

A photograph of a two-lane asphalt road with a yellow center line, curving through a vast, green, rolling landscape under a clear blue sky. The road is the central focus, leading the eye into the distance.

KY'S RSA Evolution

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AASHTO TIG/FHWA RSA PEER Exchange

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Presentation Outline

- KY's RSA History
- How we decided on RSARs
- How RSARs fit into our HSIP
- The 3 C's of Safety with RSARs/HSIP
- Project Examples

KY's Unfortunate Statistics

- "Opportunity State"

- >900 fatalities
- >1.45 fatal rate

- "Focus State" - Rural Roadway Departure

- > 240 fatalities
- > 2.68 fatal rate (Rural 2-lane Rdwy. Depart.)

KY's RSA History

- 1999 – FHWA Pilot State for RSAs
- 1999-2000 - Training Conduct Statewide
- 2000 – No Funding to Support, Champion left, RSAs died
- 2006 – Champion returned, funding available, resurrected idea
- 2007 – Funding Secure, Process began, Focus on RSA Review (Stage 5 Audit)

RSA Reviews (RSARs)

- Goal – Reduce injury/fatality collisions with low-cost, quickly-implemented projects
 - Projects – completed mostly by State Forces or In-place Price Contracts
- RSARs – Existing roadway sections or spots (< 0.3 mile) and/or Safety Corridors
- Team Members – District-led, multi-disciplinary team

Since 2007 RSA PEER Exchange...

- Came here last year and caught the fever
- Thanks to you all for leading the way
- Went home and got busy
- Began transition from thought to action

Implementation of RSARs

- May 07 – Began Process Determination
- Oct/Nov 07 - Training Districts (12)
- Dec 07/Jan 08 – Districts Began RSARs
- Jan 08 (late) – 1st Projects Submitted
- April 08 – Turning RSARs into Projects

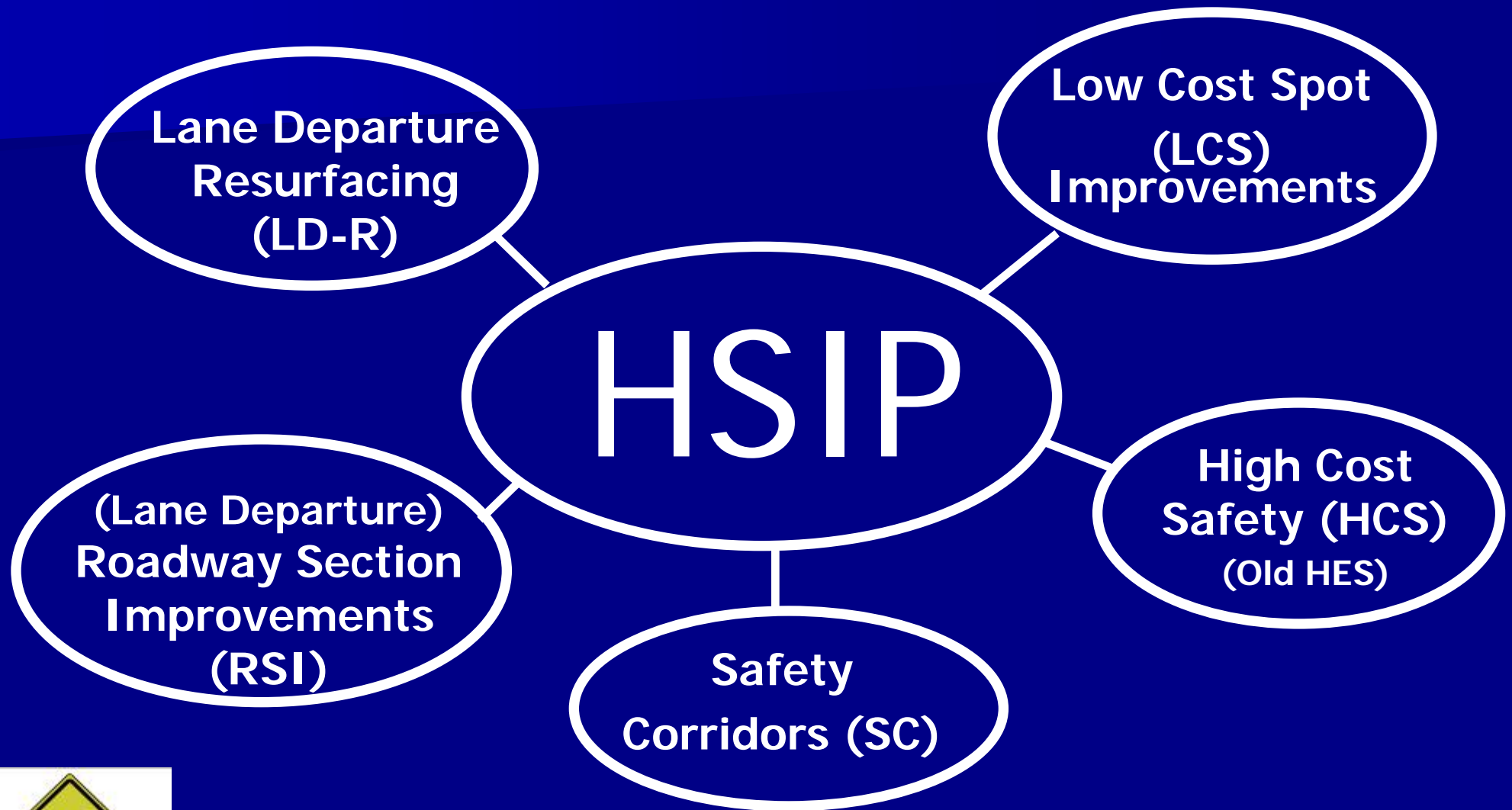
To Date – RSARs Projects

- RSARs completed on 85 Routes
- Average of 8 per District
(10/12 Districts participating)
- 91 Projects submitted from these RSARs

RSARs and KY's HSIP

- SHSP - designated Lane Departure as Emphasis Area
- Reviewers required funding source (creditability)
- HSIP funding available current/prior years

Highway Safety Improvement Program



The 3 C's of Safety

- Types of Concerns Submitted
- Average Cost for 4 of the 5 circles
- Types of Countermeasures selected

Concerns Submitted

- Culverts too short
- Trees blocking sight distance
- Lack of signage, striping, delineation
- Deficient guardrail, end treatments
- Drop offs with no protection
- Broken, non-existent, deteriorating shoulders
- Steep slopes
- Rock overhangs – dangerous and blocking sight distance
- Insufficient drainage
- RT and LT lanes needed



Cost of the Projects

Fiscal Year 2008 Totals

- 37 projects in LD-R \$4.3 million
- 17 projects in RSI \$3.3 million
- 27 projects in LCS \$1.5 million
- 10 projects in SC \$1.0 million
- 91 Total projects, cost \$10.1 million

- **Average project cost**
\$108,000



Countermeasures Selected

- Extend Culverts, remove or cut off headwalls
- Clearing Trees and brush in clear zone
- Install signing, update striping, provide delineation
- Install guardrail, update end treatments
- Ditching and adding shoulders, including earth and DGA
- Flattening slopes
- Removing overhangs, shoring with Gabion baskets
- Installing safety boxes, drainage boxes
- Provide RT and LT lanes



Project Examples



Allen County, KY 100



- Extend culvert to allow for setting back guardrail in hairpin turn at Holland Hill.



Allen County, KY 101



- Replace existing culvert w larger culvert, install Type 1 drop box and pave around box



Barren County, US 31E



- Shoulder drop offs in curve along entire route
- Excavate existing shoulders, replace with 4' paved shoulders w/ rumble strips



Logan County, KY 79



- Tree and brush cutting in the area around chevrons
- Cut by state forces as soon as observation was made



Butler County, KY 185



- Drainage problems are causing water to pond on roadway
- Maintenance has already fixed



Metcalfe County, KY 496



- Extend box
culvert 10'
on each side



Metcalfe County, US 68



- Extend culvert 10' on each side to improve driver recovery



Meade, KY 448

- Remove headwalls
- extend pipes
- flatten slopes



Meade, KY 144

- Flatten steep slopes
- Shoulder improvements for narrow roads



Safety Corridor – US 31W

- Johnson Rd turn lane \$53,680
- Teresa Rd turn lane \$45,375
- Crossover removal \$106,750
- Total \$205,805



Larue, US 31E



- Install guardrail off the edge of pavement as far as possible
- Crashes:
 - 3 ROR
 - 2 Inj
 - 1 Fatal



Pulaski, KY 1247



- Install guardrail to protect bridge ends



Pulaski, KY 1642

- Construct Shoulders
- Regrade slopes
- Remove brush and trees



Carter, US 60

- Extend narrow culverts



Rowan, KY 377

- Shoulder repair
- Delineate with rumble strips/stripes



Bath, KY 36

- Replace deteriorated culvert



Carter, KY 1947



- Extend existing culvert



Laurel County, KY 192



- Remove embankment and trees to improve sight distance



Laurel, KY 80

- Improve superelev.
- Cut trees in Clear Zone
- Install reflective posts for chevrons in curve



Laurel, KY 80



- Improve superelev
- Cut trees in Clear Zone



Leslie, US 421

- Reestablish typical section of roadway to improve drainage



Leslie, US 421

■ Remove

Rock

Overhang



Leslie, US 421

■ Extend

concrete

headwall



Leslie, US 421



- Reestablish shoulder

- Total Cost:
\$305,960



Laurel, KY 192



- Install guardrail for 300'



Laurel, KY 192

- Remove trees for sight distance around curve



Laurel, KY 192



- Problem:
Open frontage
too much
room for error

- Crosshatch the entrance 12' from driving edge to delineate and prevent parking



Pike County, KY 197



- Extend culvert



- Place guardrail



Pike, KY 1499

- Need guardrail
- Clear trees
- Check passing zones



- Add chevrons
- Check signage throughout the length of the project



Knott, KY 899



- Remove rock to improve sight distance and for more shoulder recovery



Floyd, KY 1428

- Install safety box to widen narrow area shown



Floyd KY 550



- Remove trees and install guardrail



Floyd, KY 550

- Another area to remove trees for clear zone issues



Ongoing Issues/Challenges

- Time for employees to complete RSARs
 - Impending retirements (up to 40% workforce)
 - Leaving inexperienced auditors (or none)
- Turning RSARs into estimates and submitted projects
- Lag time for fund allocation - begin projects
- Tracking system not in place
- Incorporating funding to Local Roads

Unanswered Questions

- System wide Approach vs. Spots/Segments?
- “Chase” fatalities and injuries?
- Stay with Separate funding Circles or combine into one Circle?
- RSARs - In-house vs. Consultant?
- Incorporate into State Resurfacing Program?
or Separate State funding source

Summary of Success

- In less than 3 months:
 - Completed RSARs on 85 routes in 10 Districts
 - Turned these RSARs into 91 projects
 - Projects amounted to \$10.1 million
 - Districts excited about doing the RSARs
 - All Disciplines (Maint, Const, Plan, Des) involved



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