

ENFORCEMENT: State and local law enforcement agencies.

EDUCATION: Prevention specialists, communication professionals, educators, and citizen advocacy groups.

EMERGENCY RESPONSE: First responders, paramedics, fire, and rescue.

GOAL:

REDUCE THE ANNUAL AVERAGE NUMBER OF INJURY AND FATAL CRASHES FROM

382

TO

325

2. Stakeholders

Stakeholders engaged in the process and development of the Northeastern Connecticut Region's RTSP include representatives from the four E's. In order to ensure stakeholder input, the Northeastern Connecticut Region Council of Governments (NECCOG) member municipalities were involved with the plan development from the onset of the study. The following is a list of some of the involved safety partners. Under each municipal report, there are additional stakeholders that participated in the plan.

NECCOG Member Municipalities and Chief Elected Officials

Ashford-Cathryn E Silver-Smith
Brooklyn-Rick Ives
Canterbury-Chris Lippke
Chaplin-Bill Rose
Eastford-Jacqueline DuBois
Hampton-Allan Cahill
Killingly-Mary Calorio
Plainfield-Kevin Cunningham
Pomfret-Maureen Nicholson
Putnam-Barney Seney
Scotland-Gary Greenberg
Sterling-Lincoln A. Cooper
Thompson-Amy St. Onge
Union-David Eaton
Voluntown-Tracey Hanson
Woodstock-John "Jay" Swan

CTDOT
NECCOG
State and Local Traffic Enforcement Officials
Municipal Fire Department officials and/or First Responders
Municipal Officials
Municipal Public Works Directors

3. Regional Overview

The Northeastern Connecticut Region is composed of 16 diverse municipalities situated in northeastern Connecticut and includes the municipalities of Ashford, Brooklyn, Canterbury, Chaplin, Eastford, Hampton, Killingly, Plainfield, Pomfret, Putnam, Scotland, Sterling, Thompson, Union, Voluntown, and Woodstock.

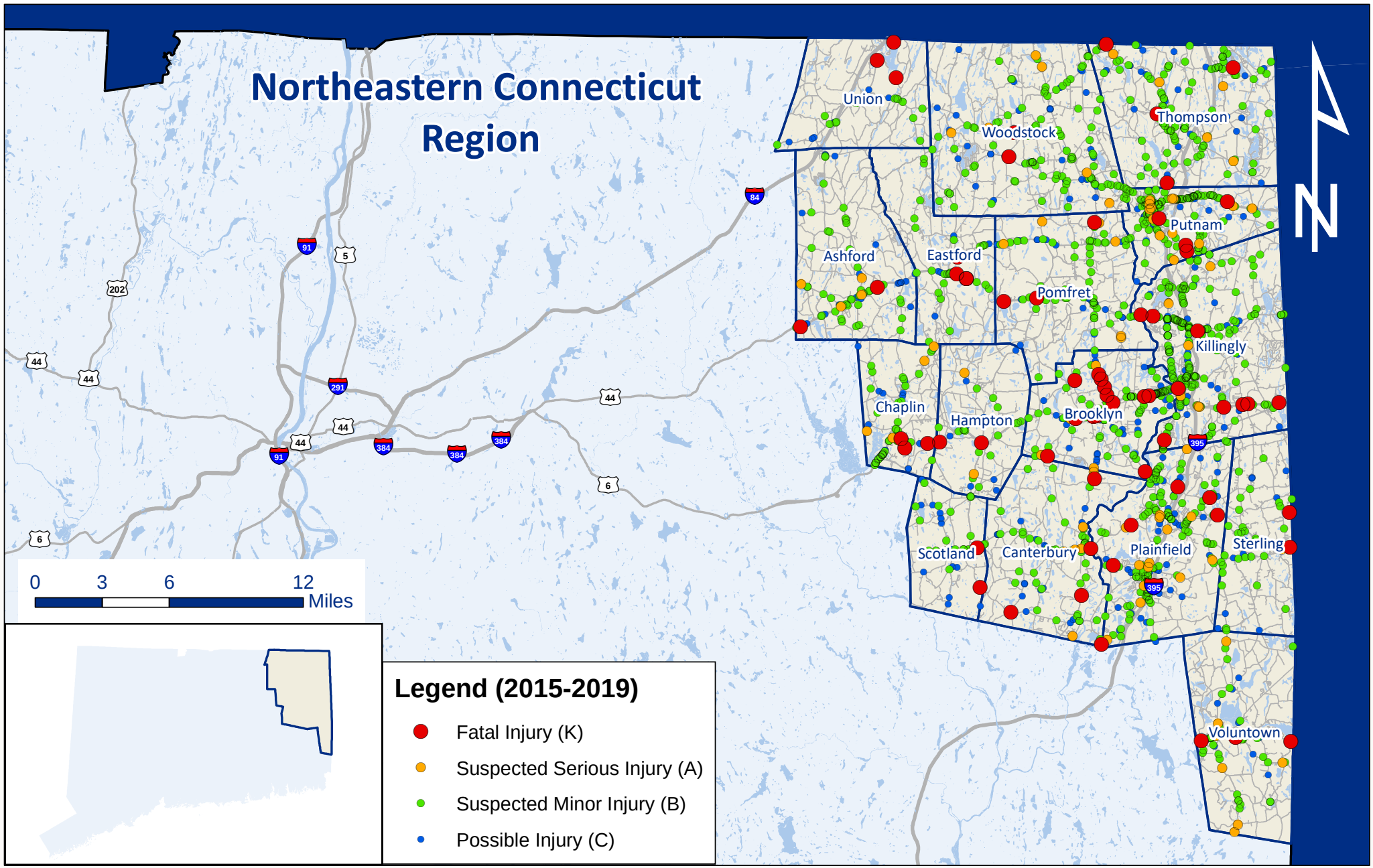
In 2015, the Region had a population of 95,880 (186.9 persons per square mile - compared to 647.6 persons per square mile for the State)[1] making the Region one of the least populated regions in the Connecticut. The Northeastern Region contains just 2.7 percent of the State's population, with municipalities categorized as rural or suburban. The Region is large (just over ten percent of Connecticut's total area) - covering 562.8 square miles. From 1970 to 2012 the Region gained more than 29,000 persons - a 43.7% increase. Population projections indicate that the Region will grow to more than 104,000 persons by 2025.

Because of the disparate composition and traffic conditions in the Region, each municipality was invited to participate in the development of this plan to improve transportation within their individual town or city. The objective was to gather data from each municipality on a micro level and then analyze these on a more macro, regional level. The insights and cooperation of each municipality and NECCOG staff were imperative to the success of this initiative.

The data gathered and used for this study represents crashes that occurred on both local and State roads. In many cases, numerous crashes occurred on State roads, most likely due to higher traffic volumes. All roads, except limited-access highways, were included in the study. According to the State, each municipality is responsible for improvements on local roads, but local officials cannot make any physical changes or improvements to any State road without an encroachment permit from the State.

1.NECCOG Comprehensive Economic Development Strategy, 2019

Source: VN Engineers


Northeastern Connecticut Region
Union
Woodstock
Thompson
Putnam
Ashford
Eastford
Pomfret
Killingly
Chaplin
Hampton
Brooklyn
Scotland
Canterbury
Plainfield
Sterling
Voluntown
N
0 3 6 12 Miles
Legend (2015-2019)
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)

4. Northeastern Connecticut RTSP Planning Process

The Northeastern Connecticut Regional Transportation Safety Plan is comprised of a regional study and 16 municipal studies. The regional overview is a data-driven analysis of the top crash locations, which include a listing of possible countermeasures, the selection of emphasis areas, and strategies to reduce injury and fatal crashes. The municipal studies includes data-driven crash locations, stakeholder input, two field site inventories per municipality, and countermeasure tables. Combining the data-driven analysis with stakeholder input provided for a more comprehensive regional transportation safety plan.

The municipal reports are in the appendices, but since they were completed prior to the regional analysis, their methodology is included first in this plan. More information on the regional analysis and methodology is found in Section 5.

The methodology for the municipal reports began with the collection of injury and fatal crash data from the period of January 1, 2015 to December 31, 2019. The data was collected from the Connecticut Roadway Safety Management System website, specifically excluding limited-access highways. The crash data studied in this report consists of only injury and fatal crashes after the removal of property damage only (PDO) crashes. PDO crashes were not included in this study because they were not included in the Connecticut SHSP.

The extracted crash data was put into the mapping program, ArcGIS, to create 16 individual injury and fatal crash maps, one for each of the Northeastern Connecticut Region municipality. High-frequency crash locations were identified and if an intersection or segment of roadway had a cluster of crashes, it was highlighted on the maps. Additional crash locations were identified by municipal representatives due to potential safety concerns or due to historic site-specific safety issues not reflected in the four years of data analyzed. These were not added to the maps, but the locations were included in the municipal reports in the Town Input sections.

Crash locations and corresponding severities were presented at each of the municipal meetings with chief elected officials, EMS, law enforcement agents, public works directors, and other municipal stakeholders. These meetings were an opportunity to receive municipal input into the crash locations and to get feedback on contributing factors. The input from municipal representatives influenced the development of countermeasure recommendations for the municipal reports.

The municipal reports include the meeting summary in the Municipal Input section. In addition, field reviews were completed based on the sites selected by municipal representatives. A summary of the field reviews and images taken are included in the Field Site Inventory section of the municipal reports. Countermeasure tables are also included at the end of each municipal report to suggest safety improvements that could be considered in each Northeastern Connecticut Region member town or city.

The top crash locations in the region were identified and the top 40 were further analyzed to identify contributing factors and possible countermeasures. A more detailed description of this process is provided in the Northeastern Connecticut Region's Top Crash Locations section of this report found on page 10.

Source: VN Engineers

Beginning in 2017, federal regulation mandates that states set five performance targets each year:

1. Number of Fatalities
2. Rate of Fatalities per 100 Million Vehicle Miles Traveled (VMT)
3. Number of Serious Injuries
4. Rate of Serious Injuries per 100 Million VMT
5. Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries (combined total)

The crash statistics are evaluated on a five-year average. The Northeastern Connecticut Region's RTSP will also look at these same performance metrics and establish the target objectives in congruence with the State's plan. This includes a 15% reduction in the number of injuries and fatalities on all public roads in the Northeastern Connecticut Region by 2026. In order to obtain this goal, the RTSP includes estimated completion time (short, medium, and long) and possible costs, as well as funding sources for all proposed countermeasures. The cost estimates for the motorized and non-motorized countermeasures were based on the FHWA's Pedestrian Safety Guide and Countermeasure Selection System.

2015-2019 Injury and Fatal Crashes by Municipality

Municipality	Total Injury and Fatal Crashes
Ashford	89
Brooklyn	195
Canterbury	90
Chaplin	86
Eastford	47
Hampton	45
Killingly	356
Plainfield	208
Pomfret	92
Putnam	211
Scotland	38
Sterling	55
Thompson	154
Union	26
Voluntown	69
Woodstock	149
Total	**1,910**

5. Top Regional Crash Locations

5.1 Methodology for Identifying Top Crash Locations in the Region

Overview

This report identifies the top crash intersections and corridors in the Region using the Equivalent Property Damage Only (EPDO) methodology built into the Connecticut Roadway Safety Management System (CRSMS). This method is based on the EPDO crash costs that were developed using Federal Highway Administration's (FHWA) national guidance. The EPDO method calculates a combined frequency and severity score for each site by assigning weighting factors to crashes by crash severity and monetary consequences. This score is then divided by the mile length and number of analysis years to develop an average annual EPDO score that allows for segments of varying lengths to be compared uniformly. The weighting factors are based on the costs of property damage only crashes, and the calculated score accounts for the severity of crashes and the expected crash costs for each site. The weighting factors used in this study are estimated by the Federal Highway Administration (FHWA) and documented in the "Safety Analyst User Manual" based on the mean comprehensive monetary costs for each severity level. These weighting factors and monetary consequences were updated in March 2021 by the Connecticut Transportation Safety Research Center (CTSRC) for the Connecticut Department of Transportation (CTDOT).
The comprehensive monetary costs are as follows:

- **K** (fatal): $6,415,389
- **A** (suspected serious injury): $338,576
- **B** (suspected minor Injury): $123,646
- **C** (possible injury): $69,541
- **O** (no apparent injury): $11,186

The ratio of these combined direct and indirect crash-related costs provided the weights for maximum severity associated with each crash:

- **K**: 574
- **A**: 30
- **B**: 11
- **C**: 6
- **PDO**: 1

KABCO Severity Ranking

Severity	Crash Cost	EPDO Score
K-Fatal	$6,415,389	574
A-Suspected Serious Injury	$338,576	30
B-Suspected Minor Injury	$123,646	11
C-Possible Injury	$69,541	6
O-Property Damage Only	$11,186	1

Final cuts were made to the ranked list of sites based on these criteria; ramps and interstates were removed and top ranked corridors and intersections were inspected visually to determine if there were overlapping sites. If intersections overlapped with a corridor(s), then the analyst determined if the high crash location was the result of the single intersection issue or the corridor as a whole. The top crash locations are divided into intersections (Table 5.2) and corridors (Table 5.3) and ranked based on EPDO.

Note: The final EPDO score should not be used as an objective standard. This observed crash-based analysis is subject to regression-to-the-mean[1] and should only be used as a relative metric for sites during the specific analysis period.

Similar to the methodology to select the top crash sites, EPDO score was used to rank those crashes solely involving vehicles and/or pedestrians and bicyclists. These were called non-motorized crash locations. The ranking of these crashes is based solely on the fatalities and injuries suffered by the non-motorists from these crashes, with more weight placed on injuries of greater severity. The non-motorized crashes exclude all single motorized vehicle or multi vehicle collisions. They are found on page 21. The non-motorized crash countermeasures were selected based on the Connecticut Uniform Police Crash Reports and a desktop review of the applicable locations.

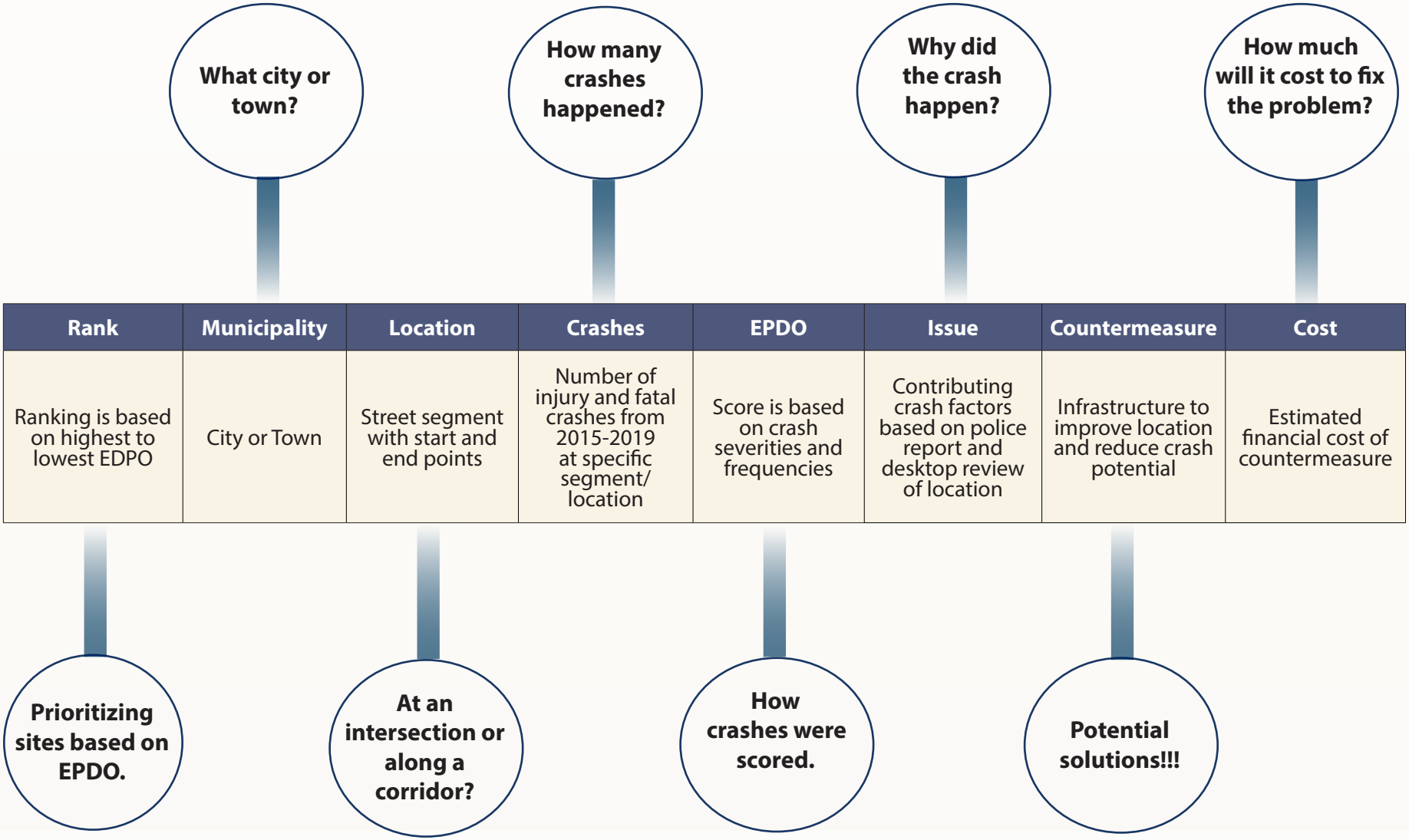
Source: VN Engineers

1 Regression-to-the-mean
When identifying potential safety issues, the analyst must be aware of the statistical phenomenon of regression-to-the-mean (RTM). RTM describes a situation in which crash rates are artificially high during the before period and would have been reduced even without an improvement to the site. Programs focused on high-hazard locations, such as the HSIP, are vulnerable to the RTM bias which is perhaps the most important cause of erroneous conclusions in highway-related evaluations. This threat is greatest when sites are chosen because of their extreme value (e.g., high number of crashes or crash rate) in a given time period.

5.2 Top Motorized Crash Locations with Countermeasures

The following tables in 5.2 and 5.3 list the top crash corridors and intersections in the Northeastern Connecticut Region. These corridors and intersections have the highest EPDO crash ratings. The locations include a description of the affiliated issues and potential countermeasures for each location. For more details on each countermeasure, please reference Appendix C: Infrastructure Countermeasure Tables on Page 131.

Below is an explanation of each column.



Rank	Municipality	Location	Crashes	EPDO	Issue	Countermeasure	Cost
Ranking is based on highest to lowest EDPO	City or Town	Street segment with start and end points	Number of injury and fatal crashes from 2015-2019 at specific segment/ location	Score is based on crash severities and frequencies	Contributing crash factors based on police report and desktop review of location	Infrastructure to improve location and reduce crash potential	Estimated financial cost of countermeasure

Top Motorized Crash Locations with Countermeasures, 2015-2019

RANK	MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
1	Eastford	US-44 (Pomfret Rd) between Sprague Hill Rd and Old Route 44	4	631	Speeding	Install dynamic speed feedback signs	Low
2	Killingly	US-6 (Providence Pike) between Halls Hill Rd and Margaret Henry Rd	3	447	Speeding	Install dynamic speed feedback signs	Low
3	Voluntown	CT-138 (Main St) between Sheldon Rd (in Griswold) and Lillibridge Ave	4	395	Lane departure crashes	Install high friction surface treatment	Low
					Speeding	Install dynamic speed feedback signs	Low
						Reduce speed limit and implement optical speed bars	Low
4	Brooklyn	US-6 (Providence Rd) between Brickyard Rd (West Access) and Brickyard Rd (East Access)	9	364	Crashes related to driveway accesses	Install turning lanes	Medium to High
5	Killingly	US-6 (Providence Pike) between Maple St and CT-12 (Wauregan Rd)	4	312	Lane departure crashes	Install high friction surface treatment	Low
					Front-to-rear crashes	Install traffic signal retroreflective back-plates at signals	Low
					Speeding	Implement optical speed bars	Low
6	Eastford	CT-244 (Boston Tpke) between Andert Dr and Mill Bridge Rd	4	275	Lane departure crashes	Install high friction surface treatment	Low
					Speeding	Install dynamic speed feedback signs	Low
						Implement optical speed bars	Low
7	Brooklyn	US-6 (Hartford Rd) between Harris Ave and Putnam Pl	5	270	Crashes related to driveway accesses	Install turning lanes	Medium to High
					Speeding	Install dynamic speed feedback signs	Low
						Implement optical speed bars	Low

Top Motorized Crash Locations with Countermeasures, 2015-2019

RANK	MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
8	Chaplin	US-6 (Hampton Rd) between CT-198 (Phoenixville Rd) and Cross Rd	5	260	Lane departure crashes	Install high friction surface treatment	Low
						Install Safety Edge	Low
					Front-to-rear crashes	Install traffic signal retroreflective backplates at signals	Medium to High
					Speeding	Implement optical speed bars	Low
9	Ashford	US-44 (Squaw Hollow Rd) between Marsh Rd (in Willington) and Howard Rd	3	234	Lane departure crashes	Install high friction surface treatment	Low
					Speeding	Install dynamic speed feedback signs	Low
						Implement optical speed bars	Low
10	Brooklyn	CT-205 (Wauregan Rd) between Allen Hill Rd and Maynard Rd	4	130	Speeding	Install dynamic speed feedback signs	Low
						Implement optical speed bars	Low
11	Thompson	CT-197 (Old Turnpike Rd) and Dresser Hill Rd	6	122	Angle crashes	Add dedicated turning lanes	Medium to High
						Manage vegetation	Low to Medium
12	Killingly	CT-101 (Hartford Pike) and Dog Hill Rd	5	122	Skewed intersection	Install left turn lane for turns on to Dog Hill Rd; may require realignment of intersection or roundabout	High
13	Hampton	US-6 (Providence Tpke) and CT-97 (Pudding Hill Rd)	5	119	Angle crashes	Construct acceleration lanes on US-6 for vehicles turning from CT-97	High
					Sight distance_	Trim vegetation	Low
					Speeding on US-6	Consider installing dynamic speed feedback signs	Low
						Implement optical speed bars on the US-6 approac	Low
14	Woodstock	CT-171 (Somers Tpke) between County Rd and Coatney Hill Rd	5	108	Speeding	Implement optical speed bars	Low
					Lane departure crashes	Install high friction surface treatment	Low
15	Killingly	US-6 (Providence Pike) between CT-435 (S Frontage Rd - West Access) and CT-435 (S Frontage Rd - East Access)	4	88	Lane departure crashes	Install high friction surface treatment	Low
					Speeding	Implement optical speed bars	Low

Top Motorized Crash Locations with Countermeasures, 2015-2019

RANK	MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
16	Brooklyn	US-6 (Providence Rd) between 494 Providence Rd and S Main St (West Access)	7	80	Access management	Restrict access to right-in, right-out to driveways in segment	Low
17	Chaplin	US-6 (Willimantic Rd) between Carefree Ln and Lynch Rd	7	80	Access management	Convert entire segment to a one-lane in each direction with a center two-way left turn lane (TWLTL)	Low
18	Putnam	US-44 (School St) between Dewey St and 614 School St	7	77	Access management	Install turn lanes	Low
19	Putnam	Church St between Green St and Morse St	3	76	Speeding	Install dynamic speed feedback signs on downgrade	Low
20	Killingly	CT-101 (Hartford Pike) between Otis St and Pleasant St	5	69	Speeding	Install dynamic speed feedback signs	Low
						Implement optical speed bars	Low
21	Sterling	CT-14 (Sterling Rd) between Goshen Rd (in Plainfield) and Church St	6	66	Speeding	Install dynamic speed feedback signs (particularly on down grade)	Low
						Implement optical speed bars	Low
					Lane departure crashes	Install high friction surface treatment	Low
22	Ashford	US-44 (Ashford Center Rd) between CT-89 (Mansfield Rd) and Pumpkin Hill Rd	10	64	Speeding	Install dynamic speed feedback signs on downgrade	Low
					Lane departure crashes	Install high friction surface treatment	Low
23	Putnam	CT-171 (Providence St) between Church St and Kennedy Dr	3	51	Speeding	Install dynamic speed feedback signs	Low
					Access management	Convert segment west of reservoir to a one-lane in each direction with a center two-way left turn lane	Low
24	Brooklyn	US-6 (Providence Rd) between S Main St (West Access) and 300 ft East of Day St	10	50	Front-to-rear crashes	Install traffic signal retroreflective back-plates at signals	Medium to High

Top Motorized Crash Locations with Countermeasures, 2015-2019

RANK	MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
25	Chaplin	US-6 (Willimantic Rd) between Lynch Rd and Chappell St	3	44	Access management	Restrict access to right-in, right-out to driveways up to 300 feet from Lynch Road	Low
26	Killingly	Maple St between Harry St and Williams St	3	44	Speeding	Install dynamic speed feedback signs	Low
27	Putnam	US-44 (School St) between 614 School St and I-395	5	44	Access management	Restrict access to right-in, right-out at gas stations	Low
28	Killingly	CT-12 (Wauregan Rd) between Junior Ave and Lucienne Ave	7	43	Speeding	Install dynamic speed feedback signs	Low
29	Killingly	CT-101 (Hartford Pike) between Sayles Ave and Otis St	4	43	Speeding	Reduce speed limit and implement optical speed bars	Low
						Install dynamic speed feedback signs	Low
					Lane departure crashes	Install high friction surface treatment at curves	Low
30	Killingly	CT-12 (N Main St) between Kohl's south entrance and CT-101 (Hartford Pike)	6	42	Access management	Restrict access to right-in, right-out to driveways or consolidate to fewer driveways	Low
31	Canterbury	CT-169 (N Canterbury Rd) between Old Plainfield Rd and N Society Rd	5	39	Speeding	Install dynamic speed feedback signs	Low
					Lane departure crashes	Install high friction surface treatment at curves	Low
32	Putnam	US-44 (Providence Pike) between I-395 and Stop & Shop/CVS Entrance	5	38	Angle Crashes	Consider conversion of protected/permissive to protected-only left turns	Low

Top Motorized Crash Locations with Countermeasures, 2015-2019

RANK	MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
33	Killingly	CT-12 (Main St) between North St and Morin Ave	3	37	Speeding	Install dynamic speed feedback signs	Low
34	Woodstock	CT-171 (Somers Tpke) between Senexet Rd/ Arc Emporium and Thompson border	3	36	Access management	Install turn lanes	Low to High
35	Brooklyn	US-6 (Providence Rd) between Brickyard Rd (East Access) and 494 Providence Rd	6	35	Access management	Add left-turn lanes	Low
36	Killingly	CT-101 (Hartford Pike) between Dunkin Donuts entrance and Mobil/Taco Bell East Entrance	3	35	Front-to-rear crashes	Install traffic signal retroreflective back-plates at signals	Medium to High
37	Killingly	CT-12 (Main St) between Morin Ave and Lewis Blvd	4	32	Speeding	Install dynamic speed feedback signs	Low
						Reduce speed limit and implement optical speed bars	Low
38	Putnam	CT-171 (Woodstock Ave West) between Woodstock border and Woodstock Ave	5	31	Access management	Install turn lanes	Low to High
39	Putnam	Kennedy Dr between Bridge St and CT-171 (Providence St)	3	28	Access management	Install turn lanes, two-way center left turn lane as needed	Low
40	Killingly	CT-12 (Main St) between Broad St and Stearns St	4	28	Front-to-rear crashes	Install traffic signal retroreflective back-plates at signals	Medium to High

5.3 Top Non-Motorized Crash Locations in the Northeastern Connecticut Region, 2015-2019

Top Non-Motorized Crash Locations in the Northeastern Connecticut Region, 2015-2019

RANK	MUNICIPALITY	LOCATION	CRASHES	EPDO	CRASH DETAILS	COUNTERMEASURE	COST	NON--INFRASTRUCTURE
1	Killingly	CT-12 (Wauregan Rd) between Taos Dr and Lucienne Ave	1	806	Pedestrian hit on side of CT-12	Provide path for pedestrians away from shoulder	High	Watch for Me CT Campaign
2	Pomfret	US-44 (Mashamoquet Rd) at Hampton Rd	1	806	Pedestrian hit in dark not-lighted conditions	Improve illumination of the empty lot	Medium	Watch for Me CT Campaign
3	Brooklyn	CT-169 (Pomfret Rd) north of Hyde Rd	1	470	Pedestrian hit during snowy conditions	Improve delineation driveways	Low	Watch for Me CT Campaign
4	Brooklyn	US-6 (Hartford Rd) and Harris Ave	1	256	Pedestrian hit in dark not-lighted, rainy conditions	Prohibit shoulder parking on US-6 across the street from business; otherwise install marked crosswalk; consider illumination	Low	Watch for Me CT Campaign
5	Ashford	US-44 (Squaw Hollow Rd) between Howard Rd and Marsh Rd	1	226	Pedestrian hit in dark not-lighted conditions	Provide path for pedestrians away from shoulder; consider illumination	High	Watch for Me CT Campaign
6	Plainfield	CT-12 (Norwich Rd) and CT-14 (E Main St)	1	50	Pedestrian hit	Extend sidewalks eastward from intersection	High	Watch for Me CT Campaign
7	Brooklyn	US-6 (Providence Rd) east of S Main St	1	50	Bicyclist hit	Convert shoulder to a marked bicycle facility	Low	Watch for Me CT Campaign
8	Putnam	CT-171 (Providence St) between Church St and Kennedy Dr	1	20	Bicyclist hit	Convert shoulder to a marked bicycle facility	Low	Watch for Me CT Campaign

Top Non-Motorized Crash Locations in the Northeastern Connecticut Region, 2015-2019

RANK	MUNICIPALITY	LOCATION	CRASHES	EPDO	CRASH DETAILS	COUNTERMEASURE	COST	NON--INFRASTRUCTURE
9	Woodstock	CT-169 (Norwich Worcester Turnpike) north of CT-197	1	22	Bicyclist hit on curve	Provide signage to indicate watch out for bicyclists	Low	Watch for Me CT Campaign
10	Brooklyn	US-6 (Providence Rd) between 494 Providence Rd and S Main St (West Access)	2	19	Pedestrian hit when crossing driveway facing S Main St during daylight hours; Bicyclist hit when crossing driveway of east entrance of Chucky's Gas Station in dark-lighted conditions	Increase the delineation of pedestrian paths across driveways	Low	Watch for Me CT Campaign
11	Canterbury	Water St and Bates Pond Rd	1	146	Pedestrian hit in dark-lighted conditions	Increase illumination	Low	Watch for Me CT Campaign
12	Thompson	Reardon Rd and Main St	1	73	Pedestrian involved in vehicle running off road after taking turn quickly	Reduce the angle of the intersection by installing plastic bollards to sharpen the turn	Low to Medium	Watch for Me CT Campaign
13	Putnam	Church St between Morse St and Green St	1	55	Pedestrian hit crossing Church St	Install marked crosswalk	Low	Watch for Me CT Campaign
14	Killingly	Broad St and Killingly Dr	1	22	Pedestrian hit when crossing marked crosswalk in dark-lighted conditions	Install rectangular rapid flashing beacons to increase visibility of crosswalk	Low	Watch for Me CT Campaign
15	Putnam	Canal St and US-44 (Pomfret St)	1	18	Pedestrian hit	Install crosswalks on Canal Street	Low	Watch for Me CT Campaign

6. Public Education Resources to Support Behavior Change

Drowsy Driving	Develop evidence-based awareness and educational message strategies that address why drowsy driving is risky, how motorists can prevent drowsy driving, signs and symptoms of drowsy driving, and strategies for dealing with drowsiness as a driver. Investigate drowsy driving legislation and potential for changing awareness and attitudes towards drowsy driving. Identify high-risk drivers for drowsy driving. The National Sleep Foundation has a Drowsy Driving Prevention Week in November to help reduce the number of drowsy driving-related crashes in the United States. Campaign materials are provided for this event through the National Highway Traffic Safety Administration (NHTSA). The United States Department of Transportation (USDOT) Traffic Safety Marketing (TSM) provides a fact sheet, sample news release, and an educational sheet that addresses drowsy driving prevention.						
Resources for Drowsy Driving	National Safety Council	NHTSA	Federal Motor Carrier Safety Administration	National Institute of Health National Heart Lung, and Blood Institute	Center for Disease Control and Prevention		
Speeding	"When Speeding Kills" marketing campaign materials are provided by the CTDOT to encourage safe travel speeds in Connecticut. Alternative campaign materials that share the message "Stop Speeding before it Stops You" are provided by the USDOT Traffic Safety Marketing (TSM) website. Banner ads, media, logos, radio ads, television ads, and web videos for speed campaigns are provided by the USDOT Traffic Safety Marketing and NHTSA.						
Resources for Speeding	Traffic Safety Marketing	NHTSA	CTDOT	Governor's Highway Safety Association	Vision Zero	National Transportation Safety Board	
Drunk Driving	The USDOT and the NHTSA provide marketing campaign materials for year-round education, such as "Buzzed Driving is Drunk Driving" or "Drive Sober or Get Pulled Over." The USDOT encourages the use of their "No Refusal Toolkit", which is an enforcement strategy that allows jurisdictions to obtain search warrants for blood samples from drivers suspected of drinking who refuse breath tests. The USDOT website explains that this program should be publicized to let the public know that the chance of being caught and facing the consequences of drunk driving is high. Banner ads, logos, radio ads, television ads, and web videos for drunk driving campaigns are provided by the USDOT's TSM and NHTSA. NHTSA also provides a yearly communications calendar that the organization uses to encourage communities to share campaign material by topic at specific times of the year, as an increased awareness strategy.						
Resources for Drunk Driving	Traffic Safety Marketing	NHTSA	Mothers Against Drunk Driving	Center for Disease Control and Prevention	Foundation for Advancing Alcohol Responsibility	CTDOT	
Drugged Driving	NHTSA and the USDOT are working on studies to understand how illegal drugs and prescription medications affect drivers. Provide marketing campaign materials are to be used as tools to raise awareness. The USDOT's TSM provides a fact sheet, sample news release, and an educational sheet that address drug-impaired driving prevention. Banner ads, logos, radio ads, television ads, and web videos for drug-impaired driving campaigns are provided by the USDOT's TSM and NHTSA. NHTSA also provides a yearly communications calendar that the organization uses to encourage communities to share campaign material by topic at specific times of the year, as an increased awareness strategy.						
Resources for Drugged Driving	NHTSA	Traffic Safety Marketing	National Institute on Drug Abuse	Stop Drugged Driving (Institute for Behavior and Health, Inc.)	Governor's Highway Safety Association	CTDOT	Mothers Against Drunk Driving

Distracted Driving	NHTSA describes distracted driving as any activity that diverts the attention of the driver from driving, including using electronic devices, eating and drinking, talking to people in your vehicle, changing the station on the radio, entertainment/navigation systems, etc. NHTSA provides resources on its website to educate Americans on the dangers of distracted driving. NHTSA provides suggestions for how teens, parents, employers, and educators can get involved with preventing distracted driving and how to make your voice heard to educate your community. The USDOT provides TSM focused on combating distracted driving through television ads that are available to every community. Banner ads, logos, radio ads, television ads, and web videos for distracted driving campaigns are provided by the USDOT's TSM and NHTSA. NHTSA also provides a yearly communications calendar that the organization uses to encourage communities to share campaign material by topic at specific times of the year as an increased awareness strategy.						
Resources for Distracted Driving	Traffic Safety Marketing	NHTSA	National Safety Council	Governor's Highway Safety Association	Center for Disease Control and Prevention	Insurance Institute for Highway Safety	CTDOT
Pedestrian and Bike Safety	The Watch for Me CT campaign is run by CTDOT in partnership with the Connecticut Children's Medical Center Injury Prevention Center. They share a message of responsibility for everyone on Connecticut roads, including pedestrians and bicyclists. The Watch for Me CT website provides facts about pedestrian crashes, pedestrian laws, and safety tips. The Watch for Me CT website also includes tips for drivers and campaign materials. NHTSA's pedestrian safety web page provides pedestrian safety related research, tips, curriculum, and programs that can be shared in any community to discuss pedestrian safety. The USDOT's TSM website provides campaign materials such as banner ads, logos, radio ads, television ads, and web videos for pedestrian campaigns used throughout the country. NHTSA also provides a yearly communications calendar that the organization uses to encourage communities to share campaign material by topic at specific times of the year, as an increased awareness strategy.						
Resources for Pedestrian and Bike Safety	Watch for Me CT	Federal Highway Administration	National Complete Streets Coalition	NHTSA	America Walks	Vision Zero	
Older Driver Safety	Older driver campaigns focus on providing resources for older drivers, their families, caregivers, medical providers, and law enforcement to educate how medical conditions can affect driving, how to assess older driver safety issues, and other transportation options provided in case an older driver's mobility is threatened when they are no longer recommended to drive a motor vehicle. NHTSA provides information for what to do if an individual has concerns about an older driver's ability to drive and what the proper licensing procedures are for older drivers. The USDOT's TSM web page provides marketing resources for the DriveWell campaign that focuses on older driver safety and mobility.						
Resources for Older Drivers	NHTSA	Department of Motor Vehicles	AAA CT	National Institute on Aging	American Association of Retired Persons	Insurance Institute for Highway Safety	

Younger Driver Safety	According to NHTSA, crashes are the leading cause of teen deaths. Public education campaigns that focus on younger driver safety highlight how to properly prepare younger drivers and their families for the responsibility of driving. NHTSA uses crash trends, safety messages, and various resources to discuss teen driver licensing requirements and key risk factors for younger drivers including illegal use of alcohol, seat belt use, and distracted driving. NHTSA also highlights the importance of influence that parents, educators, coaches, and other trusted adults have on younger drivers and their behaviors. The USDOT's TSM webpage provides posters that communities can share on social media that are specifically marketed towards younger driver safety.					
Resources for Younger Drivers	NHTSA	Traffic Safety Marketing	Department of Motor Vehicles	National Safety Council	National Institutes of Health	Center for Disease Control and Prevention
Motorcycle Safety	NHTSA's motorcycle safety message focuses on all road users sharing the road, motorcyclists making themselves visible, the use of DOT-compliant helmets, and riding sober. NHTSA provides information on the safest road behaviors. Banner ads, logos, radio ads, television ads, and web videos for motorcycle safety campaigns are provided by the USDOT's TSM and NHTSA. NHTSA also provides a yearly communications calendar that the organization uses to encourage communities to share campaign material by topic at specific times of the year, as an increased awareness strategy.					
Resources for Motorcycle Safety	NHTSA	Traffic Safety Marketing	CT.gov Connecticut Rider Education Program (CONREP) for Motorcycle Safety	RideCT	Ride4Ever	
This resource list is limited and there are various other resources not cited here.						

7. Funding

Department of Energy and Environmental Protection (DEEP) Recreational Trails
Funds: Bicycles, Pedestrians, Horseback, Recreational Vehicle

This program is administered through Connecticut DEEP. Funds can be used for projects, such as new trail construction, maintenance and restoration of existing trails, acquisition of land, or easements for a trail. Note: There is currently no funding available for this program.

Small Towns Economic Assistance Program (STEAP)
Funds: Bicycles, Pedestrians, Passenger Vehicles

STEAP funds are issued by the State Bond Commission and can be used for capital projects, which are new construction, expansion, renovation or replacement of existing facilities. The funding is directed towards small towns.

Local Capital Improvement Program (LoCIP)
Funds: Bicycles, Pedestrians, Passenger Vehicles

This program provides financial assistance to municipalities for eligible projects in the form of annual entitlement grants funded with State general obligation bonds. LoCIP grants can fund road construction, renovation and repair, sidewalk and pavement improvements, bridges, and bikeway and greenway establishment.

BUILD Discretionary Grants
Funds: Bicycles, Pedestrians, Passenger Vehicles

The highly competitive federal grant program is for investments in surface transportation infrastructure and are to be awarded on a competitive basis for projects that will have a significant local or regional impact. BUILD funding can support roads, bridges, transit, rail, ports, or intermodal transportation. This program replaces the previous TIGER grant program.

Highway Safety Programs
Funds: Driver and Passenger Behavior

The Connecticut Highway Safety program supports Federal Section 402 highway safety grant funds that are made available to the State to carry out its annual Highway Safety Plan. Grants are issued to address programs pertaining to impaired driving, public information and education, work zone safety and highway safety related legislation, police traffic services, occupant protection, and child passenger safety.

Federal-Aid Essentials for Local Public Agencies

This website provides local public agency staffers a centralized hub for guidance, policies, procedures, and best practices for administering federal-aid projects. The website includes a library of videos covering key aspects of the project development and delivery process.

Local Transportation Capital Improvement Program (LOTCIP) Funds: Bicycles, Pedestrians, Passenger Vehicles, Transit, Bridges
Provides State monies to municipalities for transportation capital improvement projects. Regional Planning Organizations are responsible for soliciting and selecting projects and administering the program. Eligible projects include reconstruction, pavement rehabilitation, sidewalks, and multi-use trails. Except for off-road bike projects, all projects must be located on/along federally eligible roadways.
Transportation Alternatives (TA) Set-Aside Program Funds: Bicycles, Pedestrian
Provides federal funding, half administered through the State and half administered through Regional Planning Organizations for surface transportation projects in categories that are not typically eligible for funding under other federal sources. Bicycle and pedestrian projects have typically been targeted for these funds.
Congestion Mitigation and Air Quality (CMAQ) Funds: Bicycles, Pedestrians, Passenger Vehicles, Transit
The Congestion Mitigation and Air Quality program is managed by the CTDOT, as a competitive grant program. A portion of funding is programmed for projects of regional significance. It provides funds for projects that will improve air quality such as congestion reduction, traffic flow improvements, transit improvements, and pedestrian and bicycle facilities.
Community Connectivity Program (CCP) Funds: Bicycles, Pedestrians
This Program offers Connecticut's towns and cities assistance in conducting Road Safety Audits (RSA) at important bike and pedestrian corridors and intersections. An RSA is a process that identifies safety issues and countermeasures to help improve safety and reduce vehicle crashes. Note: Several notable adjustments have been made to the program guidelines and selection criteria for the upcoming solicitation. The funding limits for grant awards have increased to range between $125,000 and $600,000. In addition, general program objectives have been refined to reinforce the concept of transportation equity by connecting underserved communities. The latest round of grant applications was submitted in October 2020.
Local Road Accident Reduction Program (LRARP) Funds: Bicycles, Pedestrians, Passenger Vehicles
This program aims to fund projects that improve motor vehicle safety on local public roadways. The funding for the LRARP comes from the Federal Highway Safety Improvement Program (HSIP) which also funds projects on State highways and railroad/highway grade crossings.

8. Emphasis Areas

The top emphasis areas in the Northeastern Connecticut Region were selected based on the conclusion that these contributed to the majority of the injury and fatal crashes verified from the 2015-2019 data. The seven emphasis areas are:

1. **Critical Roadway Locations: Includes both intersection and roadway departure crashes.**
2. **Driver Behavior: Includes aggressive driving, unrestrained occupants, substance-impaired driving, and distracted driving.**
3. **Older Drivers: Includes drivers aged 65 years and older.**
4. **Young Drivers: Includes drivers aged 15-25 years old.**
5. **Non-Motorized Users: Includes pedestrians and bicyclists.**
6. **Motorcyclist Safety.**
7. **Traffic Incident Management.**

These emphasis areas were selected based on crash types that have the highest potential of achieving the State's 15% injury and fatal crash rate reduction goal and fatal crash rates. From these identified emphasis areas, strategies and countermeasures were developed in conjunction with stakeholders' input. Each emphasis area's countermeasures were developed according to the four E's of transportation safety. Totals of all injury and fatal crashes by emphasis area can be found in Appendix B.

Performance Measures: The Northeastern Connecticut RTSP follows the 2017 CT SHSP strategy of implementing countermeasures identified for each emphasis area. In all cases, implementation includes site-specific and systemic safety improvements. Connecticut has set annual safety performance measure targets which the regions are encouraged to follow. The region can also establish their own performance measures, independent of the State's goals.

8.1 Critical Roadway Locations

The critical roadway locations emphasis areas include both roadway departure and intersection crashes. Intersection crashes are conflicts that occur due to complex travel patterns. Congestion, limited sight distance, driver behavior, and other variables exacerbate the inherent crash potential at each intersection. Intersections vary widely from geometry, classification (urban or rural), traffic control (signalized or unsignalized), traffic volumes, and design (conventional design or alternative designs such as roundabouts). Additionally, at-grade rail crossings are considered intersections, as trains and roadway users cross paths. Reducing the number of intersection injuries and fatalities is possible by applying a multidisciplinary approach, using strategies that focus on engineering, education, and enforcement.

Source: VN Engineers

Roadway departure crashes are described as conflicts that result when vehicles cross an edge line, a center line, or otherwise leave a travel lane. There are several factors that can contribute to a lane departure crash, including roadway characteristics like horizontal curvature and pavement condition. Other weather-related conditions like rain, snow, or ice can impede a driver's sight of the roadway and make controlling vehicles difficult. The time of day can also play a role in lane departure crashes due to decreased visibility, which can affect the driver's abilities to maintain their vehicles' alignment.

Behavioral issues like speeding, impaired driving, and distracted driving can affect the drivers' safe vehicle operation and may cause them to depart from the roadway. To improve lane departure safety, countermeasures that address keeping vehicles in the travel lane, provide for a safe recovery, and reduce crash severity are imperative. Both systemic and site-specific engineering strategies combined with education and enforcement can be used.

Performance Measure: From 2015-2019, there were 536 intersection crashes resulting in injuries or fatalities within the Northeastern Connecticut Region or an annual average of 107 crashes per year. Of those 536 intersection injury and fatal crashes reported, 11 were fatal. The Region's 2015-2019 intersection injury and fatal crashes make up 8% of the 69,885 intersection injury and fatal crashes in Connecticut.

Performance Objective: Decrease intersection injuries and fatalities by 20% over the five year period of the RTSP. This will result in preventing 107 combined injuries and fatalities per year.

8.1.1 Intersections

Strategies for Intersections:

-Engineering: Implement proven and low-cost spot improvements and systemic safety improvements to reduce intersection crashes. Promote the Regional Engineering Program to assist member municipalities in improving their roadways. Examples include enhancing signs and pavement markings, modifying signals and signal timing, adding turn lanes, and controlling access through medians. Incorporate safety elements and countermeasures into all regional roadway and intersection project designs and maintenance improvements. Review sightlines and trim vegetation regularly.

-Enforcement: Conduct high-visibility enforcement, media campaigns, and public outreach at selected locations with a significant number of intersection crashes.

-Education: Advertise and promote the Safety Circuit Rider and other similar programs that provide training and outreach about intersection safety.

Source: VN Engineers

8.1.2 Roadway Departures

Performance Measure: From 2015-2019, there were 820 roadway departure crashes resulting in injuries or fatalities within the Northeastern Connecticut Region. This is an average of 164 crashes annually per year. Of those 820 reported roadway departure injury and fatal crashes, were fatal. The Region's 2015-2019 roadway departure injury and fatal crashes accounts for 4% of the 21,068 total roadway departure injury and fatal crashes in Connecticut.

Performance Objective: Decrease fatalities and serious injuries by 20% over a five year period. This will result in preventing 33 combined injuries and fatalities per year.

Strategies for Roadway Departures:

-Engineering: Design the roadside to include protection systems (such as cable median, crash cushions and guiderail end treatments) or manage roadside vegetation, trees, and other fixed objects to minimize the severity of crashes.

-Engineering: Implement proven systemic safety countermeasures to lessen roadway departure crashes. Promote the Regional Engineering Program to assist member municipalities improve their roadways. Examples include high friction surface treatments, improved signage and pavement markings on curves, safety edges, and center line and edge line rumble strips.

-Enforcement: Conduct high-visibility regional and local enforcement, media campaigns, and public outreach on identified corridors with a high number of severe roadway departure crashes.

-Education: Utilize established regional and State programs, such as the Safety Circuit Rider, to provide education, training, and outreach.

Source: VN Engineers

8.2 Driver Behavior

The second emphasis area is driver behavior, which includes the subset areas of speeding or aggressive driving, unrestrained occupants, substance-impaired driving, and distracted driving. These subsections are related to driver behavior and not due to traffic or roadway characteristics, although they can be interdependent.

8.2.1 Aggressive Driving

The aggressive driving emphasis area includes any driver behavior that involves speeding, recklessness, driving too close, running red lights, and making unsafe lane changes. Any behavior that "exceeds the norms of safe driving" and places other motorists in danger is considered as aggressive driving. This does not include road rage, which is considered assault.

Performance Measure: Speeding-related injury and fatal crashes totaled 409, 20 of which were fatal. This yields an annual average of 82 injury and fatal crashes per year from 2015-2019. The 2015-2019 aggressive driving injury and fatal crashes in the Northeastern Connecticut Region make up 5% of the 7,458 total aggressive driving injury and fatal crashes in Connecticut.

Performance Objective: The Region's objective is to lower the average of 4 speed related deaths per year to 3 per year by 2026.

Source: NHTSA

Source: NHTSA

Strategies for Aggressive Driving:

-Engineering/Enforcement: Explore the possibility of creating safety corridors at segments of roadways that have higher-than-expected number of fatal and serious injury crashes due to driver behaviors. Further strategies include additional signage, increased traffic enforcement, and zero tolerance for violations.

-Enforcement: Regional and municipal support for high-visibility enforcement campaigns that specifically target speed and aggressive driving. This could include enhanced patrols using roads signs, electronic message boards, and command posts.

-Enforcement: Regional collaboration and resource sharing of scientifically valid speed measurement technology for enforcement.

-Education: Coordinate with local agencies, local police and fire departments, Day Kimball Healthcare, the auto insurance industry, and driving schools like Northeast Driving Academy in Killingly, to disseminate and educate the public on the hazards of aggressive driving.

-Engineering: Integrate the speed management countermeasures into roadway departure, intersection, and pedestrian safety areas.

8.2.2 Unrestrained Occupants

The unrestrained occupants emphasis area involves either passengers or drivers who do not wear seat belts while traveling, including children not properly positioned in restraint systems. Connecticut enacted a law in October 2017, requiring that children be in booster seats until they reach a minimum of 60 pounds and turn 8 years old, that toddlers ride in forward-facing seats with a 5-point harness until they are 5 years old and weigh at least 40 pounds, and that infants be in rear-facing seats until they are 2 years old and at least 30 pounds.

Source: clickitorticket.jpg

Performance Measure: From 2015-2019, there were 131 crashes involving unrestrained occupants that resulted in injury or fatality, which is an average of 26 crashes per year. Out of these 131 reported crashes, 14 of them were fatal. The region's 2015-2019 unrestrained occupant injury and fatal crashes make up 3% of the 4,888 total unrestrained occupant injury and fatal crashes in Connecticut.

Performance Objective: Reduce the number of unrestrained occupant injury and fatal crashes from 26 crashes per year by 10% to an average of 23 crashes per year by 2026. Increase the statewide observed seat belt use rate from 85.4% in 2015 to 88% or above by 2018.In 2019, Connecticut surpassed its goal of 88% seat belt compliance rate to 93.7%.

Strategies for Unrestrained Occupants:

-Enforcement: Coordinate with NHTSA's calendar of high-visibility enforcement of safety belts and child safety enforcement. Continue Regional enforcement using checkpoints, roving, and saturation patrols.

-Education: Communicate the new child safety seat laws, coordinating with multiple agencies like Safe Kids CT, local police and fire departments, hospitals in the region like Day Kimball Healthcare , the Hale YMCA Youth and Family Center, and driving schools to disseminate information and educate the public.

-Enforcement and Education: Coordinate with private sector stakeholders to host car seat clinics and publicize the safe fitting stations in the Region using earned media outlets.

8.2.3 Substance-Impaired Driving

Substance-impaired driving involves motorists who are under the influence of alcohol and/or drugs, both prescribed, unprescribed, and/or illegal. A driver with blood alcohol concentration (BAC) of 0.08 or higher is considered alcohol-impaired. Drug impairment is more challenging to detect and confirm. In addition, it is hard to determine drug effects on driving behavior, which also makes it difficult to develop effective laws and strategies for enforcement. However, according to NHTSA, many of the alcohol-impaired driving countermeasures may deter drug-impaired driving.

Performance Measure: From 2015-2019, there were 149 reported substance-impaired driving crashes that resulted in injury or death, which is an average of 30 crashes per year. Of these 149 crashes, 21 were fatal. The 149 injury and fatal crashes make up 4% of the 3,364 total statewide substance-impaired injury and fatal crashes from 2015-2019.

Performance Objective: Increase the number of Drug Recognition Expert (DRE) practitioners in the Western Connecticut Region by 2026. The State's goal was to increase the DREs in Connecticut from 31 in 2016 to 45 in 2018. By May 2021, there were 59 DREs in the entire State. The objective is to increase DRE practitioners by one additional DRE per Northeastern CT municipality by 2026.

Strategies for Substance-Impaired Driving:

-***Enforcement and Education:*** Encourage the State to provide the funding for officers to take the Advanced Roadside Impaired Driving Enforcement (ARIDE) program and to get certified as DREs, offered by the Department of Emergency Services and Public Protection. Cooperate with the SHSP goal to increase the number of certified standardized field sobriety test practitioners and instructors.

-***Education:*** Expand regional and town-specific outreach of impaired driving beyond the traditional mass media campaign by using innovative and unique delivery methods that reach specific populations of the targeted audience through local police and fire departments, Day Kimball Healthcare , the Hale YMCA Youth and Family Center, and driving schools such as the Northeast Driving Academy to disseminate information and educate the public. Highlight the importance of sober driving during the month of December, during the Office of National Drug Control Policy's National Drunk and Drugged Driving Prevention month and NHTSA's drive sober or get pulled over mobilization.

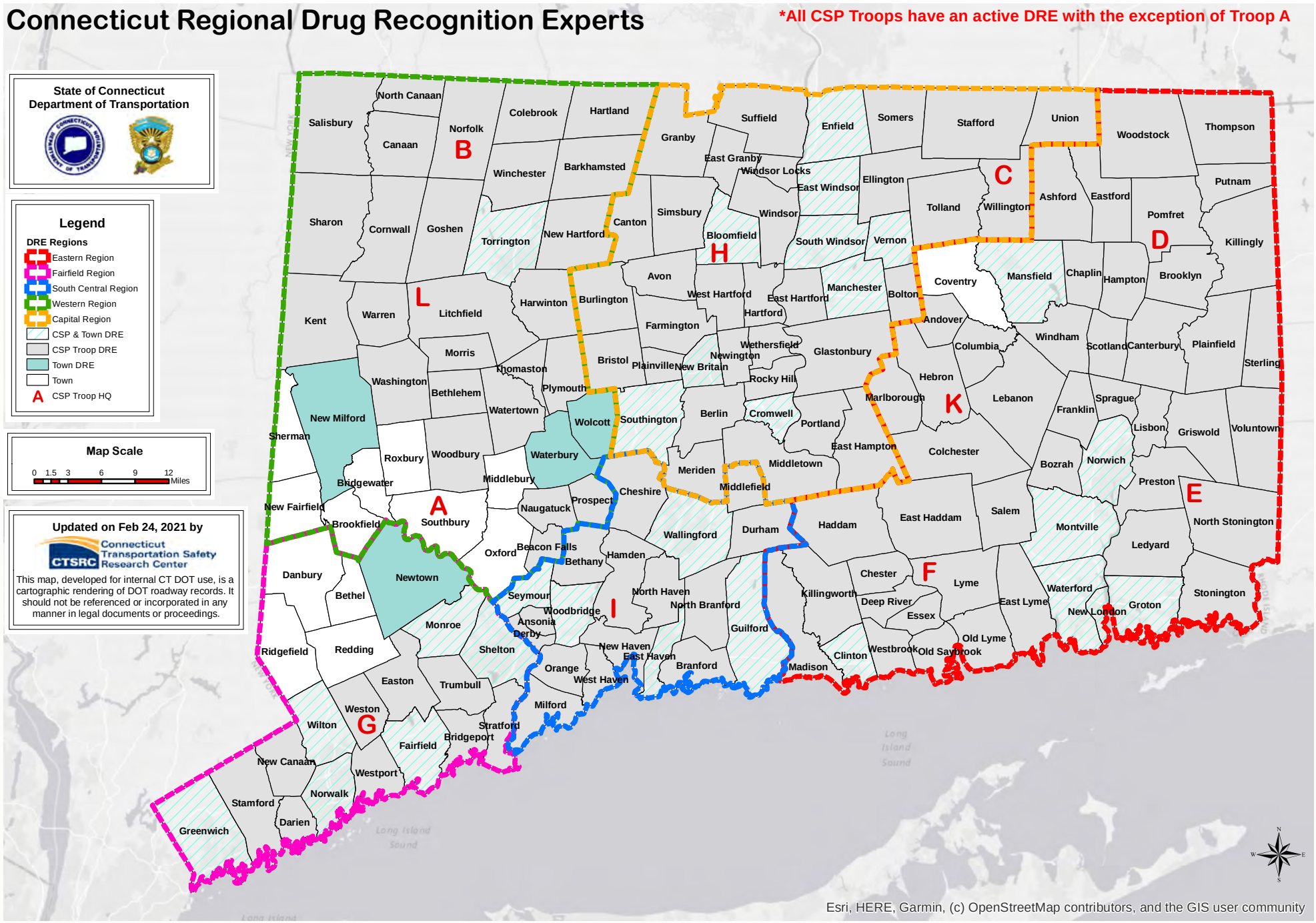
-***Education:*** Continue to support Mothers Against Drunk Driving (MADD) CT chapter's outreach and education efforts, including the Victim Impact Panels that take place. Cooperate with MADD CT Chapter to establish a Victim Impact Panel in the Northeastern CT Region.

-***Engineering:*** Municipalities should support policies and programs that increase the availability, convenience, affordability, and safety of transportation alternatives for drinkers who may drive, especially during nighttime and weekend hours. Municipalities should boost or incentivize transportation alternatives in rural areas, which are disproportionately impacted by alcohol-impaired driving crashes and fatalities.

-***Enforcement:*** Continue to enforce the interlock devices for all Connecticut DUI/DWI/OUI first-time offenders. Conduct regional high-visibility impaired driving enforcement program.

Connecticut Regional Drug Recognition Experts

*All CSP Troops have an active DRE with the exception of Troop A



8.2.4 Distracted Driving

Distracted driving is another subset of the driver behavior emphasis area. It involves any motorist whose attention is diverted by a variety of activities besides navigation. Common sources of driver distraction are cell phone use, eating, drinking, or adjusting the radio. Due to the increase of text messaging, GPS navigation systems, and other technologies, distracted driving is on the increase.

Performance Measure: From 2015-2019, there were 185 reported injury and fatal crashes related to distracted driving, an average of 37 crashes annually. There were 0 reported distracted driving fatalities. The Northeastern Connecticut Region's 2015-2019 distracted driving injury and fatal crashes make up 5% of the total 3,652 distracted driving injury and fatal crashes in Connecticut.

Performance Objective: In line with the CT SHSP, the lack of useful crash data in the area of distracted driving has made it difficult to select a goal measuring the impacts on distraction-related crashes. The performance objective is to decrease injuries and fatalities caused by driver distraction, especially those caused by handheld mobile phone use. To that end, the quantifiable performance objective is focused on high-visibility enforcement (HVE) activities. The objective is to increase the number of police agencies participating in distracted driving HVE from 50 in 2016 to 60 in 2026.

Source: WRAL.com

Strategies for Distracted Driving:

-Enforcement: Conduct distracted driver observational surveys, similar to those done for seat belt use.

-Enforcement: Update to the Model Minimum Uniform Crash Criteria (MMUCC) 5th Edition to include distraction on involved non-motorists crashes.

-Enforcement: Regionally conduct high-visibility distracted-related enforcement, focusing on municipalities with a higher rates of distracted driving related fatalities and serious injuries.

-Enforcement: In addition to high-visibility enforcement, use unmarked patrol vehicles or spotter techniques in high traffic areas.

-Education: Increase regional public outreach of distracted driving that reach specific populations of the targeted audience. Coordinate with NHTSA's calendar of outreach.

-Education: Coordinate distracted driver messages with multiple agencies like DMV, AAA CT Chapter, Northeast Driving Academy, local and State law enforcement, Emergency Management Services, Day Kimball Healthcare, and Hale YMCA Youth and Family Center to disseminate information and educate the public.

Source: NHTSA

8.3 Older Drivers

The fourth emphasis area is older drivers, which are categorized as drivers 65 years and older. Although age itself is not the principal determinant in driving performance, people's mental and physical abilities change as they age, which can affect their driving. The most common of these conditions is poor vision, but other cognitive skills may be affected, including memory and coordination. Older drivers crash survivability is a major safety concern.

Performance Measure: From 2015-2019, there were 245 crashes in NE CT Region involving older drivers that ended in injuries or fatalities, an average of 49 crashes annually. Of the 245 older driver crashes from 2015-2019, 12 were fatal.

This region's 2015-2019 older driver injury and fatal crashes make up 2% of the total 10,508 older driver injury and fatal crashes in Connecticut.

Performance Objective: To decrease the number of drivers aged 65 or older involved in fatal crashes from an average of 2 fatal crashes per year to annual average of 1 fatal crashes per year by 2026.

Source: AARP

Strategies for Older Drivers:

-Education: Consider supporting stricter CT DMV policy of license renewal for senior drivers and consider mandatory in-person tests with vision exam for drivers 65 years and older.

-Education: Coordinate with multiple agencies, including the Hale YMCA Youth and Family Center, the various senior centers in the Region, and the Connecticut Association of Senior Center Personnel to address older driver challenges and general safety.

-Education: Using earned media outlets, promote NHTSA's DriveWell Toolkit to help older drivers and the public understand the issues related to older drivers and later-life independence and mobility.

-Education: Encourage older drivers to use AARP Smart Driver Course, available online or in a classroom..

-Education: Continue to promote transit like dial-a-ride through the NE CT Transit District.

8.4 Young Drivers

Young drivers are motorists between the ages of 15-25. Due to their driving inexperience and "normal adolescent development that involves an increase in novelty seeking and risk-taking behaviors" (NHTSA Countermeasures that Work), this subset of drivers is at a greater risk of being involved in traffic crashes.

Connecticut has a graduated driver licensing (GDL) program, limiting passenger allowance in the first 12 months of licensing, imposing a driver curfew until their 18th birthday, requiring all passengers in vehicles use seat belts, and prohibiting all use of cell phones and mobile electronic devices while driving. The State also requires pre-licensure driver education for driver and parents.

Performance Measure: From 2015-2019, there were 496 crashes involving young drivers that ended in injuries or fatalities, an average of 99 crashes annually. Of the 496 young driver crashes from 2015-2019, 20 were fatal.

The region's 2015-2019 young driver injury and fatal crashes make up 2% of the 20,592 young driver injury and fatal crashes in Connecticut.

Performance Objective: Decrease the region's five-year average of 4 young driver fatal crashes per year to 2 or less young driver fatal crashes per year by the year 2026.

Source: AAA

Strategies for Young Drivers:

-Engineering, Education, Enforcement: Continue regional support for statewide GDL programs.

-Enforcement: Regional education and enforcement of young driver laws, including the State's .02 BAC laws for young drivers by organizing and conducting high-visibility enforcement campaigns.

-Enforcement: Explore the possibility of a license plate decals to identify motorists in the GDL program, so that law enforcement can more readily distinguish them.

-Education: Coordinate young driver messages with multiple agencies in Spanish and English at DMV offices, auto insurance agencies, AAA CT Chapters, State and local law enforcement agencies, Emergency Management Services, public and private schools, local chapters of the YMCA, and the State Board of Education. Promote the !MPACT program.

References:

!MPACT is a nonprofit orgnization whose members have either lost teenage family members or friends in motor vehicle crashes, or are survivors of crashes involving teen drivers. !MPACT's mission is to eliminate tragedies caused by inexperienced drivers through awareness, education and legislation. !MPACT has developed a teen driving safety program in which members share their personal experiences. Teens also learn about statistics, risk factors and how to protect themselves and others.

Zero Tolerance Law: In Connecticut, if a driver under the age of 21 has more than a trace of alcohol (.02 BAC or higher) in their system, they will be subjected to a three month license suspension.

8.5 Non-Motorized Users

The non-motorized users emphasis area includes crashes involving bicyclists and pedestrians. Bicyclists and pedestrians are more susceptible to serious injuries and fatalities when involved in a crash with a motor vehicle.

From 2015-2019, there were 60 crashes that resulted in bicyclist or pedestrian injuries or fatalities within the Northeastern Region of CT and 7 of these 60 crashes were fatal.

8.5.1 Pedestrians

Performance Measure: From 2015-2019, there were 43 injury and fatal pedestrian crashes in Northeastern CT, 7 of which were fatal. That is an average of 8 crashes per year. The Northeastern Region's 2015-2019 pedestrian injury and fatal crashes make up 1% of the total 5,241 pedestrian injury and fatal crashes in Connecticut.

Performance Objective: The Northeastern CT RTSP is in congruence with the SHSP's goal of reducing pedestrian injury and fatal crashes by 15% over the by 2026. This will result in preventing combined 2 pedestrian injury and fatal crashes per year.

8.5.2 Bicyclists

Performance Measure: From 2015-2019, there were 17 bicycle crashes in the Northeastern Region and 0 were fatal. That is an average of 3 injury and fatal crashes per year. The Northeastern Region's bicyclist injury and fatal crashes make up 1% of the 1,883 injury and fatal bicycle crashes in Connecticut.

Performance Objective: The Northeastern CT RTSP is in congruence with the SHSP goal of decreasing bicyclist injuries and fatalities by 15% by 2026. This will result in preventing 1 combined injury and fatal crash per year.

Source: VN Engineers

Strategies for Non-Motorized Users:

-Education: Coordinate with State, Regional, and local advocacy groups and bike store owners, including Bike Walk CT, the CTDOT Bike and Pedestrian Advisory Board, and other stakeholders to strategize best practices for the region.

-Engineering: Coordinate with CTDOT on the *Pedestrian Signing and Pavement Marking Project,* which improves crosswalk visibility on local roads.

-Education and Enforcement: Promote the Watch for Me CT Program.

-Education: Regionally promote the CT Bike Ped Plan interactive bike map.

-Engineering: Encourage municipal and regional adoption of the CTDOT's Complete Streets Policy, which ensures that the needs of all users of all abilities and ages (specifically including pedestrians, bicyclists, transit users, and vehicle operators) are addressed in the planning, programming, design, construction, retrofit, and maintenance activities related to all roads and streets, as a means of providing a "safe, efficient transportation network which enhances quality of life and economic vitality."

-Engineering: Continue to promote the NE CT Regional Engineering Program where each participating town receives the equivalent of a full-time in-house engineer at a fraction of the price to design pedestrian and bike friendly transportation systems.

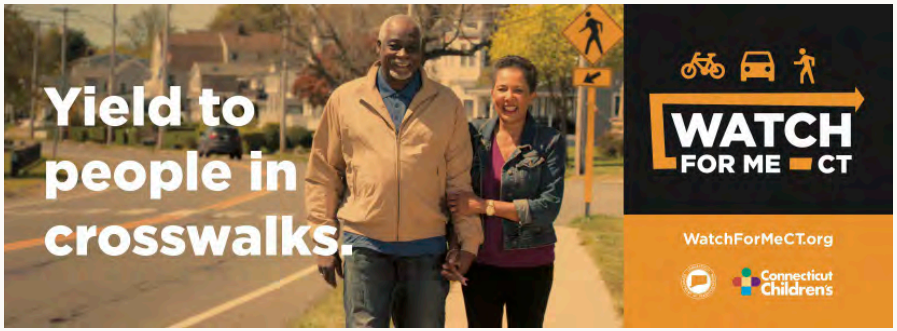
-Education and Enforcement: Educate regional law enforcement personnel on the 2014 Vulnerable User Law and the 2015 Bike Bill.

-Education: Promote the Connecticut Technology Transfer Center's educational outreach initiatives that promote bike and pedestrian safety.

References

The Vulnerable User law requires a fine of up to $1,000 for infliction of serious physical injury or death to a vulnerable user when a person fails to operate due care when using a motor vehicle. Vulnerable users include pedestrians, highway workers, wheelchair users, people riding or driving an animal, blind people and their service animals, and people who operate farm tractors, bicycles, scooters, roller or inline skates, and skateboards.

Bike Bill: When riding on roadways, bicyclists are to ride as near to the right side of the roadway as is safe, as judged by the bicyclist.



Source: CTDOT

8.6 Motorcyclist Safety

Motorcyclist safety is an area of traffic concern both regionally and nationally. The latest data on vehicle miles traveled shows that motorcyclists are about 28 times as likely as passenger car occupants to die in a motor vehicle traffic crash.[1] A motorcyclist travels at the same speeds and in the same lanes as other motorized vehicles, but without the same degree of protection.

1. https://www.nhtsa.gov/road-safety/motorcycles

Source: NHTSA

Performance Measure: From 2015-2019, there were 193 motorcycle crashes that ended in injuries or fatalities to the persons involved and of which 18 crashes were fatal. The annual average for injury and fatal motorcycle crashes is 39 crashes per year.
The Northeastern CT Region's 2015-2019 motorcycle injury and fatal crashes make up 4% of the 4,554 total motorcycle injury and fatal crashes in Connecticut.

Performance Objective: The Northeastern Connecticut RTSP is in congruence with the SHSP goal of decreasing the number of motorcyclist fatalities from the 5-year average of 4 to 3 by 2026.

There were 7 unhelmeted fatalities from 2015-2019, which is an average of 2 per year. The goal is to increase media outreach and encourage motorcycle riders to wear protective clothing and gear and to decrease the number of unhelmeted fatalities from the 2015-2019 average of 1 per year to 0 per year by 2026.

Strategies for Motorcyclist Safety:

-Education: Endorse CT DMV's Connecticut Rider Education Program (CONREP) for motorcycle safety and provide training facilities in the Western Connecticut Region.

-Engineering, Education, Enforcement: Continue to support the insurance industry's rate discount for CONREP graduates.

-Engineering, Education, Enforcement: Coordinate with local motorcycle dealerships, CT DMV, hospitals in the region, and other public and private sector agencies to promote safety campaigns, encouraging riders to wear helmets, goggles, protective clothing and gear, and for motorists to share the road. These campaigns can be amped up during May's Motorcycle Safety Awareness Month.

–Education, Enforcement: Regionally support None for The Road campaign and www.ride4ever.org, encouraging riders to not drink and ride and to ride safely.

8.7 Traffic Incident Management

A traffic incident is an event (such as a vehicle crash, work zone activity, or vehicle breakdown) that disrupts the normal operation of the transportation system. Traffic incidents are an important concern in Connecticut because they can potentially cause safety issues, increasing the risk to uninvolved motorists, congestion delays, and secondary incidents. The CT DOT recommends a statewide Traffic Incident Management (TIM) plan be implemented to coordinate the use of human, institutional, mechanical, and technological resources to reduce the duration and impact of incidents.

Traffic Incident Management (TIM) consists of a "planned and coordinated multidisciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible." Effective TIM reduces the duration and impacts of traffic incidents and impacts of traffic incidents, improves the safety of motorists, crash victims, and emergency responders.

Performance Objectives: In congruence with the CT SHSP's goals, the Northeastern CT Region's goal is to promote the safety of motorists, crash victims, and incident responders by reducing secondary crashes and associated fatalities and serious injuries. In order to achieve this goal, the region could increase its first responders in incident management training by 50%. The region could collaborate with other regional TIM efforts like the Greater Hartford TIM Coalition, which has prioritized this emphasis area and has developed a plan to reduce TIM-related injury and fatal crashes.

Strategies for Traffic Incident Management:

-Education: Support the CT SHSP objective to establish a statewide TIM program, with a lead agency to administer clearly defined responsibilities that meet the requirements of the National Incident Management System (NIMS).

-Education: Continue the planning, implementation, and coordination of activities, such as the adoption of a Unified Response Manual, updating of diversion plans, TIM training, and participation in the FHWA annual TIM Self-Assessment. Also, work on the development and implementation of a public awareness campaign for motor vehicle laws relating to highway incidents, such as the "Move It" and the "Move Over."

-Education: Continue to research the benefits and impacts of providing a regional approach to operating and maintaining local traffic signal systems.

-Education: Continue to support the CT Travel Smart website and to promote this resource regionally through media and public outreach campaigns.

-Education: Continue to conduct public awareness programs for effective on-scene TIM by road users.

-Education, and Enforcement: Continue to implement the goals from the Intelligent Transportation Systems (ITS) Joint Program Office Strategic Plan 2020-2025 for the Northeastern Region where feasible.

-Enforcement: Support the State operated State Farm Safety Patrol Program.

-Enforcement: Conduct after action reviews to improve response and scene management.

-Engineering: Continue collaborating with CTDOT to implement ITS to update the freeway traffic management system and improve incident management efforts.

-Engineering: Include Weather Responsive Traffic Management (WRTM) strategies, such as Road Weather Information Systems (RWIS).

-Engineering Education, and Enforcement: Support the development and tracking of TIM performance metrics following national standards and definitions.

9. Technological Advances Affecting Traffic Safety

9.1 Connected and Autonomous Vehicles

Connected vehicle (CV) and automated vehicle (AV) technologies (described below) are in various stages of discovery, development and deployment nationwide. These technologies have the potential to play an integral role in improving the future of traffic safety. According to the National Highway Traffic Safety Administration (NHTSA), of all motor vehicle crashes on public roadways today, "94% are due to human error or choices." Each year in Connecticut these human errors or choices results in more than 100,000 crashes, more than 30,000 injuries and more than 250 deaths.

Automated Driver Assistance Systems

Today, most of the newer motor vehicles sold in the United States have at least some form of automated driver assistance system (ADAS) technologies included that increase safety. ADAS is the hardware and software within vehicles in that is collectively capable of supporting or providing alerts to the driver (e.g. blind spot detection, lane departure warning, front collision warning, etc.) or assisting the driver to automatically perform some of the real-time operational and tactical functions in on-road traffic (steering, accelerating, braking, etc.). The term ADAS includes the Society of Automotive Engineering International (SAE) driving automation levels 0, 1 and 2. Note, for vehicles equipped with ADAS, the driver is still responsible for performing most or all of the driving tasks, thus active driver performance, supervision and/or intervention is required.

Automated Driving Systems

The future of automated vehicles is focused on automated driving systems (ADS). These technologies are being studied, developed and pilot tested around the world today and have the potential to exponentially improve safety and save lives. ADS is the combination of hardware and software within vehicles that are collectively capable of performing all of the real-time operational and tactical functions required to operate a vehicle in on-road traffic on a sustained basis, regardless of whether the ADS is limited to a specific operational design domain under which it is able to function. The term ADS, includes SAE driving automation levels 3, 4 and 5. The primary difference between these levels has to do with the conditions under which the ADS is able to perform and whether or not there are any expectations for a human driver to intervene. The performance of level 3 and level 4 driving automation is the primary focus for research, development and pilot testing around the world today.

Source: NHTSA

Connected Vehicles

In addition to the automated vehicle technologies described above, the development and implementation of connected vehicle (CV) technologies also have significant promise to improve safety on public roadways. According to NHTSA, 80% of unimpaired crashes could be prevented by the deployment of CV technologies.[1] CVs are described as vehicles that use specific wireless communication protocols (e.g. DSRC, C-V2X, 5G) to communicate with their surroundings for the purpose of improving traffic flows and preventing collisions. These technologies are able to send and receive real time transportation safety, mobility and other travel data to and from other vehicles, roadside infrastructure (e.g. traffic signals), users of the transportation system (e.g. drivers, pedestrians) and even the cloud.

Source: Shutterstock

Several CV technologies have undergone many years of national research, testing and standards development and could soon begin to be deployed nationwide on a systematic scale. However, standing in the way of large nationwide deployments are key federal policy decisions by the Federal Communications Commission (FCC) to preserve the 5.9 GHz spectrum and the resulting competition between which communication protocols (e.g. DSRC, C-V2X, 5G) will dominate the market. Additionally, both state and local infrastructure owner operators (IOO) will ultimately play a significant role in the implementation of connected vehicle to infrastructure (V2I) technologies. In order to be future proof, IOOs will need more certainty from national direction, market adoption and standards before upgrading their infrastructure in support of V2I.

1 NHTSA, https://www.its.dot.gov/factsheets/pdf/safetypilot_nhtsa_factsheet.pdf

Connecticut Update

The CTDOT is currently undertaking two projects along a 10-mile segment of the Berlin Turnpike to replace and upgrade 28 signalized intersections near the CTDOT headquarters building. These projects will serve as early adopters for testing and deploying emerging technologies, including connected vehicle to infrastructure (V2I) applications that have the potential for improving safety and mobility, enhancing CTDOT traffic signal operations and reducing congestion. Both projects will require installation of modern traffic signal controllers, new backhaul communications (fiber) and include the implementation of adaptive signal control technology and automated traffic signal performance measures software.

As part of the replacement and upgrade, the CTDOT will install roadside units (RSU) at each intersection and equip various state-owned fleet vehicles with corresponding on-board units (OBU) to test and deploy different V2I applications (e.g. signal phasing and timing, signal priority, etc.). Both projects will investigate the application of dual mode RSUs capable of sending and receiving V2I data using dedicated short-range communications (DSRC) and current generation cellular networks for connected vehicles, typically referred to as C-V2X. Both projects will also involve the submission of licensing applications to the Federal Communications Commission (FCC) to utilize multiple channels within the 5.9 GHz spectrum for connected vehicle technology. Once operational, the CTDOT looks to apply lessons learned from these projects as a template for other traffic signal replacement projects moving forward (where applicable).

In addition to the Berlin Turnpike, the CTDOT also owns and operates an ideal facility for piloting and deploying AV transit technologies – the CTfastrak bus rapid transit (BRT) corridor. This facility is a nine-mile, bus-only, fixed guideway in central Connecticut that connects four municipalities including the State's capital city of Hartford, West Hartford, Newington and New Britain. Success with AV transit technologies here has the potential to advance the marketability of near-term AV transit technologies as well as improve service and efficiencies that could free up resources to be deployed in other locations that have transit needs.

Over the next few years, the Department and its assembled team, including the Federal Transit Administration (FTA), Center for Transportation and the Environment (CTE), New Flyer Industries, Robotic Research, Inc., University of Connecticut (UConn), and the Capitol Region Council of Governments (CRCOG), will be working collaboratively to advance a state-of-the-art pilot project to test the performance and operation of full size, automated, and battery electric buses in revenue service on the CTfastrak BRT. This demonstration project is anticipated to deploy three 40' New Flyer Excelsior Charge battery electric buses equipped with increasing levels of driving automation, capable of up to high automation (SAE level 4). Automated driving capabilities demonstrated will include steering, precision docking at CTfastrak station platforms, and platooning.

Source: Hartfordbusiness.com

The automated buses deployed as part of this project will always have a safety attendant behind the wheel to drive and/or take control of operations as necessary. The buses will be operated and maintained by the Hartford division of CTtransit, which is the brand name for transit services operated by private transit providers under contract with the Department. Extensive testing will take place without passengers at an off-road test facility and on CTfastrak prior to the buses operating in service for passengers. Traffic signals along the CTfastrak fixed guideway will also be updated in order to broadcast connected vehicle to infrastructure signal phasing and timing (SPaT) data and MAP data. This broadcasted SPaT and MAP data will be integrated with the automated driving system on the buses to further enhance safety through intersections.

9.2 Concerns with Data Collection

Connecticut uses the Model Minimum Uniform Crash Criteria Guideline (MMUCC) developed by the National Highway Traffic Safety Administration (NHTSA) and the Governors Highway Safety Association (GHSA).

The purpose of this is to standardize data nationally, so that collected data can be compared and used for strategies to prevent crashes. There are some factors that affect traffic safety that are difficult to observe and measure:

- *Alcohol and drugs, low alcohol concentration, other drugs including prescription, illicit, and over-the- counter drugs*
- *Fatigue and distraction*
- *Communications technologies and advanced driver assistance systems*
- *Factors involving teen or novice driving*

MMUCC no longer defines how data elements should be collected (at scene/linked or derived). States are encouraged to link or derive data wherever feasible to minimize the impact on law enforcement. In January 2015, Connecticut initiated the transition to the updated electronic crash reporting system. The purpose is to help local police departments obtain public safety equipment. Improved tools, resources and technology would allow local police departments to better implement new E-Crash investigation and enforcement initiatives.[1]

1. CT Traffic Records Strategic Plan (CT-TRCC) July 1, 2020

10. Northeastern CT Implementation, Evaluation & Updating

10.1 Implementation

The Northeastern Connecticut RTSP is a supplemental document to the region's transportation plans. Collectively, the various plans will assist the region in prioritizing projects that will improve roadway safety locally. The member municipalities should be dedicated to the implementation of safety improvements and the reduction of injury and fatal crashes based on appropriate countermeasures, some of which are included in this report.

NECCOG staff, member municipalities, and CTDOT have provided their local and regional knowledge, input, and strategies to this safety plan. Development of this plan was an iterative process, with municipal and regional input included from the onset. Throughout the implementation of this plan, NECCOG staff could provide guidance and be dedicated to bringing appropriate strategies to fruition.

NECCOG could consider providing oversight of this safety effort and report progress to CTDOT and the member towns at least once a year. Each emphasis area could be reported on as needed, to ensure progress is being made and to provide member municipalities the opportunity to evaluate the implemented strategies. It is recommended that the implementation of each strategy be documented, and the performance measures monitored to provide transparency and ensure progress. Reporting could detail current strategy activities, accomplishments, safety performance measures, and any issues that may need additional support or guidance.

10.2 Evaluation

The Northeastern Connecticut RTSP evaluation process will follow the CT SHSP required adherence to the 2016 FHWA Guidance on Strategic Highway Safety Plans and the Fixing America's Surface Transportation (FAST) Act. The COG should be responsible for communicating with the member municipalities and CTDOT, and in addition, routinely evaluate safety data to determine the selected emphasis areas are still relevant. If any strategies prove ineffective or irrelevant, the Region can make appropriate adjustments to their approach.

Reporting should include information on which strategies are being implemented, what goals have been accomplished, the progress of performance measures, best practices, and any lessons learned.

Areas for Evaluation and Implementation:

- Are strategies current and relevant to ongoing data trends?
- Are strategies being incorporated into local, regional, and State projects?
- Is the data showing that fatalities and serious injuries in the Northeastern Region are trending towards a 15% reduction by 2025?
- Does the annual reporting reflect the RTSP performance objectives?

Recommended Steps to be taken

- Annual reporting of RTSP strategies and performance measure progress.
- Coordination with CTDOT's SHSP committee and emphasis area subcommittees to collaborate on State and regional goals.
- Annual review of goals and development of new strategies when warranted.

10.3 Updating the RTSP

The Regional Transportation Safety Plan is a living document congruent with the CT SHSP. Federal regulations require an update for the SHSP every five years and this regional safety plan will follow this same update process, if feasible for the COG. Each COG is responsible for updating their regional transportation safety plan every five years although there is no federal requirement to do so. The Regional Plan will adhere to the same mandates, with updates reflecting the most current federal surface transportation legislation.

10.4 Implementation Periods Defined

For the purposes of the RTSP, short-term is understood to mean modifications that can be expected to be completed very quickly, perhaps within six months, and certainly in less than a year, if funding is available. These include relatively low-cost alternatives, such as striping and signing, and items that do not require additional study, design, or investigation (such as right of way acquisition). Mid-term recommendations may be costlier and require establishment of a funding source, or they may need some additional study or design before implementation. Nonetheless, they should not require significant lengths of time before they can be implemented. Typically, they should be completed within a window of eighteen months to two years. Long-term improvements are those that require substantial study and engineering and may require significant funding mechanisms and/or right-of-way acquisition. These projects generally fall into a horizon of two years or more after funding is secured.

The following assistance is available through the Safety Circuit Rider Program:

- Coordination of Road Safety Assessments (RSAs).
- Collection and analysis of traffic volume data.
- Identification of low-cost safety improvements.
- Assistance in the development of local road safety plans.
- Development of a Connecticut Toolbox of Safety Resources.
- Development of a series of roadway safety briefs.
- Delivery of local road safety training.

10.5 Other Resources

Connecticut Technology Transfer Center's Safety Circuit Rider and Traffic Signal Circuit Rider Programs

The Connecticut Technology Transfer Center's Safety Circuit Rider Program and the Traffic Signal Circuit Rider Program are statewide programs aimed at reducing the frequency and severity of injury and fatal crashes by assisting and supporting local road safety authorities. Both programs offer safety-related information, educational programs, technical assistance, and various training opportunities at no cost to all Connecticut municipalities.

The following assistance is available through the Traffic Signal Circuit Rider Program:

- Support for the development of management plans with clear goals and objectives for the operation, maintenance, and design of traffic signal infrastructure.
- Training on traffic signal topics relevant to local agencies through seminars, technical briefs, and site visits.
- Assistance for the development of traffic signal timing at isolated intersections and coordinated systems, including evaluating relevant performance measures.
- Promotion of opportunities for federal-aid funding for traffic signal operations and encourage the integration of traffic signal operations into metropolitan transportation plans and programs.
- Equipment Loan Program.

Appendix A:

Municipal Reports

Introduction to the Individual Municipal Reports

The following municipal reports provide a more in-depth analysis and overview of traffic safety in each of the 16 Northeastern Connecticut Council of Government member municipalities.

Each municipal report includes basic demographic information, data -identified corridors and intersections, as well as bike and pedestrian crash totals. In addition to the data-identified sites, locations that exhibit safety concerns for municipal representatives were documented. From the data-identified and prioritized locations, systemic improvements and site-specific strategies were developed to minimize or prevent injury and fatal crashes in the future. These are listed in tabular format with estimated costs.

Source: VN Engineers

TOWN OF ASHFORD

2020 Population Estimate: 4,412
Area: 39 square miles
Population Density: 113 persons per square mile
2016 Vehicle Miles Traveled (VMT): 9,503,140
2016 VMT per Capita: 2,154
Setting: Rural
Town Representative: Christine Abikoff (Town of Ashford)
Data Identified High Crash Corridors: US-44 (Ashford Center Road) from Willington Townline to CT-89 (Mansfield Road)
Data Identified High Crash Intersections: US-44 (Ashford Center Road) and CT-89 (Mansfield Road)
Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2019: 2
Total Number of Crashes Involving Injuries or Fatalities, 2015-2019: 89

Source: VN Engineers

Overview

Ashford is a rural town in Windham County. It is bordered by Willington to the west, Union to the north, Eastford to the east, and Chaplin and Mansfield to the south. The Town's main thoroughfares are US-44, I-84, CT-74 and CT-89.

Ashford Total Crashes by Severity

Crash Severity	2015	2016	2017	2018	2019
Fatal Injury (K)	0	1	1	0	0
Suspected Serious Injury (A)	0	0	0	0	4
Suspected Minor Injury (B)	7	16	7	8	15
Possible Injury (C)	2	7	4	7	10
Total Injury Crashes	9	24	12	15	29

Town's Input
The Town of Ashford representatives were not available to meet to discuss the recent crash history in more detail. They referred us to a Road Safety Audit (RSA) report produced in April 2018 by CTDOT, that details their primary concerns along CT-74 and US-44.

Fatal Crashes from 2015-2019

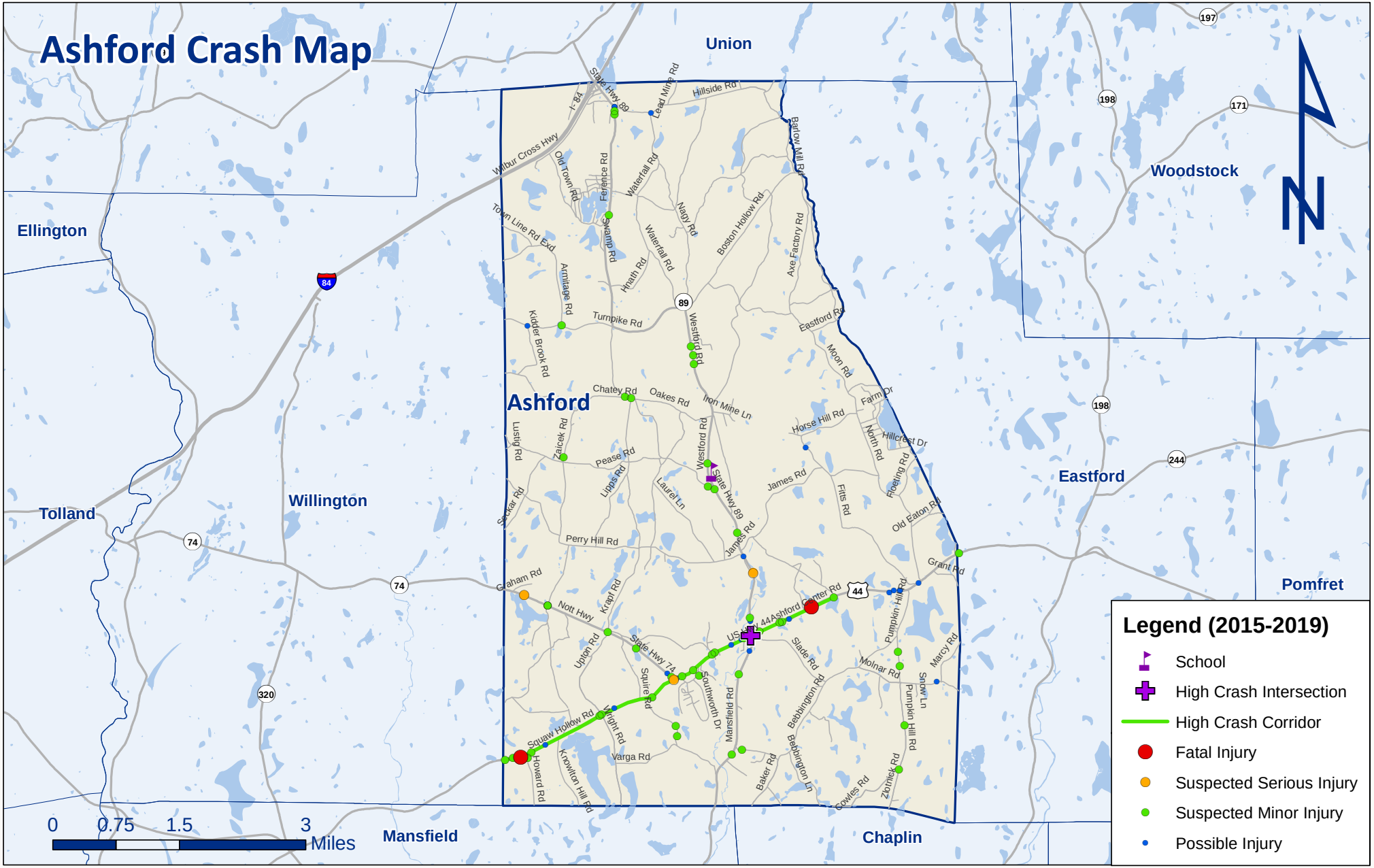
- **US-44 (Ashford Center Road)**: Front to front fatal crash.
- **US-44 (Squaw Hollow Road)**: Pedestrian fatal crash.

US-44 (Ashford Center Road, Pompey Hollow Road, Squaw Hollow Road)
The US-44 corridor is a concern for the Town of Ashford due to speeding, the high number of hazard trees, high number of crashes, lack of pedestrian and bike amenities and higher ADT. In the RSA, there are several short, mid- and long-term implementation goals.

US-44 (Pompey Hollow Road) and CT-74 (Nott Highway)
This is a T-intersection with stop control on CT-74 and a flashing yellow beacon for US-44 traffic. The vertical curvature along the US-44 approach can be difficult to maneuver. Another issue is the lack of pedestrian amenities despite pedestrian use. There is a sweeping right turn from US-44 onto CT-74 which can exacerbate speeding issues. One suggestion is to coordinate with CTDOT to review eliminating the passing zone heading west on SR 74 adjacent to the US-44/CT-74 intersection. Other recommendations include investigating the geometric modifications to the US-44/CT-74 Intersection including turning lanes, layout, overall capacity and function and conducting a survey to get resident's feedback.

US-44 (Ashford Center Road) and CT-89 (Mansfield Road)
This is a signalized four-way intersection with high crash incidents. There is vertical curvature along the US-44 southbound approach.

Source: VN Engineers


Ashford Crash Map
Union
Woodstock
Ellington
Willington
Tolland
Ashford
Eastford
Pomfret
Mansfield
Chaplin
Legend (2015-2019)
School
High Crash Intersection
High Crash Corridor
Fatal Injury
Suspected Serious Injury
Suspected Minor Injury
Possible Injury
0 0.75 1.5 3 Miles
N

Field Site Inventory

US-44 (Ashford Center Road) from CT-89 (Mansfield Road) to Pumpkin HIll Road

US-44 (Ashford Center Road) is a two-lane roadway with 12-foot lanes in each direction and 4-foot shoulders on each side. The speed limit to the east of CT-89 (Mansfield Road) is 45 miles per hour. The first segment west of CT-89 has a very steep vertical slope. The intersection approach is discussed in more detail in the next section.

US-44 proceeds east past this crest through a series of vertical and horizontal curves. The adjacent land use is rural with few driveways. The uninterrupted flow of travel and low density land use could encourage speeding. There are no centerline rumble strips despite the narrow cross section and higher speeds.

Recommendations:

- Consider installing chevron curve signs if warranted through curves.
- Consider increased enforcement of the posted speed limits.
- Consider installing dynamic speed feedback signs.
- Consider installing centerline rumble strips.

US-44 (Ashford Center Road/Pompey Hollow Road) and CT-89 (Mansfield Road)

This is a signalized four-way intersection with left-turn lanes along the east and west approaches of US-44. CT-89 has left-turn lanes and medians dividing the directions of travel, at both the north and south approaches. US-44 has 12-foot lanes in each direction and 4-foot shoulders on each side. The speed limit on US-44 to the west of CT-89 is 40 miles per hour and the speed limit to the east of CT-89 is 45 miles per hour with a steep vertical slope along the approach to the signal. This US-44 southbound approach has a stop ahead when flashing warning sign.

CT-89 has two 12-foot lanes in each direction and 4-foot shoulders on each side. The speed limit on CT-89 to the north of US-44 is 45 miles per hour with some horizontal curvature, and the speed limit to the south of US-44 is 45 miles per hour, with some horizontal curvature and vertical curvature. There are no advance intersection ahead warning signs along either approach of CT-89

Pavement marking are faded on both routes.

Recommendations:

- Consider installing traffic signal retroreflective backplates.
- Consider repainting the pavement markings.
- Consider installing intersection ahead warning signs on the US-44 approaches.

US-44 east of CT-89

US-44 (Ashford Center Road/Pompey Hollow Road) and CT-89 (Mansfield Road)

Ashford Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
US-44 (Ashford Center Road) from CT-89 (Mansfield Road) to Pumpkin HIll Road	Horizontal curve	Consider installing chevron curve signs if warranted through curves	Low
	Speeding	Consider increased enforcement of the posted speed limits	Low-Medium
		Consider installing dynamic speed feedback signs	Low
	Crashes	Consider installing centerline rumble strips	Low
US-44 (Ashford Center Road/Pompey Hollow Road) and CT-89 (Mansfield Road)	Intersection Crashes	Consider installing traffic signal retroreflective backplates	Low-Medium
		Consider repainting the pavement markings	Low
		Consider installing intersection ahead warning signs on the US-44 approaches	Low
US-44 (Pompey Hollow Road) and CT-74 (Nott Highway)	Intersection Crashes	Eliminate passing zone heading west on CT -74 adjacent to the intersection	Low-Medium
		Consider installing traffic signal retroreflective back-plates	Low-Medium
		Consider the geometric improvements in the RSA	Low-High
Village center	Speeding	Consider installing dynamic speed feedback signs	Low
		Consider enhanced gateway treatments along both entrances	Low
	Pedestrian and Bike safety	Consider narrowing travel lanes and expanding the shoulders where feasible	Low
		Consider enhancing the crosswalks with RRFB	Low-Medium

TOWN OF BROOKLYN

US Census 2020 Population Estimate: 8,951
Area: 29.1 square miles
Population Density: 283 persons per square mile
2016 Vehicle Miles Traveled (VMT): 7,692,010
2016 VMT per Capita: 859 miles
Setting: Rural
Town Representatives: Jana Roberson(Director of Community Development), Alexis Meehan (NECCOG)
Data Identified High Crash Corridors: CT-169 from Bush Hill Rd to Pomfret Rd, US-6 from Apell Rd to Pomfret Rd, US-6 from Brickyard Rd to Day St
Data Identified High Crash Intersections: US-6 and South Main St, US-6 and Church St, US-6 and CT-169
Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2019: 9
Total Number of Crashes Involving Injuries or Fatalities, 2015-2019: 195

Source: VN Engineers

Overview

Brooklyn is bordered by Hampton to the west, Pomfret to the north, Killingly to the east, and Plainfield and Canterbury to the south. Its major thoroughfares are US-6, CT-205, and CT-169.

Brooklyn Total Crashes by Severity

Crash Severity	2015	2016	2017	2018	2019
Fatal Injury (K)	3	3	0	3	4
Suspected Serious Injury (A)	1	3	0	1	0
Suspected Minor Injury (B)	22	23	21	18	18
Possible Injury (C)	15	13	16	15	16
Total Injury Crashes	41	42	37	37	38

Town's Input

Fatal Crashes from 2015-2019

- **North Society Road:** Young driver, speeding, double fatal crash.
- **Wauregan Road**: Unhelmeted motorcycle speeding fatal crash.
- **US-6 (Hartford Road):** Front-to-front sideswipe fatal crash.
- **US-6 (Hartford Road) west of Tantic Road**: Substance-impaired fatal crash.
- **US-6 (Providence Road) and Harris Ave:** Pedestrian fatal crash.
- **US-6 (Providence Road) and Prince Hill Road**: Single vehicle roadway departure fatal crash.
- **Wolf Den Road no 1**: Substance-impaired, young driver fatal crash.
- **CT-169 (Pomfret Road)**: Pedestrian fatal crash in private driveway.
- **CT-169 (Pomfret Road)**: Helmeted motorcycle roadway departure fatal crash.
- **CT-169 (Pomfret Road)**: Older driver, roadway departure fatal crash.
- **CT-169 (Pomfret Road)**: Substance-impaired, roadway departure fatal crash.
- **US-6 (Providence Road) west of Brickyard Rd**: Older driver front-to-rear fatal crash.
- **US-6 (Providence Road) and Dunkin Donuts**: Pedestrian fatal crash.

US-6 (Hartford Road/Providence Road)
Speeding is an issue along the entire route with some areas identified as more problematic. The section of US-6 east of Mason Road to CT-169 and along the commercial corridor in east Brooklyn was cited for speeding activities. This route bisects the center of town. To act as a gateway and cue motorists they are entering a town, there is a State and Town "Welcome to Brooklyn" sign. However, an enhanced gateway treatment could help motorists understand they are entering a denser area and need to slow down.

US-6 (Hartford Road)from Mason Road to Harris Ave
This segment was realigned for safety. There is a horizontal curve along US-6. The Town noted there were two fatal crashes in the recent data set. Speeding is a concern and Town representatives believe aggressive driving contributes to crashes.

US-6 (Providence Road) east of Allen Hill Road
This section of US-6 consists of a four-lane cross section with a short 500 foot section of two lanes that transitions back to four lanes. The roadway geometry could be contributing to crashes. This segment of US-6 is through a commercial area which has a high number of curb cuts and high number of front to rear crashes. Sidewalks run along the southern side, but sections of it are difficult for pedestrians to use because there is no buffer and the higher vehicular speeds make it less user friendly. The speed limit is 40 MPH.

US-6 (Hartford Road)and Windham Road
The T-intersection is under stop control on Windham Road. There have been several crashes, which could be attributed to there being no left turn lane for cars on US-6 coupled with aggressive driving.

US-6 (Hartford Road) and CT-169 (Pomfret Road/Canterbury Road)
This is a high frequency crash signalized intersection. The DOT redesigned it recently, but the Town representatives stated it still needs improvements.

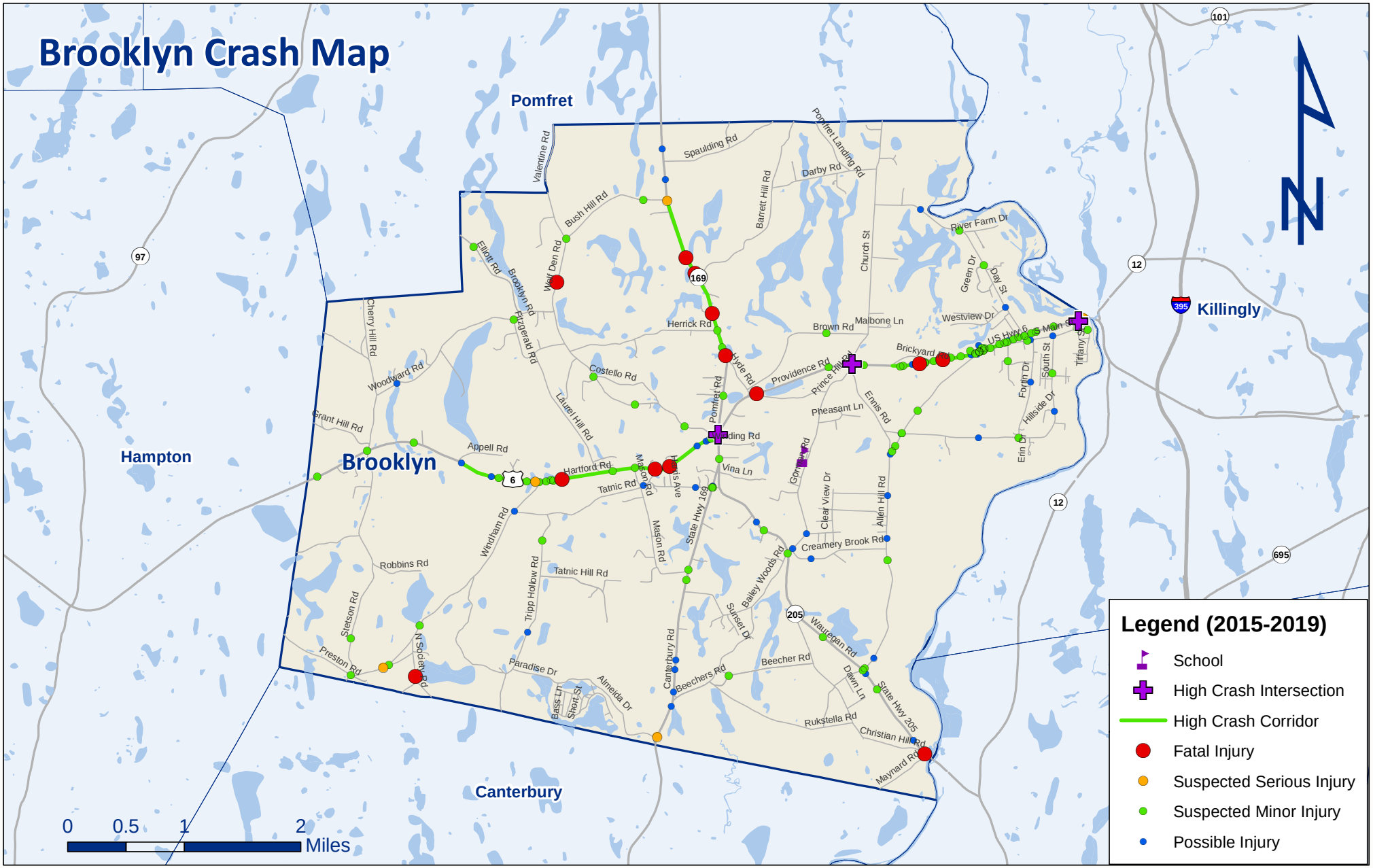
CT-169 (Pomfret Road/Canterbury Road)
There were four fatal crashes on the CT-169 segment north of the US-6 intersection. The Town said there are no centerline rumble strips. CT-169 is a scenic byway but representatives are amenable to centerline rumble strips if DOT installed them.

US-6 (Providence Road) and Church Street
This is a signalized intersection with a high number of crashes. There are possible sight distance issues due to the vertical crest on US-6 at the intersection.

Bicyclists and Pedestrians
Town representatives expressed concern with the ongoing conflict between vehicles and non-motorized users. Speed is a major contributor to less than optimal pedestrian and bicyclist environment.

NECCOG Comments and Location Concerns

- **US-6 & Day St**-Site of many crashes in recent years, sun glare is a problem.


Brooklyn Crash Map
Pomfret
Hampton
Brooklyn
Canterbury
Killingly
Legend (2015-2019)
School
High Crash Intersection
High Crash Corridor
Fatal Injury
Suspected Serious Injury
Suspected Minor Injury
Possible Injury
0 0.5 1 2 Miles
N
Spaulding Rd
Darby Rd
Pomfret Landing Rd
Valentine Rd
Bush Hill Rd
Barrett Hill Rd
Church St
River Farm Dr
Green Dr
Elliott Rd
Brooklyn Rd
Wolf Den Rd
Herrick Rd
Brown Rd
Malbone Ln
Westview Dr
Cherry Hill Rd
Fitzgerald Rd
Hyde Rd
Providence Rd
Prince Hill Rd
Brickyard Rd
US Hwy 6
Main St
Tiffany Dr
South St
Forbin Dr
Hillside Dr
Woodward Rd
Costello Rd
Laurel Hill Rd
Pomfret Rd
Pheasant Ln
Ennis Rd
Grant Hill Rd
Appell Rd
Hartford Rd
Tatnic Rd
Mason Rd
Travis Ave
Vina Ln
Gorman Rd
Clear View Dr
Allen Hill Rd
Windham Rd
State Hwy 169
Creamery Brook Rd
Robbins Rd
Tatnic Hill Rd
Tripp Hollow Rd
Bailey Woods Rd
Sunset Dr
Stetson Rd
N Society Rd
Preston Rd
Paradise Dr
Bass Ln
Short St
Almeida Dr
Canterbury Rd
Beechers Rd
Beecher Rd
Waureagan Rd
Dawn Ln
State Hwy 205
Rukstella Rd
Christian Hill Rd
Maynard Rd
101
97
12
395
6
169
205
695

Field Site Inventory

US-6 (Providence Road) west of Allen Hill Road

Just to the west of Allen Hill Road, US-6 drops from two travel lanes in the westbound direction to one travel lane, creating a bottle neck for about 500 feet within this section of the corridor. The reduction of the westbound two travel lanes to one travel lane create significant queuing and associated congestion and contribute to crashes in the westbound direction during peak periods.

Recommendation:

- Consider a traffic study to determine if maintaining two travel lanes in the westbound direction is feasible by modifying the westbound lane geometry to maintain two US-6 westbound lanes between Allen Hill Road and the signalized intersection of US-6 and the Wal-Mart Driveway.

US-6 (Hartford Road) between Mason Road and Harris Avenue

US-6 between Mason Road and Harris Avenue is a rural roadway and consists of one travel lane and minimal shoulders in each direction, and a sidewalk along the southern side of US-6. There is a horizontal curve within this section of US-6 and traveling in the eastbound direction approaching the Village Center. Traveling in the eastbound direction the speed limit drops from a posted speed of 45 mph to 35 mph approaching the Village Center east of Mason Road. Observed travel speeds are much higher than the posted speed limit through this section of US-6 and present a concern in the Village Center area.

Recommendation:

- Consider traffic calming measures and gateway treatments to address high travel speeds as US-6 transitions into the Village Center.

US-6 (Providence Road) west of Allen Hill Road

US-6 between Mason Road to Harris Avenue

Brooklyn Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
US-6 (Providence Road) west of Allen Hill Road	Crashes	Consider a traffic study to determine if maintaining two travel lanes in the westbound direction is feasible by modifying the westbound lane geometry to maintain two US-6 westbound lanes between Allen Hill Road and the signalized intersection of US-6 and the Wal-Mart Driveway	Medium
US-6 (Hartford Rd) from Mason Road to Harris Ave	Speeding through the Village Center	Consider traffic calming measures and gateway treatments to address high travel speeds as US-6 transitions into the Village Center	Medium
CT-169 (Pomfret Road/Canterbury Road)	High number of crashes	Consider installing centerline rumble strips	Low

TOWN OF CANTERBURY

2020 Population Estimate: 5,251
Area: 40 square miles
Population Density: 127 persons per square mile
2016 Vehicle Miles Traveled (VMT): 7,940,210
2016 VMT per Capita: 1,512
Setting: Rural
Town and Regional Representatives: Sidney Ames Jr. (Department of Public Works), Delia Fey (NECCOG), Christopher Lippke (First Selectman)
Data Identified High Crash Corridors: N/A
Data Identified High Crash Intersections: N/A
Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2019: 1
Total Number of Crashes Involving Injuries or Fatalities, 2015-2019: 90

Source: VN Engineers

Overview

Canterbury is a rural town located in the central southern part of Windham County and is bordered by Brooklyn to the north, Plainfield to the east, Lisbon to the south, Hampton and Scotland to the west. Its main thoroughfares are CT-14 and CT-169.

Canterbury Total Crashes by Severity

Crash Severity	2015	2016	2017	2018	2019
Fatal Injury (K)	1	0	0	1	3
Suspected Serious Injury (A)	1	3	0	0	1
Suspected Minor Injury (B)	7	13	12	12	7
Possible Injury (C)	6	5	4	9	5
Total Injury Crashes	15	21	16	22	16

Town's Input

Fatal Crashes from 2015-2019

- **CT-169 (N. Canterbury Road) and Kerr Road**: Motorcycle, intersection fatal crash.
- **CT-169 (S. Canterbury Road)**: Substance-impaired, front-to-front fatal crash.
- **Bates Pond Road**: Pedestrian under dark conditions fatal crash
- **CT-14 (Westminster Road)**: Substance-impaired, speeding motorcycle roadway departure fatal crash.
- **CT-12 (Plainfield Road)**: Motorcycle-front-to-rear, intersection, fatal crash.

Enforcement

The Town does not have its own police force but is under the jurisdiction of Troop D from the Danielson Barracks. Dynamic speed feedback signs are used to deter speeding.

CT-169 (Canterbury Road) and CT-14 (Westminster Road)

This is a four-way stop-controlled intersection with a flashing red traffic signal. Front to rear crashes are reported. The excessively wide shoulders along all intersection approaches encourage illegal by-passing.

CT-14 (Westminster Road) and Goodwin Hill Road

This is a three-legged intersection with the local road under stop control. Sight lines are reported to be insufficient. This combined with high speeds on the main line (CT-14) are concerns for the Town.

CT-169 (S. Canterbury Road) and Depot Road Extension

This is a T intersection with the local road under stop control. There is significant horizontal and vertical curvature along CT-169 which impacts sight lines. In addition the high travel speeds on the main line make this intersection a concern for the Town.

Motorcycles

Motorcycles frequent the Town of Canterbury. Its rural roadway characteristics attract high volumes of recreational users.

Pedestrian and Bicyclists

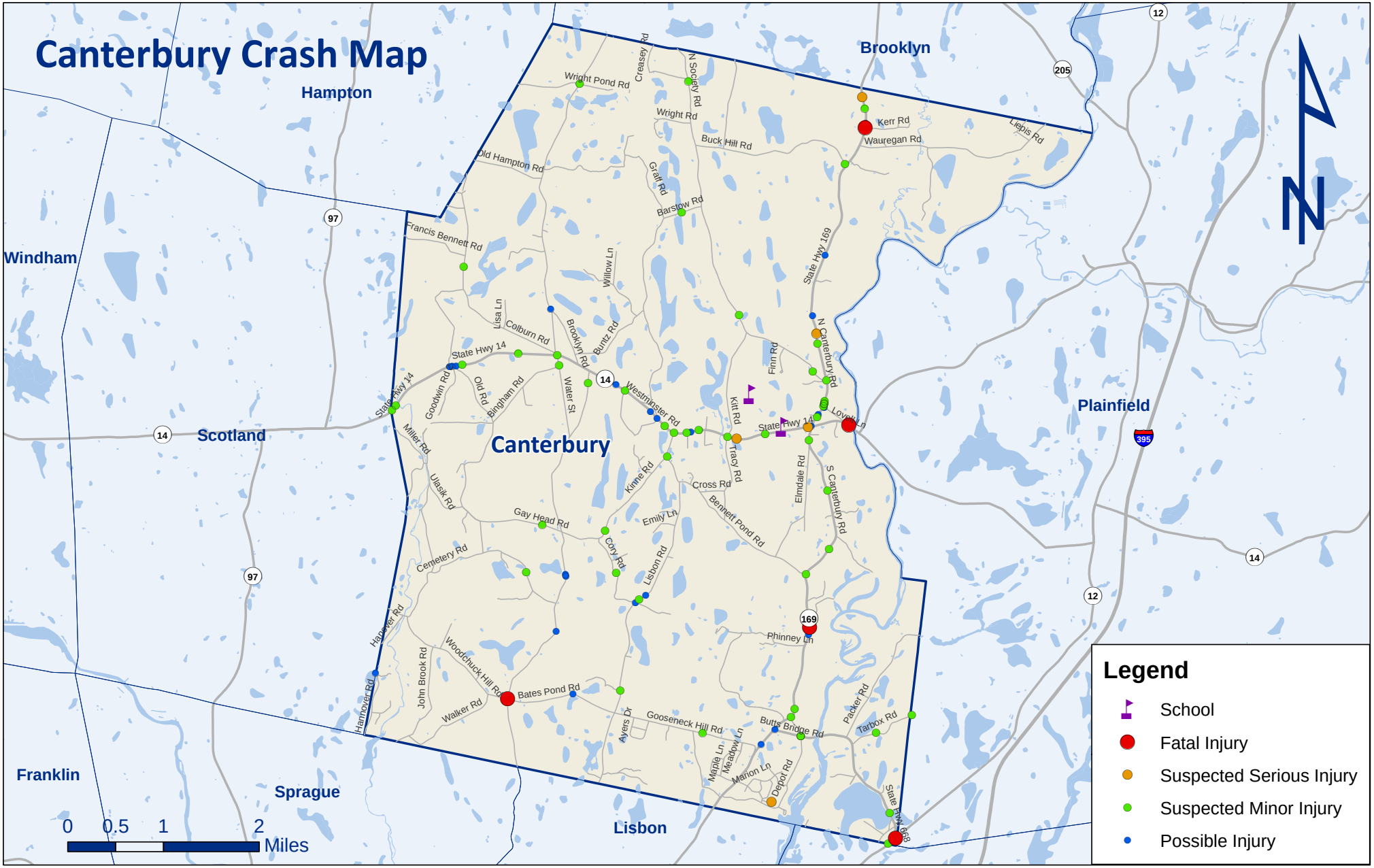
There are no sidewalks in town due to its rural characteristics. The Town reported there is no significant bicycle or pedestrian activity.

Horizontal Curve Warning Signs and Centerline rumble strips

The DOT installed horizontal curve warning signs which initially drew push back from residents The residents have slowly accepted the additional signage. Furthermore, the Town Director of Public Works appreciates the new chevron signs especially during snow plowing for enhanced delineation.

The Town stated that centerline rumble strips were installed on Packer Road by the State.

Source: VN Engineers


Canterbury Crash Map
Hampton
Brooklyn
Windham
Scotland
Canterbury
Plainfield
Franklin
Sprague
Lisbon
Wright Pond Rd
Creasey Rd
N Society Rd
Wright Rd
Buck Hill Rd
Kerr Rd
Wauregan Rd
Liepis Rd
Old Hampton Rd
Graff Rd
Barstow Rd
Francis Bennett Rd
Willow Ln
State Hwy 169
N Canterbury Rd
Lisa Ln
Colburn Rd
Brooklyn Rd
Buntz Rd
Finn Rd
State Hwy 14
Goodwin Rd
Old Rd
Bingham Rd
Water St
Westminster Rd
Kitt Rd
Tracy Rd
Lovely Ln
Miller Rd
Ulasik Rd
Kime Rd
Cross Rd
Elmdale Rd
S Canterbury Rd
Gay Head Rd
Emily Ln
Bennett Pond Rd
Cory Rd
Lisbon Rd
Cemetery Rd
Hanover Rd
Phinney Ln
Woodchuck Hill Rd
Bates Pond Rd
John Brook Rd
Walker Rd
Ayers Dr
Gooseneck Hill Rd
Butts Bridge Rd
Packer Rd
Tarbox Rd
Maple Ln
Meadow Ln
Manion Ln
Depot Rd
State Hwy 868
0 0.5 1 2 Miles
Legend
School
Fatal Injury
Suspected Serious Injury
Suspected Minor Injury
Possible Injury

Field Site Inventory

CT-14 (Westminster Road) and Goodwin Road 2

Goodwin Road 2 forms a T-intersection with CT-14 (Westminster Road). The local road is under stop control with the State route running under free flow. Sight distance from Goodwin Road 2 looking west is limited due to the horizontal and vertical curvature on the CT-14 approach. The curve terminates about 300 feet to the west of the intersection which seems inadequate with higher speeds. There is a combination horizontal alignment/intersection warning sign to alert motorists travelling eastbound on CT-14 of the intersecting roadway. The speed limit is posted at 45 MPH.

Recommendations:

- Consider installing flashing beacons to the warning signs on CT-14.
- Consider realigning the intersection to the east if ROW allows.

CT-169 (S. Canterbury Road) near Depot Road Extension

Near Depot Road Extension, CT-169 is a rural roadway with a posted speed limit of 45 mph and consists of one travel lane with minimal shoulders in each direction. Just north of Depot Road Extension, CT-169 has a significant horizontal curve with guiderail located on both sides of the road. There are four chevron curve warning signs in both directions within the horizontal curve.

Recommendations:

- Consider assessing the condition, spacing and location of the existing chevron signs to potentially improve the visibility of the warning signs.
- Consider adding reflective panels to the chevron sign posts to improve visibility of the warning signs.

CT-14 (Westminster Rd) and Goodwin Road 2

CT-169 (S Canterbury Road) near Depot Road Extension

Canterbury Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-14 (Westminster Road) and Goodwin Road 2	Inadequate sight distance	Consider installing flashing beacons to the warning signs on CT-14	Low
		Consider realigning the intersection to the east if ROW allows	Medium-High
CT-169 (S. Canterbury Road) near Depot Road Extension	Horizontal curvature	Consider assessing the condition, spacing and location of the existing chevron signs to potentially improve the visibility of the warning signs	Low
		Consider adding reflective panels to the chevron sign posts to improve visibility of the warning signs	Low

TOWN OF CHAPLIN

2020 Population Estimate: 2,228

Area: 19 square miles

Population Density: 122 per square mile

2016 Vehicle Miles Traveled (VMT): 4,381,460

2016 VMT per Capita: 1,967

Setting: Rural

Town and Regional Representatives: Joseph Pinto (Selectman/Fire Chief) and Andrew Daniels (Chaplin Volunteer Fire Department)

Data Identified Data-Driven Corridors: N/A

Data Identified High Crash Intersections: US-6 and CT-198

Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2019: 0

Total Number of Crashes Involving Injuries or Fatalities, 2015-2019: 86

Source: VN Engineers

Overview

Chaplin is a rural town in Windham County. It is bordered by Mansfield to the west, Ashford and Eastford to the north, Hampton to the east, and Scotland and Windham to the south. The Town's main thoroughfares are US-6 and CT-198.

Chaplin Total Crashes by Severity

Crash Severity	2015	2016	2017	2018	2019
Fatal Injury (K)	0	0	2	1	0
Suspected Serious Injury (A)	1	2	1	0	0
Suspected Minor Injury (B)	10	9	4	17	8
Possible Injury (C)	4	13	6	2	6
Total Injury Crashes	15	24	13	20	14

Town's Input

Fatal Crashes from 2015-2019:

- **US-6 (Hampton Road)**: Lane departure fatal crash.
- **Chewink Road:** Substance-impaired roadway departure fatal crash.
- **US-6 (Hampton Road):** Substance-impaired front-to-front fatal crash.

US-6 (Willimantic Road/Hampton Road) and CT-198 (Phoenixville Road)/Chewink Road

This is a high crash frequency signalized intersection along a horizontal curve. Speeding is an issue on US-6. There have been several fatal crashes at this intersection and the Town representatives stated they consider it the worst intersection in town. CT-198 has a sharp horizontal curve along the approach to US-6. US-6 westbound has an advance signal warning sign with flashers to advise motorists to stop.

US-6 (Willimantic Road/Hampton Road)

US-6 east of CT-198 does not have centerline rumble strips. Town representatives said they think rumble strips would help reduce crashes on this segment of roadway. West of CT-198, US-6 has had a series of crashes due to speeding and turning movements associated with the commercial area**.**

CT-198 (Phoenixville Road)

Speeding is an issue along CT-198. There was a fatal crash at CT-198 and Pumpkin Hill Road in December 2020.

Bicyclists and Pedestrians

Chaplin attracts several bicycle groups and informal rides. Popular ride routes are along Chewink Road and CT-198. There are no sidewalks in town.

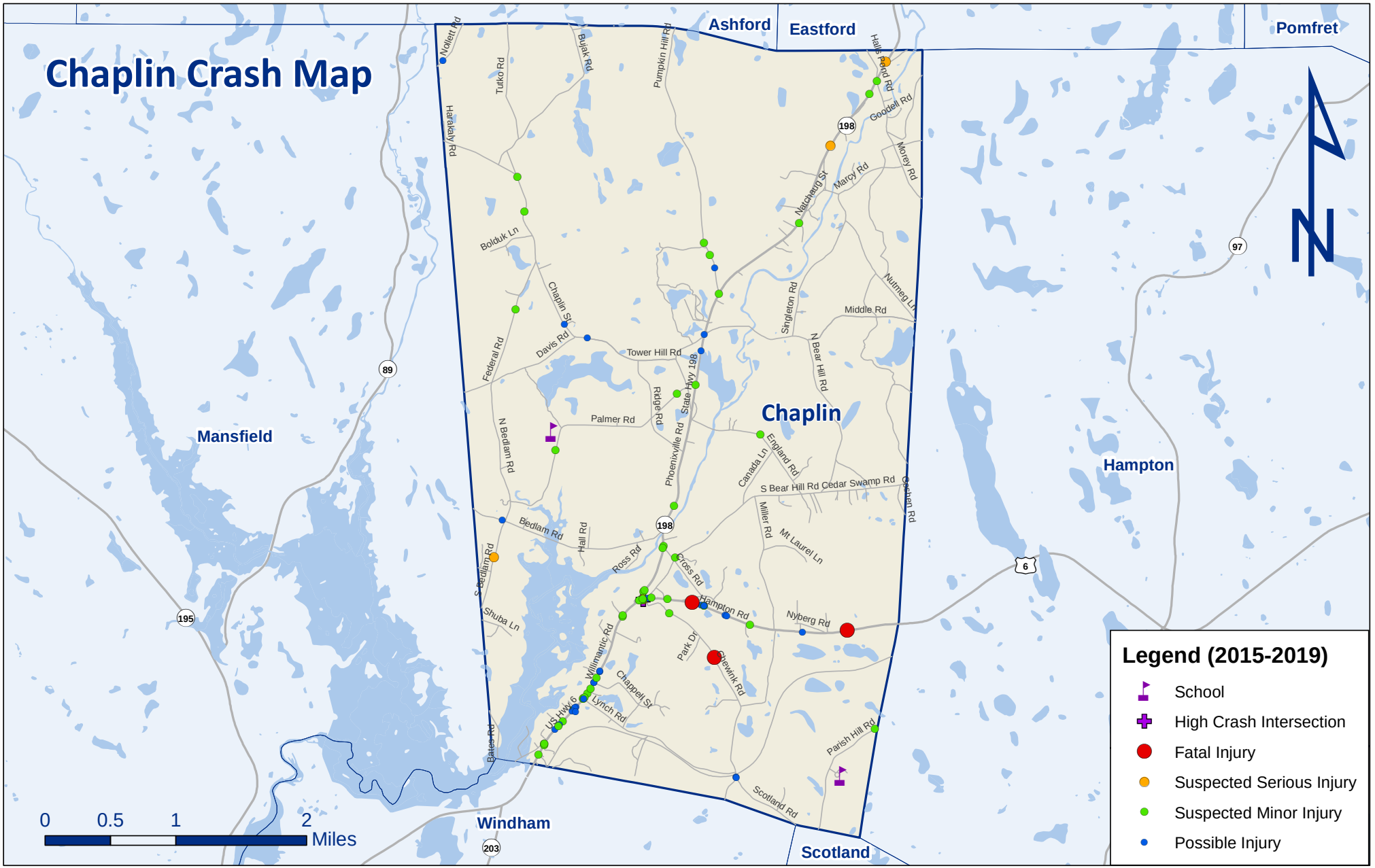
Chevron Curve Signs

Chevron curve signs have been installed along various roadways in town.

NECCOG Comments and Location Concerns

- US-6 and CT-198 are hot spots for crashes.
- The Plan of Conservation and Development (POCD) identified: CT-198 and North Bear Hil Rd; Chaplin St; Natchaug St & Ridge Rd as dangerous intersections needing attention.

Source: VN Engineers


Chaplin Crash Map
Ashford
Eastford
Pomfret
Mansfield
Chaplin
Hampton
Windham
Scotland
Nollett Rd
Bujak Rd
Pumpkin Hill Rd
Hall Wood Rd
Goodell Rd
Morey Rd
Natchaug St
Marcy Rd
Tutko Rd
Hartakaly Rd
Bolduk Ln
Chaplin St
Davis Rd
Federal Rd
Tower Hill Rd
Singleton Rd
Middle Rd
Nutmeg Ln
N Bear Hill Rd
State Hwy 198
Ridge Rd
Phoenixville Rd
Palmer Rd
N Bedlam Rd
England Rd
Canada Ln
S Bear Hill Rd
Cedar Swamp Rd
Goshen Rd
Miller Rd
Mt Laurel Ln
Bedlam Rd
Hall Rd
Ross Rd
Cross Rd
Hampton Rd
Nyberg Rd
S Bedlam Rd
Shuba Ln
Park Dr
Chewink Rd
Williamantic Rd
Chappell St
Lynch Rd
US Hwy 6
Bates Rd
Parish Hill Rd
Scotland Rd
89
198
97
6
195
203
0 0.5 1 2 Miles
Legend (2015-2019)
School
High Crash Intersection
Fatal Injury
Suspected Serious Injury
Suspected Minor Injury
Possible Injury

Field Site Inventory

US-6 (Willimantic Road) Commercial Area

US-6 in the vicinity of Lynch Road is considered Chaplin's commercial area and Village Center with a mix of commercial and residential land uses. There are a significant number of curb-cuts associated with these land uses along US-6. The roadway generally consists of one lane and a wide shoulder in each direction with a posted speed limit of 50 mph. The combination of numerous curb-cuts and the 50 mph speed limit can make it difficult for motorists to judge available gaps in traffic to enter US-6.

Recommendation:

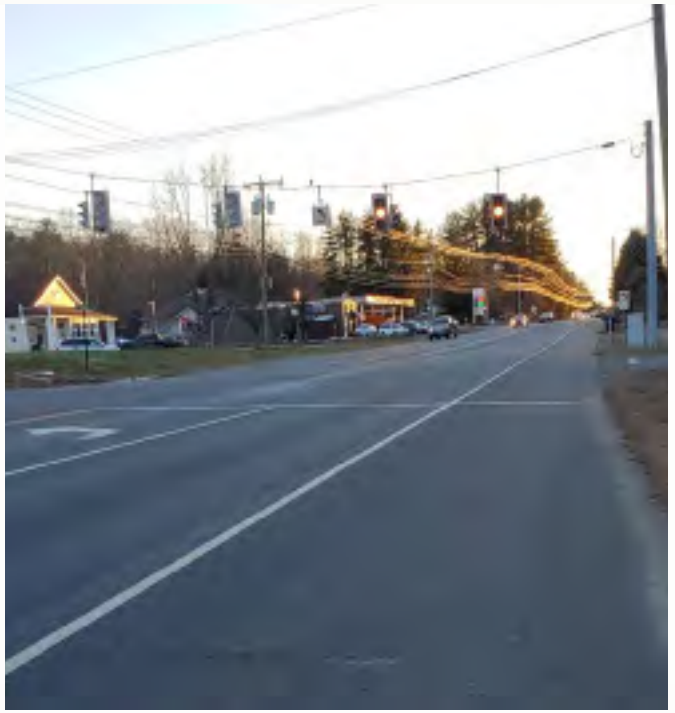
- Consider access management techniques for this area, such as curb-cut consolidation and left-turn restrictions.

CT-198 (Phoenixville Road) approach to US-6 (Willimantic Road/Hampton Road)

The CT-198, just north of US-6, consist of one travel lane with minimal shoulders in each direction with a posted speed limit of 40 mph. The CT-198 southbound approach is on an upgrade that traverses through a sharp horizontal curve approximately 300 feet prior to the signalized intersection with US-6. The combination of the upgrade, sharp horizontal curve, and adjacent vegetation along the eastern side of CT-198 significantly restrict sight distance of the upcoming intersection. A guiderail is located through the horizontal curve on the western of CT-198 and there is one curve warning sign placed at the beginning of the horizontal curve for the CT-198 southbound approach.

Recommendations:

- Consider adding an intersection ahead and/or traffic signal ahead warning sign and removing or trimming the vegetation impacting sightlines for the CT-198 southbound approach to its intersection with US-6.
- Consider assessing the condition, location and visibility of the curve warning sign and consider the installation of chevron warning signs through the horizontal curve.



US-6 Commercial Area

CT-198 (Phoenixville Road) approach to US-6 (Willimantic Road/Hampton Road

Chaplin Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
US-6 (Willimantic Road) Commercial Area	Crashes related to turning movements	Consider access management techniques for this area, such as curb-cut consolidation and left-turn restrictions	Medium
CT-198 (Phoenixville Road) approach to US-6 (Willimantic Road/Hampton Road)	Limited sight distance	Consider adding an intersection ahead and/or traffic signal ahead warning sign and removing or trimming the vegetation impacting sightlines for the CT-198 southbound approach to its intersection with US-6	Low
	Horizontal curvature	Consider assessing the condition, location and visibility of the curve warning sign and consider the installation of chevron warning signs through the horizontal curve.	Low

TOWN OF EASTFORD

2020 Population Estimate: 1,786

Area: 29 square miles

Population Density: 57 persons per square mile

2016 Vehicle Miles Traveled (VMT): 7,017,490

2016 VMT per Capita: 3,929

Setting: Rural

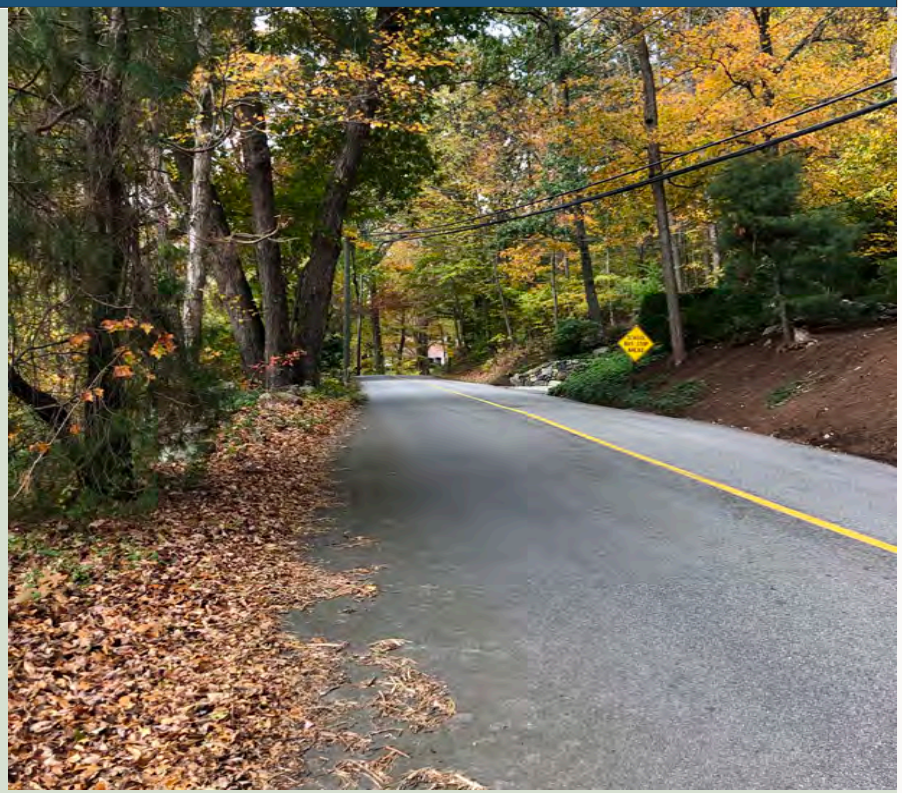
Town and Regional Representatives: Jacqueline Dubois (First Selectman) and Delia Fey (NECCOG)

Data Identified Data-Driven Corridors: N/A

Data Identified High Crash Intersections: N/A

Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2019: 2

Total Number of Crashes Involving Injuries or Fatalities, 2015-2019: 47



Source: VN Engineers

Overview

Eastford is a rural town in Windham County. It is bordered by Ashford to the west, Union and Woodstock to the north, Pomfret to the east, and Hampton and Chaplin to the south. The Town's main thoroughfares are CT-198, CT-171, CT-244, and US-44.

Eastford Total Crashes by Severity

Crash Severity	2015	2016	2017	2018	2019
Fatal Injury (K)	1	2	0	0	1
Suspected Serious Injury (A)	0	0	0	0	0
Suspected Minor Injury (B)	4	4	6	5	9
Possible Injury (C)	2	3	2	3	5
Total Injury Crashes	7	9	8	8	15

Town's Input

Fatal Crashes from 2015-2018

- **US-44 (Pomfret Rd)**: Motorcycle fatal crash.
- **US-44 (Pomfret Rd):** Roadway departure fatal crash.
- **US-44 (Pomfret Rd) and Sprague Hill Road**: Motorcycle front to front fatal crash through a horizontal curve.
- **CT-244 (Boston Turnpike) east of Andert Rd**: Roadway departure through a horizontal curve fatal crash.

Enforcement

Troop D from the Danielson Barracks provides the Town with law enforcement .

US-44 (Pomfret Road/Hartford Turnpike) and CT-198 (Chaplin Road and Eastford Road)

This is a wide signalized intersection with horizontal and vertical curvature along both of the US-44 and CT-198 approaches. The US-44 westbound approach has a wide shoulder and vehicles use the breakdown lane to bypass motorists in the travel lane. This leads to crashes and near misses.

CT-244 (Boston Turnpike) and CT-198 (Eastford Road)

This is a stop-controlled intersection with free flow on CT-244. There is vertical and horizontal curvature along the CT-198 westbound approach. A significant dip and crest prior to the intersection leaves little sight distance and stopping distance. The stop sign is regular-sized and might need to be replaced with an oversized sign and other enhancements.

CT-244 (Boston Turnpike) and Mill Bridge Road

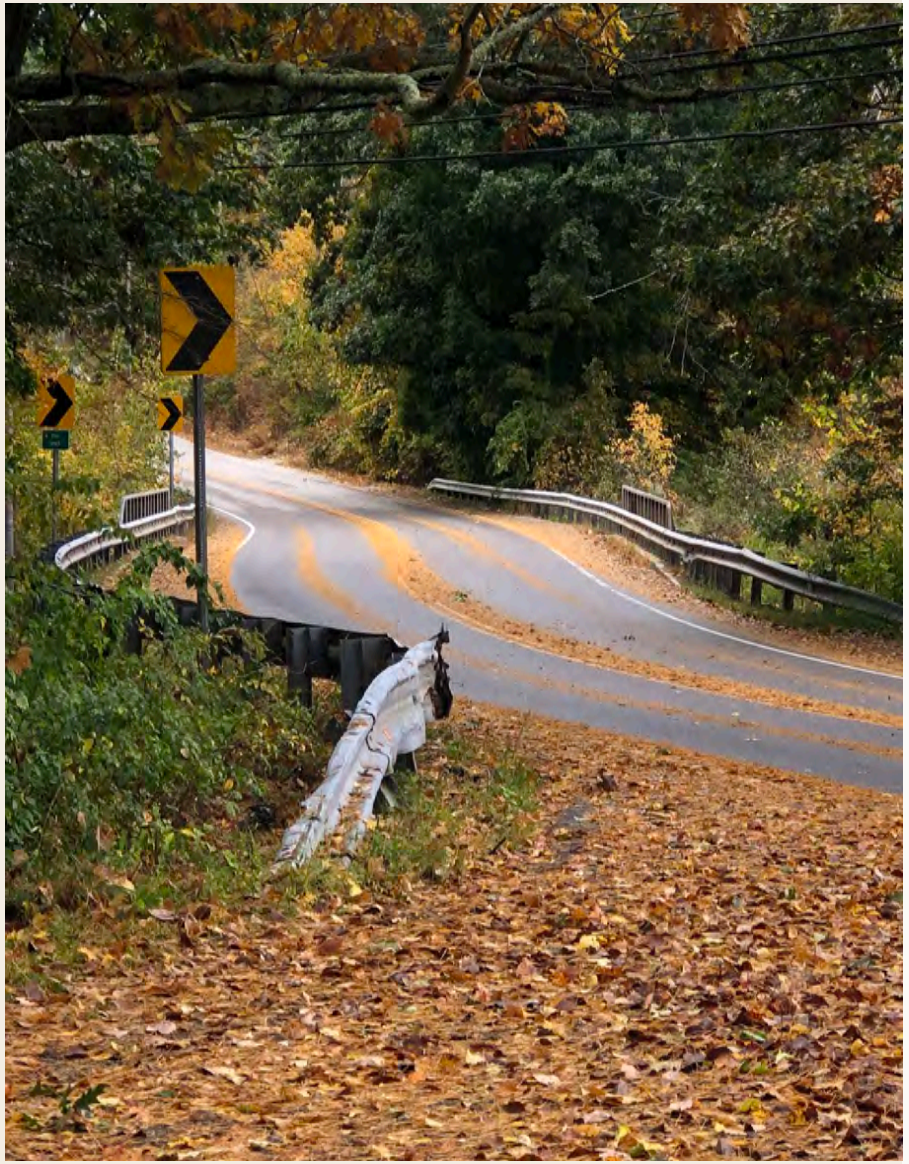
There is limited sight distance from Mill Bridge Road due to horizontal and vertical curvature on CT-244.

Pedestrians and Bicyclists

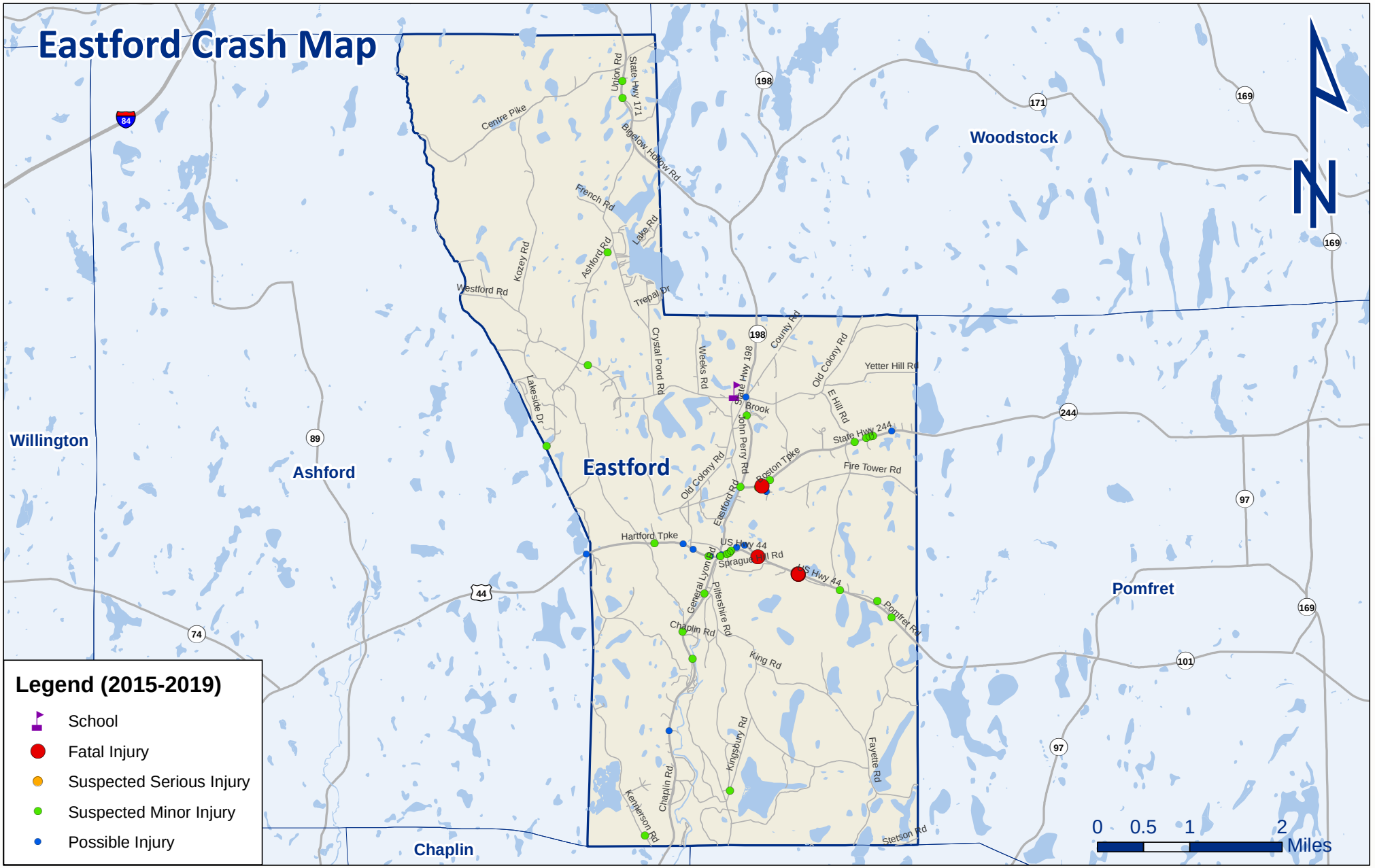
There are safety concerns for pedestrians and bicyclists due to curvature and sun glare on eastbound and westbound roads. The first selectman regularly sends out pedestrian safety messages to town residents to increase safety awareness.

NECCOG Comments and Location Concerns

- US-44 is an unsafe area where the road was reprofiled which resulted in blind spots for four residential driveways.



Source: VN Engineers


Eastford Crash Map
Willington
Ashford
Eastford
Chaplin
Woodstock
Pomfret
Centre Pike
Union Rd
State Hwy 171
Bigelow Hollow Rd
French Rd
Lake Rd
Ashford Rd
Kozey Rd
Westford Rd
Trepal Dr
Crystal Pond Rd
Weeks Rd
State Hwy 198
County Rd
Old Colony Rd
Yetter Hill Rd
E Hill Rd
Lakeside Dr
Brook
John Perry Rd
State Hwy 244
Boston Tpke
Fire Tower Rd
Eastford Rd
Hartford Tpke
US Hwy 44
Spragueville Rd
General Lyon Rd
Pilfershire Rd
Pomfret Rd
Chaplin Rd
King Rd
Kingsbury Rd
Fayette Rd
Kenyon Rd
Stetson Rd
Legend (2015-2019)
School
Fatal Injury
Suspected Serious Injury
Suspected Minor Injury
Possible Injury
0 0.5 1 2
Miles

Field Site Inventory

CT-244 (Boston Turnpike) and CT-198 (Eastford Road) and John Perry Road

This is a four-way intersection with stop control on CT-244 (Boston Turnpike) and John Perry Road. CT-198 (Eastford Road) is under free flow. There is significant vertical and horizontal curvature along the eastern CT-244 (Boston Turnpike) approach which limits sight distance as motorists approach the intersection. Centerline rumble strips are installed on CT-244. There is a stop sign ahead sign along the CT-244 (Boston Turnpike).

Recommendations:

- Consider installing high friction surface treatment along the CT-244 approach.
- Consider installing an advanced stop ahead with flashers on CT-244.
- Consider increasing the size of stop and stop ahead signs.
- Consider installing an additional stop and/or stop ahead sign on the left-hand side of the road.
- Consider installing a red reflective strip or post insert on the stop sign post.
- Consider installing actuated red flashing beacons (see MUTCD Section 4K.05) on the top of the stop sign.

CT-244 (Boston Turnpike)and Mill Bridge Road

Mill Bridge Road intersects with CT-244 (Boston Turnpike) along a vertical curvature. This is a wide stop-controlled T-intersection with CT-244 (Boston Turnpike) under free flow. Intersection ahead signs are posted along both approaches on CT-244. The stop sign on Mill Bridge Road is set back from the intersection. There is no stop bar.

Vegetation is overgrown on CT-244 to the east and west of the intersection impeding sight distance from Mill Bridge Road.

Recommendations:

- Consider trimming and removing vegetation.
- Consider enhancing intersection ahead signs on CT-244 (Boston Turnpike).
- Consider realigning and narrowing the Mill Bridge Road intersection.

CT-244 and CT-198/John Perry Road

Mill Bridge Road and CT-244

Eastford Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-244 (Boston Turnpike) and CT-198 (Eastford Road) and John Perry Road	Vertical and horizontal curvature along CT-244	Consider installing high friction surface treatment along the CT-244 approach	Medium
	Intersection crashes	Consider installing an advanced stop ahead with flashers on CT-244	Low
		Consider increasing the size of the stop sign and the stop ahead sign, or adding a red reflective strip or post insert on the stop sign post, an additional stop and/ or stop ahead sign on the left-hand side of the road. Consider placing actuated red flashing beacons on the top of a stop sign	Low
CT-244 (Boston Turnpike)and Mill Bridge Road	Limited sight distance at intersection	Consider trimming and removing vegetation	Low
		Consider enhancing the intersection ahead signs on CT-244 (Boston Turnpike)	Low
		Consider narrowing and realigning the Mill Bridge Road intersection	High

TOWN OF HAMPTON

2020 Population Estimate: 1,819

Area: 25 square miles

Population Density: 73 persons per square mile

2016 Vehicle Miles Traveled (VMT): 6,845,940

2016 VMT per Capita: 3,764

Setting: Rural

Town Representatives: N/A

Data Identified Data-Driven Corridors: N/A

Data Identified High Crash Intersections: N/A

Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2019: 0

Total Number of Crashes Involving Injuries or Fatalities, 2015-2019: 45

Source: VN Engineers

Overview

Hampton is a rural town bordered by Chaplin to the west, Eastford and Pomfret to the north, Brooklyn and Canterbury to the east and Scotland to the south. Its main thoroughfares are US-6, and CT-97.

Hampton Total Crashes by Severity

Crash Severity	2015	2016	2017	2018	2019
Fatal Injury (K)	0	1	1	0	0
Suspected Serious Injury (A)	1	1	0	0	0
Suspected Minor Injury (B)	3	3	4	6	4
Possible Injury (C)	5	6	5	4	1
Total Injury Crashes	9	11	10	10	5

Fatal Crashes from 2015-2019

- **US-6 (Hartford Turnpike) west of North Brook Road**: Roadway departure fatal crash.
- **US-6 (Providence Turnpike) and CT-97 (Pudding Hill Road):** Substance-impaired, angle intersection fatal crash.

Representatives from the Town of Hampton were not available to meet and discuss recent crash history or transportation related concerns. This section is excerpted from their 2016-2026 plan of conservation and development (POCD).

US-6 (Hartford Turnpike/Providence Turnpike)

US-6 was widened in the 1980s to accommodate traffic between Hartford and destinations in Rhode Island. Due to these improvements, US-6 continues to alleviate traffic in town by carrying the high volumes interstate motorists without hampering local traffic flow.

CT-97 (Pudding Hill Road/Main Street)/Pomfret Road)

CT-97 runs north-south and is primarily used by local and inter-town traffic. The Connecticut Department of Transportation continues to improve components of Route 97, including pavement and drainage.

Pedestrians and Bicyclists

Many town roads have narrow or no shoulders and are not compatible for pedestrians and for young bicycle riders. According to community feedback there is increasing emphasis on improving connection for walking and bicycling in town.

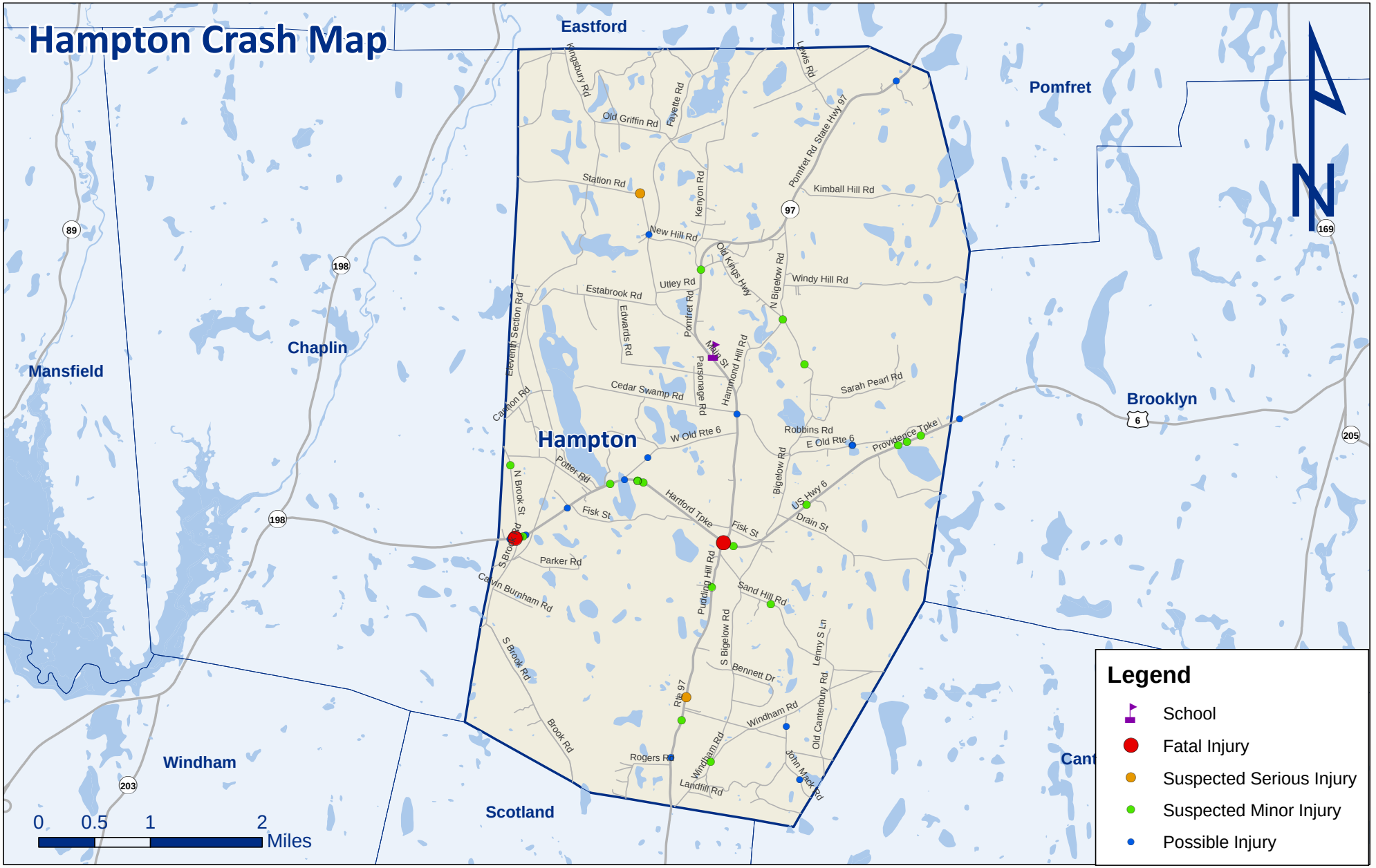
The Town endorsed the following action items from the POCD:

- Evaluate the location of a future footpath along one or both sides of Main Street/Route 97 on Hampton Hill.
- Establish a town-wide cycling and walking map.
- Seek funding for walking and cycling connections along Route 97 and Route 6 as well as along prioritized Town roads.

NECCOG Comments and Location Concerns

- **CT-97 & US-6**: Crashes and sun glare at this intersection are a concern.
- **North Brook Road/South Brook Road and US-6**
- **Windham & 97**
- **North and South Bigelow Road/ US-6**–long straightaway with high speeds. Site of two fatalities.
- **Main St / CT-97**-high speeds.

Source: VN Engineers


Hampton Crash Map
Eastford
Pomfret
Brooklyn
Chaplin
Mansfield
Hampton
Windham
Scotland
Kingsbury Rd
Old Griffin Rd
Fayette Rd
Lewis Rd
Pomfret Rd State Hwy 97
Station Rd
Kenyon Rd
Kimball Hill Rd
New Hill Rd
Old Kings Hwy
N Bigelow Rd
Windy Hill Rd
Utley Rd
Estabrook Rd
Eleventh Section Rd
Edwards Rd
Pomfret Rd
Main St
Parsonage Rd
Hammond Hill Rd
Sarah Pearl Rd
Cedar Swamp Rd
Canton Rd
W Old Rte 6
Robbins Rd
E Old Rte 6
Providence Tpke
Potter Rd
N Brook St
Fisk St
Hartford Tpke
Bigelow Rd
US Hwy 6
Drain St
S Brook Rd
Parker Rd
Calvin Burnham Rd
Pudding Hill Rd
Sand Hill Rd
S Bigelow Rd
Lenny S Ln
Bennett Dr
Rte 97
Windham Rd
Old Canterbury Rd
Brook Rd
Rogers Rd
John Mack Rd
Landfill Rd
89
198
97
169
6
205
203
0 0.5 1 2 Miles
Legend
School
Fatal Injury
Suspected Serious Injury
Suspected Minor Injury
Possible Injury

Field Site Inventory

US-6 (Hartford Turnpike) and CT-97 (Pudding Hill Road/Main Street)

US-6 (Hartford Turnpike) and CT-97 (Pudding Hill Road/Main Street) is a four-way stop controlled intersection with free flow on the main line.

US-6 (Hartford Turnpike) westbound has two travel lanes, one for slower traffic and one for passing. US-6 (Hartford Turnpike) eastbound has one travel lane. CT-97 (Pudding Hill Road/Main Street) intersects US-6 (Hartford Turnpike) through horizontal and vertical curvature. The speed is posted at 50 mph.

Sight distance from CT-97 (Pudding Hill Road/Main Street) looking east on US-6 (Hartford Turnpike) is adequate, but still limited due to the horizontal curve. In addition there is mature tree canopy and this should be maintained during the summer when growth is at its peak to ensure optimal sight distance.

The lack of traffic controls and the climbing lane on US-6 (Hartford Turnpike) could induce speeding make it more challenging for motorists on the local roadway to cross over or merge onto US-6 (Hartford Turnpike). There are non-MUTCD compliant advance intersection ahead and curve warning signs on US-6 (Hartford Turnpike) along both approaches.

Recommendations:

- Consider vegetation management.
- Consider eliminating the climbing lane on US-6 westbound.
- Consider replacing advance intersection warning signs and curve warning signs with MUTCD compliant signs that are retroreflective.
- Consider installing dynamic speed feedback signs.
- Consider installing speed reduction pavement markings.

US-6 (Hartford Turnpike) and North and South Brook Roads

US-6 (Hartford Turnpike) and North and South Brook Road is a four-way skewed intersection with stop control on the local roads and the main line under free flow. US-6 (Hartford Turnpike) has two travel lanes, one in each direction. The two local roads intersect US-6 (Hartford Turnpike) through a horizontal curve.

There is an advance intersection warning sign for North Brook Road and a combination horizontal alignment/intersection for US-6 (Hartford Turnpike) and South Brook Road on eastbound US-6 (Hartford Turnpike). On US-6 (Hartford Turnpike) westbound there is a combination horizontal alignment/intersection sign depicting both local roads.

Speed is posted at 45 mph to the east of South/North Brook Road and to the west of the intersection it is posted at 50 mph. There is vegetation on the northwestern and southwestern corners that if not trimmed. A mature tree also stands on the southeastern corner and should be trimmed. The main concerns here are line of sight and speeding.

Recommendations:

- Consider replacing advance intersection warning signs with MUTCD compliant signs that are retroreflective.
- Consider installing dynamic speed feedback signs.
- Consider reducing the width of the travel lanes on the major road approach.

US-6 looking east from CT-97


US-6 looking west from North Brook Street

Hampton Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
Townwide	Pedestrian and bike safety	Consider evaluating the location of a future footpath along one or both sides of Main Street/Route 97 on Hampton Hill	Low-Medium
		Consider establishing a town-wide cycling and walking map	Low
		Consider seeking funding for walking and cycling connections along Route 97 and Route 6 as well as along prioritized Town roads	Medium
US-6 (Hartford Turnpike) and CT-97 (Pudding HIll Road/ Main Street)	Intersection crashes	Consider vegetation management	Low
		Consider eliminating the climbing lane on US-6 westbound	Medium
		Consider replacing advance intersection warning signs and curve warning signs with MUTCD compliant signs that are retroreflective	Low
		Consider installing speed reduction pavement markings	Low
	Speeding	Consider installing dynamic speed feedback signs	Low
US-6 (Hartford Turnpike)and North and South Brook Roads	Intersection crashes	Consider replacing advance intersection warning signs with MUTCD compliant signs that are retroreflective	Low
	Speeding	Consider installing dynamic speed feedback signs	Low
		Consider reducing the width of the travel lanes on the major road approach	Low

TOWN OF KILLINGLY

2020 Population Estimate: 17,981

Area: 48 square miles

Population Density: 355 persons per square mile

2016 Vehicle Miles Traveled (VMT): 16,015,105

2016 VMT per Capita: 891

Setting: Suburban

Town and Regional Representatives: Mary Calorio (Town Manager), Randy Burchard (Emergency Management Director), Matthew Dube (Highway Department), Alexis Meehan (NECCOG), and James Larkin (NECCOG)

Data Identified Data-Driven Corridors: CT-101 (Hartford Pike) from Upper Maple St to Breakneck Hill Road, CT-12 (Main St) from Furnace St to Rock Ave

Data Identified High Crash Intersections: Upper Maple St and CT-101 (Hartford Pike), CT-607 (WestCott Rd) and I-395 off-ramp, CT-607 (Westcott Road) and CT-12 (Main St)

Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2019: 17

Total Number of Crashes Involving Injuries or Fatalities, 2015-2019: 356

Source: VN Engineers

Overview

Killingly is a suburban town located in the Northeastern region. It is bordered by Brooklyn and Pomfret to the west, Putnam to the north, Rhode Island to the east and Sterling and Plainfield to the south.

Killingly Total Crashes by Severity

Crash Severity	2015	2016	2017	2018	2019
Fatal Injury (K)	1	3	3	2	0
Suspected Serious Injury (A)	1	0	2	3	0
Suspected Minor Injury (B)	44	48	46	47	31
Possible Injury (C)	22	20	28	27	28
Total Injury Crashes	68	71	79	79	59

Town's Input

Fatal Crashes from 2015-2019:

- **CT-12 (Wauregan Road)** Heavy truck vs pedestrian fatal crash.
- **US-6 (Providence Pike) and CT-12 (Wauregan Road):** Dark-lighted, substance-impaired, roadway departure fatal crash.
- **CT-101 (Hartford Pike):** Substance-impaired, roadway departure fatal crash.
- **CT-101 (Hartford Pike):** Unrestrained driver, roadway departure fatal crash.
- **CT-101 (Hartford Pike) and Dog Hill Rd:** Speeding/older driver front-to-rear fatal crash.
- **US-6 (Providence Pike):** Front to front fatal crash.
- **US-6 (Providence Pike)and CT-618 (Halls Hill Road):** Intersection, dark-not-lighted, motorcycle and older driver fatal crash.
- **US-6 (Providence Pike):** Roadway departure fatal crash.
- **US-6 (Providence Pike) west of Margaret Henry Road:** Older driver,lane departure, front-to-front fatal crash.

US-6 (Providence Pike)
This is a high crash rate, four-lane corridor with speeding cited as the major contributing factor to crashes. The speed limit is posted at 45-50 mph. There is significant vertical and horizontal curvature. Due to speed differentials and lack of adequate gap clearance due to speed/sun glare crashes result at the intersecting roadways along US-6. In addition, there is heavy truck traffic. Centerline rumble strips have been installed.

The Town said there have been no substantial improvements on US-6 since 1988. The Town discussed the option of lowering the profile of the roadway to mitigate speeding. They said the profile on a US-6 segment in Rhode Island was lowered which reduced speeding.

Some of the challenging intersections are the I-395 and US- 6 intersection which has limited sight distance due to horizontal curvature. The US-6 and Margaret Henry Road intersection also has a sight distance issues. The US-6 and Snake Meadow Road intersection has speeding and vertical curvature challenges.

CT-101 (Hartford Pike) and Maple St/Upper Maple St
This is a signalized intersection. CT-101 has high traffic volumes, a narrow cross section, and no shoulder. With Killingly Intermediate School located on Maple Street north of the intersection, there are delays along CT-101 during dismissal. In general there is congestion through this area between the hours of 11am-5pm

CT-101 (Hartford Pike) from I-395 to Maple Street
There are high traffic volumes through this corridor. The Commons which is a large plaza with grocery /hardware/ retail is located west of I-395 on CT-101 and generates traffic. The current traffic signal at the Commons has three lanes with four lenses on the signal head. The extra lens causes motorist confusion and results in jockeying. The I-395 on-ramp signage east of the Commons is not visible at night. The Town said it needs enhanced illumination**.**

Rock Ave and Upper Maple St
This is a stop-controlled T-intersection. Sight distance is limited due to horizontal curvature. In addition, southbound motorists tend to speed on Upper Maple St. Traffic generation from Quinebaug Valley Community College and the nearby technical school creates higher volumes of traffic and the young drivers are a concern .

CT-21 (Thompson Pike) and CT-12 (Putnam Pike)
The Town representatives stated that the configuration of this Y-intersection causes driver confusion. In addition, speeding was cited as a concern through this intersection.

CT-21 (Thompson Pike) and Ware Road
This is a one-way stop controlled skewed intersection with limited sight distance. Several fatalities have been reported at this intersection. The crest in CT-21 at the intersection and speeding contributes to crashes. For major improvements the Town said CT-21 would need to be lowered by 6 feet. The Town would like the State to lower the roadway on CT-21 to make the intersection safer. In addition, the 75-unit elderly housing complex on Ware Road to the west of CT-21 increases the need for safety improvements due the needs and concerns of its the older population of drivers.

I-395 off-ramp and CT-607 (Westcott Road)
This is a signalized intersection with high crash numbers. Motorists heading west on CT-607 (Westcott Road) have difficulty seeing the traffic signal as they approach the off-ramp and there is no advanced warning sign for the intersection or the signal. Inadequate sight lines result in angle crashes. KB Ambulance Corporation is located east of the intersection on Westcott Road and emergency vehicles travel through this intersection often. The Town worries about possible crashes with ambulances due to the sight distance.

CT-12 (Wauregan Road/Main Street)
Issues on CT-12 are congestion, speed, sight lines, no shoulders for bicylists and pedestrians, and heavy trucks entering and exiting the roadway. The residences on CT-12 have their mailboxes on the opposite side of the road which makes pedestrian crossings common. This is a challenge due to high speeds. The Town stated there was a fatal pedestrian crash on CT-12, prior to the limits of this study period.

CT-12 (Main Street) and US-6 (Providence Pike)
This is a signalized intersection. High speeds, traffic signal violations, and lane changing contribute to front to rear crashes. This is a state-owned signal with no retroreflective backplates. A possible roundabout was discussed.

CT-12 (Putnam Pike) and Ballouville Road
Speed-related crashes were reported to occur at this intersection due to speed differentials.

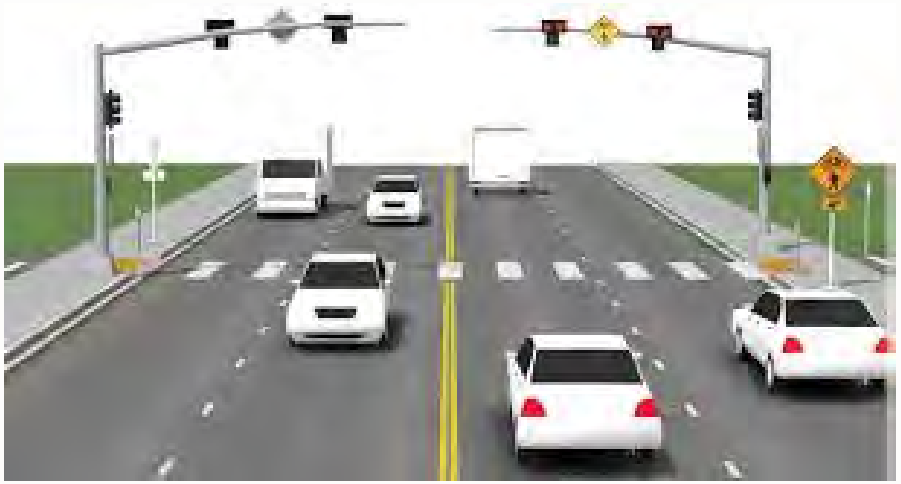
Pedestrians and Bicyclists
CT-101 and CT-12 are common pedestrian routes. The area of CT-101 near the Commons has higher pedestrian activity. The CT-12 corridor is used by frequent pedestrians despite the lack of infrastructure.

The Town wants a crosswalk to link the sidewalks on both sides of CT-12 near the Big Y store. This is not a controlled intersection so the crosswalk would be located midblock, but the Town does endorse a traffic signal here if it is warranted. Further study would be required to determine if a pedestrian hybrid beacon (PHB or HAWK) or rectangular rapid flashing beacon (RRFB) could be installed.

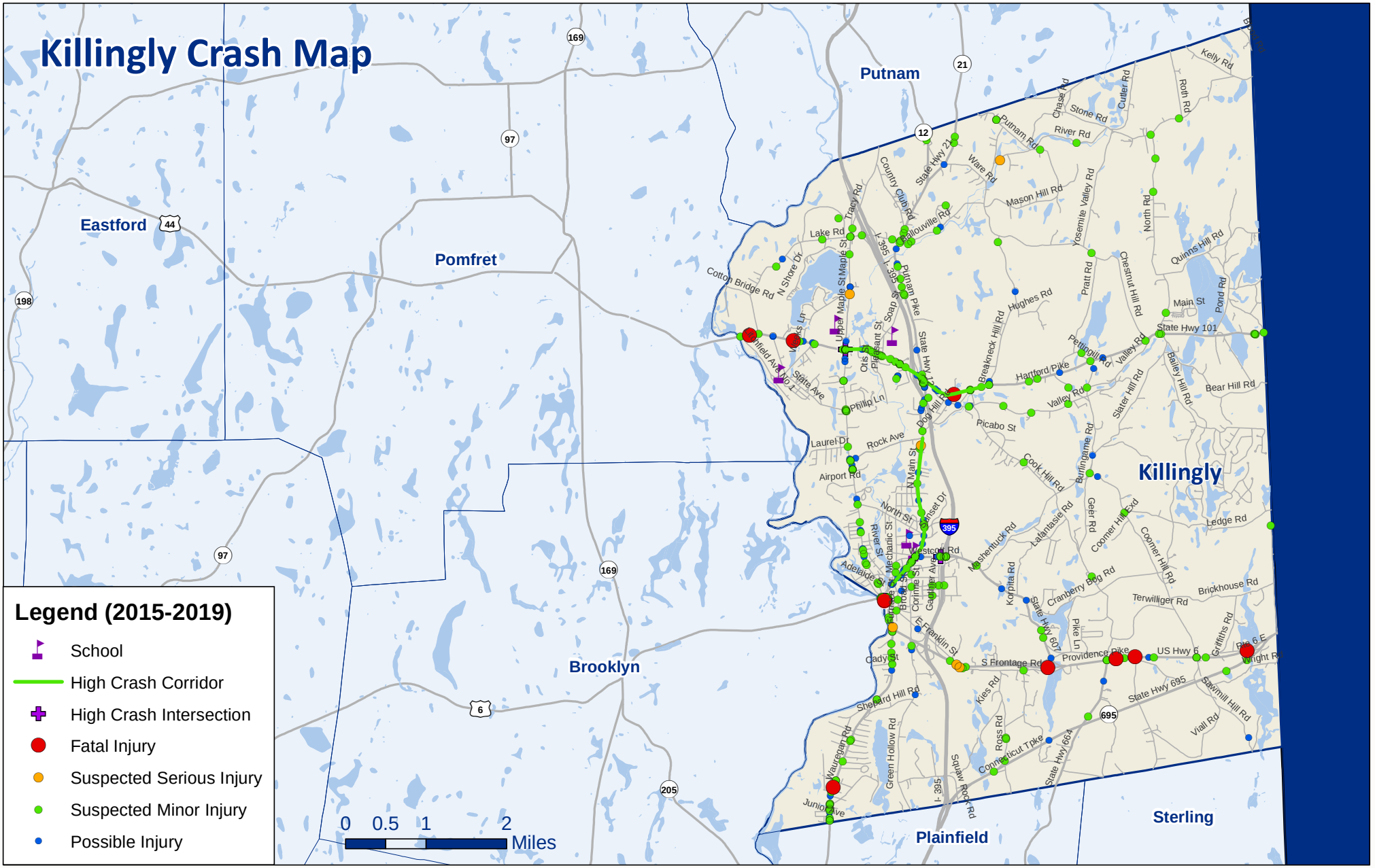
There are no sidewalks on CT-12 near the highschool and despite the challenging topography the Town said that the number of pedestrians warrants further investigation to potentially install one.

NECCOG Comments and Location Concerns

- Gauthier Ave and Main Street



Pedestrian Hybrid Beacon (PHB). Source: Portlandoregon.gov


Killingly Crash Map
Putnam
Eastford
Pomfret
Brooklyn
Killingly
Plainfield
Sterling
Legend (2015-2019)
School
High Crash Corridor
High Crash Intersection
Fatal Injury
Suspected Serious Injury
Suspected Minor Injury
Possible Injury
0 0.5 1 2
Miles

Field Site Inventory

CT-12 (Wauregan Road) at the Big Y Driveway

The intersection of CT-12 (Wauregan Road) and the Big Y driveway is a three-legged un-signalized intersection. The posted speed limit on CT-12 (Wauregan Road) in the vicinity of the Big Y driveway is 40 mph. The CT-12 (Wauregan Road) southbound approach to the Big Y driveway consists of a through lane, with an adjacent shoulder and an exclusive left turn lane providing access to Big Y. The CT-12 (Wauregan Road)northbound approach to the Big Y driveway consists of a shared through and right turn lane with an adjacent shoulder. The Big Y exit drive consists of exclusive left and right turn lanes. A sidewalk is located along the east side of CT-12 (Wauregan Road) along the Big Y frontage extending north for approximately 700 feet and ending at the southern driveway to the Friendly Spirits store.

The sidewalk switches sides to the eastern side of CT-12 (Wauregan Road)starting at the entrance to the Killingly Water Pollution Control facility providing connectivity to Quinebaug River Trail and across US-6. However, there is no designated pedestrian crossing for pedestrians to connect CT-12 (Wauregan Road) from the sidewalk on the eastern side of CT-12 (Wauregan Road) to the western side of CT-12 (Wauregan Road) creating a significant gap of approximately 200 feet in the sidewalk system.

Recommendations:

- Consider extending the existing sidewalk on the eastern side of CT-12 (Wauregan Road) to the signalized intersection of CT-12 (Wauregan Road) and US-6. Modify the signalized intersection to include a pedestrian crossing of CT-12 (Wauregan Road) to connect to the existing pedestrian crossing of US-6, providing pedestrian access to the densely populated area to the north.
- As an alternative, consider extending the sidewalk on the east side of CT-12 to the start of the sidewalk on the west side of CT-12 (Wauregan Road) and study the feasibility of a mid-block pedestrian crossing of CT-12 (Wauregan Road).

CT-21 (Thompson Turnpike) at Ware Road

The intersection of CT-21 and Ware Road is an unsignalized skewed intersection with stop control on the Ware Road eastbound and westbound approaches. CT-21 consists of one travel lane in each direction with minimal to no shoulders. The posted speed limit along CT-21 is 40 mph and the surrounding land use is generally rural residential. At the intersection, sight lines to the north from Ware Road are compromised by both a vertical and horizontal curve as well as an embankment along the western side of CT-21.

Recommendations:

- Consider re-grading the embankment along the western side of CT-21 to improve sight lines for vehicles on the Ware Road eastbound approach to CT-21.
- As an alternative, consider realigning Homestead Road to form a four-way intersection with Mayhew Drive. This realignment may provide opportunities

CT-12 (Wauregan Road) at the Big Y Driveway looking north

CT-21 (Thompson Turnpike) at Ware Road

Killingly Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-12 (Wauregan Road) at the Big Y Driveway	Pedestrian safety	Consider extending the existing sidewalk on the eastern side of CT-12 to the signalized intersection of CT-12 and US-6. Modify the signalized intersection to include a pedestrian crossing of CT-12 to connect to the existing pedestrian crossing of US-6, providing pedestrian access to the densely populated area to the north	Medium
		As an alternative, consider extending the sidewalk on the east side of CT-12 to the start of the sidewalk on the west side of CT-12 and study the feasibility of a mid-block pedestrian crossing of CT-12	
CT-21 (Thompson Turnpike) at Ware Road	Sight distance	Consider re-grading the embankment along the western side of CT-21 to improve sight lines for vehicles on the Ware Road eastbound approach to CT-21	Medium
		As an alternative, consider realigning Homestead Road to form a four-way intersection with Mayhew Drive	Medium-High
US-6 (Providence Pike)	Speeding	Consider lowering the road profile	High
		Consider adding dynamic speed feedback signs	Low
CT-101 (Hartford Pike) at the Commons	Intersection crashes	Consider eliminating the extra signal lens on the traffic signal	Low-Medium
I-395 off-ramp and CT-607 (Westcott Road)	Intersection crashes	Consider adding traffic signal retroreflective backplates	Low-Medium
		Consider adding advance left and right "Signal Ahead" warning signs or Advance detection control systems	Low-Medium
		Consider adding 12" lenses	Low
Town wide	Speeding	Consider increased enforcement	Low-Medium
		Consider narrowing travel lanes to 11' where possible	Low-Medium
	Pedestrian and bike safety	Consider developing a pedestrian and bicycle master plan	Low
		Consider adding edgelines	Low

TOWN OF PLAINFIELD

2020 Population Estimate: 15,439
Area: 42 square miles
Population Density: 357 persons per square mile
2016 Vehicle Miles Traveled (VMT): 14,952,225
2016 VMT per Capita: 968
Setting: Suburban
Town Representatives: Michael Suprenant (Chief of Police), Kevin Cunningham (First Selectman), and Delia Fey (NECCOG)
Data Identified Data-Driven Corridors: CT-12 from Lanthrop Road to Terrace Drive
Data Identified High Crash Intersections: N/A
Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2019: 6
Total Number of Crashes Involving Injuries or Fatalities, 2015-2019: 208

Source: VN Engineers

Overview

Plainfield is a town in the northeastern region of CT. It is bordered by Canterbury and Brooklyn to the west, Killingly to the north, Sterling to the east, and Voluntown and Griswold to the south. The Town's major thoroughfares are I-395, CT-12, CT-14, CT-664.

Plainfield Total Crashes by Severity

Crash Severity	2015	2016	2017	2018	2019
Fatal Injury (K)	2	0	1	1	1
Suspected Serious Injury (A)	3	3	5	3	0
Suspected Minor Injury (B)	19	25	20	29	26
Possible Injury (C)	10	12	10	28	10
Total Injury Crashes	34	40	36	61	37

Town's Input

Fatal Crashes from 2015-2019:

- **CT-14 (Black Hill Road):** Speed and substance-impaired, front-to-front motorcycle fatal crash.
- **CT-14 (Canterbury Road):** Speed related, motorcycle roadway departure fatal crash.
- **Moosup Pond Road**: Roadway departure fatal crash involving a deer.
- **Lake Street**: Speed and substance-impaired, roadway departure fatal along a horizontal curve.
- **Sterling Road**: Young driver, speed and substance-impaired, nighttime, roadway departure fatal crash.

CT-12 (Norwich Road) and CT-14 (East Main Street)
This is a signalized four-way intersection. Sight distance is limited to the north and south due to the adjacent vegetation. The vegetation overgrowth combined with the high travel speeds makes this intersection challenging. The DOT made some traffic signal improvements, but according to the Town there were no geometric improvements.

Green Hollow Road
This roadway is used as a main north-south corridor. There have been a series of crashes through the horizontal and vertical curves on Green Hollow Road. A fatal crash occurred in 2020, in the northern section of the corridor. The segment of roadway locally known as "The Farm" has had a series of crashes, primarily roadway departure crashes, along the vertical and reverse curves. There are some curve warning signs in place, but the area might need enhanced delineation.

CT-12 (Putnam Road), CT-205 (Wauregan Road) and Moosup Pond Road
This is a significantly skewed intersection with all-way stop control. The westbound Moosup Pond Road approach has blind vertical curvature. Speeding is an issue.

CT-12 (Norwich Road), CT-14A (Academy Hill Road) and Cemetery Road
Sight lines are constrained at the intersection due to adjacent buildings. CTDOT recently installed new pedestrian crosswalk signals and sidewalks.

I-395 ramps at CT-14 (East Main Street)
Difficult on- and off-ramps. The right turn on red (RTOR) is used aggressively at the off-ramp intersections with CT-14. In the vicinity of the ramps, CT-14 is two lanes in each direction separated by a grassed median. This geometry induces high travel speeds for this section of CT-14.

Moosup (Downtown)
CT-14 (Prospect Street and Ward Avenue) is an east-west one-way couple. Driver confusion regarding the one-ways leads to crashes. Additional directional signage needed to better guide motorists. Pedestrians and bicyclists are accommodated due to low travel speeds associated with the downtown environment.

Chevron Curve Signs
CTDOT installed chevron curve signs along some local roads, Spalding Road is an example. Green Hollow Road still needs additional chevrons through its various curves.

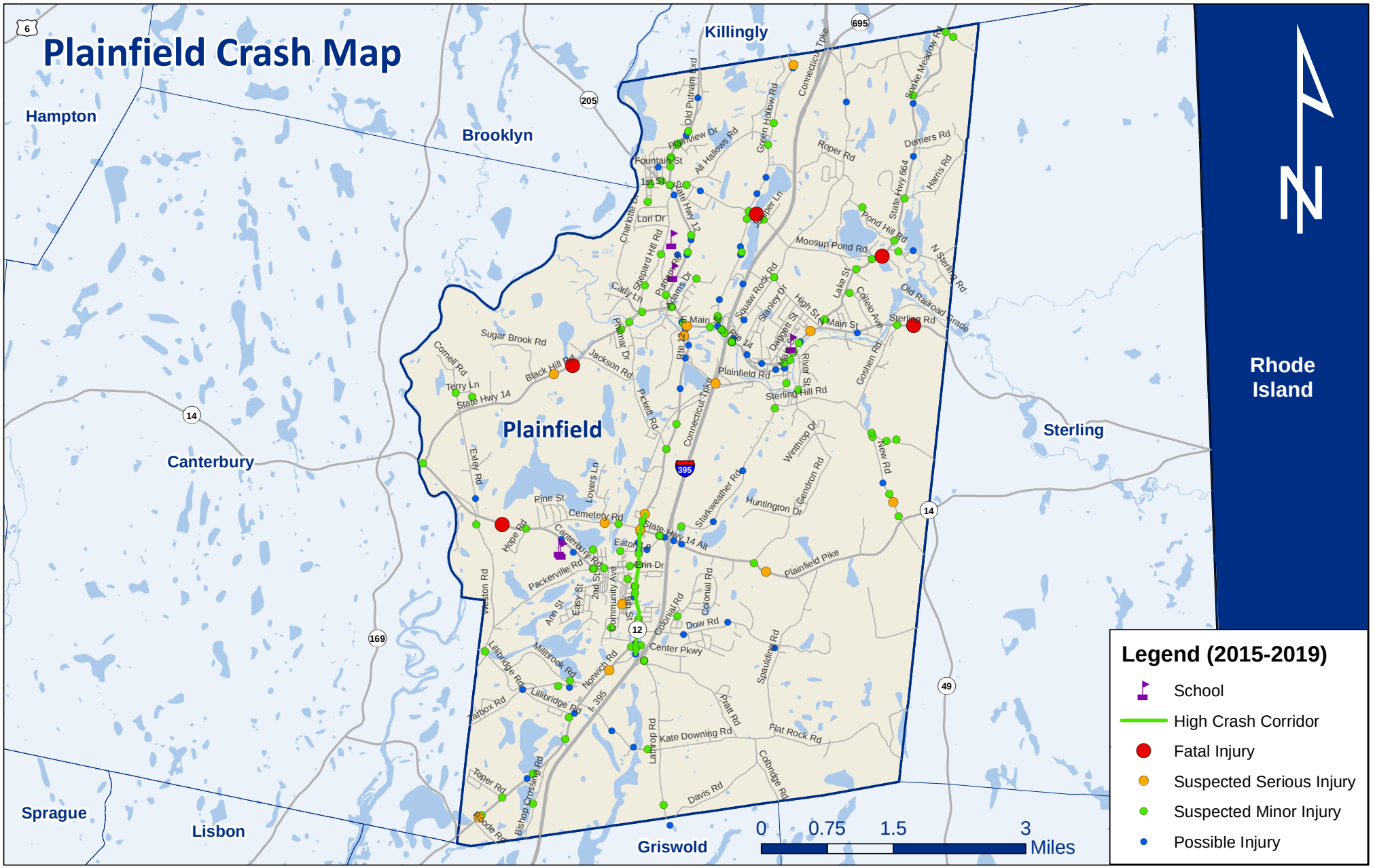
Centerline Rumble Strips
Centerline rumble strips have been installed on CT-14.

Enforcement
Dynamic speed feedback trailers are used for speed mitigation in town. Speed enforcement is low according to the Town representatives. The Police Commission is the Legal Traffic Authority (LTA) for the Town.

Stop signs
In town there are 320 stop signs. The Town is installing retroreflective strips on all sign posts for increased visibility. This is a best practice at stop-controlled intersections.

NECCOG Comments and Location Concerns

- CT-12/Lathrop Rd intersection near McDonalds is a safety concern.
- Traffic from I-Park trying to access the highway via Lathrop Rd is a concern.


Plainfield Crash Map
Killingly
Hampton
Brooklyn
Plainfield
Canterbury
Sterling
Rhode Island
Sprague
Lisbon
Griswold
Legend (2015-2019)
School
High Crash Corridor
Fatal Injury
Suspected Serious Injury
Suspected Minor Injury
Possible Injury
0 0.75 1.5 3 Miles

Field Site Inventory

Green Hollow Road at a section of road locally called "The Farm", in the vicinity of 191 Green Hollow Road

Green Hollow Road at a section of road locally called "The Farm" is a two-way roadway, with one lane in each direction. The roadway has a painted centerline and two warning signs in each direction in advance of the reverse curve near 191 Green Hollow Road. Prior to the horizontal curvature, there is a left reverse turn sign, one direction large arrow left sign, and one direction large arrow right sign in both directions. In addition to a sharp left turn then sharp right turn, both northbound and southbound approaches have a significant uphill grade. The posted speed limit along this corridor is 30 mph.

Recommendations:

- Consider installing painted edge lines.
- Consider adding centerline rumble strips to reduce crossing into the other direction of travel.
- Consider adding shoulder rumble strips to reduce roadway departure crashes.
- Consider adding posted horizontal curve chevron signage for both approaches.
- Consider installing high friction surface treatments through the curves.

Green Hollow Road from north of James Brook to Killingly Town Line

Hollow Road from just north of the James Brook overpass to the Killingly Town Line is a two-way roadway, with one lane in each direction. This corridor has a single center-line separating the directions of travel, but no painted edge lines. There is one curve warning sign and two horizontal curve chevron signs. These signs were recently installed within the last year. In addition to the sharp curve, both northbound an southbound approach-es have a significant uphill grade. The posted speed limit along this corridor is 30 mph.

Recommendations:

- Consider installing painted double yellow centerline and edge lines.
- Consider adding centerline rumble stripes to reduce crossing into the other direction of travel.
- Consider adding edge line rumble stripes to reduce roadway departure crashes.
- Consider installing high friction surface treatments through the horizontal and vertical curves.

Green Hollow Road at "the Farm"

Green Hollow Road north of the James Brook Overpass

Plainfield Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
Green Hollow Road at a section of road locally called "The Farm", in the vicinity of 191 Green Hollow Road	Crashes through the horizontal curves	Consider installing painted edge lines	Low
		Consider adding centerline rumble strips and shoulder rumble strips to reduce lane and roadway departure	Low
		Consider adding posted horizontal curve chevron signage for both approaches	Low
		Consider adding high friction surface treatments through the curves	Medium
Green Hollow Road from north of James Brook to Killingly Town Line	Crashes through the horizontal and vertical curves	Consider installing painted double yellow centerline and edge lines	Low
		Consider adding centerline rumble strips to reduce crossing into the other direction of travel	Low
		Consider adding shoulder rumble stripes to reduce roadway departure crashes	Low
		Consider adding high friction surface treatments through the horizontal and vertical curves	Medium
CT-14 (Prospect Street and Ward Avenue)	Wrong way crashes	Consider enhancing the current one-way signage	Low
CT-12 (Norwich Road)and CT-14 (East Main Street)	Limited sight distance	Consider vegetation management	Low
Various Locations	Speeding	Consider increased enforcement	Low-Medium
		Consider installing optical speed bars and dynamic speed feedback signs	Low-Medium

TOWN OF POMFRET

2020 Population Estimate: 4,536
Area: 40 square miles
Population Density: 104 persons per square mile
2016 Vehicle Miles Traveled (VMT): 7,429,575
2016 VMT per Capita: 1,638
Setting: Rural
Town Representatives: Maureen Nicholson (First Selectwoman)
Data Identified Data-Driven Corridors: N/A
Data Identified High Crash Intersections: N/A
Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2019: 2
Total Number of Crashes Involving Injuries or Fatalities, 2015-2019: 93

Source: VN Engineers

Overview

Pomfret is a rural town located in northeastern CT. It is bordered by Eastford to the west, Woodstock to the north, Putnam and Killingly to the east, Brooklyn and Hampton to the south. The Town's main thoroughfares are US-44, CT-97, CT-244, CT-101, and CT-169.

Pomfret Total Crashes by Severity

Crash Severity	2015	2016	2017	2018	2019
Fatal Injury (K)	0	0	1	1	1
Suspected Serious Injury (A)	2	2	1	0	1
Suspected Minor Injury (B)	10	8	19	7	11
Possible Injury (C)	7	6	5	3	8
Total Injury Crashes	19	16	26	11	21

Town's Input

Fatal Crashes from 2015-2019:

- **US-44 (Mashamoquet Road) at Paine Road**: Front-to-front speeding through horizontal curve fatal crash.
- **US-44 (Mashamoquet Road) west of CT-97 (Hampton Road)**: Pedestrian fatal crash.
- **CT-169 (Pomfret Street) at Harrisville Road**: Motorcycle, speeding- fatal crash.

US-44 (Mashamoquet Road/Averill Road), CT-101 (Killingly Road) and Wolf Den Drive

This is an off-set, unsignalized intersection with a history of crashes. US-44 has a large grass median and then proceeds north as Averil Road. CT-101 intersects US-44 at this junction and Wolf Den Road is offset from the intersection by approximately 200 ft to the east. There is a break in the median permitting turning movements on US-44. The Town wants to realign the intersection to bring Wolf Den Road into the intersection. The realignment would require property impacts, but there is a ROW easement possibility which would assist in improvement feasibility. The realignment would create the possibility of a roundabout for this location. There was a fatal crash at this intersection in November of 2020.

CT-244 (Brayman Hollow Road)

The segment of CT-244 on the western side of Town has had a series of crashes along the horizontal and vertical curves. The State has installed centerline rumble strips along this route. Speeding is a concern. The Town has asked CTDOT to remove heavy truck traffic due to the narrow roadway. In lieu of travelling CT-244 there are alternate routes for truck travel. The First Selectmen in Pomfret and Eastford agree on eliminating articulated trucks and have submitted a request to CTDOT.
A section of CT-244 east of Taft Pond Road has a series of reverse curves and vertical curves.

CT-169 (Pomfret Street) and Harrisville Road

This is a skewed stop-controlled intersection along a slight horizontal curve. There have been several crashes at the intersection including a motorcycle fatal crash. The State was planning on redesigning this section of CT-169. The Town would like to realign Harrisville or make improvements to intersection.

US-44 (Putman Road) and Modock Road and Wrights Crossing Roads

Both intersections are problematic and have frequent crashes.

Bicycles and Pedestrians

The Airline Trail traverses Putnam. A recent pedestrian bridge was installed on the trail over CT-169. Sidewalks and pedestrian crossings have been installed in the village center in front of the churches and private schools. Narrow shoulders make bicycling difficult. The Town would like to narrow travel lanes where possible and widen shoulder to accommodate bicyclists.

Speeding

Speeding occurs on all roads according to the Town representatives. The Town purchased dynamic speed feedback signs which they move around town to various locations based on need.

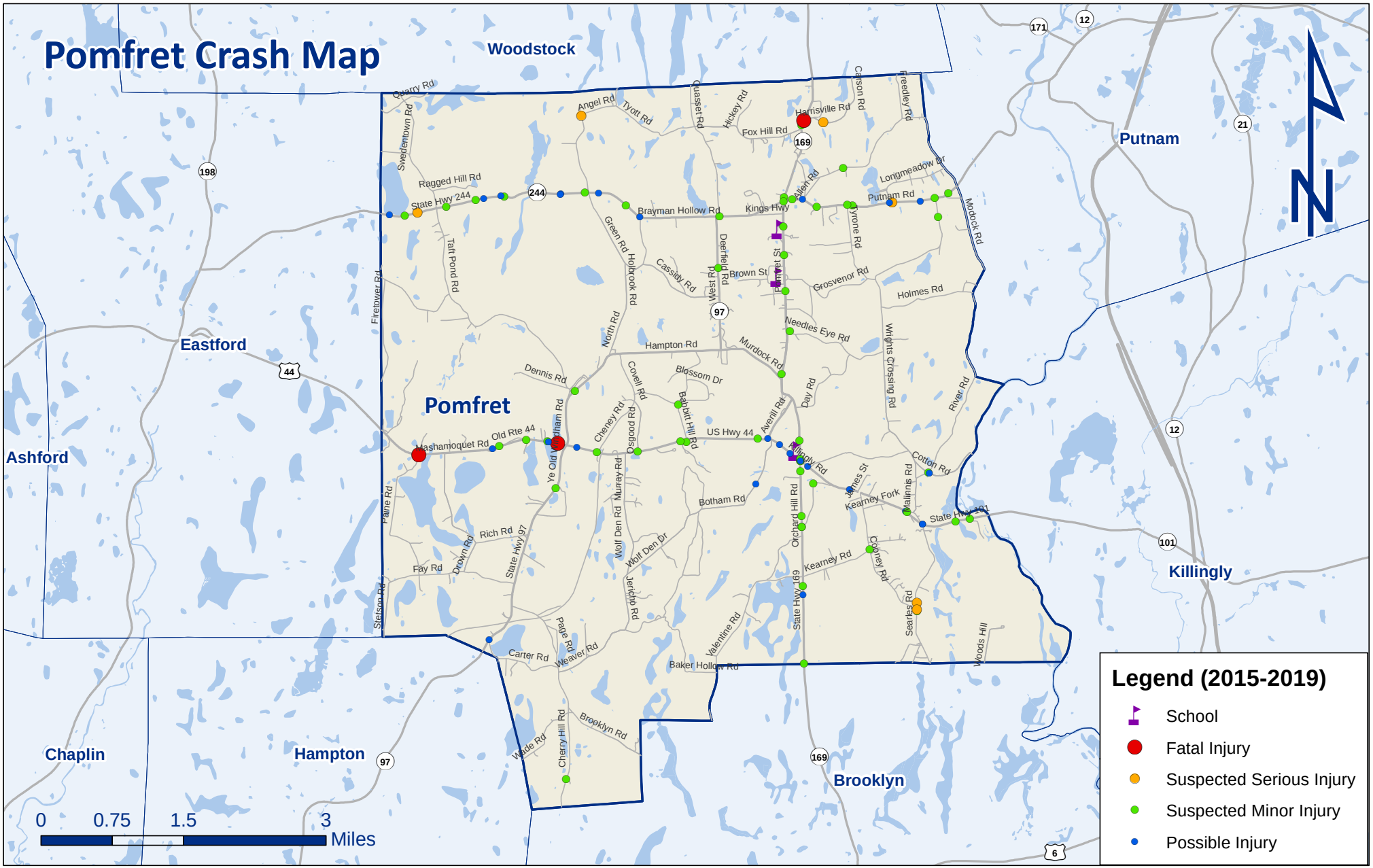
Centerline Rumble Strips

The State corresponded with the Town to propose centerline rumble strips on town-selected local roadways. The Town declined rumble strips: roads do not meet criteria, 35 mph, 14' lanes, 2000 cars / day. Town would have to maintain them – Resource for maintenance info: https://safety.fhwa.dot.gov/roadway_dept/pavement/rumble_strips/media/RumbleStripGuide_Pavement/pavement_bpg.pdf.

NECCOG Comments and Location Concerns

Safety Concerns include:

- Wolf Den Road and CT-101
- Averill Road & CT-169 - poor sight line & excessive speed - lots of campers going into campground
- Searles Road - speed too high
- Wrights Crossing & US-44
- Taft Pond Road & CT-244 - curve on CT-244 is too narrow, there are lots of trailer trucks in this area


Pomfret Crash Map
Woodstock
Putnam
Eastford
Pomfret
Ashford
Killingly
Chaplin
Hampton
Brooklyn
Legend (2015-2019)
School
Fatal Injury
Suspected Serious Injury
Suspected Minor Injury
Possible Injury
0 0.75 1.5 3 Miles

Field Site Inventory

US-44 (Mashamoquet Road) and Averill Road

The intersection of US-44 and Averill Road is an unsignalized three-legged intersection with the Averill Road approach under stop-control. There is a large grass median separating the eastbound and westbound US-44 travel lanes with a break in the grass median permitting turning movements to and from Averill Road. The US-44 westbound approach consists of a shared through-right turn lane and the eastbound approach consists of an exclusive left turn lane and through lane. The Averill Road approach consists of a single lane approach. The posted speed limit for US-44 is 45 mph. A horizontal curve traverses through the intersection along US-44 and high travel speeds have been reported along this section of US-44. The intersection of US-44 and Wolf Den Road is offset to the east by approximately 200 feet from the US-44 and Averill Road intersection, creating confusing intersection geometry and poor sight lines due to the horizontal curve.

Recommendations:

- Consider realigning the northbound approach of Wolf Den Road to align with Averill Road to form a traditional four-legged intersection with US-44.
- As part of the realignment improve the intersection by considering a roundabout or signalization if traffic volumes warrant.

CT-169 (Pomfret Street) at Harrisville Rd

The intersection of CT-169 and Harrisville Road is a skewed three-legged unsignalized intersection with the Harrisville Road approach under stop control. All approaches to the intersection are single approaches. A horizontal curve traverses through the intersection along CT-169 and the posted speed limit for CT-169 is 35 mph. The horizontal curve coupled with the skewed approach of Harrisville Road and adjacent stone walls and vegetation along CT-169 obstruct sight lines for vehicles entering CT-169 from Harrisville Road and vehicles traveling along CT-169 towards Harrisville Road.

Recommendations:

- Consider realigning Harrisville Road to the north to provide a traditional T-intersection and address the sight line obstructions associated with the horizontal curve and skewed approach of Harrisville Road.
- Consider the installation of speed reduction pavement markings along CT-169 to encourage motorists to travel the speed limit through the intersection.

US-44 (Mashamoquet Road) and Averill Road

CT-169 (Pomfret Street) at Harrisville Road looking south

Pomfret Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
US-44 (Mashamoquet Road) and Averill Road	Intersection crashes	Consider realigning the northbound approach of Wolf Den Road to align with Averill Road to form a traditional four-legged intersection with US-44	Medium-High
		As part of the realignment improve the intersection by considering a round-about or signalization if traffic volumes warrant	Medium-High
CT-169 (Pomfret Street) at Harrisville Road	Intersection crashes	Consider realigning Harrisville Road to the north to provide a traditional T-intersection and address the sight line obstructions associated with the horizontal curve and skewed approach of Harrisville Road	High
	Speeding	Consider the installation of speed reduction pavement markings along CT-169 to encourage motorists to travel the speed limit through the intersection	Low
CT-244 (Brayman Hollow Road)	Speeding	Consider the installation of dynamic speed feedback sign	Low
		Consider the installation of optical speed bars	Low
	Heavy truck travel	Coordinate with CTDOT to determine if articulated trucks can be prohibited	Low
US-44	Intersection crashes	Consider contacting the Traffic Circuit Safety Rider for more intersection analysis	Low

TOWN OF PUTNAM

2020 Population Estimate: 9,395

Area: 20 square miles

Population Density: 463 persons per square mile

2016 Vehicle Miles Traveled (VMT): 7,943,495

2016 VMT per Capita: 846

Setting: Rural

Town Representatives: Chris Ferace (Putnam Police), Travis Sirrine (Highway Foreman), Justin Lussier (Putnam Police), Elaine Sistare (Town of Putnam), Barney Seney (Mayor), Delia Fey (NECCOG)

Data Identified Data-Driven Corridors: N/A

Data Identified High Crash Intersections: US-44 (Providence Turnpike) and I-395 ramps, CT-171 (Providence Street) and Church Street

Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2019: 11

Total Number of Crashes Involving Injuries or Fatalities, 2015-2019: 211

Source: VN Engineers

Overview

Putnam is a town in Northeastern CT. It is bordered by Pomfret and Woodstock to the west, Thompson to the north, Rhode Island to the east and Killingly to the south. Major thoroughfares in the Town are I-395, US-44, CT-12, CT-21 and CT-171.

Putnam Total Crashes by Severity

Crash Severity	2015	2016	2017	2018	2019
Fatal Injury (K)	2	0	2	0	0
Suspected Serious Injury (A)	1	4	3	6	0
Suspected Minor Injury (B)	27	27	24	18	30
Possible Injury (C)	12	17	11	13	14
Total Injury Crashes	42	48	40	37	44

Town's Input

Fatal Crashes from 2015-2019:

- **Grove Street:** Substance-impaired, roadway departure fatal crash.
- **US-44 (Providence Heights) west of Elvira Heights**: Substance-impaired, roadway departure fatal crash.
- **CT-12 (Killingly Avenue) and Pierce Road**: Motorcycle, roadway departure fatal crash.
- **CT-12 (Killingly Avenue) south of Hurry Hill Road**: Roadway departure fatal crash.

US-44 (Pomfret Street and Front Street) and Main Street
Main Street is under stop control. US-44 is congested through this area with commercial businesses, high turning movements, on-street parking, and pedestrian activity. The intersection experiences conflict between vehicles due to a blind hill. Poor sight lines exist on the US-44 eastbound approach due to the vertical curve. Installation of a traffic signal would significantly impact traffic signal operation of intersection to the west.

NECCOG Comments: If the traffic flow was reversed on Main Street down the hill towards the Post Office in combination with reversing the traffic on Livery Street to have people enter US-44, both sight line issues could be addressed, with very little other changes. This should maintain the same volume of traffic and still allow all the businesses to have access for both customers and delivery of supplies while improving safety for all users. This seems like the easiest change in the world and one that would present a way to make the intersection much safer for pedestrians as well as drivers while maintaining the same volume of traffic.

Kennedy Dr and US-44 (Pomfret Street)
This is a four-way signalized intersection with a high number of crashes. Congestion especially at peak commuter hours. There is back up of traffic close to Main St due to congestion at this signal. Minor front-to-rear and distraction-related crashes result.

CT-171 (Providence St) and Church St
This is a high crash signalized intersection. Sight distance from Church Street is limited due to build out of the store on the southwest corner. There is a No Turn on Red prohibition for Church St northbound traffic due to limited sight distance and possibly because of pedestrian volumes. Motorists sometimes ignore the prohibition which can lead to crashes.

NECCOG Comment: A possible solution would be to convert the small paved area on Church Street, at the intersection and across from the Putnam Supermarket, into a short turn lane.

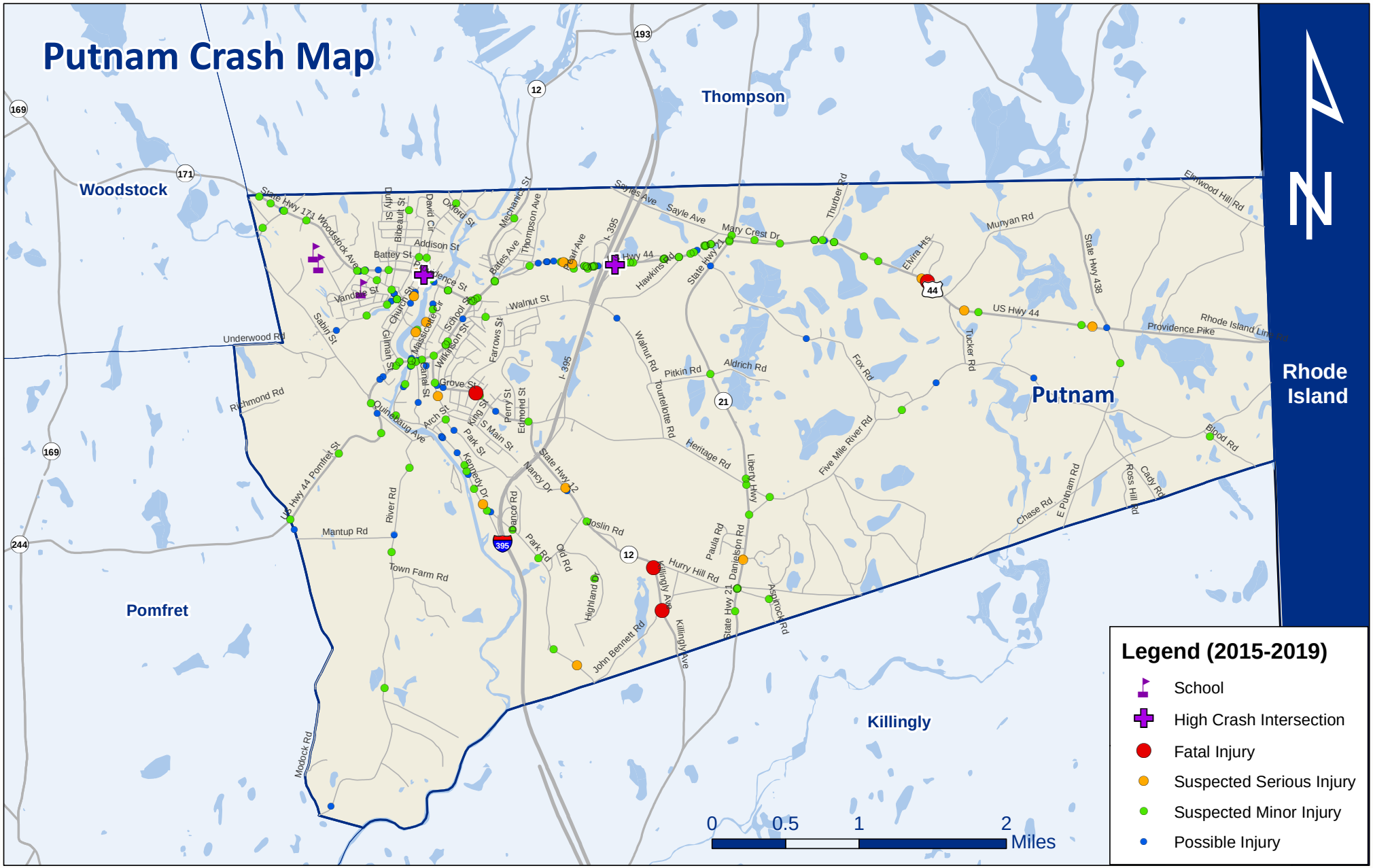
Technology Park Drive/I-395 off-and on-ramps/Kennedy Drive
This is an unsignalized intersection with high crashes and near misses. The YMCA, a gravel pit, and ash landfill with heavy truck traffic are all on Technology Park Drive. Technology Park Drive and the I-395 on-ramp are very close to each other and cause motorist confusion. It's unclear if motorists are turning right onto Technology Park Drive or the I-395 on-ramp which has resulted in many near misses and crashes. In addition, the I-395 off-ramp is directly across from the entrance to Technology Park Drive which adds another factor in maneuvering through this area.

According to the Town, a traffic study did not warrant a signal with OSTA. Continued and planned development of Technology Park Drive-may warrant a signal in the future. NECCOG provided some alternative configurations to improve this intersection. A roundabout was discussed and dismissed as a poor candidate, but the Town is amenable to them in other locations where feasible.

CT-171 (Providence Street), CT-12 (School Street), Barber Street and Nichols Street
This is a wide signalized five-legged intersection with high crash numbers. The new municipal complex is being built at this intersection which will increase traffic. The signalized intersection experiences congestion due to serving 5-legs and creating longer wait times and associated queue lengths.

NECCOG Comment: With 5 legs in the intersection, this location might be a suitable candidate for a circular intersection.

Pedestrians and Bicyclists
The Airline Trail is popular and used for recreational walking and biking. The local roads of Bridge Street and Kennedy Street have higher pedestrian traffic.


Putnam Crash Map
Thompson
Woodstock
Pomfret
Killingly
Putnam
Rhode Island
Legend (2015-2019)
School
High Crash Intersection
Fatal Injury
Suspected Serious Injury
Suspected Minor Injury
Possible Injury
0
0.5
1
2
Miles

Field Site Inventory

Kennedy Drive, Technology Park Drive and I-395 southbound off-ramp

The intersection of Kennedy Drive, Technology Park Drive and I-395 southbound off-ramp is an unsignalized intersection with Technology Park Drive and the I-395 southbound off-ramp under stop control. The I-395 southbound off-ramp consists of a single approach lane and the Technology Drive northbound approach consists of an exclusive right turn lane and an exclusive left turn lane. The Kennedy Drive-northbound approach consist of a single shared left turn-through lane with a defined shoulder and the southbound approach consists of one through lane and an exclusive right turn lane. The Kennedy Drive southbound right-turn lane continues through the intersection and also serves as an exclusive right turn lane for access to the I-395 southbound on-ramp. The exclusive right turn lane geometry through the intersection can be very confusing. Motorists exiting Technology Drive cannot determine if an approaching southbound vehicle is turning right onto Technology Drive or continuing through the intersection and taking a right onto the I-395 southbound on-ramp. Finally, it is anticipated that traffic volumes associated with the continued development Technology Drive area will significantly increase traffic volumes and associated peak period congestion at this intersection.

Recommendations:

- Consider designating the Kennedy Drive southbound exclusive right lane for access only to Technology Drive by installing a raised island channelizing the right turn movement to Technology Drive coupled with signage clearly designating the through lane to be used for access to the I-395 southbound on-ramp.
- Consider the installation of a traffic signal or roundabout as traffic volumes and congestion increase with the continued development of the Technology Drive area.

CT-171 (Providence Street), US-44 (School Street), Barber Street and Nichols Street

The intersection of CT-171, US-44, Barber Street and Nichols Street is a five-legged signalized intersection that experiences peak period traffic congestion and delays due to the traffic signal timing and phasing needed to accommodate the five legs of the intersection coupled with high peak period traffic volumes and constrained approach geometry. The US-44 northbound approach consists of a shared left turn-through-right turn lane and the southbound approach consists of an exclusive right turn lane and a shared through-left lane. The CT-171 approach consists of shared left turn-through lane with the through lane providing access to Nichols Street and a shared through-right turn lane with the through lane providing access to Barber St.. The Barber St and Nichols St approaches consist of shared left turn-through-right turn lanes.

Recommendation:

- Consider undertaking a traffic study to determine the feasibility of making Barber Street one-way away from the intersection to increase the amount of green time that can be allocated to the other approaches coupled with potentially widening the US-44 northbound approach to provide an exclusive left lane and appropriate storage lengths.

Putnam Kennedy Drive, Technology Park Drive and I-395 sb off-ramp looking south

CT-171, US-44, Barber Street and Nichols Street looking south

Putnam Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
Kennedy Drive and Technology Park Drive and I-395 off-and on-ramps	Intersection crashes	Consider designating the Kennedy Drive southbound exclusive right lane for access only to Technology Drive by installing a raised island channelizing the right turn movement to Technology Drive coupled with signage clearly designating the through lane to be used for access to the I-395 south-bound on-ramp	High
		Consider the installation of a traffic signal or roundabout as traffic volumes and conges-tion increase with the continued develop-ment of the Technology Drive area	High
CT-171 (Providence Street), CT-12 (School Street), Barber Street and Nichols Street	Intersection crashes	Consider undertaking a traffic study to determine the feasibility of making Barber street one-way away from the intersection to increase the amount of green time that can be allocated to the other approaches coupled with potentially widening the US-44 northbound approach to provide an exclusive left lane and appropriate storage lengths	Medium
US-44 (Pomfret Street and Front Street) and Main Street	Poor sight distance at intersection	Consider realigning the intersection	Medium
		Consider investigating mini roundabout installa-tion	High
Kennedy Drive and US-44 (Pomfret Street)	High crash intersection	Consider investigating roundabout installation	High
Providence and Church St	High crashes from cars turning on red from Church St NB	Consider adding sweeping right turn yield control lane	High

TOWN OF SCOTLAND

2020 Population Estimate: 1,777

Area: 19 square miles

Population Density: 91 persons per square mile

2016 Vehicle Miles Traveled (VMT): 3,642,335

2016 VMT per Capita: 2,050

Setting: Rural

Town Representatives: Gary Greenberg (First Selectman) and Delia Fey (NECCOG)

Data Identified Data-Driven Corridors: N/A

Data Identified High Crash Intersections: N/A

Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2019: 2

Total Number of Crashes Involving Injuries or Fatalities, 2015-2019: 38

Source: VN Engineers

Overview

Scotland is a rural town in Windham County. It is bordered by Windham to the west, Chaplin and Hampton to the north, Canterbury to the east, and Sprague to the south. The Town's main thoroughfares are CT-14 and CT-97.

Scotland Total Crashes by Severity

Crash Severity	2015	2016	2017	2018	2019
Fatal Injury (K)	0	0	0	0	2
Suspected Serious Injury (A)	0	0	0	0	0
Suspected Minor Injury (B)	4	4	4	7	1
Possible Injury (C)	2	0	1	6	7
Total Injury Crashes	6	4	5	13	10

Town's Input

Fatal Crashes from 2015-2019

- **Hanover Road**: Angle, wrong side of roadway fatal crash.
- **CT-14 (Palmer Road)**: Older driver, roadway departure fatal crash through vertical curvature.

Ziegler Road

Ziegler Road is a local road with a history of crashes along the horizontal curvature. Signage may need to be enhanced through curves.

Brooklyn Turnpike

This is a collector roadway with deteriorated pavement. The Town applied for funds to improve the roadway through the Federal Collector Roadway Improvement Program. Brooklyn Turnpike and Pinch Street is a four-way stop that needs enhancement due to motorists not always stopping. Stop signs are not MUTCD compliant.

CT-14 (Huntington Road) and Pinch Street

This is a T-intersection with Pinch Street under stop control. This location has a reported high number of crashes, often due to motorists not stopping. Enhancing the stop signs at this intersection could make it safer.

CT-14 (Palmer Road) and Hanover Road

This is a T-intersection with stop control on Hanover Road. There has been a cluster of crashes at the intersection. According to the Town, traffic traveling westbound has limited sight of the intersection due to the vertical curvature on CT-14 east of Hanover Road. In addition, there are high travel speeds on CT-14. Possible lane width reduction might help mitigate speeding. The Town said there are no centerline rumble strips.

CT-14 (Huntington Road) and Devotion Road

This intersection is in the village center, adjacent to the town green. The Town is concerned with the speed disparities between through traffic and local village traffic. The Town wanted the DOT to lower the speed from its current 40 mph designation to 35 mph but the 85th percentile did not support lowering it.

Pedestrian safety in the village is a concern. CT-14 has an ADT of 4,500 and there is a propensity of high travel speeds. This makes it less optimal for pedestrians. There is a crosswalk on CT-14 to the east of Devotion Road that needs enhancements to provide a safer connection for pedestrians.

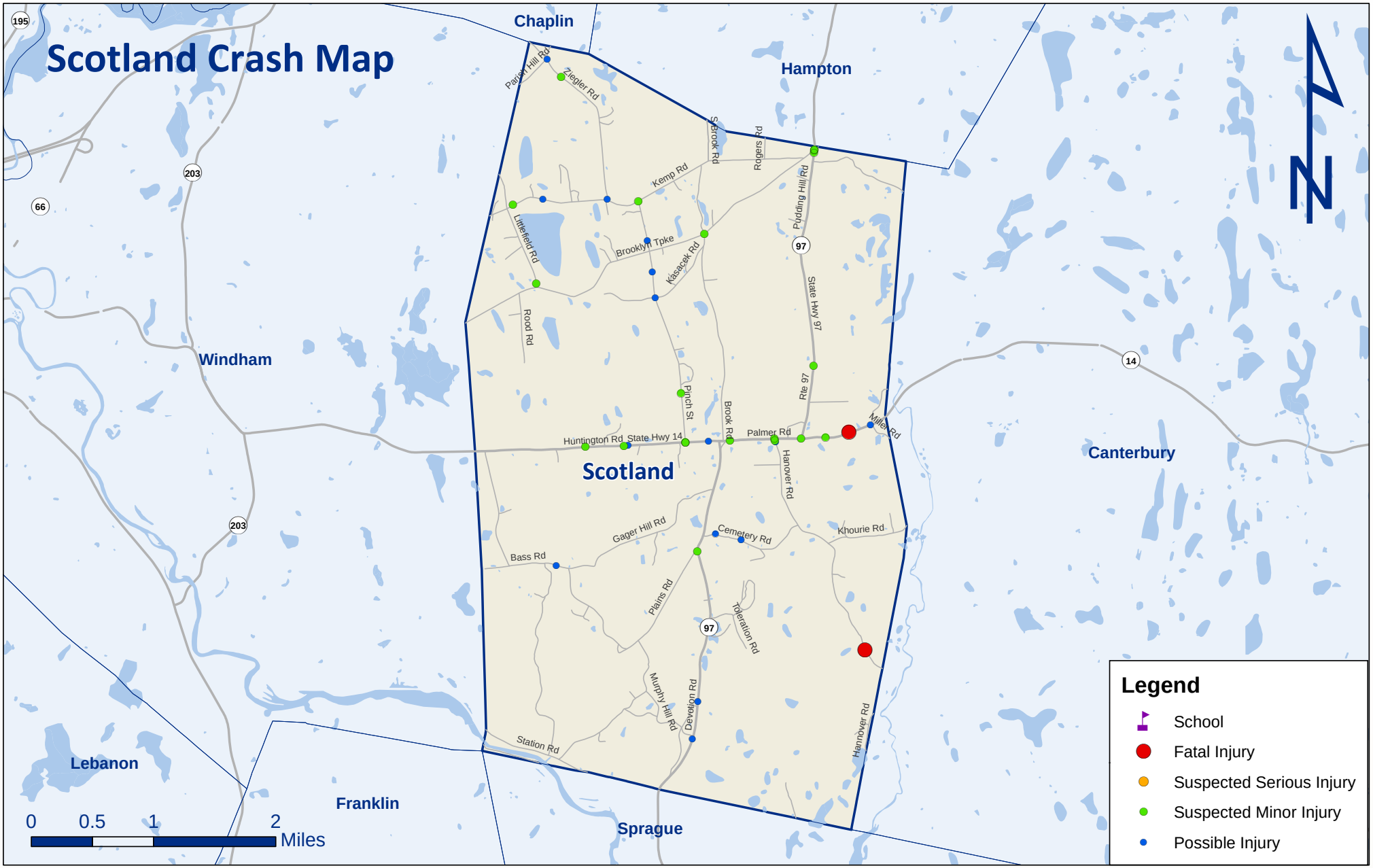
Brook Road

The Town would like better pedestrian connection between Scotland Elementary School, the town library, post office and village green.

NECCOG Comments and Location Concerns

- Pinch St & Brooklyn Turnpike
- Zeigler Rd & Kemp Rd
- Brooklyn Turnpike & CT-97 North - issues are due to speed & disregard for traffic control signs. Sight lines are adequate.

Source: VN Engineers


Scotland Crash Map
Chaplin
Hampton
Windham
Canterbury
Scotland
Lebanon
Franklin
Sprague
195
203
66
97
14
Parish Hill Rd
Ziegler Rd
Kemp Rd
S Brook Rd
Rogers Rd
Pudding Hill Rd
Littlefield Rd
Brooklyn Tpke
Kasacek Rd
State Hwy 97
Rood Rd
Pinch St
Brook Rd
Rte 97
Huntington Rd
State Hwy 14
Palmer Rd
Miller Rd
Hanover Rd
Gager Hill Rd
Cemetery Rd
Khourie Rd
Bass Rd
Plains Rd
Toleration Rd
Murphy Hill Rd
Devotion Rd
Station Rd
Hannover Rd
0 0.5 1 2 Miles
Legend
School
Fatal Injury
Suspected Serious Injury
Suspected Minor Injury
Possible Injury

Field Site Inventory

CT-14/CT-97 (Huntington Road/Palmer Road) from CT-97 (Devotion Road) to Center Street

CT-14/CT-97 (Huntington Road/Palmer Road) at CT-97 (Devotion Road) is a T-intersection, with a flashing yellow signal for traffic on CT-14/CT-97 (Huntington Road/Palmer Road) and a flashing red signal for the CT-97 (Devotion Road). There is an additional stop sign at the northbound CT-97 (Devotion Road) approach to the intersection. To the east is the skewed intersection of CT-14/CT-97 (Palmer Road) at Center Street. The Center Street northbound approach has stop control, with free flow operations along CT-14/CT-97 (Palmer Road). There is a midblock crosswalk along the east approach of the intersection. This crossing has pedestrian signage at the crosswalk and in advance of the crosswalk in both directions. The posted speed limit on CT-14/CT-97 is 40 mph. While this segment of CT-14/CT-97 (Huntington Road/Palmer Road) is at relatively level grade, the approaches into the town center from the east and west have a downhill grade. CT-97 (Devotion Road) and Center Street form a Y-intersection just south of CT-14/CT-97 (Huntington Road/Palmer Road). The intersection has stop control for the southbound Center Street approach and free flow operations along all other directions. The CT-97 (Devotion Road) approach has a posted speed limit of 30 mph.

Recommendations:

- Consider installing dynamic speed feedback signs.
- Increase speed enforcement along CT-14/CT-97 (Huntington Road/Palmer Road) corridor.
- Consider installing rectangular rapid flashing beacons at the crossing.
- Consider installing MUTCD-compliant signage at and in advance of the crosswalk in both directions.

Ziegler Road from Parish Hill Road to 166 Ziegler Road

Ziegler Road is a two-way roadway, with one lane in each direction. There are no painted pavement markings or edge lines. A horizontal curve begins near 176 Ziegler Road, with no posted chevron signs in either direction. The only posted signage along this corridor is a speed limit sign of 35 mph for the southbound direction and a "School Bus Stop Ahead" sign in the northbound direction, prior to the sharp left curve.

Recommendations:

- Consider installing painted centerline and edge lines.
- Investigate adding posted horizontal curve chevron signage for both approaches along the horizontal curve, with sign supports at the standard height.
- Consider installing high friction surface treatment through the horizontal curve.
- Consider providing new posted speed limit signs in both directions on standard sign supports.

Pedestrian crossing at CT-14/CT-97 (Huntington Road/Palmer Road)

Horizontal curve along Ziegler Road

Scotland Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-14/CT-97 (Huntington Road/Palmer Road) from CT-97 (Devotion Road) to Center Street	Speeding	Consider installing dynamic speed feedback signs	Low
		Consider increasing speed enforcement along CT-14/CT-97 (Huntington Road/Palmer Road) corridor	Low-Medium
	Pedestrian safety	Consider installing high-visibility crosswalk	Low
		Consider installing rectangular rapid flashing beacons at the midblock crossing	Low
		Consider installing MUTCD-compliant signage at and in advance of the crosswalk in both directions	Low
Ziegler Road from Parish Hill Road to 166 Ziegler Road	Crashes through the horizontal curve	Consider installing painted centerline and edge lines	Low
		Investigate adding posted horizontal curve chevron signage for both approaches along the horizontal curve, with sign supports at the standard height	Low
		Consider installing high friction surface treatment through the horizontal curve	Medium
		Consider providing new posted speed limit signs in both directions on standard sign supports	Low
Brooklyn Turnpike and Pinch Street	Intersection crashes	Consider enhancing stop signs	Low
CT-14 and various stop-controlled intersections	Intersection crashes along corridor at stop controlled locations	Consider enhancing stop sign by increasing size, installing a doubled up (left and right), oversized stop signs, and adding retroreflective sheeting on sign posts	Low
Townwide	Speed related crashes	Consider installing gateway treatment along all major village center approaches	Low
		Consider narrowing travel lanes where feasible	Low
		Consider installing dynamic speed feedback signs	Low
	Pedestrian safety	Consider installing sidewalks and enhancing crosswalks	Medium

TOWN OF STERLING

2016 US Census Population Estimate: 4,428

Area: 27 square miles

Population Density: 138 persons per square mile

2016 Vehicle Miles Traveled (VMT): 6,136,745

2016 VMT per Capita: 1,386

Setting: Rural

Town Representatives: Lincoln A. Cooper (First Selectman)

Data Identified Data-Driven Corridors: N/A

Data Identified High Crash Intersections: N/A

Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2019: 0

Total Number of Crashes Involving Injuries or Fatalities, 2015-2019: 55

Source: VN Engineers

Overview

Sterling is a town in northeastern CT. It is bordered by Plainfield to the west, Killingly to the north, Rhode Island to the east, and Voluntown to the south. The Town's main thoroughfares are CT-14, CT-14A, and CT-49.

Sterling Total Crashes by Severity

Crash Severity	2015	2016	2017	2018	2019
Fatal Injury (K)	0	1	0	0	1
Suspected Serious Injury (A)	0	1	0	0	0
Suspected Minor Injury (B)	8	4	7	8	5
Possible Injury (C)	4	5	5	3	3
Total Injury Crashes	12	11	12	11	9

Town's Input

Fatal Crashes from 2015-2019:

- CT-14A (Plainfield Pike): Roadway departure fatal crash.
- Gibson Lane: Substance-impaired fatal crash.

CT-14 (Sterling Road)

CT-14 has had several crashes during this study period. There are center-line rumble strips on the western side of CT-14 approaching the Plainfield Townline. The segment of CT-14 near the Sterling Community School has had several crashes through a series of horizontal curves. This segment might need additional curve warning enhancements.

CT-14A (Plainfield Pike) and CT-49 (Ekonk Hill Road)

This is a stop-controlled T-intersection with CT-14A westbound under free flow. Roadway departure crashes have resulted at this intersection from cars proceeding straight through the T-intersection and running off the road. There is a large horizontal double-headed arrow indicating CT-49 terminates at this junction to warn drivers the roadway ends. This might need enhancement. There is a home located on the north side of CT-49 which has been hit several times due to these roadway departures. The stop sign is not very visible on CT-14A eastbound however, there is an advanced stop ahead warning sign.

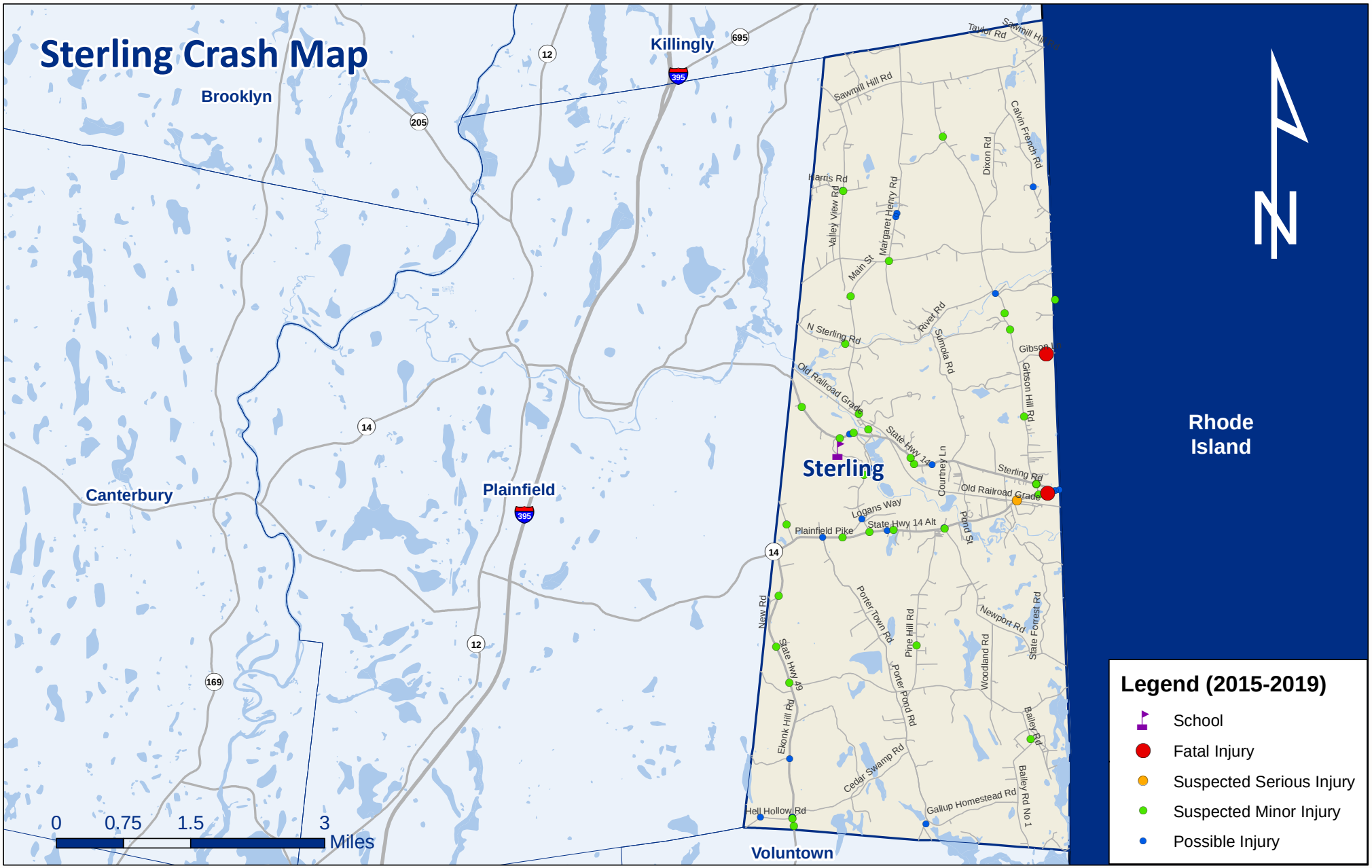
CT-14 (Sterling Road) and CT-14A (Plainfield Pike)

This is a T intersection with CT-14A under stop control and CT-14 under free flow. There have been a cluster of crashes at the intersection. According to the Town, speed is the contributing cause. The westbound CT-14A approach has sharp horizontal curvature prior to the intersection to impact sight distance. The intersection lane control sign is parallel to the lane split providing no advanced warning. This sign could possibly be moved farther east to provide adequate advanced warning. Crashes have resulted as cars queue in the left turn lane along westbound CT-14 due to limited sight distance along intersection approach.

CT-49 (Ekonk Hill Road)

There have been various crashes on CT-49. The Town states that speeding is the major contributing factor. The adjacent land use is rural and agricultural which may contribute to drivers aggressive driving due to the lack of physical constraints. Speeding is an issue especially south of Hells Hollow Road.

Source: VN Engineers


Sterling Crash Map
Brooklyn
Killingly
Canterbury
Plainfield
Sterling
Voluntown
Rhode Island
Sawmill Hill Rd
Taylor Rd
Calvin French Rd
Dixon Rd
Harris Rd
Valley View Rd
Margaret Henry Rd
Main St
River Rd
N Sterling Rd
Slumola Rd
Gibson Hill Rd
Old Railroad Grade
State Hwy 14
Courtney Ln
Sterling Rd
Logans Way
Plainfield Pike
State Hwy 14 Alt
Pond St
New Rd
Porter Town Rd
Pine Hill Rd
Newport Rd
State Forest Rd
State Hwy 49
Woodland Rd
Porter Pond Rd
Ekonk Hill Rd
Bailey Rd
Cedar Swamp Rd
Bailey Rd No 1
Hell Hollow Rd
Gallup Homestead Rd
0 0.75 1.5 3 Miles
Legend (2015-2019)
School
Fatal Injury
Suspected Serious Injury
Suspected Minor Injury
Possible Injury

Field Site Inventory

CT-14 (Sterling Rd.) and CT-14A (Plainfield Pike)

CT-14 (Sterling Rd.) and CT-14A (Plainfield Pike) are two-lane arterials, with narrow shoulders. CT-14A (Plainfield Pike) terminates at a 90° three-way intersection with CT-14 (Sterling Rd.) and is under stop control. CT-14 is free flow and has a left turn bay for Westbound traffic turning onto CT-14A (Plainfield Pike). in the vicinity of this intersection, though the average speed was 35 mph. The posted speed limit on CT-14A (Plainfield Pike) is 35 mph. Immediately West of this intersection, CT-14 (Sterling Rd.) has a small crest vertical curve. To the East, CT-14 (Sterling Rd.) has a horizontal curve which obstructs line of sight to the intersection for Westbound traffic. Immediately after the intersection with CT-14 (Sterling Rd.), CT-14A (Plainfield Pike) takes a 90° turn to the West. This turn, as well as several trees, block line of sight to the intersection. There is a one direction large arrow (ODLA) and delineators in place along this curve, as well as advance warning for the stop sign on CT-14A (Plainfield Pike). CT-14 has a lane control sign for Westbound traffic placed at the start of the left turn bay, however, given the aforementioned horizontal curve, it may not be placed far enough in advance to properly warn westbound traffic. The intersection is not illuminated. Install centerline rumble strips on CT-14 (Sterling Rd.) and CT-14A (Plainfield Pike) in this area.

***Recommendations*:**

- Consider installing light standards to illuminate the intersection and the sharp curve on CT-14A (Plainfield Pike).
- Consider relocating the lane control sign farther East to better alert Westbound traffic.
- Consider installing flashers on the ODLA on CT-14A (Plainfield Pike).
- Consider working with RIDOT to install advance warning for this intersection East of the CT/RI State Line.

CT-49 (Ekonk Hill Rd.) south of Hell Hollow Rd.

CT-49 (Ekonk Hill Road) is a two-lane arterial with a speed limit of 45 mph. The shoulders are narrow. Passing is allowed for Southbound traffic only. The intersection for Hell Hollow Road is a skewed intersection with Cedar Swamp Road opposite Hell Hollow Road. Both of these two-lane local roads are under stop control, while CT-49 (Ekonk Hill Road) is free-flow. South of the intersection, CT-49 (Ekonk Hill Road) has a crest vertical curve, and then continues downgrade past the Voluntown Town Line. Northbound traffic has a Cross Road sign (which provides advance warning). However, the yellow background for this sign is faded which may affect visibility. The intersection is illuminated. The average speed in this area is 50 mph. There are farms, residential homes, and a church along this section of CT-49 (Ekonk Hill Road)

Recommendations:

- Consider working with Sterling Resident State Trooper and Voluntown Police Dept. to increase speeding enforcement in this area.
- Consider using dynamic speed feedback signs.

CT-14 (Sterling Road) looking east at CT-14A(Plainfield Pike)


CT-49 south of Hell Hollow Road

Sterling Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-14 (Sterling Rd.) and CT-14A (Plainfield Pike)	Lack of Illumination	Consider installing light standards to illuminate the intersection and the sharp curve on CT-14A (Plainfield Pike)	Low-Medium
	Intersection crashes	Consider relocating the lane control sign farther East to better alert Westbound traffic	Low
		Consider installing flashers on the ODLA CT14A (Plainfield Pike)	Low
		Consider working with RIDOT to install advance warning for this intersection East of the CT/RI State Line	Low
CT-49 (Ekonk Hill Rd.) south of Hell Hollow Rd	Speeding	Consider working with Sterling Resident State Trooper and Voluntown Police Dept. to increase speeding enforcement in this area	Low-Medium
		Consider using dynamic speed feedback signs	Low
CT-14A(Plainfield Pike) and CT-49 (Ekonk Hill Road)	Roadway departure crashes at T-intersection	Consider installing flashers on the ODLA sign	Low
	Intersection crashes	Consider enhancing stop sign by increasing size, installing a doubled up (left and right), oversized stop signs, and adding retroreflective sheeting on sign posts	Low
		Consider adding flashers to the advance stop ahead warning sign	Low

TOWN OF THOMPSON

2020 Population Estimate: 9,602
Area: 47 square miles
Population Density: 198 persons per square mile
2016 Vehicle Miles Traveled (VMT): 11,539,840
2016 VMT per Capita: 1,201
Setting: Rural
Town Representatives: Amy St Onge (First Selectwoman) and Richard Benoit (Director of Public Works)
Data Identified Data-Driven Corridors: N/A
Data Identified High Crash Intersections: CT-197 (Old Turnpike Road) and CT-131(Quinebaug Road)
Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2019: 2
Total Number of Crashes Involving Injuries or Fatalities, 2015-2019: 154

Source: VN Engineers

Overview

Thompson is a town located in northeastern CT. It is bordered by Woodstock to the west, Massachusetts to the north, Rhode Island to the east, and Putnam to the south. The Town's main thoroughfares are CT-12, I-395, CT-131, CT-200, CT-197, CT-193, and CT-438.

Thompson Total Crashes by Severity

Crash Severity	2015	2016	2017	2018	2019
Fatal Injury (K)	2	0	0	1	1
Suspected Serious Injury (A)	3	0	0	1	1
Suspected Minor Injury (B)	20	23	23	13	21
Possible Injury (C)	9	12	9	8	7
Total Injury Crashes	34	35	32	23	30

Town's Input

Fatal Crashes from 2015-2019

- **CT-197 and CT-131 (Dresser Hill Road):** Substance-impaired motorcycle /intersection fatal crash.
- **Birch Ave:** ATV Roadway departure fatal crash.
- **Red Birch Road and Reardon Road**: Substance-impaired motorcycle fatal crash.
- **Riverside Drive:** Speeding and unrestrained driver fatal crash.

Walker Drive and CT-31 (Dresser Hill Road) and CT-197 (Old Turnpike Road)

This is a four-way intersection with CT-31 and Walker Drive under stop control. There have been a cluster of crashes at this junction. Overgrown vegetation and a retaining wall restrict sight lines. Walker Drive becomes state route CT-31 (Dresser Hill Road) north of CT-197. High traffic volumes result on CT-31 due to motorists using this route to travel to Massachusetts. There was a fatal crash at this intersection prior to the RTSP study period. CTDOT has made improvements by trimming and removing vegetation at the intersection.

Buckley Hill Road and CT-12 (Riverside Drive)

This is a skewed intersection through a horizontal curve. Speed is an issue. The posted speed limit is 40 mph. A private driveway for multiple residences is also part of the intersection. Motorists entering and exiting the nearby driveway have reported incidents of near misses. UCONN conducted a study of this intersection and students suggested a possible roundabout as a countermeasure for crashes. A no thru truck prohibition sign was recently installed on Buckley Hill Road, warranted by bridge limitations.

The Town anticipates an increase in traffic due to the development of the old mill site on CT-12 (Riverside Drive). The augmented volume could possibly warrant a traffic signal at the intersection. At the mill site development, sidewalks will possibly be extended due to increased pedestrian activity.

CT-200 (Thompson Hill Road) from Pasay Road to Buckley Hill Road

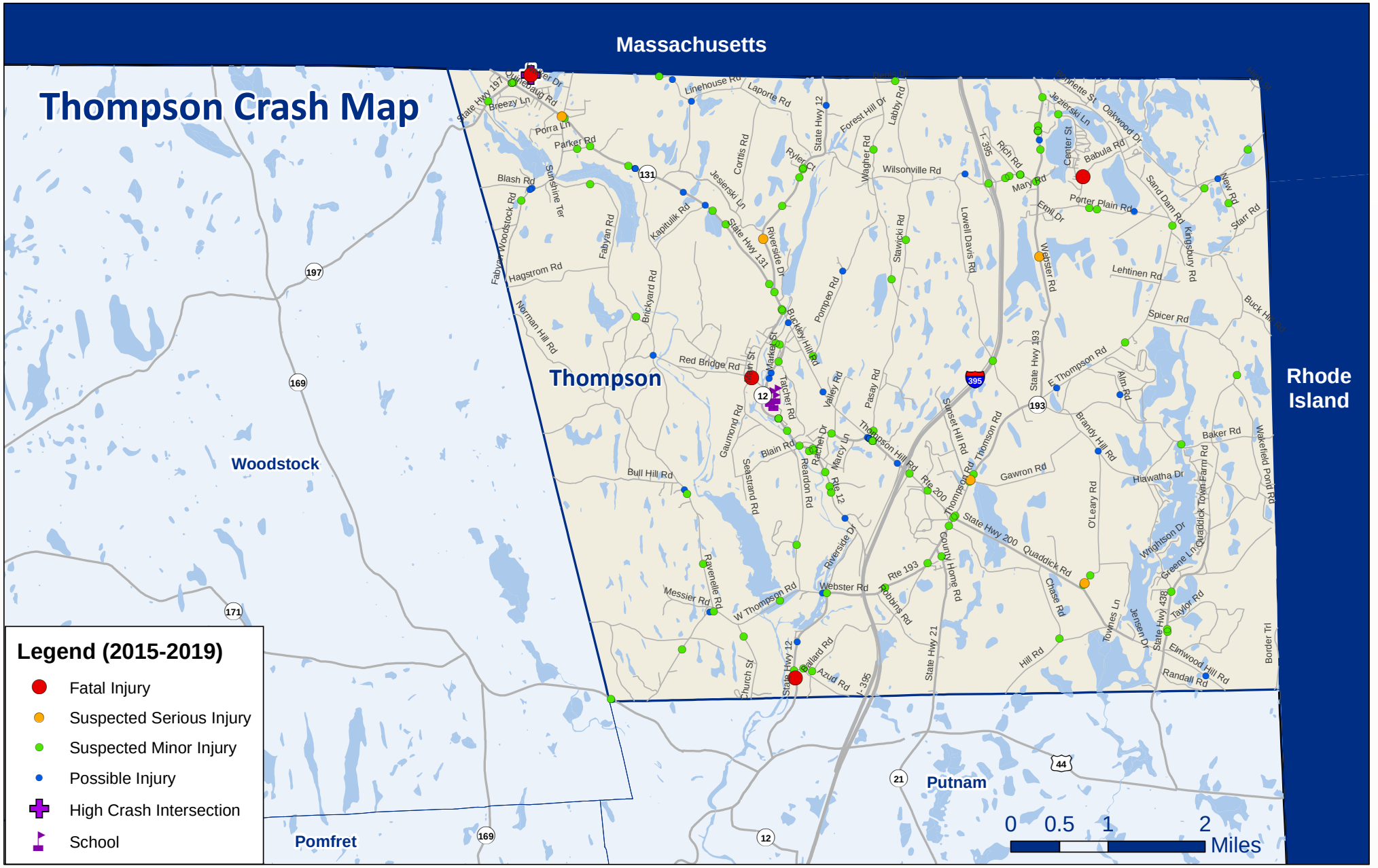
There was a series of crashes along this segment of CT-200. CT-200 has a significant horizontal curve through its intersection with Buckley Hill Road. Sight lines are limited for motorists entering CT-200 due to the horizontal curvature. CT-200 has a wide cross section which quickly tapers at Buckley Hill Road and Pasay Road.

Bicyclists and Pedestrians

Bicyclists use the Airline Trail network more than roadways. The Town is discussing making the trail more accessible to bikers via town roadways. Along the CT-12 corridor north of CT-200, LOTCIP-funded sidewalks are being installed. The Town is slowly increasing walkability, most notably near the mill redevelopment.

NECCOG Comments and Location Concerns

- Old Turnpike Rd / Walker Rd
- Riverside & Buckley Hill & CT-200


Thompson Crash Map
Massachusetts
Rhode Island
Thompson
Woodstock
Pomfret
Putnam
Legend (2015-2019)
Fatal Injury
Suspected Serious Injury
Suspected Minor Injury
Possible Injury
High Crash Intersection
School
0 0.5 1 2
Miles

Field Site Inventory

CT-12 (Riverside Drive) at Buckley Hill Road

The intersection of CT-12 and Buckley Hill Road is a significantly skewed unsignalized intersection with the Buckley Hill Road approach under stop control and on a fairly steep upgrade. In addition, a grass median splits the Buckley Hill Road approach providing separate access/egress approaches to and from CT-12. In addition, the CT-12 northbound access to Buckley Hill Road is under stop control, within the grass median area, to provide the right of way to the CT-12 southbound access to Buckley Hill Road. Finally, CT-12 traverses through intersection along a sharp horizontal curve, is under free flow condition and has a posted limit of 30 mph. A driveway serving approximately five residences is part of the intersection and further complicates the intersection. High travel speeds have been reported along CT-12 through this intersection.

Recommendations:

- Consider the installation of speed reduction pavement markings along CT-12 to encourage motorists to travel the speed limit through the intersection.
- Consider removing the grass median and realigning the Buckley Hill Road approach to form more of a traditional T intersection to improve sight lines.
- Consider the installation of a round-about.

CT-197 (Old Turnpike Road), Walker Road and Dresser Hill Road (MA-31)

The intersection of CT-197, Dresser Hill Road and Walker Road is an unsignalized intersection with Walker Road and Dresser Hill Road under stop control. The intersection has an overhead flashing warning beacon and intersection warning signs on both CT-197 approaches.

All approaches to the intersection are single lane approaches. The sight lines from the Dresser Hill Road approach looking to the east and west are significantly impacted by adjacent trees and vegetation.

Recommendations:

- Consider removing trees and vegetation obstructing sight lines from the Dresser Hill Road approach.
- Consider speed management on CT-197 approaching the intersection including optical speed bars and dynamic speed feedback signs.

CT-12 at Buckley Hill Road -looking North

CT-197, Walker Road and Dresser Hill Road

Thompson Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
Walker Drive, CT-197 (Old Turnpike Road) and CT-31(Dresser Hill Road)	Limited sight distance at intersection	Consider removing trees and vegetation obstructing sight lines from the Dresser Hill Road approach	Low-Medium
	Intersection crashes	Consider speed management on CT-197 approaching the intersection including optical speed bars and dynamic speed feedback signs	Low
CT-12 and Buckley Hill Road	Speeding	Consider the installation of speed reduction pavement markings along CT-12 to encourage motorists to travel the speed limit through the intersection	Low
	Intersection Crashes	Consider removing the grass median and realigning the Buckley Hill Road approach to form more of a traditional T intersection to improve sight lines	Medium
		Consider the installation of a roundabout	High
CT-200 (Thompson Hill Road) from Pasay Road to Buckley Hill Road	Crashes at skewed intersection	Consider realigning the intersection to provide more sight distance from Buckley Hill Road	Medium

TOWN OF UNION

2020 Population Estimate: 916
Area: 29 square miles
Population Density: 32 persons per square mile
2016 Vehicle Miles Traveled (VMT): 4,239,840
2016 VMT per Capita: 4,629
Setting: Rural
Town Representatives: David D. Eaton (First Selectman, Director of Public Works, and Fire Chief)
Data Identified Data-Driven Corridors: N/A
Data Identified High Crash Intersections: N/A
Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2019: 0
Total Number of Crashes Involving Injuries or Fatalities, 2015-2019: 26

Source: Unionconnecticut.org

Overview

Union has the smallest population of any municipality in the state. It is located in the northeastern region. It is bordered by Stafford to the west, Massachusetts to the north, Woodstock to the east, and Ashford and Willington to the south. The Town's main thoroughfares are I-84, CT-171, CT-190, and CT-197.

Union Total Crashes by Severity

Crash Severity	2015	2016	2017	2018	2019
Fatal Injury (K)	0	1	0	2	0
Suspected Serious Injury (A)	0	0	0	0	0
Suspected Minor Injury (B)	2	5	2	3	1
Possible Injury (C)	3	2	2	1	1
Total Injury Crashes	5	8	5	6	2

Town's Input

Fatal Crashes from 2015-2019:

- **Mashapaug Road:** ATV roadway departure fatal crash.
- **Bigelow Hollow State Park:** Fatality resulting from car driving onto frozen pond and breaking through the ice.
- **CT-171(Buckley Highway):** Substance-impaired,motorcycle,roadway departure fatal crash.

CT-171(Buckley Highway) west of Bigelow Brook

There was a series of crashes through the horizontal and vertical curves on CT-171 west of Bigelow Brook. The roadway narrows which could contribute to crashes and inclement weather was also a contributing crash factor according to the Town. Current roadway signage might need to be enhanced. There are centerline rumble strips on CT-171.

CT-197 (Lawson Road) west of Woodstock Town Line

The narrow cross section and horizontal and vertical curves impacts sight lines on CT-197. There was a motorcycle fatal crash along this segment of roadway. The Town representative was unsure of the chevron curve warning sign status or condition.

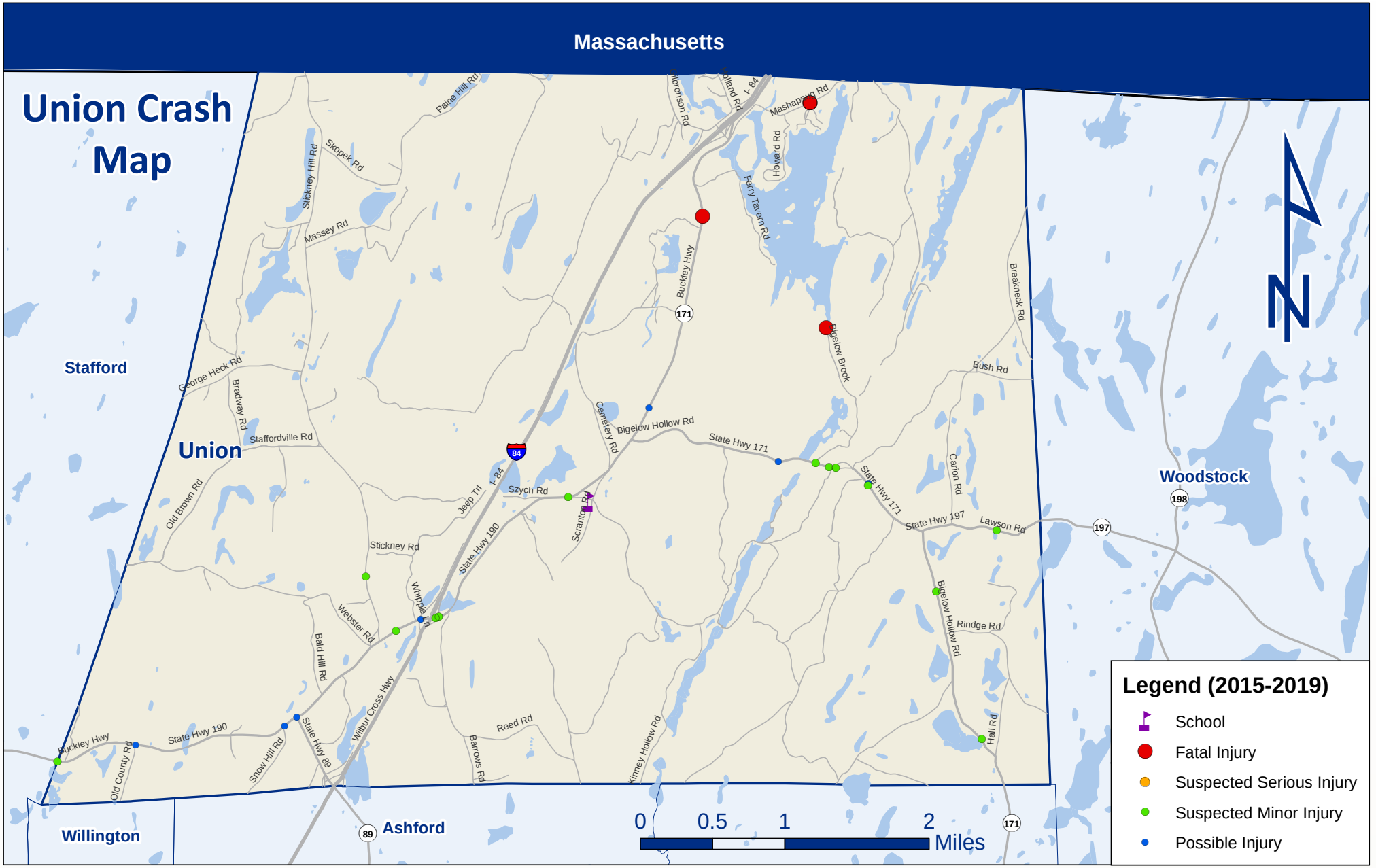
CT-190 (Buckley Highway)

There have been crashes on CT-190 near the I-84 off- and on-ramps. When questioned about possible centerline rumble strips on CT-190, the Town replied they did not support them on this roadway. CTDOT has an upcoming public information meeting about the installation of centerline rumble strips on CT-190.

NECCOG Comments and Location Concerns

- Intersection of CT-190 & Webster Road & Stickney Road.

Source: VN Engineers


Union Crash Map
Massachusetts
Stafford
Union
Woodstock
Willington
Ashford
Paine Hill Rd
Skopek Rd
Stickney Hill Rd
Massey Rd
George Heck Rd
Bradway Rd
Staffordville Rd
Old Brown Rd
Jeep Trl
I-84
Szych Rd
Stickney Rd
State Hwy 190
Whipple Ln
Webster Rd
Bald Hill Rd
Willbur Cross Hwy
Reed Rd
Barrows Rd
Kinney Hollow Rd
Buckley Hwy
Old County Rd
Snow Hill Rd
State Hwy 89
Scranton Rd
Cemetery Rd
Bigelow Hollow Rd
State Hwy 171
Buckley Hwy
Howard Rd
Ferry Tavern Rd
Bigelow Brook
Breakneck Rd
Bush Rd
Carion Rd
State Hwy 197
Lawson Rd
Rindge Rd
Hall Rd
Mashapaug Rd
Holland Rd
I-84
Wilbronson Rd
0 0.5 1 2 Miles
Legend (2015-2019)
School
Fatal Injury
Suspected Serious Injury
Suspected Minor Injury
Possible Injury

Field Site Inventory

CT-171(Buckley Highway) west of Bigelow Brook

In the vicinity of Bigelow Brook, CT-171 consists of one travel lane in each direction with minimal shoulders, centerline rumble strips and a posted speed limit of 35 mph. CT-171 is a rural roadway with a mature tree canopy and significant horizontal and vertical curvature. West of Bigelow Brook in the eastbound direction there is a posted 9% downgrade truck warning sign with a series of curve and chevron warning signs for approximately 1,500 ft as the roadway descends to an earthen dam over Bigelow Brook. During inclement weather the roadway curvature presents additional challenges.

Recommendations:

- Consider high friction surface treatment, steep grade signage, and "SLOW" pavement marking to further highlight the steep downgrades of the roadway.
- Consider evaluating existing warning signs for reflectivity to determine if they need to be replaced.
- Consider updating the centerline and edge line striping.
- Consider installing high friction surface treatment through the horizontal and vertical curves.

CT-197 (Lawson Road) west of Woodstock Town line

Just west of the Woodstock Town Line, CT-197 is a rural roadway with one travel lane in each direction with minimal or no shoulders and a posted speed limit of 30 mph. CT-197 has mature tree canopy and significant horizontal and vertical curvature with a series of curve and chevron warning signs. During inclement weather the roadway curvature presents additional challenges.

Recommendations:

- Consider high friction surface treatments and "SLOW" pavement marking to further highlight the steep downgrades of the roadway.
- Consider evaluating existing warning signs for reflectivity to determine if they need to be replaced.
- Consider updating the centerline and edge line striping.
- Consider installing high friction surface treatment through the curves.

CT-171 (west of Bigelow Brook Road)- Looking east

CT-197 (west of Woodstock Town line)- Looking east

Union Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-171 (Buckley Highway) east of Bigelow Brook Road	Crashes through the horizontal and vertical curvature	Consider high friction pavement, steep grade signage, and "SLOW" pavement markings to further highlight the steep downgrades of the roadway	Low
		Consider evaluating existing warning signs for reflectivity to determine if they need to be replaced	Low
		Consider updating the centerline and edge line striping	Low
		Consider installing high friction surface treatment through the horizontal and vertical curves	Low-Medium
CT-197 (Lawson Road) through horizontal west of Woodstock Town Line	Crashes through the horizontal and vertical curvature	Consider high friction surface treatments and "SLOW" pavement marking to further highlight the steep downgrades of the roadway	Low
		Consider evaluating existing warning signs for reflectivity to determine if they need to be replaced	Low
		Consider updating the centerline and edge line striping	Low
		Consider installing high friction surface treatment through the horizontal and vertical curves	Low-Medium

TOWN OF VOLUNTOWN

2020 Population Estimate: 2,505

Area: 39 square miles

Population Density: 66 persons per square mile

2016 Vehicle Miles Traveled (VMT): 8,231,845

2016 VMT per Capita: 3,286

Setting: Rural

Town Representatives: Tracey Hanson (First Selectwoman) and Delia Fey (NECCOG)

Data Identified Data-Driven Corridors: N/A

Data Identified High Crash Intersections: N/A

Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2019: 2

Total Number of Crashes Involving Injuries or Fatalities, 2015-2019: 69

Source: VN Engineers

Overview

Voluntown is situated in the northeastern region of CT. It is bordered by Griswold to the west, Plainfield and Sterling to the north, Rhode Island to the east, and North Stonington to the south. The Town's main thoroughfares are CT-165, CT-138, and CT-49.

Voluntown Total Crashes by Severity

Crash Severity	2015	2016	2017	2018	2019
Fatal Injury (K)	0	1	1	0	1
Suspected Serious Injury (A)	2	1	2	0	2
Suspected Minor Injury (B)	7	10	6	5	8
Possible Injury (C)	6	4	5	6	2
Total Injury Crashes	15	16	14	11	13

Town's Input

Fatal Crashes from 2015-2019:

- **CT-165 (Beach Pond Road) near Rhode Island border:** Roadway departure fatal crash.
- **Main Street:** Substance-impaired roadway departure fatal crash.
- **CT-165 (Beach Pond Road):** Front to front animal in roadway-related fatal crash.

CT-165 (Beach Pond Road) near the Rhode Island Border

This section of CT-165 near the RI border has had a series of crashes, including a fatal crash. Speeding is a concern. There is limited sight distance from the local roadways that intersect CT-165 and horizontal curvature along the main line. According to the Town, there are drainage problems and ice forms on the roadway which is possibly due to run off from the adjacent town roads.

CT-165/CT-138 (Beach Pond Rd) and CT-49 (Ekonk Hill Rd) and Shetucket Turnpike

CT 165/ CT-138 (Beach Pond Rd) bisects the business section of town and vehicles travel at high speeds from both directions. This is a dangerous three-way intersection where traffic is entering/pulling out of Shetucket Turnpike, which has a skewed intersection with CT-165/138 (Beach Pond Rd) and nearby CT-49 (Ekonk Hill Rd). Coming from the western direction, Beach Pond Rd widens before the intersection of Shetucket Turnpike (by Robbins Cemetery), causing vehicles to increase speed. There is a corner here as well that can reduce visibility when pulling onto Beach Pond Rd from CT-49 (Ekonk Hill Rd)). There are businesses in this area where there is difficulty entering and exiting safely due to the high speed of traffic. The state signs on the end of CT-49 (Ekonk Hill Rd) block the sight line from those entering who are in trucks or large vehicles. The Town has requested that these signs be removed or moved and they have not. There have been several crashes (including motorcycle crashes) at the intersection of CT-165/138 (Beach Pond Rd) and CT-49 (Ekonk Hill Rd) because traffic does not stop quick enough when cars are waiting to turn onto CT-49 (Ekonk Hill Rd).

CT-165/CT-49 (Preston City Road) and CT-138 (Main Street)

This is a skewed intersection with CT-165/CT-149 under stop control. CT-165 splits in two segments which are separated by a grassy island at the junction with CT-138.

CT-138 (Main Street)

CT-138 is the Town's Main Street in the village center. Its cross section is narrow and there are physical constraints from adjacent houses. According to the Town, speeding is an issue through this corridor. The vertical curvature on the approach to the village center encourages speeding. Installing gateway treatments on both approaches might aid in lowering speeds as motorists enter the village center.

CT-138 is used as a cut through for motorists travelling to and from the nearby casinos and Rhode Island. Heavy trucks use CT-138 to avoid tolls in Rhode Island. The State has been enforcing load limits to reduce violations of truck travel on CT-138.

The Town is concerned with speeding through this area, especially with Voluntown Elementary School located on CT-138 just west of this intersection. The Town would like to update the current outdated school zone signage associated with the school. They are waiting for CTDOT to send signage update info.

There are crosswalks in front of the town library and Voluntown Elementary School that need enhancement. There is limited sidewalk connectivity throughout the Village Center.

CT-49 (Pendleton Hill Road)

There were a series of crashes south of Gallup Road through the horizontal curves on CT-49 (Pendleton Hill Road). The existing curve signs may need further enhancements. The lack of physical constraint seems to encourage speeding. On CT-49 (Pendleton Hill Road), new chevron signs and centerline rumble strips have been installed.

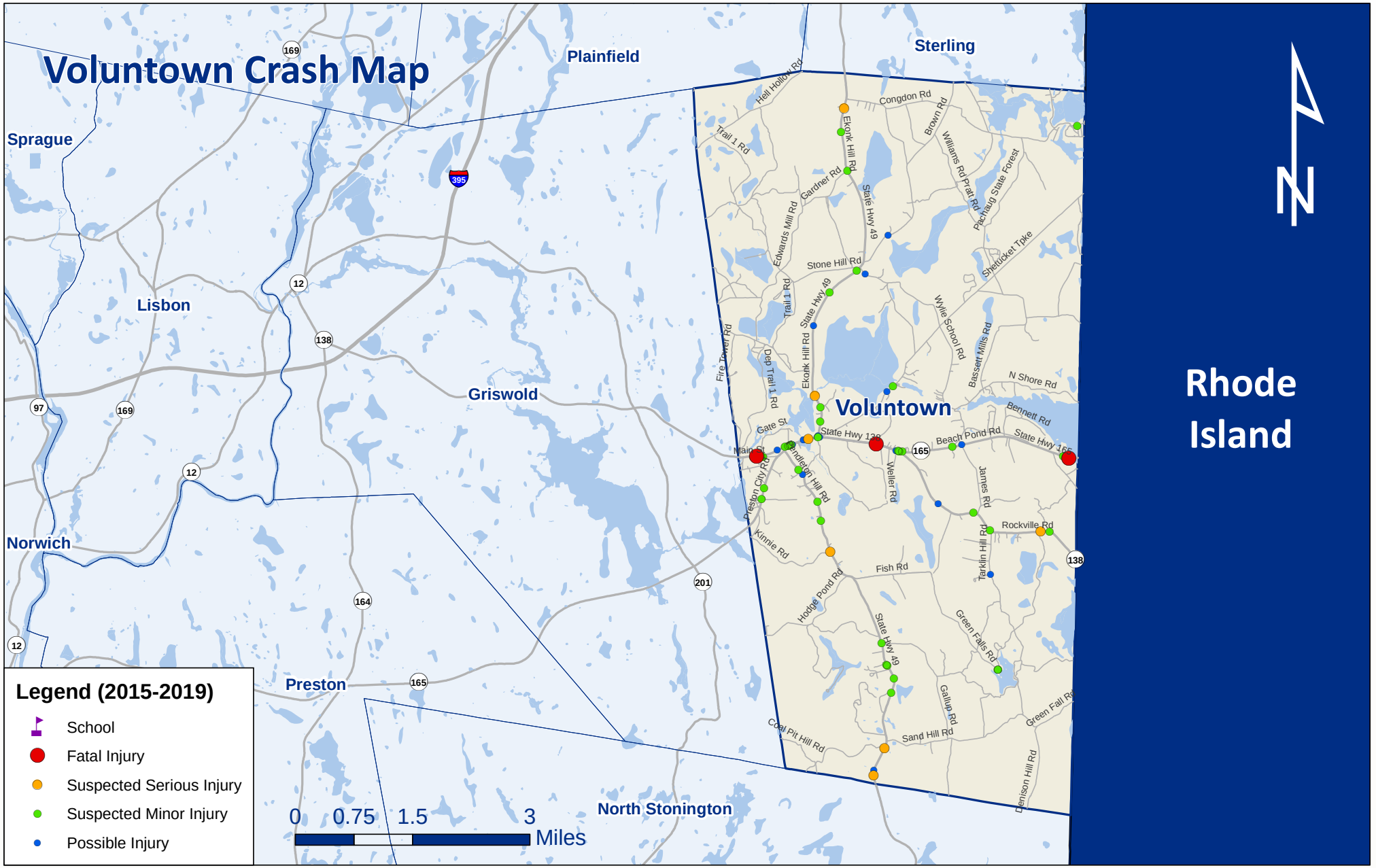
NECCOG Comments and Location Concerns

- CT-138 and CT-165 - Known fatalities, motorcycle crashes; excessive speed on straight stretch w/ corner at end of CT-138 / Rockville Road.
- CT-49 (Shetucket Turnpike)/CT-138 and Ekonk Hill Road - The state signs are blocked.
- CT-165 - There is increased traffic due to casinos. The whole corridor has no traffic signals.
- CT-49 heading into Westerly at Kenney Road/Hodge Pond Road/ Fish Road.

CT-165 (Beach Pond Rd) and CT-138 (Rockville Rd)
This intersection has seen a high level of crashes, including several involving motorcycles. Traffic on CT-165 (Beach Pond Rd) has a tendency to speed in both directions, but especially in the direction coming from Rhode Island. CT-138 (Rockville Rd) intersects CT-165 (Beach Pond Rd) at a skew. The horizontal curvature on CT-165 (Beach Pond Rd) limits sight distance. Sun glare in the morning and in the evening also reduces visibility for those pulling out of CT-138 (Rockville Rd). The road curves, speed of traffic, and sun glare all contribute to the danger of this intersection. The intersection needs to be realigned and the Town advocates for the installation of a traffic signal or three-way stop to improve safety.

NECCOG Comments and Location Concerns

- **CT-138 and CT-165** - Known fatalities, motorcycle crashes; excessive speed on straight stretch w/ corner at end of CT-138 / Rockville Road.
- **CT-49 (Shetucket Turnpike)/CT-138 and Ekonk Hill Road** - The state signs are blocked.
- **CT-165** - There is increased traffic due to casinos. The whole corridor has no traffic signals.
- **CT-49** heading into Westerly at Kenney Road/Hodge Pond Road/Fish Road.


Voluntown Crash Map
Sprague
Lisbon
Plainfield
Sterling
Griswold
Voluntown
Norwich
Preston
North Stonington
Rhode Island
Legend (2015-2019)
School
Fatal Injury
Suspected Serious Injury
Suspected Minor Injury
Possible Injury
0 0.75 1.5 3
Miles
N
Congdon Rd
Brown Rd
Ekonk Hill Rd
Gardner Rd
State Hwy 49
Williams Rd
Pratt Rd
Pachaug State Forest
Edwards Mill Rd
Stone Hill Rd
Shetucket Tpke
Trail 1 Rd
Wylie School Rd
Bassett Mills Rd
Fire Tower Rd
Dep Trail 1 Rd
N Shore Rd
Bennett Rd
Cate St
Main St
State Hwy 138
Beach Pond Rd
State Hwy 165
Preston City Rd
Pendleton Hill Rd
Weller Rd
James Rd
Rockville Rd
Parkin Hill Rd
Kinnie Rd
Fish Rd
Hodge Pond Rd
Green Falls Rd
Gallup Rd
Sand Hill Rd
Coal Pit Hill Rd
Denison Hill Rd

Field Site Inventory

CT-165 (Beach Pond Road) West of RI State Line

CT-165 (Beach Pond Road) is a two-lane arterial with a speed Limit of 35 mph. Shoulders in this area range from 1-foot to 3-feet wide. The east end of this corridor is marked by the CT/RI State Line. Traveling westbound from the State Line, CT-165 (Beach Pond Road) becomes a right horizontal curve. At the end of the horizontal curve, there is a crest vertical curve. Approximately halfway up the vertical curve, CT-165 (Beach Pond Road) intersects Beach View Road, a two-lane local road. This intersection is skewed with a sharp descending grade on Beach View Road, which limits sight distance for drivers turning onto CT-165 (Beach Pond Road). Advance intersection warning signs are located on both approaches of CT-165 (Beach Pond Road). Metal Beam Rail (MBR) is present on both sides of CT-165 (Beach Pond Road) but is not continuous throughout the corridor. Along the horizontal curve, there are paved aprons on the field side of the MBR. At the bottom of the vertical curve on the eastbound side of CT-165 (Beach Pond Road), there is a rock cut. There is no roadway illumination in this area.

Recommendations:

- Consider installing roadway illumination at the intersection of CT-165 (Beach Pond Road) and Beach View Road.
- Consider installing roadway illumination from the State Line to the crest of vertical curve on CT-165 (Beach Pond Road).
- Consider installing centerline rumble strips.
- Consider installing a Hill (Symbol) sign at the top of the crest vertical curve to warn Eastbound traffic of the descending grade.

Western Split between CT-138 and CT-165

The western split between CT-138 (Main Street) and CT-165 (Beach Pond Road) is a sharply skewed intersection with CT-165 (Beach Pond Road) under stop control. CT-138 (Main Street) is under free flow. There is a flashing yellow/red signal at this intersection. All roads are two-lane arterials with shoulders approximately 3-feet wide. The intersection is illuminated. The speed limit on CT-138 (Main Street) is 30 mph, while the speed limit on CT-165 (Beach Pond Road) is 40 mph. After the split, CT-138 continues westward as Main Street, while CT-165 continues southward to the intersection with CT-49 (Pendleton Hill Road) . There is a sidewalk along the north side of CT-138 (Main Street). An advance intersection warning sign is present on the CT-165 (Beach Pond Road) leg only. Immediately east of the split, there is a crest vertical curve and an intersection of CT-138/165 with Beachdale Avenue, a two-lane dead-end road. This intersection, as well as the proximity of the intersection between CT-165 (Beach Pond Road) and CT-49 (Pendleton Hill Road) make this area a very busy corridor. Additionally, there are local residences, businesses, and a school in the vicinity of this split. A School Zone Ahead sign (with flashers) is located on CT-138 (Main Street) to alert westbound traffic.

Recommendations:

- Consider installing centerline rumble strips through the curves.
- Consider installing Side Road Angle Left Up sign on CT-138/165 to better alert westbound traffic to the intersection.
- Consider installing optical speed bars on CT-138 (Main Street) approaching CT-165 (Beach Pond Road).

CT-165 east of Beach View Road

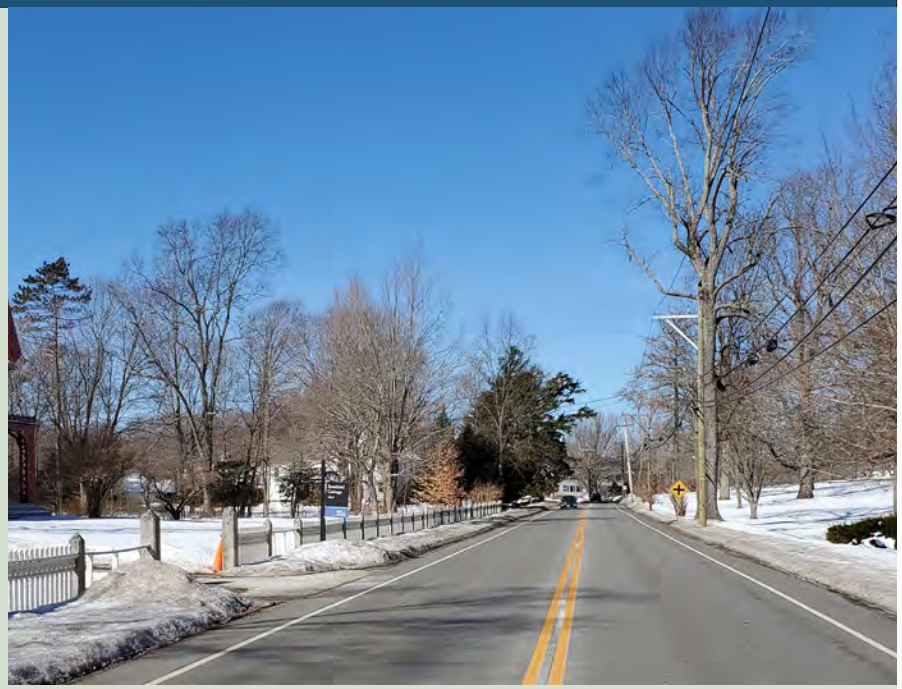
Western split between CT-138 and CT-165

Voluntown Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-165 (Beach Pond Road)near RI Border	Crashes	Install roadway illumination at the intersection of CT-165 (Beach Pond Rd.) and Beach View Rd. Consider installing roadway illumination from the CT/RI State Line to the crest of the vertical curve on CT-165 (Beach Pond Rd)	Low
		Install centerline rumble strips	Low
		Consider installing a Hill (Symbol) sign at the top of the crest vertical curve to warn Eastbound traffic of the descending grade	Low
CT-165 (Beach Pond Road)/ CT-138 (Main Street)	Horizontal curvature	Install centerline rumble strips along curves	Low
	Intersection crashes	Install side road angle left up sign on CT-138/165 to better alert westbound traffic to the intersection	Low
CT-49 (Pendleton Hill Road) south of Gallup Hill Road	Horizontal curve crashes	Enhance curve warning signs	Low
		High friction surface treatment	Medium

TOWN OF WOODSTOCK

2020 Population Estimate: 8,207
Area: 61 square miles
Population Density: 129 persons per square mile
2016 Vehicle Miles Traveled (VMT): 15,901,955
2016 VMT per Capita:1,938
Setting: Rural
Town Representatives: Jay Swan (First Selectman) and Delia Fey (NECCOG)
Data Identified Data-Driven Corridors: N/A
Data Identified High Crash Intersections: N/A
Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2019: 4
Total Number of Crashes Involving Injuries or Fatalities, 2015-2019: 149



Source: VN Engineers

Overview

Woodstock is a town in northeastern Connecticut. It is bordered by Union and Eastford to the west, Massachusetts to the north, Thompson and Putnam to the east and Pomfret and Eastford also to the south. The Town's main thoroughfares are CT-171, CT-197, CT-198, and CT-169.

Woodstock Total Crashes by Severity

Crash Severity	2015	2016	2017	2018	2019
Fatal Injury (K)	0	0	2	0	0
Suspected Serious Injury (A)	2	2	0	1	1
Suspected Minor Injury (B)	21	20	21	15	16
Possible Injury (C)	10	5	7	14	12
Total Injury Crashes	33	27	30	30	29

Town's Input

Fatal Crashes from 2015-2019:

- **Center Road:** Medically-related roadway departure horizontal curve fatal crash.
- **CT-171 (Somers Turnpike):** Substance-impaired roadway departure fatal crash.

CT-171 (Somers Turnpike) and Pulpit Rock Road
There have been a series of crashes through the severe horizontal curve on CT-171 through the intersection with Pulpit Rock Road. Chevron curve signs have been updated. A guard rail was recently installed.

Pulpit Rock Road
Pulpit Rock Road is used as cut through and is not designed to accommodate heavy traffic. It's a scenic gravel roadway with a narrow cross section. The Town requested a no thru truck prohibition, but it was not granted. GPS devices direct vehicles to travel on Pulpit Rock Road.

CT-171 (Somers Turnpike), Little Pond Road and Peak Brook Road
Speeding on CT-171 makes it difficult for vehicles on the local roads to enter the state route. Sight lines are sufficient but there is a moderate horizontal curve along the approach. The wide cross section on CT-171 may encourage high travel speeds. There was a fatal crash at this intersection prior to our study period.

CT-169 (Norwich Worcester Turnpike) and Child Hill Road
This four-way intersection with stop control exclusively on the local road is located in the village center. Sight distance at the intersection of Child Hill Road and CT-169 is limited due to the vegetation and the horizontal and vertical curvature on CT-169. Vegetation and a utility pole in the vicinity of the intersection could be removed or relocated to potentially improve sight lines.

CT-169 (Norwich Worcester Turnpike) south of Joy Road
Currently there are no sidewalks on CT-169. The students from Woodstock Academy walk on the shoulder to popular destinations. The Town is interested in installing sidewalks. Funding is needed.

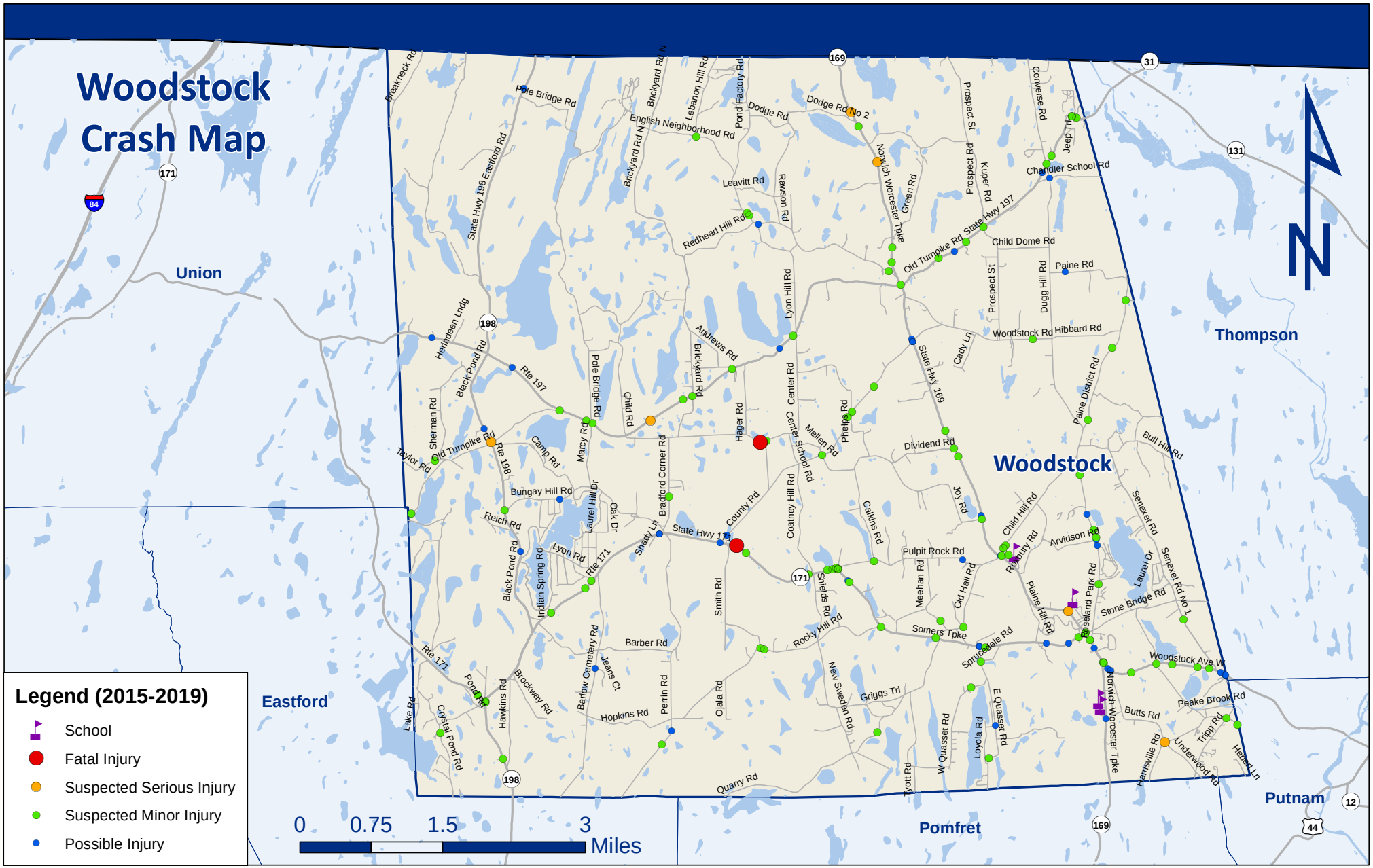
County Road
This local road runs north to south between CT-169 and CT-171. It is used as a short cut but there is a no thru truck prohibition to prevent some through traffic. This road is not conducive to heavy vehicle traffic due to pedestrian use and lack of sidewalks. Speeding is an issue on this road.

CT-171 (Somers Turnpike) and CT-169 (Norwich Worcester Turnpike)
This is an all-way stop-controlled intersection. Shuttle traffic is heavy due to travel between the two Woodstock Academy campuses. In addition, Woodstock Middle School is located on Route 169 across from the south campus of Woodstock Academy adds to the volume of cars. A traffic signal is currently in the design stages by CTDOT which would replace the current control system.

Center of Town
The center of Woodstock along CT-169 is historic but has no sidewalks to connect the various places of interest. The Town would like sidewalks installed for pedestrian safety.

Behavior Issues
Speeding and substance-impaired driving are the two major behavior concerns for the Town.

NECCOG Comments and Location Concerns
CT-171/Peake Brook Road/Little Pond Road intersection.


Woodstock
Crash Map
Union
Eastford
Pomfret
Woodstock
Thompson
Putnam
Legend (2015-2019)
School
Fatal Injury
Suspected Serious Injury
Suspected Minor Injury
Possible Injury
0 0.75 1.5 3 Miles
N
Breakneck Rd
Pole Bridge Rd
Brickyard Rd N
Lebanon Hill Rd
Pond Factory Rd
Dodge Rd
Dodge Rd No 2
English Neighborhood Rd
Converse Rd
Deer Trl
Chandler School Rd
State Hwy 198 Eastford Rd
Leavitt Rd
Rawson Rd
Norwich Worcester Tpke
Green Rd
Prospect St
Kuper Rd
Redhead Hill Rd
Old Turnpike Rd
State Hwy 197
Child Dome Rd
Paine Rd
Dugg Hill Rd
Prospect St
Lyon Hill Rd
Woodstock Rd
Hibbard Rd
Herlindeen Lndg
Black Pond Rd
Rte 197
Andrews Rd
Brickyard Rd
Pole Bridge Rd
Child Rd
Center Rd
Hager Rd
State Hwy 169
Cady Ln
Paine District Rd
Sherman Rd
Old Turnpike Rd
Rte 198
Camp Rd
Marcy Rd
Center School Rd
Mellen Rd
Phelps Rd
Dividend Rd
Bull Hill Rd
Taylor Rd
Bungay Hill Rd
Bradford Corner Rd
Coatney Hill Rd
Joy Rd
Senexet Rd
Reich Rd
Laurel Hill Dr
Oak Dr
Shady Ln
State Hwy 171
County Rd
Calkins Rd
Child Hill Rd
Arvidson Rd
Pulpit Rock Rd
Roseland Park Rd
Laurel Dr
Senexet Rd No 1
Lyon Rd
Rte 171
Black Pond Rd
Indian Spring Rd
Shields Rd
Meehan Rd
Old Hall Rd
Plaine Hill Rd
Stone Bridge Rd
Smith Rd
Somers Tpke
Rocky Hill Rd
Barber Rd
Spruce Dale Rd
Woodstock Ave W
Rte 171
Pond Rd
Brockway Rd
Barlow Cemetery Rd
Jeans Ct
Hawkins Rd
Lake Rd
Crystal Pond Rd
Hopkins Rd
Perrin Rd
Ojala Rd
New Sweden Rd
Griggs Trl
E Quasset Rd
W Quasset Rd
Loyola Rd
Norwich Worcester Tpke
Butts Rd
Peake Brook Rd
Tripp Rd
Hamisville Rd
Underwood Rd
Hebert Ln
Lyott Rd
Quarry Rd
171
84
198
169
31
131
44
12

Field Site Inventory

CT-171 (Somers Turnpike) at Pulpit Rock Road

The intersection of CT-171 and Pulpit Rock Road is an unsignalized intersection with Pulpit Rock Road under stop control. A small grass median splits the Pulpit Rock Road approach providing separate access/egress approaches to and from CT-171. CT-171 traverses through the intersection along a ninety-degree horizontal curve with Pulpit Rock Road directly aligned with the CT-171 eastbound approach. The CT-171 eastbound approach to the intersection can be perceived to continue to straight onto Pulpit Rock Road instead of continuing along the horizontal curve through the intersection. Curve ahead and chevron warning signs are located along the CT-171 curve.
This intersection is also the site of a school bus stop.

Recommendation:

- Consider removing the grass median and realigning the Pulpit Rock Road approach to form more of a traditional T intersection to improve sight lines and minimize the perception that the CT-171 eastbound approach continues onto Pulpit Rock Road.
- Consider installing a school bus stop ahead warning sign.
- Consider installing a narrow road ahead sign on Pulpit Rock Road to alert motorists to the cross section features.
- Consider safety edge installation or guide rails along Pulpit Rock Road at spot locations.

CT-169 (Norwich Worchester Turnpike) between Joy Road and Woodstock Academy Campus

CT-169 between the Woodstock Academy Campus and Joy Road with consists of one travel lane in each direction with little to no shoulder and sidewalk on the west side of CT-169 between Plaine Hill Road and Old Hall Road. The posted speed limit is 35 mph along the southern section of the corridor and 40 mph along the northern section of the corridor. This section of CT-169 is a popular pedestrian corridor for Woodstock Academy students and the lack of available shoulder, high travel speeds, limited road cross-section and no sidewalk is a concern.

Recommendations:

- Consider extending the sidewalk along CT-169 from Old Hall Road to Joy Road or an alternative route.
- Consider a uniform posted speed limit of 35 mph and installation of speed reduction pavement markings along CT-169 to encourage motorists to travel the speed limit.

CT-171 at Pulpit Rock Road-looking west

CT-169 between Joy Road and Woodstock Academy Campus

Woodstock Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-171 (Somers Turnpike) and Pulpit Rock Road	Intersection crashes	Consider removing the grass median and realigning the Pulpit Rock Road approach to form more of a traditional T intersection to improve sight lines and minimize the perception that the CT-171 eastbound approach continues onto Pulpit Rock Road	Medium
CT-169 (Norwich Worcester Turnpike)south of Joy Road to the Woodstock Academy campus	Speeding	Consider a uniform posted speed limit of 35 mph and installation of speed reduction pavement markings along CT-169 to encourage motorists to travel the speed limit	Low
	Pedestrian safety	Consider extending the sidewalk along CT-1639 from Old Hall Road to Joy Road or an alternative route	Medium
CT-169 (Norwich Worcester Turnpike) and Child Hill Road	Limited sight distance	Remove vegetation	Low
		Relocate utility pole	Low-Medium
Center of Town	Pedestrian safety	Create a bicycle and pedestrian master plan	Low
Townwide	Substance-impaired crashes	Increased enforcement and public messaging	Low
	Speed related crashes	Dynamic speed feedback signs	Low
		Gateway treatments	Low

Appendix B: Emphasis Areas

INTERSECTION FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018	2019
Ashford	6	3	1	4	7
Brooklyn	10	10	13	12	18
Canterbury	3	4	2	6	7
Chaplin	0	5	0	8	7
Eastford	1	3	1	1	1
Hampton	2	5	3	1	2
Killingly	28	22	39	33	18
Plainfield	9	12	11	21	6
Pomfret	1	0	5	2	5
Putnam	18	16	18	7	17
Scotland	0	1	2	4	1
Sterling	1	2	3	2	3
Thompson	5	7	6	7	7
Union	0	1	1	3	0
Voluntown	4	3	3	2	2
Woodstock	8	4	6	4	10
Total	**96**	**98**	**114**	**117**	**111**

ROADWAY DEPARTURES FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018	2019
Ashford	4	10	7	4	16
Brooklyn	12	14	7	9	12
Canterbury	9	13	12	12	7
Chaplin	7	9	2	5	5
Eastford	3	6	2	4	9
Hampton	5	6	6	7	1
Killingly	21	32	21	21	16
Plainfield	16	16	19	27	18
Pomfret	8	13	12	5	8
Putnam	10	16	9	9	14
Scotland	5	2	0	0	7
Sterling	7	7	7	8	3
Thompson	18	19	19	12	15
Union	4	5	2	3	2
Voluntown	12	8	7	5	5
Woodstock	23	11	12	19	18
Total	**164**	**187**	**154**	**158**	**156**

OLDER DRIVER FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018	2019
Ashford	0	0	3	1	1
Brooklyn	5	4	3	6	4
Canterbury	3	2	1	1	3
Chaplin	3	4	4	8	6
Eastford	2	1	2	0	0
Hampton	1	1	5	1	2
Killingly	7	9	13	8	13
Plainfield	1	9	2	3	0
Pomfret	1	1	2	1	4
Putnam	10	7	6	3	6
Scotland	0	0	2	0	2
Sterling	1	0	2	2	1
Thompson	2	5	2	3	3
Union	0	1	0	0	0
Voluntown	3	1	1	0	4
Woodstock	6	5	5	7	4
Total	**45**	**50**	**53**	**44**	**53**

YOUNG DRIVER FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018	2019
Ashford	2	5	3	3	11
Brooklyn	14	11	12	10	12
Canterbury	4	4	4	7	5
Chaplin	6	7	3	5	1
Eastford	1	0	1	2	5
Hampton	3	2	2	1	0
Killingly	17	21	21	23	9
Plainfield	6	14	4	18	17
Pomfret	5	4	6	5	7
Putnam	7	16	8	9	8
Scotland	2	0	0	3	4
Sterling	5	2	1	2	1
Thompson	10	9	8	4	5
Union	1	3	2	3	1
Voluntown	4	6	5	3	4
Woodstock	6	7	13	7	4
Total	**93**	**111**	**93**	**105**	**94**

ASLEEP OR FATIGUED FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018	2019
Ashford	0	3	2	1	2
Brooklyn	3	0	1	0	0
Canterbury	0	1	1	0	0
Chaplin	1	2	0	0	2
Eastford	0	0	0	0	0
Hampton	1	0	2	0	1
Killingly	3	2	4	1	4
Plainfield	0	0	0	1	2
Pomfret	1	1	0	0	1
Putnam	0	3	0	1	1
Scotland	1	0	0	2	1
Sterling	0	0	0	2	0
Thompson	3	2	2	0	1
Union	0	1	0	0	0
Voluntown	5	3	1	1	0
Woodstock	2	3	3	1	1
Total	**20**	**21**	**16**	**10**	**16**

SPEEDING FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018	2019
Ashford	3	6	0	5	7
Brooklyn	11	6	7	5	7
Canterbury	6	9	7	5	6
Chaplin	5	6	0	2	2
Eastford	2	3	1	1	5
Hampton	2	1	4	1	1
Killingly	14	17	6	12	8
Plainfield	3	5	6	13	5
Pomfret	5	7	7	4	4
Putnam	4	7	4	7	3
Scotland	2	0	3	5	2
Sterling	4	4	4	5	3
Thompson	12	7	9	8	9
Union	0	3	4	3	1
Voluntown	0	1	5	3	1
Woodstock	8	8	10	10	8
Total	**81**	**90**	**77**	**89**	**72**

SUBSTANCE-IMPAIRED FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018	2019
Ashford	1	2	1	0	1
Brooklyn	2	1	3	3	4
Canterbury	0	2	2	2	2
Chaplin	1	1	1	2	2
Eastford	0	0	0	1	0
Hampton	0	1	2	0	0
Killingly	8	9	8	3	1
Plainfield	2	4	8	5	3
Pomfret	0	0	1	0	2
Putnam	1	6	6	4	5
Scotland	0	0	0	3	0
Sterling	1	3	2	1	2
Thompson	2	2	4	1	2
Union	0	1	1	2	0
Voluntown	1	0	1	0	0
Woodstock	1	2	3	1	0
Total	**20**	**34**	**43**	**28**	**24**

NON-MOTORIZED USER FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018	2019
Ashford	0	2	0	0	1
Brooklyn	3	3	1	0	2
Canterbury	1	0	0	0	0
Chaplin	0	0	0	0	0
Eastford	0	0	1	0	1
Hampton	0	0	0	0	0
Killingly	3	5	6	2	1
Plainfield	3	0	0	3	0
Pomfret	0	0	2	0	0
Putnam	2	0	2	2	2
Scotland	1	0	0	1	0
Sterling	0	0	0	0	0
Thompson	1	0	1	0	0
Union	0	0	0	0	0
Voluntown	0	0	0	0	1
Woodstock	1	3	0	0	0
Total	**15**	**13**	**13**	**8**	**8**

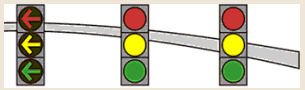
MOTORCYCLE FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018	2019
Ashford	0	0	2	1	0
Brooklyn	4	6	5	4	2
Canterbury	0	2	2	2	4
Chaplin	1	4	0	1	1
Eastford	3	1	2	2	0
Hampton	1	2	0	1	0
Killingly	5	6	5	11	6
Plainfield	5	5	3	2	2
Pomfret	4	1	2	2	2
Putnam	6	0	5	2	4
Scotland	0	1	2	1	0
Sterling	0	3	2	1	1
Thompson	7	3	3	2	9
Union	0	0	1	1	0
Voluntown	2	2	2	1	2
Woodstock	4	3	3	2	4
Total	**42**	**39**	**39**	**36**	**37**

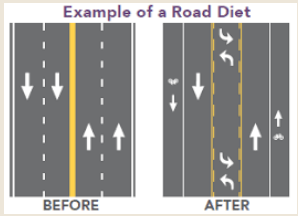
DISTRACTED DRIVING CRASHES

Municipality	2015	2016	2017	2018	2019
Ashford	4	1	0	2	1
Brooklyn	10	6	4	0	3
Canterbury	0	1	3	1	3
Chaplin	0	3	2	2	3
Eastford	0	0	0	1	0
Hampton	0	0	0	0	1
Killingly	9	4	4	10	7
Plainfield	4	3	5	8	3
Pomfret	4	2	4	1	2
Putnam	7	6	8	4	4
Scotland	0	1	0	1	2
Sterling	2	0	2	1	0
Thompson	1	4	1	1	2
Union	1	0	0	0	0
Voluntown	1	4	0	1	0
Woodstock	2	0	3	3	2
Total	**45**	**35**	**36**	**36**	**33**

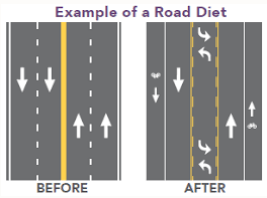
The countermeasures included in this report were determined based on an analysis of historical data for crashes involving injuries or fatalities, discussions with Region and Town officials, the Connecticut Strategic Highway Safety Plan, FHWA's List of Proven Countermeasures and NHTSA's Countermeasures that Work, 8th edition.

	Measure	Description	Application
Signage	**Speed Feedback Signs**[1,2] **Cost: Low**  Source: FHWA	A changeable message sign that displays the speed of approaching vehicles.	To be used where motorized vehicle speed is a concern.
Signage	**Retroreflective Signal Backplates** **Cost: Low-Medium**  Source: FHWA	Improved visibility of a signal head with a backplate is made even more conspicuous by framing it with a retroreflective border.	Signal heads that have backplates equipped with retroreflective borders are more visible and conspicuous in both daytime and nighttime conditions. Cost may depend on the need to replace span wire with mast arms.
Signage	**Change Left-Turn Phase to Protected Phasing** **Cost: Low to Medium**  Source: FHWA	Modify existing phasing to a protected phase.	"Protected-only" phasing consists of providing a separate phase for left-turning traffic and allowing left turns to be made only on a green left arrow signal indication, with no pedestrian movement or vehicular traffic conflicting with the left turn. As a result, left-turn movements with "protected-only" phasing have a higher capacity than those with "permissive-only" phasing due to fewer conflicts.[3]
Signage	**Flashing Advance Warning Beacons** **Cost: Low to Medium**  Source: FHWA	A beacon that provides a warning to motorists about an intersection ahead.	To be used in advance of an intersection.

1 Federal Highway Administration. (2009). Engineering Countermeasures for Reducing Speeds: A Desktop Reference of Potential Effectiveness. Washington, D.C.: Federal Highway Administration.
2 Overuse of signs and pavement markings may reduce their effectiveness. These devices should be used in locations where the needs are greatest.
3 Federal Highway Administration. (2004). Signalized Intersections: Informational Guide. https://www.fhwa.dot.gov/publications/research/safety/04091/04.cfm

	Measure	Description	Application
Pavement Markings	**Regulatory Pavement Markings**[1] **Cost: Low**  Source: FHWA	Pavement markings, such as "25 mph", that emphasize regulatory signage (MUTCD Section 3B.20).	To be used as a supplement to regulatory signs.
Pavement Markings	**Crosswalks** **Cost: Varies,** **Low -markings only** **Medium -markings and simple ADA landings;** **High-significant pedestrian safety features required**  Source: VN Engineers	Pavement markings delineating a portion of the roadway that is designated for pedestrian or bicycle crossing. There are several types including: continental, zebra, and standard (MUTCD Section 3B.18).	To be used at intersections or midblock crossings. Crosswalks may be used in areas with lower traffic volumes, lower speeds, and a limited number of travel lanes. See Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations for additional guidance regarding when to install a marked crosswalk.
Pavement Markings	**Road Reconfigurations** **Cost: Low to High**  Source: The Kinder Institute	Roadway retrofit techniques designed to produce a wide variety of benefits including reduced traffic speeds, reduced crashes, improved access management, improved accessibility for pedestrians or bicyclists, improved parking utilization, as well as improved economic vitality for businesses along those streets. Can include a variety of measures such as road diets and lane narrowing to include bike lanes.	For use in areas where speed and pedestrian and bicycle accessibility are a concern.

1 Federal Highway Administration. (2009). Manual on Uniform Traffic Control Devices. Washington, D.C.: Federal Highway Administration.

	Measure	Description	Application
Physical Environment	**Median Crossing Islands** **Cost: Medium**  Source: Pedbikesafe	A raised island in the center of the roadway with a refuge area that is accessible for pedestrians of all abilities. Can also provide a refuge area for cyclists, especially at locations where a shared use path crosses a roadway. The island allows pedestrians and cyclists to cross one direction of traffic at a time.	To be used when pedestrians and cyclists have to cross high-volume, multilane roadways (MUTCD Chapter 3I), (RV).
Physical Environment	**Rectangular Rapid Flash LED Beacons**[1] **Cost: Medium**  Source: FHWA	A beacon that provides a warning to motorists about the presence of a crosswalk. Beacon is yellow, rectangular, and has a rapid "wig-wag" flash like police lights. Beacon should operate only when a pedestrian is present; utilize either push button or passive detection.	For use at midblock crossings and intersections that do not warrant a signal.
Physical Environment	**Roadway Illumination**[2] **Cost: Medium**  Source: FHWA	Lighting directed to illuminate the roadway.	To be used on sections of roadway with high volumes of nighttime non-motorized activity.
Physical Environment	**Road Diets** **Cost: Low to Medium**  Source: The Kinder Institute	A redistribution of space in the roadway leading to a reduction in the number of travel lanes for motor vehicles on a roadway. The road diet is one of FHWA's Proven Safety Countermeasures and may provide space for bike lanes, sidewalk, or medians, and can help to reduce motor vehicle speed.	For use in areas with pedestrian crossings, multiple lanes of traffic, and high vehicle speeds.

1 Federal Highway Administration. (2008). Guidance Memorandum on Consideration and Implementation of Proven Safety Countermeasures. Retrieved August 29, 2011 from Federal Highway Administration: http://safety.fhwa.dot.gov/policy/memo071008.
2 Hall, J. W., Brogan, J. D., & Kondreddi, M. (2004). Pedestrian Safety on Rural Highways. FHWA-SA-04-008. Washington, D.C.: Federal Highway Administration.

	Measure	Description	Application
Signage	**Pedestrian Hybrid Beacons** **Cost: High**  Source: Portland Bureau of Trans.	The pedestrian hybrid beacons (PHB) is a traffic control device designed to help pedestrians safely cross busy or higher-speed roadways at midblock crossings and uncontrolled intersections.	The PHB is an intermediate option between a flashing beacon and a full pedestrian signal because it assigns right of way and provides positive stop control. It also allows motorists to proceed once the pedestrian has cleared their side of the travel lane, reducing vehicle delay.
Pavement Markings	**Roadway (or Transverse) Rumble Strips** **Cost: Low**  Source: ITE	Raised bars or grooves placed across the travel lane that can be either black or white.	To be used to alert drivers of the need to reduce speed in locations where other measures cannot be applied or have been tested and have not succeeded in addressing speeding issues. Bicyclist (and motorcyclist) concerns should be addressed by a break in the strips and installing a warning sign reading "RUMBLE STRIPS AHEAD." May have limited use because of citizens concerns over noise from vehicles driving over.
Pavement Markings	**Shoulder Rumble Strips** **Cost: Low**  Source: ITE	Raised bars or grooves placed at the edge of the travel lane.	Longitudinal rumble strips are milled or raised elements on the pavement intended to alert drivers through vibration and sound that their vehicles have left the travel lane. They can be installed on the shoulder, edge line of the travel lane, or at or near center line of an undivided roadway.
Pavement Markings	**Centerline Rumble Strips** **Cost: Low**  Source: CTDOT	Raised bars or grooves placed at or near the centerline travel lane.	Longitudinal rumble strips are milled or raised elements on the pavement intended to alert drivers through vibration and sound that their vehicles have left the travel lane. They can be installed on the shoulder, edge line of the travel lane, or at or near center line of an undivided roadway.
Pavement Markings/ Physical Environment	**Lane Narrowing** **Cost: Low to High**  Source: NACTO	The narrowing of travel lanes—either visually (by using pavement markings) or physically narrowing (with measures such as curb extensions). One example of visually narrowing lanes is a painted island that is an island defined by pavement markings and created with the function of reducing lane widths for traffic calming purposes.[1]	For use in areas with wide travel lanes and where speed is a concern (MUTCD Chapter 3I).

1 Federal Highway Administration. (2009). Manual on Uniform Traffic Control Devices. Washington, D.C.: Federal Highway Administration

	Measure	Description	Application
Signage	**No Right Turn on Red** **Cost: Low**  Source: capecods.com	A sign that prohibits right turns during the red phase due to exclusive pedestrian phases, high traffic or pedestrian volumes, or inadequate visibility.	Together with a leading pedestrian interval, the restriction can benefit pedestrians with minimal impact on traffic. Part-time prohibitions during the busiest times of the day may be adequate to address the problem.
Signage	**Additional Chevron Signs** **Cost: Low**  Source: Road Traffic Signs	Additional signs help to increase the noticeability of signage in situations where standard signage is insufficient.	While agencies apply signing devices uniformly, adding additional signs may be necessary depending on an assessment of speed, unexpected geometric features, traffic volume, and crash data.
Physical Environment	**Roadway Surface Improvements** **Cost: Varies greatly based on conditions present**  Source: UNH Tech Transfer Center	Roadway surface improvements include maintenance and paving activities to provide a smooth and slip-resistant traveling surface for pedestrians and cyclists.	Facilities used by pedestrians and cyclists should be smoother than those deemed acceptable for motorized traffic to maintain stability. Therefore, it is important that debris be cleared from facilities used by pedestrians and cyclists. If rumble strips are present, sufficient gaps should be provided for cyclists to move from the shoulder to the travel lane. Additionally, there should be sufficient width for cyclists to ride between the edge of the rumble strip and the edge of the shoulder.
Pavement Markings	**Bike Lanes**[1] **Cost: *Varies**  Source: CT.gov	A lane in the roadway designated for bicycle use with striping, signing, and pavement markings (MUTCD Chapter 9B and 9C).	To be used in areas with high volumes and speeds of motor vehicles and bicycles (RV).

1 American Association of State Highway Safety Officials, (1999), Guide for the Development of Bicycle Facilities, Washington, D.C.: American Association of State Highway Safety Officials.

	Measure	Description	Application
Physical Environment	**Gateways** **Cost: Low to High**  Source: CBS News	Visual or physical markers to serve as an indicator to motorists that they are entering an urbanized area and to slow down.	For use at the entrance of a residential or commercial area.
Physical Environment	**High Friction Pavement** **Cost: Low**  Source: WisconsinDOT	High friction surface treatment helps to compensate for high friction demand at curves where the available pavement friction is inadequate to support operating speeds.	This treatment can be applied in situations such as sharp curves, inadequate cross-slope, wet conditions, polished road surface, and prevailing speeds in excess of the curve advisory speed.
Physical Environment	**Shared Use Paths** **Cost: Medium to High**  Source: TrailLink	A facility separated from motorized vehicular traffic by a landscaped space or barrier. Shared use paths may be used by cyclists, pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. Such facilities are often referred to as "trails."	To be used in areas with a high volume of pedestrians and bicyclists and high motor vehicle speeds or volumes.
Physical Environment	**Buffered Shoulders** **Cost: Low for restriping existing paved shoulder, high for constructing new paved shoulder**  Source: Bouldercounty.org	A paved shoulder that is separated by a pavement marking to create a buffer from the vehicle travel lanes. The buffer space may be marked with diagonal pavement markings and ranges from 1 to 4 feet wide.	To be used in areas where pedestrian, bicycle, and/or horse-drawn vehicle volumes and motor vehicle volumes and speeds combine to create the need for separated and buffered space along the roadway.

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