Revision 1 - Virginia Work Area Protection Manual
Frequently Asked Questions

The intent of this document is to provide interpretation & provide future guidance to updating the VWAPM. This information may be implemented in the field at the discretion of the Engineer.

1. **Section 6A.01 General**
   - add references for pedestrian, bicycle, crosswalks & sidewalks and trails documents
   
   Guidance:
   
   03 The Virginia Department of Transportation Work Zone Pedestrian and Bicycle Guidance document, VDOT Guidelines for the Installation of Marked Crosswalks, Section 1330 of the Road and Bridge Standards, Part 6 of the MUTCD and Chapter 4 of FHWA’s Designing Sidewalks and Trails for Access should be used to address the needs and control for pedestrians and bicyclists through a TTC zone.
   
   12 The TTC plan should start in the planning phase and continue through the design, construction, and restoration phases. The TTC plans and devices should follow the principles set forth in this Manual, the Virginia Department of Transportation Work Zone Pedestrian and Bicycle Guidance document, VDOT Guidelines for the Installation of Marked Crosswalks, Section 1330 of the Road and Bridge Standards, Part 6 of the MUTCD and Chapter 4 of FHWA’s Designing Sidewalks and Trails for Access.

2. **Section 6A.03 Definitions of Words and Phrases in This Manual**
   - add submittal of internal traffic control plan for ingress, egress & parking private vehicle.
   
   19. Flagger—a certified person who actively controls the flow of vehicular traffic and other road users into and/or through a temporary traffic control zone using hand-signaling devices or an Automated Flagger Assistance Device (AFAD).

3. **Section 6B.01 Fundamental Principles of Temporary Traffic Control**
   - add submittal of internal traffic control plan for ingress, egress & parking private vehicle.
   
   Guidance:
   
   14 Attention should be given to the maintenance of roadside safety during the life of the TTC zone by applying the following principles:
   
   C. Work equipment, workers’ private vehicles, materials, and debris should be stored in such a manner to reduce the probability of being impacted by run-off-the-road vehicles. An internal traffic control plan should be submitted and approved by the Engineer identifying the ingress, egress and parking areas for workers’ private vehicles on long-term projects.

4. **Section 6C.01 Temporary Traffic Control Plans**
   - add references for pedestrian, bicycle, crosswalks & sidewalks and trails documents, mark through deletion, and spacing of channelizing devices
   
   Guidance:
   
   03 The Virginia Department of Transportation Work Zone Pedestrian and Bicycle Guidance document, VDOT Guidelines for the Installation of Marked Crosswalks, Section 1330 of the Road and Bridge Standards, Part 6 of the MUTCD and Chapter 4 of FHWA’s Designing Sidewalks and Trails for Access should be used to address the needs and control for pedestrians and bicyclists through a TTC zone.
   
   16 TTC plans should be designed in accordance with the approach speeds prior to construction when possible, except for channelizing device spacing which should be spaced based on the active work zone speed limit.
5. **Section 6C.11 One-Lane, Two-Way Traffic Control**
   - add control of intersecting roadways & entrances and mark through deletion

   **Standard:**
   01 When traffic in both directions must use a single lane for a limited distance, movements from each end shall be coordinated as well as intersecting roadways. Entrances shall be controlled as directed by the Engineer.

   **Guidance:**
   02 Provisions should be made for alternate one-way movement through the constricted section via methods such as flagger control, a flag transfer, a pilot car, traffic control signals, or stop or yield control.

6. **Section 6C.12 Flagger Method of One-Lane, Two-Way Traffic Control**
   - broke up paragraph & changed paragraph numbers; add low volume number & visibility note

   **Guidance:**
   02 A single flagger can be used on low volume (less than 500 vpd) two-lane roadways. The work zone must be short and the flagger must have a clear line of sight to both ends of the work zone.

   03 When a single flagger is used, the flagger should be stationed on the shoulder opposite the constriction or work space, or in a position where good visibility and traffic control can be maintained at all times.

   **Standard:**
   04 When good visibility and traffic control cannot be maintained by one flagger, traffic shall be controlled by a flagger at each end of the work area.

   **Guidance:**
   05 One of the two flaggers should be designated as the coordinator or lead flagger. Flaggers should be able to communicate with each other orally, electronically, or with manual signals. These manual signals should not be mistaken for flagging signals.

7. **Section 6C.13**
   - delete

   **Section 6C.13 Flag Transfer Method of One-Lane, Two-Way Traffic Control**

   **Support:**
   02 The driver of the last vehicle proceeding into the one-lane section is given a red flag (or other token) and instructed to deliver it to the flagger at the other end. The opposite flagger, upon receipt of the flag, then knows that it is reasonably safe to allow traffic to move in the other direction. A variation of this method is to replace the use of a flag with an official pilot car that always follows the last road user vehicle proceeding through the section.

   **Guidance:**
   02 The flag transfer method should be employed only where the one-way traffic is confined to a relatively short length of a road, usually not more than 1 mile in length.

8. **Section 6C.14 Pilot Car Method of One-Lane, Two-Way Traffic Control**
   - add flaggers coordinate traffic moving in pilot car operation & radio communication between flaggers and pilot car operation

   **Standard:**
   04 A flagger shall be stationed on the approach to the activity area to control vehicular traffic until the pilot vehicle is available. Flaggers shall coordinate traffic movement at intersecting roadways and other areas as directed by the Engineer. All flaggers and pilot car operators shall be interconnected by radio communications.
9. **Section 6C.15 TTC Signal Method of One-Lane, Two-Way Traffic Control**
   - add references to VWAPM & Specifications and deleted R&B Standard reference

   **Option**
   01 Traffic control signals may be used... as approved by the Regional Traffic Engineer (see Section 6F.93, Figure TTC-25, Section 512 of the Road and Bridge Specifications and Chapter 4H of the 2009 MUTCD and Standard TS-1 of the Road and Bridge Standards)

10. **Section 6D.02 Accessibility Considerations**
    - add references for pedestrian, bicycle, crosswalks & sidewalks and trails documents

   **Guidance:**
   02 The extent of pedestrian needs should be determined through engineering judgment or by the individual responsible for each TTC zone situation. Adequate provisions should be made for pedestrians with disabilities. The Virginia Department of Transportation Work Zone Pedestrian and Bicycle Guidance document, VDOT Guidelines for the Installation of Marked Crosswalks, Section 1330 of the Road and Bridge Standards, Part 6 of the MUTCD and Chapter 4 of FHWA’s Designing Sidewalks and Trails for Access should be used to address the needs and control for pedestrians and bicyclists through a TTC zone.

11. **Section 6D.03 Worker Safety Considerations**
    - require Class E trouser when worker is using backpack type equipment that block visibility of the safety apparel and workers consider walking facing traffic while performing duties on foot

   **Standard:**
   12 All apparel shall be securely fastened such that the greater conspicuity provided by the fluorescent colors, retroreflectivity and pattern of the high-visibility apparel is visible for 360° around the wearer. When the high visibility Class 3 apparel is blocked by the wearing of equipment (weed eaters, leaf blowers, etc.), the worker shall also wear Class E trousers.

   **Guidance:**
   14 Workers should consider walking facing traffic when performing duties on foot.

12. **Section 6E.02 High-Visibility Safety Apparel**
    - add recommendation for flagger to wear Class E trouser during daylight hours and renumber paragraphs

   **Guidance:**
   06 Flaggers should wear Class E trousers during daylight hours.

13. **Section 6E.04 Automated Flagger Assistance Device**
    - add channelizing device requirement for AFAD

   **Standard:**
   19 Four (4) cones shall be used to form a taper in advance of the AFAD when in operation. If the AFAD is not operational and is located within the clear zone in an unmanned work zone four (4) drums shall be used to form a taper in advance of the AFAD.

14. **Section 6E.06 Automated Flagger Assistance Device**
    - Change minimum vertical aspect of gate arm and sheeting to 4 inches.

   **Standard:**
   04 A Red/Yellow Lens AFAD shall include a gate arm.....When the arm is in the down position blocking the approach lane:

   A. The minimum vertical aspect of the arm and sheeting shall be 4 inches; and
15. Section 6E.07 Flagger Procedures

- delete allowing flagger to standing in lane after queued traffic; add timeframe for stopping traffic, add details were a flagger can stand and how to approach a vehicle, and not allowing the use of mobile devices

Guidance:
06 The flagger should stand either on the shoulder adjacent to the road user being controlled or in the closed lane prior to stopping road users. A flagger should only stand in the lane being used by moving road users after road users have stopped.

Standard:
08 The flagger shall stand alone, away from other workers, work vehicles, or equipment. When shoulder space is limited the flagger shall stand as close to the shoulder as possible and never move any further into the lane being used by stopped or moving traffic at any time. The flagger shall approach the vehicle from the passenger side to speak with a driver if directions or information must be given to a driver.
09 Flaggers shall not use cellular phones, head/ear phones, Bluetooth or other similar devices while at the flagger station.

Guidance:
10 Radio communication should be used between flaggers and between the pilot vehicle operator and a flagger shall control each roadway connection (intersection) - Add timeframes for stopping traffic, single flagger use on low volume roadways; flagger control

Guidance:
11 To maintain the efficiency of road user flow in a flagging operation on a two-lane roadway the maximum time motorist should be stopped at a flagger station is 10 minutes for high volume roadways (average daily traffic of 500 or more vehicles per day) to a maximum of 15 minutes for low volume roadways (less than 500 vehicles per day).
12 When stoppage timeframes are greater 15 minutes advance notification should be given to the motorist with either a static sign or PCMS message.

Option:
13 These maximum stoppage times may need to be reduced based on traffic conditions, roadway geometrics, presence of emergency vehicles and other site conditions.

Option:
14 At spot lane closures where adequate sight distance is available for the reasonably safe handling of traffic, the use of one flagger may be sufficient.

Guidance:
15 When a single flagger is used, the flagger should be stationed on the shoulder opposite the work space, or in a position where good visibility and traffic control can be maintained at all times.

Standard:
16 A single flagger shall only be used on low volume roadways (less than 500 vehicles per day) for short-term stationary operations.
17 Only uniformed law enforcement officers are allowed to direct traffic through an operating traffic signal (see Section 46.2-834 of Highway Laws of Virginia). Flaggers do not have the authority and shall not direct vehicles through an operating traffic signal at an intersection.
18 A flagger shall control each roadway connection (intersection) located between the flaggers controlling movement through the work operation as shown in Figure TTC-67, Lane Closure Operation Through an Unsignalized Intersection or as directed by the Engineer. A flagger shall control only one lane of traffic approaching an intersection as shown in Figure TTC-30, Flagging Operation at a Signalized Intersection.

Support:
19 Flaggers may use whistles, air horns, or other audible devices to alert and warn workers of the approach of a vehicle which failed to stop at the flagger station when instructed to do so.
16. **Section 6E.08 Flagger Stations**
   - delete allowing flagger to standing in lane after queued traffic; add details were a flagger can stand and how to approach a vehicle, and not allowing the use of mobile devices

**Standard:**

13 A person designated by the employer shall coordinate all work operations on or over the railway’s right-of-way with the Railway Company and make all arrangements for necessary flagger and watchperson service.

17. **Table 6F.1 Temporary Traffic Control Zone Sign and Plaque Sizes (Sheet 5 of 6)**
   - Change sign size at the request of the industry with fabrication requirements and add a new sign

In Revision 1, Table 6F.1 the 48” x 48” sizes was incorrect for these signs as well. Regardless, the fabrication requirements were correct in the VA Standard Highway Signs book. Therefore, the 60” x 36” LEFT/RIGHT TURN LANE OPEN and LEFT/RIGHT TURN LANE CLOSED signs may be used until April 1, 2018. The industry asked for a design change to reduce the size of the LEFT/RIGHT TURN LANE OPEN and LEFT/RIGHT TURN LANE CLOSED signs to 48” x 36” to better fit the portable sign support.

Add new signs

(a) **Table 6F.1 - Corrected sizes & New Signs**

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<tr>
<td>Left (Right) Turn Lane Open</td>
<td>E5-V3L, V3R</td>
<td>48 x 36</td>
<td>48 x 36</td>
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<tr>
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<td>E5-V4L, V4R</td>
<td>48 x 36</td>
<td>48 x 36</td>
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<tr>
<td>Turn Lane with Arrow</td>
<td>E5-V5L, 5R</td>
<td>48 x 48</td>
<td>48 x 48</td>
<td>36 x 36</td>
<td></td>
</tr>
</tbody>
</table>

(b) **Fabrication requirements:**

18. **Section 6F.02 General Characteristics of Signs**
   - Add bicycle and school may use fluorescent yellow-green backgrounds

**Option:**

07 In order to maintain the systematic use of yellow or fluorescent yellow-green backgrounds for pedestrian, bicycle and school warning signs in a jurisdiction, fluorescent yellow-green background for pedestrian, bicycle and school warning signs may be used in TTC zones.

19. **Section 6F.03 Sign Placement**
   - Add minimum mounting high for portable sign support on some signs

**Standard:**

24 Stop, Yield, Left/Right Turn Lane Open, Left/Right Turn Lane Closed, Turn Lane with Arrow (located at turn lane temporary go), Exit Open, Exit Closed, Exit w/Arrow (located at exit’s temporary go), signs mounted on portable sign supports shall be mounted a minimum of 7 feet from the pavement surface to the bottom of the sign.
20. **Figure 6F-1, Height and Lateral Location of Signs**  
   - Change post extension above the sign on “A-RURAL AREA” to 2'-0" MAX.

21. **Section 6F.08 Road (Street) Closed...Bike Lane Closed (R11-V3) and Path Closed Sign (R11-V4)**  
   - Change Add Bike Lane Closed and Path Closed sign to title and note regarding their use  
   **Standard:**  
   07 The BIKE LANE CLOSED (R11-V3) and PATH CLOSED (R11-V4) sign shall be installed above a Type 3 Barricade on short-term and long-term projects.

22. **Section 6F.18 Warning Sign Function, Design, and Application**  
   - Add MUTCD and VA Supplement to the 2009 MUTCD references  
   **Standard:**  
   03 TTC warning signs shall comply with the Standards for warning signs presented in 2009 MUTCD Part 2 and its SHSM (see Section 1A.11 of the 2009 MUTCD or Virginia Supplement to the MUTCD) and its VSHS. Except as provided in Paragraph 6, TTC warning signs shall be diamond-shaped with a black legend and border on a fluorescent orange background, except for the W10-1 sign which shall have a black legend and border on a yellow background, and except for signs that are in Parts 2 or 7 of the 2009 MUTCD and Parts 2 and 9 of the Virginia Supplement to the 2009 MUTCD shall have fluorescent yellow-green backgrounds.

23. **Section 6F.35 Exit Open Sign (E5-2), Exit Closed Sign (E5-2a), Left/Right Turn Lane Open Sign (E5-V3), Left/Right Turn Lane Closed Sign (E5-V4L), Turn Lane with Arrow Sign (E5-V5), Begin Left/Right Turn Lane With Arrow Sign (R3-20L)**  
   - Add Turn Lane Closed, Turn Lane with Arrow and Begin Turn Lane w/ Arrow sign to title and their notes regarding their use  
   **Standard:**  
   04 For better visibility the EXIT OPEN, EXIT CLOSED, LEFT/RIGHT TURN LANE OPEN (E5-V3), LEFT/RIGHT TURN LANE CLOSED (E5-V4L), TURN LANE WITH ARROW (E5-V5) and BEGIN LEFT/RIGHT TURN LANE WITH ARROW signs shall be mounted a minimum of 7 feet from the pavement surface to the bottom of the sign (see Figures TTC-26, TTC-27, and TTC-37).  
   **Guidance:**  
   05 The LEFT/RIGHT TURN LANE OPEN (E5-V3L, V3R) sign should be used where work is being conducted in the vicinity of turn lanes and where the entrance maneuver for vehicular traffic using the turn lane is different from the normal condition. The LEFT/RIGHT TURN LANE OPEN sign should be installed in advance of the TURN LANE w/ Arrow (E5-V5L?, EV5R?). The signs are only required on the side of the open turn lane.  
   07 When a turn lane is closed, a LEFT/RIGHT TURN LANE CLOSED (E5-V4L, V4R) sign should be placed at the beginning of the closed turn lane. The LEFT/RIGHT TURN LANE CLOSED AHEAD sign should be installed in advance of the LEFT/RIGHT TURN LANE CLOSED sign. The signs are only required on the side of the open turn lane.  
   **Standard:**  
   06 The BEGIN LEFT/RIGHT TURN LANE w/ Arrow (R3-20L, R3-20R) sign shall be used on long-term conditions (for longer than 3 consecutive days) in conjunction with the LEFT/RIGHT TURN LANE OPEN and placed at the beginning of the turn lane taper or the open turn lane.  
   **Option:**  
   08 On long-term work zones the right and left sign assemblies may be used for LEFT/RIGHT TURN LANE OPEN or the LEFT/RIGHT TURN LANE CLOSED AHEAD signs.  
   **Standard:**  
   09 The 60" x 36" LEFT/RIGHT TURN LANE OPEN and LEFT/RIGHT TURN LANE CLOSED signs may be used until April 1, 2018 at which time 48" x 36" size shall be used.
24. Section 6F.36 Exit Sign (E5-V1)
   - add clarification arrow direction shall match permanent gore sign

   **Standard:**
   09 A temporary EXIT (E5-V1) sign (see Figure 6F-5) shall be located in the temporary gore. For better visibility, it shall be mounted a minimum of 7 feet from the pavement surface to the bottom of the sign (see Figure TTC-37). The gore EXIT with arrow sign shall correctly identify that the exit is on the right or left by matching the arrow on the permanent EXIT arrow sign.

25. Section 6F.40 … Trucks Entering Highway Sign and Construction Entrance Sign
   - add clarification placement of signs identifying ingress and egress point

   **Guidance:**
   06 CONSTRUCTION ENTRANCE (W11-V2) sign should be used to identify ingress points for deliveries and the TRUCKS ENTERING HIGHWAY sign should be used to identify egress point for trucks entering roadways on large scale projects. The CONSTRUCTION ENTRANCE and the TRUCKS ENTERING HIGHWAY signs should be covered or removed when the daily work activity cease.

26. Section 6F.53 No Center Line Sign (W8-12) and Unmarked Pavement Ahead Sign (W8-V4)
   - add UNMARKED PAVEMENT AHEAD sign for two-lane roadway renumber remaining paragraphs

   02 The UNMARKED PAVEMENT AHEAD (W8-V4) sign shall be erected in advance of resurfaced roadway sections 500 feet or more in length where the center line and edge lines have been removed until pavement markings are applied.

27. Section 6F.66 Detour Signs
   - smaller detour sign may be used upon the approval of RTE

   **Option:**
   06 The DETOUR M4 series signs and plaque sizes for Non-Restricted Right-of-Way Roadway may be reduced to Restricted Right-of-Way Roadway sizes as approved by the Regional Traffic Engineer.

28. Section 6F.68 Portable Changeable Message Signs
   - add CMS may be mounted on shadow and queue warning vehicle; PCMS use with all signs cannot be installed; and renumber paragraphs starting at 30 & conspicuity marking on other trailer mounted device

   **Option:**
   15 For the CMS mounted on shadow vehicles (pick-ups), queue warning vehicles, service patrol trucks or other incident response vehicles, a letter height as short as 10 inches may be used. Shorter letter sizes may also be used on a PCMS used on low speed (30 mph or less) facilities provided that the message is legible from at least 650 feet.

   **Guidance:**
   29 When closing a lane on a multi-lane highway, if all of the advance warning signs cannot be installed on both the right and left side of the highway, a PCMS displaying lane closure information should be used in advance of the first warning sign.

   **Standard:**
   37 A PCMS trailer or other non-crashworthy trailer mounted devices such as but not limited to intelligent transportation systems (ITS), Highway Advisory Radio, Speed Trailers, CB Wizards, ITS cameras, Portable Traffic Control Signals, AFAD units, light towers, etc., shall be delineated on a permanent basis by affixing retroreflective material, known as conspicuity material, in a continuous line on the face of the towed trailer as seen by oncoming road users, where the trailer’s signal and brake lights are located.
29. **Section 6F.71 (09) Channelizing Devices**
   - clarify extending 4 additional channelizing devices beyond downstream end of transition area

   **Guidance:**
   09 When channelizing devices have the potential of leading vehicular traffic out of the intended traffic space as shown in Figure TTC-42, the channelizing devices should be extended with 4 additional channelizing devices beyond the downstream end of the transition area as depicted.

30. **Section 6F.75 Drums**
   - add drum required for tapers for gore areas

   **Standard:**
   25 Drums shall be used in all unmanned work zone locations, in all merging and shifting tapers including tapers for gore areas on Limited Access highways during nighttime operations, and in tapers providing delineation...

31. **Section 6F.76 Type 3 Barricades**
   - add sidewalk and share use path closure using Type 3 Barricades

   **Guidance:**
   05 Where Type 3 Barricades extend entirely across a roadway, a sidewalk, or a share use path, the stripes should slope downward in the direction toward which road users must turn (see Figures 6F-8 and 6F-9).

32. **Section 6F.76 Temporary Marking:**
   - updated eradicated repair per the Engineer and add sizes of transverse crosswalk line, yield line marking and optional temporary detectable warning strip

   **Standard:**
   06 Eradication of pavement markings shall be performed to minimize damage to the roadway surface as well as provide a safe travel way for road users including, but not limited to, motorcyclist and bicyclist. Damaged roadway or deterioration of the pavement surface caused by eradication shall be repaired as directed by the Engineer.
   13 Transverse crosswalk lines shall be a minimum of 6 inches wide and shall be used on long-term projects, see TTC-36 and refer to the Virginia Department of Transportation Work Zone Pedestrian and Bicycle Guidance document.
   14 When used in conjunction with a transverse crosswalk, yield lines shall be 24” x 36” and supported by YIELD HERE TO PEDESTRIANS (R1-5) sign, see TTC-36 & Figure 3B-16(b) of the Virginia Supplement to the 2009 MUTCD.
   **Option:**
   15 Transverse crosswalk lines may be supplemented with a yellow 6 inch wide temporary detectable warning strip, refer to the Virginia Department of Transportation Work Zone Pedestrian and Bicycle Guidance document.

33. **Section 6F.92 Vehicle Warning Lights:**
   - clarify when warning lights are needed on equipment

   **Standard:**
   03 Warning lights shall be used on all vehicles performing moving and mobile operations and on equipment with rollers or wheels.

34. **Section 6F.93 Temporary Traffic Control Signals**
   - reference Section 512 (j) of the Road and Bridge Specifications and the type of channelizing devices to delineate portable temporary traffic control signals

   **Standard:**
   07 The Regional Traffic Engineer shall determine which traffic control signal will be used - portable or temporarily mounted on fixed supports. Any field adjustments or changes to the temporary traffic
control signal shall be in compliance with Section 512 (j) of the Road and Bridge Specifications prior to implementation.

17 Four (4) cones shall be used to form a taper in advance of the portable temporary traffic control signals when workers are present. When the temporary traffic control signals are used on a long-term project four (4) drums shall be used to form the taper.

35. Section 6F.96 Rumble Strips
- Provide guidance when PTRS may be used and when they should not be used as well as increase spacing between PTRS.

Option
06 PTRS may be considered for work operations that last 4 hours or longer.
07 The PTRS shall be able to withstand being run over by an 80,000 pound vehicle and retain its original placement with minor incidental movement of 6 inches or less during an 8-hour deployment. The PTRS shall be used in arrays of three rumble strips spaced 10 to 15 feet center to center (see TTC-23), placed transverse across the travel lane.

Guidance:
17 PTRS should not be placed on horizontal curves, fresh seal coat, bleeding asphalt, soft pavement, heavily rutted roads, gravel roads, or roadways with loose gravel or sand. PTRS should not be used for emergency response or snow or icy weather.

36. Section 6F.98 Pedestrian and Bicycle Warning Sign, Plaques and Regulator Signs for TTC
- New section

Standard:
01 The BICYCLE TRAFFIC (W11-1) sign, the PEDESTRIAN TRAFFIC (W11-2) and the COMBINED BIKE AND PEDESTRIAN CROSSING (W11-15a) signs (see Figure 2C-10) shall be used to alert road users to locations where bicyclists and/or pedestrian traffic has been relocated in a TTC zone.

Option:
02 Supplemental plaques (see Section 2C.53) with legends such as DIAGONAL ARROW (W16-7p), AHEAD (W16-9p), XX FEET (W16-VP3), NEXT XX MILES (W16-VP1) or On Road (W16-1) may be mounted below warning signs to provide advance notice to road users of unexpected entries.

Standard:
03 YIELD HERE TO PEDESTRIANS (R1-5) signs (see Figure 2B-2(VA) of the Virginia Supplement to the 2009 MUTCD shall be used if yield lines are used in advance of a marked crosswalk that crosses an uncontrolled multi-lane approach. The STOP HERE FOR PEDESTRIANS (R1-5b and R1-5c) signs shall not be used in Virginia. The legend STATE LAW can be displayed at the top of the R1-6 and R1-9 signs.

04 If used in advance of a pedestrian and bicycle crossing, a W11-15 or W11-15a sign shall be supplemented with an AHEAD or XX FEET plaque (see Section 2C.55 of the MUTCD) to inform road users that they are approaching a point where crossing activity might occur.

05 If a post-mounted W11-1, W11-2, or W11-15a sign is placed at the location of the crossing point where pedestrians, bicyclists, or other shared-use path users might be crossing the roadway, a diagonal downward pointing arrow (W16-7P) plaque (see Figure 2C-12) shall be mounted below the sign. If the W11-1, W11-2, or W11-15a sign is mounted overhead, the W16-7P supplemental plaque shall not be used.

06 The W11-1, W11-2, W11-15, and W11-15a signs and their related supplemental plaques shall have a fluorescent yellow-green background with a black legend and border.

07 If yield lines and YIELD HERE TO PEDESTRIANS signs are used in advance of a crosswalk that crosses an uncontrolled multi-lane approach, they shall be placed 20 to 50 feet in advance of the nearest
crosswalk line, see Section 3B.16 and Figure 3B-17(VA) of the Virginia Supplement to the MUTCD, and parking shall be prohibited in the area between the yield (stop) line and the transverse crosswalk.

Guidance:
08 Yield lines and YIELD HERE TO PEDESTRIANS signs should not be used in advance of crosswalks that cross an approach to or departure from a roundabout.

Option:
09 The crossing location identified by a W11-1, W11-2, W11-15, or W11-15a sign should be defined with crosswalk markings (see Section TTC-36 and Section 3B.18 of the Virginia Supplement to the MUTCD).
10 In order to remind drivers who are making turns to yield to pedestrians, a TURNING VEHICLES YIELD TO PEDESTRIANS (R10-15) sign may be used.

Standard:
11 If used, the TURNING VEHICLES YIELD TO PEDESTRIANS (R10-15) sign shall utilize a fluorescent yellow-green background.
12 The IN-STREET PEDESTRIAN CROSSING (R1-6) sign shall be used to remind road users of state laws regarding right-of-way at an un-signalized pedestrian crosswalk. The sign shall include the STATE LAW legend and the YIELD symbol.
13 The R1-5b, R1-5c, R1-6a and R1-9a sign shall not be used in Virginia, as the Code of Virginia requires drivers to yield to Pedestrians, see Section 2B.12 of the Virginia Supplement to the MUTCD.
14 The IN-STREET PEDESTRIAN CROSSING Sign shall be placed in the roadway at the crosswalk location on the center line, on a lane line, or on a median island. The IN-STREET PEDESTRIAN CROSSING sign shall not be post-mounted on the left-hand or right-hand side of the roadway.
15 An IN-STREET PEDESTRIAN CROSSING sign shall not be placed in advance of the crosswalk to educate road users about the State law prior to reaching the crosswalk, nor shall it be installed as an educational display that is not near any crosswalk.

Guidance:
16 If an island (see Chapter 3I) is available, the IN-STREET PEDESTRIAN CROSSING sign, if used, should be placed on the island.

Standard:
17 The Pedestrian Traffic (W11-2) symbol sign shall be used in combination with an In-Street Pedestrian Crossing sign, the W11-2 sign with a diagonal downward pointing arrow (W16-7P) plaque may be post-mounted on the right-hand side of the roadway at the crosswalk location.
18 The IN-STREET PEDESTRIAN CROSSING shall not be used at signalized locations.
19 The IN-STREET PEDESTRIAN CROSSING sign shall have a black legend (except for the red YIELD sign symbols) and border on a white background, surrounded by an outer fluorescent yellow-green background area, see Figure 6F-XX.
20 Unless the IN-STREET PEDESTRIAN CROSSING sign is placed on a physical island, the sign support shall be designed to bend over and then bounce back to its normal vertical position when struck by a vehicle.
21 The top of an IN-STREET PEDESTRIAN CROSSING shall be a maximum of 4 feet above the pavement surface. The top of an In-Street Pedestrian Crossing sign placed in an island shall be a maximum of 4 feet above the island surface.
### 37. Table 6F-3  Pedestrian and Bicycle Warning Sign, Plaques and Regulator Signs for TTC:

- New table of pedestrian and bicycle signs and plaques.

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<td>Yield Here To Pedestrians</td>
<td>R1-5</td>
<td>6F-xx</td>
<td>36 x 36</td>
<td>36 x 36</td>
<td>36 x 36</td>
</tr>
<tr>
<td>In-Street (Yield) Pedestrian Crossing</td>
<td>R1-6b</td>
<td>6F-xx</td>
<td>12 x 36</td>
<td>12 x 36</td>
<td>12 x 36</td>
</tr>
<tr>
<td>Turning Vehicles Yield To Pedestrians</td>
<td>R10-15L, 15R</td>
<td>6F-xx, TTC-36</td>
<td>30 x 30</td>
<td>30 x 30</td>
<td>30 x 30</td>
</tr>
<tr>
<td>Bike May Use Full Lane</td>
<td>R4-11</td>
<td>*WZPBG</td>
<td>30 x 30</td>
<td>30 X 30</td>
<td>30 X 30</td>
</tr>
<tr>
<td>Bike May Use Full Lane</td>
<td>R4-11</td>
<td>*WZPBG</td>
<td>30 X 30</td>
<td>30 X 30</td>
<td>30 X 30</td>
</tr>
<tr>
<td>Pedestrian Crosswalk</td>
<td>R9-8</td>
<td>6F.15</td>
<td>36 x 18</td>
<td>36 x 18</td>
<td>36 x 18</td>
</tr>
<tr>
<td>Sidewalk Closed</td>
<td>R9-9</td>
<td>6F.16</td>
<td>30 x 18</td>
<td>30 x 18</td>
<td>30 x 18</td>
</tr>
<tr>
<td>Sidewalk Closed, Use Other Side</td>
<td>R9-10</td>
<td>6F.16</td>
<td>48 x 24</td>
<td>48 x 24</td>
<td>48 x 24</td>
</tr>
<tr>
<td>Sidewalk Closed, Cross Here</td>
<td>R9-11L</td>
<td>6F.16</td>
<td>48 x 36</td>
<td>48 x 36</td>
<td>48 x 36</td>
</tr>
<tr>
<td>Sidewalk Closed, Cross Here</td>
<td>R9-11aL, 11aR</td>
<td>6F.16</td>
<td>48 x 24</td>
<td>48 x 24</td>
<td>48 x 24</td>
</tr>
<tr>
<td>Bike Lane Closed</td>
<td>R11-V3</td>
<td>*WZPBG</td>
<td>48 x 30</td>
<td>48 x 30</td>
<td>48 x 30</td>
</tr>
<tr>
<td>Path Closed</td>
<td>R11-V4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shoulder Closed</td>
<td>R11-V5</td>
<td>*WZPBG</td>
<td>48 x 30</td>
<td>48 x 30</td>
<td>48 x 30</td>
</tr>
<tr>
<td>On Road (Plaque)</td>
<td>W16-1p(VA)</td>
<td>*WZPBG</td>
<td>24 x 30</td>
<td>18 x 24</td>
<td>24 x 30</td>
</tr>
<tr>
<td>BICYCLE TRAFFIC</td>
<td>W11-1</td>
<td>6F-xx</td>
<td>48 x 48</td>
<td>48 x 48</td>
<td>36 x 36</td>
</tr>
<tr>
<td>PEDESTRIAN TRAFFIC</td>
<td>W11-2</td>
<td>6F-xx</td>
<td>48 x 48</td>
<td>48 x 48</td>
<td>36 x 36</td>
</tr>
<tr>
<td>COMBINED BIKE AND PEDESTRIAN CROSSING</td>
<td>W11-15a</td>
<td>6F-xx</td>
<td>48 x 48</td>
<td>48 x 48</td>
<td>36 x 36</td>
</tr>
<tr>
<td>DIAGONAL DOWNWARD POINTING ARROW</td>
<td>W16-7P, 7pR</td>
<td>6F-xx, TTC-36</td>
<td>30 x 18</td>
<td>30 x 18</td>
<td>24 x 12</td>
</tr>
<tr>
<td>AHEAD (Plaque)</td>
<td>W16-9P</td>
<td>6F-xx, TTC-36</td>
<td>30 x 18</td>
<td>30 x 18</td>
<td>30 x 18</td>
</tr>
<tr>
<td>Bike Detour</td>
<td>M4-V7</td>
<td>*WZPBG</td>
<td>60 x 48</td>
<td>48 x 36</td>
<td>48 x 36</td>
</tr>
<tr>
<td>End Detour</td>
<td>M4-8b</td>
<td>*WZPBG</td>
<td>24 x 18</td>
<td>24 x 18</td>
<td>48 x 36</td>
</tr>
<tr>
<td>Bike/Pedestrian Detour (Symbol)</td>
<td>M4-9aL, 9aR</td>
<td>*WZPBG</td>
<td>60 x 48</td>
<td>48 x 36</td>
<td>48 x 36</td>
</tr>
<tr>
<td>Pedestrian Detour (Symbol)</td>
<td>M4-9bL, 9bR</td>
<td>6F.66</td>
<td>60 x 48</td>
<td>48 x 36</td>
<td>48 x 36</td>
</tr>
<tr>
<td>Bike Detour (Symbol)</td>
<td>M4cL, 9cR</td>
<td>6F.66</td>
<td>60 x 48</td>
<td>48 x 36</td>
<td>48 x 36</td>
</tr>
<tr>
<td>Bike Diversion (Symbol)</td>
<td>M4-9 (VA)</td>
<td>*WZPBG</td>
<td>60 x 48</td>
<td>48 x 36</td>
<td>48 x 36</td>
</tr>
<tr>
<td>Bike Merge With Arrow</td>
<td>W11-V1L, V1R</td>
<td>*WZPBG</td>
<td>60 x 48</td>
<td>48 x 36</td>
<td>48 x 36</td>
</tr>
<tr>
<td>Path Closed Ahead</td>
<td>WV21-21</td>
<td>*WZPBG</td>
<td>60 x 48</td>
<td>48 x 36</td>
<td>48 x 36</td>
</tr>
<tr>
<td>Bike Detour Ahead (Symbol)</td>
<td>WV21-22</td>
<td>*WZPBG</td>
<td>60 x 48</td>
<td>48 x 36</td>
<td>48 x 36</td>
</tr>
<tr>
<td>Bike Diversion Ahead (Symbol)</td>
<td>WV21-23</td>
<td>*WZPBG</td>
<td>60 x 48</td>
<td>48 x 36</td>
<td>48 x 36</td>
</tr>
</tbody>
</table>

---

**Table Color Codes:**
- White – White Background
- Green – Fluorescent-Yellow-Green Background
- Orange - Fluorescent-Orange Background
- Green - Fluorescent-Yellow Green Background

* WZPBG – Work Zone Pedestrian and Bicycle Guidance document
38. **Table 6G-1, Intersecting Sight Distance (ISD) for Construction Entrances (In Feet)**

- New table replaces the old.

<table>
<thead>
<tr>
<th>Posted Speed (mph)</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>45</th>
<th>50</th>
<th>55</th>
<th>60</th>
<th>65</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Lane Major Road</td>
<td>225</td>
<td>280</td>
<td>335</td>
<td>390</td>
<td>445</td>
<td>500</td>
<td>555</td>
<td>610</td>
<td>665</td>
<td>720</td>
<td>775</td>
</tr>
<tr>
<td>Left Turn, 3-4 Lane Road (Undivided)</td>
<td>250</td>
<td>315</td>
<td>375</td>
<td>440</td>
<td>500</td>
<td>565</td>
<td>625</td>
<td>690</td>
<td>750</td>
<td>815</td>
<td>875</td>
</tr>
<tr>
<td>Right Turn, 3-4 Lane Road (Undivided)</td>
<td>240</td>
<td>295</td>
<td>355</td>
<td>415</td>
<td>475</td>
<td>530</td>
<td>590</td>
<td>650</td>
<td>710</td>
<td>765</td>
<td>825</td>
</tr>
<tr>
<td>Left Turn, 4 Lane Road (Divided-18' Median)</td>
<td>275</td>
<td>340</td>
<td>410</td>
<td>480</td>
<td>545</td>
<td>615</td>
<td>680</td>
<td>750</td>
<td>820</td>
<td>885</td>
<td>955</td>
</tr>
<tr>
<td>Right Turn, 4 Lane Road (Divided-18' Median)</td>
<td>240</td>
<td>295</td>
<td>355</td>
<td>415</td>
<td>475</td>
<td>530</td>
<td>590</td>
<td>650</td>
<td>710</td>
<td>765</td>
<td>825</td>
</tr>
<tr>
<td>Left Turn, 5 Lane Road (2-Way Turn Lane)</td>
<td>265</td>
<td>335</td>
<td>400</td>
<td>465</td>
<td>530</td>
<td>600</td>
<td>665</td>
<td>730</td>
<td>800</td>
<td>860</td>
<td>930</td>
</tr>
<tr>
<td>Right Turn, 5 Lane Road (2-Way Turn Lane)</td>
<td>250</td>
<td>315</td>
<td>375</td>
<td>440</td>
<td>500</td>
<td>565</td>
<td>625</td>
<td>690</td>
<td>750</td>
<td>815</td>
<td>875</td>
</tr>
<tr>
<td>Left Turn, 6 Lane Road (Divided-18' Median)</td>
<td>290</td>
<td>360</td>
<td>430</td>
<td>505</td>
<td>575</td>
<td>645</td>
<td>720</td>
<td>790</td>
<td>860</td>
<td>935</td>
<td>1005</td>
</tr>
<tr>
<td>Right Turn, 6 Lane Road (Divided-18' Median)</td>
<td>250</td>
<td>315</td>
<td>375</td>
<td>440</td>
<td>500</td>
<td>565</td>
<td>625</td>
<td>690</td>
<td>750</td>
<td>815</td>
<td>875</td>
</tr>
<tr>
<td>Right Turn, (No Left Turns Allowed or Physically Restricted)</td>
<td>210</td>
<td>260</td>
<td>310</td>
<td>365</td>
<td>415</td>
<td>465</td>
<td>515</td>
<td>570</td>
<td>620</td>
<td>670</td>
<td>725</td>
</tr>
</tbody>
</table>

39. **Section 6G.10 Work Within the Traveled Way of a Two-Lane Highway**

- Provide guidance when PTRS may be used and when they should not be used as well as increase spacing between PTRS.

**Support:**

02 Techniques for controlling vehicular traffic under one-lane, two-way conditions are described in Sections 6C.11, 6C-15, 6E.07, 6E.08 and 6F.93.

40. **Section 6G.25 Work Within the Traveled Way of a Two-Lane Highway**

- change TTC Spotter to Flagger and clarify STOP/SLOW paddle use & delete its option to supplement a flag. Change TTC-62 to TTC-13; it is better reference for a modified mobile operation.

**Guidance:**

02 The acts of installing and removing TTC on a two-lane roadway should begin as a non-stationary flagging operation using a flagger, a shadow vehicle, and a work operations vehicle.
On a two-lane roadway, where pull off areas are limited, a flagger using a STOP/SLOW paddle and proper flagger procedures should temporarily stop traffic while advance warning signs and additional TTC devices are being installed. After the advance warning area is installed, the flagger occupies the flagger station while the channelizing devices are installed. The advance warning signs are installed in the opposite direction then the flagger is positioned at their flagger station.

The flagger moves with the operation or can be stationary. At nighttime, road flares, a red glow cone flashlight, or a red traffic baton/wand can be used to increase the visibility of the flagger.

**Standard:**

The flagger shall remain highly visible to oncoming traffic at all times.

**Option:**

When a work operations vehicle acts as shadow vehicle, two flaggers may be used. One flagger to control traffic and the other to alert co-workers who are installing and removing TTC of approaching traffic and control traffic when necessary.

- Change TTC-62 to TTC-13; it is better reference for a modified mobile operation. Renumber paragraph

On a multilane roadway installing and removing TTC begins and ends as a modified mobile operation (for an example, see TTC-13).

41. **Section 6H.01 Typical Applications**

- add references for pedestrian, bicycle, crosswalks & sidewalks and trails documents

**Guidance:**

The Virginia Department of Transportation Work Zone Pedestrian and Bicycle Guidance document, VDOT Guidelines for the Installation of Marked Crosswalks, Section 1330 of the Road and Bridge Standards, Part 6 of the MUTCD and Chapter 4 of FHWA's Designing Sidewalks and Trails for Access should be used to address the needs and control for pedestrians and bicyclists through a TTC zone.

42. **Table 6H-1 – TTC-20.1**

- change “Temporary” to Temporary for Figure TTC-20.1

43. **Figure TTC-9**

- align Standard and Option statements and correct Note 8 TTC-13 reference to Moving/Mobile Operations on a Multi-Lane Roadway

**Guidance:**

8. For high volume, high speed multi-lane highways, if the mower encroaches into the roadway for extended periods of time, or prevents vehicles from passing, TTC-13, Moving/Mobile Operations on a Multi-Lane Roadway should be used.

44. **Figure TTC-11 and Figure TTC-13**

- Shadow vehicle 2 will be relocated to straddle the edge line in lieu of being in the close lane as well as shadow vehicle 3 in Figure TTC-12.
- Note: This change is based on a recommendation found in the Virginia Center for Transportation Innovation and Research titled INVESTIGATION OF TRUCK MOUNTED ATTENUATOR (TMA) CRASHES IN WORK ZONES IN VIRGINIA.

45. **Figure TTC-15 – TTC-22**

- Add guidance statement for PCMS; renumber notes as necessary; and update figures with PCMS symbol.

**Guidance:**

When closing a lane, a PCMS should be used in advance of the first warning sign if all of the advance warning signs cannot be installed on both the right or left side.
46. **Figure TTC-13 and Figure TTC-14**
   - Add new note 2 change for radio between vehicle and renumber notes

   **Standard:**
   2. Each vehicle involved in the moving operation shall have radio communications between vehicles.

47. **Figure TTC-22 - Notes**
   - Revise note 7 to require a shadow vehicle with a TMA when the posted speed limit is 45 mph or greater.

   **Standard:**
   7. A shadow vehicle with either a Type B or C arrow board operating in the caution mode, or at
      least one rotating amber light or high intensity amber flashing or oscillating; light shall be
      parked 80'-120' in advance of the work crew in both directions of travel. When the posted
      speed limit is 45 mph or greater, the shadow vehicle shall be equipped with a truck-mounted
      attenuator (TMA).

48. **Figure TTC-23 - Notes**
   - Revise note 4 to define flagger control intersecting roadways between the work zone’s flagger stations;
     note 9 to allow flexibility to adjust Portable Temporary Rumble Strips and note 14 increase spacing of
     the PTRS.

   **Standard:**
   4. Flagging stations shall be located far enough in advance of the work space to permit approaching
      traffic to reduce speed and/or stop before passing the work space and allow sufficient distance
      for
      departing traffic in the left lane to return to the right lane before reaching opposing traffic
      (see
      Table 6H-3 on Page 6H-5). Intersecting roadways in between the work zone’s flagger stations
      shall be controlled by a flagger (see TTC-67).
   9. The location of the PTRS should be adjacent to the BE PREPARED TO STOP (W3-4) sign. If the queue of
      traffic reaches the BE PREPARED TO STOP (W3-4) sign then the signs, and if used the portable temporary
      rumble strips (PTRS), should be readjusted at greater distances. The PTRS can be moved to other locations
      within the advance warning area based on field conditions.

14. ...

<table>
<thead>
<tr>
<th>Posted Speed</th>
<th>0 – 35 mph</th>
<th>36 – 55 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTRS Spacing (Center to Center)</td>
<td>10 Feet</td>
<td>10 Feet</td>
</tr>
</tbody>
</table>

49. **TTC-26, TTC-27 & TTC-28 - Notes**
   - Note 6 for TTC-26 and TTC-27 and note 8 for TTC-28 - Add taper in advance of the work vehicle.

   **Standard:**
   6. For emergency situations (any non-planned operation) of 30 minutes or less duration, two rotating
      amber lights or two high intensity amber flashing or oscillating\(^1\) lights mounted on the vehicle and
      visible for 360° shall be required. In addition to the channelizing devices shown around the vehicle,
      channelizing devices forming a 50 foot taper shall be placed in advance of the work vehicle. The
      spacing between channelizing devices shall be spaced 10 feet. When spacing is limited five
      channelizing devices shall be deployed to form as much taper possible within the limited space.
50. **TTC-36 – Notes**
   - Note 8 delete pedestrian and bicycle reference, add Standard notes for pedestrian signs and added option statement for signs:

   **Option:**
   8. In order to maintain the systematic use of the fluorescent yellow-green background for pedestrian, bicycle and school warning signs in a jurisdiction, the fluorescent yellow-green background for pedestrian, bicycle and school warning signs may be used in TTC zones.

   **Standard:**
   11. The YIELD HERE TO PEDESTRIANS (R5-1) sign shall be placed at the Yield Line.
   12. Fluorescent yellow-green PEDESTRIAN TRAFFIC (W11-2) symbol sign, AHEAD (W16-9p) plaque and ARROW (W16-7p) plaque shall be fluorescent yellow green and shall be used to identify the work zone crosswalks.

   **Option:**
   13. Fluorescent orange PEDESTRIAN TRAFFIC symbol sign, AHEAD plaque and ARROW plaque may be used as advance warning of work zones crosswalks until July 1, 2018.

51. **Figure TTC-36**
   - Update signs in figure as follows:
     - The YIELD HERE TO PEDESTRIANS (R5-1) sign shall be placed at the Yield Line.
     - The PEDESTRIAN TRAFFIC symbol sign and the AHEAD plaque should be placed in advance of the Yield lines.
     - The PEDESTRIAN TRAFFIC symbol sign, Arrow Plaque and AHEAD plaque shall be fluorescent yellow green.
     - Add the IN-STREET PEDESTRIAN CROSSING sign

52. **TTC-52**
   - Clarify increase sign is discretionary to the Engineer:

   **Option:**
   2. This layout depicts signing requirements for speed limit and the discretionary use of increased fines in work zones. Additional signing and traffic control devices may be required based on the operation being performed.

   **Standard:**
   5. When used, the WORK ZONE $500 MAX FOR EXCEEDING SPEED LIMIT WHEN FLASHING (R2-V1) sign shall be approved by the Regional Traffic Engineer prior to installation.

53. **TTC-63**
   - Reference NEW Table 6G-1, Intersection Sight Distance for Construction Entrances

   **Guidance:**
   2. Care should be exercised when establishing the location of the permitted temporary entrance to insure maximum possible sight distance in advance of the entrance, and should be based on the posted speed limit and at least equal to or greater than the values in Table 6G-1, Intersection Sight Distance for Construction Entrances. If the minimum distances in Table 6G-1 cannot be obtained, a flagging operation per TTC-50 should be implemented for exiting and entering vehicles.

54. **TTC-64**
   - Clarify use of UNMARKED PAVEMENT AHEAD sign and renumber

   4. The UNMARKED PAVEMENT AHEAD (W8-V4) sign shall be erected in advance of resurfaced
roadway sections 500 feet or more in length where the center line and edge lines have been removed until pavement markings are applied.

55. **Rename TTC-67 to Right Lane Closure Operation for Continuous Left-turn Lane**

56. **New TTC-68.0 Lane Closure Operation for Flagging Operations on an Intersecting Roadway**

57. **Revision 1a to Appendix A – GUIDELINES FOR THE USE OF BARRIER/CHANNELIZING DEVICES IN WORK ZONES** related to the application of Temporary Barrier Service Concrete (TBSC) has been completed. Please replace the April 2015 Appendix A Revision 1 with the October 2015 revision 1a.

   [Link](http://www.virginiadot.org/business/resources/Wrk_zone/Appendix_A_R1a.pdf)

58. **Appendix C – Work Zone Training for Law Enforcement Officers**
   - Add training references for Virginia State Police and local law enforcement officers
   - Law Enforcement Officers shall complete Work Zone Training for Law Enforcement Officers before working in Virginia’s Work Zones. Virginia State Police complete this training through their training division.
   - Local LEO shall complete the online course. ([Link](http://link to be added)). The LEO shall provide their Work Zone Training for Law Enforcement Officers certification card to the VDOT Inspector.

59. **ADA Reference Links**

60. **FHWA Bicycle & Pedestrian Program, Sidewalk Design Guidelines and Existing Practices - Chapter 4a**
   - [Link](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalks/chap4a.cfm)
61. Guidelines for the Installation of Marked Crosswalks

62. VDOT Work Zone Pedestrian & Bicycle Guidance