



**Discussion of Milling Shoulder
Rumble “Stripes” vs Rumble Strips
on Interstate Facilities**

Front Office Meeting

March 25, 2013

NH Route 111 just west of Sullivan Road

Rumble Strips

- **Rumble Strips** are one of the nine FHWA Proven Safety Countermeasures to address crashes that occur in the focus areas of intersections, pedestrians, and roadway departure



Roundabouts



Corridor Access Management



Backplates with Retroreflective Borders



Longitudinal Rumble Strips and Stripes on Two-Lane Roads



Enhanced Delineation and Friction for Horizontal Curves



Safety Edges



Medians and Pedestrian Crossing Islands in Urban and Suburban Areas



Pedestrian Hybrid Beacon



Road Diet

Why install rumble strips/stripes?

Rumble Strips/Stripes are an effective, low cost, countermeasure for preventing roadway departure crashes. The noise and vibration produced by rumble strips alert drivers when they leave their travel lane.

In a study of 1,800 run-off-road freeway crashes, one state found that drift-off-road crashes (due to inattentive driving) resulted in death or serious injury at a rate three to five times higher than other categories of run-off-road crashes. Where drivers don't safely recover, the warning created by rumble strips often improves driver reaction, thereby reducing crash severity.

Source: FHWA TA5040-39 Rev1

Why install rumble “stripes”?

Nationally, edge line rumble stripes or shoulder rumble strips with a narrow offset from the edge line have been shown to be most effective, because the driver is alerted sooner and it provides a slightly larger recovery area after being alerted. This is supported by research showing a statistically significant higher reduction in crashes on rural freeways for rumble strips with narrow or no offset, as opposed to those with 9 inches or more offset.

Source: FHWA TA5040-39 Rev1

Established NHDOT Guidelines

- Developed in 2008
 - In response to public comments about installation practices
 - Combined effort:
Highway Design,
Construction, Traffic,
Highway Maintenance,
Rail & Transit, FHWA,
and Environment
 - Guidelines being
reevaluated at this time
to allow a systemic
approach to roadway
selection and installation



Federal Highway Guidelines

The main cause of roadway departure crashes is driver drowsiness and inattention

- driving too fast
 - alcohol and drugs
 - cell phones
 - other distractions within the vehicle
- Driver fatigue can be induced by highway hypnosis
 - occurs when the lines and stripes on long, stretches of highway reduce the driver's concentration.
 - Rumble strips are also helpful in alerting drivers to the lane limits where conditions such as rain, fog, snow or dust reduce driver visibility.

Currently in place in NH...

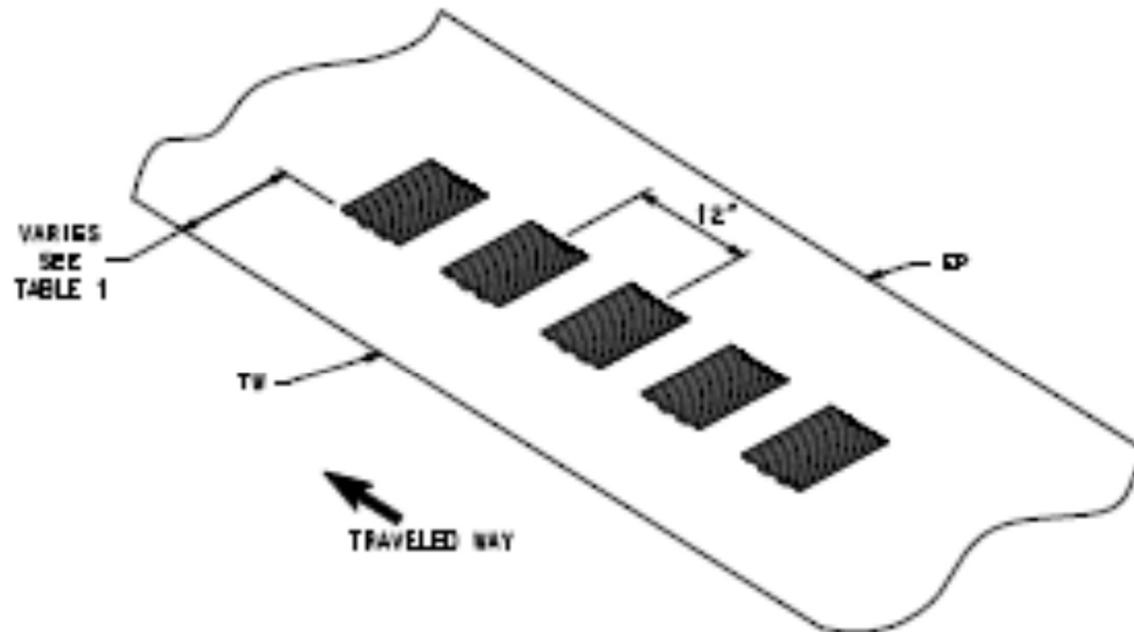
- Shoulders
 - Interstates and Turnpikes
 - US202/NH9 – Henniker & Hopkinton
 - NH 101 – Auburn to Exit 10 in Exeter
- One location of shoulder rumble “stripes” in NH
 - Franconia Notch Parkway – median shoulder
- Currently proposed as Rumble “Stripes” along NH Route 111 from Hudson to Hampstead

Franconia Notch Parkway



Design Details

- Shoulder Rumble Strips - 16 inches wide at 30" offset
- Rumble "Stripes" will begin ON the white and yellow lane lines and the remainder will be within the shoulder



TYPICAL SHOULDER INSTALLATION
RIGHT SHOULDER DETAIL

Test Area Proposed

- Franconia-Littleton 22312 (IPPP)
 - Advertised July 2012
 - Completion June 2014
 - Contractor - Pike Industries
 - Project limits: MM 111.6 to MM 125.0
 - Points to note
 - Rumble strips included in contract
 - Polyurea pavement markings in contract
 - Paint pavement markings in contract
- ❖ Proposed TYP 4R project Franconia-Littleton scheduled for 2021 and 2022 if we don't like them

Test Area Proposed Cont'd

Recommendation

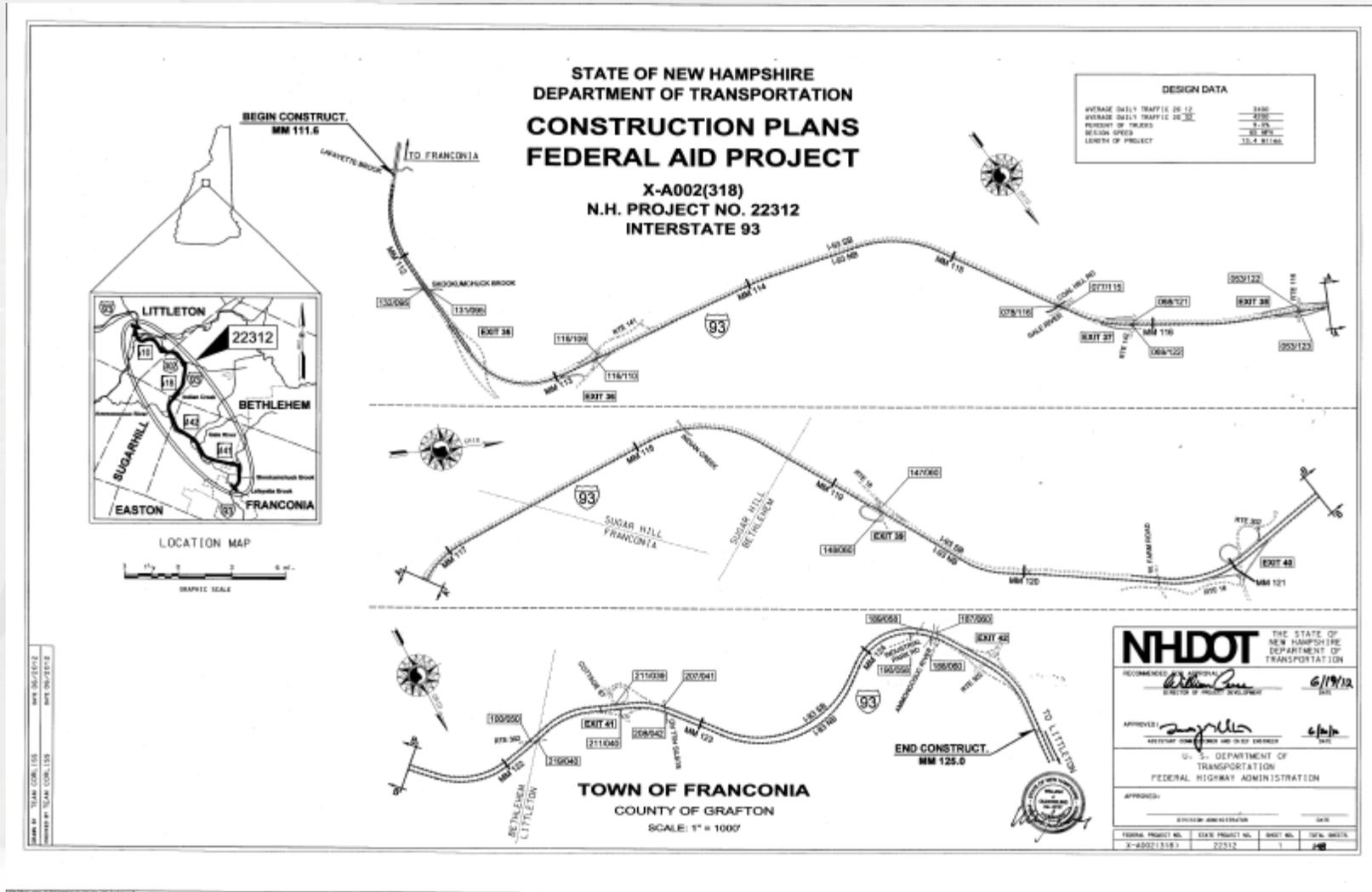
- Install one (1) mile of milled shoulder rumble stripes (high speed and travel) with grooved retro-reflective polyurea pavement markings;
- Install one (1) mile (adjacent to the first) of milled rumble stripes (high speed and travel) with non-grooved retro-reflective polyurea pavement marking material;
- Install one (1) mile (adjacent to the second) of milled shoulder rumble stripes (high speed and travel) with grooved retro-reflective paint pavement markings;
- Install one (1) mile (adjacent to the third) of milled rumble stripes (high speed and travel) with standard non-grooved retro-reflective paint pavement marking.

Research Project Proposal

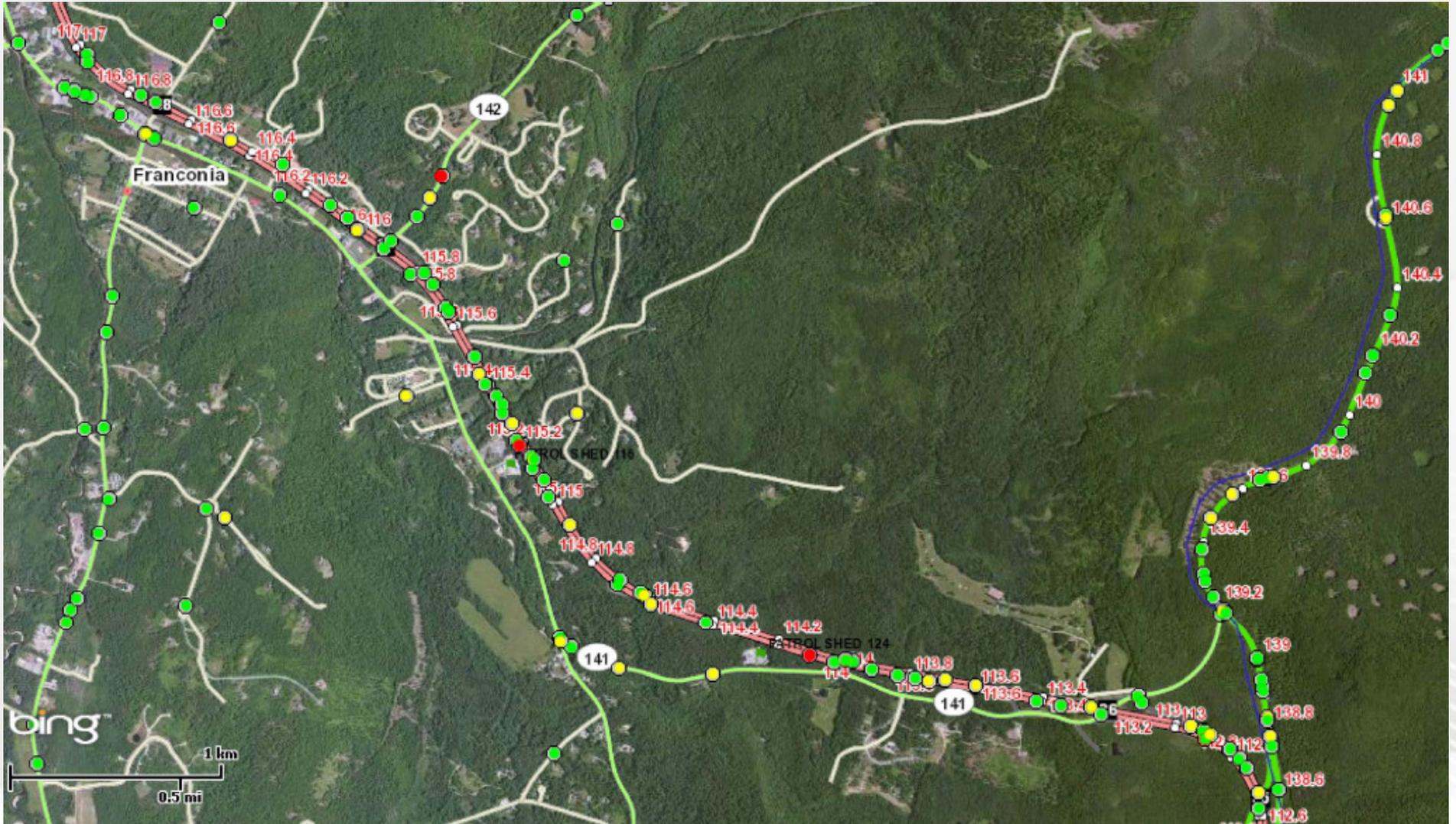
To be presented to Research Advisory Committee on April 10, 2013.

- The current NHDOT Standard for installation of milled shoulder rumble strips is to install them thirty inches (30”) from the white or yellow edge line on interstates, turnpikes, or divided highways and twelve inches (12”) from the white edge line on two-lane roadways. It is currently proposed that the milled shoulder rumble strip become a rumble “stripe” meaning the white or yellow edge line is placed at the travel lane edge of the milled rumble strip, thus better delineating the travel lane both in a physical and visible sense. The Department would like to determine the best pavement marking method for the rumble “stripes”.

Franconia-Littleton 22312



Franconia Map



Benefits to Rumble “Stripes”



- Improved low light and nighttime visibility
- Increased reflectivity under wet road conditions
- Additional time for errant drivers to recover
- Increased longevity of the pavement markings
- Inclement weather navigational aid



Questions?