DATE: December 16, 2015

SUBJECT: Publication 213 - Shadow Vehicle Utilization during Mowing Operations

TO: District Executives

FROM: Richard N. Roman, P.E., Director
       Bureau of Maintenance and Operations
       Richard Roman /s/

This Strike-off Letter (SOL) is to clarify the requirements for the utilization of shadow vehicles in conjunction with mowing operations along conventional highways as well as freeways and expressways. The attached drawings and notes provide information pertaining specifically to mowing operations. Relief from the shadow vehicle requirement has been provided for mowing along freeways and expressways where the tractor does not encroach upon the shoulder while actively mowing.

Should you have any questions, please contact Matthew Briggs, Work Zones and Regulations Unit, at 717.783.6268.

Attachment
cc: Anthony Mento, P.E., Director of Technical Services, FHWA
    Michael Casetellano, P.E., Safety Engineer, FHWA
    Timothy Scanlon, P.E., Director, Traffic Engineering and Operations, PTC
    Jason Wagner, Director, Policy and Government Relations, APC
    Eric Madden, Executive Vice President, APC
    Assistant District Executive – Construction
    Assistant District Executive – Design
    Assistant District Executive – Maintenance
    Maintenance Services Executives
    District Planning and Programming Managers
    District Plans Engineers
    District Traffic Engineers
    District Training Coordinators
    District Safety Coordinators
    District HOP Permit Managers
    County Maintenance Managers
    Richard Kirkpatrick, Press Secretary, Press Office
    Andrew Blum, Policy Specialist, Policy Office
    Daryl St.Clair, P.E., Acting Special Assistant, Highway Administration
    Steven Roth, Assistant Counsel, Office of Chief Counsel
    Richard Roman, P.E., Director, BOMO
    Christopher Norris, Director, BHR
    Cindy Cashman, Director, Legislative Affairs
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    Laine Heltebridle, Director, Planning and Research
    Penny Morgan, Chief, Safety Division, BHR
    Glenn Rowe, P.E., Chief, Highway Safety and Traffic Operations Division, BOMO
    Kimberly Martin, Chief, Maintenance Performance Division, BOMO
    Jonathan Fleming, Acting Chief, Maintenance Technical Leadership Division, BOMO
    Robert Pento, P.E., Chief, Traffic Engineering and Permit Section, BOMO
    Matthew Briggs, Manager, Work Zones and Regulations Unit, BOMO
    Larry Fagan, Work Zone Specialist, BOMO
    Ryan Palman, Regulations Specialist, BOMO
    David Gaffney, Civil Engineer Trainee, BOMO
1. Mowing operations should be performed without encroaching upon the roadway and/or shoulder whenever possible. A shadow vehicle is required if the tractor utilizes any part of the travel lane to perform the mowing operation. The shadow vehicle is optional when the tractor will remain on or beyond the shoulder while actively mowing.

2. The shadow vehicle shall maintain a reasonable distance from the mower while remaining visible to approaching motorists for a minimum distance shown on the chart below. The mower and shadow vehicle should proceed at approximately the same speed, however shadow vehicle should slow down in advance of vertical or horizontal curves that restrict sight distance. The distance between the shadow vehicle and mower may vary according to terrain and other factors.

3. Where practical and when needed, the shadow vehicle and mower should pull over periodically to allow vehicular traffic to pass.

4. A Mowing Next X Miles (W21-14) sign shall be installed 500’ prior to the area to be mowed when a shadow vehicle is not utilized. The mowing operation must remain downstream and within the distance posted on the sign (up to 5 miles maximum). This sign is optional when a shadow vehicle is utilized.

5. An appropriate temporary traffic control sign, such as Lane Closed Do Not Pass (G80-1), Mowing Ahead (W21-8) or Road Work Ahead (W20-1) sign, shall be placed on the rear of the shadow vehicle and mounted in a manner such that it is not obscured by equipment or supplies. The shadow vehicle may be equipped with an arrow panel. If used, operate the arrow panel in Caution Mode when there is a single lane approaching the mowing operation. The arrow panel is to be operated in Merge Mode when there are multiple lanes approaching the mowing operation and the shadow vehicle occupies the right lane. Refer to PATA 012 for arrow panel guidelines.

6. Mowers performing operations that do not require a shadow vehicle may utilize the roadway to navigate around roadside obstacles such as utility poles, traffic signs, etc. without the protection of a shadow vehicle. The operator shall yield the right of way to all vehicles before entering the roadway in accordance with Pennsylvania Consolidated Statutes Title 75 (Vehicle Code) Section 3324 and exit the roadway immediately after passing the obstruction.

7. The mower is required to have a Slow Moving Vehicle Emblem (V1-6-1) mounted to the rear and positioned as near as practicable to the center of the vehicle. A flashing, oscillating or revolving yellow light which is visible from any direction (360° visibility) must be active when mowing is in progress.

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**Signs**

![Signs]

- W20-1: Road Work
- W21-8: Mowing Ahead
- W21-14: Mowing Next X Miles
- G80-1: Lane Closed Do Not Pass
- V1-6-1: Slow Moving Vehicle Emblem

**Shadow Vehicle Visibility To Approaching Drivers**

<table>
<thead>
<tr>
<th>Speed (MPH)</th>
<th>Minimum Distance (Feet)</th>
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<tbody>
<tr>
<td>25</td>
<td>155</td>
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<tr>
<td>30</td>
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1. Mowing operations are to be performed without encroaching upon the roadway and/or shoulder whenever possible. A shadow vehicle is required if the tractor will encroach upon the shoulder or roadway while performing the mowing operation. The shadow vehicle is optional if the tractor remains beyond the shoulder, although the mowing implement may overlap the shoulder up to 12” while actively mowing.

2. The shadow vehicle shall maintain a distance of 150’ to 250’ from the mower depending upon the regulatory speed limit while remaining visible to approaching motorists for a minimum distance shown on the chart below. The mower and shadow vehicle should proceed at approximately the same speed, however the shadow vehicle should slow down in advance of vertical or horizontal curves that restrict sight distance. The distance between the shadow vehicle and mower may vary according to terrain and other factors.

3. Mowers performing operations that do not require a shadow vehicle may utilize the shoulder or roadway to navigate around roadside obstacles without the protection of a shadow vehicle. The operator shall yield the right of way to all vehicles approaching on the roadway in accordance with Pennsylvania Consolidated Statutes Title 75 (Vehicle Code) Section 3324. The mower shall exit the roadway immediately after passing the obstruction.

4. At least one warning sign must be visible to drivers while mowing is in progress. If the sign will be placed on the ground, install the Mowing Next X Miles (W21-14) sign 500’ prior to the area to be mowed and install this sign on side of the roadway where mowing operations will take place. The mowing operation must remain downstream within the distance shown on the sign (up to 5 miles maximum). If a shadow vehicle will be used, a Mowing Ahead (W21-8) or Road Work Ahead (W20-1) sign may be placed on the rear of the shadow vehicle in lieu of the (W21-14) sign.

5. The shadow vehicle may be equipped with an arrow panel which, if active, shall be operated in caution mode. Refer to PATA 012 for arrow panel guidelines.

6. The mower is required to have a Slow Moving Vehicle Emblem (V1-6-1) mounted to the rear and positioned as near as practicable to the center of the vehicle. A flashing, oscillating or revolving yellow light which is visible from any direction (360° visibility) must be active when mowing is in progress.

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**Signs**

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- W21-8: Mowing Ahead
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Mowing Operation On The Right Side
Freeways And Expressways

Shoulder Encroachment:
Tractor Utilizes Any Part Of The Shoulder While Mowing

No Shoulder Encroachment:
Tractor Consistently Remains Beyond The Shoulder
Mowing Operation In The Median
Freeways and Expressways

Shoulder Encroachment:
Tractor Utilizes Any Part Of The Shoulder While Mowing

No Shoulder Encroachment:
Tractor Consistently Remains Beyond The Shoulder
G80-1
LANE CLOSED DO NOT PASS SIGN

The Lane Closed Do Not Pass Sign (G80-1) may be used in conjunction with mobile operations on conventional
highways that occupy the only available travel lane in a particular direction. It may also be used in conjunction
with mobile operations on freeways and expressways that occupy all available travel lanes in a
particular direction.

On conventional highways, place the sign on the back of the first shadow vehicle a motorist will encounter while
approaching the operation. On freeways and expressways, place the sign on the back of the first shadow vehicle
in each lane that motorists will encounter while approaching the operation.

The 48”x24” or the 84”x36” size may be used for operations taking place on conventional highways.

The 84”x36” sign may be used for operations taking place on freeways and expressways.

<table>
<thead>
<tr>
<th>SIGN SIZE A x B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>BOR-DER</th>
<th>BLANK STD.</th>
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<td>5C</td>
<td>1</td>
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<td>6C</td>
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<td>18.8</td>
<td>22.2</td>
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<td>6D</td>
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<td>7</td>
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COLOR:

LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)

TOP BACKGROUND:
ORANGE (REFLECTORIZED)

BOTTOM BACKGROUND:
WHITE (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION

By: Date: 9/15/15
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations