NJDOT Comprehensive Strategic Highway Safety Plan: Highway Safety Emphasis Area 2 - Improving Design and Operation of Intersections

DVRPC Regional Safety Task Force

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Intersection Crashes: More Frequent Than You Think…

- Nearly half of all intersection crashes occur “strictly” at intersections, but potentially three quarters of them are intersection related and they are 20% more likely to result in injury as compared to mid-block crashes.
- In 2005, State and County roadways experienced 49% of their crashes at intersections, also referred to as “in the box”.
- Municipal roadways experienced 42% of their crashes at intersections.
- Signalized intersection crashes accounted for 10% of the crashes on Municipal roadways, 16% on the State system, and 18% on County roadways.

Goal:
Annually reduce intersection crash frequencies and severities across all roadway systems in New Jersey

- Intersection Crash Reduction Programs Currently Employed:

1) Intersection Improvement Program
2) Pedestrian
3) Left Turn
4) Right Angle (Incl. Red-Light Running)
5) Safe Corridors

Challenges:

1) MUTCD Guidelines for intersection design and operation are “minimal”
2) Wide range of signal designs and control methods employed throughout the State
3) Many locations with MUTCD warrant-satisfying crash experience frequently go unidentified until they are brought to the attention of the respective jurisdiction’s engineers by local police
4) NJ Access Code only applies to State roads
5) The significant volumes of traffic passing through intersection facilities require complex operations and control
6) Police resources are stretched thin enforcing other improper motor vehicle operator behaviors (e.g. speeding, drunk/aggressive/distracted driving, etc.)

Proposed Strategies:

1) Develop and/or enhance methodologies for identifying and selecting intersections for safety improvements

A. Evaluate existing methodologies

B. Develop handbook for intersection crash location identification, project development and implementation, and evaluation process

C. Improve website version of crash records database for engineering and planning professionals

2) Develop and implement an NJ Best Practices Guidebook for design and operation of signalized and non-signalized intersections

A. Organize a forum to establish guidelines

B. Implement and promote guidelines

Proposed Strategies (cont'd):

3) Educate the public on intersection safety issues

A. Promote utilization of existing resources to educate professionals

B. Expand intersection safety in NJ Driver's Manual and Driver Education programs

C. Educate decision-makers and the public about the benefits of investment in intersection safety

D. Develop a safety marketing plan

4) Enhance compliance and provide increased enforcement at intersections

A. Identify, evaluate and implement current technologies for enforcement

B. Educate law enforcement on the importance of the enforcement of traffic controls at intersections

Intersection Safety Program Methodologies

- High Priority (3-yr.Avg.>1 EPDO crash per month) and Top Priority (3-yr.Avg.>2 EPDO crashes per month) intersections in New Jersey
- Intersections averaging one moderate injury pedestrian crash per year
- Intersections experiencing four or more left turn crashes combined on opposing approaches
- Intersections experiencing five or more right angle crashes per year
- The three or four highest crash frequency and severity intersections or locations on NJ's State highway arterial corridors (representing 5% of the State system roadways)

Intersection Safety Project Prioritization

- Initial Safety Management Systems Ranking
- Obvious crash patterns
- Statistically significant crash types and frequencies
- Countermeasurability
- Ease of implementation (“Low-hanging fruit”)
- Minimal trade-offs
- Cost effectiveness / Return on investment

Project Justification/Evaluation

- Present Worth of Safety Elements of Capital Projects
- Benefit-to-Cost ratio of Low-Cost Projects exceed of 1.2
- Statistically significant reduction in crash frequencies and severities

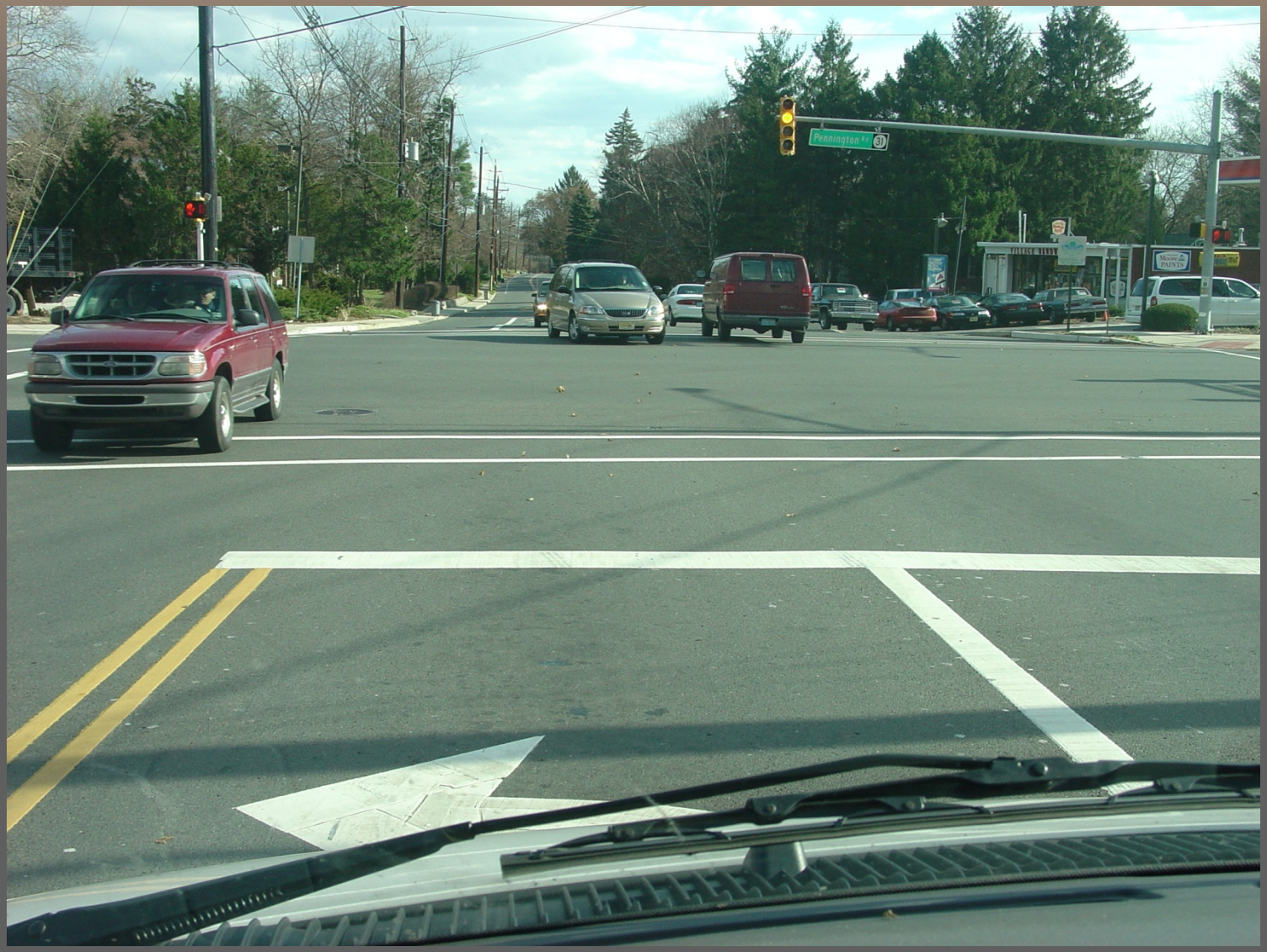
New Jersey Best Practices Guidelines

- Driver considerations

1. CONTROL OF CHANNELIZED RIGHT TURN LANES AT SIGNALS (SDRE, PED)
2. LEFT TURN SIGNALS (SDRE, LT, CAP)
3. LEFT/RIGHT TURN OVERLAPPING SIGNAL OPERATION (SDRE, PED, CAP)
4. STOPLINE SETBACK FOR LEFTMOST LANE OF MULTIPLE LANE APPROACHES (ENC, PED, CAP)
5. LANE GUIDANCE TRACKING FOR ADJACENT PAIRS OF LEFT AND THROUGH MOVEMENTS (SDSS, CAP)
6. PHYSICAL AND OPERATIONAL CONTROL OF LEFT TURN MOVEMENTS (LT, SDRE, SDSS, PED)
7. CHOICE OF CYCLE LENGTH AND MANNER OF PHASING OF SIGNALS (SDRE, SDSS, CAP)
8. APPROPRIATE SETTING OF YELLOW AND ALL-RED TIMES (RA, SDRE)

Pedestrian considerations

1. LOCATION AND NUMBER OF PEDESTRIAN CROSSINGS PROVIDED/MARKED/SIGNALIZED
2. PEDESTRIAN SIGNAL TYPES
3. PPB SIGNS ACCOMPANYING PEDESTRIAN SYMBOL INDICATIONS
4. DURATION OF WALK AND FLASHING DON'T WALK INTERVALS
5. VEHICULAR (3-SECTION) HEADS CONTROLLING PEDESTRIANS
6. MOVEMENT OF PEDESTRIANS ADJACENT TO SPLIT PHASE-CONTROLLED SIDESTREETS (LEFT TURN ARROW USAGE ASSUMED)
7. PROVISION OF HIGH VISIBILITY CROSSWALKS
8. 2009 MUTCD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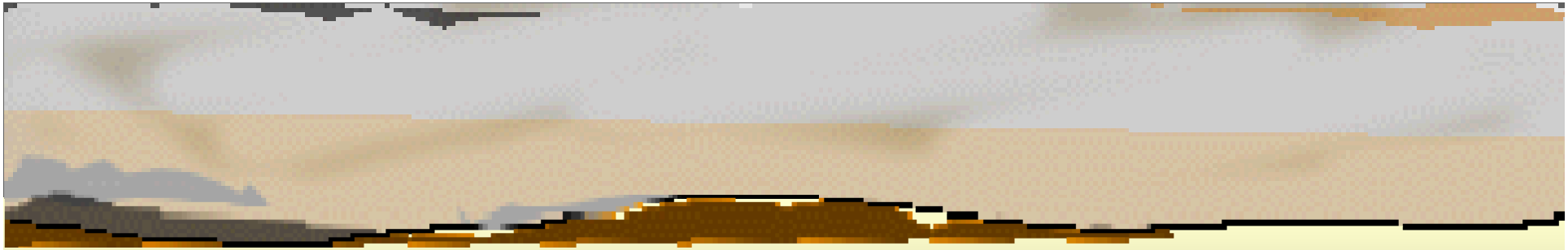
31



Engineering, Education, Enforcement, with Everyone personally accountable today…

...will keep the sights and sounds...
of the Emergency responders away!