Highway Safety Improvement Program (HSIP)

Arizona Association of County Engineers

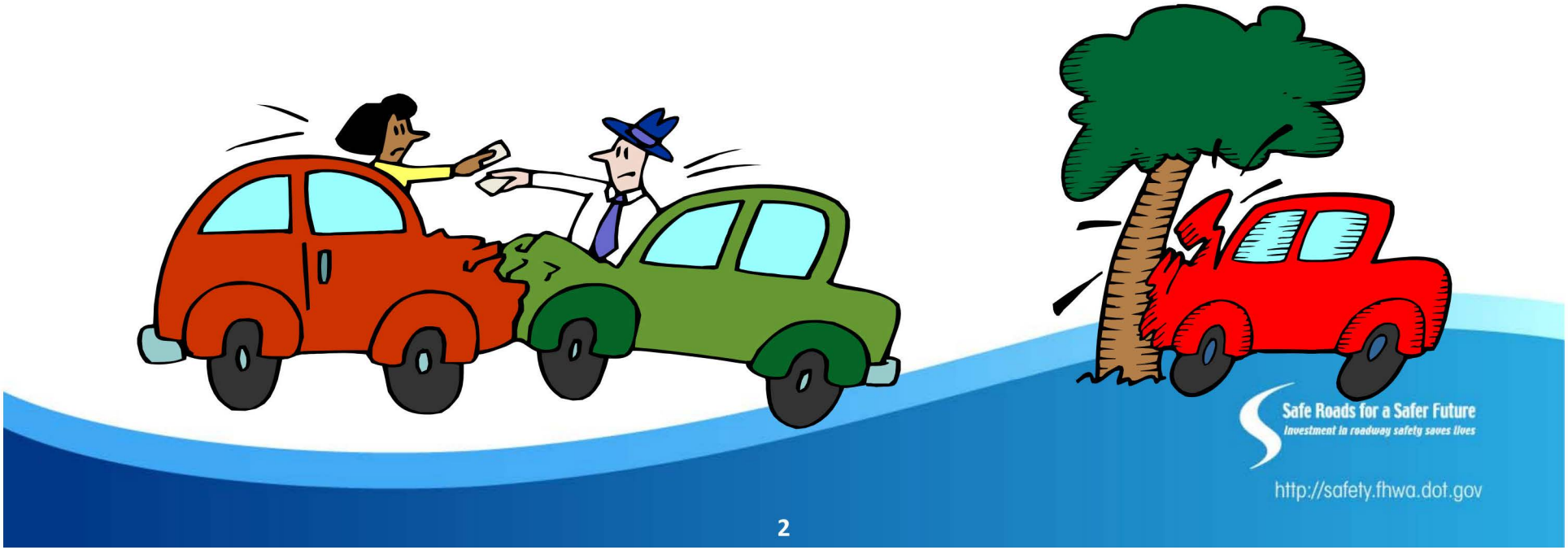
June 14, 2012

U.S. Department of Transportation
Federal Highway Administration

Safe Roads for a Safer Future
Investment in roadway safety saves lives
http://safety.fhwa.dot.gov

Purpose of the HSIP

To achieve a significant reduction in fatalities and serious injuries on all public roads through the implementation of infrastructure-related highway safety improvements.



Legislative References

- SAFETEA-LU
  - 23 U.S.C. 148: Highway Safety Improvement Program
  - 23 U.S.C. 130: Railway-Highway Crossing Program
- Federal Regulation
  - 23 CFR 924: Highway Safety Improvement Program

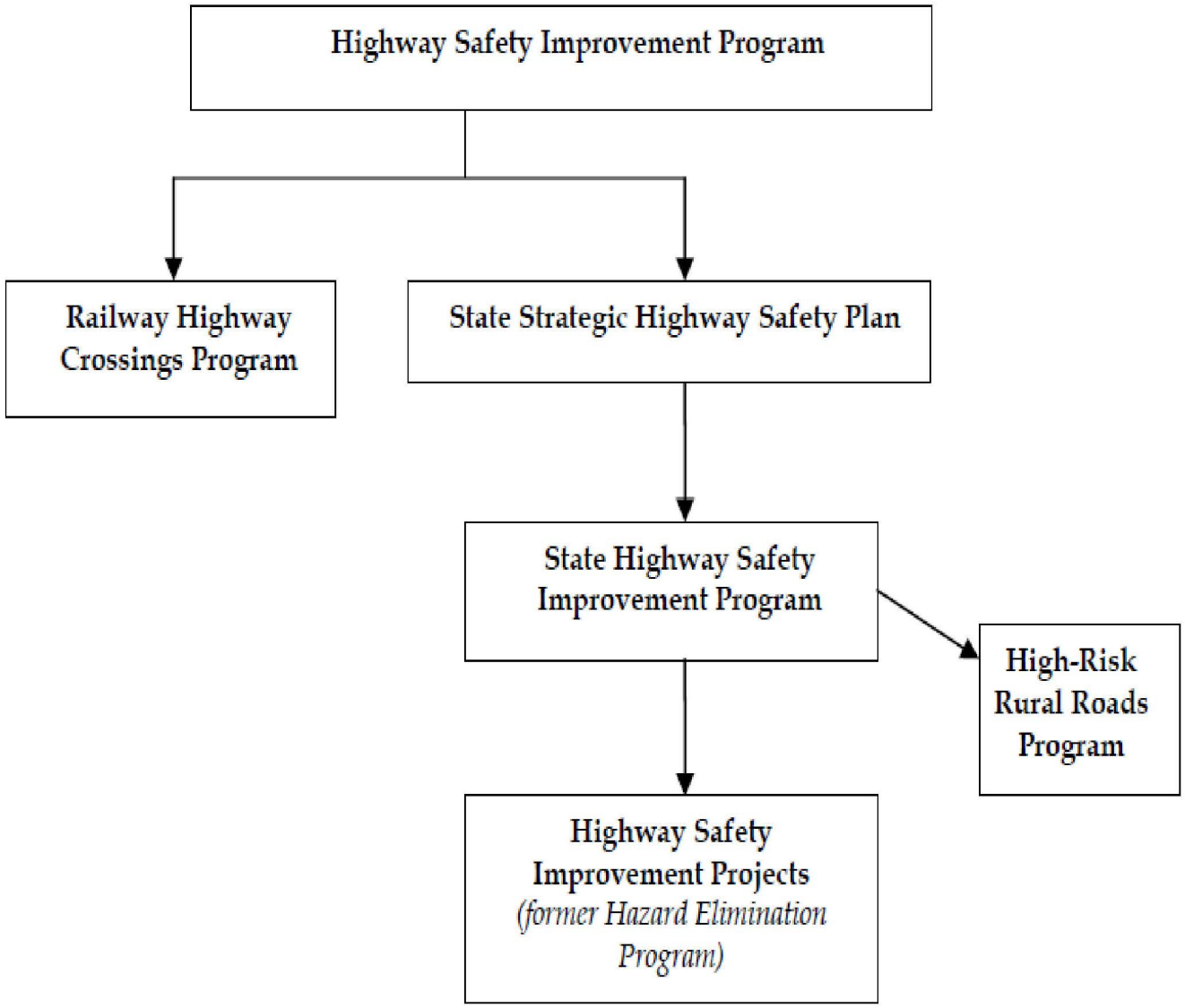
23 CFR 924.5(b)

"In order for an eligible improvement to be funded with HSIP funds, States shall first consider whether the activity maximizes opportunities to advance safety. States shall fund safety projects or activities that are most likely to reduce the number of, or potential for, fatalities and serious injuries."

HSIP Programs—4 Major Components:

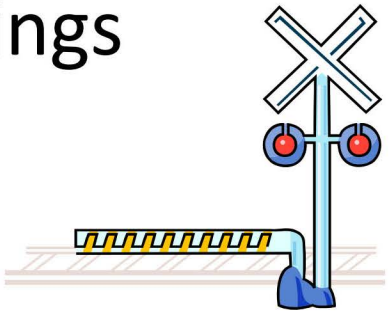
- Strategic Highway Safety Plans (SHSP)
- State Highway Safety Improvement Program
  - Highway safety improvement projects
- High Risk Rural Roads Program (HRRRP)
- Railway-Highway Grade Crossing Program (RHGCP)

Relationship of HSIP Programs



Railway-Highway Crossings Program

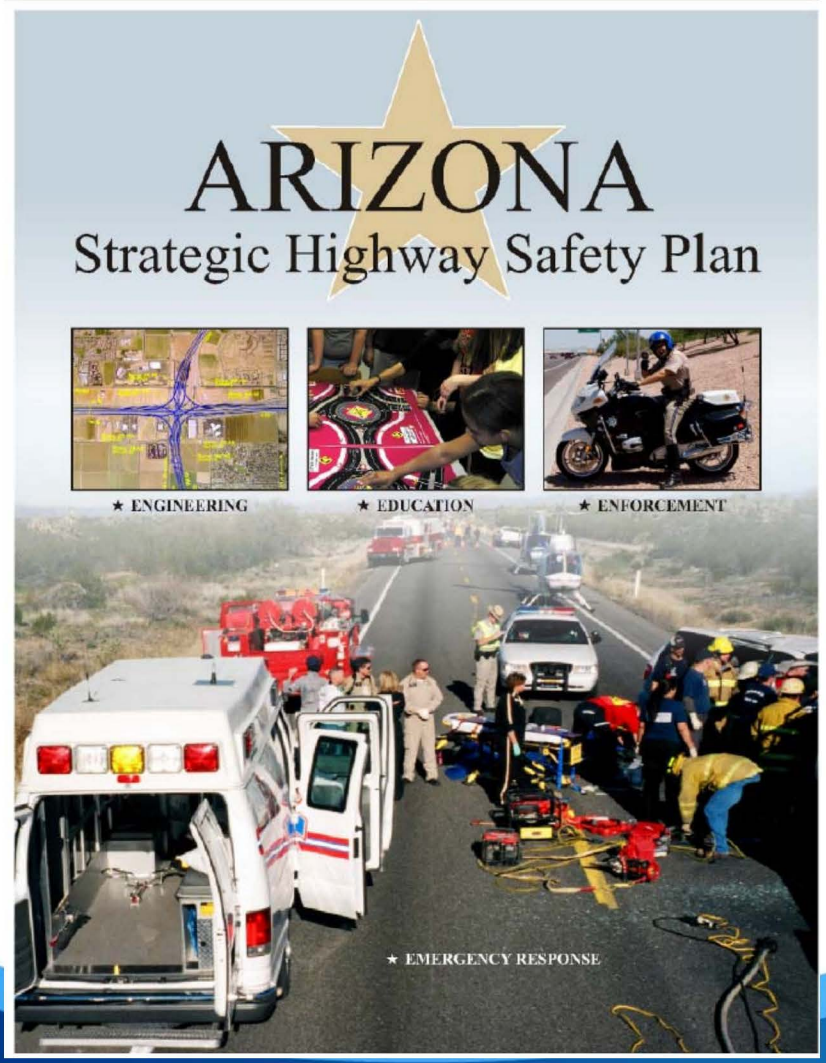
- Considers relative hazard of public railway-highway grade crossings based on a hazard index formula
- Includes onsite inspection of public grade crossings
- Statutory requirement: All public crossings be provided with standard signing and pavement markings



Strategic Highway Safety Plans (SHSP)

- Data-driven, statewide plan of strategies that provide a framework for reducing highway fatalities and serious injuries
- Developed through a collaborative process with safety stakeholders
- Integrates the 4Es – Engineering, Education, Enforcement, and Emergency services
- Considers the safety needs of all public roads
- Guides investment decisions

Strategic Highway Safety Plans (SHSP)



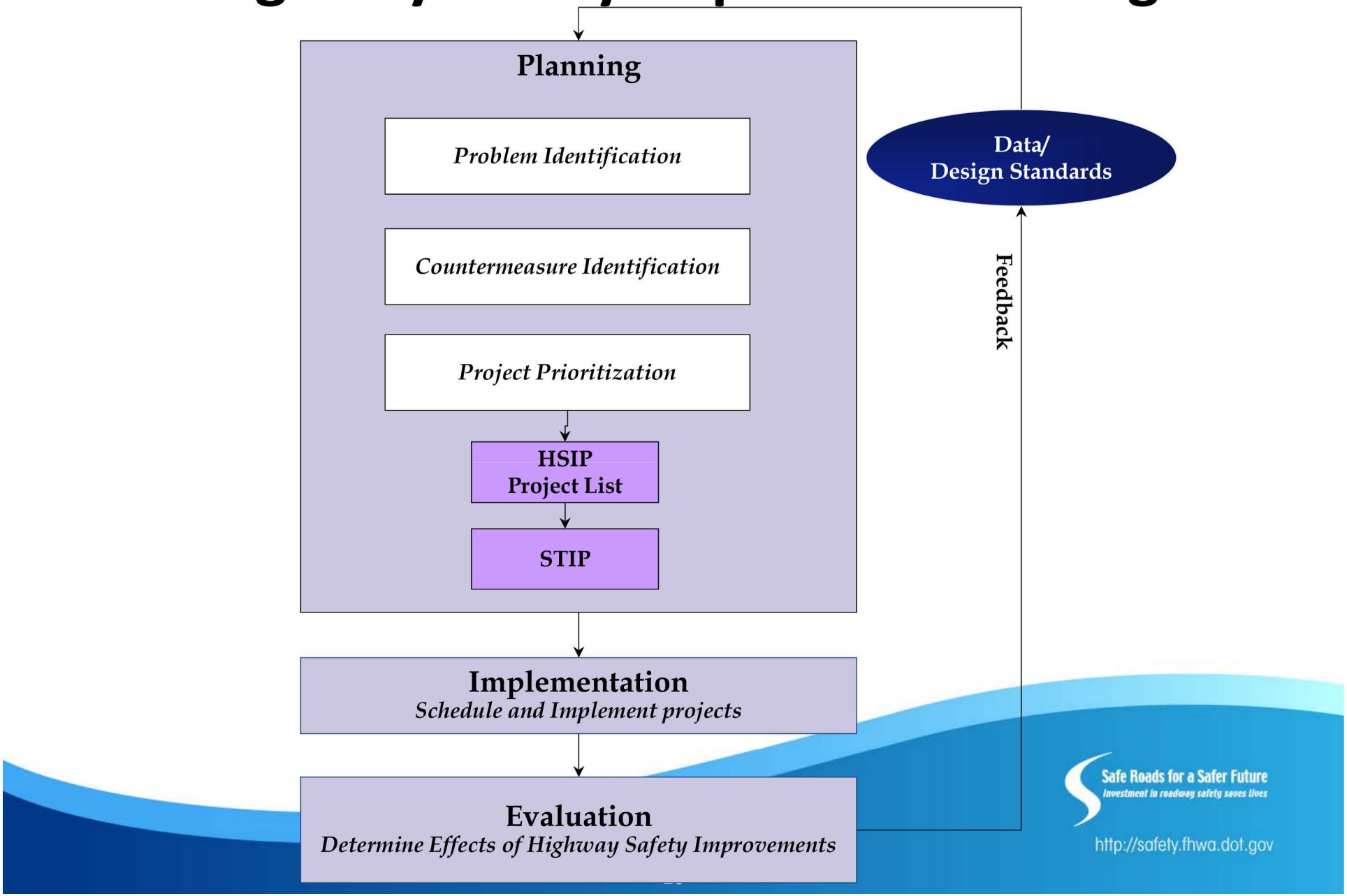
http://azdot.gov/Highways/Traffic/9620.asp

Adopted in August, 2007

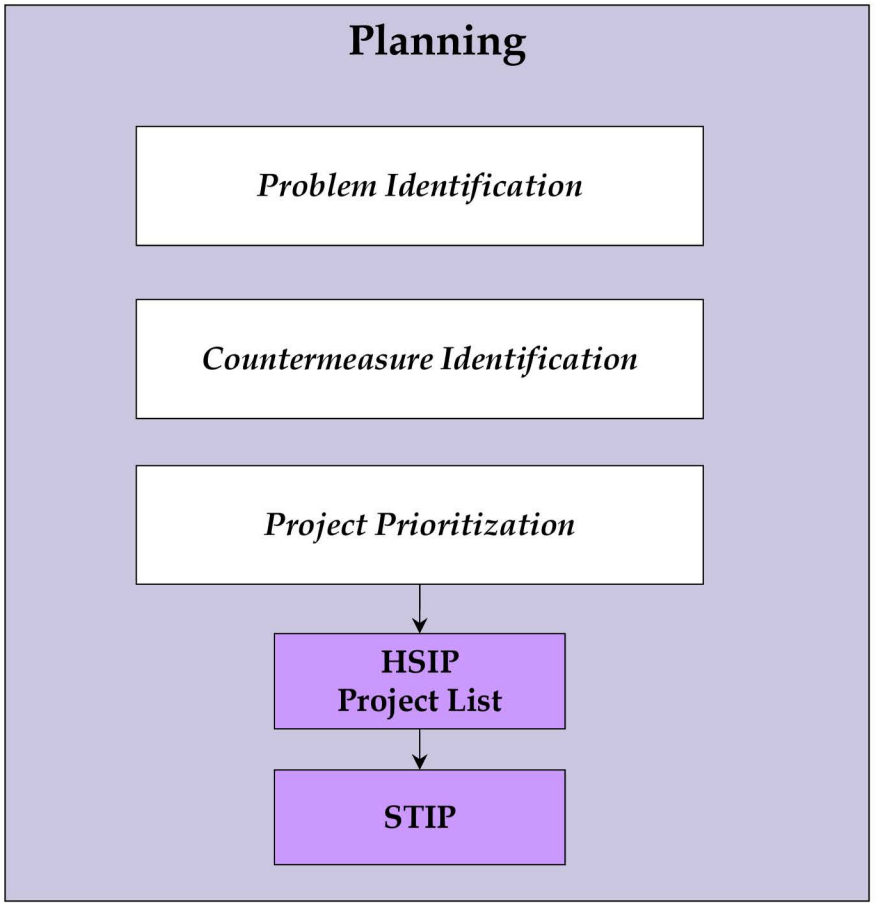
Arizona SHSP Emphasis Areas:

1. Restraint Usage
2. Young Drivers
3. Speeding
4. Impaired Driving
5. Roadway/Roadside
6. Data Improvement

State Highway Safety Improvement Program



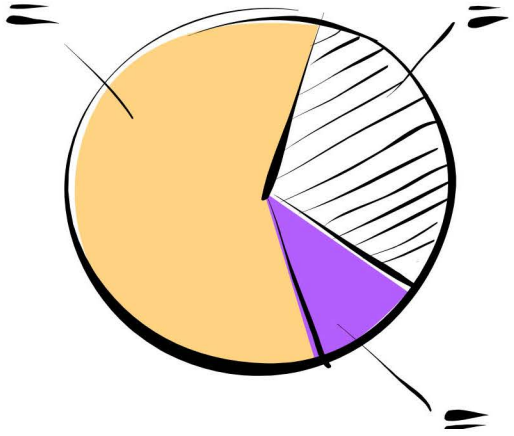
HSIP Planning Process Steps



1. Project Identification
   - Data Collection
   - Network Screening Process
2. Countermeasure Identification
3. Project Prioritization
4. Evaluation

Planning Process Step 1: Project Identification

- Data Collection
  - Crash Data
  - Traffic Volumes
  - Roadway Inventory Data
  - RSAs
- Network Screening Process



Network Screening

- Identify Sites for Potential Safety Improvement
  - Intersections
  - Segments
  - Traditional problem identification methodology
- Identify Systemic Safety Improvements
  - Based on SHSP Emphasis Areas & Strategies
  - Identify key crash types and patterns to address
- High Risk Rural Roads Program (HRRRP)

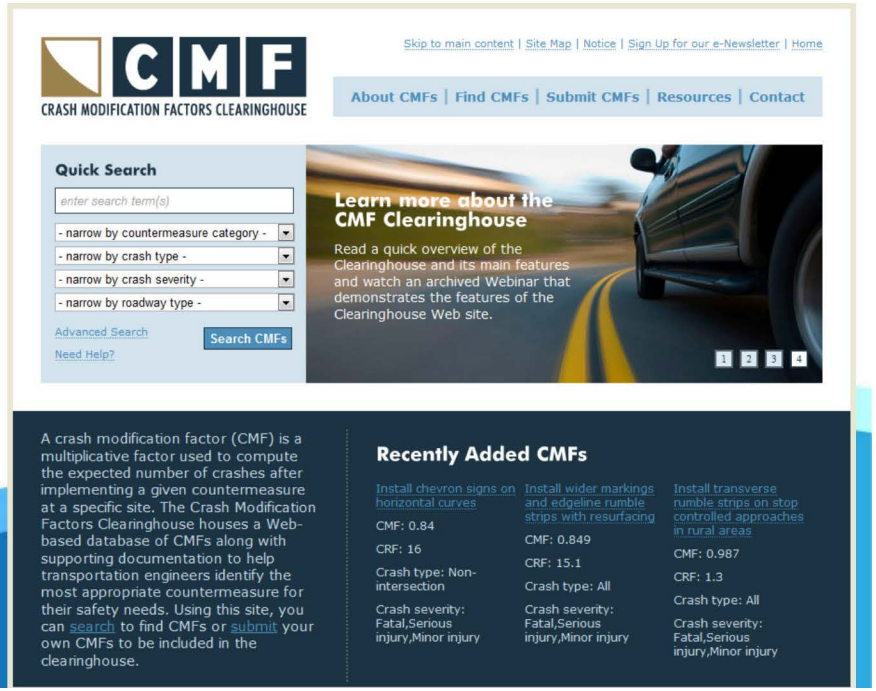
Planning Process Step 2: Countermeasure Identification

Four essential steps:

1. Analyze the Data
2. Conduct Field Review
3. Identify Countermeasures
4. Assess Countermeasure Effectiveness

Countermeasure Resources

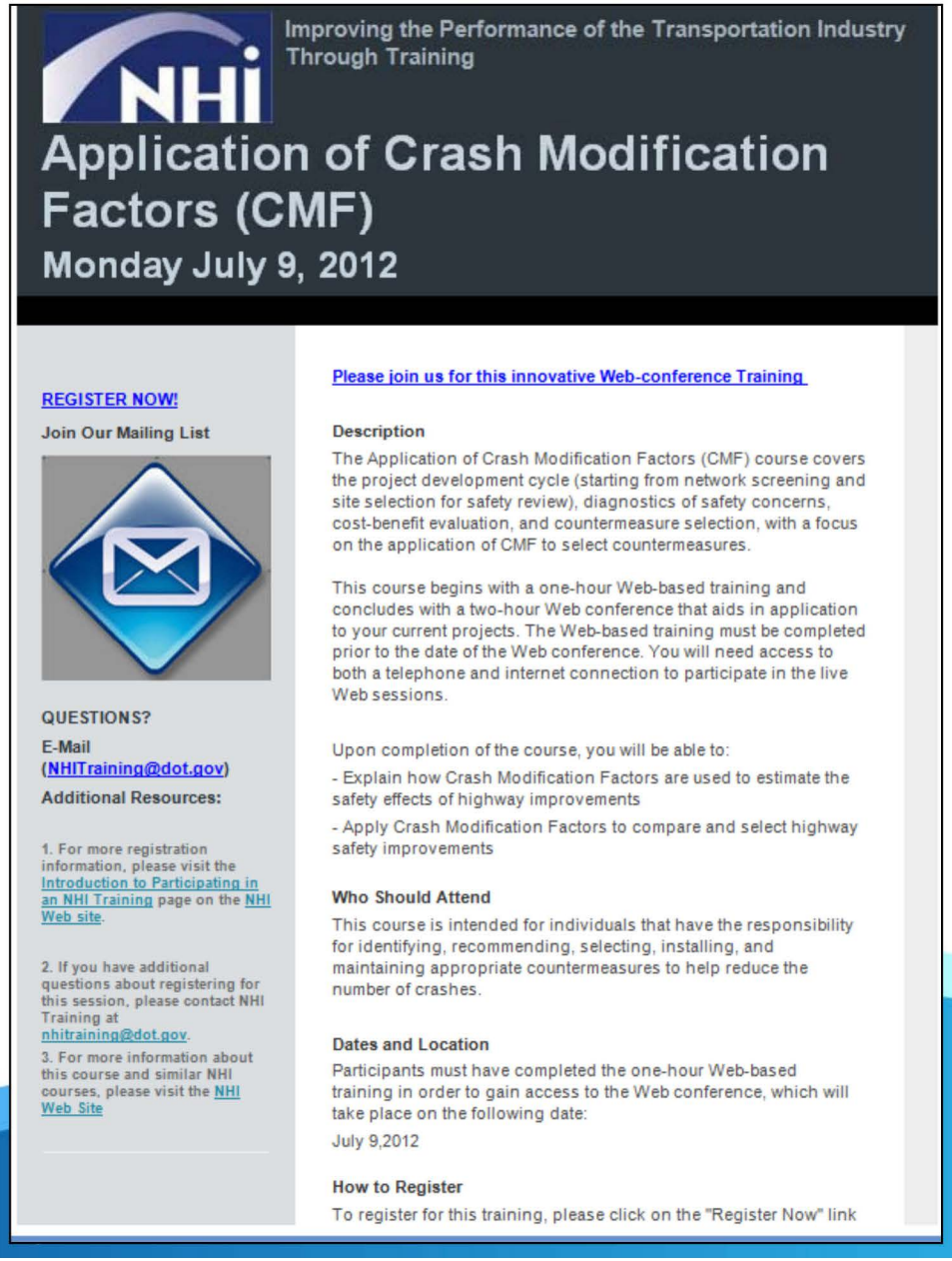
- Crash Modification Factor Clearinghouse
  www.CMFclearinghouse.org/
- Highway Safety Manual – Part D
  www.highwaysafetymanual.org/
- NCHRP Report 500 Series
  www.trb.org/
- NHI Training
  www.nhi.fhwa.dot.gov/



Countermeasure Resources

NHI Training

www.nhi.fhwa.dot.gov/



Improving the Performance of the Transportation Industry Through Training

Application of Crash Modification Factors (CMF)

Monday July 9, 2012

REGISTER NOW!

Join Our Mailing List

QUESTIONS?

E-Mail (NHITraining@dot.gov)

Additional Resources:

1. For more registration information, please visit the Introduction to Participating in an NHI Training page on the NHI Web site.

2. If you have additional questions about registering for this session, please contact NHI Training at nhitraining@dot.gov.

3. For more information about this course and similar NHI courses, please visit the NHI Web Site

Please join us for this innovative Web-conference Training

Description

The Application of Crash Modification Factors (CMF) course covers the project development cycle (starting from network screening and site selection for safety review), diagnostics of safety concerns, cost-benefit evaluation, and countermeasure selection, with a focus on the application of CMF to select countermeasures.

This course begins with a one-hour Web-based training and concludes with a two-hour Web conference that aids in application to your current projects. The Web-based training must be completed prior to the date of the Web conference. You will need access to both a telephone and internet connection to participate in the live Web sessions.

Upon completion of the course, you will be able to:

- Explain how Crash Modification Factors are used to estimate the safety effects of highway improvements
- Apply Crash Modification Factors to compare and select highway safety improvements

Who Should Attend

This course is intended for individuals that have the responsibility for identifying, recommending, selecting, installing, and maintaining appropriate countermeasures to help reduce the number of crashes.

Dates and Location

Participants must have completed the one-hour Web-based training in order to gain access to the Web conference, which will take place on the following date:

July 9,2012

How to Register

To register for this training, please click on the "Register Now" link

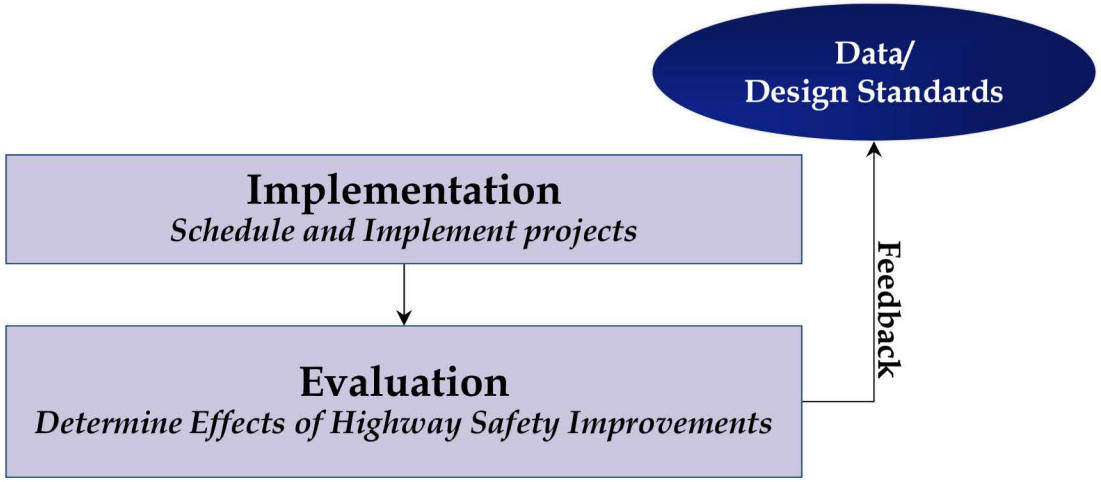
Planning Process Step 3: Project Prioritization

- Objective Approach (e.g. Benefit/Cost Ratio)
- Countermeasure Prioritization
- Project Prioritization
- Balance of Projects
- Approaches Addressing Current & Future Safety Problems

Prioritization Considerations

- Potential reduction in # fatalities and serious injuries
- SHSP Priorities
- Cost effectiveness of projects and resources available
- Correction and prevention of hazardous locations
- Other safety data-driven criteria
- Integration with statewide/metropolitan transportation planning process and S/TIP

Implementation & Evaluation



Evaluation

- Project Evaluation
- Program Evaluation
- Feedback to Future Planning

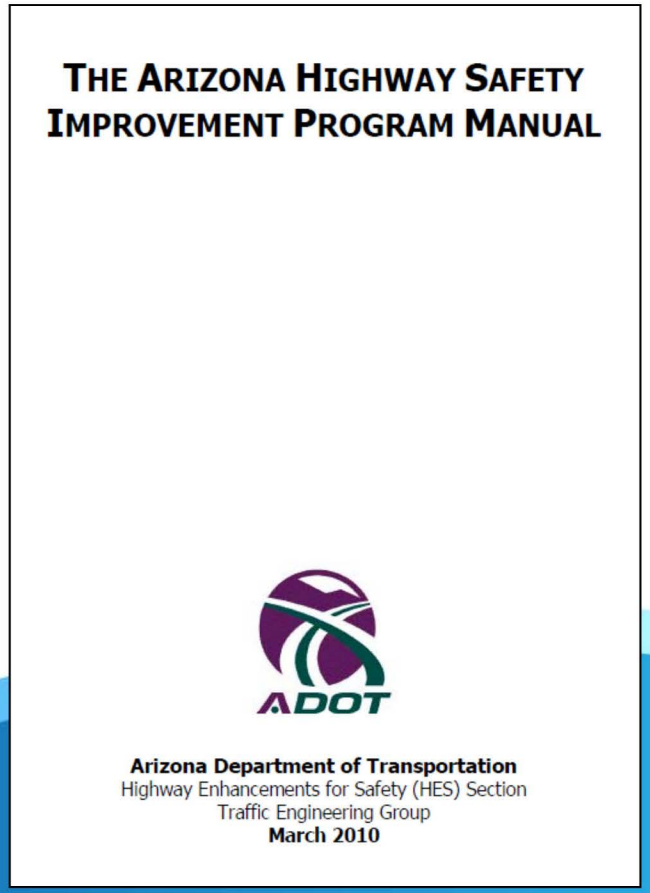
Arizona HSIP Manual

ADOT HSIP Manual

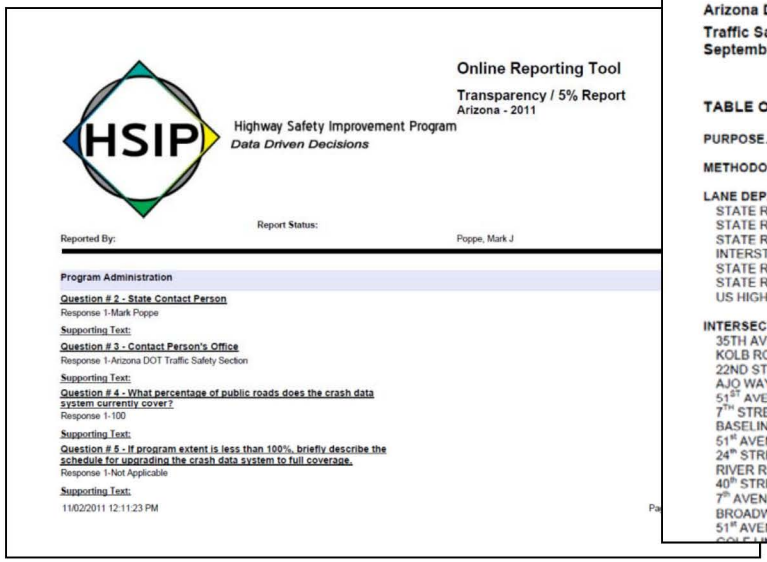
http://azdot.gov/Highways/Traffic/9620.asp

FHWA HSIP Website

http://safety.fhwa.dot.gov/hsip/



HSIP Reporting



Online Reporting Tool

Transparency / 5% Report
Arizona - 2011

HSIP

Highway Safety Improvement Program
Data Driven Decisions

Report Status:

Reported By: Poppe, Mark J

Program Administration

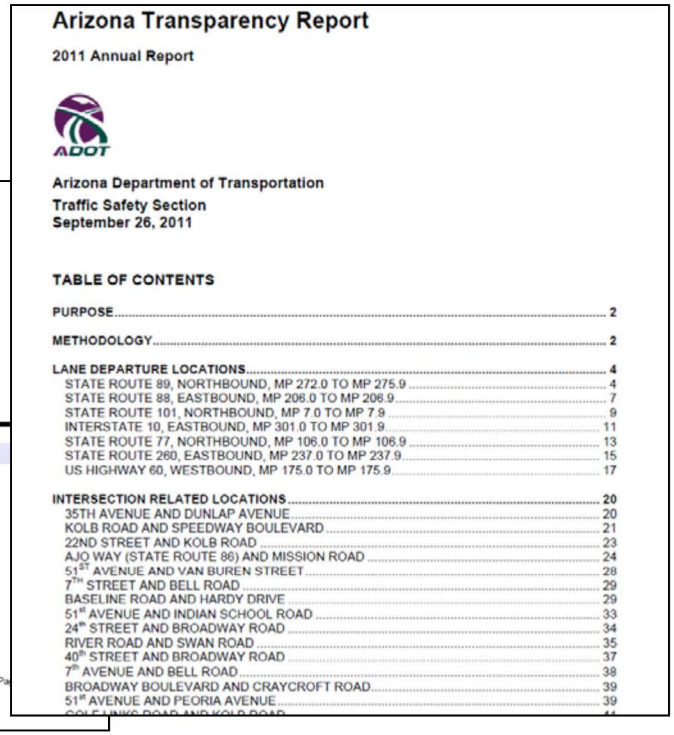
Question # 2 - State Contact Person
Response 1-Mark Poppe
Supporting Text:

Question # 3 - Contact Person's Office
Response 1-Arizona DOT Traffic Safety Section
Supporting Text:

Question # 4 - What percentage of public roads does the crash data system currently cover?
Response 1-100
Supporting Text:

Question # 5 - If program extent is less than 100%, briefly describe the schedule for upgrading the crash data system to full coverage.
Response 1-Not Applicable
Supporting Text:

11/02/2011 12:11:23 PM



Arizona Transparency Report

2011 Annual Report

ADOT

Arizona Department of Transportation
Traffic Safety Section
September 26, 2011

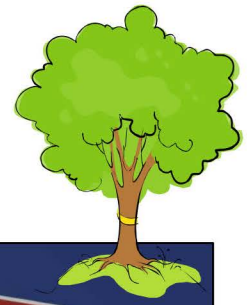
TABLE OF CONTENTS

- Highway Safety Improvement Program
- Transparency (5%) Report

  http://safety.fhwa.dot.gov/hsip/fivepercent/
- Railway-Highway Crossings Report

Examples of Eligible Projects for HSIP

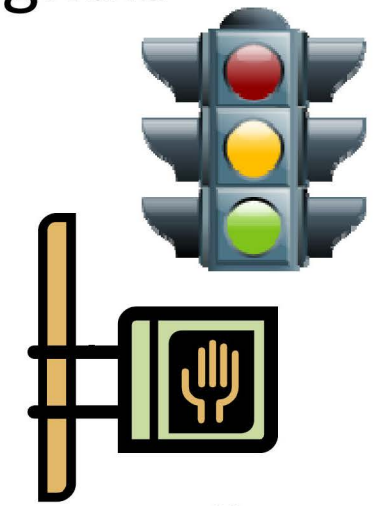
- Eliminate roadside obstacles or hazards
- Upgrade signage
- Upgrade pavement markings
- Rumble strips
- Upgrade guardrail end treatments
- Improvements on high risk rural roads
- Conducting road safety audits



Examples of Eligible Projects for HSIP

At Intersections:

- Converting from 8-inch to 12-inch signals
- Roundabouts
- Advance street name signing



For Pedestrians:

- Pedestrian countdown signals
- Install new or upgrade pedestrian crosswalk pavement markings

Systematic Improvements

- Low-cost, efficient to implement
- Do not require lengthy environmental review
- Many qualify for Group 1 or Condensed Group 2 Categorical Exclusions (no or minor ground disturbance)
- Usually no additional right-of-way and no utility coordination or adjustments

Examples of Systematic Improvements

On Roadway Segments:

- Shoulder and centerline rumble strips
- Barrier and obstacle delineation
- Upgrade guardrail end treatments
- Upgrade regulatory and warning signs
- Upgrade pavement markings
- Install RPMs

Examples of Systematic Improvements

At Signalized Intersections:

- Converting from 8-inch to 12-inch signals
- Installation / upgrading street name signing
- Advance street name signing

At Unsignalized Intersections:

- Upgrade STOP signs
- Install advance stop ahead markings

Examples of Systematic Improvements

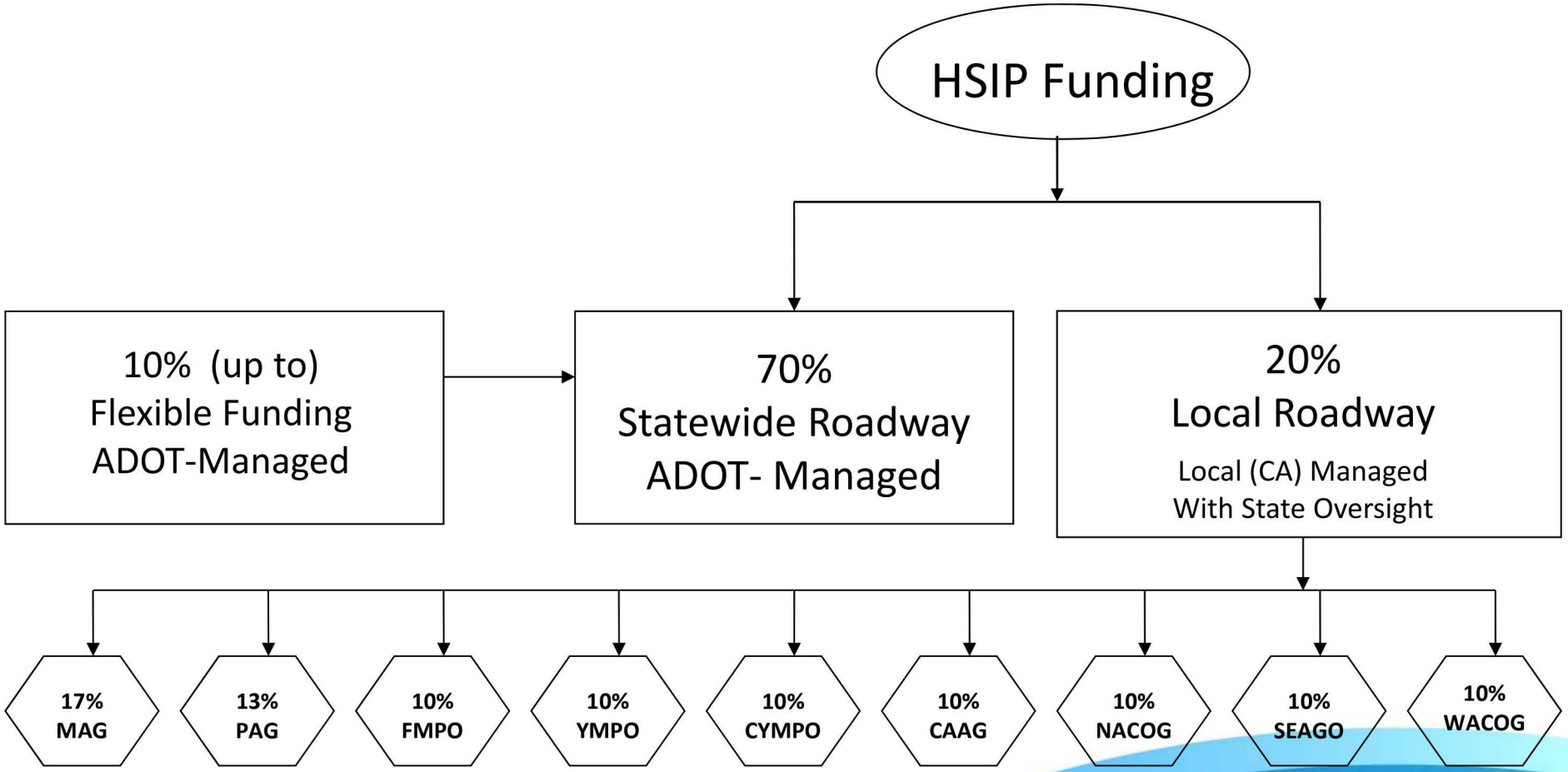
For Pedestrians:

- Pedestrian crosswalk countdown signals
- Install new or upgrade pedestrian crosswalk pavement markings
- Enhanced school crossings
- Provide pedestrian refuges

Emergency Response Improvements:

- Establish or upgrade milepost system

Arizona HSIP Funding Allocations



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Arizona HSIP Funding

- Statewide HSIP (70%)
- Local Government HSIP (20%)
- High Risk Rural Roads Program (HRRRP)
- Railway-Highway Grade Crossing Program (RHGCP)
- Road Safety Assessment (RSA) Program
- Safe Routes to School (SRTS) Program
  - Separate Legislation

Local Match Requirements

- 5.7% for most projects
- No match required per 23 U.S.C. 120 (c) for:
  - Roundabouts
  - Traffic Signals
  - Pavement markings
  - Signs
  - Streetlighting
  - Guardrail

Important HSIP Requirements

- Based on SHSP Emphasis Areas & Strategies
- Focused on reducing fatalities and serious injury crashes
- Carried out through the STIP Process
- Addresses an identified highway safety problem
- Identified through a data-driven process

HSIP Application Process

- Submit through local COG/MPO for Local Government HSIP
- Submit through ADOT Traffic Safety Section for State-managed HSIP
- Must be identified in TIP/STIP
- Must get eligibility approval from ADOT/FHWA
- Then get Funding Authorization. **Any work performed prior to Funding Authorization is not eligible for reimbursement**

High Risk Rural Roads Program (HRRRP)

ADOT HSIP/HRRRP Contact: Irene Higgs

Local Gov't Program Manager

602-712-7581

ihiggs@azdot.gov

U.S. Department of Transportation
Federal Highway Administration

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High Risk Rural Roads—Eligibility

- Any roadway functionally classified as a rural major collector, rural minor collector, or rural local road
- On which the crash rate for fatalities and incapacitating injuries exceeds the statewide average for those functional classes of roadway; or
- That will likely have increases in traffic volume that create a crash rate for fatalities or incapacitating injuries that exceeds the statewide average
- Current Arizona focus is on local and tribal roads (non-State roads)

HRRRP Eligibility Criteria

Candidate roads with following minimum crash frequencies during past 10 years

Major Collectors:

2 fatal crashes or 3 fatal + incapacitating injury crashes over any 3-year period

Minor Collectors/Local Roads:

2 fatal + incapacitating injury crashes and 10 total crashes over the 10-year period

HRRRP Selection Process

- ADOT crash data analysis used to identify eligible segments
- Local Agency/Tribe can use their own crash data to submit locations to ADOT for consideration (can use combination of state and local data)
- Utilize same HSIP Planning Process

Example HRRRP Projects

- **Coconino County,** Lake Mary Road: Rumble strips, pavement markings ($503,603)
- **Coconino County,** Leupp Road: Rumble strips, pavement markings, guardrail ($983,228)
- **Gila County,** Ice House Canyon, Six Shooter: Pavement Markings ($280,800)
- **Mohave County**, Guardrail, Pavement Markings, Rumble Strips, Intersection Warning System, Pavement Widening ($1,003,000)
- **Santa Cruz County,** RPM's, Turn Lanes, Shoulder Widening, Chevrons ($1,526,387)
- **Graham County,** 8th Ave & Airport Rd: Roundabout ($2,500,000)
- **Graham County,** Reay Lane & Safford Bryce: Intersection Improvement ($556,370)

Road Safety Assessment Program (RSA)

ADOT RSA Program Contact: Mike Blankenship
602-712-7601
mblankenship@azdot.gov

U.S. Department of Transportation
Federal Highway Administration

Safe Roads for a Safer Future
Investment in roadway safety saves lives

http://safety.fhwa.dot.gov

What is an RSA?

- A Road Safety Assessment is the formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team. It qualitatively estimates and reports on potential road safety issues and identifies opportunities for improvements in safety for all road users. RSAs are encouraged to be integrated into the project development process for new roads and intersections, and also on existing facilities.

What is an RSA?

The aim of an RSA is to answer the following questions:

- What elements of the road may present a safety concern: to what extent, to which road users, and under what circumstances?
- What opportunities exist to eliminate or mitigate identified safety concerns?

http://safety.fhwa.dot.gov/rsa/

RSA Process

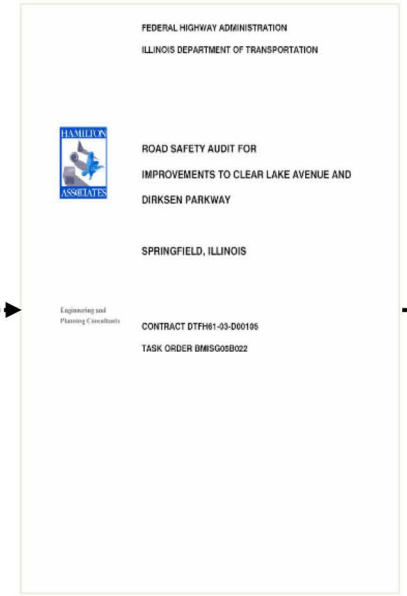
1. Start-up Meeting

2. Site Visit

3. RSA Analysis Workshop

4. Preliminary Findings Meeting

RSA Process (continued)



FEDERAL HIGHWAY ADMINISTRATION

ILLINOIS DEPARTMENT OF TRANSPORTATION

HAMILTON ASSOCIATES

ROAD SAFETY AUDIT FOR

IMPROVEMENTS TO CLEAR LAKE AVENUE AND

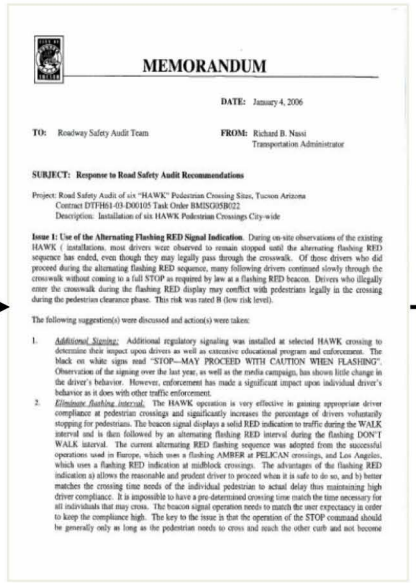
DIRKSEN PARKWAY

SPRINGFIELD, ILLINOIS

Engineering and Planning Consultants

CONTRACT DTFH61-03-D00105

TASK ORDER BMISG05B022



MEMORANDUM

DATE: January 4, 2006

TO: Roadway Safety Audit Team

FROM: Richard B. Nassi
Transportation Administrator

SUBJECT: Response to Road Safety Audit Recommendations

Project: Road Safety Audit of six "HAWK" Pedestrian Crossing Sites, Tucson Arizona
Contract DTFH61-03-D00105 Task Order BMISG05B022
Description: Installation of six HAWK Pedestrian Crossings City-wide

Issue 1: Use of the Alternating Flashing RED Signal Indication. During on-site observations of the existing HAWK (installations, most drivers were observed to remain stopped until the alternating flashing RED sequence has ended, even though they may legally pass through the crosswalk. Of those drivers who did proceed during the alternating flashing RED sequence, many following drivers continued slowly through the crosswalk without coming to a full STOP as required by law at a flashing RED beacon. Drivers who illegally enter the crosswalk during the flashing RED display may conflict with pedestrians legally in the crossing during the pedestrian clearance phase. This risk was rated B (low risk level).

The following suggestion(s) were discussed and action(s) were taken:

1. *Additional Signing:* Additional regulatory signaling was installed at selected HAWK crossing to determine their impact upon drivers as well as extensive educational program and enforcement. The black on white signs read "STOP—MAY PROCEED WITH CAUTION WHEN FLASHING". Observation of the signing over the last year, as well as the media campaign, has shown little change in the driver's behavior. However, enforcement has made a significant impact upon individual driver's behavior as it does with other traffic enforcement.
2. *Eliminate flashing interval:* The HAWK operation is very effective in gaining appropriate driver compliance at pedestrian crossings and significantly increases the percentage of drivers voluntarily stopping for pedestrians. The beacon signal displays a solid RED indication to traffic during the WALK interval and is then followed by an alternating flashing RED interval during the flashing DON'T WALK interval. The current alternating RED flashing sequence was adopted from the successful operations used in Europe, which uses a flashing AMBER at PELICAN crossings, and Los Angeles, which uses a flashing RED indication at midblock crossings. The advantages of the flashing RED indication a) allows the reasonable and prudent driver to proceed when it is safe to do so, and b) better matches the crossing time needs of the individual pedestrian to actual delay thus maintaining high driver compliance. It is impossible to have a pre-determined crossing time match the time necessary for all individuals that may cross. The beacon signal operation needs to match the user expectancy in order to keep the compliance high. The key to the issue is that the operation of the STOP command should be generally only as long as the pedestrian needs to cross and reach the other curb and not become

5. RSA Report

6. Owner Response

7. Implementation

RoadSafetyAssessments
MAKING ARIZONA'S ROADS SAFER

ARIZONA
ROAD SAFETY ASSESSMENT APPLICATION

1. Name, Position/Title, Address of Contact Person:
   _____ Phone Number: _____
   _____ Fax: _____
   _____ Email: _____
   _____

2. Type of assessment requested (planning, design, construction, existing): _____

3. Specific location of proposed RSA project (intersection, spot location, road segment or project, or new facility):
   Route(s): _____ Segment: _____ Project: _____
   From/To (if segment/project): _____ Segment Length: _____
   City/County/Tribe: _____

4. Describe any improvement plans, including stage (scoping, design, construction, etc.), for this location:
   _____
   _____

5. Reasons for requesting RSA:

http://azdot.gov/Highways/Traffic/9620.asp

6. What is the crash experience for the most recent 3-year period (total crashes, fatal crashes, injury crashes, crash rate, etc.)? (not applicable for new facility) _____
   _____

7. Does your agency have a method to identify and prioritize road safety issues? _____ If yes, where does this location rank within your agency's problem locations? _____

8. Average Daily Traffic (ADT) volume for road(s): _____

9. Please list month and/or days of week when safety issues are most prevalent, if applicable: _____
   _____

10. Describe any future development planned for this area:
    _____
    _____

11. Please include any additional road owners, photos and/or other information that highlight the location:
    _____

12. Signature (and printed name) of Person with Authority to Respond To/Implement the RSA Findings:
    _____ Date: _____

RSAs in Arizona

- 25 of 53 RSAs conducted in past 6 years have been rural RSAs
  - 8 Tribes
  - 6 Counties
  - 6 ADOT Districts
  - 1 National Park

Projects Resulting from RSAs

- Coconino County- improve Leupp Rd ($983,000)
- Graham County- roundabout at 8th Ave/Airport Rd ($2,500,000), intersection improvement at Reay Ln/Safford-Bryce Rd ($556,000)
- Tohono-O'odham Nation- improve SR 86/IRR 15 intersection ($2,000,000)
- Bullhead City- various roads: Pedestrian Hybrid Beacon (HAWK), street lighting, intersection improvements, roadway improvements ($2,100,000)
- Scottsdale- improve Thomas Rd/Hayden Rd intersection ($1,200,000)

Questions???

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602-382-8991
Kelly.larosa@dot.gov

ADOT RSA Program
Michael Blankenship
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mblankenship@dot.gov

ADOT Traffic Safety Section

Local Gov't HSIP & HRRP
Irene J. Higgs
602-712-7581
ihiggs@azdot.gov

Statewide HSIP Program
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602-712-7374
maglan@azdot.gov