

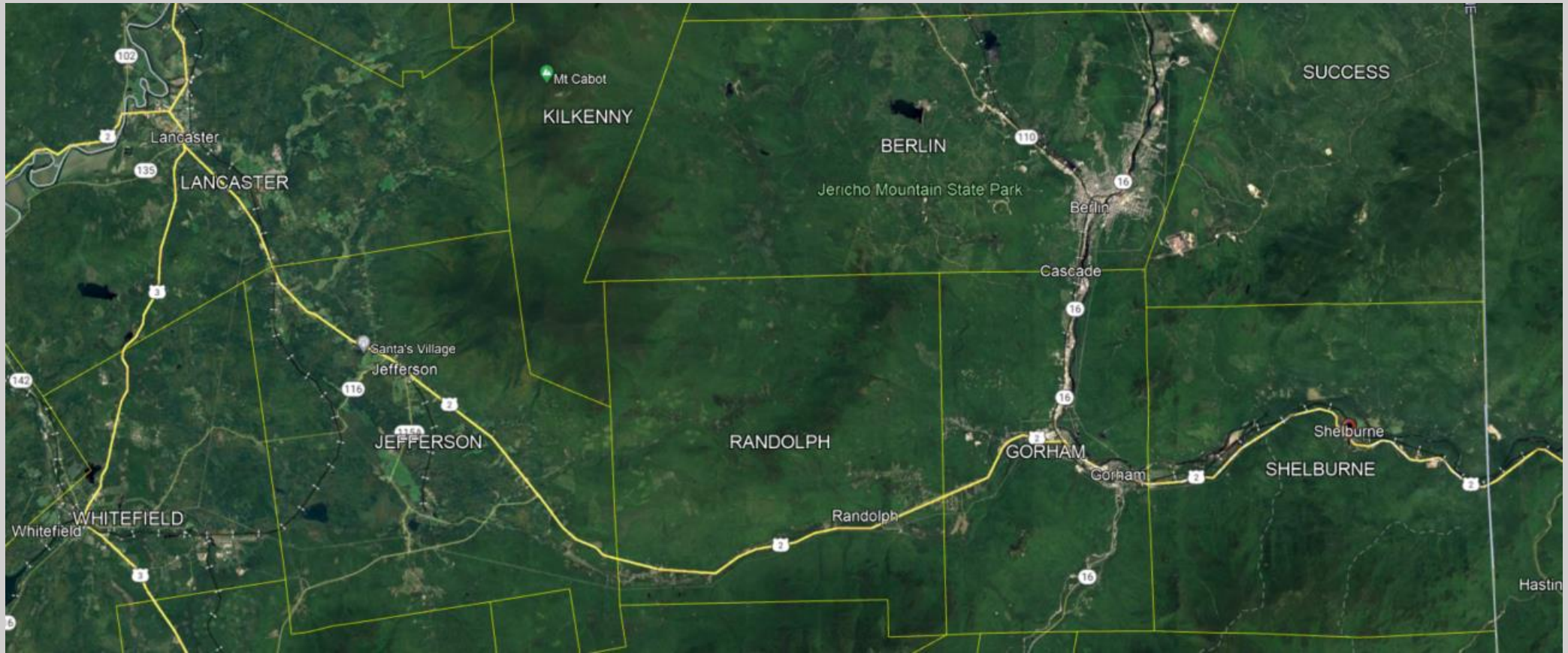
Lancaster- Shelburne 40844

Shelburne Public
Informational Meeting:

Rumble Strip Installation
along US Route 2



Project Location



Agenda

Project Purpose & Crash Information

Safety Countermeasure: Rumble Strips/Rumble Stripes

Specific Project Locations

Next Steps

Public Input

Project Purpose:

Address Lane Departures

Centerline Cross-over

Potential Head-On Crash

Potential Roadway Departure

Potential Overturning of Vehicle

Potential Impact with Fixed Object

Edge Line Cross-over

Potential Roadway Departure

Potential Overturning of Vehicle

Potential Impact with Fixed Object

US Route 2 Crash Data

July 2017- December 2022

Types of Crashes*

Towns	Run-off-the-Road	Other Crashes	Grand Total	Percent Run-off-the-Road Crashes
GORHAM	16	445	461	3%
JEFFERSON	21	192	215	10%
LANCASTER	27	400	428	6%
RANDOLPH	35	49	85	41%
SHELBURNE	15	54	70	21%
TOTAL	114	1140	1259	9%

Crashes Resulting in Injuries*

Towns	Run-off-the-Road (Injury Crashes Only)	All Other Crashes Types (Injury Crashes Only)	Total Injury Crashes	Percent of Run-off-the-Road Crashes (Injury Crashes Only)
GORHAM	3	51	54	6%
JEFFERSON	4	29	33	12%
LANCASTER	4	40	44	9%
RANDOLPH	11	12	23	48%
SHELBURNE	2	12	14	14%
TOTAL	24	144	168	14%

Lane Departure Statistics

2023 Fatality Statistics	Nationwide	New Hampshire
# of Fatalities Annually in U.S.	44,000	130
% Fatal Crashes Due to Lane Departures	51%	39%
# Fatal Crashes Due to Lane Departures	22,440	51

Fatal Crash Locations are **Random**.

Fatal Crash Types are **Predictable**.

What are Rumble Strips?



Why Rumble Strips?

Proven to Reduce Fatal and Injury Crashes

44%-64% Reduction in Head-On Crashes

13%-51% Reduction in Single-Vehicle Roadway Departure

Low-Cost Safety Countermeasure

Short Construction Exposure

<https://www.cmfclearinghouse.org/index.php>

<https://highways.dot.gov/safety/proven-safety-countermeasures/longitudinal-rumble-strips-and-stripes-two-lane-roads>

Rumble Strip Requirements



General

40 MPH Posted Speed Limit Minimum
Pavement in Good Condition

Centerline

Minimum 28' Roadway Width

Shoulder

Minimum 6' Shoulder Width

Rectangular Corrugated Rumble Strips

Rumble Strip Patterns

Rectangular Corrugated Rumble Strip

A rumble strip pattern which consists of milled rectangular shaped corrugations or grooves of a certain shape, dimension and frequency in the pavement.

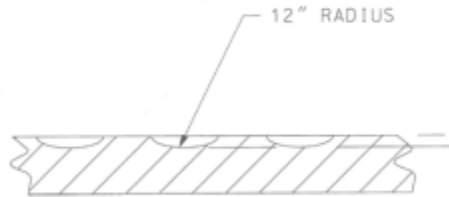
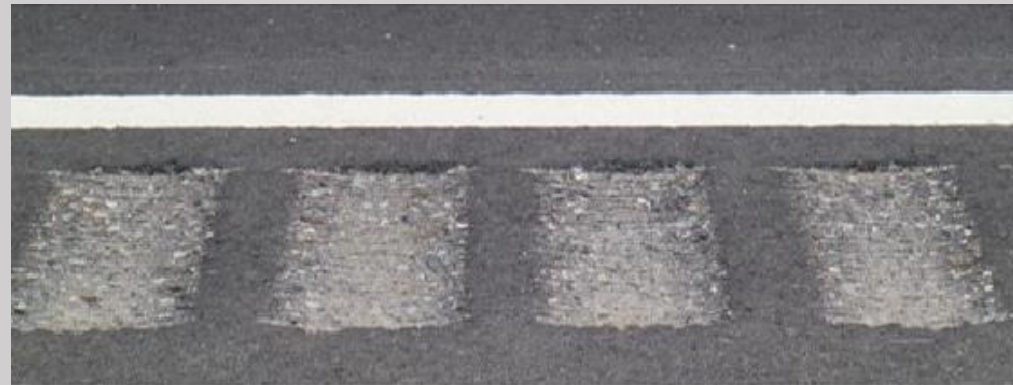
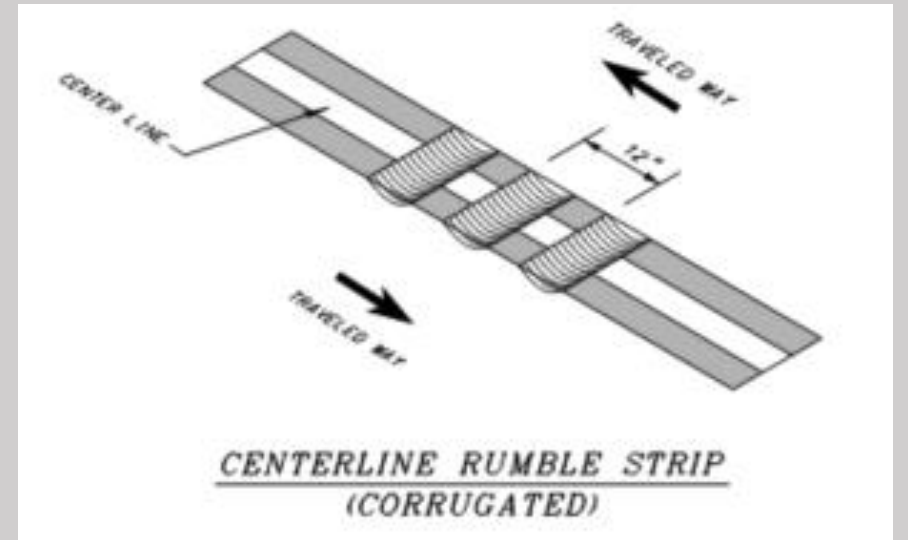


Figure 1. Rectangular Corrugated Rumble Strip – Longitudinal Section



Sinusoidal “Mumble” Rumble Strips

Sinusoidal Rumble Strip

A rumble strip pattern which consists of a continuously-milled sine wave developed to produce less exterior noise than the rectangular corrugated rumble strip.

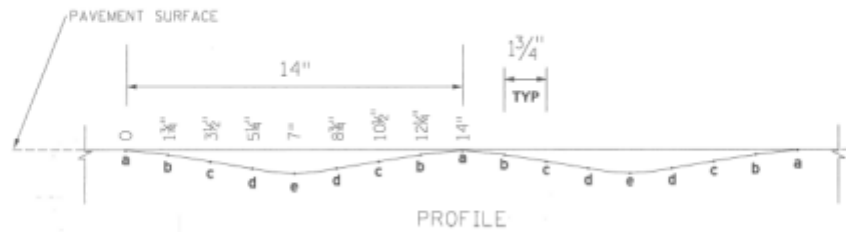
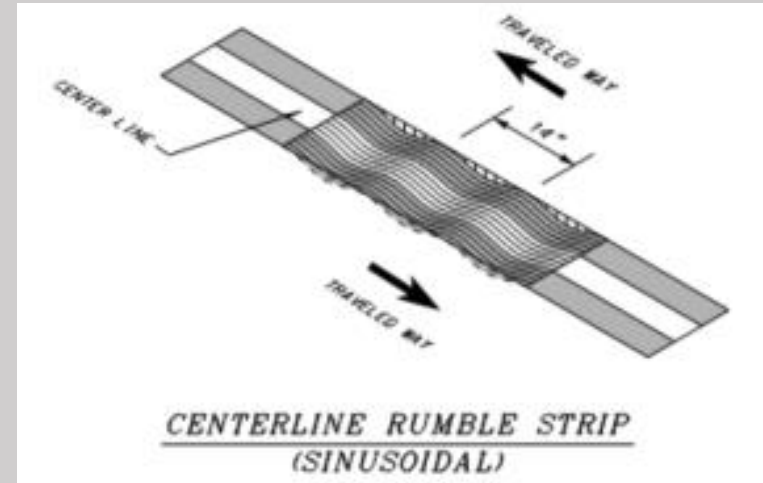
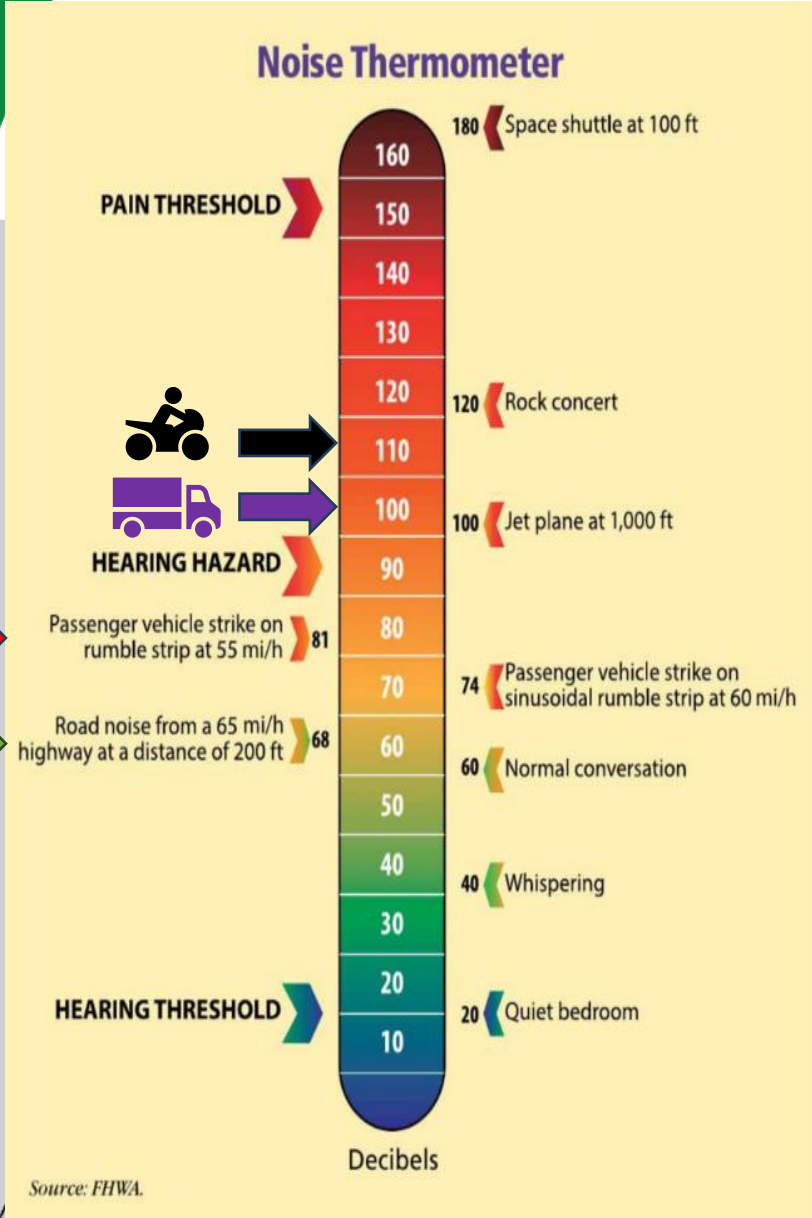


Figure 2. Sinusoidal Rumble Strip - Longitudinal Section



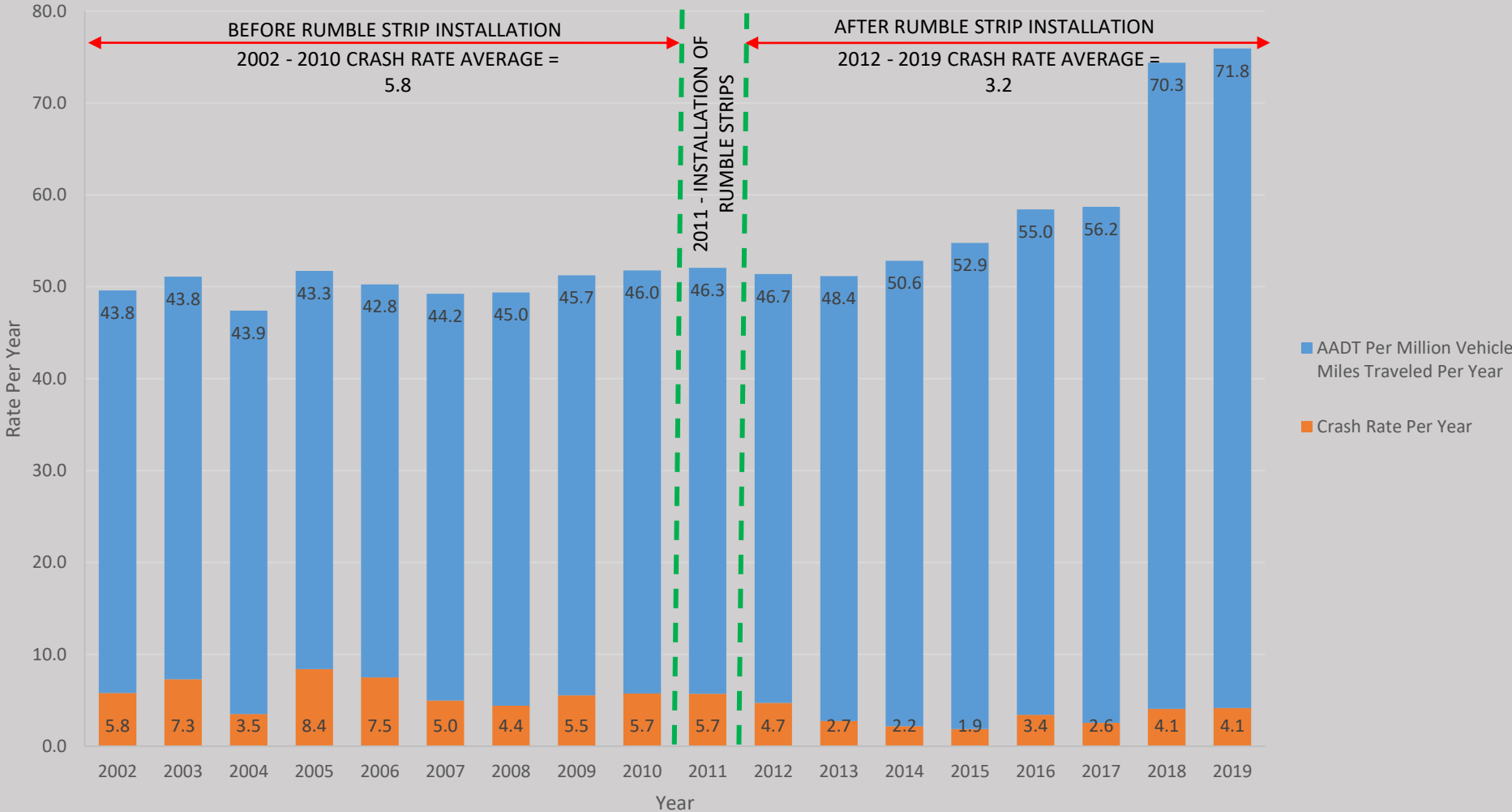
Decibel Level Comparison



- A change of 1-3 dBA is barely noticeable
- A change of 5 dBA is readily noticeable
- A change of 10 dBA is essentially doubling/halving of perceived sound
- Jake Brake: Up to 105 dBA
- Motorcycle: Up to 116 dBA

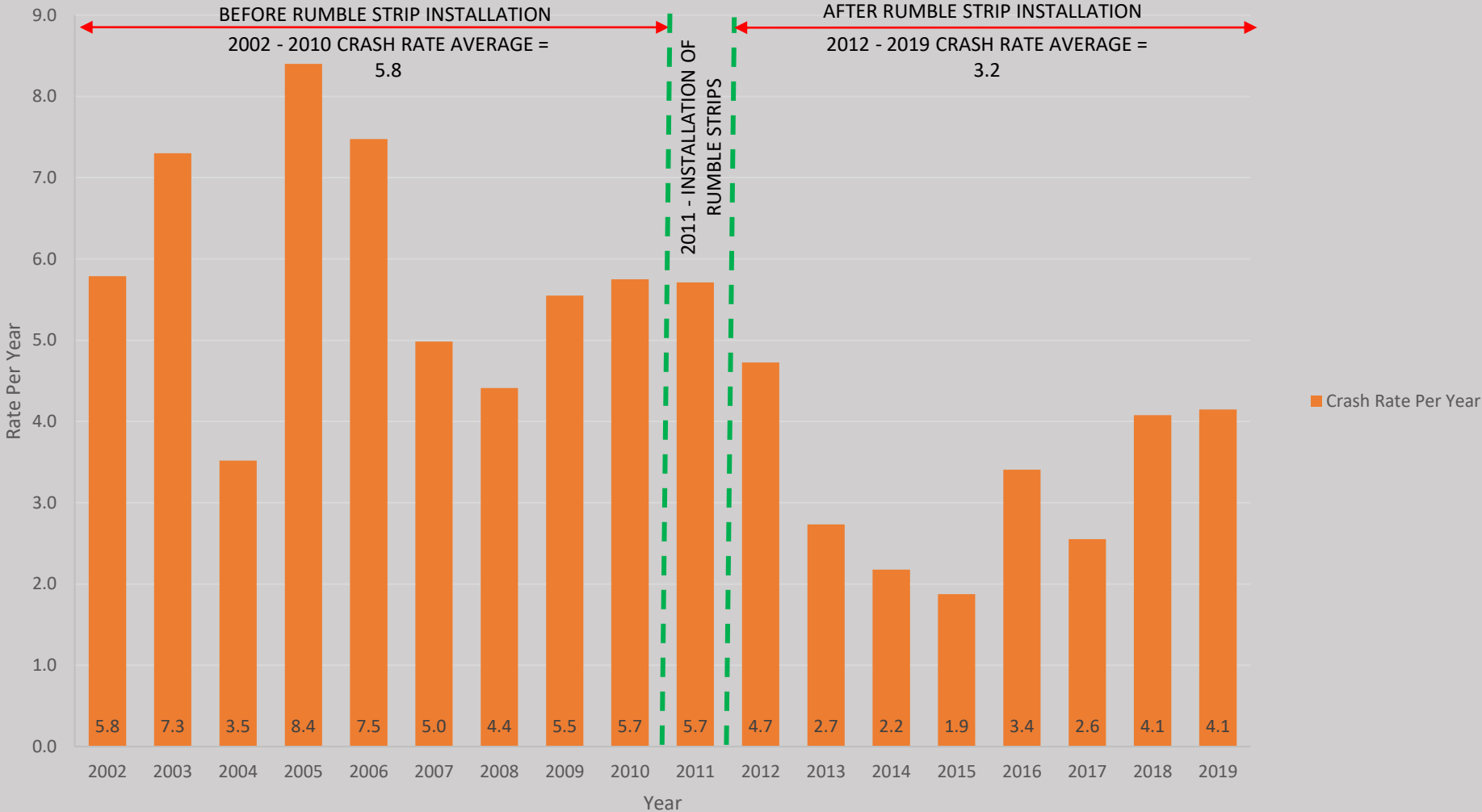
Effectiveness in NH

CRASH RATE AND AADT BEFORE AND AFTER RUMBLE STRIP INSTALLATION ON AN 11-MILE SEGMENT OF NH 16 IN WAKEFIELD, NH

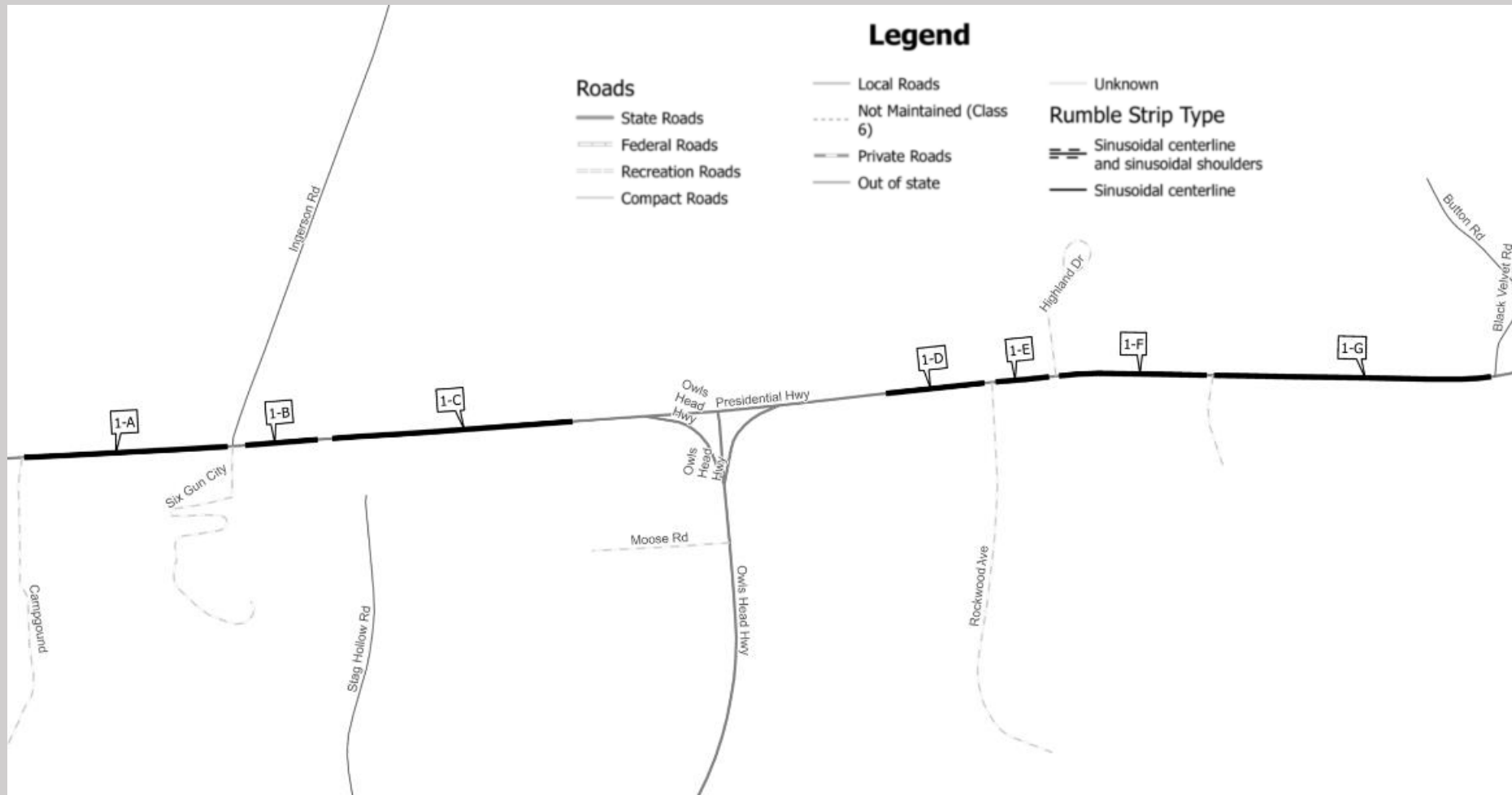


Effectiveness in NH

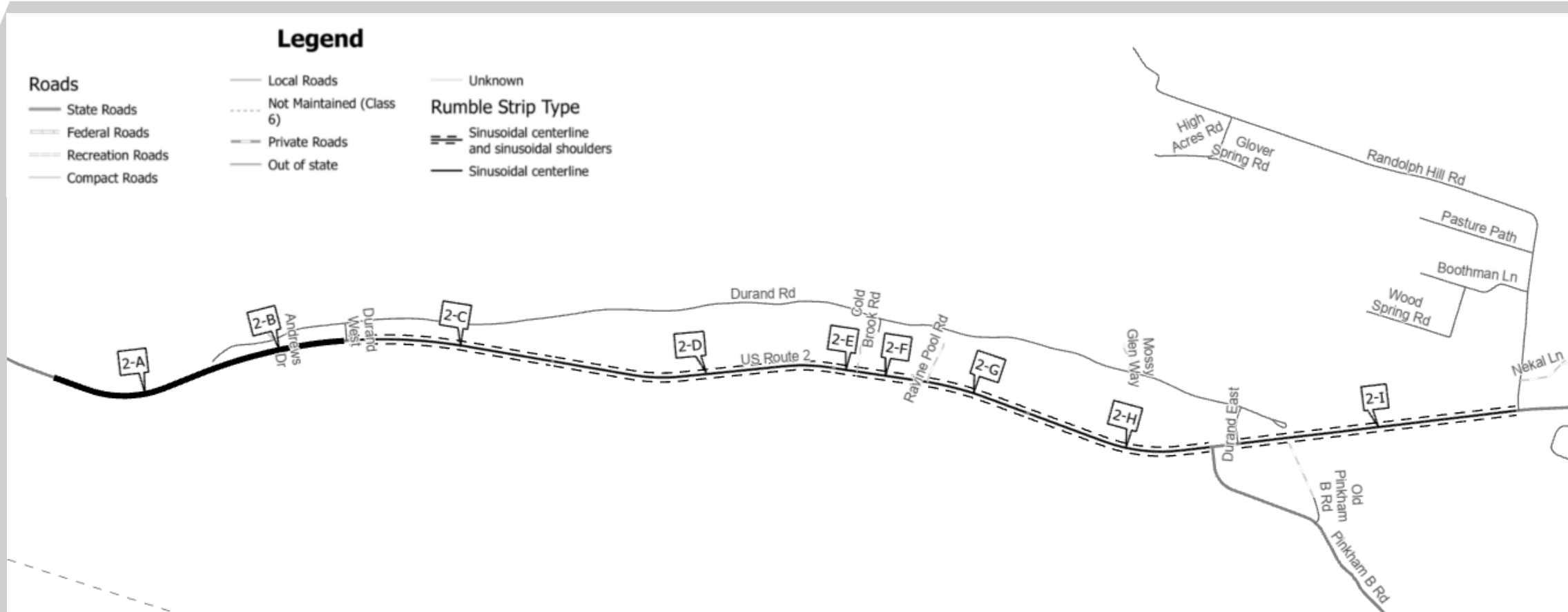
CRASH RATE BEFORE AND AFTER RUMBLE STRIP INSTALLATION ON AN 11-MILE SEGMENT OF NH 16 IN WAKEFIELD, NH



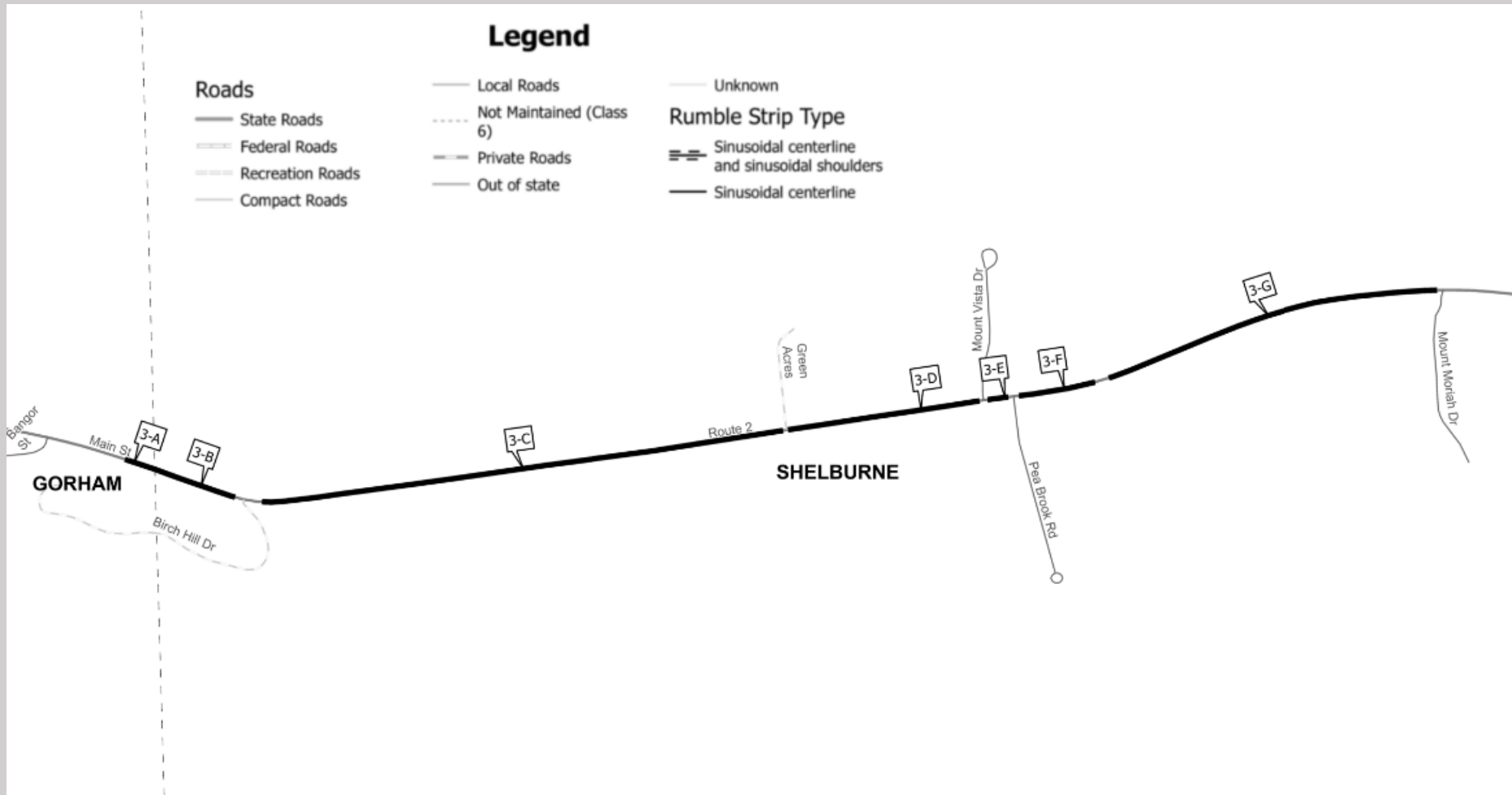
Jefferson Rumble Strip Installation Locations



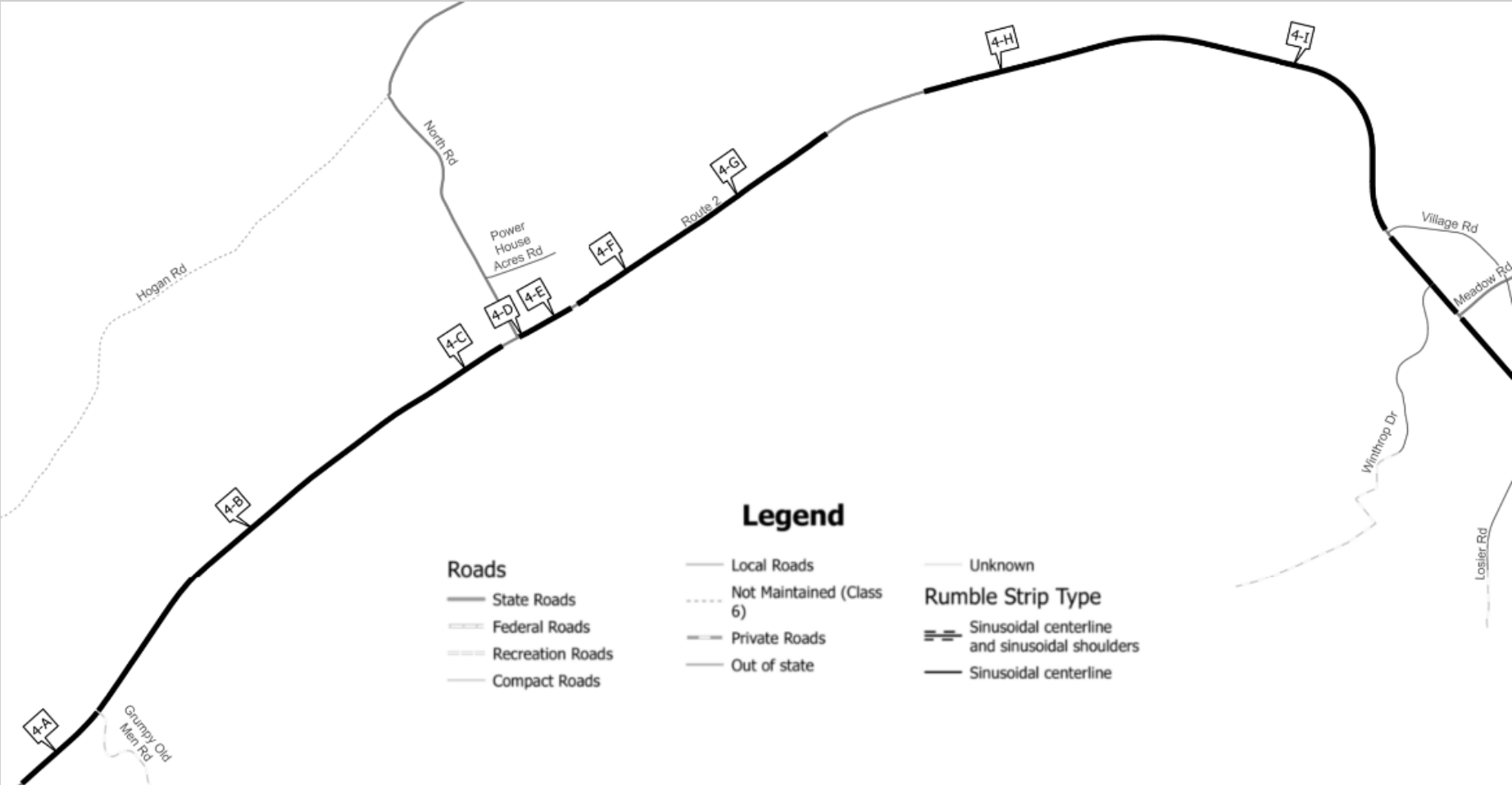
Randolph Rumble Strip Installation Locations



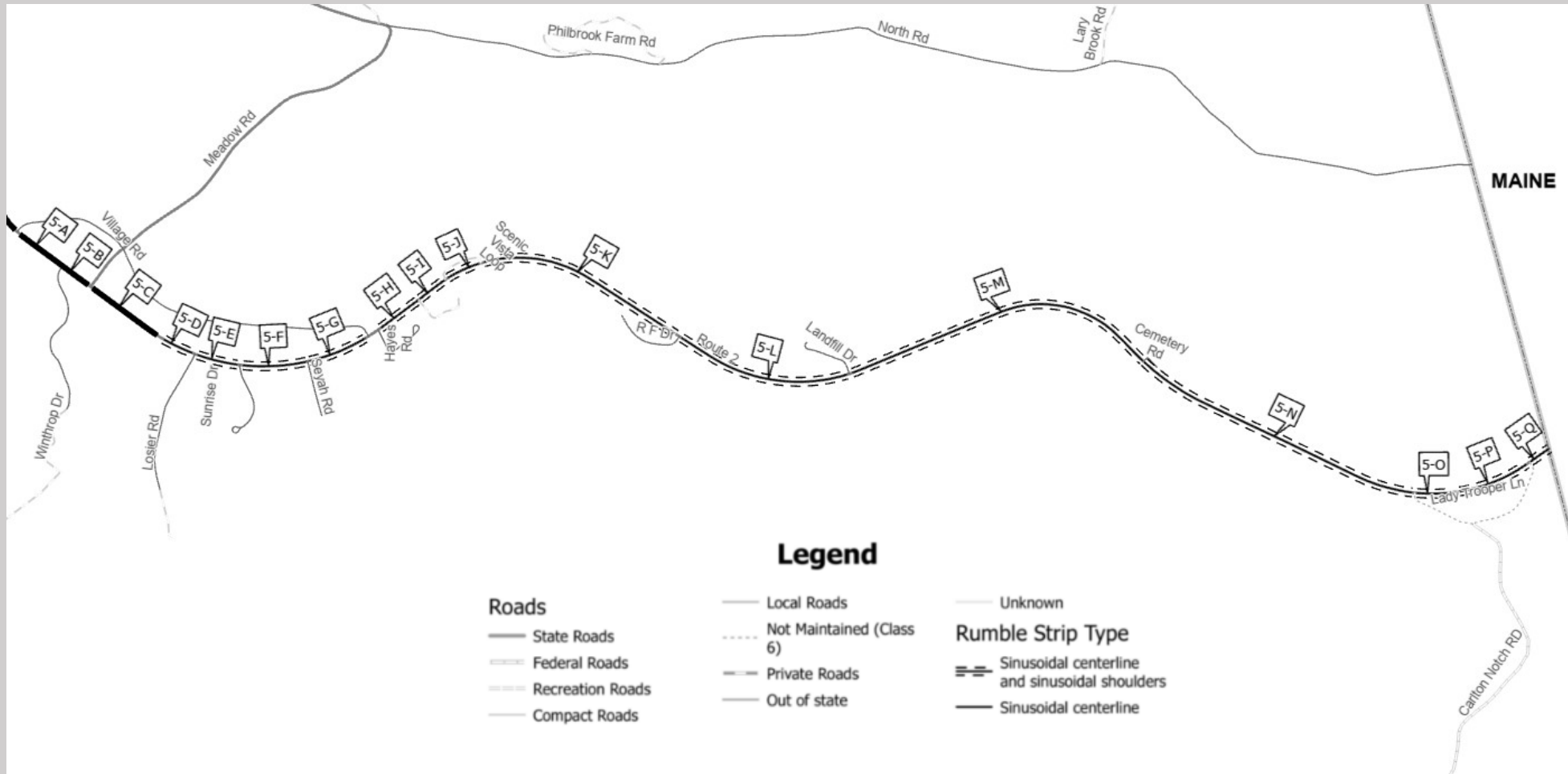
Gorham & Western Shelburne Proposed Rumble Strip Locations



Central Shelburne Proposed Rumble Strip Locations



Eastern Shelburne Proposed Rumble Strip Locations



Next Steps

- Project Advertised: March 12, 2024
 - Still in bidding period; project can still be amended easily
- Construct this Spring/Summer
 - Completion Date: September 27, 2024
- Observe lane departure crash rates post-implementation

Contact Information & Project Website

Project Manager

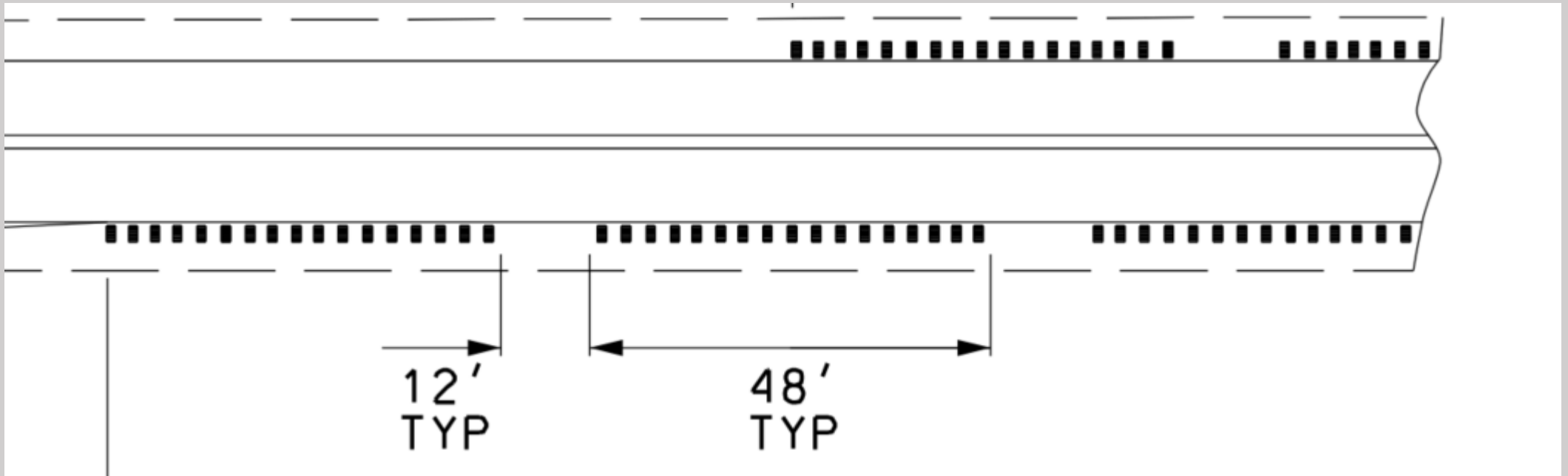
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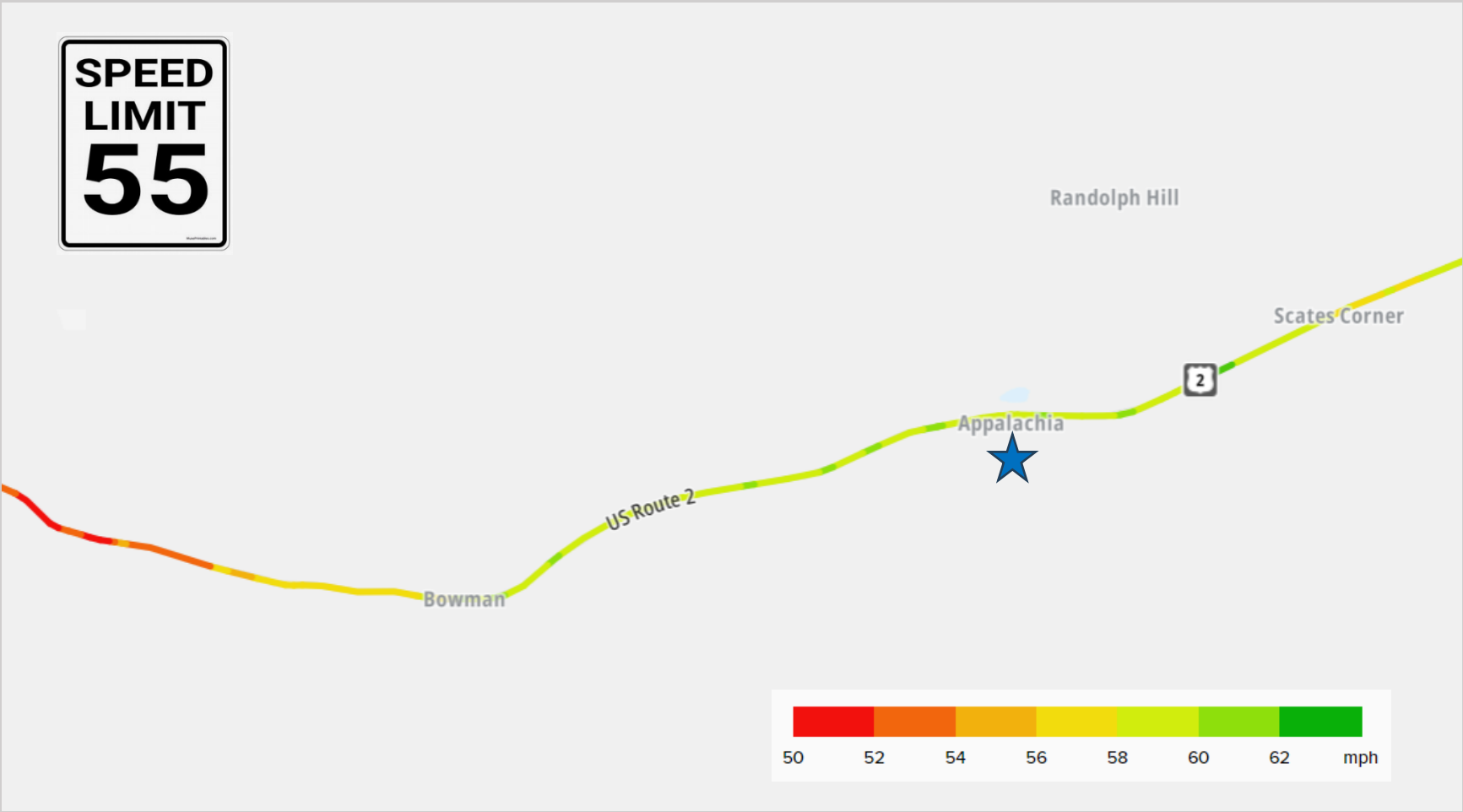
Bicycle Accommodations



Shelburne Speeds Along US Route 2



Randolph Speeds Along US Route 2

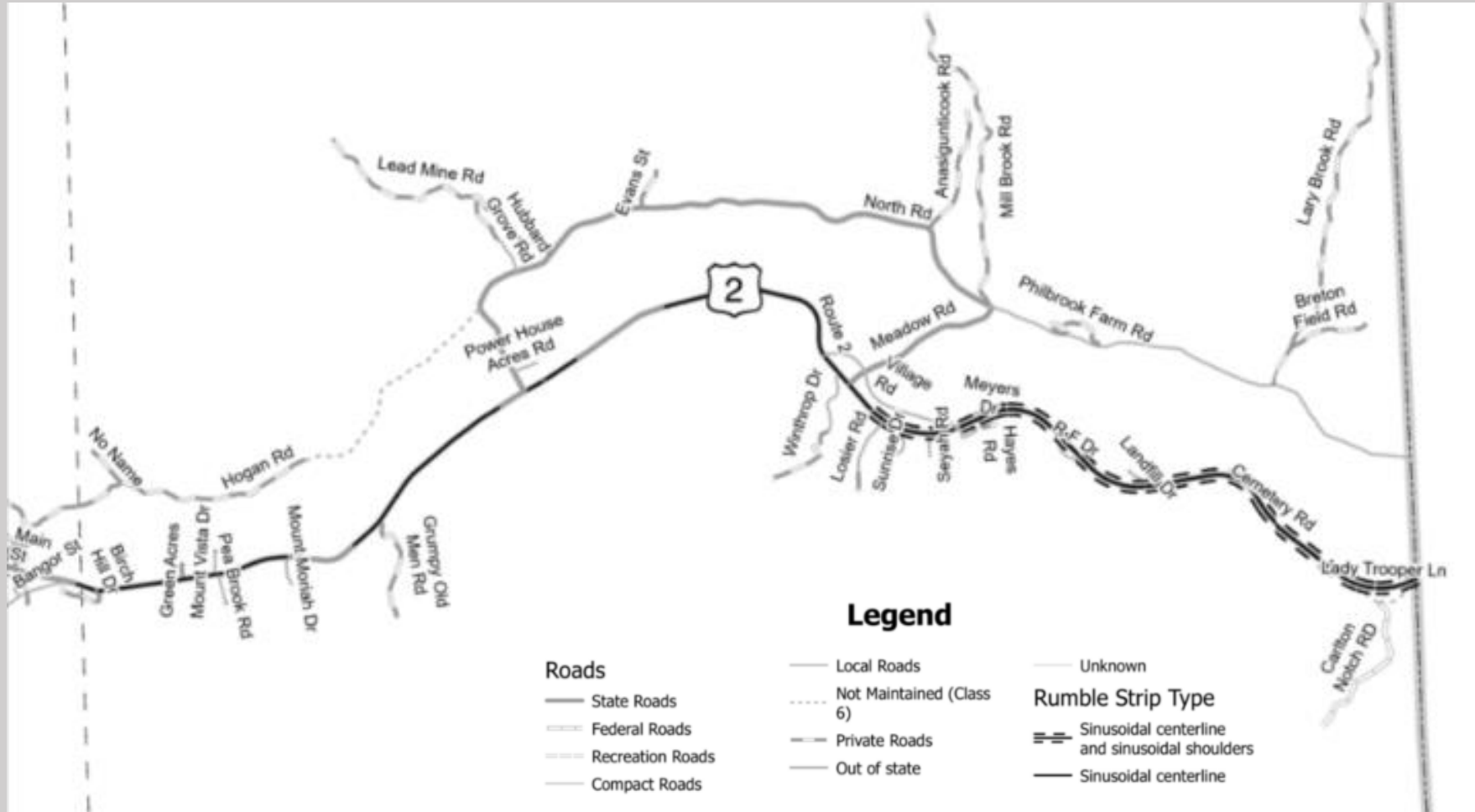


Crash Costs by Severity

Severity	Comprehensive Cost by Severity	Crashes
Fatal	\$15,130,940	526
Suspected Serious Injury	\$815,777	2,055
Suspected Minor Injury	\$251,167	15,959
Possible Injury	\$138,585	6,428
Property Damage Only	\$8,623	115,567

NH Crash Data from 2017 - 2021

Shelburne/Gorham Rumble Strip Installation Locations



Rumble Strip Installation History

- NHDOT stopped NEW installation of rumble strips in 2016
 - Primarily due to noise complaints with conventional rectangular rumbles
- Re-Installation of rumble strips have occurred on projects that already had rumble strips
 - Resurfacing projects
- Removal of rumble strips
 - Installed incorrectly (Not per NHDOT Rumble Strip Guidelines)
- New NHDOT policy for rumble strip installation
 - All installations are marked by trained personnel before installation and reviewed within a short period of time after installation.
- NH 106 and US 2 will be first corridors to have new rumble strip installations since 2016