

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

- In January 2012, the 2011 Virginia Work Area Protection Manual, Part 6 of the 2009 MUTCD, became effective.
- This table provides an overview of technical changes between Revision 1 of the 2011 Virginia Work Area Protection Manual and the original version.
- The effective date of Revision 1 of the 2011 Virginia Work Area Protection Manual is: April 1, 2015 for day-to-day operations and July 1, 2015 for projects advertised for bid on or after that date.
- The 2011 Virginia Work Area Protection Manual is a living document, and will be updated over time. For the most recent version of the Work Area Protection Manual please visit http://www.virginia.gov/business/resources/wztc/Virginia_WAPM_2011_web.pdf.

CHAPTER	SECTION NUMBER	SECTION TITLE	NEW TABLE/FIGURE /PARAGRAPH NUMBER	TABLE / FIGURE TITLE	REVISION TOPIC	SIGN CODE	REVISION DESCRIPTION
6A	6A.03	Definitions of Words and Phrases in This Manual	Paragraph 01, Definition 24		Limited Access Highway		Changed "...easement or right of way, air, or access..." to: "... easement or right of light ¹ , air, or access..." to match the Virginia Supplement to the MUTCD.
			Paragraph 01, Definition 33		Portable Temporary Rumble Strips (PTRS)		Added definition for Portable Temporary Rumble Strips (PTRS). Renumbered remaining definitions.
	6A.04	Meanings of Acronyms and Abbreviations in this Manual	Paragraph 01, Acronym/Abbreviation 26		Portable Temporary Rumble Strips (PTRS)		Added Acronym/abbreviation for Portable Temporary Rumble Strips (PTRS). Renumbered remaining Acronym/abbreviation.
6B	6B.01	Fundamental Principles of Temporary Traffic Control	Paragraph 15		Removal of Traffic Control Devices		Clarified the statement by removing "All temporary traffic control devices shall be removed as soon as practical when they are no longer needed. When work is suspended for periods longer than 30 minutes, advance warning signs (including supports) that are no longer appropriate shall be removed from the roadway (including shoulders). Other inappropriate devices shall be removed from the work area so they are not visible to drivers." and replaced with: " All temporary traffic control devices shall be removed as soon as practical when they are no longer needed except the Flagger symbol sign shall be removed or covered whenever the flagger operation is suspended. Advance warning signs (including supports) that are no longer appropriate shall be removed from the roadway (including shoulders) at the end of the work shift. ^{1"}

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6C			Figure 6C-1	Component Parts of a Temporary Traffic Control Zone	Paved Shoulder Taper, Maximum Work Space Length		Added shoulder taper dimension to the illustration. Added note: "Maximum length of a work space is 2 miles unless approved by the Regional Traffic Engineer."
	6C.04	Advance Warning Area	Table 6C-1	Recommended Spacing of Advanced Warning Signs	Title of Table		Added "Recommended" to title to match the MUTCD.
	6C.06	Buffer Space	Paragraph 05	Length of the Longitudinal Buffer Space	Buffer Space Distance		Added the following sentence: These distances should be increased for downgrades and other geometric conditions that affect stopping distance. ¹
			Table 6C-2	Length of the Longitudinal Buffer Space	Buffer Space Distance		Corrected buffer space distance from "155-160" to "155-165" ¹ , "305-320" to "305 - 325" ¹ , "500-520" to "500-530" ¹ , and "570-590" to "570-600" ¹ .
	6C.07	Activity Area	Paragraph 05		Reference		Added reference to see Figure 6C-1
		6C.08	Termination Area	Paragraph 02		Signs at the Termination Area	
		Paragraph 04			Added the standard statement: "If the entire project is signed for a reduced speed, and an original speed limit sign is not within 1000 feet of the END ROAD WORK (G20-2 (V)) sign, signs depicting the original speed limit shall be erected 500'± past the END ROAD WORK sign. On secondary roads without posted speed limits, an END WORK ZONE SPEED LIMIT (R2-12) sign shall be used in place of erecting an R2-1 sign. If only part of the project is signed for a reduced speed, then the original speed limit shall be posted 500'± past the work area (see TTC-52)" to clarify the application of the required signs.		

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6C	6C.09	Tapers	Paragraph 11		Shoulder Tapers		Deleted Support statement: "A shoulder taper may be beneficial on a high-speed roadway where shoulders are part of the activity area and are closed, or when improved (paved) shoulders or parking lane might be mistaken as a driving lane. In these instances, the same type, but abbreviated, closure procedures used on a normal (travel) portion of the roadway can be used. " and replaced with Standard statement: " On roadways with paved shoulders having a width of 8 feet or more, a shoulder taper shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the traveled way. ¹ "
			Figure 6C-2	Examples of Types of Tapers and Buffer Spaces	Activity Area		Replaced "Work Zone" with "Activity Area ¹ " to match description in Section 6C.07. Revised the note from "4 X Speed Limit in Feet." to "4 channelizing devices".
			Table 6C-4	Taper Length Chart	Taper Length for 10 and 11 Foot Offset Widths at 40 mph		Replace 40 mph Taper Length for 10 and 11 Foot Offset Width distances from "267 and 294" to "270 ¹ and 295 ¹ " respectively.
			Figure 6C-3	Examples of a One-Lane, Two-Way Traffic Taper	Activity Area		Replaced "Work Zone" with "Activity Area ¹ " to match description in Section 6C.07.

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6D	6D.03	Worker Safety Considerations	Paragraph 04		Safety Apparel		In the first sentence replace "Until" with "Since ¹ ". Replaced "Performance Class 2 or 3 requirements of the ANSI/ISEA 107–2004 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear" (see Section 1A.11 of the Virginia Supplement to the 2009 MUTCD), or equivalent revisions, and labeled as meeting the ANSI 107-2004 standard performance for Class 2 or 3", with: "...Performance Class 3 requirements of the ANSI/ISEA 107–2010 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear" (see Section 1A.11 of the Virginia Supplement to the 2009 MUTCD), or equivalent revisions, and labeled as meeting the ANSI 107-2010 standard performance for Class 3 ¹ ..."
			Paragraph 05		Safety Apparel Head Protection		Deleted paragraph 05 "Beginning July 1, 2012, all workers, including emergency responders, media, towing and recovery personnel and others within the right-of-way who are either exposed to traffic or to work vehicles and construction equipment within the TTC zone shall wear high-visibility safety apparel that meets Performance Class 3 requirements of the ANSI/ISEA 107–2010 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear" (see Section 1A.11 of the Virginia Supplement to the 2009 MUTCD), or equivalent revisions, and labeled as meeting the ANSI 107-2010 standard performance for Class 3 risk exposure, except as provided in Paragraph 7". Renumbered remaining paragraphs. New Paragraph 06, replaced "Until" with "Since ¹ "; added full length ¹ " and "overalls ¹ " to sentence. Added "Shorts shall not be worn. ¹ ".

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6D	6D.03	Worker Safety Considerations	Paragraph 06		Safety Apparel		Added the Standard statement: " Class E trousers shall be defined as full length waistband trousers or overalls that all minimum requirements of the ANSI/ISEA 107-2010 publication. Shorts shall not be worn at any time." Renumbered the remaining paragraphs.
			Paragraph 07		Safety Apparel		Added Option statement: "headwear meeting ANSI 107/ISEA 107-2010 standards may be worn but is not required." Renumbered the remaining paragraphs.
			Paragraph 09				Deleted "this Section" and "Refer to Paragraph 7 of Section 6E.02 for additional guidance" and replaced with "that meets Performance Class 2 or 3 requirements of the ANSI/ISEA 107-2010 publication or as described in paragraph 9 shall be worn by law enforcement personnel."
			Paragraph 10				Deleted "Except as provided in Paragraph 10"and"this Section" and replaced with "in paragraph 9."
			Paragraph 11		Safety Apparel		Added the Standard statement: " 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. ¹ " Renumbered the remaining paragraphs.

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6E	6E.01	Qualifications for Flaggers	Paragraph 03		Recertification		Edited the existing statement: "A flagger shall be recertified every two years if the flagger is certified by the VDOT Flagger Certification Program or every three years if the flagger is certified by the ATSSA Flagger Certification Program. ", to" A flagger shall be recertified every two years if the flagger is certified by the VDOT Flagger Certification Program. Recertification is required every four years if the flagger is certified by the VDOT Basic and Intermediate Work Zone Traffic Control Training course or by ATSSA's classroom Flagger Certification Program. ¹ "
	6E.02	High-Visibility Safety Apparel	Paragraph 03		Safety Apparel		In the first sentence replace "Until" with "Since ¹ ". Replaced "Performance Class 2 or 3 requirements of the ANSI/ISEA 107-2004 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear" (see Section 1A.11 of the Virginia Supplement to the 2009 MUTCD), or equivalent revisions, and labeled as meeting the ANSI 107-2004 standard performance for Class 2 or 3", with: "...Performance Class 3 requirements of the ANSI/ISEA 107-2010 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear" (see Section 1A.11 of the Virginia Supplement to the 2009 MUTCD), or equivalent revisions, and labeled as meeting the ANSI 107-2010 standard performance for Class 3 ¹ ..."

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6E	6E.02	High-Visibility Safety Apparel	Paragraph 04		Safety Apparel Head Protection		Deleted Paragraph 04: "Beginning July 1, 2012, all workers, including emergency responders, media, towing and recovery personnel and others within the right-of-way who are either exposed to traffic or to work vehicles and construction equipment within the TTC zone shall wear high-visibility safety apparel that meets Performance Class 3 requirements of the ANSI/ISEA 107-2010 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear" (see Section 1A.11 of the Virginia Supplement to the 2009 MUTCD), or equivalent revisions, and labeled as meeting the ANSI 107-2010 standard performance for Class 3 risk exposure, except as provided in Paragraph 7". Replaced "Until" with "Since ¹ "; added "full length ¹ " and "overalls ¹ " to sentence. Added "Shorts shall not be worn. ¹ " to new Paragraph 04. Renumbered remaining paragraphs.
			Paragraph 05		Safety Apparel		Added the Support statement: " Class E trousers are defined as full length waistband trousers or overalls that meet all minimum requirements of the ANSI/ISEA 107-2010 publication. ¹ " Renumbered the remaining paragraphs.
			Paragraph 06				Added the Standard statement: " 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. ¹ " Renumbered the remaining paragraphs.
			Paragraph 07			Added "Section 6D.03(09) ¹ ."	
			Paragraph 09		Safety Apparel Head Protection		Added "Headwear meeting ANSI 107/ISEA 107-2010 standards may be worn but is not required. ¹ "

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6E	6E.03	Hand Signaling Devices	Paragraph 10		Flags		Revised Paragraph 10 by adding: " 24 x 24 ¹ inches" and "...is 1 to 1¼ inches in diameter and ¹ approximately..."
			Paragraph 12				Revised Paragraph 12 by adding "...nighttime, both sides of the ¹ flags shall be retroreflectORIZED orange/red in color ¹ ."
	6E.04	Automated Flagger Assistance Devices	Paragraph 13		AFAD Methods		Defined Methods 1 and 2 from an AFAD at both ends and an AFAD and flagger at each end respectively to: "A. An AFAD at each end of the TTC zone using Stop/Slow signs (Method 1). B. An AFAD at each end of the TTC zone using Red/Yellow Lens (Method 2)."
			Paragraph 14				Replaced the Standard: "Except as provided in Paragraph 15, two flaggers shall be used when using either Method 1 or Method 2" with: "Two AFADs shall be used to control one-lane, two-way traffic as illustrated in Figures 6E-1 and 6E-2 ¹ " to correspond with the requirements in the revised Paragraph 13.
			Paragraph 15				Deleted the Option statement: "A single flagger may simultaneously operate two AFADs (Method 1) or may operate a single AFAD on one end of the TTC zone while being the flagger at the opposite end of the TTC zone (Method 2) if both of the following conditions are present: A. The flagger has an unobstructed view of the AFAD(s), and B. The flagger has an unobstructed view of approaching traffic in both directions" and replaced with the Standard statement: "When one flagger is used to operate both AFADs, the flagger shall have an unobstructed view of the AFADs and approaching traffic in both directions ¹ " to correspond with the requirements in the revised Paragraphs 13 and 14.

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6E			Figure 6E-1	Example of Use of a Stop/Slow Automated Flagger Assistance Device	Stop/Slow Automated Flagger Assistance Devices		Deleted all references to the required number of AFAD units and added certified flagger information to the Note. Revised the note from "4 X Speed Limit in Feet." to "4 channelizing devices".
			Figure 6E-2	Example of Use of a Red/Yellow Lens Automated Flagger Assistance Device	Red/Yellow Lens Automated Flagger Assistance Devices		Deleted all references to the use of one AFAD unit and one flagger and added certified flagger information to the Note. Removed the flagger symbol and replaced with a Red/Yellow Lens AFAD symbol and R10-6 sign . Revised the note from "4 X Speed Limit in Feet." to "4 channelizing devices".
			Figure 6E-4	Flagger Requirements Sheet 2 of 2	Flagger Station Sight Distances		Replaced the table listing specific distances for each posted speed with a table listing a range of distances for each posted speed.
	6E.08	Flagger Stations	Paragraph 01		Advanced Warning Signs		Added sign designation and "symbol". Deleted "turned away" from second sentence to match Section 6B.01, Paragraph 15.
			Table 6E-1	Length of the Longitudinal Buffer Space	Buffer Space Distance		Added "Longitudinal" and deleted "Flagger Distance from Work Area to title to match MUTCD. Corrected buffer space distance from "155-160" to "155-165 ¹ ", "305-320" to "305 - 325 ¹ ", "500-520" to "500-530 ¹ ", and "570-590" to "570-600 ¹ ".
6F			Table 6F-1	Temporary Traffic Control Zone Sign and Plaque Sizes Sheet 1 of 6	Traffic Control Signs	R1-V1 R2-V1 R3-20	Added PROCEED WHEN WAY IS CLEAR (R1-V1) sign. Revised R2-V1, WORK ZONE \$500 MAX. FINE FOR EXCEEDING SPEED LIMIT WHEN FLASHING, sign to comply with §46.2-878.1 of the Code of Virginia. Added BEGIN RIGHT TURN LANE w/ arrow (R3-20) sign.

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6F			Table 6F-1	Temporary Traffic Control Zone Sign and Plaque Sizes Sheet 2 of 6	Traffic Control Signs	R10-15 W0-V1	Added TURNING VEHICLES YIELD TO PEDESTRIANS add CRASH AREA KEEP CLEAR signs.
				Temporary Traffic Control Zone Sign and Plaque Sizes Sheet 4 of 6		W20-V14 W20-V15 W20-V16 W20-V26 W20-V27	Added GROOVED PAVEMENT AHEAD, MEDIAN CROSSOVER CLOSED AHEAD, MEDIAN CROSSOVER CLOSED, RUMBLE STRIPS AHEAD, and EMERGENCY WORK AHEAD signs
				Temporary Traffic Control Zone Sign and Plaque Sizes Sheet 5 of 6		W21-V18 W21-V19 E5-V3 E5-V4 G20-V1a G20-5aP(V)	Added ROAD PATCHING AHEAD, ROAD PATCHING X MILES, "LEFT/RIGHT" TURN LANE OPEN, AND "LEFT/RIGHT" TURN LANE CLOSED, WORK VEHICLE FREQUENT TURNS signs. Deleted the Virginia specific G20-5aP(V) WORK ZONE plaque.
				Temporary Traffic Control Zone Sign and Plaque Sizes Sheet 6 of 6		M1-1 M1-4 M1-V1 M1-V2 M3-1 M3-2 M3-4 M5-1 M5-2 M6-1 M6-2 M6-3 M6-4 M6-5	Added Interstate Route Shield for Independent Use (1, 2, and 3 digits), US Route Marker for Independent Use (1, 2, and 3 digits), VA Primary Route for Independent Use (1, 2, and 3 digits), VA Circular Secondary Route for Independent Use (3 or more digits), Cardinal Directional Auxiliary (North, East, South, West), and Directional Arrow Auxiliary signs.

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6F			Figure 6F-1	Height and Lateral Location of Signs – Typical Post-Mounted Installations	Ground-mounted Signs		For Typical A, added the 2' Max extension of the post above the top of the sign. For Typical B added 7 foot maximum dimension. For Typical C, deleted 9 foot minimum dimension. For Typical D, added 8 foot maximum dimension. For Typical C and D, added 8 foot maximum dimension. For Typical D, changed the location measurement for the bore hole from the edge of pavement projected to the finish grade below the holes. Changed the location measurement to and between the bore holes from the bottom/top of the holes to the centerline of the holes. Edited note by removing "STP-1" and adding "OR TEMPORARY SIGNS."
	6F.02	General Characteristics of Signs	Paragraph 22		Material Thickness		Changed rigid sign aluminum thickness from 0.100 to 0.080 ¹ .
	6F.03	Sign Placement	Paragraph 08		Sign Height		Deleted the statement "The minimum height of ground-mounted signs, measured vertically from the bottom of the sign to the elevation of the near edge of the pavement, shall be 7 feet (see Figure 6F-1)" and replaced with "The height of ground-mounted signs, measured vertically from the bottom of the sign to the elevation of the near edge of the pavement shall be a minimum of 7 feet and a maximum of 8 feet ¹ (see Figure 6F-1)."
			Paragraph 09				Deleted "shall be 7 feet" and replaced with "a minimum of 7 feet and a maximum of 8 feet ¹ ."
			Paragraph 10				Deleted the statement "The minimum height of ground-mounted signs, measured vertically from the bottom of the sign to the elevation of the near edge of the pavement, shall be 7 feet (see Figure 6F-1)" and replaced with "The height of ground-mounted signs, measured vertically from the bottom of the sign to the elevation of the near edge of the pavement shall be a minimum of 7 feet and a maximum of 8 feet ¹ (see Figure 6F-1)."

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6F	6F.03	Sign Placement	Paragraph 17		Portable Sign Supports		Changed from: "...as provided in Paragraph 17..." to "...as provided in Paragraph 18 ¹ ..."
			Paragraph 20				Added "...fully extended and ¹ flush as possible to the ground or roadway surface for stability. " and the sentence "If the legs cannot be fully extended then they should be weighted per Paragraph 26. ¹ "
			Paragraph 21				Changed from: "...as provided in Paragraph 17..." to: "...as provided in Paragraph 18 ¹ ..." Added " ...a sand bag weighting approximately 25 pounds or "two (2) drum collar weights".
			Paragraph 26				Deleted "than two cone weights or" and replaced with "two (2) drum collar weights".
	6F.04	Sign Maintenance	Paragraph 03		Covering Ground-mounted Signs		Clarified the standard by changed first sentence from: "Plywood shall be used on ground-mounted TTC signs only." to: "When used ¹ , plywood shall only be attached to ¹ ground-mounted TTC signs."
			Figure 6F-2	Regulatory Signs and Plaques in Temporary Traffic Control (Sheet 1 of 2)	Traffic Control Signs	R1-V1 R2-V1 R3-20	Added R1-V1 sign. Revised R2-V1 sign, "Work Zone \$500 Max. Fine For Exceeding Speed Limit When Flashing." Added R3-20 sign

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6F	6F.13	Work Zone \$500 Max. Fine For Exceeding Speed Limit When Flashing Sign	Paragraph 01		Traffic Control Sign for Exceeding the Speed Limit	R2-V1	Revised the title of this section from: "Notice Fines Up To \$500 for Exceeding Speed In Work Zone" to: "Work Zone \$500 Max. Fine For Exceeding Speed Limit When Flashing ¹ ." Added "This Code section was amended by the 2012 General Assembly by adding "for projects covered by contract entered into on or after July 1, 2012, with attached flashing light" or other traffic control device indicating that work is in progress. The intent of this change in the Code is for flashing lights to be activated indicating to motorists when workers are present and work is in progress".
			Paragraph 02				Revised the sign name from Notice Fines Up To \$500 for Exceeding Speed In Work Zone" to: "Work Zone \$500 Max. Fine For Exceeding Speed Limit When Flashing ¹ ."
			Paragraph 03				Replaced the word "NOTICE" with "WORK ZONE ¹ "
			Paragraph 06				Added paragraph "The Type B flashing warning lights shall be remotely operated and activated only when workers are present in the work zone."
	6F.17	Special Regulatory Signs	Paragraph 01		Virginia Supplement to the MUTCD		Added reference to the Virginia Supplement to the MUTCD.
			Paragraphs 03, 04 and 05		Proceed When Way Is Clear Sign	R1-V1	Revised Paragraph 03 by adding "Proceed When Way Is Clear (R1-V1) sign". Added new Paragraph 04, "An engineering study should determine the use of the PROCEED WHEN WAY IS CLEAR sign when a stop or yield condition is used to control traffic on a two-lane roadway." Renumbered remaining paragraphs. Deleted sign designation in Paragraph 05.
			Paragraph 09		Pedestrian Safety	R10-15	Added paragraph.

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6F	6F.18	Warning Sign Function, Design, and Application	Paragraph 14		Application of Warning Signs		Added standard statement: Advanced warning signs shall be installed on entrance ramps if the advanced warning signs installed on the roadway are not visible to road users on the ramp. ¹	
	6F.21	Road (Street) Work Ahead Sign (W20-1), Road Work Next 2 Miles Sign (W21-V2), and Emergency Work Ahead Sign (W20-V27)	Paragraphs 2 and 3		Traffic Control Signs	W20-1	Deleted sign designation references in the paragraphs.	
			Paragraphs 12 through 16			W20-V27	Revised the title of this section by adding "and Emergency Work Ahead (W20-V27) Sign." Added Paragraphs 12 through 16 to define the application of the Emergency Work Ahead sign.	
	6F.26	Lane(s) Closed Signs (W20-5, W20-5a), Turn Lane(s) Closed Signs (W20-V13), Median Crossover Closed Ahead (W20-V15) Sign, and Median Crossover Closed (W20-V16) Signs	Paragraphs 04 ,05 and 06			W20-5, W20-5a, W9-3 W20-V15 W20-V16	Added "Median Crossover Closed Ahead (W20-V15 and Median Crossover Closed (W20-V16) signs" to title. Deleted Paragraphs 04 and 05. Deleted the optional signs and changed the required date of "December 31, 2012" to: "Required as of July 1, 2014". Renumbered remaining paragraph. Added median crossover signs and new Standard statement, Paragraph 05, for median crossover signs.	
	6F.28	Center (Left/Right) Lane Closed Ahead Sign (W9-3)	Paragraphs 02 and 03			W9-3	Deleted Paragraph 02. Deleted the optional sign and changed the required date of "December 31, 2012" to: "Required as of July 1, 2014". Renumbered remaining paragraph.	
			Figure 6F-3	Warning Signs and Plaques in Temporary Traffic Control (Sheet 1 of 5)			W0-V1	Added CRASH AREA KEEP CLEAR sign.
				Warning Signs and Plaques in Temporary Traffic Control (Sheet 3 of 5)			W20-V26 W20-V27	Added, RUMBLE STRIPS AHEAD, and EMERGENCY WORK AHEAD signs

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6F			Figure 6F-3	Warning Signs and Plaques in Temporary Traffic Control (Sheet 5 of 5)		G20-1(V) G20-2(V) G20-V2 G20-V3	Added Sheet 5 of and moved signs from Sheet 4.
	6F.35	Exit Open (E5-2) and Exit Closed (E5-2a) Signs	Paragraph 04			E5-2 E5-2a	Added Paragraph 04: For better visibility the EXIT OPEN and EXIT CLOSED shall be mounted a minimum of 7 feet from the pavement surface to the bottom of the sign (see Figure TTC-37).
	6F.38	Flagger Signs (W20-7a, W20-7), XX Feet Plaque (W16-VP3), and Slow Sign (W21-V10)	Paragraphs 04 and 07			W20-7a, W20-7, W16-VP3, W21-V10	Deleted reference to sign designation in Paragraph 04. Deleted Paragraph 07. Deleted the optional sign and changed the required date of "December 31, 2012" to: "Required as of July 1, 2014". Renumbered remaining paragraphs.
			Figure 6F-3	Warning Signs and Plaques in Temporary Traffic Control (Sheet 5 of 5)		G20-1(V) G20-2(V) G20-V2 G20-V3	Added Sheet 5 of and moved signs from Sheet 4.
	6F.35	Exit Open (E5-2) and Exit Closed (E5-2a) Signs	Paragraph 04			E5-2 E5-2a	Added Paragraph 04: "For better visibility the EXIT OPEN and EXIT CLOSED shall be mounted a minimum of 7 feet from the pavement surface to the bottom of the sign (see Figure TTC-37)."
	6F.38	Flagger Signs (W20-7a, W20-7), XX Feet Plaque (W16-VP3), and Slow Sign (W21-V10)	Paragraphs 04 and 07			W20-7a, W20-7, W16-VP3, W21-V10	Deleted reference to sign designation in Paragraph 04. Deleted Paragraph 07. Deleted the optional sign and changed the required date of "December 31, 2012" to: "Required as of July 1, 2014". Renumbered remaining paragraphs.

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6F	6F.40	Motorized Traffic Signs - Truck Crossing Symbol (W11-10), Truck Crossing Sign (W8-6), Watch for Turning Vehicles Sign (W11-V3), Trucks Entering Highway Sign (W11-V4), and Construction Entrance Sign (W11-V2)	Paragraphs 05 and 06		Traffic Control Signs		LOG TRUCKS ENTERING HIGHWAY sign shall not be use. ¹ was added to Paragraph 05 Deleted the Option statement, Paragraph 06: "The LOG TRUCKS ENTERING HIGHWAY sign may be used in lieu of the TRUCKS ENTERING HIGHWAY sign until December 31, 2012." Renumbered remaining paragraphs.
	6F.41	Rough Road Sign (W8-8), Motorcycle Plaque (W8-15P), and Grooved Pavement Sign (W20-V14)	Paragraph 02 and 03		Grooved Pavement Sign	W20-V14	Added "and Grooved Pavement Sign" to title. Revised Paragraph 02 from "A MOTORCYCLE (W8-15P) plaque (see Figure 6F-3) may be mounted below a ROUGH ROAD (W8-8) sign when the sign is mounted on a post." To The GROOVED PAVEMENT (W20-V14) sign may be used as an alternative to the ROUGH ROAD sign. ¹ Renumbered Paragraph 02 as Paragraph 03 and added "or a GROOVED PAVEMENT ¹ " to sentence.
	6F.44	Survey Crew Ahead Sign (W21-V8)	Paragraph 03		Traffic Control Signs	W21-V8	Deleted Paragraph 03. Deleted the optional sign and changed the required date of "December 31, 2012" to: "Required as of July 1, 2014".
	6F.50	Soft Shoulder Sign (W8-4), Low Shoulder Sign (W8-9), Shoulder Drop Off Sign (W8-V5), and Shoulder Drop Off Plaque (W8-17P)	Paragraph 05			W8-V5, W8-17P	Deleted Paragraph 05. Deleted the optional sign and changed the required date of "December 31, 2012" to: "Required as of July 1, 2014".

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6F	6F.53	No Center Line Sign (W8-12) and Unmarked Pavement Ahead Sign (W8-V4)	Paragraph 04		Traffic Control Signs	W8-12	Deleted Paragraph 04. Deleted the optional sign and changed the required date of "December 31, 2012" to: "Required as of July 1, 2014".
	6F.58	Advisory Speed Plaque (W13-1P)	Paragraph 05		Traffic Control Signs	W13-1	Deleted Paragraph 05. Deleted the optional sign and changed the required date of "December 31, 2012" to: "Required as of July 1, 2014".
	6F.59	Supplementary Distance Plaque (W16-VP1)	Paragraph 05		Traffic Control Signs	W7-3p, W16-VP1	Deleted Paragraph 05. Deleted the optional sign and changed the required date of "December 31, 2012" to: "Required as of July 1, 2014". Renumbered remaining paragraph.
	6F.64	Work Vehicle Frequent turns (G20-V1a) and Work Vehicle Do Not Follow Sign (G20-V1) - (Vehicle-Mounted)	Paragraphs 01 and 02		Traffic Control Signs	G20-V1a G20-V1	Added WORK VEHICLE FREQUENT TURNS sign to title. Added WORK VEHICLE FREQUENT TURNS (G20-V1a) sign to Paragraph 1.

CHAPTER	SECTION NUMBER	SECTION TITLE	NEW TABLE/FIGURE /PARAGRAPH NUMBER	TABLE / FIGURE TITLE	REVISION TOPIC	SIGN CODE	REVISION DESCRIPTION
6F	6F.64	Work Vehicle Frequent turns (G20-V1a) and Work Vehicle Do Not Follow Sign (G20-V1) - (Vehicle-Mounted)	Paragraphs 03, 04, 05, and 06		Traffic Control Signs	G20-V1	Added Option statements "The WORK VEHICLE FREQUENT TURNS (G20-V1a) vehicle-mounted sign may be displayed at all times. ¹ " (Paragraph 02) and The WORK VEHICLE FREQUENT TURNS and WORK VEHICLE DO NOT FOLLOW signs is not required on one-way, two-lane operations since flaggers normally control the ingress and egress of work vehicles, however it may be used as an option. The sign may be covered or removed from view during normal operations other than those listed above. ¹ " (Paragraph 03) Added Standard statement "The WORK VEHICLE DO NOT FOLLOW (G20-V1) vehicle-mounted sign shall be replaced with the WORK VEHICLE FREQUENT TURNS (G20-V1a) vehicle-mounted sign by July 1, 2017. ¹ "(Paragraph 04) Added Support statement: "When the tailgate has been removed or lowered for work operations (such as with an Athey Loader), the vehicle would be exempt from having to display the sign. The sign is not required to be placed on the back of pickup trucks, SUV's, vans or other vehicles such as safety service patrol, which can enter or exit the work zone at higher speeds. ¹ " (Paragraph 05).
			Figure 6F-4	Vehicle Mounted Signs for Temporary Traffic Control		G20-V1a	Added WORK VEHICLE FREQUENT TURNS sign and optional and required application dates.

CHAPTER	SECTION NUMBER	SECTION TITLE	NEW TABLE/FIGURE /PARAGRAPH NUMBER	TABLE / FIGURE TITLE	REVISION TOPIC	SIGN CODE	REVISION DESCRIPTION
6F			Figure 6F-5	Exit, Pull Off Area, Exit Open, and Detour Signs for Temporary Traffic Control	Long – Term Stationary Detour Assembly		Changed the US Route detour assembly from Cardinal directional Marker-WEST above the US Route sign then the detour sign with arrow to detour sign above US Route sign then the arrow sign per TA-8 in the 2009 MUTCD. Changed the background color on the Interstate Cardinal directional plaque.
	6F.68	Portable Changeable Message Signs	Paragraph 33		Non-Crashworthy Trailer-Mounted Devices		Added "...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. ¹ ..." to the first sentence.
	6F.69	Arrow Boards	Paragraph 03		Shoulder Taper		Added sentence "If placed on roadways with paved shoulders having a width of 8 feet or more, a shoulder taper shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the traveled way. ¹ "
			Figure 6F-6	Channelizing Devices for PCMS and Other Trailer Mounted Traffic Control Devices			Clarified by adding "... and Other Trailer Mounted Traffic Control Devices" to the title. Also added "...PCMS or other unmanned trailer mounted devices..." and replaced "Drums" with "Channelizing Devices" for Arrow Boards.
			Figure 6F-7	Advance Warning Arrow Board Display Specification			Added missing bulb to "Move/Merge Right" Arrow Board illustration.
	6F.73	Tubular Markers	Paragraph 01				Added "...shall be constructed of lightweight, deformable material..." to second sentence.
		Paragraph 02				Added "...white fluorescent prismatic (high observation angle) lens ¹ stripes ..." to last sentence.	

CHAPTER	SECTION NUMBER	SECTION TITLE	NEW TABLE/FIGURE /PARAGRAPH NUMBER	TABLE / FIGURE TITLE	REVISION TOPIC	SIGN CODE	REVISION DESCRIPTION
6F	6F.75	Drums	Paragraph 01		Retroreflective Sheeting		Replaced "...retroreflective..." with "...fluorescent prismatic (high observation angle) lens ¹ ." Replaced last sentence with "Drums with retroreflective sheeting conforming to Section 247 purchased prior to July 1, 2012 can continue to be used on projects until July 1, 2016. On and after July 1, 2016, all drums shall meet the retroreflective sheeting requirements of Section 247 dated July 1, 2012. ¹ "
			Paragraph 02		Retroreflective Sheeting		Added Guidance statement: "Until July 1, 2016, drums with like retroreflective sheeting should be grouped together and not scattered randomly throughout the work zone or project." Renumbered the remaining paragraphs.
			Paragraph 09 ((previously Paragraph 08)		Non-Crashworthy Trailer-Mounted Devices		Added "... for non-crashworthy trailer mounted devices such as but not limited to intelligent transportation systems (ITS), PCMS, Highway Advisory Radio, Speed Trailers, CB Wizards, ITS cameras, Portable Traffic Control Signals, AFAD units, light towers, etc. ¹ "
			Paragraph 10		Channelizing Devices		Added Option statement.
	6F.76	Type 3 Barricades	Paragraph 04		Barricade Rail Width		Added "...approximately 8 inches to..." and replaced "270 square inches" with "2 exposed rails."
			Paragraph 17		Barricade Application		Deleted "the responsibility for ensuring the placement of Type 3 Barricades shall be assigned to a person who will provide proper closure at the end of each work day" and replaced with "a Type 3 Barricade shall be used to close a work access opening or construction entrance".

CHAPTER	SECTION NUMBER	SECTION TITLE	NEW TABLE/FIGURE /PARAGRAPH NUMBER	TABLE / FIGURE TITLE	REVISION TOPIC	SIGN CODE	REVISION DESCRIPTION
6F	6F.76	Type 3 Barricades	Paragraph 18				Added new Paragraph 18 "The responsibility for ensuring the placement of Type 3 Barricades shall be assigned to a person who will ensure proper closure at the end of each work day". Renumbered remaining paragraphs.
			Paragraph 21 ((previously Paragraph 20)		Signs Mounted on Barricades		Deleted "50 percent of the top two rails or 33 percent of the total area of the three rails" and replaced with "the top rail ¹ ."
			Figure 6F-9	Channelizing Devices			Clarified traffic flow for Type 3 Barricades. Revised 8 or 12 inches rail dimension to 8 to ¹ 12 inches.
	6F.83	Temporary Raised Islands	Paragraph 07		Reference for Temporary Asphalt Median Detail		Revised last sentence from: "See L&D special design drawing for Temporary Asphalt Median for details", to: "See Figure 6 in Appendix A of this manual or IIM-LD-93 for specific details on ¹ Temporary Asphalt Medians."
	6F.86	Temporary Markings	Paragraph 05		Temporary Markings		Changed "temporary pavement markers (TPMs)" to "flexible temporary pavement markers (FTPMs) ¹ ".
	6F.90	Floodlights	Paragraph 06		Illumination		Added "...or anti-glare shields" to sentence.
	6F.92	Vehicle Warning Lights	Paragraph 02	Vehicle Warning Light Intensity Requirements	Flash Rates		Bullet point 1, deleted reference to strobe lights, change flash rate from "80-100" to "75-135 ¹ ".
			Paragraph 06		Vehicle Warning Lights		Added "During day and ¹ night operations..." to comply with 2009 MUTCD. Deleted reference to "strobe" lights.
	6F.94	Temporary Traffic Barriers	Paragraph 06		Temporary Traffic Barriers		Revised paragraph by adding "and selected from VDOT's Approved Products list ¹ ".
	6F.95	Crash Cushions	Paragraph 04		Non-redirective Crash Cushions		Added the sentence "When a non-redirective crash cushion (impact attenuator) is used a CRASH AREA KEEP CLEAR (W0-V1) sign shall be installed as directed by the plan assembly (see IIM-LD-222)."

CHAPTER	SECTION NUMBER	SECTION TITLE	NEW TABLE/FIGURE /PARAGRAPH NUMBER	TABLE / FIGURE TITLE	REVISION TOPIC	SIGN CODE	REVISION DESCRIPTION
6F	6F.95	Crash Cushions	Paragraph 06		TMA Application		Revised paragraph by removing “not be used more than 3 consecutive days to protect a fixed object” and replacing with “shall only be used during an incident management operation to protect a fixed object. The TMA shall remain in place for no more than 24 hours after the initial scene response. ¹ .”
			Paragraph 07		Chevron Stripes on the Rear Panel of a TMA		Added "...or yellow and black..." to the first sentence. Added "...orange or yellow retroreflective sheeting shall..." to the last sentence
			Paragraph 08		TMA Requirements		Added “and installed as tested per NCHRP350/Mash Test Level 3 criteria ¹ ” to the first sentence.
			Paragraph 11				Replaced “strobe” with “flashing”.
			Paragraph 18		Shadow Vehicles		Paragraph rewritten for the addition of the statement “when workers are present and work is in progress.”
			Paragraph 20		Operation of a Shadow Vehicle with a TMA		Changed the last sentence from: "All material and/or equipment on the shadow vehicle TMA shall be properly secured to prevent spillage if struck by an errant vehicle ", to: "All other ¹ material and/or equipment on the shadow vehicle TMA shall be properly secured to prevent spillage if struck by an errant vehicle."
	6F.96	Rumble Strips	Paragraphs 3 through 16		Portable Temporary Rumble Strips (PTRS)		Added Support, Standard, Option and Guidance statements related to the design and application of Portable Temporary Rumble Strips (PTRS). Renumbered paragraphs.

CHAPTER	SECTION NUMBER	SECTION TITLE	NEW TABLE/FIGURE /PARAGRAPH NUMBER	TABLE / FIGURE TITLE	REVISION TOPIC	SIGN CODE	REVISION DESCRIPTION
6G	6G.02	Work Duration	Paragraph 02		Mobile Work Duration		Added "... (1-15 minutes)..."to bullet E, mobile work.
			Paragraphs 11, 13, 15, 21, 23, and 25		Vehicle Warning Lights		Deleted reference to strobe lights.
	6G.06	Work Outside of the Shoulder	Paragraph 03		Vehicle Warning Lights		Deleted reference to strobe lights.
	6G.10	Work Within the Traveled Way of Two-Lane Highway	Paragraph 06		Transitions from Two-Lane Highway to a Multi-Lane Highway		Added Support statement, Paragraph 06.
	6G.11	Work Within the Traveled Way of an Urban Street	Paragraph 14		Vehicle Warning Lights		Deleted reference to strobe lights.
	6G.24	Slow Roll Temporary Traffic Control Operations	Paragraph 02		Approval of Slow Roll Operation		Added "or their designee ¹ ".
			Paragraph 07		Control Vehicle		Replaced "state" with "public agency ¹ ".
	6G.25	Installing/Removing Temporary Traffic Control	Paragraph 01		Installing/Removing Temporary Traffic Control		Deleted the sentences: A shadow vehicle or shadow vehicle with a TMA should be used to protect workers installing and removing TTC devices from a work vehicle such as signs, arrow boards, and channelizing devices.

CHAPTER	SECTION NUMBER	SECTION TITLE	NEW TABLE/FIGURE /PARAGRAPH NUMBER	TABLE / FIGURE TITLE	REVISION TOPIC	SIGN CODE	REVISION DESCRIPTION
6G	6G.25	Installing/Removing Temporary Traffic Control	Paragraph 02		Installing/Removing Temporary Traffic Control		Deleted the Standard statement: "TTC devices shall not be stored, installed or removed from a shadow vehicle or a shadow vehicle with a TMA. Temporary traffic control devices shall be stored, installed or removed from a work operation vehicle." And replaced with the Guidance statement: "The acts of installing and removing TTC on a two-lane roadway should begin as a non-stationary flagging operation using a Temporary Traffic Control (TTC) Spotter, a shadow vehicle, and a work operations vehicle. ¹ ."
			Paragraph 03		Shadow Vehicle		Added Option statement. Renumbered remaining paragraphs
			Paragraph 04 (previously Paragraph 03)		Shadow Vehicle		Revised the first two sentences to: "On a two-lane roadway, where pull off areas are limited, a Temporary Traffic Control Spotter ¹ using a red or red-orange ¹ flag and proper flagger procedures should temporarily stop traffic while TTC devices are being installed. The TTC Spotter ¹ moves with the operation or can be stationary."
			Paragraph 05 (previously Paragraph 04)		Shadow Vehicle		Deleted Guidance statement "On a multi-lane roadway a pick-up truck with a trailer-mounted arrow board should be placed on the shoulder to direct traffic out of the closed lane. A shadow vehicle with an arrow board or amber light closes the lane while TTC devices are being installed or removed. The shadow vehicle should be 80' to 120' in advance of the work operation vehicle" with the Option statement "The STOP/SLOW paddle may be used as a supplement to enhance the flag used by the TTC Spotter. ¹ "

CHAPTER	SECTION NUMBER	SECTION TITLE	NEW TABLE/FIGURE /PARAGRAPH NUMBER	TABLE / FIGURE TITLE	REVISION TOPIC	SIGN CODE	REVISION DESCRIPTION
6G	6G.25	Installing/Removing Temporary Traffic Control	Paragraph 06 (previously Paragraph 05)		Traffic Spotter		Replaced Standard statement "A shadow vehicle with a TMA shall be used to protect the workers and their work vehicle installing and removing TTC devices on multi-lane roadway with a posted speed of 45 mph or greater." With Standard statement "The TTC Spotter shall be positioned after the Road Work Ahead sign and must remain highly visible to oncoming traffic at all times. ¹ "
			Paragraph 07 through Paragraph 10		Shadow Vehicles		Added Guidance, Option and Standard statements.
			Paragraph 11 (previously Paragraph 05)		Shadow Vehicles		Standard statement rewritten for clarity. Deleted Option statement "A TTC Spotter may be used in this operation." (previously Paragraph 11).
			Paragraph 16 (previously Paragraph 10)		Relocating Advance Warning Signs		Renumbered Paragraph.
			Paragraph 17		TMA Requirements		Added Support statement.
	6G.26	Temporary Traffic Control During Nighttime Hours	Paragraph 10		PCMS Use		Added Option statement allowing the use of a PCMS. Renumbered remaining paragraphs.
	6G.27	Work Area Ingress/Egress Considerations	Paragraph 05 and 06		Work Area Ingress/Egress Guidance	G20-V1	Added paragraphs. Renumbered the remaining paragraphs.
			Paragraph 07				Added "day and ¹ " operations and replaced "strobe" with "flashing".
			Paragraphs 08, 09, and 10				Added the Guidance, Standard, and Option statements on work area ingress/egress.
6H	6H.01	Typical Applications	Paragraph 10		Post-Mounted Signs		Replaced the term "required" with "used".
			Paragraph 11		TOC Notification		Added paragraph to require notification of the TOC for road work on Limited Access highways and Primary roads.
			Table 6H-1	Index to Typical Temporary Traffic Control Figures and Notes	Figure TTC-64, TTC-65, TTC-66, And TTC-67		Added Typical Traffic Control applications to Table.
			Table 6H-3	Longitudinal Buffer Space	Buffer Space Distance		Revised Table title. Corrected buffer space distance from "155-160" to "155-165 ¹ ", "305-320" to "305 - 325 ¹ ", "500-520" to "500-530 ¹ ", and "570-590" to "570-600 ¹ ".

CHAPTER	SECTION NUMBER	SECTION TITLE	NEW TABLE/FIGURE /PARAGRAPH NUMBER	TABLE / FIGURE TITLE	REVISION TOPIC	SIGN CODE	REVISION DESCRIPTION
6H	6H.01	Typical Applications	Table 6H-5	Recommended Spacing of Advanced Warning Signs	Table Title		Revised Table Title to match Table 6C-1 title.
			Figure 6H-1	Symbols Used In Typical Temporary Traffic Control Figures Application	Temporary Barrier		Replaced "Temporary Concrete Barrier" with "Temporary. Traffic ¹ Barrier"
			TTC-1 Notes 4 and 5	Work Beyond the Shoulder Operation	Vehicle Warning Lights		In Note 4, pluralized operation. Deleted reference to strobe lights in Notes 4 and 5.
			TTC-3 Notes 3, 4, 8, 9, and 10 TTC Figure	Mobile or Short Duration Shoulder Operations	Vehicle Warning Lights and Work Duration Requirements		Deleted reference to strobe lights in Notes 3 and 4. Replaced the Note 8 Option statement: "The shadow vehicle may be used with a truck-mounted attenuator (TMA) on Limited Access highways" with the Standard statement: "A truck-mounted attenuator (TMA) shall be used on the shadow vehicle on Limited Access highways and multi-lane roadways with posted speed limit equal to or greater than 45 mph for operations with a duration greater than 60 minutes. ¹ " Added Notes 9 through 11. Added references to Notes 5), 9, 10, and 11 to figure. Added channelizing devices to Figure.
			TTC-4 Notes 1, 4, and 5	Stationary Operation on a Shoulder	Vehicle Warning Lights		Note 1, added RIGHT SHOULDER CLOSED (W21-5aR) ¹ to first sentence, replaced RIGHT SHOULDER CLOSED AHEAD (W21-5bR) with RIGHT SHOULDER CLOSED (W21-5aR) ¹ in second sentence. Deleted reference to strobe lights in Notes 4 and 5.
			TTC-5 Notes 1, 5, and 6	Shoulder Operation with Minor Encroachment	Sign Requirements and Vehicle Warning Lights		Note 1, replaced "On divided highways having a median wider than 8', right and left sign assemblies shall be required." with "See Note 1, TTC-4 for additional sign information ¹ ". Deleted reference to strobe lights in Notes 5 and 6.

CHAPTER	SECTION NUMBER	SECTION TITLE	NEW TABLE/FIGURE /PARAGRAPH NUMBER	TABLE / FIGURE TITLE	REVISION TOPIC	SIGN CODE	REVISION DESCRIPTION
6H	6H.01	Typical Applications	TTC-6 Note 4	Shoulder Closure with Barrier Operation	Shoulder Taper		Replaced minimum distance for a shoulder taper from "300' "to "360 ¹ " in Note 4.
			TTC-9 Notes 1, 8, 9, 10, 11, 12, 13, and 14	Mowing Operation with Encroachment on Non-Limited Access Roadways	Vehicle Warning Lights and Sign Requirements		Replaced "strobe" with flashing ¹ in Note 1. Corrected TTC reference in Note 8. Added Notes 9 through 14.
			TTC-10 Notes 1, 13, 14, 15, 16, and 17	Non-Licensed Vehicle Operation with Encroachment on Limited Access Roadways	Vehicle Warning Lights and Sign Requirements		Replaced "strobe" with flashing ¹ in Note 1. Added Notes 13 through 17.
			TTC-11 Notes 1 and 2	Moving/Mobile Operations on Limited Access Highways (Single Lane Closure)	Vehicle Warning Lights		Replaced "strobe" with flashing ¹ in Note 1. Deleted reference to "strobe" lights in Note 2.
			TTC-12 Notes 1, 2, and 5. TTC Figure	Moving/Mobile Operations on Limited Access Highways (Multiple Lane Closure)	Vehicle Warning Lights, Shadow vehicle 5	W20-V2a	Replaced "strobe" with flashing ¹ in Notes 1 and 2. Added sentence For non-limited access highways, Shadow Vehicle 1 shall have the option of using a Type C arrow board in place of the PCMS. ¹ Added Shadow vehicle 5 with arrow board and vehicle sign W20-V2a.
			TTC-13 Note 1	Moving/Mobile Operations on a Multi-Lane Roadway	Vehicle Warning Lights		Replaced "strobe" with flashing ¹ in Note 1.
			TTC-14 Note 1	Moving/Mobile Operations on a Two-Lane Roadway	Vehicle Warning Lights		Replaced "strobe" with flashing ¹ in Note 1.
			TTC-15 Notes 2 and 9 TTC Figure	Short Duration Operation on a Multi-Lane Roadway	Vehicle Warning Lights		Replaced "strobe" with flashing ¹ in Note 2. Added Option Note 9. Added channelizing devices and Note 9 reference to Figure.

CHAPTER	SECTION NUMBER	SECTION TITLE	NEW TABLE/FIGURE /PARAGRAPH NUMBER	TABLE / FIGURE TITLE	REVISION TOPIC	SIGN CODE	REVISION DESCRIPTION
6H	6H.01	Typical Applications	TTC-16 Notes 8 and 9	Outside Lane Closure Operation on a Four-Lane Roadway	Vehicle Warning Lights		Replaced “strobe” with flashing ¹ in Note 8. Deleted reference to strobe lights from Note 9.
			TTC-17 Notes 8 and 9	Inside Lane Closure Operation on a Four-Lane Roadway	Vehicle Warning Lights		Replaced “strobe” with flashing ¹ in Note 8. Deleted reference to strobe lights from Note 9.
			TTC-18 Notes 8 and 9	Multi-Lane Closure Operation	Vehicle Warning Lights		Replaced “strobe” with flashing ¹ in Note 8. Deleted reference to strobe lights from Note 9.
			TTC-19 Notes 5, 8, and 9	Lane Closure with Lane Weave	Taper Length and Vehicle Warning Lights		In the Note 5 Taper Length Table, replaced the second 9 foot lane width notation with 11 ¹ foot lane width. Replaced “strobe” with flashing ¹ in Note 8. Deleted reference to strobe lights from Note 9.
			TTC-20 Title and Note 8	Lane Closure Operation with Traffic Barrier	Title		Revised by deleting the term “Concrete” from the title due to the use of steel traffic barriers.
					Barrier Transition		Changed “Slope Rate” and “slope” to “Flare Rate” and flare” in Note 8.
			TTC-21 Note 6	Center Turn Lane Closure Operation	Vehicle Warning Lights		Replaced strobe with flashing or oscillating ¹ in Note 6.
			TTC-22 Notes 5, 6, 7, and 10 TTC Figure	Right Lane Closure Operation on a Three-Lane Roadway	Vehicle Warning Lights and Channelizing Devices		In the Note 5 Taper Length Table, replaced the second 9 foot lane width notation with 11 ¹ foot lane width. Note 6, replaced “work zone” with “buffer and activity areas ¹ ”. Replaced “strobe” with flashing or oscillating ¹ in Note 7. Added Guidance statement, Note 10. In the TTC Figure, added 4 additional drums to be extended the guidance and revised the note from “4 X Speed Limit in Feet.” to “4 channelizing devices”; corrected TMA reference to See Note 7; changed 20 foot channelizing spacing from a note to a linear dimension and added See Note 6.

CHAPTER	SECTION NUMBER	SECTION TITLE	NEW TABLE/FIGURE /PARAGRAPH NUMBER	TABLE / FIGURE TITLE	REVISION TOPIC	SIGN CODE	REVISION DESCRIPTION
6H	6H.01	Typical Applications	TTC-23 Notes 6, 7 and 14 TTC Figure	Lane Closure Operation on a Two-Lane Roadway Using Flaggers	Vehicle Warning Lights and Portable Temporary Rumble Strips	W20-V26	Revised Note 6 by deleting cone spacing table and referring to Table 6H-4, Page 6H-6. Replaced "strobe" with flashing ¹ in Note 7. Added ", and if used the portable temporary rumble strips (PTRS) ¹ " to Note 9. Added Standard Note 14, Portable Temporary Rumble Strips. In the TTC Figure, added Portable Temporary Rumble Strips and W20-V26 signs.
			TTC-24 Note 10	Non-Stationary Operation on a Two-Lane Roadway Using Flaggers	Vehicle Warning Lights		Replaced "strobe" with flashing ¹ in Note 10.
			TTC-25 Note 13 TTC Figure	Lane Closure Operation on a Two-Lane Roadway Using Traffic Control Signals	Rumble Strips		Changed Note 13 from "... Temporary rumble strips..." to "...Long-term ¹ rumble strips..." Revised the rumble strip note in the Figure.
			TTC-26 Note 6 TTC Figure	Lane Closure Operation – Near Side of an Intersection	Vehicle Warning Lights		Replaced "strobe" with flashing or oscillating ¹ in Note 6. Added Note 8. Added R3-20 sign to the TTC Figure.
			TTC-27 Notes 4, 6, and 8 TTC Figure	Lane Closure Operation – Far Side of an Intersection	Vehicle Warning Lights and Sign Requirements	R3-20	Added amber ¹ and flashing ¹ to Note 4. Replaced "strobe" with flashing or oscillating ¹ in Note 6. Added Note 8. Added R3-20 sign to TTC Figure.
			TTC-28 Notes 4, and 5 TTC Figure	Lane Closure Operation in an Intersection	TMA Requirements and Vehicle Warning Lights		Replaced "strobe" with flashing or oscillating ¹ in Note 4. Deleted Note 5 on the use of a TMA. Renumbered remaining notes. Replaced "strobe" with flashing or oscillating ¹ in new Note 5.
			TTC-29 Note 7	Turn Lane Closure Operation	Buffer Space		Changed the distance values in the table from a specific distance with plus/minus to a range of distances.
			TTC-30 Notes 3, 4, 12, and 13	Flagging Operation at a Signalized Intersection	Options when Law Enforcement Officer Directing Traffic		Revised Notes 3 and 4 by adding "For flagging operations,". Added Notes 12 and 13 for signal operation and lane closure options when law enforcement officers are directing traffic.

CHAPTER	SECTION NUMBER	SECTION TITLE	NEW TABLE/FIGURE /PARAGRAPH NUMBER	TABLE / FIGURE TITLE	REVISION TOPIC	SIGN CODE	REVISION DESCRIPTION
6H	6H.01	Typical Applications	TTC-31 Notes 7 and 8	Flagging Operation on a Single Lane Roundabout	Vehicle Warning Lights		Added amber ¹ and replaced “strobe” with flashing ¹ in Note 7. Replaced “and” with or ¹ and deleted references to “strobe” in Note 8.
			TTC-32 Notes 3, 4 and 5	Inside Lane Closure on a Multi-Lane Roundabout	Vehicle Warning Lights and Taper Length		Added amber ¹ and replaced “strobe” with flashing ¹ in Note 3. In the Note 4 Taper Length Table, replaced the second 9 foot lane width notation with 11 ¹ foot lane width. Replaced “and” with or ¹ and deleted references to “strobe” in Note 5.
			TTC-33 Notes 8 and 9	Outside Lane Closure on a Multi-Lane Roundabout	Vehicle Warning Lights		Replaced “strobe” with flashing ¹ in Note 8. Replaced “and” with or ¹ and deleted references to “strobe” in Note 9.
			TTC-34 TTC Figure	Street Closure Operation with Detour	Optional Signs		Deleted R3-1 sign to and replaced with a street name plaque and R11-4 sign in TTC Figure.
			TTC-36 Note 10 TTC Figure	Crosswalk Closure and Pedestrian Detour Operation	Crosswalk Markings and Signs		Added reference to VA Supplement to Note 10. In TTC Figure, replaced Stop Bars with Yield Lines. Moved W11-2 sign and W16-7pL plaque to crosswalk. Added dimension (size) for yield bars in TTC Figure.
			TTC-37 Notes 4 and 7 TTC Figure	Work Operation in the Vicinity of an Exit Ramp	Vehicle Warning Lights, “L” Dimension, Sign Placement, Sign Height	E5-2 E5-2a	Added “the EXIT, EXIT OPEN (E5-2) and EXIT CLOSED (E5-2a) signs ¹ to Note 4. Moved amber ¹ and replaced “strobe” with flashing ¹ in Note 7. Revised “L” dimension at gore area to match 2009 MUTCD. Deleted arrow marking on ramp, left illustration. Added “SEE NOTE 4 to EXIT OPEN sign designation. Added PCMS to TTC Figure.
			TTC-38 Note 4	Partial Exit Ramp Closure Operation	Vehicle Warning Lights		Moved amber ¹ and replaced “strobe” with flashing ¹ in Note 4.
			TTC-39 Notes 4 and 8	Work Operation in the Vicinity of an Entrance Ramp	Sign Height, Vehicle Warning Lights		Added For better visibility, the STOP and YIELD signs shall be mounted a minimum of 7 feet from the pavement surface to the bottom of the sign. ¹ to Note 4. Replaced “and strobe” with or flashing ¹ in Note 8.
			TTC-40 Note 9	Multi-Lane Shift Operation	Vehicle Warning Lights		Replaced “strobe” with flashing ¹ in Note 9.

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6H	6H.01	Typical Applications	TTC-41 Note 7	Half Road Closure Operation on a Multi-Lane Roadway	Vehicle Warning Lights		Replaced “strobe” with flashing ¹ in Note 7.
			TTC-42 Notes 6, 9, and 10 TTC Figure	Interior Lane Closure Operation on a Multi-Lane Roadway	Vehicle Warning Lights		Replaced “strobe” with flashing ¹ in Note 6. Revised Guidance statement, Note 9, and the TTC Figure, from “4 X Speed Limit in Feet.” to “4 channelizing devices ¹ ”. Added Note 10.
			TTC-43 TTC Figure	Road Closure Operation with a Diversion	Temporary Pavement Markers, Signs		Added temporary pavement markers and legend. Added Chevrons (W8-1) layout for opposing traffic. Deleted optional W1-6 sign.
			TTC-44 Note 8 TTC Figure	Median Cross-Over Operation on a Multi-Lane Roadway	Channelizing Devices, Pavement Markers/Markings, Type 3 Barricades		Revised Guidance statement, Note 8, from “4 X Speed Limit in Feet.” to “4 channelizing devices ¹ ”. Added “SEE FIGURE 6F.11” to pavement marking note in TTC Figure. Added Optional ¹ and Required ¹ to Type 3 Barricades in the TTC Figure.
			TTC-45 TTC Figure	Total Limited Access Highway Closure Operation	Group 2 Devices		Added 4 Group 2 devices (Drums) in advance of the PCMS to the TTC Figure to match Figure 6F-6.
			TTC-46 TTC Figure	Limited Access Highway Closure Operation with a Short Term Detour	Type 3 Barricade		Replaced road closed Type 3 Barricade symbol with a right lane closed (pass to left) Type 3 Barricade symbol.
			TTC-47 TTC Figure	Limited Access Highway Closure Operation with a Long Term Detour	Type 3 Barricade		Replaced road closed Type 3 Barricade symbol with a right lane closed (pass to left) Type 3 Barricade symbol. Changed the background of the Cardinal signs directional plaques to orange and deleted “Interstate” from sign designation.
			TTC-48 TTC Figure	Limited Access Highway Closure Operation with a Short Term Detour	Type 3 Barricade	R11-V2	Replaced road closed Type 3 Barricade symbols with a lane closed (pass to left or right) Type 3 Barricade symbol. Replaced US Route 50 North sign with US Route 50 West sign. Corrected sign designations from R11-3a to R11-V2 ¹ . Changed M4-V1 sign spacing from 50-200 feet to ±50 feet. Added END DETOUR sign and Route shield to TTC Figure.

CHAPTER	SECTION NUMBER	SECTION TITLE	NEW TABLE/FIGURE /PARAGRAPH NUMBER	TABLE / FIGURE TITLE	REVISION TOPIC	SIGN CODE	REVISION DESCRIPTION
6H	6H.01	Typical Applications	TTC-49 Notes 3 and 4 TTC Figure	Surveying Operation	Vehicle Warning Lights		Replaced "strobe" with flashing ¹ in Note 3. Replaced and with or ¹ in Note 4. Changed "zone" to space ¹ in TTC Figure.
			TTC-51 TTC Figure	Haul Road Crossing Operation	Methods		Revised the titles to the two methods to match the description on the notes page.
			TTC-52 Notes 1, 5, 6, and 10 TTC Figure	Signing for Speed Limit and Fine Signs in Work Zones	Signs	R2-V1 R2-12 G20-5ap(V)	Note 1 was rewritten to add "a speed reduction ¹ ", "and evaluating ¹ ", and "investigation ¹ " to the sentence. Revised the sign and Note 5 from: "Notice Fines Up To \$500 for Exceeding Speed In Work Zone" to: "Work Zone \$500 Max. Fine For Exceeding Speed Limit When Flashing ¹ ." Revised Note 5 by adding: "The Type B warning lights shall be installed above the R2-V1 sign and controlled remotely with activation only when workers are present in the work zone." ¹ Also added "WORK ZONE (G20-5ap) plaque shall be installed above the SPEED LIMIT (R2-1) sign and the ¹ " to Note 5. Added sign designation R1-V1 ¹ to Note 6. Added new Note 10, speed reductions for short term operations and renumber remaining note. Added new sign to the TTC figure. Added note references to various signs in TTC Figure for clarity. Deleted reference to See Note 8 from R4-V7R and W9-3 Signs. Deleted G20-5ap (V) sign designation from TTC Figure.
TTC-55 Notes 4 and 8	Eradication of Pavement Markings in a Work Zone	Signs		In Note 4 replaced "...skip lines..." with "...pavement markings ¹ ..." and replaced "concrete" with temporary ¹ . Replaced the Option statement (Note 8): "Additional markings may require removal based on the roadway geometrics and night review of the site" with the Guidance statement: Removal of additional pavement markings and pavement markers should be removed based on the roadway geometrics and specific site conditions so that traffic will be guided safely if additional traffic control devices such as drums become displaced. ¹			

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6H	6H.01	Typical Applications	TTC-56 Notes 10 and 11	Work in the Vicinity of a Highway-Rail Crossing	Vehicle Warning Lights		Replaced "strobe" with flashing ¹ in Note 10. Deleted "strobe", replaced "and" with or ¹ , and added "but can be used as a supplement ¹ " in Note 11.
			TTC-57 Notes 5 and 7	End of Day Signing for Partial Paving Operations on a Multi-Lane Roadway	Sign Stands		Note 5, deleted reference to see Note 10 for sign spacing. Note 7, added "or two (2) drum collar weights positioned on the center of the sign stand".
			TTC-58 Notes 5 and 7	End of Day Signing for Full Paving Operations on a Multi-Lane Roadway	Sign Stands		Note 5, deleted reference to see note 10 for sign spacing. Note 7 added "or two (2) drum collar weights positioned on the center of the sign stand" to the note.
			TTC-59 Notes 4, 7, 8, and 12	End of Day Signing for Paving Operations on a Two-Lane Roadway	Signs	W8-7 W8-12	Added "or two (2) drum collar weights positioned on the center of the sign stand" to Notes 4 and 7. Deleted Note 8, "LOOSE GRAVEL (W8-7) signs should be installed on surface treated roadways and should be removed when the roadway has been swept or loose gravels have been removed from the roadway": deleted Note 12, "Either the NO CENTER LINE or NO CENTER STRIPE sign may be used until December 31, 2012, in which time only the NO CENTER LINE (W8-12) sign will be allowed". Renumbered remaining notes.
			TTC-61 Note 1	Pre-Storm Treatment Operation	Vehicle Warning Lights		Replaced "strobe" with flashing ¹ in Note 1.
			TTC-62 Note 1	Litter Pick-Up on Limited Access Highways	Vehicle Warning Lights		Replaced "strobe" with flashing ¹ in Note 1.
			TTC-63 Note 4	Logging Operations	Signs	W11-V4	Added new Note 4. Renumbered remaining notes.

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6H	6H.01	Typical Applications	TTC-64 Notes and TTC Figure	End of Day Signing for Surface Treatment, Slurry Seal and Latex Emulsion Treatment Operations	End of Day Signing for Paving Operations		Added Figure TTC-64.0.
			TTC-65 Notes and TTC Figure	Short Duration Road Patching Operation on a Low Volume Two-Lane Roadway	Short Duration Road Patching Operations		Added Figure TTC-65.0.
			TTC-66 Notes and TTC Figure	Slow-Roll Operation on a Multi-Lane Roadway	Slow-Roll Operations		Added Figure TTC-66.0.
			TTC-67 Notes and TTC Figure	Lane Closure Operation through an Intersection	Temporary Traffic Control		Added Figure TTC-67.0.
6I	6I.13	Traffic Incident Management Control Applications	TMIC-1 Note 5	Incident on Shoulder with minor Encroachment	Buffer Space Distance for 25 mph		Corrected buffer space distance from "155-160" to "155-165" ¹ , "305-320" to "305-325" ¹ , "500-520" to "500-530" ¹ , and "570-590" to "570-600" ¹ ..
			TMIC-2 Note 5	Incident in Outside Lane on Four-Lane Roadway	Buffer Space Distance for 25 mph		Corrected buffer space distance from "155-160" to "155-165" ¹ , "305-320" to "305-325" ¹ , "500-520" to "500-530" ¹ , and "570-590" to "570-600" ¹ ..
			TMIC-3 Note 5	Incident in Inside Lane on Four-Lane Roadway	Buffer Space Distance for 25 mph		Corrected buffer space distance from "155-160" to "155-165" ¹ , "305-320" to "305-325" ¹ , "500-520" to "500-530" ¹ , and "570-590" to "570-600" ¹ ..
			TMIC-4 Note 5	Incident in Multiple Lanes on a Multi-Lane Highway	Buffer Space Distance for 25 mph		Corrected buffer space distance from "155-160" to "155-165" ¹ , "305-320" to "305-325" ¹ , "500-520" to "500-530" ¹ , and "570-590" to "570-600" ¹ ..
			TMIC-5 Note 9	Incident Blocking a Lane on a Two-Lane Highway	Vehicle Warning Lights		Replaced "strobe" with flashing ¹ in Note 9.

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6I	6I.13	Traffic Incident Management Control Applications	TMIC-7 Note 6	Incident Closing a Highway	Detour Signing		Revised Note 6 from: "...detour route, a DETOUR with directional arrow sign should be placed..."to: "... detour route (see Figures TTC-46 or TTC-47), a DETOUR sign with directional arrow or Detour with a Route Assembly sign ¹ should be placed...".
			TMIC-8 TTC Figure	Highway Closure Incident with a Temporary Detour	Type 3 Barricade		Replaced road closed Type 3 Barricade symbol with a right lane closed (pass to left) Type 3 Barricade symbol.
Appendix A	Section 1	Channelizing Device/barrier Selection Process			Channelizing/Barrier Selection Process Example		Example 3, Step 2, revised from: "...used but Figure 3b, ROR Frequency Factor Chart for All Other Highways, shall be..." To: "...used but Figure 3a ¹ , ROR Frequency Factor Chart for Limited Access ¹ Highways, shall be...".
			Figure 3a	ROR Frequency Factor Chart for Limited Access Highways	Application of ADT		Added note for clarification on the application of ADT when using chart.
					Example for Night or Day Work Zones		Revised example from: "...select a channelizing device from Figure 4" to: "...select a channelizing device from Table 1 ¹ ."
			Figure 3b	ROR Frequency Factor Chart for All Other Highways	Application of ADT		Added note for clarification on the application of ADT when using chart.
	Section 3	Barrier Design Considerations	Table 3	Acceptable Longitudinal Steel Barriers	Longitudinal Steel Barriers		Added new section on Longitudinal Steel Barriers and Table 3, Acceptable Longitudinal Steel Barriers
			Table 4	Acceptable Longitudinal Channelizing Devices	Longitudinal Channelizing Devices (Portable Water-Filled Devices)		Renumbered Table 3 to Table 4.
			Figure 5	Construction Access Techniques and Induced barrier	Construction Access Techniques		Added Type 3 Barricades.

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Appendix D		Portable Changeable Message Sign (PCMS) Displays	Page D-1, Second Paragraph		PCMS Messages		Revised first sentence: This Appendix is intended to create uniformity in standardizing ¹ PCMS messages for temporary traffic control as shown in Table D1 ¹ across the Commonwealth. Added the following sentence: There are some standardized messages that require three phases which may be used on one PCMS or an additional PCMS may be used as directed by the Engineer. ¹
			Page D-1, Third and Fourth Paragraphs				Added paragraphs for new standardized PCMS messages.
			Page D-1, Sixth Paragraph (previously the Third Paragraph)				Revised the first sentence by adding “and Traffic Engineering”. Added second sentence referencing Operations and Security Division’s guidance on PCMS usage.
			Page D-1, Seventh Paragraph (previously the Third and Fourth Paragraphs)				Revised the sentences referencing tables with acceptable and unacceptable PCMS messages. Deleted the old fourth paragraph providing guidance on message pre-approval as this guidance is provided in the Operations and Security Division’s memorandum OD IIM-13-03.
			Page D-2				Added guidance on PCMS messages for alternate routes and traffic detours.
			Pages D-3 through D-6, Table D-1	Portable Changeable Messages for Temporary Traffic Control Application			Replaced previous Table D-1, Abbreviations That Shall be Used Only on Portable Changeable Messages Signs, with current Table D-1 (Portable Changeable Messages for Temporary Traffic Control Application).
			Page D-7 Tables D-2 and D-3	Portable Changeable Messages for Advanced Warning (D-2) and Unacceptable Portable Changeable Messages (D-3)			Added PCMS message guidance on the Display of Future Roadwork. Replaced previous Table D-2, Acceptable Abbreviations, with current Table D-2 (Portable Changeable Messages for Advanced Warning). Replaced previous Table D-3, Unacceptable Abbreviations, with current Table D-3 (Unacceptable Portable Changeable Messages).

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Appendix D		Portable Changeable Message Sign (PCMS) Displays	Page D-7	Abbreviations Used Traffic Control Devices	PCMS Messages		Added guidance on use of abbreviations for traffic control devices.
			Pages D-8 and D-9 Table D-4	Abbreviations That Shall be Used Only on Portable Changeable Messages Signs			Renumbered previous Table D-1 and Table D-4.
			Page D-10 Tables D-5	Acceptable Abbreviations			Renumbered previous Table D-2 and Table D-5.
			Page D-11 Tables D-6	Unacceptable Abbreviations			Renumbered previous Table D-3 and Table D-6.