Temporary Portable Rumble Strips:
Reduce Crashes in Work Zones

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#Put Down the Phone

LEADING KILLER ON ONTARIO ROADS

Police Week 2017, May 14 - 20
Working Together for Safer Communities
Distracted Driving is now the number one risk on Canadian roads contributing to 8 in 10 collisions.

- 13% Talking on the phone with hands-free device
- 29% Reaching for something in the backseat
- 35% Looking and talking to passengers
- 35% Adjusting iPod or radio
- 47% Talking on cellphone
- 51% Eating and Drinking
- 71% Eating and Drinking
“A Comparison of the Cell Phone Driver and the Drunk Driver”

“We found that people are as impaired when they drive and talk on a cell phone as they are when they drive intoxicated at the legal blood-alcohol limit…”

- Strayer, Drews, Crouch, 2006
Visual Processing-Eye Movement Restrictions

Not on phone…

On phone…
More Visual Restrictions

Driving Alone

Driving and Listening
Work Zones: Planned Hazards

Construction Projects

Routine Maintenance
Mitigating a Killer

Driver Behavior

• Vision Zero
• DIAD – Drop It And Drive
• National Work Zone Awareness Week
• Increased fines and points

Engineering Solutions

• Portable Changeable Message Signs
• Truck Mounted Attenuators
• Portable barriers – steel and concrete
• Temporary Portable Rumble Strips
Countermeasure: Temporary Portable Rumble Strip (TPRS)
Research

• Kansas U: sound & vibration = milled-in strips
• Ohio U: speed reduction 8-12 mph = alert drivers
• 2 Case Studies
  • Pennsylvania Turnpike Commission
  • Texas A&M Transportation Institute I-35 Central Texas Expansion
PA Turnpike Commission Study

Goals of Study:

• Improve both work-zone and worker safety

• Determine if TPRS would increase driver awareness
PA Turnpike: Conclusions

With TPRS arrays in place:

• Speed Reduction
  • 8% average
  • 4% 85th percentile

• Merge distance before lane closure
  • Base line – 90 M
  • TPRS + Trooper – 180 M
  • TPRS only – 210 M
Case 2: I-35 Central Texas Expansion
Types of Crashes

- **Severe Crashes**
  - Without EOQ: 58%
  - With EOQ: 41%

- **Rear-End Crashes**
  - Without EOQ: 58%
  - With EOQ: 36%
Average Crash Cost Savings with EOQ System

$6,300 Per Night
TTI: Update!

Queues developed during nighttime closures, 6 PM – 3 AM
Countermeasure Effects When Queuing is Present...

Both countermeasures have a statistically significant effect

- PRS ONLY
- EOQ+PRS
Experiences in Canada

TPRS in Western Provinces

• Saskatchewan
  – Ashley Richards dies - August 2012
  – Conditional Requirement – May 2013
• British Columbia
  – Field trial – July 2015
• Alberta
  – Field trials - 2016
• Manitoba
  – Field trials - 2017
References

1.) Canadian Distractions Behind the Wheel, Rates.ca: http://ww1.prweb.com/prfiles/2014/10/07/12216393/Distracted%20Driving%20Infographic.jpg

2.) Dr. Paul Atchley: https://psych.ku.edu/paul-atchley#link2


4.) PA Turnpike: “RoadQuake Temporary Portable Rumble Strip Pilot Project”, Gibson-Thomas Engineering Co., Camp Hill PA, for Pennsylvania Turnpike Commission, May 13, 2016, Unpublished; contact PSS.

Thank You

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