2015 VDOT – VAA
Asphalt Seminar
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Work Zone Safety

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Work Zone Safety Discussion Topics

- Overview of changes included in the Virginia Work Area Protection Manual, Revision 1
- Overview of 2013 Work Zone Crashes
- Overview of Short Term Reduced Work Zone Speed Limit Request Process
NEW – 2011 Virginia Work Area Protection Manual (Revision 1)

The 2011 Virginia Work Area Protection Manual with Revision 1 contains the most current standards, guidance, options, and support for the design, application, and placement of Temporary Traffic Control Devices on roadways in Virginia during construction, maintenance, utility, permit and emergency operations.

The PDF version of Revision 1 is the most current edition of the official VDOT publication. The 2011 WAPM with Revision 1 can be accessed by clicking on the link below. To access a chapter, click on the chapter listing in the table of contents.

2011 Virginia Work Area Protection Manual – Revision 1

In January 2015, Revision 1 to the 2011 Virginia Work Area Protection Manual was approved. Revision 1 becomes effective April 1, 2015, for daily operations. Revision 1 becomes effective July 1, 2015 for projects bid on or after July 1, 2015.

Copies of the 2011 WAPM with Revision 1 may soon be ordered from the American Traffic Safety Services Association (ATSSA), or may be printed.

The following document lists the technical changes shown in Revision 1 to the 2011 Work Area Protection Manual:

Technical Changes in Revision 1 of the 2011 Virginia Work Area Protection Manual

Below is a PowerPoint presentation listing the changes shown in Revision 1 to the 2011 Work Area Protection Manual:

Review of significant revisions to the 2011 Virginia Work Area Protection manual

An April 2015 Work Zone Safety Guidelines for Temporary Traffic Control pocket guide, reflecting the changes in the Revision to the 2011 Virginia Work Area Protection Manual, will be posted in the near future.

The 2011 Virginia Work Area Protection Manual (WAPM) without Revision 1 continues to be in effect for daily operations prior to April 1, 2015, and for projects advertised before July 1, 2015.
Key Dates

• Revision Effective Date(s):
  • April 1, 2015 – Daily Operations
  • July 1, 2015 – Projects bid on or after July 1, 2015
  • Any project bid before July 1, 2015 will continue under the 2011 VA Work Area Protection Manual, without revision 1.
Portable Sign Supports

Weight may be added to stabilize portable sign supports:

- Two drum collars on center of sign stand
- A sandbag per leg weighing approximately 25 lbs
- ** Except for signs that shall be weighted per “End of Day Signing” TTC diagrams, VA WAPM

Section 6F.03
Figure 6F-4, Vehicle-Mounted Signs for Temporary Traffic Control

- **WORK VEHICLE DO NOT FOLLOW**
  - G20-V1
  - Optional until June 30, 2017

- **WORK VEHICLE FREQUENT TURNS**
  - G20-V1a
  - Required as of July 1, 2017
Signs - Important Points

• The Flagger symbol sign shall be removed or covered whenever the flagger operation is suspended.

• ALL other TTC signs on posts or portable sign stands shall not be rotated to prevent the display of messages.

Section 6F.38, 6F.04
Sign Legibility

Based on a study by the University of Michigan, drivers need twice as much light to see the same object with the same clarity every 13 years after the age of 20.
Observations

• Motorist population is getting older, harder to see objects at night.
• Distracted driving is on the increase.
• It’s critical that temporary traffic control devices are visible and installed correctly to provide motorists adequate time to see and respond properly:
  • Clean w/ proper sheeting
  • Spaced appropriately and weighted
  • Monitored regularly
PCMS and “other trailer mounted devices delineate with 4 drums”

Arrow board:

- Delineate with a minimum of 4 channelizing devices with spacing matching those used in the taper.
- With paved shoulders 8 feet or more a shoulder taper is required (more than 4 devices).
Shadow Vehicle with a TMA

- All material and/or equipment on the shadow vehicle TMA shall be properly secured to prevent spillage if struck.
- On the back of the TMA 6" to 8" wide fluorescent orange or yellow retroreflective sheeting and black chevron inverted v stripes.
Appendix D was revised to provide uniformity across the Commonwealth by standardizing PCMS messages for temporary traffic control applications as shown in Chapter 6H. The new Tables are:

- PCMS Message for TTC Applications
- Unacceptable Portable Changeable Messages
### Table D-1, PCMS Message for TTC Applications

<table>
<thead>
<tr>
<th>TTC Number</th>
<th>PHASE 1</th>
<th>PHASE 2</th>
<th>PHASE 3 or Additional PCMS may be used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example</td>
<td>Line 1 / Line 2 / Line 3</td>
<td>Line 1 / Line 2 / Line 3</td>
<td>Line 1 / Line 2 / Line 3</td>
</tr>
<tr>
<td>TTC-17</td>
<td>LEFT / LANE / CLOSED</td>
<td>MERGE / INTO / RT LANE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*LFT LANE / CLOSED / MM123</td>
<td>MERGE / INTO / RT LANE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*HEAVY / TRAFFIC / AHEAD</td>
<td>EXPECT / DELAYS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*HEAVY / TRAFFIC / AHEAD</td>
<td>PREPARE / TO / STOP</td>
<td></td>
</tr>
<tr>
<td>TTC-18</td>
<td>2 LEFT / LANES / CLOSED</td>
<td>MERGE / INTO / RT LANE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*2 LFT LN / CLOSED / MM 123</td>
<td>MERGE / INTO / RT LANE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*HEAVY / TRAFFIC / AHEAD</td>
<td>EXPECT / DELAYS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*HEAVY / TRAFFIC / AHEAD</td>
<td>PREPARE / TO / STOP</td>
<td></td>
</tr>
</tbody>
</table>
Appendix D
Portable Changeable Message Signs Displays

Table D-3,
Unacceptable Portable Changeable Messages

<table>
<thead>
<tr>
<th>BEAWARE, BEWARE</th>
</tr>
</thead>
<tbody>
<tr>
<td>BE ALERT (any form or combination of BE ALERT messages)</td>
</tr>
<tr>
<td>CARE (any form or combination of CARE messages)</td>
</tr>
<tr>
<td>USE CARE</td>
</tr>
<tr>
<td>CAUTION (any form or combination of CAUTION messages)</td>
</tr>
<tr>
<td>USE CAUTION</td>
</tr>
<tr>
<td>NOTICE (messages)</td>
</tr>
<tr>
<td>WARNING, WARN (any form or combination of WARN messages)</td>
</tr>
</tbody>
</table>

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New and Revised Figures

End of Day Signing for Paving Operations on a Two-Lane Roadway

TTC-59.1
New and Revised Figures

End of Day Signing Surface Treatment, Slurry Seal, and Latex Emulsion Treatment Operations

TTC-64.0

Typical Traffic Control

End of Day Signing for Surface Treatment,
Slurry Seal and Latex Emulsion Treatment Operations

(Figure TTC-64.0)

NOTES

Standard:

1. LOOSE GRAVEL (W-7) signs shall be installed on surface treated roadways and shall be removed when the roadway has been swept or loose gravel have been removed from the roadway.

2. NO CENTER LINE (W-12) signs shall be installed whenever the centerline has been obliterated or until permanent pavement markings have been installed. The signs shall be installed in both directions when the centerline is not present. In addition, NO CENTER LINE signs shall be installed every mile if the unmarked area is less than 3 miles, or every 2 miles if the unmarked area is longer than 4 miles.

3. A DO NOT PASS (R40) sign shall be installed where the centerline has been obliterated or until permanent pavement markings have been installed. The DO NOT PASS sign shall be installed after the NO CENTER LINE sign and their signs stand shall be supported with a sand bag weighting approximately 25 pounds on each leg or two (2) drum collar weights positioned on the center of the sign stand. Thereafter, the DO NOT PASS sign installed every mile if the unmarked area is less than 3 miles, or every 2 miles if the unmarked area is longer than 4 miles.

4. Signs shall be post-mounted at locations after 72 consecutive hours of non-work activities.

5. Temporary construction or permanent pavement markings cannot be installed in accordance with Road and Bridge Specification 704, then yellow flexible temporary pavement markers (FTPMs) spaced at 20-40 feet centers for two-way traffic shall be placed along the centerline for lane division. No signage will be required.

Guidance:

6. Sign spacing distance should be 500-500' where the posted speed limit is 45 mph or less, 500-600' where the posted speed limit is greater than 45 mph.

Option:

7. Only traffic control signing for surface treatment, slurry, latex, emulsion treatment operations is shown. Other traffic control devices may be used for the control of traffic through the work area.

8. The advanced warning sign shown may also be used on multi-lane roadways replacing the NO CENTER LINE signs with UNMARKED PAVEMENT AHEAD (W-86) signs and adding a ROAD WORK AHEAD (W-12) sign as the first advanced warning sign.
2013 Work Zone Crash Statistics

WZ Crashes and Injuries

WZ Crashes

- 2013: 3405
- 2012: 3465

WZ Injuries

- 2013: 1679
- 2012: 1781
2013 Work Zone Crash Statistics

* Includes a consultant inspector and a pavement marking contractor employee.

2014 Work Zone Fatalities
Tentatively thru Nov. 2014
State Wide: 15 Fatalities
SW Region: 3 Fatalities

2013:
- 16 Fatal Crashes
- 21* Fatalities

2012:
- 12 Fatal Crashes
- 13 Fatalities

* Includes a consultant inspector and a pavement marking contractor employee.
2013 Work Zone Crash Statistics

Of the 3405 crashes last year, 469 were single vehicle crashes while 2935 were multi-vehicle crashes.

Included in these numbers were 63 motorcycle crashes resulting in 67 injuries and 3 fatalities.

Combined, there were a total of 7192 motorists involved in a work zone crash in 2013.
### 2013 Work Zone Crash Statistics

<table>
<thead>
<tr>
<th>Location in the Work Zone</th>
<th>Number of Crashes</th>
</tr>
</thead>
<tbody>
<tr>
<td>TERMINATION AREA (lets traffic resume normal driving)</td>
<td>70 crashes</td>
</tr>
<tr>
<td>WORK AREA</td>
<td>2237 crashes</td>
</tr>
<tr>
<td>BUFFER AREA (provides protection for traffic and workers)</td>
<td>422 crashes</td>
</tr>
<tr>
<td>TRANSITION AREA (moves traffic out of its normal path)</td>
<td>672 crashes</td>
</tr>
<tr>
<td>ADVANCED WARNING AREA (tells traffic what to expect ahead)</td>
<td></td>
</tr>
</tbody>
</table>
2014 Work Zone Reviews

The following were positive findings during our review this year:

1. Proper signage for lane closures and shoulder operations
2. Effective use of PCMS and Arrow Boards
3. Adequate taper lengths and placement of tapers
4. Use of High Visibility Class 3 garments by workers
5. Positive flow of traffic through the work zones
2014 Work Zone Reviews

The following were deficiencies related to paving operations found during our review this year:

• Missing “End of Day” signage (Bump, Uneven Lanes, Rough Road) on some operations and entrance ramps.
• Mixture of drums with improper sheeting.
• Nighttime glare from work lights.
• Maintenance of channelizing devices near exit ramps.
• Workers wearing high visibility garments improperly.
The following are some additional areas of concern:

- Channelizing devices placed into open travel lanes for the entire length of the lane closure versus moving out then back in along with the operation.
- Lane closures excessively longer than needed.
- Closing ramps too soon.
- Running ramp traffic across grass areas.
- Leaving out advance STOP AHEAD or YIELD AHEAD signs on entrance ramps.
Short Term Reduced Work Zone Speed Limit Request Process

- Process finalized and published in December 2014 in order to streamline.
- Reduction only in effect during time of day when work zone is active.
- All traffic control devices will be installed based on the original posted speed limit.
- Form and guidance for request is available on VDOT website:

http://www.virginiadot.org/business/trafficeng-default.asp
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