Rapid City Intersection Crash Report

2009 - 2011

14 August 2012

Engineering Services Division
Public Works Dept.

Background

- Companion study to the Rapid City Arterial Street Safety Study (March 2012)
- Two categories
  - Signalized intersections
  - Unsignalized intersections
- GIS & State reportable crash data
- Screening methodology as per Highway Safety Manual (AASHTO, 2010)

Background

- Reviewed actual crash reports
- South Dakota Department of Transportation's Roadway Safety Improvement program
- Upcoming road improvement projects

Screening Methodology

- Signalized: critical crash rate
  - Chance or pattern?
  - 95% confidence level
  - Critical rate index
  - 16 intersections reviewed
- Unsignalized: method of moments
  - Adjusted crash frequency
  - Potential improvement index
  - 5 intersections reviewed

Causes for Patterns

- Geometric
  - Sight distance, curvature, lane configuration, etc.
- Operational
  - Yellow phase timing, left turn phasing, turn restrictions, etc.
- Access management
  - Location of driveways, number of driveways, etc.

Causes for Patterns

- Driver behavior
  - Erroneous informal visual driver input (“monkey see, monkey do”), red light running, speeding, etc.
- Weather
- Unknown

Recommended Mitigation Strategies

- Signal operation
  - Clearance intervals, head placement, timing, phasing
  - Example: Omaha St. (S.D.-44) & Cambell St., verify yellow & all-red timing
- Geometrics
  - Eliminate right turn bays
  - Example: Omaha St. (S.D.-44) & 5th St., eliminate southbound right turn bay
- Signing
  - Lane use signs
  - Example: East Blvd. & Main St., install lane use signs

Recommended Mitigation Strategies

- Control
  - Turn restrictions
  - Example: Haines Ave. & Knollwood Dr, prohibit left turns from Knollwood Dr.

- Targeted enforcement
  - Example: Lacrosse St. & Anamosa St., red light running

- "Do Nothing"
  - Travel patterns changing, no specific cause identified, other strategies not feasible
  - Example: E. North St. at Spruce St., new Wal-Mart, E. North St. project, E. Anamosa St. opening