

TRAFFIC SAFETY: PAST, PRESENT, AND FUTURE

Rick O. Drumm, P.E.

Federal Highway Administration

Safety Engineer

2018 Road School

March 7, 2018



Get out smart phone
Go to kahoot.it





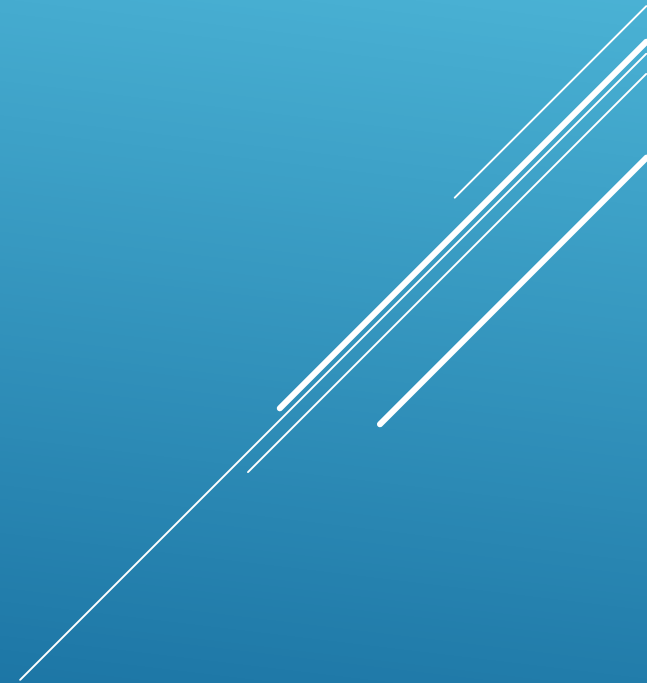
A lot to get through.....
..... or around.

- ▶ The Facts
- ▶ The Past
- ▶ The Present
- ▶ The Future
- ▶ The Bottom Line

TRAFFIC SAFETY: PAST, PRESENT, AND FUTURE



TRAFFIC SAFETY: THE FACTS



KAHOOT IT!

Go to: kahoot.it

Enter Code

TRAFFIC SAFETY: THE PAST



- ▶ Data – Availability, Accuracy
- ▶ Data Analysis – Numbers-Rate-Statistics
- ▶ Countermeasures*
- ▶ Systemics*
- ▶ New Issues, e.g. Distracted Driving

BIG PICTURE TRENDS


SINCE THE NEW MILLENNIUM:





Median Cable Guardrail





Centerline
and
Edgeline
Rumbles





Safety
Edge

Roundabouts





Alternative
Intersections:
e.g. J-turns





Flashing Yellow Arrow



Flashing Yellow Arrow



Backplates with
Retroreflective Border

Pedestrian Hybrid Beacon



Pedestrian
Refuge
Island



Systemics: Curves





Systemics: Unsignalized Intersections







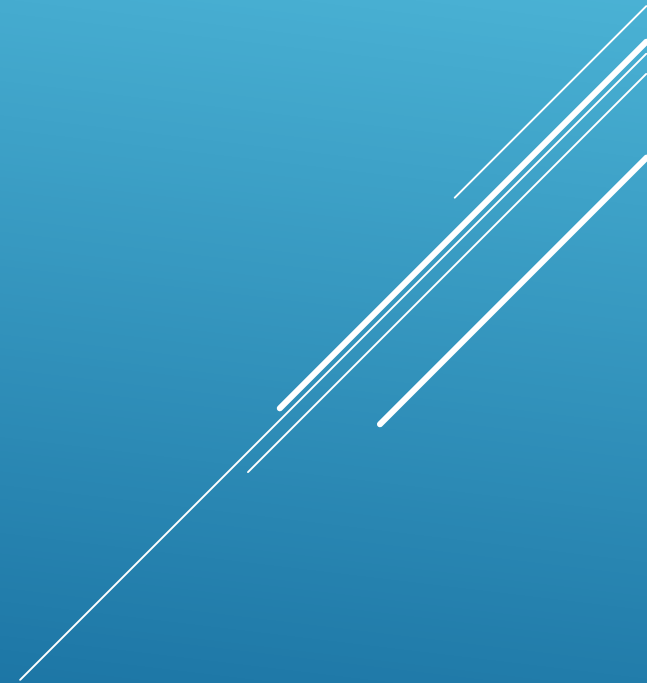




Systemics: Signalized Intersections



AND SO MANY OTHERS,
SUCH AS:



LED on Stop Sign Border





Restrict Left Turn Movements

Speed Warning with Advanced Intersection or Curve Warnings





LED on
Curve
Warning
Chevrons

Ground – In Pavement Markings





- ▶ Left-turn lanes
- ▶ Right-turn lanes
- ▶ Passing “Blisters”
- ▶ Signal Updates
- ▶ Sign Improvements
- ▶ Guardrail
- ▶ Tree Removal

- ▶ Delineation
- ▶ Pavement Markings
- ▶ Curve Correction
- ▶ Crosswalk Improvements
- ▶ Sight Line Clearing
- ▶ Improve Clearzone
- ▶ Road Diets

THE PREVIOUS DOES NOT INCLUDE
TRADITIONAL, EFFECTIVE
COUNTERMEASURES:

TRAFFIC SAFETY: THE PRESENT

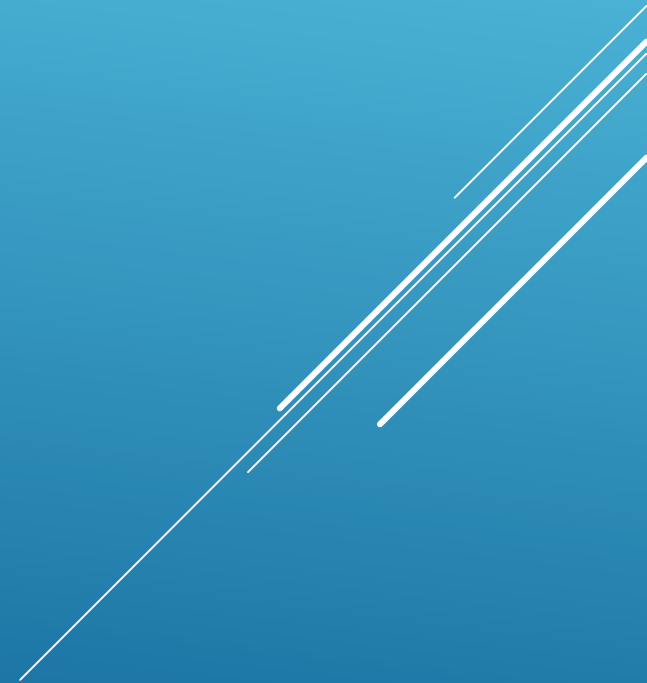


- ▶ New Countermeasures
 - High Friction Surface Treatments
- ▶ Proven Safety Countermeasures

THE PRESENT

A decorative graphic consisting of several parallel white lines of varying lengths, slanted diagonally from the bottom right towards the top right, located in the lower right quadrant of the slide.

HIGH FRICTION SURFACE TREATMENT







EXIT
113 ↗

25 MPH

RAMP

25
MPH



- ▶ Let in February, 2018
- ▶ Several locations in each District
- ▶ More “planned” for future

HFST IN INDIANA

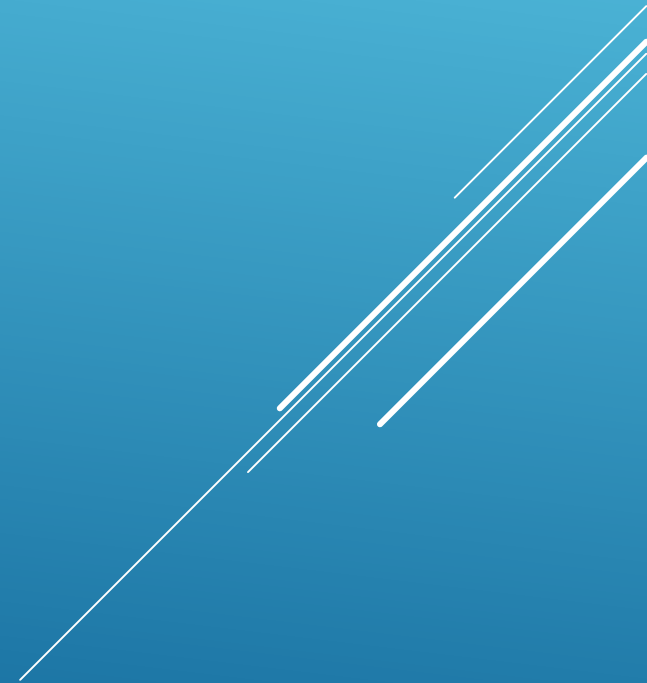


- ▶ 2008 2012 2017
- ▶ 14 Past PSCs
- ▶ Introduced in September, 2017
 - ▶ Six (6) New Proven Safety Countermeasures

PROVEN SAFETY COUNTERMEASURES

- ▶ Roadside Design Improvements at Curves
- ▶ Reduced Left Turn Conflict Intersections
- ▶ Systemic Applications of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections
- ▶ Leading Pedestrian Interval
- ▶ Local Road Safety Plans
- ▶ USLIMITS2

PROVEN SAFETY COUNTERMEASURES

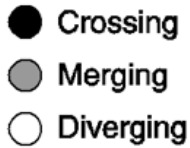
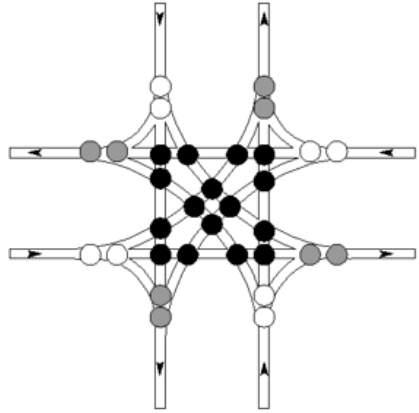
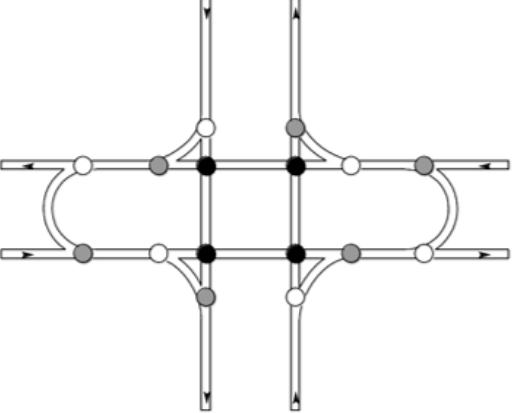
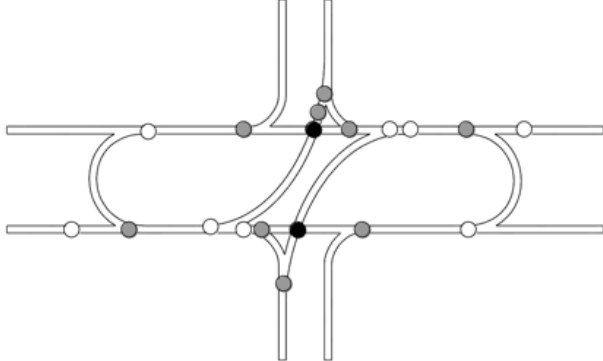


- ▶ Increase clear zone at curves.
 - ▶ Recommended by AASHTO RDG.
 - ▶ Proven to reduce crashes.
- ▶ Improve traversability.
 - ▶ Adding or widening shoulders in curves.
 - ▶ flatter slopes at curves than in tangent sections.
- ▶ Reconsider when to install barrier
 - ▶ Reduce severity.



ROADSIDE DESIGN IMPROVEMENTS AT CURVES

REDUCED LEFT-TURN CONFLICT INTERSECTIONS

Vehicle-Vehicle Conflict Points	<u>Conventional</u>	<u>MUT</u>	<u>RCUT</u>
 <ul style="list-style-type: none"> ● Crossing ● Merging ○ Diverging 			
Crossing	16	4	2
Merging	8	6	6
Diverging	8	6	6
Total	32	16	14

Sources: FHWA-SA-14-069, FHWA-SA-14-070

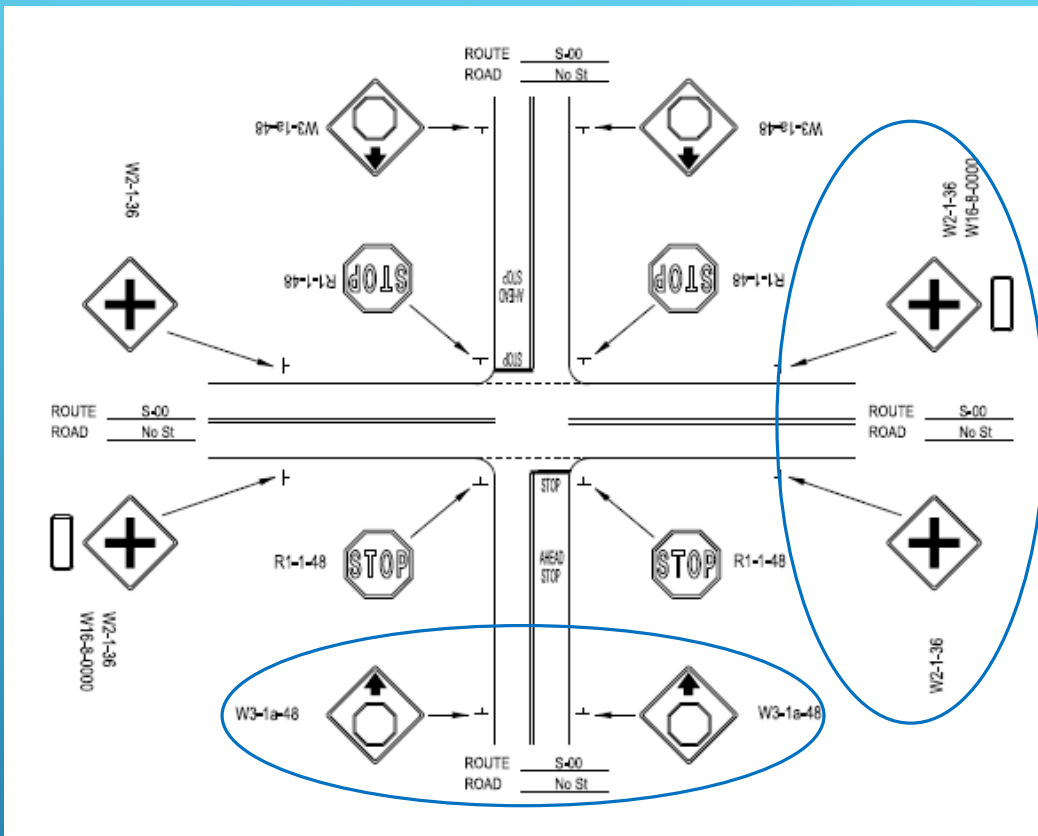
MUT Safety Performance

- ▶ 30% decrease F&I Crashes.
- ▶ 16% decrease All Crashes.



RCUT Safety Performance

- ▶ 54% decrease F&I Crashes.
- ▶ 35% decrease All Crashes. 47



SYSTEMIC APPROACH FOR STOP INTERSECTIONS

- ▶ Pedestrians get “WALK” signal before vehicles get green light.
- ▶ Provides pedestrians a 3-7 second head start before vehicles are given a green indication.
- ▶ Allows pedestrians to establish presence in crosswalk before vehicles have priority to turn left.



LEADING PEDESTRIAN INTERVAL

- ▶ Developing an LRSP is an effective strategy to improve local road safety.
- ▶ Local roads experience 3X the fatality rate of the Interstate Highway System.



LOCAL ROAD SAFETY PLANS

- ▶ Speed Limit Legal Framework:
BASIC RULE; STATUTORY SPEEDS;
SPEED ZONES (USLIMITS2)
- ▶ Why do we set speed limits?
 - ▶ Inform drivers of the maximum reasonable and safe operating speed under favorable conditions

USLIMITS2



<https://safety.fhwa.dot.gov/provencountermeasures/>

A decorative graphic consisting of several parallel white lines of varying lengths, slanted upwards from left to right, located in the bottom right corner of the slide.

TRAFFIC SAFETY: THE FUTURE



- ▶ New Countermeasures

Intersection Conflict Warning Systems

ICWS

THE FUTURE

A decorative graphic consisting of several parallel white lines of varying lengths, slanted diagonally from the bottom right towards the top right, set against a blue gradient background.

▶ New Countermeasures

Intersection Conflict Warning Systems

ICWS

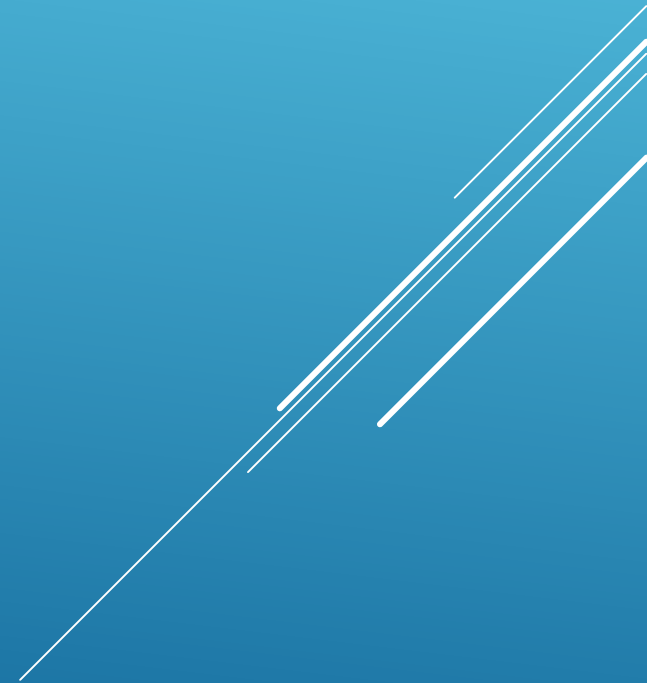
- ▶ Will autonomous vehicles save us?
- ▶ Until then, YOU own the future.

THE FUTURE

TRAFFIC SAFETY: THE BOTTOM LINE



WHAT WE KNOW.
WHAT WE DON'T KNOW.



- ▶ How much Variability plays a part.
- ▶ How much influence is from various factors.
- ▶ When and how “autonomous” movement will take effect.

WHAT WE DON'T KNOW

A decorative graphic consisting of several parallel white lines of varying lengths, slanted upwards from left to right, located in the bottom right corner of the slide.

- ▶ There are MANY influences to highway safety.
- ▶ The Driver is the weak link. – BUT we can't blame him/her and walk away.
- ▶ Some Highway Safety issues change over time.
- ▶ We can, and do, influence crash numbers and severities.

WHAT WE KNOW

WHAT WE DO CAN
INFLUENCE CRASH NUMBERS
AND SEVERITIES.

