



REVISION 2

VIRGINIA WORK AREA PROTECTION MANUAL

ADA & District Traffic Engineer

Added in various sections

- **Work Zone Pedestrian and Bicycle Guidance document**
- **VDOT guidelines for the Installation of Marked Crosswalks**
- **Section 1300 of the Road and Bridge Standards**
- **Part 6 of the MUTCD**
- **Chapter 4 of FHWA's designing sidewalks and Trails for Access**
- **District Traffic Engineer instead of Regional TE**

Flagger Updates

- **Control all road users**
- **Coordinate traffic movement on mainline and intersecting roadways**
- **Require radio Communication between all flaggers and pilot vehicle operators.**
- **Removing flag transfer method**
- **One flagger controls traffic on low volume roadway (500 vpd) with good visibility to each end of WZ otherwise two flaggers required**

High-visibility apparel

- **Prohibits use of leg gaiters or chaps in lieu of Type E trouser for workers installing, maintaining, removal of TTC devices**
- **Allows workers to wear leg gaiters (optional)**
- **Allow flaggers performing tasks in electrical utility operations to wear fire-retardant leg gaiters or chaps**

AFAD

- **Delineated with 4 cone taper**
- **If unmanned, 4 drum taper**
- **Move AFAD figures to 6H - TTCs**

Flagger Procedures

Standard statements added

- **Flaggers stand on shoulder or close as possible, never enter travel lane used by stopped or moving traffic**
- **Flagger speaks to motorist from passenger side and does not touch vehicle**
- **Flagger shall not use cell phones or other similar devices**
- **Radio communication required between all flaggers and pilot vehicle operators**
- **Flagger control movements at intersections with reference to TTC-30 & TTC-67**
- **ADT added to define use of single flagger**

Flagger Procedures

Guidance statements added

- **Stoppage timeframes**
 - *10 minutes for high volume roadways (500 vehicles or greater per day)*
 - *15 minutes for less than 500 vehicles per day*
- **PCMS recommended with stoppage greater than 15 minutes**

Option statements

- **Flagger may be need to control ingress and egress of private entrances/driveways as directed by the Engineer with advance notification to the property owner**
- **Add to reduce stoppage time based on existing traffic conditions**

Flagger Station at Railroad Crossing

Coordination between contractor and railway required for railway flaggers and watchperson services

ADA & Bicycle

- **Table 6F-1 added pedestrian and bicycle signs, corrected/added section references and sizes**
- **New section for TTC Regulator signs for Pedestrian & Bicycle**
- **Added Bike Lane Closed and Path Closed signs**
- **New section for TTC Warning signs for Pedestrian & Bicycle**
- **Figure 6F-3 Regulatory signs and Plaques**
- **Figure 6F-4 Warning signs and Plaques**
- **Figure 6F-5 Detours**

Chapter 6F – removing Specification language

- Removed listing of sign substrates and rigid sign materials covered in Specification
- Removed PTRS details covered in Specifications

7' to bottom of portable sign support

- Stop & Yield,
- Left/Right Turn Lane Open & Left/Right Turn Lane Closed
- Turn Lane with Arrow
- Exit Open & Exit Closed
- Exit w/Arrow - arrow must match permanent Exit ARROW

Various Signs

- **CONSTRUCTION ENTRANCE (W11-V2) sign should be used to identify ingress points for deliveries**
- **TRUCKS ENTERING HIGHWAY sign should be used to identify egress point for trucks entering roadways on large scale projects**
- **WORK VEHICLE FREQUENT TURNS**
 - **Mounting height 7' to bottom of the sign**
 - **Modified to fit indentions of the truck bed**
 - Letters cannot be modified
 - Allow to sign to be cut in two
 - Eliminate border if necessary

Various Signs

- **Detour signs sizes may be reduced with DTE approval**

PCMS

- **Optional on shadow vehicles - 10" letters**
- **Should be used when signs cannot dual indicated in advance of signs**
- **Removed AFAD from delineation list**

Channelizing Devices

- **Wherever 4 x Speed was noted changed to normal spacing of channelizing devices**
- **Cones used for AFADs**
- **All drum must meet Specification 247 (effective date removed).**
- **Drums required for off ramp tapers**
- **Type 3 Barricades should extend across the entire width of sidewalks and bicycle lanes or paths**

Pavement Marking

- **FTPMM may be used up to 3 days on final surfaces while paving operations are completed**
- **Eradication damage to roadway surface must be repaired at the direction of the Engineer**
- **Transverse crosswalk line minimum 6 inches**
- **Yield markings 24 x 36 must be supported by in roadway YIELD HERE TO PEDESTRIAN sign**
- **A supplement detectable guidance line may be added in the middle of the crosswalk**

Vehicle Warning Light

- **No flashing white lights of any kind**
- **Required on equipment with rollers or wheels**
- **DAY & Night should have 360° visibility**

Temporary Signal

- **Field adjustment must comply with Specification 512**
- **Portable temporary signal must be delineated with 4 drum taper**

Shadow Vehicle with Truck Mounted Attenuator

- On shoulders of multilane roadways with a posted speed of 45 mph or greater for operations with a duration greater than 60 minutes to resolve conflict between TTC-3 – TTC-5

Portable Temporary Rumble Strips

- Should be considered on roadways posted speed limit 35 mph or greater
- Changer spacing to 10 or 15 feet
- *Provide guidance when not to use 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 and in snow or icy weather*

Section 6G

Center Lane Closure added due to sunset of TED - 342

- **When the center lane of a multi-lane roadway must be closed for work activities, an additional adjoining lane on one side shall be closed such that through traffic is not split around the work area (see Figure TTC-18).**
- **If the center lane closure must encroach on the remaining lanes, a minimum 11 foot travel lane(s) shall be maintained.**
- **A center lane shall not be closed when work is only being performed in an adjacent lane unless the lane closure encroached into the center lane resulting is a travel lane width of less than 11 feet.**

Installing & Removing TTC - Flagger

- **Change TTC spotter to flagger**
- **Uses STOP/SLOW paddle**
- **Controls traffic while installing signs and assumes flagger(1) station for that direction and maintains flagger station**
- **Flagger(2) controls traffic during opposite signs installation then maintains flagger station.**

Installing & Removing TTC – Shadow Vehicles

- **Work vehicle may be equipped with a TMA; however it must also be protected by a shadow vehicle TMA and reference to TTC-13**

Installing & Removing TTC – Shadow Vehicles

- ***All TTC devices should be removed with the flow of traffic***
 - A. Remove or deactivate the arrow board. If the arrow board is not removed it must be delineated with four channelizing devices.**
 - B. Remove the channelizing devices with the flow of traffic starting at the merging taper and continue to remove the remaining channelizing devices through the termination area. Remove the END ROAD WORK sign adjacent to the lane.**
 - C. Remove the advanced warning signs.**
 - D. Remove the arrow board and its delineation if necessary.**

Table 6G-1, Intersection Sight Distance (ISD) in Feet for Construction Entrances

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

Chapter 6H

- **TTC-11 – TTC-13 – 1st vehicle in lane will be shown straddling the edgeline**
- **TTC-14 – shall have radio communications for mobile/moving operations on Two-Lane Roadways**
- **TTC-15**
 - **PCMS should be used when signs cannot be dual indicated**
 - **TMA use note added to figure**
- **TTC-22 – posted speed limit 45 or greater requires TMA**

Chapter 6H

- **TTC-23 – PTRS spacing**
 - 0 – 35 mph spaced at 10'
 - 35 - 55 mph spaced at 15'
 - Optional PTRS array may be installed at the end of the tapers
- **TTC-36**
 - All pedestrian and plaques changed to yellow-green sheeting
 - Added YEILD HERE TO PEDESTRIAN signs
 - Added State Law Yield to Pedestrian sign in the center of the roadway
- **TTC-37**
 - Added note requiring drums in the exiting taper for traffic

Chapter 6H

- **TTC-48 – PTRS spacing**
 - W16-5pl (24" x 18")
- **TTC-50**
 - Change stoppage time to 15 minute in lieu of 20
 - Lane closure required if flaggers are controlling traffic – flagger controls only one-lane.
 - Lane closure and center lane turn lane must be closed if using flaggers or if performing a slow roll

Chapter 6H

- **TTC-48 – Arrow plaque W16-5pl (24" x 18") may be used as a cardinal directional under the combined route shield/cardinal direction and CLOSED X MILE AHEAD sign**
- **TTC-50**
 - **Change stoppage time to 15 minute in lieu of 20**
 - **Lane closure required if flaggers are controlling traffic – flagger controls only one-lane.**
 - **Lane closure and center lane turn lane must be closed if using flaggers or if performing a slow roll**

Chapter 6H

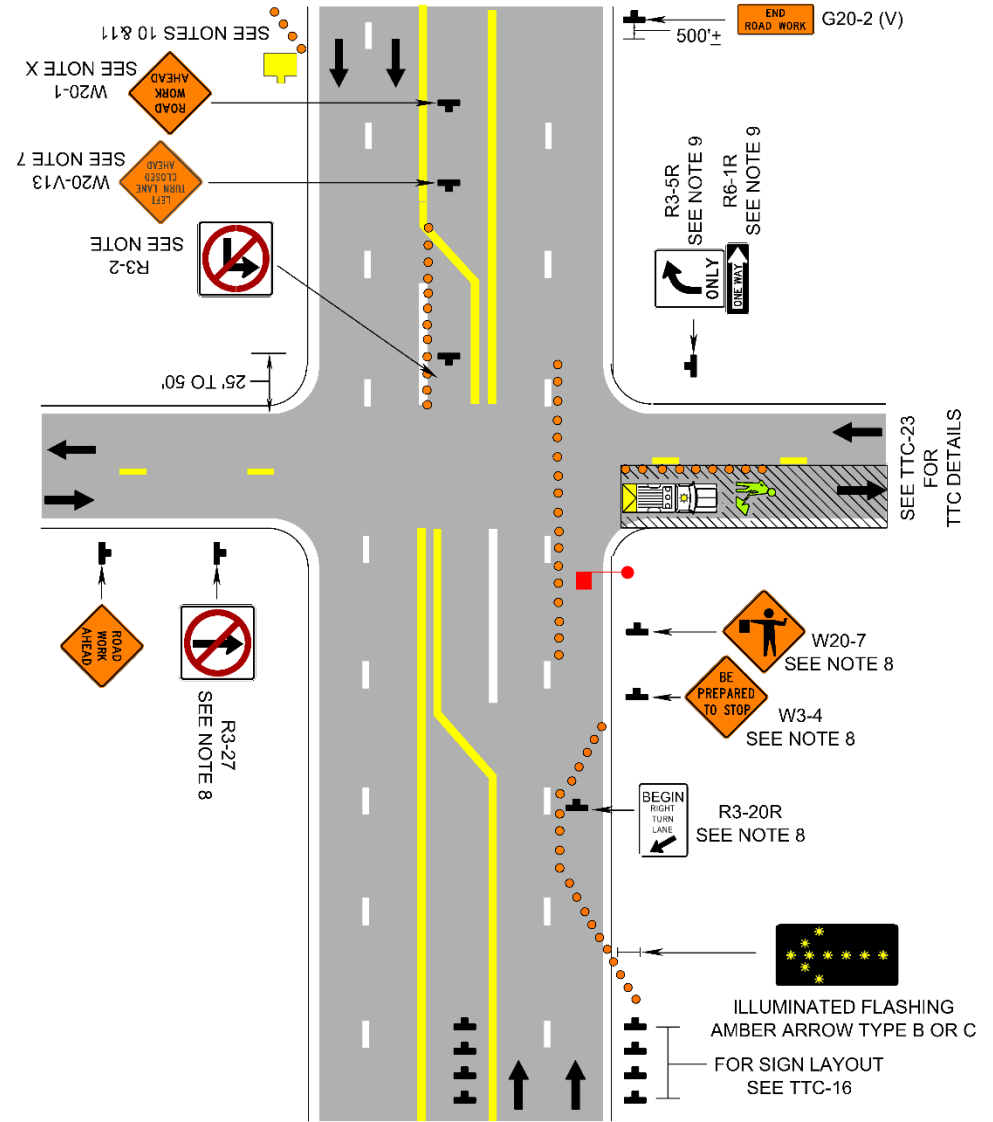
- **TTC-52 – Maximum fine sign are used discretionarily by the Department**
- **TTC-63 – Logging truck operations**
 - **References 6G-1, Intersection Sight Distance for Construction Entrances**
 - **If the minimum distances in Table 6G-1 cannot be obtained, a flagging operation per TTC-50 or TTC-51 should be implemented for exiting and entering vehicles.**

Chapter 6H

- **TTC-64 – Add information about UNMARKED PAVEMENT AHEAD sign**
- **TTC-67 – title change to *Lane Closure Operation for Flagging Operations on an Intersecting Roadway***

Chapter 6H

- **New TTC-68 Right Lane Closure Operation for Continuous Left-turn Lane**



Chapter 6H

- **New TTC-69 Stop/Slow Automated Flagger Assistance Device**
- **New TTC-70 Red/Yellow Lens Automated Flagger Assistance Device**