

March 30, 2021
New Jersey Department of Transportation
Division of Local Aid and Economic Development



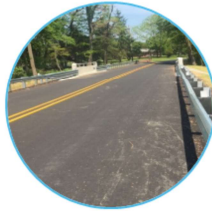
Focus on Reducing Rural Roadway Departures
IMPLEMENTATION STRATEGIES

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LOCAL AID GRANT PROGRAMS

Municipal Aid and County Aid
funds provide opportunities to
implement safety improvements



Municipal Aid
\$151.25 Million



County Aid
\$16.25



Local Safety Program/High Risk Rural Road
\$22 Million

SAFETY IMPROVEMENTS

The Division of Local Aid strongly
supports the use of local aid
grants for safety improvements



County Aid Allowable Improvements

Bikeway	Primary project purpose is for constructing new bikeways (e.g. bike lanes, bike paths, bike compatible roadways).
Bridge Preservation	Primary project purpose is for improving the condition of bridge infrastructure (e.g. new deck, rehabilitation, replacement).
Mobility	Primary project purpose is to enhance mobility and reduce congestion (e.g. adding lanes, park & ride, signal optimization)
Pedestrian Safety	Primary project purpose is to enhance pedestrian safety (e.g. new sidewalks, new crosswalks, traffic calming, pedestrian overpass).
Quality of Life	Primary project purpose is for beautification, environmental mitigation, economic development or historic preservation.
Roadway Preservation	Primary project purpose is for improving the condition of roadway infrastructure (e.g. resurfacing, reconstruction, drainage).
Roadway Safety	Primary project purpose is to enhance vehicular safety (e.g. guiderail, signing, warning devices, striping).

Municipal Aid Allowable Improvements

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Municipal Aid Applications - Most Used Categories

	2017	2018	2019	2020
Bikeways	1	2	7	5
Bridge Preservation	2	2	2	1
Mobility	1	2	3	4
Pedestrian Safety	23	29	23	17
Quality of Life	4	9	10	6
Roadway Preservation	591	607	632	620
Roadway Safety	7	5	4	7
Sum Total	629	656	681	660
Total (Including Unspecified Projects)	631	657	681	661

6

Traditionally this is how most municipalities spend their MA. Today's conversation is about how you can incorporate safety improvements in your roadway preservation projects.

MUNICIPAL AID PROGRAM

Scope of Work:

The roadway will be milled 1 1/2" - 2" thick and resurfaced with a 2" HMA surface course. HMA base repairs will be performed as required. New center line striping will be installed.

Raised pavement markers and flexible delineators with signage will be installed at the curves to alert drivers of the bends to increase safety.



We understand how having good pavement is important to every constituency, however we want to show you how you can add safety components to your regular pavement jobs in areas where the data indicates a need for safety improvement

Safety Improvements

Does the project involve any of the safety improvements listed below? If so, please check all applicable and add a narrative of proposed safety improvements in the box below.

(X) Yes () No

Flexible delineators and bi-directional retroreflective pavement markers and signage will be installed at the bends in the road to alert motorists of the bends in the road

Safety improvements should not be replacement in kind, it must enhance/improve existing.



Reference to safety improvements in the application

You don't have to wait until a crash occurs to make improvements

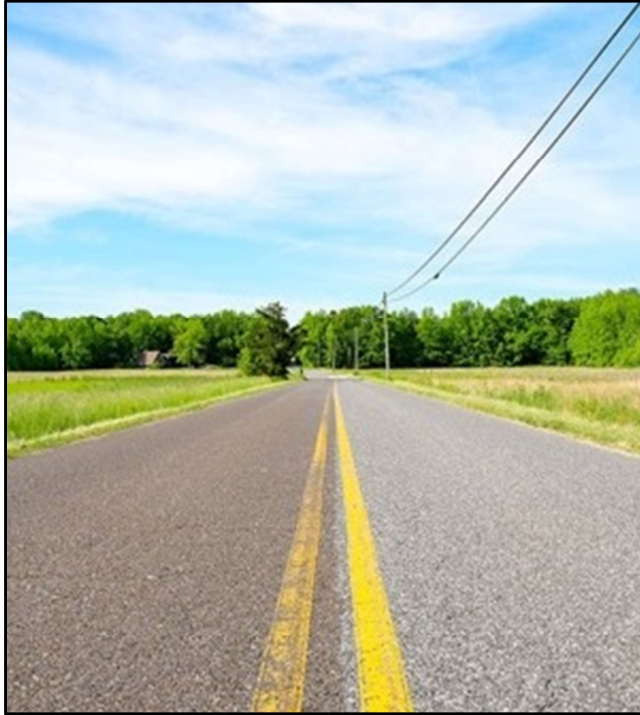


Low cost improvements can be included in a typical project

You need to know where safety improvements are most needed so that you can do this.

Leverage available funds – including County Aid & Municipal Aid

Prioritization – Knowing where safety improvements are needed can help to efficiently use limited funds



Local Safety Program

Eligible improvements include:

- upgraded traffic signals
- signage
- pedestrian indications
- crosswalks
- curb ramps
- pavement markings
- and other improvements to increase the safety of drivers, bicyclists and pedestrians.

10

Check \$ amount for this program

Streetscaping



High Risk Rural Roads

Eligible improvements include:

- skid-resistant surface treatment
- guiderail
- reflective pavement markings
- rumble strips & rumple stripes
- Safety Edge
- enhanced and advanced warning signs
- other improvements to increase the safety of drivers, bicyclists and pedestrians.

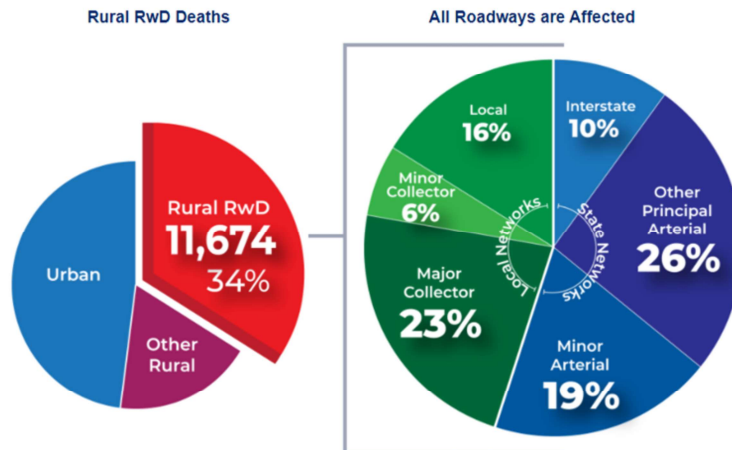
11

Projects must be on roadways functionally classified as rural major collector, rural minor collector or rural local roads with a crash rate that exceeds the statewide average for those functional classes of roadways.

Projects must have minimal or no environmental or cultural resource impacts

Funding may be used for all phases of a project, including design, right of way acquisition, construction and construction inspection.

Addressing Rwd's on ALL Roads



Source: NHTSA FARS 2014-2016

12

States must work with local agencies to reduce rural roadway departures on all roads.

The pie chart shows where these deaths occur based on functional classification. More than half of the deaths are rural but only 17% of people live in rural areas

Ownership of roads varies throughout the country, but arterials are typically under the jurisdiction of State DOTs, while collectors and roads functionally classified as local are more likely to be under the jurisdiction of others. The chart clearly indicates lane departure crashes are a major problem on all types of public roads. You can see here in green that more than 40 percent of traffic fatalities occur on locally-owned roads.

Countermeasures

Overturn Crash Strategies:

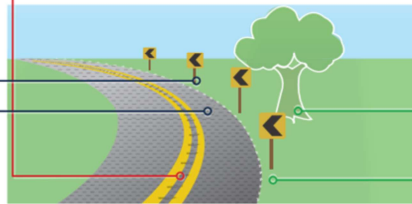
- 1 Curve delineation
- 2 Friction treatments in curves
- 3 Edge line and shoulder rumble strips
- 4 Safety Edge_{SM}
- 5 Clear zones
- 6 Traversable roadside slopes
- 7 Barriers to shield fixed objects and slopes

Opposite Direction Crash Strategies:

- 1 Center line rumble stripes
- 2 Friction treatments in curves
- 3 Increased separation between opposing lanes, particularly in curves
- 4 Median barriers

Roadside Trees and Shrub Crash Strategies:

- 1 Edge line and shoulder rumble strips
- 2 Curve delineation
- 3 Friction treatments in curves
- 4 Clear zone improvements, particularly on the outside of curves
- 5 Barriers to shield trees and shrubs



Most of these were discussed in the previous sessions. This graphic illustrates countermeasures applicable to the 3 main emphasis areas nicely. The emphasis areas are Overturn, Opposing Direction, Tree crashes. These account for more than 70% of all roadway departure crashes.

NJDOT Pay Items

- 424005M High Friction Chip Seal
- 423003M High Friction Surface Treatment
- 402003M Open-Graded 9.5 MM Friction Course
- 403003M Ultra-Thin Friction Course
- 610015M RPM, Bi-Directional, White Lens
- 610021M RPM, Bi-Directional, Amber Lens
- 610030M Flexible Delineator, Ground Mounted
- 610033M Rumble Strip
- 609003M Beam Guide Rail

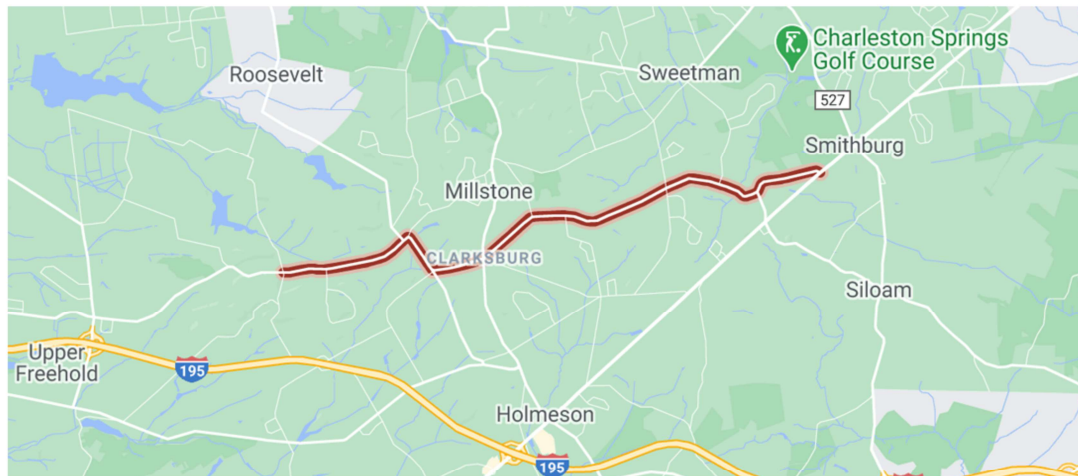


These are items that are being used throughout the state.

Most of what you need is already in the Special Provisions.

Federal Aid Projects

Stagecoach Road (CR 524), Millstone Twp, Monmouth County



This was a project under the federal High Risk Rural Roads program.

High Risk Rural Roads are defined in 23 USC 148(a)(1) as "any roadway functionally classified as a rural major or minor collector or a rural local

road with significant safety risks...”

The CR 524 (Stagecoach Road) corridor is a predominantly rural residential area and is classified as a rural major collector.

The posted speed limit of CR 524 (Stagecoach Road) is 50 mph. However, advisory speed limits signs are posted on the approaches to the horizontal curves for 30 mph (eastbound) and 25 mph (westbound).



Federal Aid Projects

Stagecoach Road, Millstone Twp

Substandard Design Elements

- Horizontal Radius
- Superelevation
- Sight Distance
- Drainage Issues

21 Crashes

- 14 Fixed Object
- 10 Injured
- 1 Fatality
- 7 Wet Surface
- 12 Night Time

16

This section of roadway has a substandard minimum horizontal radius, substandard superelevation, restricted sight distance and drainage issues which contribute to the high rate of accidents through this section.

21 total reported crashes that occurred from 2003 to 2013.

Federal Aid Projects

Stagecoach Road, Millstone Twp.

- Milled and resurfaced CR 524
- Provided superelevation on horizontal curves.
- Applied high friction surface treatment.
- Installed and replaced regulatory and warning signs
- Installed RPM's and new centerline striping.
- Constructed drainage inlets, pipes, manholes, MTD and outfall with riprap scour hole.
- Cleared brush to enhance sight distance along tight horizontal curve.

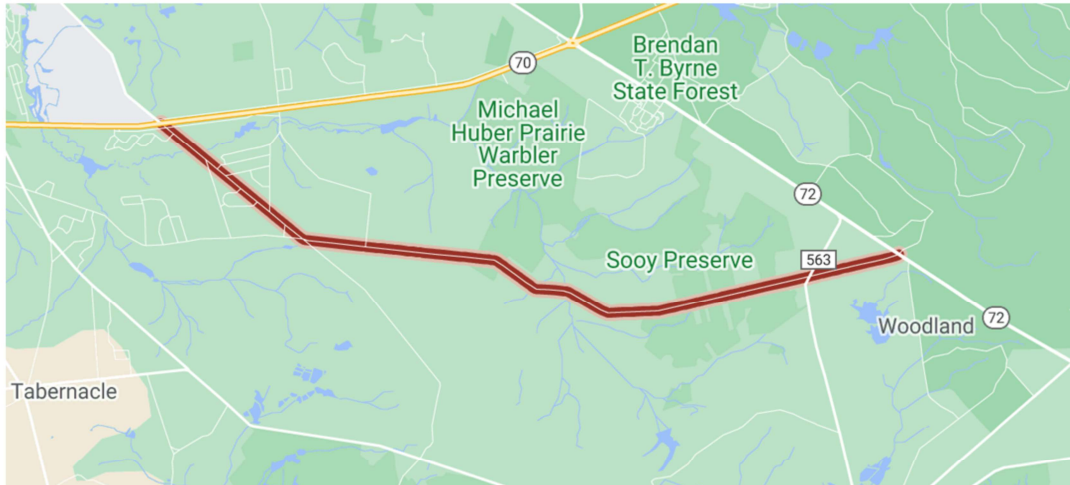


No roadway widening is proposed and the horizontal alignment will not change and a design exception will be required for the minimum horizontal radius.

These were pretty significant improvements under the High Risk Rural Roads program. Not all of your safety projects need to be this robust.

Municipal Aid Projects

Sooy Place Rd, Woodland Twp.

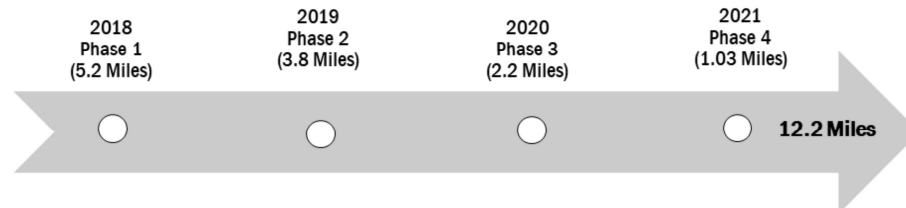


Roadway Preservation project in Woodland Twp in Burlington County

Links CR 563 and Rt 70 and connects Woodland Township with neighboring
Tabernacle.

Municipal Aid Projects

Sooy Place Rd, Woodland Twp.



- Milled and overlaid HMA surface course. Repaired HMA base as required.
- Installed new center line striping.
- Installed RPM's and flexible delineators and signage at curves to alert drivers and increase safety.
- Filled sidewalk gaps to the Chatsworth Elementary School.

19

Links CR 563 and Rt 70 and connects Woodland Township with neighboring Tabernacle.

Maybe could have done the project in less phases without safety upgrades.

Prioritize the worst segments and phase the project.

RPM's, Flexible delineators and signage at CURVES. Where are we most likely to see roadway departures?

This leads back to the idea of a **Systemic Approach**. Instead of Hot Spot (Reactive). Move to proactive and apply the safety improvements systemically as part of your roadway preservation projects.

Roadway Preservation

2018 – Phase 1

Resurfacing Sooy Place Road

From CR 563 Main Street to Twp Line (5.2 Miles)

2019 – Phase 2

CR 563 to Johnson Place Rd (End of 218 MA Project) (3.8 Miles)

2020 – Phase 3

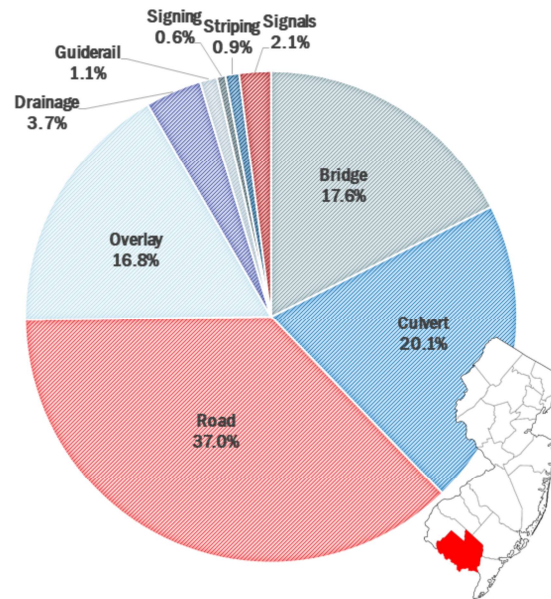
2000' from CR 563 (End of 2019 MA project) to 13,700 ft from CR 563 (2.2 Miles)

2021 – Phase 4

Various (1.03 Miles)

CountyAid

- Bridge Rehabilitation or Replacement
- Culvert Rehabilitation or Replacement
- Road Program
- Overlay Program
- Drainage Improvement
- Guiderail Program
- Roadway Signing Program
- Striping Program
- Traffic Signal & Flasher Program



More flexibility in how the Counties spend their aid dollars.
They don't submit projects to be rated and they have much bigger budgets.

Here is an example of how Cumberland County allocates their funding across their 540 centerline miles.

Dedicate about 5% of their budget to predominately safety improvements.

So they are taking a systemic approach to get the most benefit for their dollars spent.

Horizontal Curve High Friction Surface Treatment

Berkeley, Lacey, Ocean, and Plumsted Townships, Ocean County

Treated 6 curves with
High Friction Surface
Course

Included

- *Milling/Paving*
- *Striping*
- *Signage*
- *Rumble strips*
- *Raised Pavement Markers*



Chevrons, HSFT, RPMs

Long Swamp Road

Plumstead Twp, Ocean County



22

50 MPH posted speed limit on a long straight approach to a curve with a 10 MPH advisory speed.

This would be a good example of a high-risk feature to invest your safety dollars.

Speed Reduction Markings to give the driver the impression that their speed is increasing and encourage them to slow down.

Long Swamp Road

Plumstead Twp, Ocean County



23

Advanced warning signs with advisory speed plaques.

Long Swamp Road

Plumstead Twp, Ocean County



24

High Friction Surface Treatment

Arnold Avenue Point Pleasant, Ocean County



S Curve. Doesn't meet driver expectation. Difficult to provide meaningful
superlevation.
High Friction Surface Treatment

FoRRRwD GOALS



Three levels of focus.

Mission - Reduce the potential for serious injury and fatal roadway departure crashes on all public rural roads by increasing the **systemic deployment** of proven countermeasures.

To do that based on the percentage of local roads, we need LPAs to adopt a systemic approach. LPAs must have the will, be innovative, creative and strategic to get it done. Stretch your dollars as far as you can to not only preserve your roadways but to increase safety.

Aligns with the Departments involvement with “Toward Zero Deaths”, which is a national strategy to reduce motor-vehicle-related deaths on our roadways to zero.

Proactive Rather than Reactive. Opposite would be the hot spot approach to address

after a departure has occurred.

May involve treating areas where accidents haven't occurred, but are likely to occur based on risk potential.

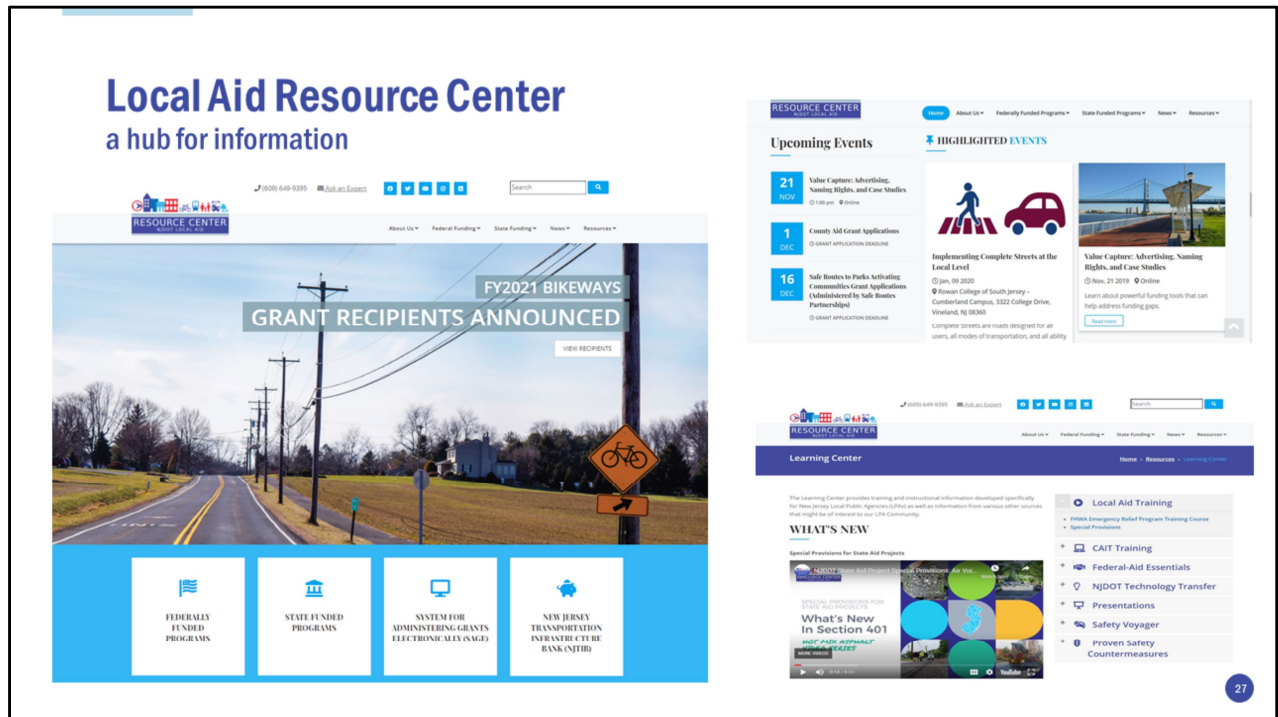
These countermeasures don't have to be expensive. You can include multiple low cost options in a single project.

Upgrade signs, new striping, rpms, delineators, clearing trees and brush....

You can request developers make improvements at intersections to include some of these safety countermeasures.

Again, we need the help of our LPA's to achieve this mission on the roads in your jurisdictions.

Part of the way we are doing that is with the LARC.



NJDOT Local Aid Resource Center is a central source of information & a way to connect you to a team of experts to guide you through the grant application process, assist with project selection, or provide guidance on other technical needs.

We have created a dedicated hotline to answer any of your questions and concerns.

We also share content on twitter, Instagram, facebook, youtube and linkedin to promote your projects and share best practices.

www.njdotlocalaidrc.com


THANK YOU!

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