

Appendix A

CONTENTS

Intersection Templates

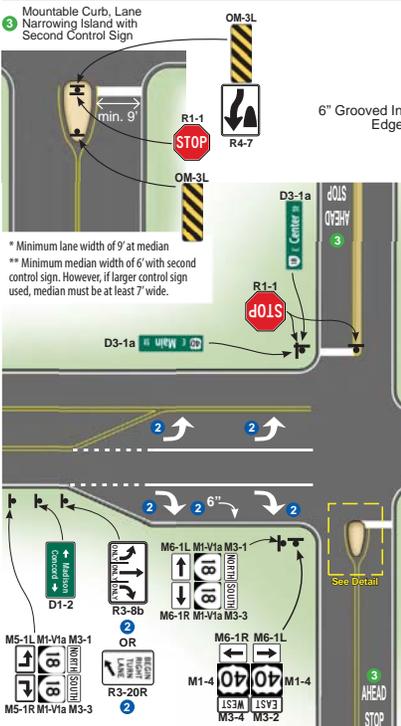
Appendix A

Criteria for Placement of Edge Line Markings (Source: Virginia Supplement Chapter 3B)

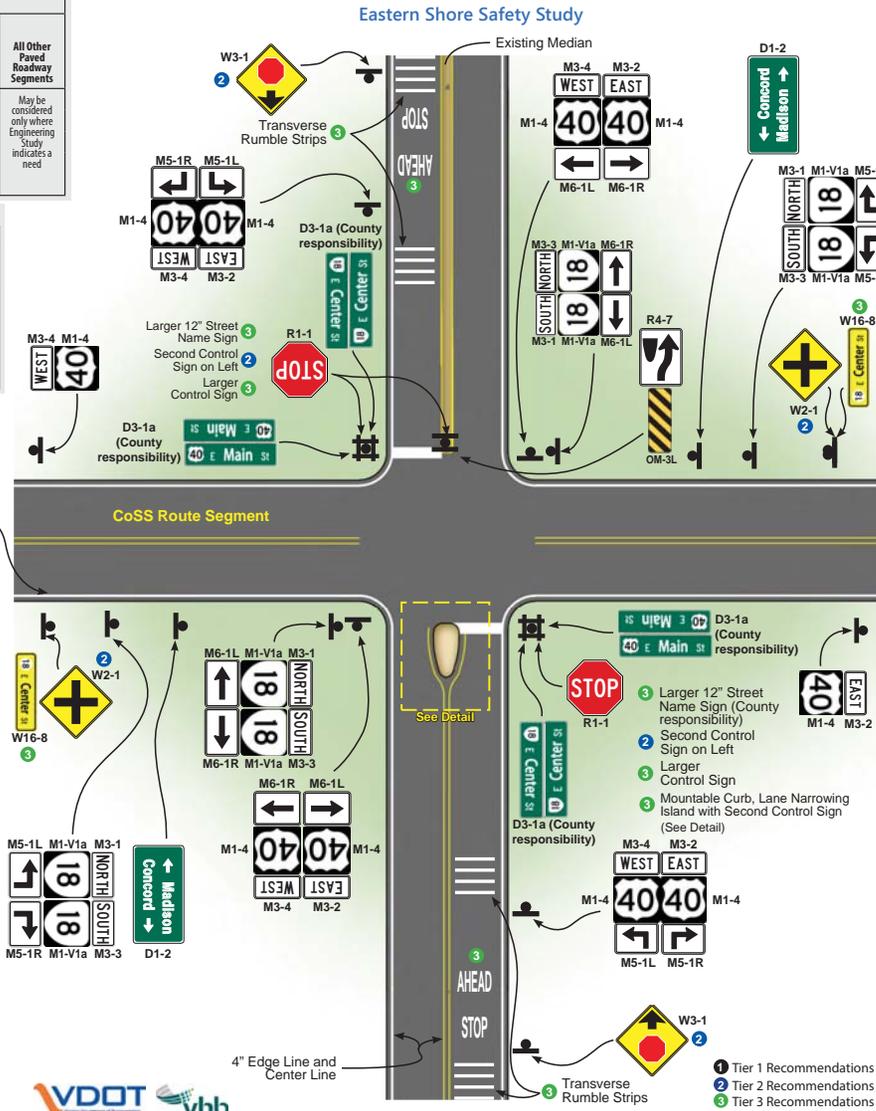
Pave-ment Width	Traffic Volume	Roadway Type					
		Un-divided Limited Access	Bi-directional multi-lane	Two-lane Paved Roads with Center Line & without Curb and Gutter	Other Rural Arterials and Collectors	Local Residential	All Other Paved Roadway Segments
≥ 20 feet	≥ 3,000 vpd	Required	Required	Required	Recommended	Not Recommended unless primarily serving through traffic	May be considered only where Engineering Study indicates a need
< 20 feet	< 3,000 vpd	Required	Required	May be considered only where Engineering Study indicates a need	Optional (if warranted)	Recommended	Recommended

Criteria for Placement of Center Line Markings (Source: Virginia Supplement Chapter 3B)

Pave-ment Width	Traffic Volume	Roadway Type				
		Un-divided Limited Access	Bi-directional multi-lane	Other Non-Local Residential	Other Local Residential	Local Residential
≥ 18 feet	≥ 500 vpd	Required	Required	Required	Recommended	Recommended
< 18 feet	≥ 500 vpd	Required	Required	Optional (if warranted)	Optional	Recommended
< 18 feet	< 500 vpd	Required	Required	May be considered only where Engineering Study indicates a need	Recommended	Recommended



Template 1 - Unsignalized Intersection - 4-leg (2-way stop controlled), Undivided (3 Tiers)



- NOTES:**
- Signage**
- Upgraded signs with current MUTCD standards (font, size, retroreflectivity, placement, message, etc.)
 - Fluorescent yellow sheeting on change of Direction Warning signs
 - Street Name sign (D3-1a or D3-1 for local roads) (County responsibility)
 - Larger 12" Street Name sign (D3-1a) (County responsibility)
 - Control sign (R1 Series)
 - Second Control sign (R1 Series) on left if median is present and is greater than 6' in width, with a "Keep Right" sign (R4-7) and an Object Marker (OM3-L) facing opposite direction
 - Larger Control sign (R1 Series)
 - Mountable curb, lane narrowing island with second control sign (see detail)
 - OM3-L object marker and R4-7 "Keep Right" sign at end of mountable curb island
 - Intersecting Route and Directional sign (M1, M3, & M5 Series) on primary routes and secondary routes with AADT ≥ 2000 vpd
 - Confirmation Route signs (M1 and M3 series) on primary routes
 - Destination/guide sign (D1 series) on primary routes
 - Advance Intersection Lane Control signs (R3-8 Series) on approaches with turn lanes, or "Begin Right Turn Lane" sign (R3-20R) where only a right-turn lane is present
 - Intersection Warning sign (W2 series) on approaches that are not stop-controlled
 - Street Name (W16-8 series) signs on CoSS approaches
 - Stop Ahead sign (W3-1) on stop-controlled approaches
- Pavement Markings**
- Stop bar/yield line (MUTCD Section 3B.16)
 - 6" grooved/in-laid edge line on primary routes
 - 4" edge line on secondary routes (see table for application guidance)
 - 4" center line pavement markings on secondary routes (see table for application guidance)
 - Solid lane and center line approaching intersection
 - Mini-skip marks delineating turn lanes through the intersection when dual turn lanes are present
 - Mini-skip marks at turn lane when taper length is greater than 100'
 - Lane use pavement markings (MUTCD Section 3B.20)
 - "Stop Ahead" or "Yield Ahead" pavement markings (MUTCD Section 3B.20)
 - Use rumble stripe for 6" markings
- Other**
- If pedestrian accommodations are present, ensure minimum requirements for crossing (6" solid lines offset minimum 6' and placed 4' in advance of the stop bar) and crosswalk warning sign
 - ReflectORIZED sign posts (MUTCD Section 2A.15)
 - Add transverse rumble strips on stop-controlled approach to CoSS
 - Trim vegetation to provide adequate sight distance
 - Mark obstructions within clear zone (OM1, 2, or 3 series)
 - Remove or provide a barrier for obstructions within clear zone
- NOTE: Signage and pavement marking placement is not to scale. Depending upon site conditions, signs should share the same post to the extent possible in order to reduce sign clutter. Actual placement will be determined on a site by site basis based on MUTCD and/or VA Supplement design standards and guidance. Signs should not be placed in the median unless the median is ≥ 4' wide and the sign is smaller than the median.
- 1 Tier 1 Recommendations
2 Tier 2 Recommendations
3 Tier 3 Recommendations

Criteria for Placement of Edge Line Markings (Source: Virginia Supplement Chapter 3B)

Pavement Width	Traffic Volume	Roadway Type					
		Undivided Limited Access	Bi-directional multi-lane	Two-lane Paved Roads with Center Line & without Curb and Gutter	Other Rural Arterials and Collectors	Local Residential	All Other Paved Roadway Segments
≥ 20 feet	≥ 3,000 vpd	Required	Required	Required	Recommended	Not Recommended unless primarily serving through traffic	May be considered only where Engineering Study indicates a need
< 20 feet	< 3,000 vpd	Required	Required	May be considered only where Engineering Study indicates a need	May be considered only where Engineering Study indicates a need	Not Recommended unless primarily serving through traffic	May be considered only where Engineering Study indicates a need

Criteria for Placement of Center Line Markings (Source: Virginia Supplement Chapter 3B)

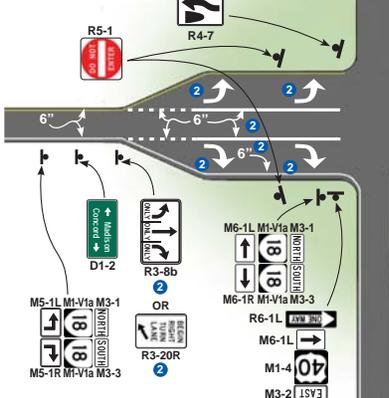
Pavement Width	Traffic Volume	Roadway Type					
		Undivided Limited Access	Bi-directional multi-lane	Other Non-Local Residential	Other Local Residential	Local Residential	
≥ 18 feet	≥ 500 vpd	Required	Required	Required	Recommended	Recommended	
< 18 feet	< 500 vpd	Required	Required	Optional (if warranted)	Optional	Recommended	
< 18 feet	≥ 500 vpd	Required	Required	May be considered only where Engineering Study indicates a need	Optional	Recommended	
< 18 feet	< 500 vpd	Required	Required	May be considered only where Engineering Study indicates a need	Optional	Recommended	

Mountable Curb, Lane Narrowing Island with Second Control Sign



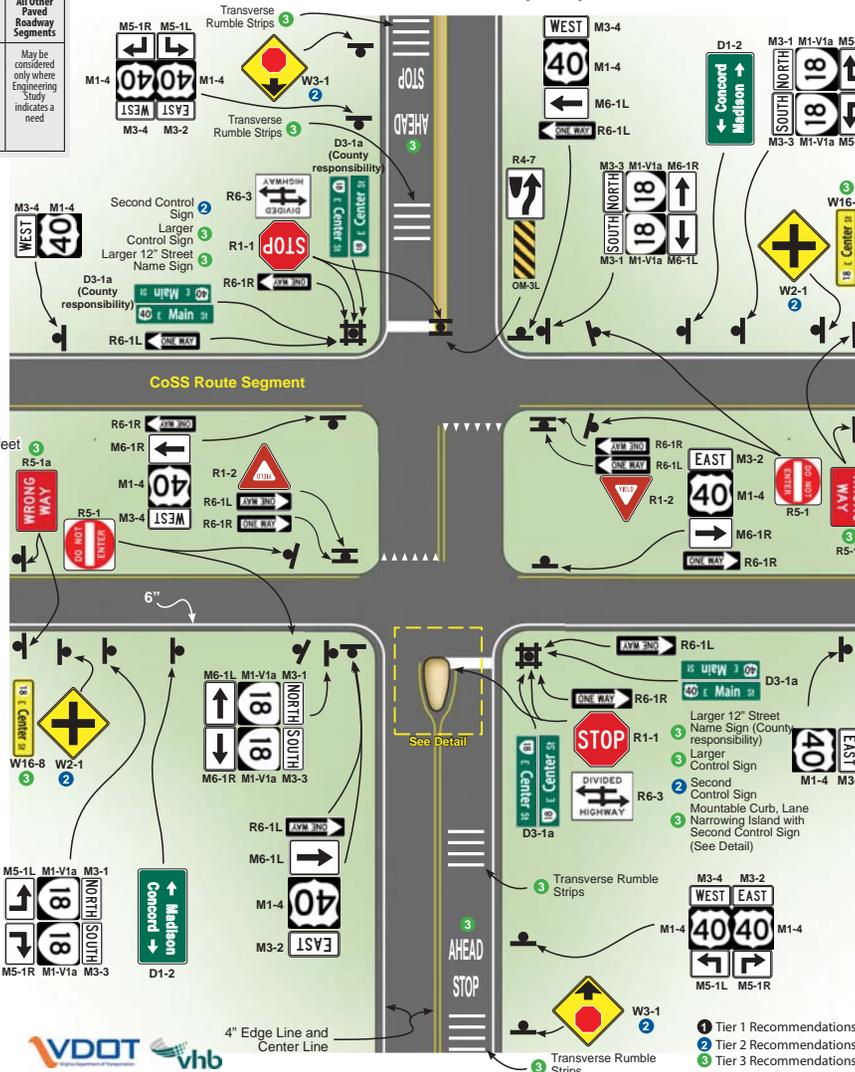
*Median width greater than 30 feet

*Median width less than 30 feet



Template 2 - Unsignalized Intersection - 4-leg (2-way stop controlled), Median Separated (3 Tiers)

Eastern Shore Safety Study



- 1 Tier 1 Recommendations
- 2 Tier 2 Recommendations
- 3 Tier 3 Recommendations

NOTES:

Signage

- 1 Upgraded signs with current MUTCD standards (font, size, retroreflectivity, placement, message, etc.)
- 1 Fluorescent yellow sheeting on change of Direction Warning signs
- 1 Control sign (R1 Series)
- 2 Second Control sign (R1 Series) on left, if median is present and is greater than 6' in width, with a "Keep Right" sign (R4-7) and Object Marker (OM3-L) facing opposite direction
- 3 Larger Control sign (R1 Series)
- 3 Mountable curb, lane narrowing island with second control sign (see detail)
- 1 OM3-L Object Marker and R4-7 "Keep Right" sign at end of mountable curb island
- 1 Street Name sign (D3-1a or D3-1 for local roads) (County responsibility)
- 3 Larger 12" Street Name sign (D3-1a)
- 1 Intersecting Route and Directional sign (M1, M3, & M6 Series). Include signs for through movement on primary routes only where through movement is a different route number.
- 1 Advance Intersecting Route and Directional sign on primary routes and secondary routes with an AADT > 2000 vpd (M1, M3, & M5 Series)
- 1 Confirmation Route signs (M1 & M3 Series) on primary routes
- 1 Destination/guide sign (D1 Series) on primary routes
- 1 Advance Intersection Lane Control signs (R3-8 Series) on approaches with turn lanes, or "Begin Right Turn Lane" sign (R3-20R) where only a right-turn lane is present
- 2 Intersection Warning sign (W2 series) on approaches that are not controlled
- 3 Street Name (W16-8) signs on CoSS approaches
- 2 Stop Ahead sign (W3-1) on stop controlled approaches
- 1 "One Way" and "Do Not Enter" (R6 Series & R5-1) signs per VA Supplement
- 1 "Keep Right" sign and Median Object Marker (OM3 Series) on raised medians where it is not readily apparent that traffic is required to keep to the right (MUTCD Figure 2B-10)
- 1 Divided Highway (R6 Series)(see application details)
- 3 "Wrong Way" (R5-1a) signs on divided highway

Pavement Markings

- 1 Stop bar/yield line on all stop/yield controlled approaches, including median crossovers greater than 30' in width (MUTCD Section 3B.16)
- 1 6" grooved/in-laid edge line on primary routes
- 1 6" edge line on primary routes (see table for application guidance)
- 1 4" center line pavement markings on secondary routes (see table for application guidance)
- 1 Solid lane and center line approaching intersection
- 1 Mini-skip marks delineating turn lanes through the intersection when dual turn lanes are present
- 1 Mini-skip marks at turn lane taper when taper length is greater than 100'
- 1 Lane use pavement markings (MUTCD Section 3B.20)
- 3 "Stop Ahead" or "Yield Ahead" pavement markings (MUTCD Section 3B.20)
- 3 Use rumble stripe for 6" markings

Other

- 1 If pedestrian accommodations are present, ensure minimum requirements for crossing (6" solid lines offset minimum 6' and placed 4' in advance of the stop bar) and crosswalk warning sign
 - 3 ReflectORIZED sign posts (MUTCD Section 2A.15)
 - 1 Trim vegetation to provide adequate sight distance
 - 1 Mark obstructions within clear zone (OM1, 2, or 3 series)
 - 3 Remove or provide a barrier for obstructions within clear zone
 - 3 Transverse rumble strips on stop controlled approach to CoSS
- NOTE: Signage and pavement marking placement is not to scale. Depending upon site conditions, signs should share the same post to the extent possible in order to reduce sign clutter. Actual placement will be determined on a site by site basis based on MUTCD and/or VA Supplement design standards and guidance. Signs should not be placed in the median unless the median is ≥ 4' wide and the sign is smaller than the median.

Divided Highway Crossing Sign Application (R6-3, R6-3a).

When to use:

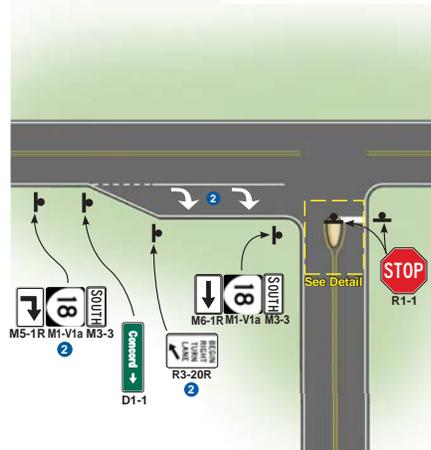
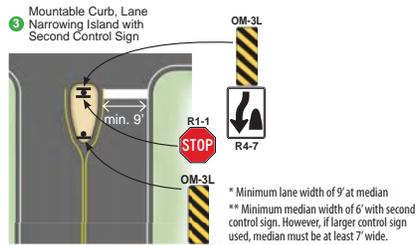
- 1 Unsignalized minor-street approaches from which both left turns and right turns are permitted onto a divided highway with a median width of > 30'
- 1 May be omitted if:
- 1 If divided highway traffic volume > 400 AADT & Speed limit > 25 MPH

Criteria for Placement of Edge Line Markings (Source: Virginia Supplement Chapter 3B)

Pave-ment Width	Traffic Volume	Roadway Type					
		Undi-vided Limited Access	Bi-directional multi-lane	Two-lane Paved Roads with Center Line & without Curb and Gutter	Other Rural Arterials and Collectors	Local Residential	All Other Paved Roadway Segments
≥ 20 feet	≥ 3,000 vpd	Required	Required	Required	Recommended	Not Recommended unless primarily serving through traffic	May be considered only where Engineering Study indicates a need
< 20 feet	< 3,000 vpd	Required	Required	Required	May be considered only where Engineering Study indicates a need	May be considered only where Engineering Study indicates a need	May be considered only where Engineering Study indicates a need

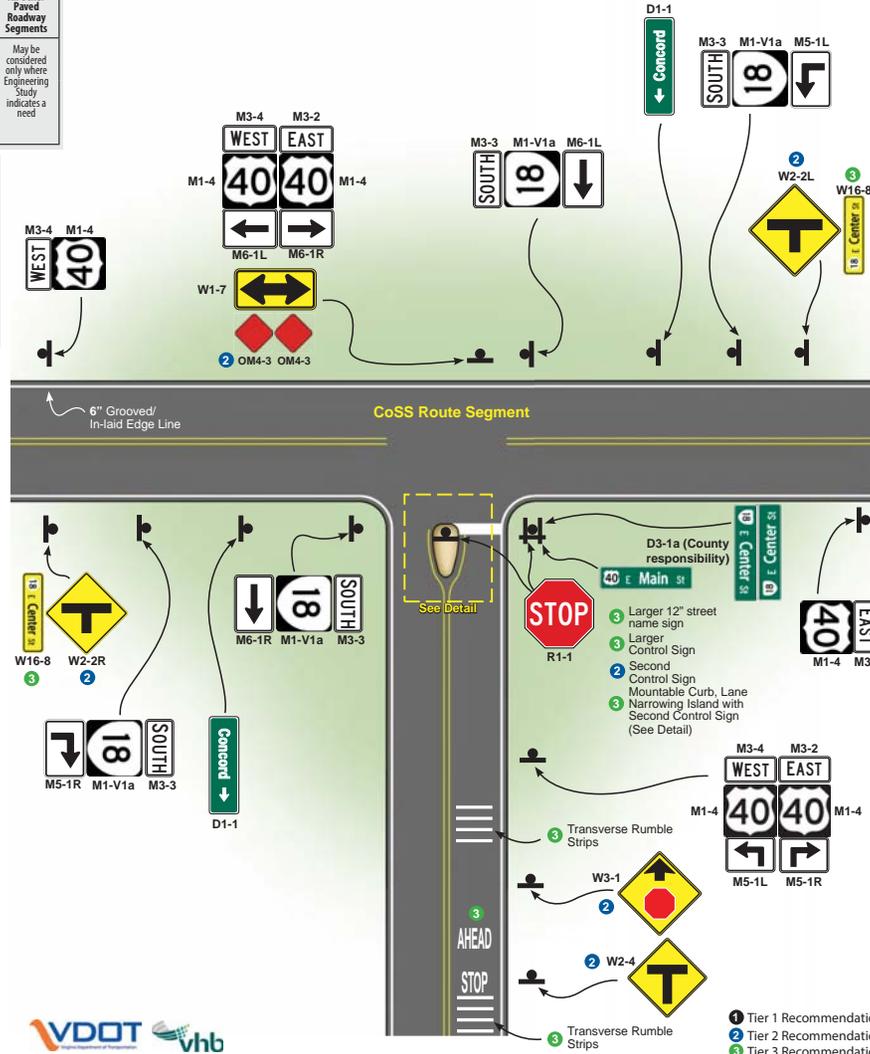
Criteria for Placement of Center Line Markings (Source: Virginia Supplement Chapter 3B)

Pave-ment Width	Traffic Volume	Roadway Type					
		Undi-vided Limited Access	Bi-directional multi-lane	Other Non-Local Residential	Other Local Residential	Local Residential	
≥ 18 feet	≥ 500 vpd	Required	Required	Required	Recommended	Recommended	
< 18 feet	< 500 vpd	Required	Required	Optional (if warranted)	Optional	Recommended	



Template 3 - Unsignalized Intersection - 3-leg (1-way stop controlled) Undivided (3 Tiers)

Eastern Shore Safety Study



NOTES:

Signage

- 1 Upgraded signs with current MUTCD standards (font, size, retroreflectivity, placement, message, etc.)
- 1 Fluorescent yellow sheeting on changes of Direction Warning signs
- 1 Control sign (R1 Series)
- 2 Second Control sign (R1 Series) on left, if median is present and is greater than 6' in width, with a "Keep Right" sign (R4-7) and Object Marker (OM3-L) facing opposite direction
- 3 Larger Control sign (R1 Series)
- 1 Street Name sign (D3-1a or D3-1 for local roads) (County responsibility)
- 3 Larger 12" Street Name sign (D3-1, 1a) (County responsibility)
- 3 Mountable curb, lane narrowing island with second control sign (see detail)
- 1 OM3-L Object Marker and R4-7 "Keep Right" sign at end of mountable curb island
- 1 Intersecting Route and Directional sign (M1, M3, & M6 Series). Include signs for through movements on primary routes only where through movement is a different route number.
- 1 Advance Intersecting Route and Directional sign on primary routes (M1, M3, & M5 Series)
- 1 Confirmation Route signs (M1 and M3 Series) on primary routes
- 1 Destination/guide sign (D1 Series) on CoSS
- 2 "Begin Right Turn Lane" sign (R3-20R)
- 2 Intersection Warning sign (W2 series)
- 3 Street Name (W16-8) signs on CoSS approaches
- 2 Stop Ahead sign (W3-1) on stop controlled approach
- 1 Two-Direction Large Arrow sign at T-intersection (W1-7)
- 2 Add two OM4-3 Object Markers below the Two Direction Large Arrow (W1-7) sign

Pavement Markings

- 1 Stop bar/yield line (MUTCD Section 3B.16)
- 1 6" grooved/in-laid edge line on primary routes
- 2 4" edge line on secondary routes (see table for application guidance)
- 1 4" center line pavement markings on secondary routes (see table for application guidance)
- 1 Solid lane and center line approaching intersection
- 1 Mini-skip marks delineating turn lanes through the intersection when dual turn lanes are present
- 1 Mini-skip marks at turn lane taper when taper length is greater than 100'
- 2 Lane use pavement markings (MUTCD Section 3B.20)
- 3 "Stop Ahead" or "Yield Ahead" pavement markings (MUTCD Section 3B.20)
- 3 Use rumble stripe for 6" markings

Other

- 1 If pedestrian accommodations are present, ensure minimum requirements for crossing (6" solid lines offset minimum 6' and placed 4' in advance of the stop bar) and crosswalk warning sign
- 3 ReflectORIZED sign posts (MUTCD Section 2A.15)
- 1 Trim vegetation to provide adequate sight distance
- 2 Mark obstructions within clear zone (OM1, 2, or 3 series)
- 3 Remove or provide a barrier for obstructions within clear zone
- 3 Add transverse rumble strips on stop controlled approach to CoSS

NOTE: Signage and pavement marking placement is not to scale. Depending upon site conditions, signs should share the same post to the extent possible in order to reduce sign clutter. Actual placement will be determined on a site by site basis based on MUTCD and/or VA Supplement design standards and guidance. Signs should not be placed in the median unless the median is ≥ 4' wide and the sign is smaller than the median.

- 1 Tier 1 Recommendations
- 2 Tier 2 Recommendations
- 3 Tier 3 Recommendations

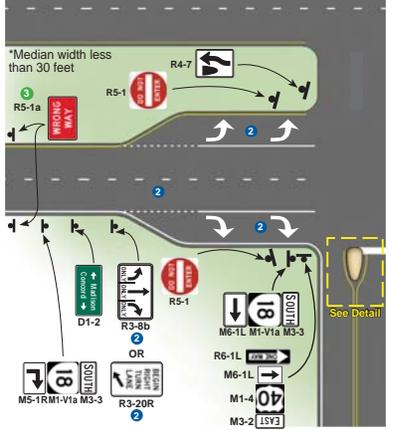
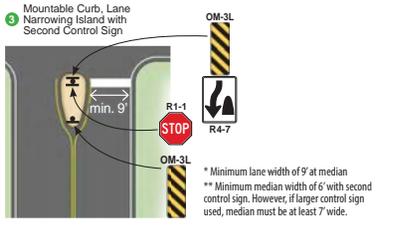
Criteria for Placement of Edge Line Markings (Source: Virginia Supplement Chapter 3B)

Pavement Width	Traffic Volume	Roadway Type					All Other Paved Roadway Segments
		Undivided Limited Access	Bi-directional multi-lane	Two-lane Paved Roads with Center Line & without Curb and Gutter	Other Rural Arterials and Collectors	Local Residential	
≥ 20 feet	≥ 3,000 vpd	Required	Required	Required	Recommended	Not Recommended unless primarily serving through traffic	May be considered only where Engineering Study indicates a need
< 20 feet	< 3,000 vpd	Required	Required	May be considered only where Engineering Study indicates a need	May be considered only where Engineering Study indicates a need	May be considered only where Engineering Study indicates a need	May be considered only where Engineering Study indicates a need

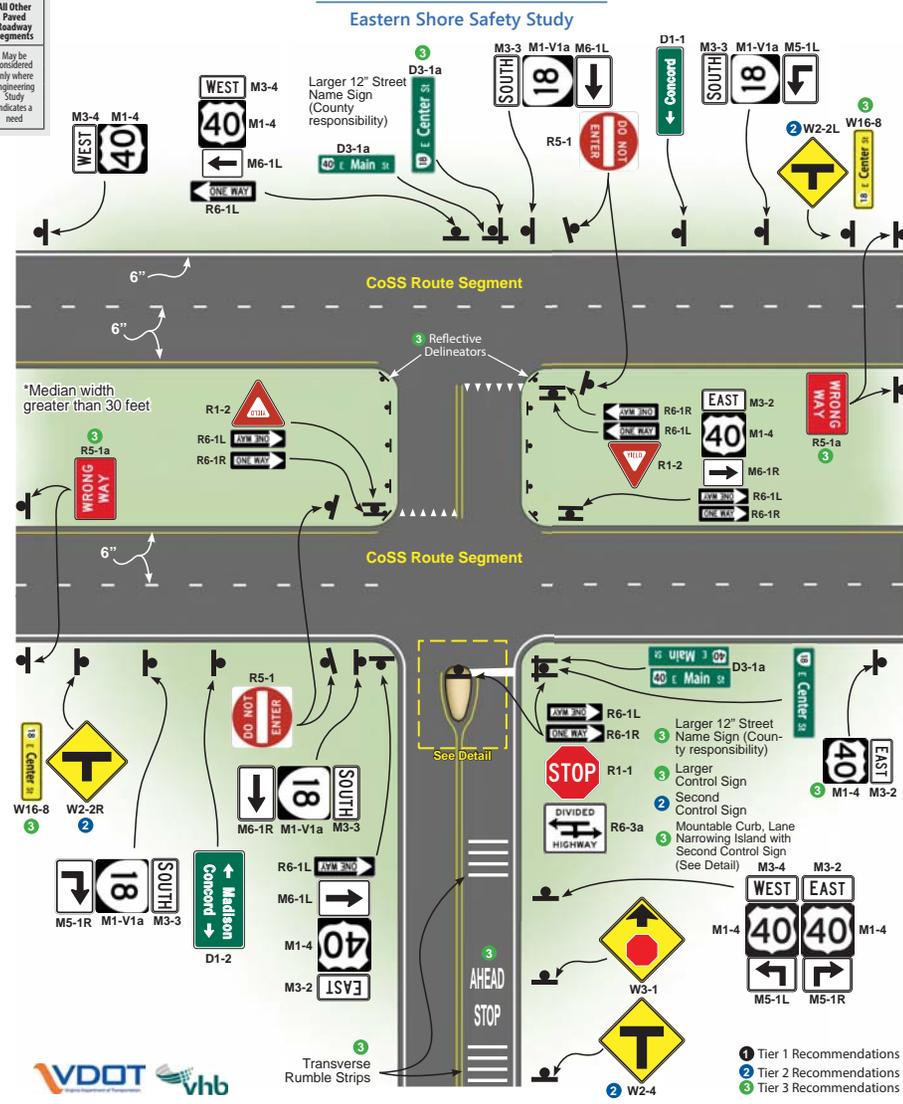
Criteria for Placement of Center Line Markings (Source: Virginia Supplement Chapter 3B)

Pavement Width	Traffic Volume	Roadway Type				
		Undivided Limited Access	Bi-directional multi-lane	Other Non-Local Residential	Other Local Residential	Local Residential
≥ 18 feet	≥ 500 vpd	Required	Required	Optional (if warranted)	Optional	Recommended
< 18 feet	≥ 500 vpd	Required	Required	May be considered only where Engineering Study indicates a need	Recommended	Recommended

Divided Highway Crossing Sign Application (R6-3, R6-3a)
 When to use:
 • Unsignalized minor-street approaches from which both left turns and right turns are permitted onto a divided highway with a median width of > 30' may be omitted if:
 • If divided highway traffic volume > 400 AADT & Speed limit > 25 MPH



Template 4 - Unsignalized Intersection - 3-leg (1-way stop controlled), Median Separated (with crossover) (3 Tiers)



NOTES:
Signage

- 1 Upgraded signs with current MUTCD standards (font, size, retroreflectivity, placement, message, etc.)
- 1 Fluorescent yellow sheeting on change of Direction Warning signs
- 1 Control sign (R1 Series)
- 2 Second Control sign (R1 Series) on left, if median is present and is greater than 6' in width, with a "Keep Right" sign (R4-7) and Object Marker (OM3-L) facing opposite direction
- 3 Larger Control sign
- 3 Mountable curb, lane narrowing island with second control sign (see detail)
- 1 OM3-L object marker and R4-7 "Keep Right" sign at end of mountable curb island
- 1 Yield sign on median crossover (R1-2)
- 1 Street Name sign (D3-1a or D3-1 for local roads) (County responsibility)
- 3 Larger 12" Street Name sign (D3-1a) (County responsibility)
- 1 Intersecting Route and Directional sign (M1, M3, & M6 Series). Include signs for through movements on primary routes only where through movement is a different route number.
- 1 Advance Intersecting Route and Directional sign (M1, M3, & M5 Series) on primary routes and secondary routes with an AADT > 2000 vpd
- 1 Confirmation route signs (M1 & M3 Series)
- 1 Destination route sign (D1 Series) on primary routes
- 2 Advance Intersection Lane Control signs (R3-8 Series) on approaches with turn lanes, or "Begin Right Turn Lane" sign (R3-20R) where only a right-turn lane is present
- 2 Intersection Warning sign (W2 Series)
- 2 Street Name (W16-8) signs on CoSS approaches
- 1 Stop Ahead sign (W3-1) on stop controlled approach
- 1 "Keep Right" sign and Median Object Marker (OM3 Series) on raised medians where it is not readily apparent that traffic is required to keep to the right (MUTCD Figure 2B-10)
- 1 "One Way" and "Do Not Enter" (R6 Series & R5-1) signs per VA Supplement
- 1 Divided Highway (R6 Series) (see application details)
- 3 "Wrong Way" (R5-1a) signs on divided highway

Pavement Markings

- 1 Stop bar/yield line on all stop/yield controlled approaches, including median crossovers greater than 30' in width (MUTCD Section 3B.16)
- 1 6" grooved/in-laid edge line on CoSS (see corridor template)
- 1 Standard double yellow center line in median crossover (MUTCD Chapter 3B) if median is greater than 30' wide
- 1 6" edge line on all primary routes (see table for application guidance)
- 1 4" pavement markings on secondary routes (see table for application guidance)
- 1 Solid lane and center line approaching intersection
- 1 Mini-skip marks delineating turn lanes through the intersection when dual turn lanes are present
- 1 Mini-skip marks at turn lane taper when taper length is greater than 100'
- 3 "Stop Ahead" or "Yield Ahead" pavement markings (MUTCD Section 3B.20)
- 2 Lane use pavement markings (MUTCD Section 3B.20)
- 3 Use rumble stripe for 6" markings

Other

- 1 If pedestrian accommodations are present, ensure minimum requirements for crossing (6" solid lines offset minimum 6' and placed 4' in advance of the stop bar) and crosswalk warning sign.
- 3 ReflectORIZED sign posts (MUTCD Section 2A.15)
- 3 Transverse rumble strips on stop controlled approach to CoSS
- 1 Trim vegetation to provide adequate sight distance
- 2 Mark obstructions within clear zone (OM1, 2, or 3 Series)
- 3 Remove or provide a barrier for obstructions within clear zone

NOTE: Signage and pavement marking placement is not to scale. Depending upon site conditions, signs should share the same post to the extent possible in order to reduce sign clutter. Actual placement will be determined on a site by site basis based on MUTCD and/or VA Supplement design standards and guidance. Signs should not be placed in the median unless the sign is ≥ 4' wide and the sign is smaller than the median.



- 1 Tier 1 Recommendations
- 2 Tier 2 Recommendations
- 3 Tier 3 Recommendations

Criteria for Placement of Edge Line Markings (Source: Virginia Supplement Chapter

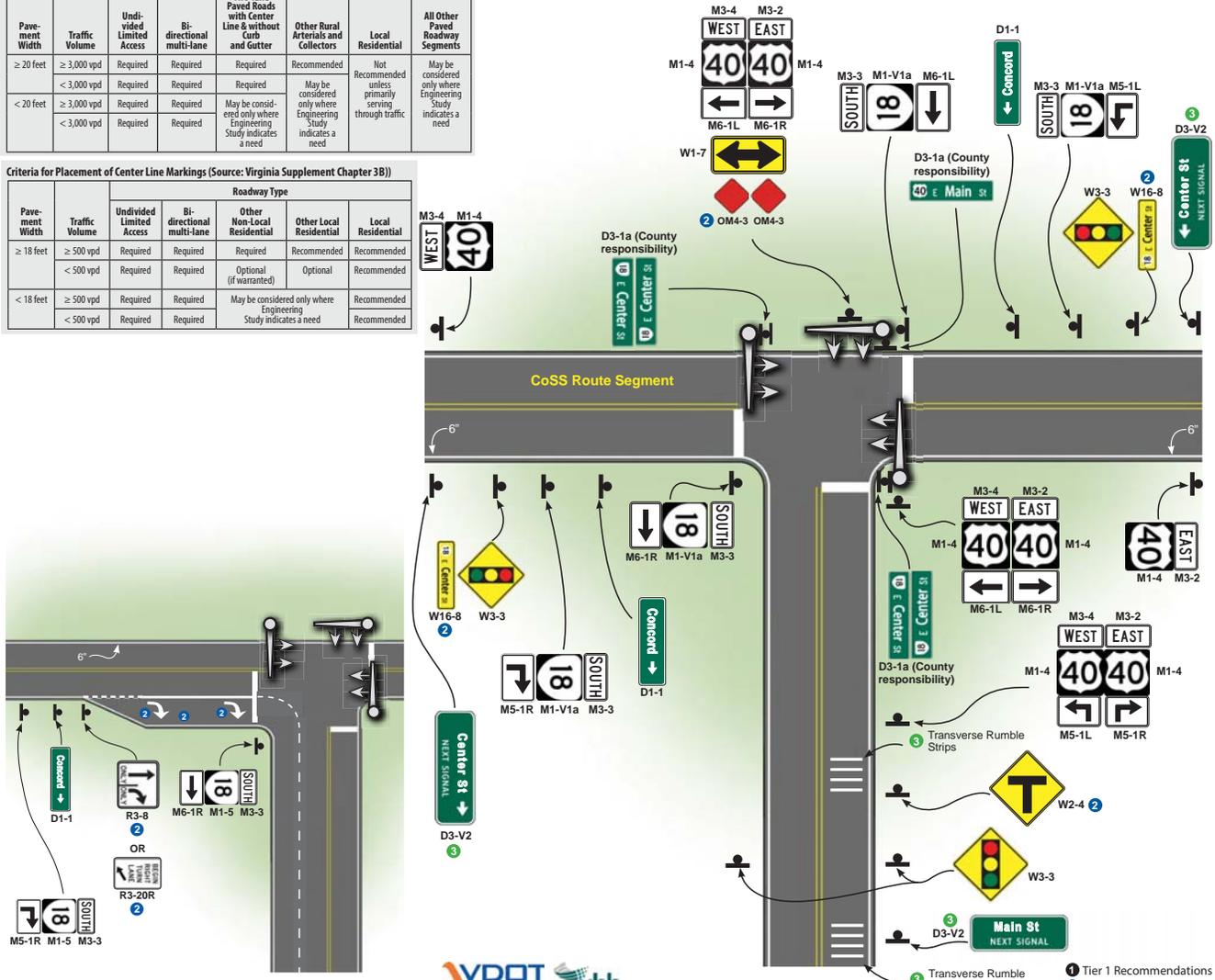
Pave-ment Width	Traffic Volume	Roadway Type					
		Undi-vided Limited Access	Bi-directional multi-lane	Two-lane Paved Roads with Center Line & without Curb and Gutter	Other Rural Arterials and Collectors	Local Residential	All Other Paved Roadway Segments
≥ 20 feet	≥ 3,000 vpd	Required	Required	Required	Recommended	Not Recommended unless primarily serving through traffic	May be considered only where Engineering Study indicates a need
< 20 feet	< 3,000 vpd	Required	Required	May be considered only where Engineering Study indicates a need	May be considered only where Engineering Study indicates a need	Not Recommended unless primarily serving through traffic	May be considered only where Engineering Study indicates a need

Criteria for Placement of Center Line Markings (Source: Virginia Supplement Chapter 3B)

Pave-ment Width	Traffic Volume	Roadway Type				
		Undi-vided Limited Access	Bi-directional multi-lane	Other Non-Local Residential	Other Local Residential	Local Residential
≥ 18 feet	≥ 500 vpd	Required	Required	Required	Recommended	Recommended
< 18 feet	< 500 vpd	Required	Required	Optional (if warranted)	Optional	Recommended
< 18 feet	≥ 500 vpd	Required	Required	May be considered only where Engineering Study indicates a need	Recommended	Recommended
< 18 feet	< 500 vpd	Required	Required		Recommended	Recommended

Template 7 - Signalized Intersection - 3-leg (3 Tiers)

Eastern Shore Safety Study



- NOTES:**
- Signage**
- 1 Upgraded signs with current MUTCD standards (font, size, retroreflectivity, placement, message, etc.)
 - 1 Fluorescent yellow sheeting on change of Direction Warning signs
- Post-Mounted**
- 1 Street Name sign (D3-1a or D3-1 for local roads) (County responsibility)
 - 1 Two-Direction Large Arrow Warning sign at T-intersection (W1-7)
 - 1 Intersecting Route and Directional sign (M1, M3, & M6 Series). Include signs for through movements on primary routes only where through movement is a different route number.
 - 1 Advance Intersecting Route and Directional sign (M1, M3, & M5 Series) on primary routes
 - 1 Confirmation Route signs (M1& M3 Series) on primary routes
 - 1 Destination/guide sign (D1 Series) on CoSS
 - 2 Advance Intersection Lane Control signs (R3-8 Series) on approaches with turn lanes, or "Begin Right Turn Lane" sign (R3-20R) where only a right-turn lane is present
 - 3 Advances Street Name signs (D3-2 & D3-V2)
 - 2 Add two OM4-3 Object Markers below the Two Direction Large Arrow (W1-7) sign
 - 1 Signal Ahead warning sign (W3-3) on CoSS
 - 1 Signal Ahead warning sign (W3-3) on non-CoSS roads
 - 2 Street Name (W16-8) signs on CoSS approaches
 - 2 Intersection Warning sign (W2-4) on approach that does not continue through intersection
- Overhead**
- 3 Overhead Lane Use signs and Left Turn Regulatory signs
 - 1 Mast arm mounted 12" Street Name sign (D3-1a or D3-V1 for local roads)
- Pavement Markings**
- 1 Stop bar/yield line (MUTCD Section 3B.16)
 - 1 6" grooved/in-laid edge line on primary routes
 - 1 4" edge line on secondary routes (see table for application guidance)
 - 1 4" center line pavement markings on secondary routes (see table for application guidance)
 - 1 Mini-skip marks delineating turn lanes through the intersection when dual turn lanes are present
 - 1 Mini-skip marks at turn lane taper when taper length is greater than 100'
 - 2 Lane use pavement markings (MUTCD Section 3B.20)
 - 3 Use rumble stripe for 6" markings
- Signal**
- 1 Check signal sight distance
 - 1 12" LED signal lenses
 - 1 Red and yellow arrow lenses for protected movements
 - 1 Signal backplates with retroreflective border
 - 1 Check for proper red clearance and yellow change intervals (VDOT TE 306.1)
 - 1 One signal head per approach (where structural loading permits)
 - 2 Provide near side signal heads if minimum signal sight distance is not provided
 - 3 Provide actuated signals
- Other**
- 1 If pedestrian accommodations are present, ensure minimum requirements for crossing (6" solid lines offset minimum 6' and placed 4' in advance of the stop bar), Pedestrian Warning sign, and Right Turn Yield to Pedestrian signs.
 - 1 If pedestrian phase is present, provide pedestrian countdown signals with pushbutton activation and appropriate pedestrian crossing clearance interval.
 - 1 Restrict parking near intersection
 - 3 ReflectORIZED sign posts (MUTCD Section 2A.15)
 - 3 Transverse rumble strips on approach to CoSS
 - 1 Trim vegetation to provide adequate sight distance
 - 2 Mark obstructions within clear zone (OM1, 2, or 3 Series)
 - 3 Remove or provide a barrier for obstructions.
- NOTE: Signage and pavement marking placement is not to scale. Depending upon site conditions, signs should share the same post to the extent possible in order to reduce sign clutter. Actual placement will be determined on a site by site basis based on MUTCD and/or VA Supplement design standards and guidance. Signs should not be placed in the median unless the median is ≥ 4' wide and the sign is smaller than the median.
- 1 Tier 1 Recommendations
2 Tier 2 Recommendations
3 Tier 3 Recommendations



Criteria for Placement of Edge Line Markings (Source: Virginia Supplement Chapter 3B)

Pave-ment Width	Traffic Volume	Roadway Type					
		Undi-vided Limited Access	Bi-directional multi-lane	Two-lane Paved Roads with Center Line & without Curb and Gutter	Other Rural Arterials and Collectors	Local Residential	All Other Paved Roadway Segments
≥ 20 feet	≥ 3,000 vpd	Required	Required	Required	Recommended	Not Recommended unless primarily serving through traffic	May be considered only where Engineering Study indicates a need
< 20 feet	< 3,000 vpd	Required	Required	Required	May be considered only where Engineering Study indicates a need	May be considered only where Engineering Study indicates a need	
	≥ 3,000 vpd	Required	Required	Required			

Criteria for Placement of Center Line Markings (Source: Virginia Supplement Chapter 3B)

Pave-ment Width	Traffic Volume	Roadway Type				
		Undi-vided Limited Access	Bi-directional multi-lane	Other Non-Local Residential	Other Local Residential	Local Residential
≥ 18 feet	≥ 500 vpd	Required	Required	Required	Recommended	Recommended
< 18 feet	< 500 vpd	Required	Required	Optional (if warranted)	Optional	Recommended
	≥ 500 vpd	Required	Required	May be considered only where Engineering Study indicates a need		Recommended

Raised Pavement Marker Application (Source: MUTCD VA Supplement Section 3B.11)

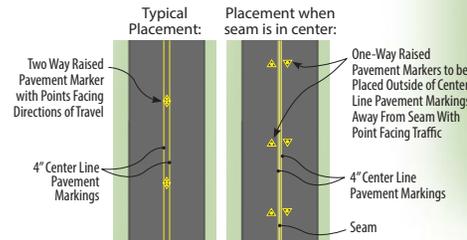
Tier	CoSS Facility Type	AADT	Posted Speed Limit	Lighting	Application
1	All Roadway Facilities	-	≥ 60 MPH	-	SRPMs shall be installed continuously.
1	Two-Lane, Two-Way Roadways	≥ 15,000	-	No roadway lighting	SRPMs shall be installed continuously.
1	Multilane Roadways	≥ 25,000	≥ 45 MPH	No roadway lighting	SRPMs shall be installed continuously.
2	Multilane Roadways	15,000 ≤ AADT < 25,000	45-55 mph	-	SRPMs shall be installed continuously.
3	Two-Lane, Two-Way Roadways (Only if the sections DO NOT have multiple horizontal curves with Posted Speed Limit < 55 MPH)	5,000 ≤ AADT < 15,000	-	-	SRPMs shall be installed continuously.
3	Two-Lane, Two-Way Roadways	≥ 15,000	-	Roadway lighting present	SRPMs shall be installed continuously.
3	Multilane Roadways	≥ 25,000	45-55 mph	Roadway lighting present	SRPMs shall be installed continuously.

Delineator Placement and Spacing (Source Section 3E.04 MUTCD VA Supplement)

Type	Placement	Spacing
D-1	On the right of through roadways	300 feet*
D-1	Interchange ramps	100 feet (except on horizontal curve sections)
D-2	On acceleration and deceleration lanes	100 feet
	Delineators on barrier or guardrail	80 feet (may vary on interchange ramp horizontal curve sections although maximum spacing = 80 feet)

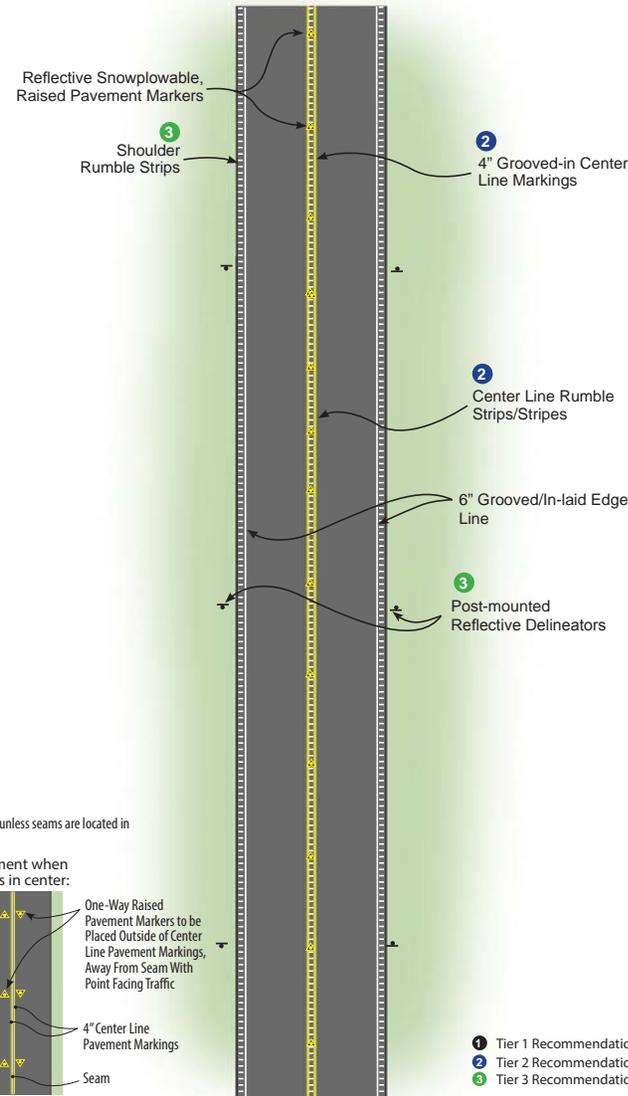
*Spacing may take into consideration other sources of reflection (such as signs)(modification to MUTCD guidance)

Raised Pavement Markers:
Place pavement markers between double solid lines unless seams are located in center of roadway



Template 9 - Corridor - Undivided Roadway (3 Tiers)

Eastern Shore Safety Study



NOTES:

- Signage**
- 1 Upgraded signs with current MUTCD standards (font, size, retroreflectivity, placement, message, etc.)
- Pavement Markings**
- 1 6" center line pavement markings on primary routes
 - 2 6" grooved-in center line markings on primary routes
 - 1 6" grooved/in-laid edge line (MUTCD Section 3B.01 and 3B.06) on primary routes
 - 1 Reflective, snowplowable, raised pavement markers (Section 3B.11 MUTCD VA Supplement)(see table for application guidance and template tier)
- Other**
- 1 Trim vegetation provide adequate sight distance within clear zone
 - 2 Mark obstructions within clear zone (OM1, 2, or 3 Series)
 - 3 Remove or provide a barrier for obstructions within clear zone
 - 3 Post-mounted reflective delineators (Chapter 3F MUTCD VA Supplement)(see table for application guidance)
 - 1 Reflective delineation of barriers (Chapter 3F MUTCD VA Supplement)
 - 2 If bike route is present install signs and pavement markings (shared lane markings) (Chapter 9 MUTCD VA Supplement)
 - 3 Shoulder rumble strips/stripes (MUTCD Chapter 3J.01) on corridors with a high number of roadway departure crashes per IIM #212.5. (see notes for application details)
 - 2 Center line rumble strips/stripes (Section 3J.01 MUTCD) on corridors with a high number of head-on crashes or crashes involving vehicles crossing the centerline (see notes for application details)
 - 3 ReflectORIZED sign posts (MUTCD Section 2A.15)
- NOTE: Signage and pavement marking placement is not to scale. Actual placement will be determined on a site by site basis based on MUTCD and/or VA Supplement design standards and guidance. Signs should not be placed in the median unless the median is ≥ 4' wide and the sign is smaller than the median.

Rumble Strips and Stripes:

- If it is determined that rumble strips/stripes should be applied to a corridor, utilize the following application guidance:
- Shoulder rumble strips shall be placed continuously on outside paved shoulders of CoSS where the shoulder has a minimum width of four (4) feet where bicycles are prohibited and eight (8) feet where bicycles are permitted. Rumble strips shall not be placed within limits of bridge drainage aprons or special design shoulder slot inlets.
 - Shoulder rumble strips shall be placed with an intermittent pattern on outside paved shoulders of CoSS where shoulders are at least two (2) feet wide. Rumble strips shall not be placed in the following locations: within 50' of any intersection, turn lane, acceleration/ deceleration lane, or gore area; bridge drainage aprons; or, special design shoulder slot inlets.
 - Center line rumble strips shall not be placed in the following locations: within limits of bridges; on narrow, unmarked road sections without pavement markings; within the limits of center two-way turn lanes; or, in passing zones.
- Additional rumble strip/stripes application guidance can be found in the VDOT Road and Bridge Standards. Pavement markings shall be placed in accordance with current MUTCD and/or VA Supplement standards.



Template 10 - Corridor - Divided Roadway (3 Tiers)
*Median width greater than 30 feet

Edge Line Application* (Source: MUTCD Chapter 3B)

Functional Class	Pavement Width	AADT
Rural Arterials & Collectors	>= 20'	>= 3,000
Local	Where curb is not present	>= 3,000

*Where pavement is less than three years old and in good conditions, groove pavement and install 6" in-laid edge line on all CoSS with speed limits of 45 mph or greater.

Center Line Application (Source: MUTCD Chapter 3B)

Functional Class	Pavement Width	AADT
Urban Arterials & Collectors	>= 20'	>= 4,000
Rural Arterials & Collectors	>= 18'	>= 3,000
Local	>= 16'	N/A

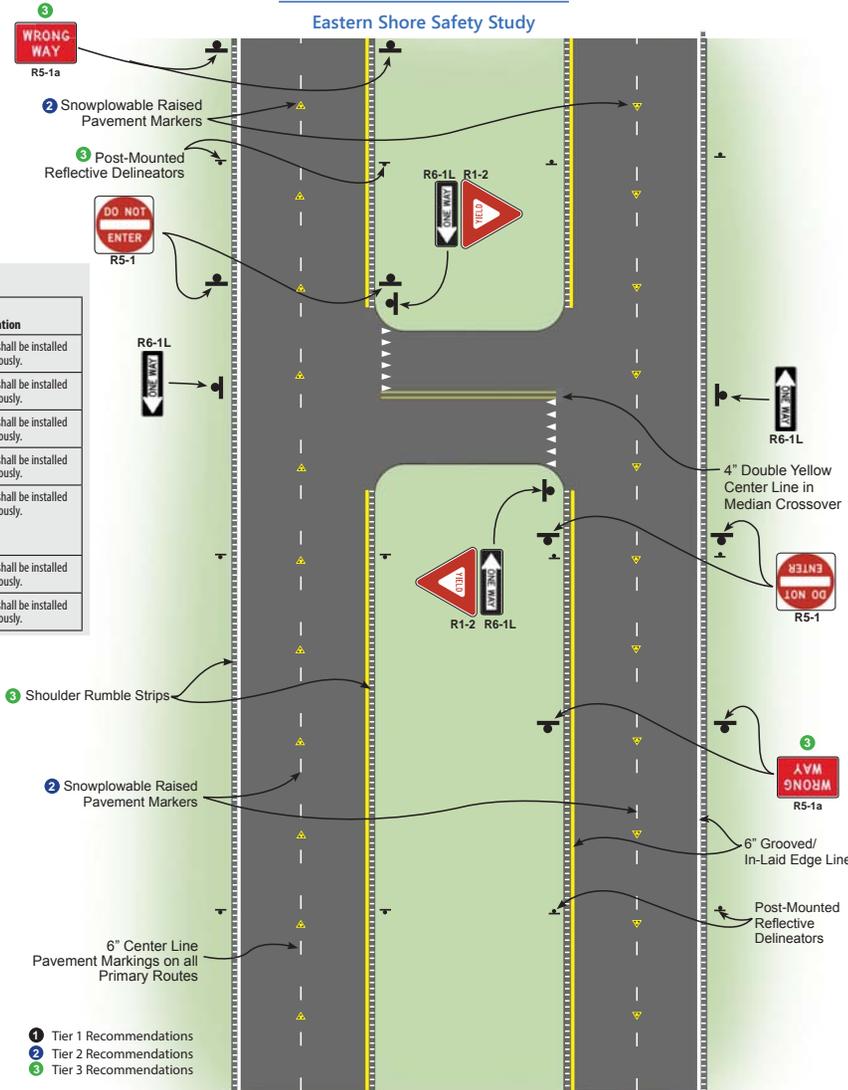
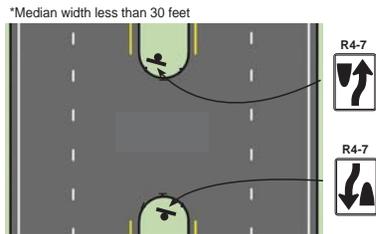
Raised Pavement Marker Application (Source: MUTCD VA Supplement Section 3B.11)

Tier	CoSS Facility Type	AADT	Posted Speed Limit	Lighting	Application
1	All Roadway Facilities	-	≥ 60 MPH	-	SRPMs shall be installed continuously.
1	Two-Lane, Two-Way Roadways	≥ 15,000	-	No roadway lighting	SRPMs shall be installed continuously.
1	Multilane Roadways	≥ 25,000	≥ 45 MPH	No roadway lighting	SRPMs shall be installed continuously.
2	Multilane Roadways	15,000 ≤ AADT < 25,000	45-55 mph	-	SRPMs shall be installed continuously.
3	Two-Lane, Two-Way Roadways (Only if the sections DO NOT have multiple horizontal curves with Posted Speed Limit < 55 MPH)	5,000 ≤ AADT < 15,000	-	-	SRPMs shall be installed continuously.
3	Two-Lane, Two-Way Roadways	≥ 15,000	-	Roadway lighting present	SRPMs shall be installed continuously.
3	Multilane Roadways	≥ 25,000	45-55 mph	Roadway lighting present	SRPMs shall be installed continuously.

Delineator Placement and Spacing (Source Section 3F.04 MUTCD VA Supplement)

Type	Placement	Spacing
D-1	On the right of through roadways	300 feet*
D-1	Interchange ramps	100 feet (except on horizontal curve sections)
D-2	On acceleration and deceleration lanes	100 feet
Delineators on barrier or guardrail		80 feet (may vary on interchange ramp horizontal curve sections although maximum spacing = 80 feet)

*Spacing may take into consideration other sources of reflection (such as signs)(modification to MUTCD guidance)



- NOTES:**
- Signage**
- Upgraded signs with current MUTCD standards (font, size, retroreflectivity, placement, message, etc.)
 - Fluorescent yellow sheeting on change of direction warning signs
 - Yield sign on median crossover (R1-2)
 - "One Way" and "Do Not Enter" signs (R6 Series and R5-1) per MUTCD VA Supplement
 - "Wrong Way" (R5-1a) signs along roadway
 - Keep Right (R4-7) sign
- Pavement Markings**
- 4" center line pavement markings (including the double yellow center line in median crossover) (MUTCD Sections 3B.01 and 3B.06)
 - 6" pavement markings on all primary routes (excluding a double yellow center line in median crossover) (MUTCD Sections 3B.01 and 3B.06)
 - 6" grooved/in-laid edge line, per IIM #212.5
 - Reflective, snowplowable, raised pavement markers (Section 3B.11 MUTCD) VA Supplement
 - Yield line on median crossover (MUTCD Section 3B.16)
- Other**
- Trim vegetation to provide adequate sight distance and clear zone
 - Mark obstructions within clear zone (OM-1, 2, or 3 Series)
 - Remove or provide a barrier for obstructions within clear zone
 - Post-mounted reflective delineators (Chapter 3F MUTCD VA Supplement) along CoSS roadway
 - Reflective delineation of barriers (Chapter 3F MUTCD VA Supplement)
 - If bike route is present install signs and pavement markings (shared lane markings) (Chapter 9 MUTCD VA Supplement)
 - Shoulder rumble strips/stripes (MUTCD Section 3J.01) on corridors with a high number of roadway departure crashes per IIM #212.5. (see notes for application details)
 - ReflectORIZED sign posts (MUTCD Section 2A.15)
- NOTE: Signage and pavement marking placement is not to scale. Actual placement will be determined on a site by site basis based on MUTCD and/or VA Supplement design standards and guidance. Signs should not be placed in the median unless the median is ≥ 4' wide and the sign is smaller than the median.
- Rumble Strips and Stripes:**
- If it is determined that rumble strips/stripes should be applied to a corridor, utilize the following application guidance:
- Shoulder rumble strips shall be placed continuously on outside paved shoulders of CoSS where the shoulder has a minimum width of four (4) feet where bicycles are prohibited and eight (8) feet where bicycles are permitted. Rumble strips shall not be placed within limits of bridge drainage aprons or special design shoulder slot inlets.
 - Shoulder rumble strips shall be placed with an intermittent pattern on outside paved shoulders of CoSS where shoulders are at least two (2) feet wide. Rumble strips shall not be placed in the following locations: within 50 feet of any intersection, turn lane, acceleration/deceleration lane, or gore area; bridge drainage aprons; or, special design shoulder slot inlets.
- Additional rumble strip/stripe application guidance can be found in the VDOT Road and Bridge Standards. Pavement markings shall be placed in accordance with current MUTCD VA Supplement standards.

Template 11 - Curve - Undivided Roadway (3 Tiers)

Eastern Shore Safety Study

No Passing Zones:
(Source: MUTCD Section 3B.02)

On two-way, two- or three-lane roadways at vertical and horizontal curves and other locations where an engineering study indicates that passing must be prohibited because of inadequate sight distances or other special conditions.

At horizontal or vertical curves where:

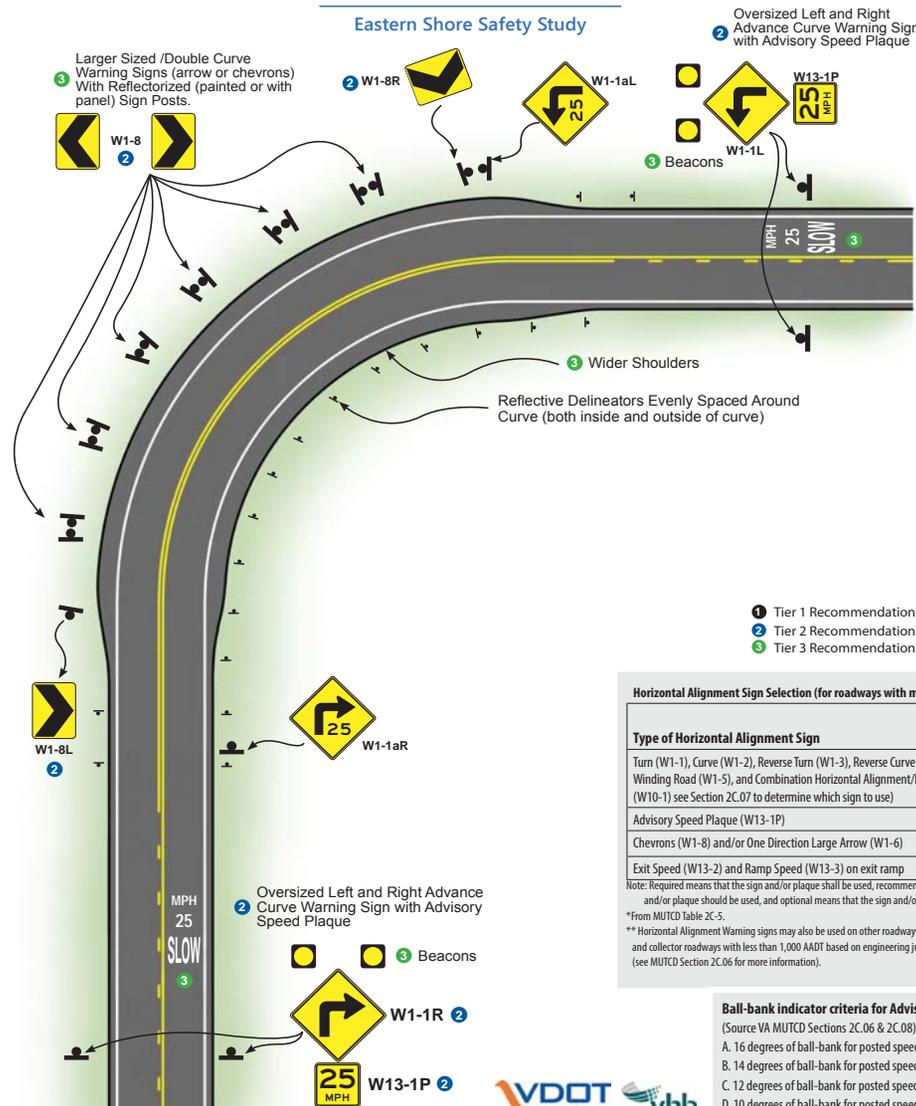
- The passing sight distance is less than the minimum shown in the following table for the 85th-percentile speed or the posted or statutory speed limit.
- The passing sight distance on a **vertical curve** is the distance at which an object 3.5 feet above the pavement surface can be seen from a point 3.5 feet above the pavement.
- the passing sight distance on a **horizontal curve** is the distance measured along the center line (or right-hand lane line of a three-lane roadway) between two points 3.5 feet above the pavement on a line tangent to the embankment or other obstruction that cuts off the view on the inside of the curve

A short stretch of depressed alignment that might momentarily hide a vehicle should be treated as a no-passing zone when center line striping is provided on a two-lane or three-lane road

85th Percentile or Posted or Statutory Speed Limit	Minimum Passing Sight Distance
25 mph	450 feet
30 mph	500 feet
35 mph	550 feet
40 mph	600 feet
45 mph	700 feet
50 mph	800 feet
55 mph	900 feet
60 mph	1,000 feet
65 mph	1,100 feet
70 mph	1,200 feet

Approximate Spacing for Delineators on Horizontal Curves (Including Interchange Ramps)
(Source Section 3F.04 MUTCD VA Supplement)

Placement	Spacing
Radius of curve = 50 feet	20 feet
Radius of curve = 115 feet	25 feet
Radius of curve = 180 feet	35 feet
Radius of curve = 250 feet	40 feet
Radius of curve = 300 feet	50 feet
Radius of curve = 400 feet	55 feet
Radius of curve = 500 feet	65 feet
Radius of curve = 600 feet	70 feet
Radius of curve = 700 feet	75 feet
Radius of curve = 800 feet	80 feet
Radius of curve = 900 feet	85 feet
Radius of curve = 1,000 feet	90 feet



NOTES:

The following templates should only be applied at curves based on differential of speed limit and advisory speed and ball-bank testing as specified by MUTCD requirements. See MUTCD Tables 2C-5 and 2C-6 along with Section 2C.08. Other measures identified in corridor or segment templates may be applied as well.

- Signage**
- Upgraded signs with current MUTCD standards (font, size, retroreflectivity, placement, message, etc.)
 - Minimize driver distraction in curve by relocating wayfinding/informational signs so they are not placed on the curve.
 - Horizontal alignment signs (W1 Series)
 - Larger sized /double Curve Warning signs (arrow or chevrons – W1-8, W1-6) with reflectorized (painted or with panel sign posts) (MUTCD Section 2A.15)
 - Left and Right Advance Curve Warning sign with Advisory Speed Plaque (W1 Series with W13-1P)
 - Oversized Left and Right Advance Curve Warning Sign with Advisory speed plaque (W1 Series with W13-1P)
 - Fluorescent yellow sheeting on change in Direction Warning signs
- Pavement Markings**
- "SLOW" and "XX mph" pavement markings (MUTCD Section 3B.20)
- Other**
- Post-mounted delineators except in locations with chevrons (e.g. if chevrons are present on outside of curve, place delineators on inside of curve only) (MUTCD Section 3B.20)
 - Shoulder widening (engineering study required to determine exact widths)
 - Reflectorized sign posts (MUTCD Section 2A.15)
 - Flashing beacons on top of curve warning signs

NOTE: Signage and pavement marking placement is not to scale. Depending upon site conditions, signs should share the same post to the extent possible in order to reduce sign clutter. Actual placement will be determined on a site by site basis based on MUTCD and/or VA Supplement design standards and guidance. Signs should not be placed in the median unless the median is $\geq 4'$ wide and the sign is smaller than the median.

Horizontal Alignment Sign Selection (for roadways with more than 1,000 AADT)

Type of Horizontal Alignment Sign	Difference Between Speed Limit and Advisory Speed				
	5 mph	10 mph	15 mph	20 mph	25 mph or more
Turn (W1-1), Curve (W1-2), Reverse Turn (W1-3), Reverse Curve (W1-4), Winding Road (W1-5), and Combination Horizontal Alignment/Intersection (W10-1) see Section 2C.07 to determine which sign to use)	Recommended	Required	Required	Required	Required
Advisory Speed Plaque (W13-1P)	Recommended	Required	Required	Required	Required
Chevrons (W1-8) and/or One Direction Large Arrow (W1-6)	Optional	Recommended	Required	Required	Required
Exit Speed (W13-2) and Ramp Speed (W13-3) on exit ramp	Optional	Optional	Recommended	Required	Required

Note: Required means that the sign and/or plaque shall be used, recommended means that the sign and/or plaque should be used, and optional means that the sign and/or plaque may be used.
*from MUTCD Table 2C-5.
** Horizontal Alignment Warning signs may also be used on other roadways or on arterial and collector roadways with less than 1,000 AADT based on engineering judgment (see MUTCD Section 2C.06 for more information).

Ball-bank indicator criteria for Advisory Speed Plaques:
(Source VA MUTCD Sections 2C.06 & 2C.08)

- 16 degrees of ball-bank for posted speeds of 20 mph or less
- 14 degrees of ball-bank for posted speeds of 25 or 30 mph
- 12 degrees of ball-bank for posted speeds of 35 mph to 45 mph
- 10 degrees of ball-bank for posted speeds of 50 mph or greater

Typical Spacing of Chevron Alignment Signs on Horizontal Curves: (Source: MUTCD Table 2C-6)

Advisory Speed	Curve Radius	Sign Spacing
15 mph or less	Less than 200 feet	40 feet
20 to 30 mph	200 to 400 feet	80 feet
35 to 45 mph	401 to 700 feet	120 feet
50 to 60 mph	701 to 1,250 feet	160 feet
more than 60 mph	More than 1,250 feet	200 feet

Note: The relationship between the curve radius and the advisory speed shown in the table should not be used to determine advisory speed*



Template 12 - Curve - Divided Roadway (3 Tiers)
 Eastern Shore Safety Study

Ball-bank indicator criteria for Advisory Speed Plaques:
 (Source VA MUTCD Sections 2C.06 & 2C.08)
 A. 16 degrees of ball-bank for posted speeds of 20 mph or less
 B. 14 degrees of ball-bank for posted speeds of 25 or 30 mph
 C. 12 degrees of ball-bank for posted speeds of 35 mph to 45 mph
 D. 10 degrees of ball-bank for posted speeds of 50 mph or greater

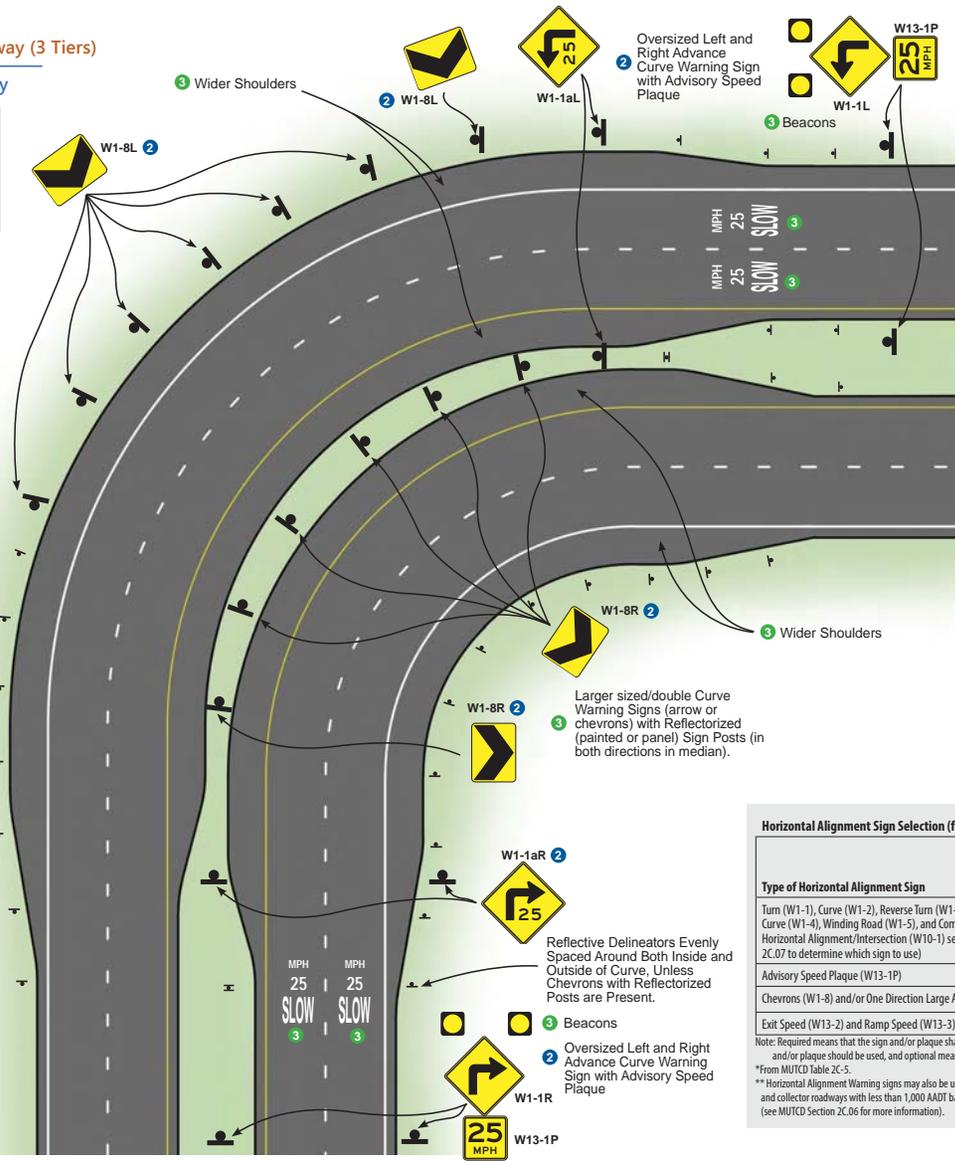
Typical Spacing of Chevron Alignment Signs on Horizontal Curves:
 (Source: MUTCD Table 2C-6)

Advisory Speed	Curve Radius	Sign Spacing
15 mph or less	Less than 200 feet	40 feet
20 to 30 mph	200 to 400 feet	80 feet
35 to 45 mph	401 to 700 feet	120 feet
50 to 60 mph	701 to 1,250 feet	160 feet
more than 60 mph	More than 1,250 feet	200 feet

Note: The relationship between the curve radius and the advisory speed shown in the table should not be used to determine advisory speed*
 From MUTCD Table 2C-6

Approximate Spacing for Delineators on Horizontal Curves (Including Interchange Ramps)
 (Source Section 3E.04 MUTCD VA Supplement)

Placement	Spacing
Radius of curve = 50 feet	20 feet
Radius of curve = 115 feet	25 feet
Radius of curve = 180 feet	35 feet
Radius of curve = 250 feet	40 feet
Radius of curve = 300 feet	50 feet
Radius of curve = 400 feet	55 feet
Radius of curve = 500 feet	65 feet
Radius of curve = 600 feet	70 feet
Radius of curve = 700 feet	75 feet
Radius of curve = 800 feet	80 feet
Radius of curve = 900 feet	85 feet
Radius of curve = 1,000 feet	90 feet



NOTES:
 The following templates should only be applied at curves based on differential of speed limit and advisory speed and ball-bank testing as specified by MUTCD requirements. See MUTCD Tables 2C-5 and 2C-6 along with Section 2C.08. Other measures identified in corridor segment templates may be applied as well.

Signage

- 1 Upgraded signs with current MUTCD standards (font, size, retroreflectivity, placement, message, etc.)
- 1 Minimize driver distraction in curve by relocating wayfinding/informational signs so they are not placed on the curve.
- 1 Horizontal alignment signs (W1 Series)
- 3 Larger sized/double Curve Warning signs (arrow or chevrons - W1-8, W1-6) with painted/retroreflective sign posts (MUTCD Section 2A.15) in both directions in median
- 1 Left and Right Advance Curve Warning sign with Advisory Speed plaque (W1 Series with W13-1P)
- 2 Oversized Left and Right Advance Curve Warning sign with Advisory Speed plaque (W1 Series with W13-1P)
- 1 Fluorescent yellow sheeting on change of Directions Warning signs

Pavement Markings

- 3 "SLOW" and "XX mph" pavement markings (MUTCD Section 3B.20)

Other

- 1 Post-mounted delineators except in locations with chevrons (e.g. if chevrons are present on outside of curve, place delineators on inside of curve only) (MUTCD Chapter 3F)
- 3 Shoulder widening (engineering study required to determine exact widths)
- 3 ReflectORIZED signs posts (in both directions in median) (MUTCD Section 2A.15)
- 3 Flashing beacons on top of curve warning signs

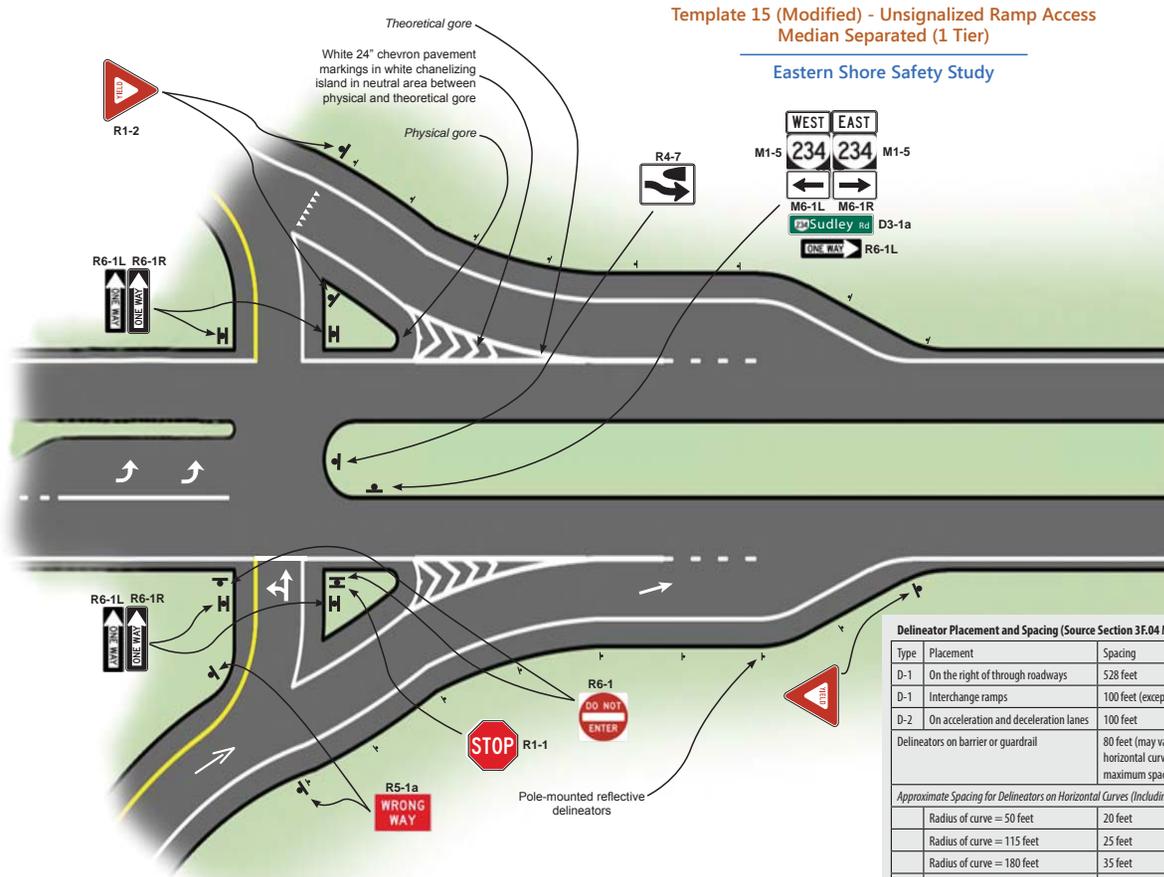
NOTE: Signage and pavement marking placement is not to scale. Actual placement will be determined on a site by site basis based on MUTCD and/or VA Supplement design standards and guidance. Signs should not be placed in the median unless the median is $\geq 4'$ wide and the sign is smaller than the median.

Horizontal Alignment Sign Selection (for roadways with more than 1,000 AADT)

Type of Horizontal Alignment Sign	Difference Between Speed Limit and Advisory Speed				
	5 mph	10 mph	15 mph	20 mph	25 mph or more
Turn (W1-1), Curve (W1-2), Reverse Turn (W1-3), Reverse Curve (W1-4), Winding Road (W1-5), and Combination Horizontal Alignment/Intersection (W1-1) see Section 2C.07 to determine which sign to use)	Recommended	Required	Required	Required	Required
Advisory Speed Plaque (W13-1P)	Recommended	Required	Required	Required	Required
Chevrons (W1-8) and/or One Direction Large Arrow (W1-6)	Optional	Recommended	Required	Required	Required
Exit Speed (W13-2) and Ramp Speed (W13-3) on exit ramp	Optional	Optional	Recommended	Required	Required

Note: Required means that the sign and/or plaque shall be used, recommended means that the sign and/or plaque should be used, and optional means that the sign and/or plaque may be used.
 *From MUTCD Table 2C-5.
 ** Horizontal Alignment Warning signs may also be used on other roadways or on arterial and collector roadways with less than 1,000 AADT based on engineering judgment (see MUTCD Section 2C.06 for more information).





Template 15 (Modified) - Unsignalized Ramp Access Median Separated (1 Tier)

Eastern Shore Safety Study

Delineator Placement and Spacing (Source Section 3F.04 MUTCD VA Supplement)

Type	Placement	Spacing
D-1	On the right of through roadways	528 feet
D-1	Interchange ramps	100 feet (except on horizontal curve sections)
D-2	On acceleration and deceleration lanes	100 feet
Delineators on barrier or guardrail		
80 feet (may vary on interchange ramp horizontal curve sections although maximum spacing = 80 feet)		
Approximate Spacing for Delineators on Horizontal Curves (Including Interchange Ramps)		
	Radius of curve = 50 feet	20 feet
	Radius of curve = 115 feet	25 feet
	Radius of curve = 180 feet	35 feet
	Radius of curve = 250 feet	40 feet
	Radius of curve = 300 feet	50 feet
	Radius of curve = 400 feet	55 feet
	Radius of curve = 500 feet	65 feet
	Radius of curve = 600 feet	70 feet
	Radius of curve = 700 feet	75 feet
	Radius of curve = 800 feet	80 feet
	Radius of curve = 900 feet	85 feet
	Radius of curve = 1,000 feet	90 feet

NOTES:

Merge/Diverge:

Signage

- Upgraded signs with current MUTCD standards (font, size, retroreflectivity, placement, message, etc.)
- Fluorescent yellow sheeting on change of direction warning signs
- Ramp warning signs (W4 series)
- Advisory speed signs (W13 Series)
- Gore signs (E5-1 Series)

Pavement Markings

- 6" center/lane/edge line pavement markings. Terminate 6" at a logical termini of the off-ramp
- White 24" chevron pavement markings in white channelizing island in neutral area between physical and theoretical gore
- Wider 6" solid white deceleration/acceleration lane line leading to theoretical exit gore
- Dotted extension of right-hand edge line
- Snowplowable raised pavement markers

Other

- Post mounted delineators around nose of physical gore and both sides of ramp, unless guardrail is present. If guardrail is present, delineators to be placed on top (Chapter 3F MUTCD VA Supplement).
- Reflectorized sign posts (MUTCD Section 24.15)

Ramp/Intersection with Arterial:

Signage

- Upgraded signs with current MUTCD standards (font, size, retroreflectivity, placement, message, etc.)
- Fluorescent yellow sheeting on warning signs
- Advisory speed signs and curve warning signs as appropriate on ramp
- Destination/Guide Sign (D1 series)
- Control sign at intersection (R1 series)
- Intersecting route and directional sign (M1, M3, & M6 Series)
- Street name sign (D3-1a)
- "One Way", "Do Not Enter", and "Wrong Way" signs per VA Supplement
- Add Object Marker on same post as R4-7 or on separate post closer to road (OM3-L)

Pavement Markings

- Stop bar/yield line (MUTCD Section 3B.16)
- Lane use pavement markings (MUTCD Section 3B.20)
- Wrong-way arrows (MUTCD Figures 2B-18 and 3B-24)

Other

- Reflectorized (painted or with panel) sign posts (MUTCD Section 24.15)

NOTE: Signage and pavement marking placement is not to scale. Actual placement will be determined on a site by site basis based on MUTCD and/or VA Supplement design standards and guidance.

Raised Pavement Markers:

Raised pavement markers shall be spaced every 20' and extend a minimum of 80' beyond the physical gore. (See Section 3B.13 and Drawing F of Figure 3B V-2.)

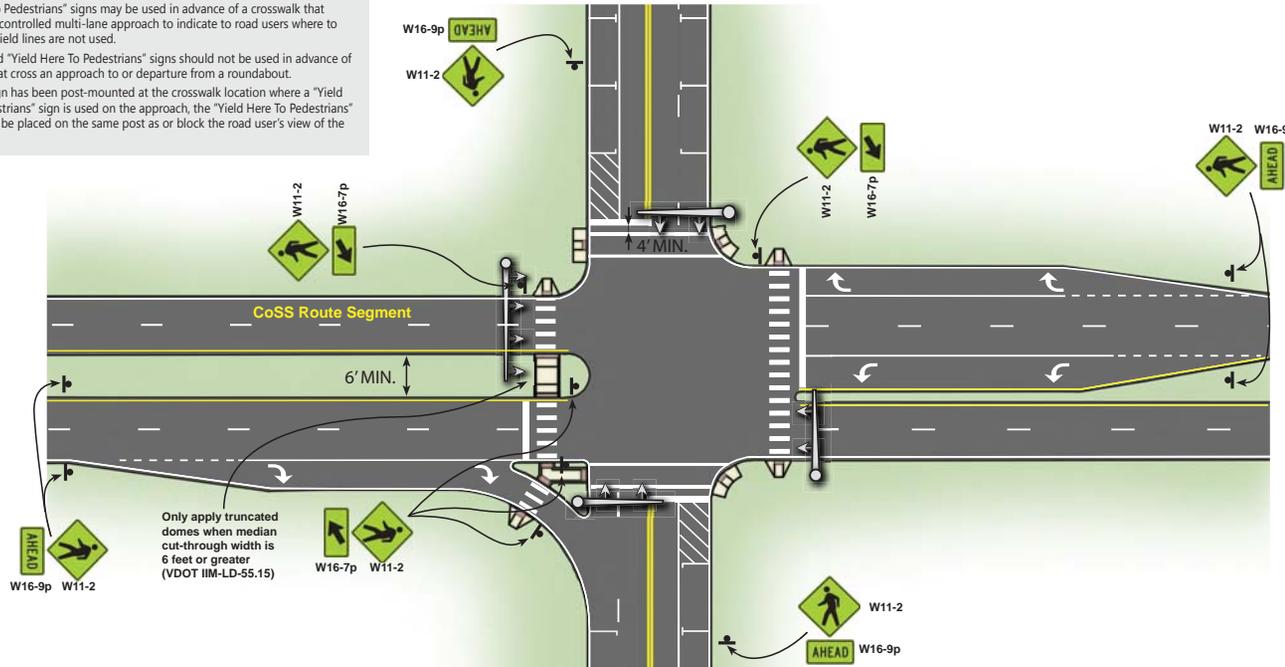


Yield Here to Pedestrian Signs (R1-5, R1-5A)
 (Source: Section 2B.11 MUTCD VA Supplement)

- If yield lines and "Yield Here to Pedestrians" signs are used in advance of a crosswalk that crosses an uncontrolled multi-lane approach, they should be placed 20 to 50 feet in advance of the nearest crosswalk line (see Section 3B.16 and Figure 3B-17(VA) in this Supplement), and parking should be prohibited in the area between the yield (stop) line and the crosswalk.
- "Yield Here to Pedestrians" signs may be used in advance of a crosswalk that crosses an uncontrolled multi-lane approach to indicate to road users where to yield even if yield lines are not used.
- 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.
- If a W11-2 sign has been post-mounted at the crosswalk location where a "Yield Here to Pedestrians" sign shall not be placed on the same post as or block the road user's view of the W11-2 sign.

Template 16 - Pedestrian Measures

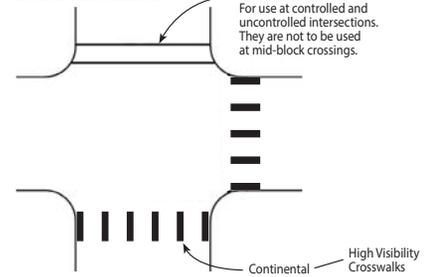
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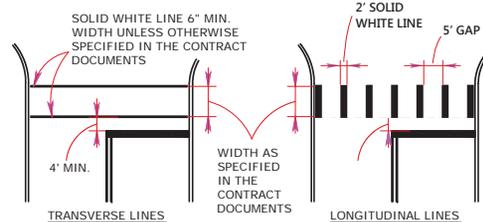
Supplemental Warning Plaques (W16-2/3/4 Series, W16-7P, W16-9P)
 (Source 2C.53)

- Supplemental warning plaques shall be used only in combination with warning or regulatory signs; installed on the same post(s) as the warning or regulatory sign that it supplements and with the same legend, border, and background color as the warning sign with which it is displayed. A supplemental warning plaque used with a regulatory sign shall have a black legend and border on a yellow background.
- The Distance Ahead (W16-2 series and W16-3 series) plaques may be used to inform the road user of the distance to the condition indicated by the warning sign. These plaques can be used to indicate the distance to a specific crossing.
- The Next Distance (W16-4P) plaque may be used to inform road users of the length of roadway over which the condition indicated by the warning sign exists. This plaque can be used to indicate a specific length of road with multiple crossings.

CROSSWALK MARKINGS



See Section 3B.18 of the MUTCD VA Supplement and VDOT TE Guidelines for the installation of marked crosswalks for application and design Guidance.



DETAIL FOR TYPICAL CROSSWALK APPLICATIONS

PEDESTRIAN MEASURES:

Where crosswalks and pedestrian signal phases do not already exist, they shall not be installed except where justified. Crosswalks across uncontrolled locations should not be installed without an engineering study as per VDOT's Guidelines for the Installation of Marked Crosswalks document. Determination of a new crosswalk or pedestrian signal can be considered on a site-specific basis if observations during the CSA suggest the need and the proper study/analysis is performed. Where pedestrian facilities already exist, the following measures shall be placed:

- Pedestrian warning signs. The W11-2 sign and related supplemental plaques shall have a fluorescent yellow-green background with a black legend and border (see Section 2C.50 of the MUTCD VA Supplement).
- Crosswalk pavement markings of a minimum 6" or maximum 24" in width.
- Crosswalk markings located so that the curb ramps are within the extension of the crosswalk markings.
- Detectable warning surface and ramps consistent with VDOT's Road and Bridge Standards.
- Pedestrian signals that are accessible and have countdowns.
- Parking restrictions near crosswalks.
- If determined that new ramps are necessary or need to be redesigned, they shall meet ADA standards per VDOT Road and Bridge standards and IIM 55.14.

PEDESTRIAN CONTROL FEATURES:

For information and design guidelines for accessible pedestrian signals, refer to Chapter 4E of the MUTCD, the VA Supplement, and the VDOT Guidelines for the Retrofit Installation of Accessible Pedestrian Signals.

APPLICATION OF PEDESTRIAN SIGNAL HEADS:

Pedestrian signal heads shall be used in conjunction with vehicular traffic control signals under any of the following conditions:

- If a traffic control signal is justified by an engineering study and meets either Warrant 4, Pedestrian Volume or Warrant 5, School Crossing (see Chapter 4C);
- If an exclusive signal phase is provided or made available for pedestrian movements in one or more directions, with all conflicting vehicular movements being stopped;
- At an established school crossing at any signalized location; or
- Where engineering judgment determines that multi-phase signal indications (as with split-phase timing) would tend to confuse or cause conflicts with pedestrians using a crosswalk guided only by vehicular signal indications. (Source: MUTCD Section 4E.03)



Appendix B

CONTENTS

Citizen Comments

Appendix B

Citizen Information Meeting #1 Comments:
<p>Location 23: Extend the 5 mile No Passing Zone on Rt.175 from Rt.13 to Main St. Chincoteague.</p> <p>Put up No U-turn/No Left Turn, in some cases, at intersections with no turn lanes.</p> <p>Police could be more visible, especially in towns with lowered speed limits, and not just traveling 65 to 70 mph in the passing lanes.</p>
<p>Location 3: The intersection of US 13 and Rt 636, (Cobbs Station Road). There are 2 historical signs on the south side of 636, which obstructs a drivers view looking left for US 13 northbound traffic. It is hard to see an opening in the oncoming traffic.</p>
<p>Location 2: Fact - Folks (not all) travel at 75mph. Need access roads installed at public eating and shopping areas to existing side roads managed by a traffic signal. Locals can't get out on 13 with fast herds of traffic. An example is Cape Charles light should manage Dollar General/Food Lion traffic.</p>
<p>Location 23: The left turn lane on Route 13 Southbound going to Route 175 backs up and a it can take multiple signals to get through this intersection. This causes people to run the light and or speed through it, making the intersection dangerous. The turn signal should run for longer during periods of high volume.</p> <p>Location 23: T's Corner does not have any curb along most of its boundaries and traffic will make dangerous merges in and out of the lot, making it hard to know where traffic is coming from. There should be a curb or physical boundary that focuses traffic into specific entrances and exits instead of making it a free for all next to a high traffic intersection.</p> <p>Location 23: There are 5 business entrances on Route 175 in the first 400 feet from US 13. There is 1 for Pizza Hut, 1 for the shopping center, 1 for PNC and a farm, and 2 to T's Corner. If these were consolidated it would make traffic much more predictable and significantly decrease the chance of a crash with so much traffic merging/exiting next to a high volume intersection.</p> <p>Location 23: Please consider lowering the speed limit on 175 West as it approaches this intersection. Cars waiting to pull out on to 175 often cut off traffic approaching 13 and cause people to slam on the brakes. Rear end accidents are too common on 175 West here.</p> <p>Location 24: Route 175 desperately needs a shoulder here as traffic often speeds and there is little room to move if someone drifts towards your lane. Route 175 from 13 to 798 would be much safer if it had a shoulder. Bicycle tourism is becoming a big draw on the Delmarva Peninsula and 175 should have a wide enough shoulder to allow bikes to safely travel along it to Chincoteague. Not only would it be a safety improvement, it would also help the local economy.</p>
<p>This is in regards to road safety to develop a plan to make the highway which bisects Virginia from Eastern Shore from north to south, safer. What is really needed is a limited access bypass. Think safety. This will alleviate the traffic and get the trucks off our backs and the accidents and deaths. The trucks would be happy and people would be happy and safer. Small businesses will still get business from locals and the tourists. It's up to you to make Route 13 safer for all of us.</p>
<p>I have seen in other counties that there are "keep to the right" "Left lane is for passing" signs. This would be a tremendous help to keep the traffic flowing.</p>

Citizen Information Meeting #1 Comments:
<p>Location 2: I live in Cape Charles so I utilize this intersection quite often. It is an impossible area in the summer, but poses issues all year. In 2011, my Toyota Corolla was totaled at that intersection. My boyfriend and I were heading home to Cape Charles (northbound) on Rt 13 from VA Beach in the afternoon. It was still light outside and we were traveling at about 55mph. We had gotten in the left lane to be able to turn left into Cape Charles at the traffic light. However, we never made it that far. Upon approaching the intersection, a Mitsubishi Eclipse coming out of the Food Lion/McDonald's intersection to turn left (southbound) pulled right out in front of us and all the oncoming traffic. She barely missed the truck that was in the slow lane next to us. We hit her in the rear and we lost all brakes and were lucky to not hit any other vehicle in the process of slowing down in the median.</p> <p>This accident could have been a lot worse and I am thankful it wasn't even though my car was totaled.</p> <p>Location 2: This intersection is extremely dangerous for those who want to leave Food Lion/McDonald's and make a left turn to head South. There is not enough room in the median for a vehicle, especially a truck or SUV. For those who know the area, it's easier and safer to leave McDonald's/Food Lion and exit out the Dollar General intersection. Also, there is a restaurant (Captain Pete's) on the opposite side which has become increasingly busy as it gains popularity. This will be especially busy in the summer, therefore increasing the traffic coming through that intersection. The ice machine is also over there by Captain Pete's and it is busy in the summer as well.</p> <p>Location 2: This intersection could really use a traffic light. I realize this is not feasible as the traffic light at Stone Road and South Bayside Road is too close. I am really surprised that there isn't a service road behind Food Lion for tractor trailers. The current intersection must be dangerous and difficult to maneuver in a tractor trailer. A service road could run from Food Lion to South Bayside Road. This would alleviate some traffic at the other intersection as I'm sure most locals would utilize this service road. Another option would be to have a right turn lane only and another lane for left turns and traffic going straight coming out of Food Lion. People trying to turn left hold up the people trying to turn right. This is not my favorite option as this would not have prevented my accident.</p> <p>The best option I feel for this current intersection would be to have the dividers in the median intersection that prevent you from driving straight through and allow you to only make a left turn or U-turn. Therefore, the people coming out of Food Lion can only make a right turn and would have to go to the traffic light to make a U-turn to head back south or to go across the street. I think people struggle with having to evaluate northbound and southbound traffic simultaneously. If they only had to think about one direction of traffic I think it would be a lot safer and there would be less accidents at this specific location.</p> <p>I would like to see the flashing yellow lights approaching red light signals reinstalled.</p> <p>Also please cut roadside and median grass in summer when needed, not in December when not needed.</p>

Citizen Information Meeting #1 Comments:
<p>Location 23: Route 175 floods during storms as it crosses the marsh land causeway and has no border to pull off when someone passes on the solid line, which I have personally observed often. There is not even shoulder room for state police to set up for speeders. A lady whose son was killed trying to ride a bicycle across this causeway protested to the Accomack County Board of Supervisors to put in shoulders with negative results. A well known local waterman was killed in a head on collision on this part of 175 because there was no way to avoid it.</p> <p>I had a personal experience traveling north on Route 13 between the intersection of 702 and 175 next to the cemetery. The right lane had flooded and froze over night. I hit it and found myself in the Southbound lane of 13, fortunately I didn't hit anybody.</p> <p>I know of 3 fatalities at the intersection of route 702 (Horsey Road) and 693 (Neil Parker Road). One was a neighbor (Mr. Miles) and another was an employee of VDOT. The stop sign isn't very noticeable. I have been told that no charges were filed against the drivers who hit and killed the occupant of the other vehicle because of this dangerous condition.</p> <p>I live adjacent to where Route 702 ends at Route 701 (Jenkins Bridge Road). The bridge at this location as one turns left floods often as does the road next to it. As one is heading East they travel around a dangerous curve (many accidents) and hit the flooded bridge with no way to turn around and go back. School buses, farm vehicles, tractor trailers traverse this route. In regard to small cars, I have seen water go over their hood as they attempt to cross this bridge. The water is brackish.</p> <p>I see tractor trailers and other vehicles coming upon the many intersections and business turn offs on Route 13 at high rates of speed and run the lights often. Traffic lights and sudden turn offs in 55 mph speed zones with many long distance commuters is a recipe for disaster.</p> <p>Thank you for your attention to this matter. I hope that improvements are going to be made soon. I attended a public forum on this Route 13 issue many years ago but nothing was done. The safety of the citizens must be a priority over business and political interests. If I can be of any assistance, please let me know.</p>
<p>Location 2: My husband and I live on Poplar Grove Lane in Seaview of the Cape Charles area, and we access Route 13 via Bayview Circle if we are traveling north. The spot where the entrances to the Food Lion shopping center, the Shore Bank, the restaurant, and the ice dispenser converge is quite dangerous, especially in the summer months. When I am leaving the Food Lion center at that time of the year, I have found that making a right turn and then either a U-turn at the light or traveling the back roads are much safer alternatives than trying to make a left onto 13. I definitely support the installation of a traffic signal at that location.</p> <p>I would also suggest that an access road from Bayview Circle directly to the shopping center be considered as well. I don't know the ownership of that property but I do remember that idea being discussed at earlier planning sessions.</p> <p>Tasley overpass going South on 13 leaving a dark area then hit by spot lights from Hardees. Please have them adjust there aim away from 13. Right in drivers eyes.</p> <p>Chesapeake Square coming North to turn into Food Lion. Turning lights letting the line of cars gets so long last cars are in traffic lane.</p> <p>Have trouble at night finding North bound lane when leaving Cape Charles. Please do some of the study at night because there is a difference.</p>

Citizen Information Meeting #1 Comments:
<p>Location 1: There's nothing there and very little traffic use. This would likely only encourage future development and more traffic problems.</p> <p>Location 3: This is a private road with only a handful of residents and little traffic. This is a waste of money.</p> <p>The only location in the first six locations where improvements are needed is the Food Lion intersection (2).</p>
<p>CBBT @ S.R. 600 (Recent application to expand Campground, issue is extended length vehicles having direct access blocking traffic)</p> <p>Mile Post 73 (Royal Farms application 12 years old, question of diligent Pursuit, issue is extended length vehicles having direct access blocking traffic)</p> <p>U.S. 13 @ Townsend (Existing Request for a Traffic Activated Caution Light for Crossing Traffic, issue is extended length vehicles having direct access blocking traffic)</p> <p>U.S. 13 @ Cape Center restaurant (issues with Extended Length vehicles having direct access to median crossing)</p> <p>U.S. 13 @ Mile Post 78 Kiptopeke Elementary School (Median Narrow, School Buses block Traffic)</p> <p>U.S. 13 @ Mile Post 79 Corner Mart, Median Crossing at Strip Mall (Potential for Stop Light, issue is extended length vehicles having direct access blocking traffic)</p> <p>U.S. 13 @ Mile Post 80.8± Caution Sign for Light Change to RED (Cheriton)</p> <p>U.S. 13 @ Mile Post 100± Caution Sign for light Change to RED (Exmore)</p> <p>Several Median Crossings within County to possibly be closed that maybe should not be closed as there is need for public Safety vehicles to turn around and other issues.</p> <p>We need a turn lane at Paige Scott to go South for safety of farm equipment, large delivery trucks, Tractors with grain trailers.</p> <p>Need a turn lane in front of David Smith to go North for access to farm and house 26104 and 26103 (Farm Equipment)</p> <p>If the above two were put in place the intersection in front of 26104 could be closed. Show them on maps.</p> <p>Stat not included: 1. Indian Gas Station 2. Cape center 3. Food Lion, MOD, Bank. # of accidents at these median turn arounds, if < 8, it is statistically insignificant.</p>

Appendix B

Citizen Information Meeting #1 Comments:
<p>I am concerned about excessive lights in businesses and in shopping areas at night. Specifically, I would like to see you or someone do something about the blinding lights on the Hardee's in Onley. When traveling in the southbound lanes, one comes over the business Route 13 overpass bridge and is nearly blinded by the extreme amount of lights at Hardee's that seem to be aimed at eye level. I know that adequate security lighting can be provided for a site without the lights having to shine out in all directions, especially into drivers eyes. This issue should be of concern on all roads, not just the extreme example I have sited.</p> <p>My family lives in Accomac and we frequently have to cross Route 13. We are always wary when crossing and make sure that traffic has actually stopped at lights before venturing out from the side roads.</p> <p>The left turn onto Business Route 13 from the southbound travel lanes, north of Accomac is especially scary. We have aborted this turn more than once because of aggressive tailgaters. When we pass the traffic light at Parksley, we feel that we must be especially alert to the movement of other vehicles in this section of the road as drivers seem jockey for position in this stretch of highway. There needs to be more room for getting into the left lane and slowing down in this location so that people turning do not get mowed down.</p> <p>Finally, and for what it is worth, the up and down speed limits in the narrower areas of the road as it passes through communities often seem to be ignored.</p>
<p>Location 2: The Food Lion Shopping center entrance is dangerous for people driving across lanes of traffic for the South bound drivers.</p> <p>Please feel free to call and talk to my husband Chuck Tankard (he spoke to Chris Isdol) for more clarification.</p> <p>PLEASE SPEAK TO THE FARMERS. Farm equipment is dangerous. You need to find the turn arounds used by this large equipment. Ursula Deitch North Hampton County Extension Agent may be able to make suggestions. Daughter is extension agent- good resource for outreach to farmers. Map is attached showing where land is located in relation to Cape Center's Stingray's.</p>

Citizen Information Meeting #2 Comments:
<p>Thank you for this opportunity. Have long been very concerned with Food Lion. Have driven 13 for 38 years, beginning with one traffic light in Northampton County. I share potential concern at Jonathan's Landing due to volume occupancy increase extraordinarily at new campground, especially in season.</p> <p>18-wheelers are a menace or intimidating throughout the shore. We know they run lights. Route 13 was not built with them in mind nor in expectation of driving populace or drive thru % increase, what also with CBBT expansion imminent.</p> <p>Here in Northampton County and Accomack too: large elderly population in old autos add hazards. Throughout Shore consider restrictions on cell phone usage please, statewide.</p> <p>18-wheelers and increase in the number of large SUV's and host of pickups in the area made us consider upgrading from a small sedan.</p> <p>Thank you for the chance to insert reminder of over a decade: could there please be consideration for an attractive North End- Northampton County welcome sign versus the puny one scarcely noticed? It would elevate the community yes even roadways have self respect. So overdue, pride. There just must be a way! Thanks again.</p> <p>Wish we could've had the option to type or email in, so as not to suffer through this hard to read.</p> <p>Trying to conjure the 18-wheelers' u-turns is mighty uncomfortable.</p>
<p>Total miles of your study? 309 incidents per annum.</p> <p>The four corner plaza area is a 30 year old bypass that is extremely congested, especially in the summer/holidays tourist traffic. The bypass needs to be by-passed.</p> <p>The ES railroad used to have two tracks, northbound and southbound. From Nassawadox north to Exmore, then from Belle Haven to Melfa at the Nandua H.S. - it is impossible to put in northbound right turn lanes due to the proximity of the tracks. If the tracks were moved eastward in these areas, even if only at the intersections, then turn lanes could be installed.</p>
<p>Reinstall the red light warning signs.</p> <p>Interested in traffic efficiency alternatives across 175 Causeway.</p>
<p>The following comments are transcribed from sketches with notes:</p> <p>Proposed road to reduce accidents of US 13, like at T's Corner (road drawn north from the the Food Lion shopping center).</p> <p>5 weeks ago I almost was in a horrendous accident. A former student had the same thing happen to him but he was hit. Having farm equipment waiting to turn left is dangerous. Just try driving a tractor on the road and wait to turn left. Create a new lane for farm equipment to get them off the road.</p> <p>Lots of crashes in front of Cape Center Sting Ray's.</p>

Appendix C

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Appendix C

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USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Exmore Town NB

Analyst: VHB

Date: 02-04-2016

Basic Project Information

Project Number: 39955.06
 Route Name: Route 13
 State: Virginia
 County: Northampton County
 City: Exmore town
 Route Type: Road Section in Undeveloped Area
 Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
 Crash AADT: 5710 veh/day
 Total Number of Crashes: 2
 Total Number of Injury Crashes: 0
 Section Crash Rate: 22 per 100 MVM
 Section Injury Crash Rate: 0 per 100 MVM
 Crash Rate Average for Similar Roads: 101
 Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: .88 mile(s)
 Statutory Speed Limit: 45 mph
 Adverse Alignment: No
 Divided/Undivided: Divided
 Number of Lanes: 4
 Roadside Hazard Rating: 2
 Transition Zone: No

Traffic Information

85th Percentile Speed: 53 mph
 50th Percentile Speed: 47 mph
 AADT: 5710 veh/day

Recommended Speed Limit: 55

Note: The final recommended speed limit is higher than the statutory speed limit of **45 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Exmore Town SB

Analyst: VHB

Date: 02-04-2016

Basic Project Information

Project Number: 39955.06
 Route Name: Route 13
 State: Virginia
 County: Northampton County
 City: Exmore town
 Route Type: Road Section in Undeveloped Area
 Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
 Crash AADT: 6008 veh/day
 Total Number of Crashes: 1
 Total Number of Injury Crashes: 0
 Section Crash Rate: 10 per 100 MVM
 Section Injury Crash Rate: 0 per 100 MVM
 Crash Rate Average for Similar Roads: 101
 Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: .88 mile(s)
 Statutory Speed Limit: 45 mph
 Adverse Alignment: No
 Divided/Undivided: Divided
 Number of Lanes: 4
 Roadside Hazard Rating: 2
 Transition Zone: No

Traffic Information

85th Percentile Speed: 53 mph
 50th Percentile Speed: 47 mph
 AADT: 6008 veh/day

Recommended Speed Limit: 55

Note: The final recommended speed limit is higher than the statutory speed limit of **45 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Nassawadox Town NB

Analyst: VHB

Date: 02-04-2016

Basic Project Information

Project Number: 33995.06
 Route Name: Route 13
 State: Virginia
 County: Northampton County
 City: Nassawadox town
 Route Type: Road Section in Undeveloped Area
 Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
 Crash AADT: 6180 veh/day
 Total Number of Crashes: 3
 Total Number of Injury Crashes: 2
 Section Crash Rate: 27 per 100 MVM
 Section Injury Crash Rate: 18 per 100 MVM
 Crash Rate Average for Similar Roads: 101
 Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: .98 mile(s)
 Statutory Speed Limit: 50 mph
 Adverse Alignment: No
 Divided/Undivided: Divided
 Number of Lanes: 4
 Roadside Hazard Rating: 1
 Transition Zone: No

Traffic Information

85th Percentile Speed: 65 mph
 50th Percentile Speed: 56 mph
 AADT: 6180 veh/day

Recommended Speed Limit: 65

Note: The final recommended speed limit is higher than the statutory speed limit of **50 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Nassawadox Town SB

Analyst: VHB

Date: 02-04-2016

Basic Project Information

Project Number: 39955.06
 Route Name: Route 13
 State: Virginia
 County: Northampton County
 City: Nassawadox town
 Route Type: Road Section in Undeveloped Area
 Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
 Crash AADT: 5646 veh/day
 Total Number of Crashes: 2
 Total Number of Injury Crashes: 1
 Section Crash Rate: 20 per 100 MVM
 Section Injury Crash Rate: 10 per 100 MVM
 Crash Rate Average for Similar Roads: 101
 Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: .98 mile(s)
 Statutory Speed Limit: 50 mph
 Adverse Alignment: No
 Divided/Undivided: Divided
 Number of Lanes: 4
 Roadside Hazard Rating: 1
 Transition Zone: No

Traffic Information

85th Percentile Speed: 60 mph
 50th Percentile Speed: 53 mph
 AADT: 5646 veh/day

Recommended Speed Limit: 60

Note: The final recommended speed limit is higher than the statutory speed limit of **50 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Keller Town NB

Analyst: VHB

Date: 02-04-2016

Basic Project Information

Project Number: 39955.06
 Route Name: Route 13
 State: Virginia
 County: Accomack County
 City: Keller town
 Route Type: Road Section in Undeveloped Area
 Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
 Crash AADT: 6823 veh/day
 Total Number of Crashes: 3
 Total Number of Injury Crashes: 1
 Section Crash Rate: 29 per 100 MVM
 Section Injury Crash Rate: 10 per 100 MVM
 Crash Rate Average for Similar Roads: 101
 Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: .83 mile(s)
 Statutory Speed Limit: 50 mph
 Adverse Alignment: No
 Divided/Undivided: TWLTL
 Number of Lanes: 4
 Roadside Hazard Rating: 2
 Transition Zone: No

Traffic Information

85th Percentile Speed: 64 mph
 50th Percentile Speed: 57 mph
 AADT: 6823 veh/day

Recommended Speed Limit: 65

Note: The final recommended speed limit is higher than the statutory speed limit of **50 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Keller Town SB

Analyst: VHB

Date: 02-04-2016

Basic Project Information

Project Number: 39955.06
 Route Name: Route 13
 State: Virginia
 County: Accomack County
 City: Keller town
 Route Type: Road Section in Undeveloped Area
 Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
 Crash AADT: 7306 veh/day
 Total Number of Crashes: 1
 Total Number of Injury Crashes: 0
 Section Crash Rate: 9 per 100 MVM
 Section Injury Crash Rate: 0 per 100 MVM
 Crash Rate Average for Similar Roads: 101
 Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: .83 mile(s)
 Statutory Speed Limit: 50 mph
 Adverse Alignment: No
 Divided/Undivided: TWLTL
 Number of Lanes: 4
 Roadside Hazard Rating: 2
 Transition Zone: No

Traffic Information

85th Percentile Speed: 64 mph
 50th Percentile Speed: 57 mph
 AADT: 7306 veh/day

Recommended Speed Limit: 65

Note: The final recommended speed limit is higher than the statutory speed limit of **50 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Mappsville NB

Analyst: VHB

Date: 02-04-2016

Basic Project Information

Project Number: 39955.06
 Route Name: Route 13
 State: Virginia
 County: Accomack County
 City: Rural/Other
 Route Type: Road Section in Undeveloped Area
 Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
 Crash AADT: 6908 veh/day
 Total Number of Crashes: 17
 Total Number of Injury Crashes: 7
 Section Crash Rate: 112 per 100 MVM
 Section Injury Crash Rate: 46 per 100 MVM
 Crash Rate Average for Similar Roads: 101
 Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: 1.2 mile(s)
 Statutory Speed Limit: 45 mph
 Adverse Alignment: No
 Divided/Undivided: TWLTL
 Number of Lanes: 4
 Roadside Hazard Rating: 1
 Transition Zone: No

Traffic Information

85th Percentile Speed: 63 mph
 50th Percentile Speed: 56 mph
 AADT: 6908 veh/day

Recommended Speed Limit: 60

Note: The final recommended speed limit is higher than the statutory speed limit of **45 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Mappsville SB

Analyst: VHB

Date: 02-04-2016

Basic Project Information

Project Number: 39955.06
 Route Name: Route 13
 State: Virginia
 County: Accomack County
 City: Rural/Other
 Route Type: Road Section in Undeveloped Area
 Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
 Crash AADT: 6995 veh/day
 Total Number of Crashes: 14
 Total Number of Injury Crashes: 2
 Section Crash Rate: 91 per 100 MVM
 Section Injury Crash Rate: 13 per 100 MVM
 Crash Rate Average for Similar Roads: 101
 Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: 1.2 mile(s)
 Statutory Speed Limit: 45 mph
 Adverse Alignment: No
 Divided/Undivided: TWLTL
 Number of Lanes: 4
 Roadside Hazard Rating: 1
 Transition Zone: No

Traffic Information

85th Percentile Speed: 60 mph
 50th Percentile Speed: 54 mph
 AADT: 6995 veh/day

Recommended Speed Limit: 60

Note: The final recommended speed limit is higher than the statutory speed limit of **45 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Melfa Town NB

Analyst: VHB

Date: 02-04-2016

Basic Project Information

Project Number: 39955.06
 Route Name: Route 13
 State: Virginia
 County: Accomack County
 City: Melfa town
 Route Type: Road Section in Undeveloped Area
 Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
 Crash AADT: 7549 veh/day
 Total Number of Crashes: 1
 Total Number of Injury Crashes: 0
 Section Crash Rate: 8 per 100 MVM
 Section Injury Crash Rate: 0 per 100 MVM
 Crash Rate Average for Similar Roads: 101
 Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: .87 mile(s)
 Statutory Speed Limit: 50 mph
 Adverse Alignment: No
 Divided/Undivided: TWLTL
 Number of Lanes: 4
 Roadside Hazard Rating: 2
 Transition Zone: No

Traffic Information

85th Percentile Speed: 58 mph
 50th Percentile Speed: 46 mph
 AADT: 7549 veh/day

Recommended Speed Limit: 60

Note: The final recommended speed limit is higher than the statutory speed limit of **50 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Melfa Town SB

Analyst: VHB

Date: 02-04-2016

Basic Project Information

Project Number: 39955.06
 Route Name: Route 13
 State: Virginia
 County: Accomack County
 City: Melfa town
 Route Type: Road Section in Undeveloped Area
 Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
 Crash AADT: 7763 veh/day
 Total Number of Crashes: 2
 Total Number of Injury Crashes: 2
 Section Crash Rate: 16 per 100 MVM
 Section Injury Crash Rate: 16 per 100 MVM
 Crash Rate Average for Similar Roads: 101
 Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: .87 mile(s)
 Statutory Speed Limit: 50 mph
 Adverse Alignment: No
 Divided/Undivided: TWLTL
 Number of Lanes: 4
 Roadside Hazard Rating: 2
 Transition Zone: No

Traffic Information

85th Percentile Speed: 62 mph
 50th Percentile Speed: 57 mph
 AADT: 7763 veh/day

Recommended Speed Limit: 60

Note: The final recommended speed limit is higher than the statutory speed limit of **50 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Nelsonia NB

Analyst: VHB

Date: 02-16-2016

Basic Project Information

Project Number: 39955.06
 Route Name: Route 13
 State: Virginia
 County: Accomack County
 City: Rural/Other
 Route Type: Road Section in Undeveloped Area
 Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
 Crash AADT: 6883 veh/day
 Total Number of Crashes: 34
 Total Number of Injury Crashes: 16
 Section Crash Rate: 184 per 100 MVM
 Section Injury Crash Rate: 87 per 100 MVM
 Crash Rate Average for Similar Roads: 101
 Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: 1.47 mile(s)
 Statutory Speed Limit: 45 mph
 Adverse Alignment: No
 Divided/Undivided: TWLTL
 Number of Lanes: 4
 Roadside Hazard Rating: 2
 Transition Zone: No

Traffic Information

85th Percentile Speed: 57 mph
 50th Percentile Speed: 50 mph
 AADT: 6883 veh/day

Recommended Speed Limit: 50

Note: The final recommended speed limit is higher than the statutory speed limit of **45 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Nelsonia SB

Analyst: VHB

Date: 02-16-2016

Basic Project Information

Project Number: 39955.06
 Route Name: Route 13
 State: Virginia
 County: Accomack County
 City: Rural/Other
 Route Type: Road Section in Undeveloped Area
 Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
 Crash AADT: 6796 veh/day
 Total Number of Crashes: 28
 Total Number of Injury Crashes: 6
 Section Crash Rate: 154 per 100 MVM
 Section Injury Crash Rate: 33 per 100 MVM
 Crash Rate Average for Similar Roads: 101
 Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: 1.47 mile(s)
 Statutory Speed Limit: 45 mph
 Adverse Alignment: No
 Divided/Undivided: TWLTL
 Number of Lanes: 4
 Roadside Hazard Rating: 2
 Transition Zone: No

Traffic Information

85th Percentile Speed: 57 mph
 50th Percentile Speed: 50 mph
 AADT: 6796 veh/day

Recommended Speed Limit: 55

Note: The final recommended speed limit is higher than the statutory speed limit of **45 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - New Church NB

Analyst: VHB

Date: 02-16-2016

Basic Project Information

Project Number: 39955.06
 Route Name: Route 13
 State: Virginia
 County: Accomack County
 City: Rural/Other
 Route Type: Road Section in Undeveloped Area
 Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
 Crash AADT: 6570 veh/day
 Total Number of Crashes: 21
 Total Number of Injury Crashes: 8
 Section Crash Rate: 125 per 100 MVM
 Section Injury Crash Rate: 48 per 100 MVM
 Crash Rate Average for Similar Roads: 101
 Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: 1.4 mile(s)
 Statutory Speed Limit: 45 mph
 Adverse Alignment: No
 Divided/Undivided: Divided
 Number of Lanes: 4
 Roadside Hazard Rating: 2
 Transition Zone: No

Traffic Information

85th Percentile Speed: 58 mph
 50th Percentile Speed: 53 mph
 AADT: 6570 veh/day

Recommended Speed Limit: **55**

Note: The final recommended speed limit is higher than the statutory speed limit of **45 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - New Church SB

Analyst: VHB

Date: 02-16-2016

Basic Project Information

Project Number: 39955.06
 Route Name: Route 13
 State: Virginia
 County: Accomack County
 City: Rural/Other
 Route Type: Road Section in Undeveloped Area
 Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
 Crash AADT: 6627 veh/day
 Total Number of Crashes: 15
 Total Number of Injury Crashes: 7
 Section Crash Rate: 89 per 100 MVM
 Section Injury Crash Rate: 41 per 100 MVM
 Crash Rate Average for Similar Roads: 101
 Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: 1.4 mile(s)
 Statutory Speed Limit: 45 mph
 Adverse Alignment: No
 Divided/Undivided: Divided
 Number of Lanes: 4
 Roadside Hazard Rating: 2
 Transition Zone: No

Traffic Information

85th Percentile Speed: 58 mph
 50th Percentile Speed: 52 mph
 AADT: 6627 veh/day

Recommended Speed Limit: **55**

Note: The final recommended speed limit is higher than the statutory speed limit of **45 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Oak Hall NB

Analyst: VHB

Date: 02-04-2016

Basic Project Information

Project Number: 39955.06
 Route Name: Route 13
 State: Virginia
 County: Accomack County
 City: Rural/Other
 Route Type: Road Section in Undeveloped Area
 Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
 Crash AADT: 7264 veh/day
 Total Number of Crashes: 19
 Total Number of Injury Crashes: 7
 Section Crash Rate: 111 per 100 MVM
 Section Injury Crash Rate: 41 per 100 MVM
 Crash Rate Average for Similar Roads: 101
 Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: 1.29 mile(s)
 Statutory Speed Limit: 45 mph
 Adverse Alignment: No
 Divided/Undivided: TWLTL
 Number of Lanes: 4
 Roadside Hazard Rating: 2
 Transition Zone: No

Traffic Information

85th Percentile Speed: 56 mph
 50th Percentile Speed: 50 mph
 AADT: 7264 veh/day

Recommended Speed Limit: **55**

Note: The final recommended speed limit is higher than the statutory speed limit of **45 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Oak Hall SB

Analyst: VHB

Date: 02-04-2016

Basic Project Information

Project Number: 39955.06
 Route Name: Route 13
 State: Virginia
 County: Accomack County
 City: Rural/Other
 Route Type: Road Section in Undeveloped Area
 Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
 Crash AADT: 7348 veh/day
 Total Number of Crashes: 19
 Total Number of Injury Crashes: 5
 Section Crash Rate: 110 per 100 MVM
 Section Injury Crash Rate: 29 per 100 MVM
 Crash Rate Average for Similar Roads: 101
 Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: 1.29 mile(s)
 Statutory Speed Limit: 45 mph
 Adverse Alignment: No
 Divided/Undivided: TWLTL
 Number of Lanes: 4
 Roadside Hazard Rating: 2
 Transition Zone: No

Traffic Information

85th Percentile Speed: 59 mph
 50th Percentile Speed: 53 mph
 AADT: 7348 veh/day

Recommended Speed Limit: **60**

Note: The final recommended speed limit is higher than the statutory speed limit of **45 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Onley Town NB

Analyst: VHB

Date: 02-04-2016

Basic Project Information

Project Number: 39955.06
Route Name: Route 13
State: Virginia
County: Accomack County
City: Onley town
Route Type: Road Section in Undeveloped Area
Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
Crash AADT: 8046 veh/day
Total Number of Crashes: 4
Total Number of Injury Crashes: 0
Section Crash Rate: 23 per 100 MVM
Section Injury Crash Rate: 0 per 100 MVM
Crash Rate Average for Similar Roads: 101
Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: 1.17 mile(s)
Statutory Speed Limit: 45 mph
Adverse Alignment: No
Divided/Undivided: Divided
Number of Lanes: 4
Roadside Hazard Rating: 2
Transition Zone: No

Traffic Information

85th Percentile Speed: 49 mph
50th Percentile Speed: 41 mph
AADT: 8046 veh/day

Recommended Speed Limit: 50

Note: The final recommended speed limit is higher than the statutory speed limit of **45 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Onley Town SB

Analyst: VHB

Date: 02-04-2016

Basic Project Information

Project Number: 39955.06
Route Name: Route 13
State: Virginia
County: Accomack County
City: Onley town
Route Type: Road Section in Undeveloped Area
Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
Crash AADT: 8203 veh/day
Total Number of Crashes: 1
Total Number of Injury Crashes: 1
Section Crash Rate: 6 per 100 MVM
Section Injury Crash Rate: 6 per 100 MVM
Crash Rate Average for Similar Roads: 101
Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: 1.17 mile(s)
Statutory Speed Limit: 45 mph
Adverse Alignment: No
Divided/Undivided: Divided
Number of Lanes: 4
Roadside Hazard Rating: 2
Transition Zone: No

Traffic Information

85th Percentile Speed: 50 mph
50th Percentile Speed: 39 mph
AADT: 8203 veh/day

Recommended Speed Limit: 50

Note: The final recommended speed limit is higher than the statutory speed limit of **45 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Painter Town NB

Analyst: VHB

Date: 02-04-2016

Basic Project Information

Project Number: 39955.06
Route Name: Route 13
State: Virginia
County: Accomack County
City: Painter town
Route Type: Road Section in Undeveloped Area
Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
Crash AADT: 6694 veh/day
Total Number of Crashes: 3
Total Number of Injury Crashes: 0
Section Crash Rate: 28 per 100 MVM
Section Injury Crash Rate: 0 per 100 MVM
Crash Rate Average for Similar Roads: 101
Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: .89 mile(s)
Statutory Speed Limit: 50 mph
Adverse Alignment: No
Divided/Undivided: TWLTL
Number of Lanes: 4
Roadside Hazard Rating: 2
Transition Zone: No

Traffic Information

85th Percentile Speed: 58 mph
50th Percentile Speed: 49 mph
AADT: 6694 veh/day

Recommended Speed Limit: 60

Note: The final recommended speed limit is higher than the statutory speed limit of **50 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Painter Town SB

Analyst: VHB

Date: 02-04-2016

Basic Project Information

Project Number: 39955.06
Route Name: Route 13
State: Virginia
County: Accomack County
City: Painter town
Route Type: Road Section in Undeveloped Area
Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
Crash AADT: 7032 veh/day
Total Number of Crashes: 1
Total Number of Injury Crashes: 1
Section Crash Rate: 9 per 100 MVM
Section Injury Crash Rate: 9 per 100 MVM
Crash Rate Average for Similar Roads: 101
Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: .89 mile(s)
Statutory Speed Limit: 50 mph
Adverse Alignment: No
Divided/Undivided: TWLTL
Number of Lanes: 4
Roadside Hazard Rating: 1
Transition Zone: No

Traffic Information

85th Percentile Speed: 59 mph
50th Percentile Speed: 51 mph
AADT: 7032 veh/day

Recommended Speed Limit: 60

Note: The final recommended speed limit is higher than the statutory speed limit of **50 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Temperanceville NB

Analyst: VHB

Date: 02-16-2016

Basic Project Information

Project Number: 39955.06
Route Name: Route 13
State: Virginia
County: Accomack County
City: Rural/Other
Route Type: Road Section in Undeveloped Area
Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
Crash AADT: 6656 veh/day
Total Number of Crashes: 37
Total Number of Injury Crashes: 13
Section Crash Rate: 138 per 100 MVM
Section Injury Crash Rate: 49 per 100 MVM
Crash Rate Average for Similar Roads: 101
Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: 2.2 mile(s)
Statutory Speed Limit: 45 mph
Adverse Alignment: No
Divided/Undivided: TWLTL
Number of Lanes: 4
Roadside Hazard Rating: 2
Transition Zone: No

Traffic Information

85th Percentile Speed: 60 mph
50th Percentile Speed: 54 mph
AADT: 6656 veh/day

Recommended Speed Limit: 60

Note: The final recommended speed limit is higher than the statutory speed limit of **45 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.

USLIMITS2 Speed Zoning Report

Project Name: Route 13 - Temperanceville SB

Analyst: VHB

Date: 02-16-2016

Basic Project Information

Project Number: 39955.06
Route Name: Route 13
State: Virginia
County: Accomack County
City: Rural/Other
Route Type: Road Section in Undeveloped Area
Route Status: Existing

Crash Data Information

Crash Data Years: 5.00
Crash AADT: 7238 veh/day
Total Number of Crashes: 23
Total Number of Injury Crashes: 11
Section Crash Rate: 79 per 100 MVM
Section Injury Crash Rate: 38 per 100 MVM
Crash Rate Average for Similar Roads: 101
Injury Rate Average for Similar Roads: 31

Roadway Information

Section Length: 2.2 mile(s)
Statutory Speed Limit: 45 mph
Adverse Alignment: No
Divided/Undivided: TWLTL
Number of Lanes: 4
Roadside Hazard Rating: 2
Transition Zone: No

Traffic Information

85th Percentile Speed: 59 mph
50th Percentile Speed: 54 mph
AADT: 7238 veh/day

Recommended Speed Limit: 60

Note: The final recommended speed limit is higher than the statutory speed limit of **45 mph** for this type of road. An engineering study such as the one carried out with USLIMITS is usually required to set a speed limit above the statutory limit.