Infrastructure & Automotive Safety

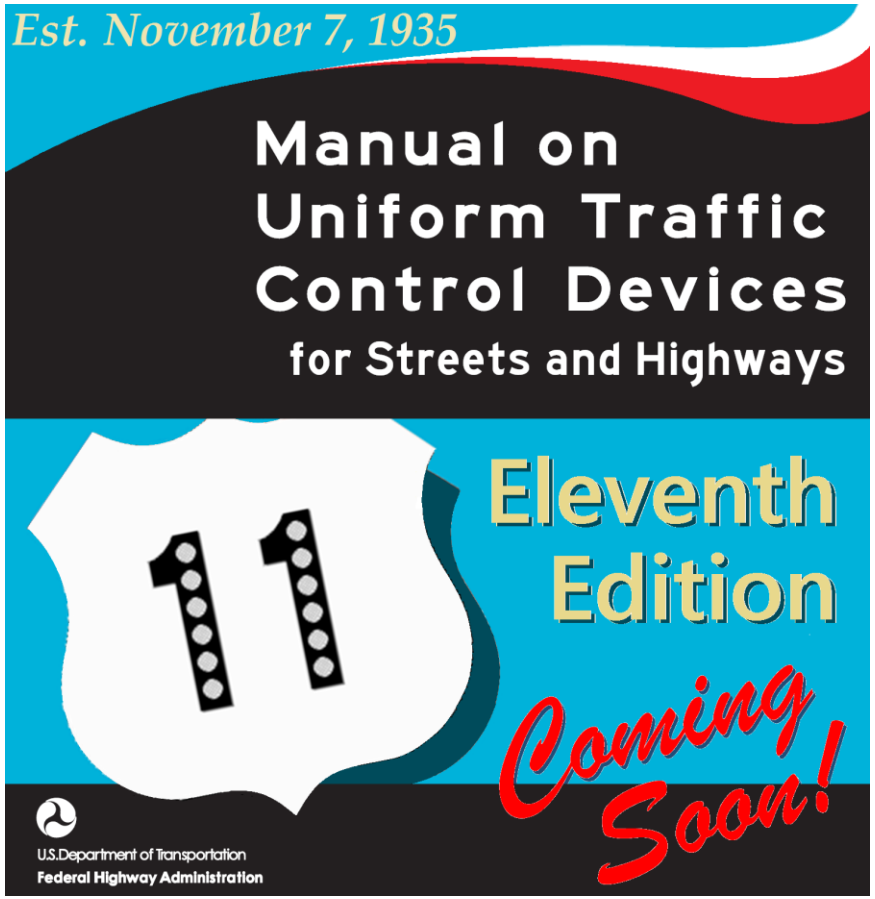
Robert N. Dingess

President, Mercer Strategic Alliance

March 18, 2022

Automotive Safety Council

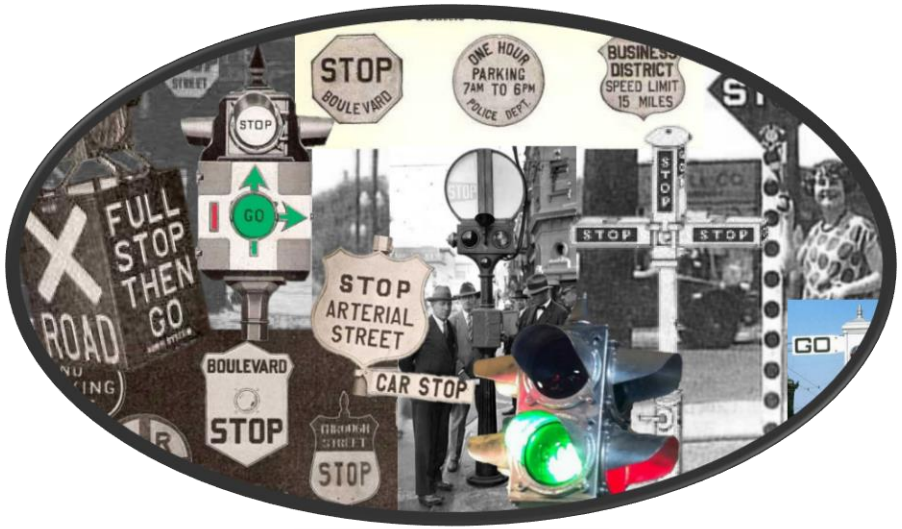
Prevent Protect Notify



- 647 changes
- 145 New Figures
- 11 New Tables
- Creation New Part 5 (Avs)
- Comment Process: May 14, 2021
- 35,000 individual docket comments
- September 2022 (Est. Final Rule)

Notice of Proposed Amendment (NPA)

December 14, 2020



MUTCD Proposed Changes

Part 3: Markings

- Line Width: 6” wide (freeways, expressways and ramps)
- Line Width: 6” wide (Roads) >**40mph**
- Wide line: 10” with 6” Line
- Dotted Lines: **Exit/Entrance** now mandatory from option
- Edge Lines: If used, “normal width” 6”
- Chevron Markings Require Engineering Study (Waive)
- Botts Dots Prohibited

NPA AV Major Provisions

Figure 3H-3. Examples of White-Colored Pavement Applications

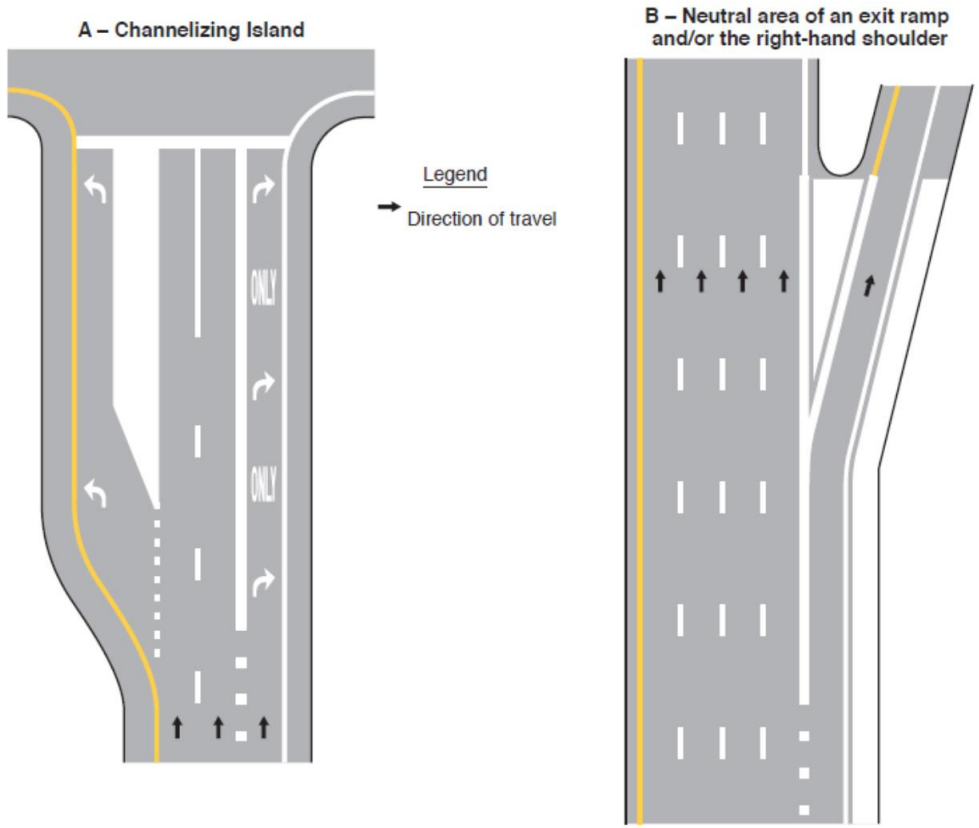


Figure 3B-8. Examples of Dotted Line and Channelizing Line Applications for Exit Ramp Markings (Sheet 1 of 2)

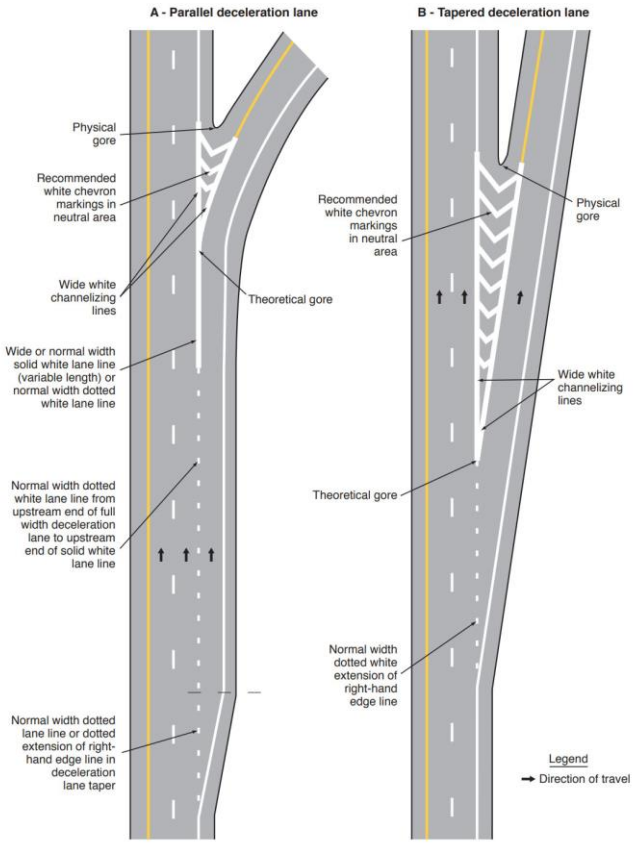
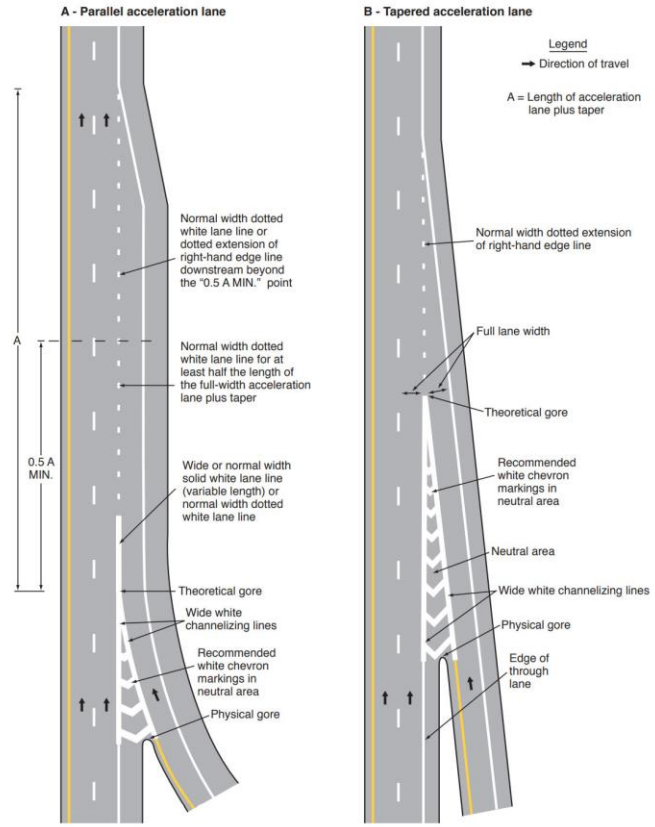


Figure 3B-9. Examples of Dotted Line and Channelizing Line Applications for Entrance Ramp Markings (Sheet 1 of 2)



Infrastructure

VSI Labs

“VSI Labs…

How to score a perfect “10” when it comes to AV Readiness:

- **6” wide lane markings**
- **<u>High contrast materials using “tiger tail”</u>**
- **8” wide material at the gore**
- **Perfect chevrons**
- **Dashed lane markings in ramps. ”**

Infrastructure Investment and Jobs Act (IIJA)

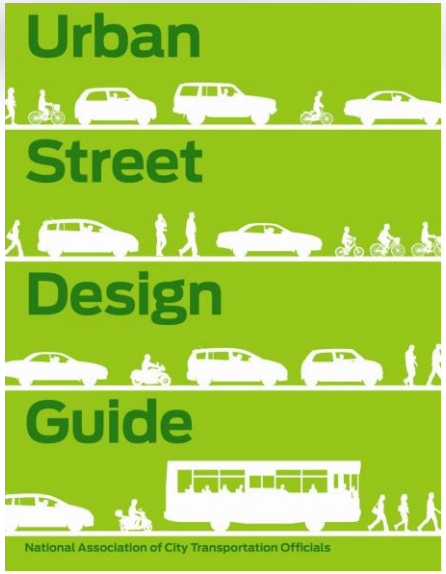
Manual on Uniform Traffic Control Devices (MUTCD)

MUTCD (Title 23, Section 109(d))

- 18 months Issue MUTCD Update (4 years)
- Change focus to “safety, inclusion, and mobility of all users”
- Local jurisdictions can bypass State design guides (FHWA Design Guide)

MUTCD Updates (Next Update) “Secretary shall…

(1) Protect VRUs
(2) Support safe testing of AV technology
(3) Variable Message Sign use
(4) Minimum Retroreflectivty Pavement Markings
(5) NCUTCD Recommendations not currently included in proposed MUTCD



Infrastructure Investment and Jobs Act (IIJA)

Vulnerable Road User (VRU)

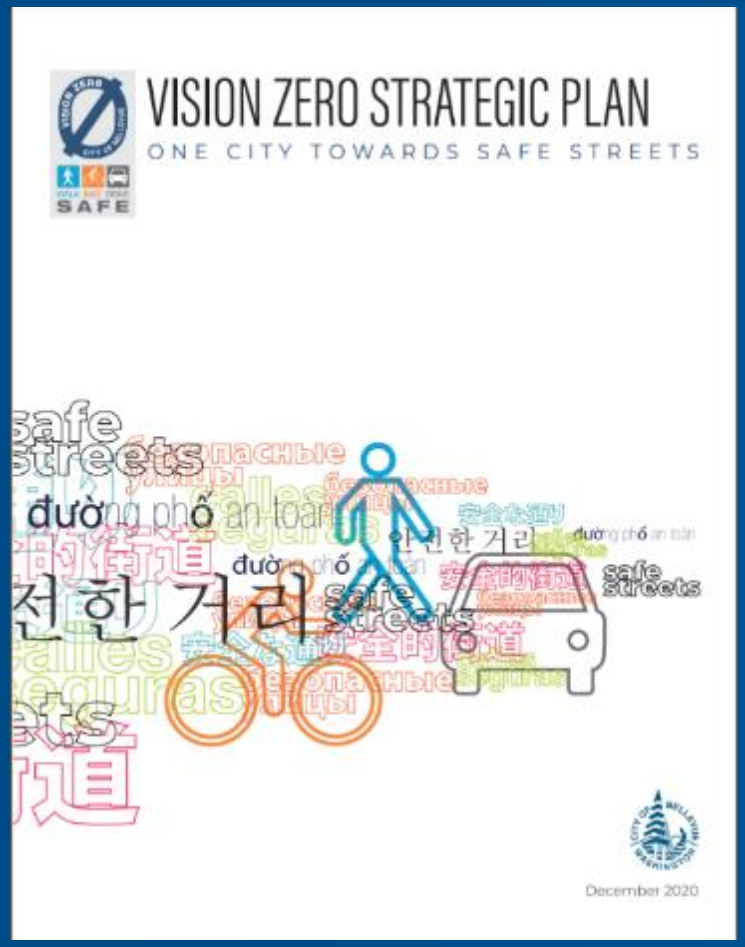
"Safe Streets for All Grant Program"

- $1 billion annually
- Local and Tribal Governments
- Comprehensive Safety Action Plan – Minimum 40%
- Data-driven
- States are excluded

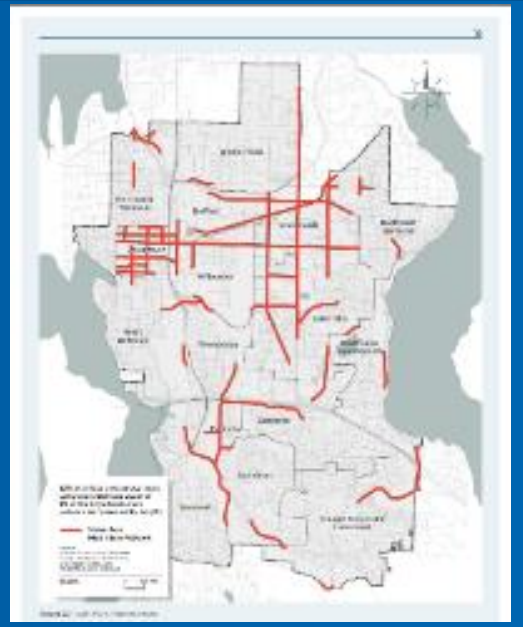
Grant Criteria:

- Proposal likely to reduce or eliminate fatalities and serious injuries
- Included public engagement
- Utilizes innovative strategies and technologies
- Low-cost, high-impact strategies to improve safety over wide geographic area
- Ensures equitable investment in underserved communities
- Evidence-based projects or strategies
- "Achieves such other conditions as the Secretary considers to be necessary."

Vision Zero Plans & Road Risk Safety Maps/Audits



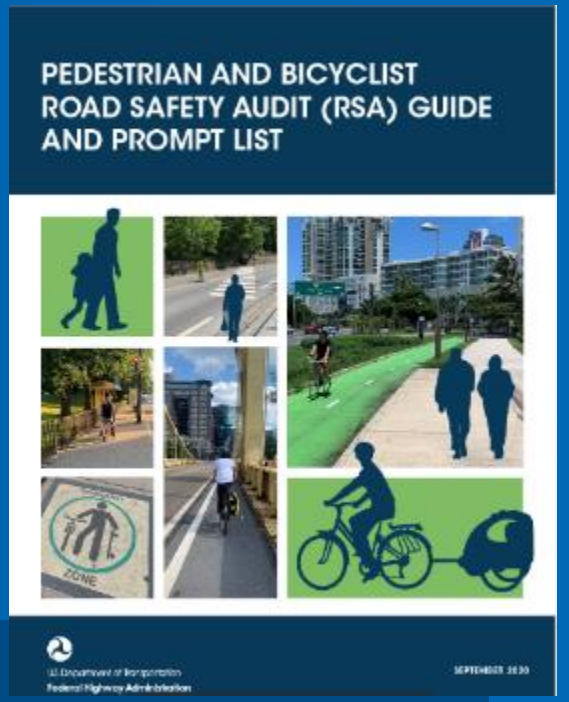
Initiatives



High Injury Network Identification

Safe Systems	Principles	Goals
DATA	The Safe Systems approach leverages traditional crash data, community input, conflict analytics, and other data sources to identify areas of potential risk, select appropriate safety countermeasures, and monitor countermeasure impacts. The goal is to proactively prevent safety problems before they arise.	Collect and analyze data to understand the factors that impact the safety of our transportation system and leverage this insight to identify improvements and evaluate outcomes.
SAFE VEHICLES	The Safe Systems approach supports innovations in vehicle systems that reduce crash impacts and alert drivers to road dangers.	Implement and influence improvements to vehicle design and technology to reduce risk of injury to people inside and outside the vehicles.

Road Safety Audits
(incl. suggested mitigation options)
(Options assessed by Cost/ROI)



Infrastructure Investment and Jobs Act (IIJA)

Highway Safety Improvement Program (HSIP)

- Funding: Increase from $2.3 to $3.5 billion annually
- 10% Flex to “non-infrastructure” safety activities (education)
- Expands Eligibility: Physical bike-Ped Infrastructure
- Vulnerable Road User (VRU) Defined: **Nonmotorist**
- NHTSA FARS VRU Code
- “Specified Safety Project” (Education; emergency response; Research; Safe Routes to School non-infrastructure)
- VRU Safety Assessment
- VRUs – 15% Fatalities, 15% Dedicated
- VRU Safety Assessment: (2 years) State-by-State; SHSP for VRUs

Infrastructure Investment and Jobs Act (IIJA)

Miscellaneous

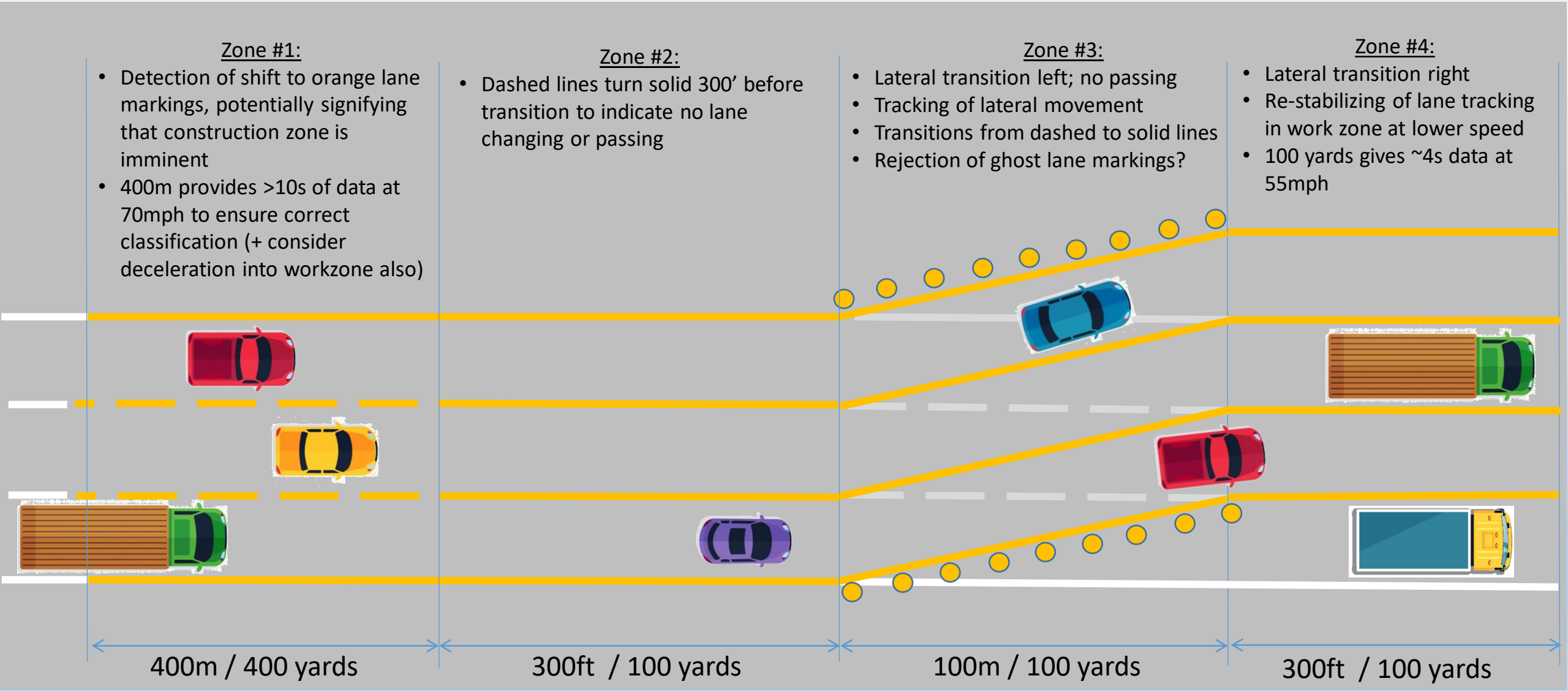
Rural Surface Transportation Grant Program ($1.6 billion over five years)

- 15% reserved for rural road lane departure safety
- Eligible States above average rural lane departure fatalities

Railway-Highway Grade Crossing ($1.2 billion over five years)

- Replace functionally Obsolete Devices
- Projects to reduce pedestrian fatalities and injuries at grade crossings

Proposal for Orange Lane Marking Trial for Machine Vision Data Collection



Crowd-sourced data impacts Roadway Information Management

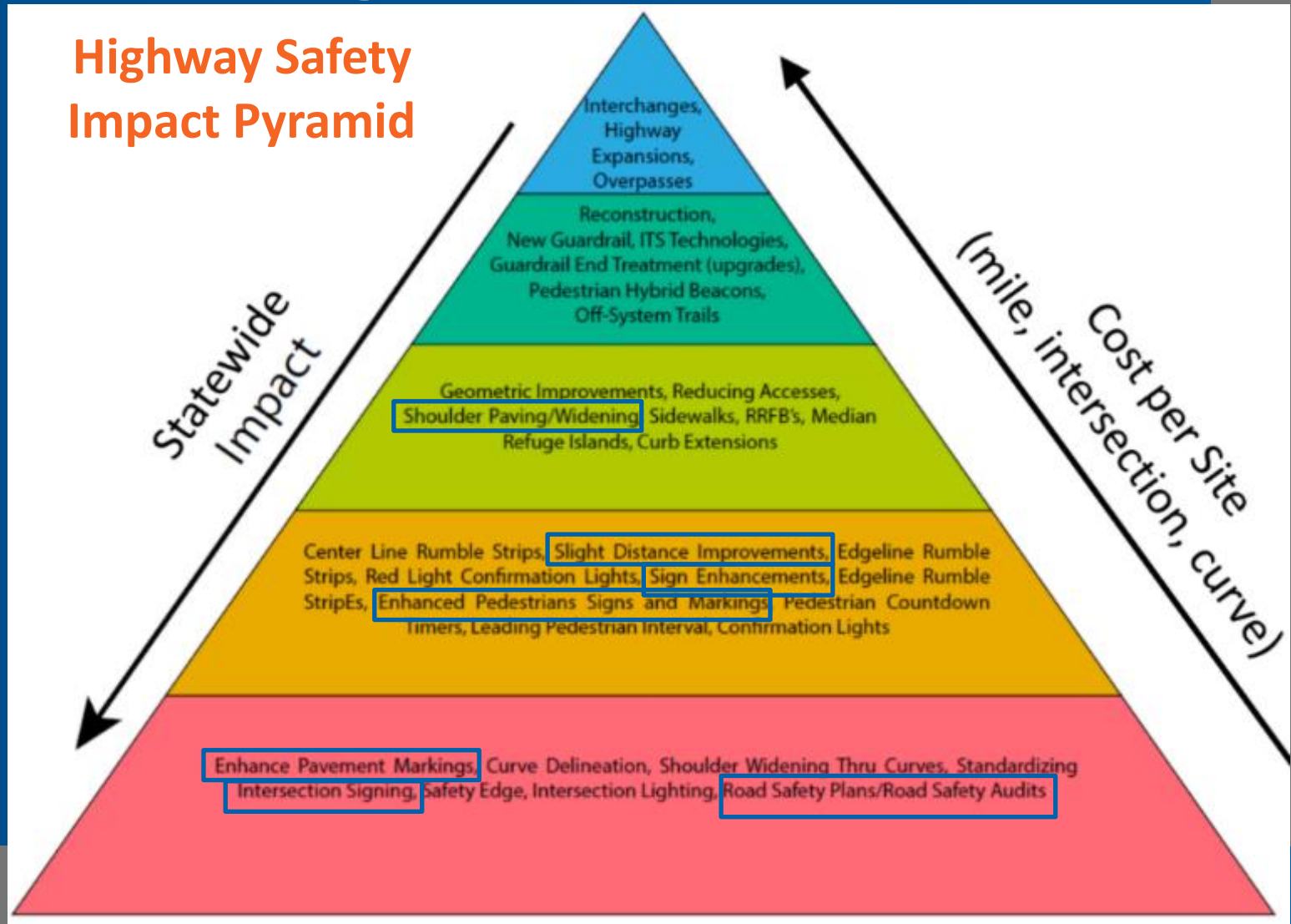
Improves **road safety** and mobility

Maximizes **investment impacts**

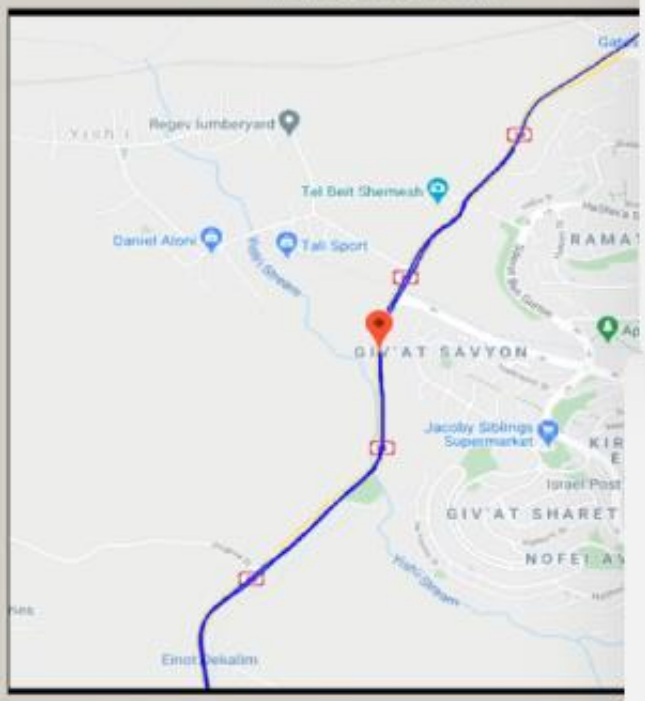
Gains **compliance assurance**

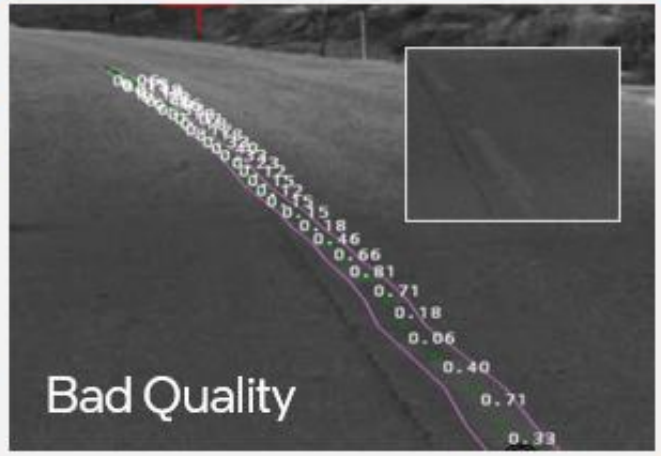
On-demand **before/after results**

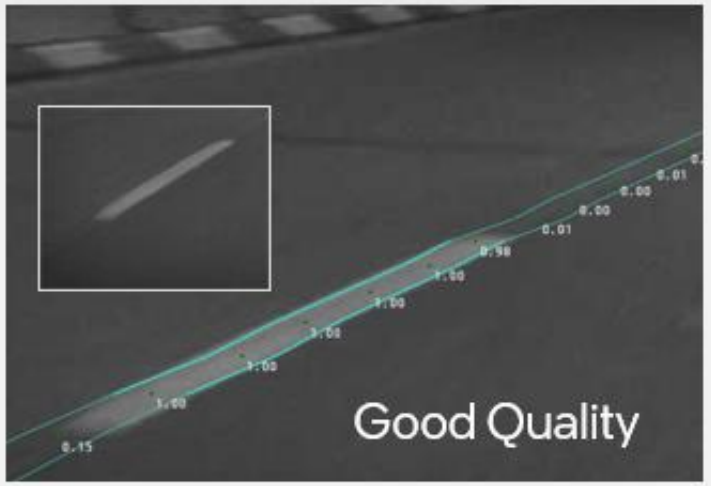
Enables **condition-based** maintenance



Road Maintenance Example: Lane Mark Quality Monitoring







Michigan DOT Orange Markings

Michele R. Mueller
Sr. Project Manager Connected and Automated Vehicles
Muellerm2@michigan.gov
Cell Phone: 248-431-1443

Eric Ferron, P.E.
Civil Engineer (Highway)
Operations Technical Service Team
MUTCD Team
Phone: 719-225-3964
eric.ferron@dot.gov

Chris Brookes
Work Zone Delivery Engineer
Brookesc@michigan.gov
Cell: 517-242-6486