Traffic Control Devices
Pooled Fund Study

Co-Chairs:
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Purpose

To assemble a consortium composed of regional, State, local entities, appropriate organizations and the FHWA to:

1) establish a systematic procedure to select, test, and evaluate approaches to novel TCD concepts as well as incorporation of results into the MUTCD;

2) select novel TCD approaches to test and evaluate;

3) determine methods of evaluation for novel TCD approaches;

4) initiate and monitor projects intended to address evaluation of the novel TCDs;

5) disseminate results; and

6) assist MUTCD incorporation and implementation of results.
TCD PFS Members

- **State DOTs (26)**
  - Alabama DOT
  - California DOT
  - Colorado DOT
  - Delaware DOT
  - Florida DOT
  - Georgia DOT
  - Illinois DOT
  - Iowa DOT
  - Kansas DOT
  - Maryland DOT
  - Massachusetts DOT
  - Minnesota DOT
  - Mississippi DOT
  - Missouri DOT
  - Montana DOT
  - Nebraska DOT
  - New Hampshire DOT
  - New Jersey DOT
  - Nevada DOT
  - New York DOT
  - North Carolina DOT
  - Oregon DOT
  - Pennsylvania DOT
  - South Carolina DOT
  - Texas DOT
  - Wisconsin DOT

- **FHWA**
  - Office of Operations
  - Office of Safety
  - Eastern Federal Lands

- **Local Representation**
  - Los Angeles DOT
    - (John Fisher, retired)
  - Broward County DOT
    - (Lee Billingsley, retired)

- **Organizations**
  - American Traffic Safety Services Association (ATSSA)
Recently Completed Projects

- Lane Line Markings in Advance of Lane Reduction Transitions
- Human Factors Evaluation of Intersection Conflict Warning Systems
Lane Line Markings in Advance of Lane Reduction Transitions

Objective
Evaluate layouts of a dotted line for a lane-reduction transition in terms of:

- Merging behavior (i.e. moving into the adjacent lane) at lane-reduction transitions
- Driver understanding of the intended message conveyed at lane-reduction transitions (from both the terminating lane and the left adjacent lane)
- Perceived rankings of effectiveness

Layouts were developed with and without an adjacent solid white line
Lane Line Markings in Advance of Lane Reduction Transitions

Key Findings

• The addition of a solid white line results in:
  – Earlier lane changes
  – An understanding that drivers in an adjacent lane should not move into a lane that is about to terminate
  – An understanding by drivers in an adjacent lane that they should expect merging traffic

• Dotted lines (as opposed to broken lines) result in greater understanding that a lane is about to end.

• Drivers subjectively perceive the addition of the solid white line in lane reduction markings to be helpful in indicating a lane reduction.

• Drivers subjectively perceive dotted lines to be more effective than the broken line alone.
Human Factors Evaluation of Intersection Conflict Warning Systems

**Objective**

- Provide recommendations for ICWS signs at 2-way stop controlled intersections
  - Wording
  - Placement
  - Static versus blank-out
- Recommendations to apply to three intersection types
  - Two-lane through roads
  - Two-lane intersections with Multilane undivided roads
  - Two-lane intersection with multilane divided highways
Human Factors Evaluation of Intersection Conflict Warning Systems

Messages Tested

On major road:
- CROSSING VEHICLE
- ENTERING VEHICLE
- EXPECT ENTERING TRAFFIC
- TRAFFIC ENTERING
- WATCH FOR ENTERING VEHICLES

On minor road:
- APPROACHING TRAFFIC
- APPROACHING VEHICLE
- CROSS TRAFFIC
- TRAFFIC APPROACHING WHEN FLASHING
- EXPECT CROSS TRAFFIC
- WATCH FOR APPROACHING TRAFFIC
Human Factors Evaluation of Intersection Conflict Warning Systems

Key Findings

- On Minor Road
  - “CROSS TRAFFIC” well understood and preferred
  - “WHEN FLASHING” placard

- On Major Road
  - “CROSS TRAFFIC AHEAD” well understood and preferred
Current Projects

• Evaluation of Selected Symbol Signs (Phase IV)
  – Toll Plaza Electronic Toll Interoperability
  – Recreational and Cultural Interest Symbols
  – Lane Reduction/Merging Signs
  – Bicycle Detour
  – Single vs. Double Yellow Centerlines
  – Flashing Yellow Arrow
  – Truck Symbols
  – Alternative Fuels
  – Oncoming Traffic Has Extended Green
  – Regulatory Signs for Midblock Crossing
  – Ferry (Passenger)
  – Regulatory Sign for Bicycle/Vehicle Separation
  – Vehicle Prohibition (ATV, Snowmobiles, Mopeds)
  – Rail/Flangeway Bicycle Warning
  – Blind Hill Warning
Recently Selected Topics for Consideration

- Lane Reduction / Lane Drop Signing and Marking
- Guide Signing for U-Turn Intersections
- Enhancing Conspicuity for Standard Signs and Retroreflectivity Strips on Posts
Have Questions? Want to Join?

- Contact Tim Crouch (tim.crouch@dot.iowa.gov)
- Contact Jim Shurbutt at FHWA (jim.shurbutt@dot.gov)