AUTOMATED FLAGGER ASSISTANCE DEVICES
SAVING LIVES
LANE CLOSURE ON TWO-LANE ROADS

- Flagging typically used to control traffic

- Various measures used to improve safety
  - Stop/slow paddles
  - High visibility apparel

- Still flaggers represent more than one-third of total and serious injuries to pedestrian workers
WHAT ARE AFADs?

- Portable traffic control systems remotely operated by a flagger
- Introduced in 2009 MUTCD
- Two types of AFADs
  - Stop/slow
  - Red/yellow lens
HOW DO STOP/SLOW AFADS WORK?

Stop

Proceed
HOW DO RED/YELLOW AFADS WORK?

Stop

Proceed

Transition
CONCERNS PRIOR TO STATEWIDE IMPLEMENTATION

- Motorist not understanding AFADs
  - Stop and then proceed like at a normal stop sign
  - Red, flashing yellow, and steady yellow circular indications

- Decreased compliance
  - Motorist misunderstanding
  - Less respect for device
  - Gate arm optional for stop/slow AFAD
RESEARCH STUDY

- 0-6407, Evaluation of the Effectiveness of Automated Flagger Assistance Devices
- September 2009 – August 2011
- Conducted by the Texas A&M Transportation Institute

Assessed effectiveness of AFADs
- Motorist surveys – comprehension
  - Stop/Slow AFAD
  - Red/yellow lens AFAD
  - Advance warning sign sequence
- Field studies – effectiveness
  - Operational
  - Safety
MOTORIST SURVEYS MAIN FINDINGS

- **Stop/slow AFADs**
  - Current signs *not* well understood
  - Experimental symbol sign best understood
  - Need to require gate arm

- **Red/yellow lens AFADs**
  - Participants understood stop and proceed phases
  - Most participants did *not* understand difference between flashing and steady yellow lights
  - Gate arm critical to understanding
## FIELD STUDY MAIN FINDINGS

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Violations per 100 Stop Cycles</th>
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</thead>
<tbody>
<tr>
<td>Flagger</td>
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</tr>
<tr>
<td>Red/yellow lens AFAD</td>
<td>2.2</td>
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<tr>
<td>Stop/slow AFAD – WAIT ON STOP sign</td>
<td>6.7</td>
</tr>
<tr>
<td>Stop/slow AFAD – WAIT ON STOP sign Gate arm</td>
<td>4.0</td>
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<tr>
<td>Stop/slow AFAD – WAIT ON STOP/GO ON SLOW signs Gate arm</td>
<td>3.2</td>
</tr>
<tr>
<td>Stop/slow AFAD – Alternative symbol signs Gate arm</td>
<td>3.8</td>
</tr>
</tbody>
</table>

- Violation rate for both AFADs higher than for flaggers
- Stop/slow AFADs
  - Minimum MUTCD requirements
    - Highest violation rate
    - Significantly higher than red/yellow lens AFAD
  - Adding gate arm decreased violation rate
  - Supplemental signs
    - After gate arm added did not impact compliance
    - Experimental sign did increase motorist understanding
CURRENT IMPLEMENTATION

- Both types of AFADs included in 2011 Texas MUTCD
  - Stop/slow
  - Red/yellow

- Developed AFAD standard sheet TCP (1-6)–12
  - Only used where there is one approaching traffic lane
  - Adequate stopping sight distance must be provided
  - Must be operated by certified flagger
  - Flaggers cannot leave unattended
  - MUTCD advance warning sign sequence used
  - All AFADs must have a gate arm with flag
  - Experimental supplemental signs used
AFADs DEPLOYED AS OF AUGUST 2012

The map shows the deployment areas across Texas, with specific numbers indicating the count of deployed areas:

- 3 areas in the northern region
- 2 areas in the central region
- 2 areas in the south-central region
- 14 areas in the southeastern region
- 9 areas in the eastern region
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- RESEARCH REPORT
THANK YOU