Evaluation of Safety Practices for Short Duration Work Zones

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Research Goal and Objectives

- **Goal**
  - Identify cost effective and safer alternatives to the current procedures for short duration operations

- **Phase 1 objectives**
  - Review current ODOT procedures
  - Identify new strategies and technologies
  - Conduct a preliminary assessment of alternatives
  - Recommend alternatives for further evaluation
Research Goal and Objectives, cont.

- Phase 2 objectives
  - Purchase and evaluate recommended alternatives
  - Organize and conduct full-matrix, truck-mounted changeable message sign (CMS) demonstration
  - Recommend cost effective and safer alternatives for implementation
Operations Observed

- 15 maintenance activities
  - 9 mobile
  - 6 stationary
- About ½ daytime and ½ nighttime
- Majority on high-speed freeways
- Majority single lane closures
## Procedural Safety Enhancements

<table>
<thead>
<tr>
<th>Safety Improvement</th>
<th>Potential Benefit(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periodically pull over to allow traffic to pass convoy</td>
<td>Reduces motorist risky behavior</td>
</tr>
<tr>
<td>Do not park work vehicles in areas where drivers are merging</td>
<td>Provides recovery area for errant vehicle</td>
</tr>
<tr>
<td></td>
<td>Reduces likelihood of errant vehicle strike</td>
</tr>
<tr>
<td>Do not deploy traffic control devices en route to work site</td>
<td>Reduces driver confusion</td>
</tr>
<tr>
<td></td>
<td>Improves agency credibility</td>
</tr>
<tr>
<td>Make two passes to set dual advanced warning signs</td>
<td>Removes need for worker to cross live traffic on foot</td>
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<tr>
<td></td>
<td>Improves worker visibility</td>
</tr>
<tr>
<td>Ensure workers know how to space shadow vehicles</td>
<td>Reduces the potential for worker injuries and equipment damage due to roll/skid ahead when errant vehicle strikes shadow vehicle</td>
</tr>
<tr>
<td>Ensure workers know how to position advanced warning vehicles</td>
<td>Reduces driver merging conflicts, hard braking, and other erratic maneuvers</td>
</tr>
<tr>
<td>Develop internal traffic control plans</td>
<td>Reduces worker and equipment conflicts</td>
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</tbody>
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## Equipment Safety Enhancements

<table>
<thead>
<tr>
<th>Safety Improvement</th>
<th>Potential Benefit(s)</th>
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</thead>
<tbody>
<tr>
<td>Modify existing traffic control setup/removal equipment</td>
<td>Reduces risk of falls and back injuries</td>
</tr>
<tr>
<td></td>
<td>May reduce worker injury severity</td>
</tr>
<tr>
<td>Purchase dedicated vehicle for traffic control setup/removal</td>
<td>Reduces risk of falls and back injuries</td>
</tr>
<tr>
<td></td>
<td>May reduce worker injury severity</td>
</tr>
<tr>
<td>Use equipment to move channelizing devices</td>
<td>May reduce worker injury severity</td>
</tr>
<tr>
<td>Use automated equipment for traffic control setup/removal</td>
<td>Some may reduce worker exposure</td>
</tr>
<tr>
<td></td>
<td>May reduce worker injury severity</td>
</tr>
<tr>
<td>Use equipment-mounted lighting</td>
<td>Improves worker task lighting</td>
</tr>
<tr>
<td></td>
<td>Some types can reduce glare</td>
</tr>
<tr>
<td>Use personal task lighting</td>
<td>Improves worker visibility</td>
</tr>
<tr>
<td></td>
<td>Increases work area task lighting</td>
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<tr>
<td></td>
<td>Some types can reduce glare</td>
</tr>
<tr>
<td>Wear Performance Class 3 apparel</td>
<td>Increases worker visibility</td>
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</tbody>
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## Equipment Safety Enhancements, cont.

<table>
<thead>
<tr>
<th>Safety Improvement</th>
<th>Potential Benefit(s)</th>
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</thead>
<tbody>
<tr>
<td>Use mobile/portable positive protection alternatives</td>
<td>Provides lateral and rear positive protection</td>
</tr>
<tr>
<td>Use temporary rumble strips</td>
<td>Alerts distracted drivers</td>
</tr>
<tr>
<td></td>
<td>Reduces vehicle speeds by 2 to 5 mph</td>
</tr>
<tr>
<td>Use full-matrix, truck-mounted CMS</td>
<td>Provides drivers more specific information</td>
</tr>
<tr>
<td></td>
<td>Could reduce likelihood of drivers cutting into work convoy</td>
</tr>
<tr>
<td>Use intrusion alarms</td>
<td>Alerts workers to errant vehicles</td>
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</tbody>
</table>
Equipment Currently Being Studied

- Performance Class 3 apparel
- Personal task lighting
- Modifying existing traffic control setup/removal equipment
  - Worker basket
  - Dedicated maintenance-of-traffic (MOT) truck
- Equipment-mounted lighting
- Mobile barrier
Personal Gear

Before
Personal Gear, cont.

- Performance Class 3 apparel
  - ODOT purchased Class 3 pants
  - ODOT uniform program
  - Conducting visibility study this winter

- Halo Light™
  - ODOT purchased
  - Conducting visibility study this winter
Modifying Existing Equipment
Basket to Place and Remove Cones
Dedicated MOT Truck - Columbus
Dedicated MOT Truck - Cleveland
Equipment-Mounted Lighting
Mobile Barrier
Mobile Barrier, cont.
Mobile Barrier, cont.
Full-Matrix, Truck-Mounted CMS Demonstration

- Monday, October 24th
- 6 vendors
- 25 ODOT attendees
Moving Forward...

- Reduce and analyze field data
- Conduct visibility comparison
- Make recommendations
- Compose final report
- Project ends in August 2017
Contact Information

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