Florida’s Intersection Safety Implementation Plan (ISIP)

Alan El-Urfali, PE
State Traffic Engineering and Operations Office

March 28, 2017
Intersection Safety Implementation Plan

• Background
• What is an ISIP?
• ISIP Project Screening Process
• Proposed ISIP Systematic Implementation
  – Intersection Control Evaluations (ICE)
  – Design standards
• Discussion
Background

Florida’s Strategic Highway Safety Plan

- Lane Departure Crashes
- Commercial Vehicle Crashes
- Motorcycle Crashes
- Intersection Crashes
- Speeding and Aggressive Driving Crashes
- Distracted Driving Crashes
- Impaired Driving Crashes
- Teen Driver Crashes
- Work Zone Crashes
- Pedestrian and Bicycle Crashes
- Aging Road User Crashes
- Traffic Records and Information Systems
- Unrestrained Occupant Crashes
- Engineering
- Enforcement
- Education
- Traffic Records and Information Systems
So why focus on intersections?

• Locations that pose the greatest risk to any user.
• The one place where all road users and vehicle types come together.
• A point of conflict that relies on signage, traffic control devices, roadway design and good behavior of users to operate safely.
• Pedestrians and bicyclists account for more than 17 percent of the fatalities at intersections.
• Intersections create risks for aging road users because as people age, there are declines in visual, cognitive, and physical abilities.
Moving towards a fatality-free roadway system requires re-evaluating current process for determining intersection improvements.

FDOT’s Intersection Safety Coalition formed

Implementation strategy identified:

- Reduce frequency & severity of intersection crashes by limiting conflicts through geometric, traffic control and lighting
- Institute Highway Safety Manual (HSM) analyses and road safety audits to make improvements for all users
- Use traditional and alternative designs & technologies to reduce conflict risks such as innovative intersection designs, access management and roundabouts
- Improve awareness and visibility of traffic control devices so all users can safely navigate intersections
What is an ISIP?

• Intersection Safety Implementation Plan (ISIP) identifies key steps, responsibilities, estimated funding requirements, and estimated injuries and fatalities prevented annually.

• The Florida ISIP will have:
  – Intersection Control Evaluations (ICE) for top ranked intersections
  – Selection of low-cost countermeasures
  – Development new standards and guidelines
What is an ISIP?

Intersection Control Evaluations (ICE)

A new FDOT policy and procedure implementing a consistent and objective intersection evaluation process that is built upon performance-based criteria for determining the “best value” geometric design and traffic control for a given intersection/interchange.

Planned to be adopted July 1, 2017
ISIP Project Screening Process

- Candidate Intersections are identified based on AASHTO Highway Safety Manual (HSM) methodologies
- Predictive method using network (statewide) screening process called “Excess Expected Crash Frequency”
- Intensive data collection effort
- Start with state highway system intersections first, then include off system, local intersections.
ISIP Project Screening Process

Highway Safety Manual (HSM)

- AASHTO’s guide for analyzing transportation safety
- Provides guidance on conducting predictive method crash analysis given various condition variables
- Includes Safety Performance Functions (SPFs) which help establish expected crash frequencies for given conditions/variables
- Used as a foundation for establishing ICE analysis tools and performance criteria
ISIP Project Screening Process

• Intersections will be “grouped” or categorized according to HSM criteria:
  – Rural or Urban
  – 2-lane or multi-lane
  – Divided or undivided
  – Signalized or stop control
  – 3-leg or 4-leg

• Ranked based on highest crashes resulting from the “Excess Expected Crash Frequency” screening process
Proposed ISIP Implementation

• Intersection Control Evaluation (ICE) Component:
  – Top ranked intersections based on excess expected crash frequency
  – Perform ICE for top ranked intersections
  – Implement intersection improvements based on ICE results (Identified Innovative Intersection Control Types)

• Low Cost Improvements Component:
  – Creating new design standards and guidelines
  – Innovative signing and marking standards
Proposed ISIP Implementation

• Examples of Innovative ICE results:
  – Result of ICE process will be a list of innovative intersection types that will be programmed

Most common innovative intersections:
• Roundabouts
• Signalized Restricted Crossing U-Turn (R-CUT)
• Displaced Left-Turn
• Diverging Diamond
Proposed ISIP Implementation

- Examples of Innovative ICE results:
  - Roundabouts
Proposed ISIP Implementation

• Examples of Innovative ICE results:
  – RCUT
Proposed ISIP Implementation

• Examples of Innovative ICE results:
  – Displaced Left-Turn
Proposed ISIP Implementation

• Examples of Innovative ICE results:
  – Diverging Diamond
Proposed ISIP Implementation

- Examples of Low-Cost Standards:
  - Stop control enhancements (doubled up signage)
Proposed ISIP Implementation

- Examples of Low-Cost Standards:
  - Led Blank-Out Signs
Proposed ISIP Implementation

• Examples of Low-Cost Standards:
  – Intersection Conflict Warning Systems (ICWS)
Proposed ISIP Implementation

• Examples of Low-Cost Standards:
  – Internally Illuminated Reflective Pavement Markers (IIRPM)
Proposed ISIP Implementation

• Examples of Low-Cost Standards:
  – Flashing Yellow Arrow standards
Questions?