



Big Book of Ideas Engineering Safety Strategies

October 2018

VISION ZERO 
Zero fatalities. Zero excuses.



Rural Intersections

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Upgrade Signs and Pavement Markings

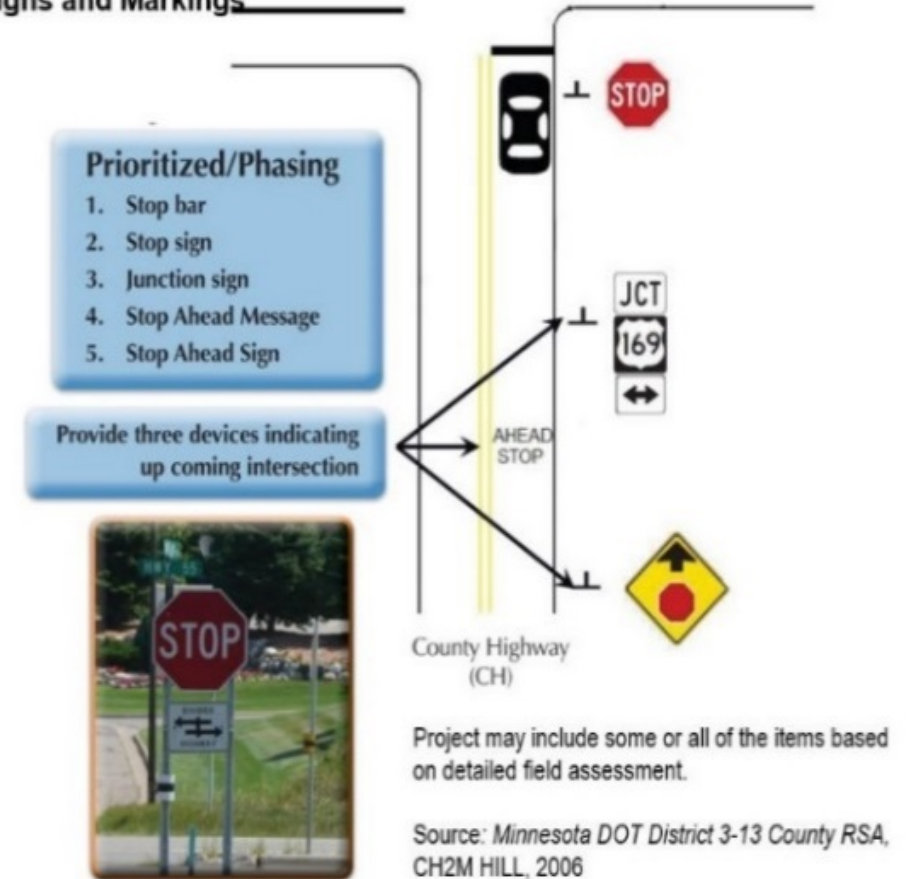
Crash Reduction Factor

- 40% upgrade of all signs and pavement markings
- 15% for STOP AHEAD pavement marking

Typical Installation Costs

- \$2,640 per approach

Upgraded Signs and Markings



Streetlights (and Approaches)

Crash Reduction Factor

- 25% to 40% of nighttime crashes

Typical Installation Costs

- \$6,000 per light



All-Way Stop/Yield

Crash Reduction Factor

- Not Available

Typical Installation Costs

- \$1,000 per intersection



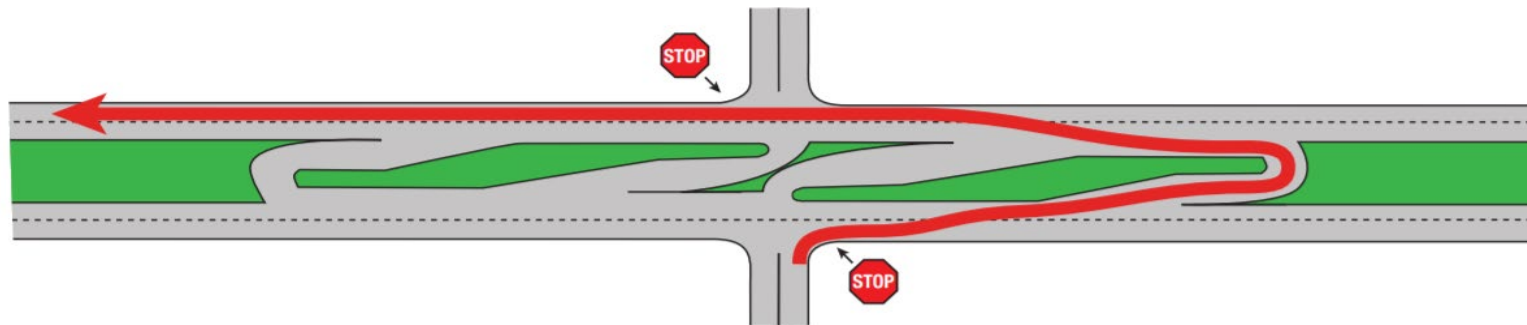
Restricted Crossing U-Turn (RCUT) Intersections

Crash Reduction Factor

- 17% all crashes
- 100% angle crashes

Typical Installation Costs

- \$750,000 per intersection



Rural Intersection Conflict Warning System (RICWS)

Crash Reduction Factor

- 50% all crashes
- 75% severe right angle crashes

Typical Installation Costs

- \$75,000 to \$125,000 per intersection



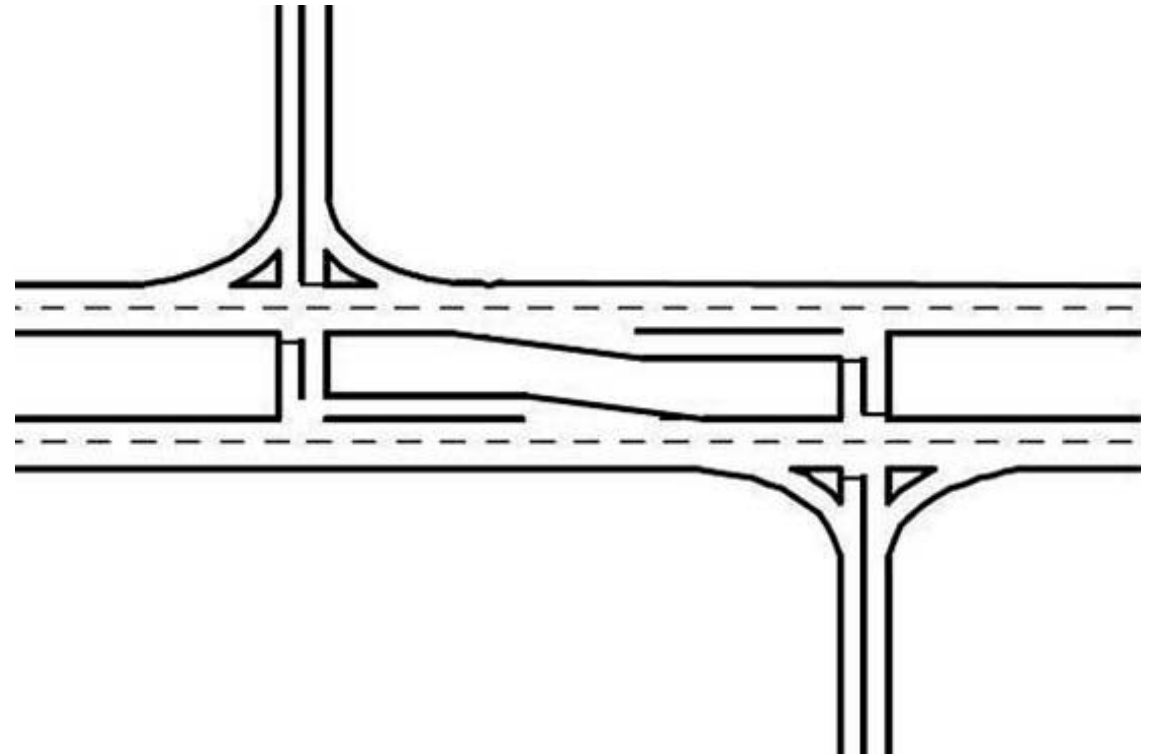
Offset T-Intersection

Crash Reduction Factor

- All crash types & severities 53%

Typical Installation Costs

- \$150,000 to \$300,000 per intersection



Roundabout

Crash Reduction Factor

- 20% to 50% all crashes
- 60% to 90% right-angle crashes

Typical Installation Costs

- \$1,000,000 per intersection



ND 22 & ND 200 roundabout in Killdeer, ND

Turn Lanes (Offset, Channelized)

Crash Reduction Factor

- Create positive offset left turn lanes ~35% (all + severe crashes)
- Channelize right turn lanes 43% - 60% (all crash severities)

Typical Installation Costs

- \$75,000 - \$250,000



Continuous Green T (Signalized)

Crash Reduction Factor

- Angle crashes – 96.8%
- Injury crashes – 70%
- Total crashes – 60%

Typical Installation Costs

- \$300,000 per intersection



Median Acceleration Lanes

Crash Reduction Factor

- Angle: increased 57%
- Rear End: decreased 40%

Typical Installation Costs

- \$115,000 for 1,500 feet with a 12 feet wide lane



LED Stop Signs

Crash Reduction Factor

- Angle crashes: 0% to 71%

Typical Installation Costs

- \$2,000 to \$6,000 per intersection



Remove Skew

Crash Reduction Factor

- 0% to 33%

Typical Installation Costs

- \$150,000 - \$300,000 per intersection

