The Power Combination: Roadsoft & the Safety Application

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Presentation Outline

• Identify Potential Problems
• Requirements of the Safety Application
• Analyze Crash Frequency / Severity
• Double Check all UD 10’s!
• Intersection Ranking
• Corridor Ranking
Identify Potential Problems

Non-Headed up Left Turn Lanes at Intersections

“Light’s green...Going thru FAST from the outside lane! If you’re turning left. Can you see me?”
Identify Potential Problems

Non Break-away Items

I’ve been here a long time...Please don’t hit me at 55+ mph. I won’t move!
4 Lane Corridors w/ Heavy Left Turning Potential

“I need to brake fast to turn left here!...is anyone behind this pick-up truck...and is someone behind me?”
Identify Potential Problems

Hidden Signal Heads

I’m a signal ahead. Can you see me?
Identify Potential Problems

Horizontal Curves
Safety Application

- Synopsis of Existing Conditions
- Proposed Fix via. MDOT Standards (AASHTO)
- Engineer’s Estimate (MERL)
- Rate of Return Analysis (or HSM) (MDOT)
- Crash History, Rankings & Statistics (Roadsoft)
- UD-10’s (Roadsoft)
Using Roadsoft to Analyze Crash Frequency
2 Main Project Types for HSIP funding

Spot Location

Systemic
Spot Locations

Use Ranking Tools
– Intersection Ranking
– Segment Ranking
Intersection Ranking
Ranked by Total crashes

Ranked by K/A crashes

<table>
<thead>
<tr>
<th>Intersection Name</th>
<th>Township</th>
<th>County</th>
<th>Total Crashes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caldwell Ave &amp; Mackin Rd</td>
<td>Flint Township</td>
<td>Genesee</td>
<td>120</td>
</tr>
<tr>
<td>N Dort Hwy &amp; E Carpenter Rd</td>
<td>Mundy Township</td>
<td>Genesee</td>
<td>147</td>
</tr>
<tr>
<td>Dupont St &amp; W Carpenter Rd</td>
<td>Davison Township</td>
<td>Genesee</td>
<td>146</td>
</tr>
<tr>
<td>W Court St &amp; S Linden Rd</td>
<td>Flint Township</td>
<td>Genesee</td>
<td>126</td>
</tr>
<tr>
<td>W Vienna Rd &amp; S 1 75/Vienna RAMP</td>
<td>Mt Morris Township</td>
<td>Genesee</td>
<td>122</td>
</tr>
<tr>
<td>WB Vienna/SB 1 75 RAMP &amp; W Vienna R</td>
<td>Flint Township</td>
<td>Genesee</td>
<td>120</td>
</tr>
<tr>
<td>E Mount Morris Rd &amp; N State Rd &amp; State F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S Saginaw St &amp; Klein St &amp; W Klein St</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S Saginaw St &amp; Saginaw/N 1 475 RAMP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E Pierson Rd &amp; North St</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lawndale Ave &amp; Forest Hill Ave</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest Hill Ave &amp; Welch Blvd</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S 1 475/Kearsley RAMP &amp; S 1 475</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S Dort Hwy &amp; S Saginaw Rd</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whitehouse Dr &amp; Beecher Rd</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Intersection Ranking
Segment Ranking

Pick the desired min. length
- Highlight the desired segment
- Click on ‘View Crashes’
- Opens Crash Grid view

Segment Ranking
<table>
<thead>
<tr>
<th>CR #</th>
<th>Location</th>
<th>Type</th>
<th>Description</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1001</td>
<td>Lapeer Rd</td>
<td>Rear End Straight</td>
<td>No Injury</td>
<td>2012-01-21</td>
<td>00:00</td>
</tr>
<tr>
<td>1002</td>
<td>Lapeer Rd</td>
<td>Rear End Straight</td>
<td>No Injury</td>
<td>2012-01-22</td>
<td>00:00</td>
</tr>
<tr>
<td>1003</td>
<td>Lapeer Rd</td>
<td>Rear End Straight</td>
<td>No Injury</td>
<td>2012-01-23</td>
<td>00:00</td>
</tr>
<tr>
<td>1004</td>
<td>Lapeer Rd</td>
<td>Rear End Straight</td>
<td>No Injury</td>
<td>2012-01-24</td>
<td>00:00</td>
</tr>
<tr>
<td>1005</td>
<td>Lapeer Rd</td>
<td>Rear End Straight</td>
<td>No Injury</td>
<td>2012-01-25</td>
<td>00:00</td>
</tr>
<tr>
<td>1006</td>
<td>Lapeer Rd</td>
<td>Rear End Straight</td>
<td>No Injury</td>
<td>2012-01-26</td>
<td>00:00</td>
</tr>
<tr>
<td>1007</td>
<td>Lapeer Rd</td>
<td>Rear End Straight</td>
<td>No Injury</td>
<td>2012-01-27</td>
<td>00:00</td>
</tr>
<tr>
<td>1008</td>
<td>Lapeer Rd</td>
<td>Rear End Straight</td>
<td>No Injury</td>
<td>2012-01-28</td>
<td>00:00</td>
</tr>
<tr>
<td>1009</td>
<td>Lapeer Rd</td>
<td>Rear End Straight</td>
<td>No Injury</td>
<td>2012-01-29</td>
<td>00:00</td>
</tr>
<tr>
<td>1010</td>
<td>Lapeer Rd</td>
<td>Rear End Straight</td>
<td>No Injury</td>
<td>2012-01-30</td>
<td>00:00</td>
</tr>
</tbody>
</table>
Viewing crash reports
Double Check Your UD-10’s

• Are crashes relevant to the proposed fix?
• Are they correctly recorded by crash type?
• What are the injury types?
• Was the crash recorded at the proper location?
• Was the UD-10 filed at the proper location?
Using the Queue
Exporting to Google Earth
Roadsoft to Google Earth
Combine ranking tools with Filters

Specific crash type

Specific countermeasure

Systemic Projects
Angle Crashes with Injuries at Intersections

Filter based on crash type

19,428 crashes
Angle Crashes with Injuries at Intersections

Filter based on crash year

8,391 crashes
Angle Crashes with Injuries at Intersections

Filter based on greatest injury severity

<table>
<thead>
<tr>
<th>Group</th>
<th>Field</th>
<th>Operator</th>
<th>Value(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Crash County</td>
<td>=</td>
<td>Genesee</td>
</tr>
<tr>
<td>1</td>
<td>Crash Type</td>
<td>=</td>
<td>Angle Driveway or Angle Straight or Angle Turn</td>
</tr>
<tr>
<td>1</td>
<td>Year of Crash</td>
<td>=</td>
<td>2016 or 2015 or 2014 or 2013 or 2012</td>
</tr>
<tr>
<td>1</td>
<td>Greatest Injury Severity</td>
<td>=</td>
<td>Incapacitating Injury or Killed or Non-Incapacitating Injury or Possible Injury</td>
</tr>
</tbody>
</table>

2,797 crashes found (animal crashes included)
Angle Crashes with Injuries at Intersections
Filter by Year

50,327 crashes

Specific Countermeasure
Fixed Object removal on HRRR eligible segment
Filter by NFC

50,327 crashes → 12,826 crashes → 

Specific Countermeasure
Fixed Object removal on HRRR eligible segment
Filter by ‘rural’

50,327 crashes → 12,826 crashes → 2,657 crashes

Specific Countermeasure
Fixed Object removal on HRRR eligible segment
Filter by ‘FXOBJ’

50,327 crashes → 12,826 crashes → 2,657 crashes → 666 crashes

Specific Countermeasure
Fixed Object removal on HRRR eligible segment