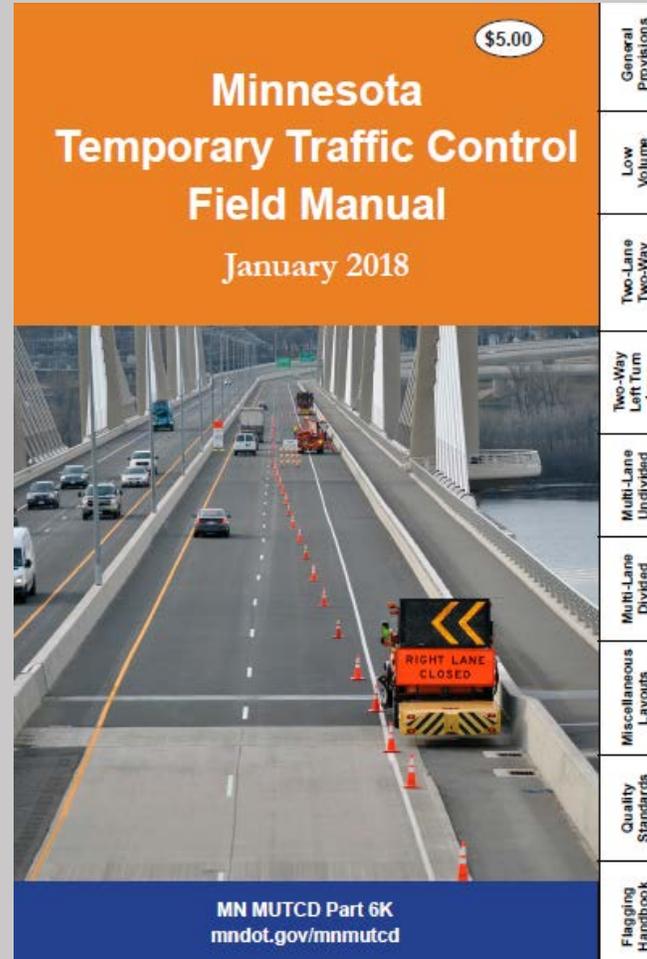
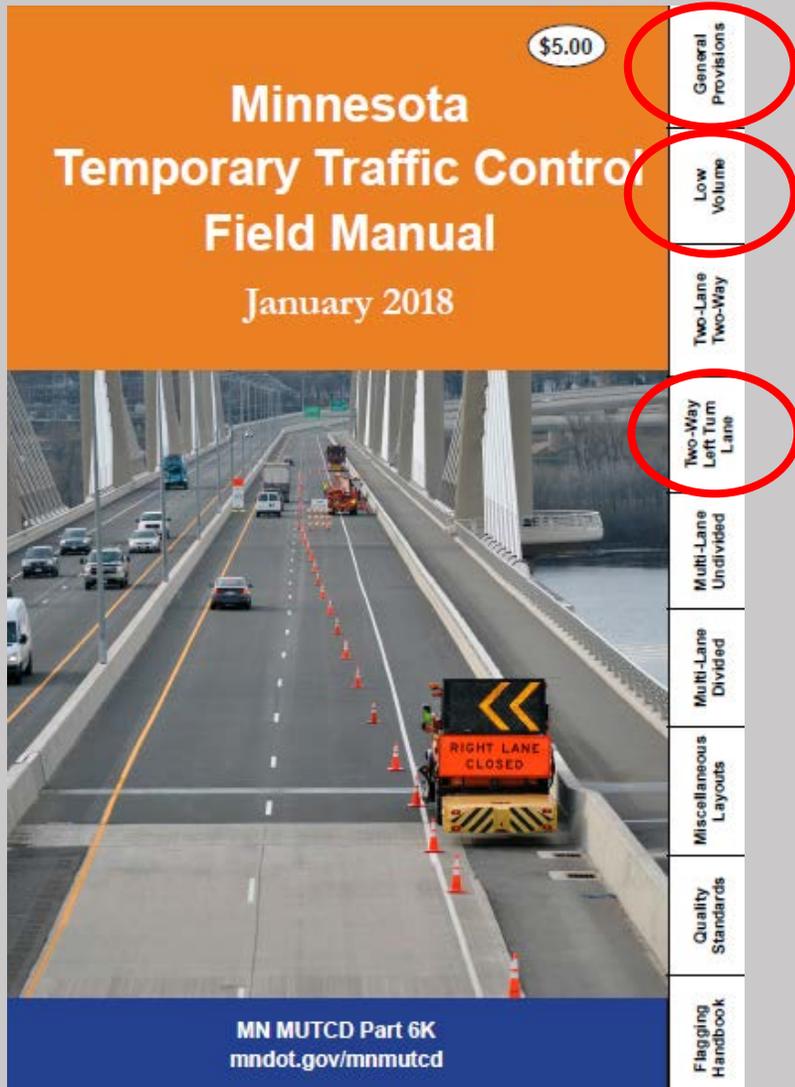


2018 Field Manual



<http://mndot.gov/mnmutcd>

New Sections



- Low Volume
- Two-Way Continuous Left Turn Lane
- Standards and Specs renamed ***General Provisions***



**No job is so important
in maintenance or
construction, and
no service so
urgent, that we
cannot take time
to perform our
work safely.**

m1 MINNESOTA

How To Use The Field Manual

How to Select a layout using the charts at the front of each section

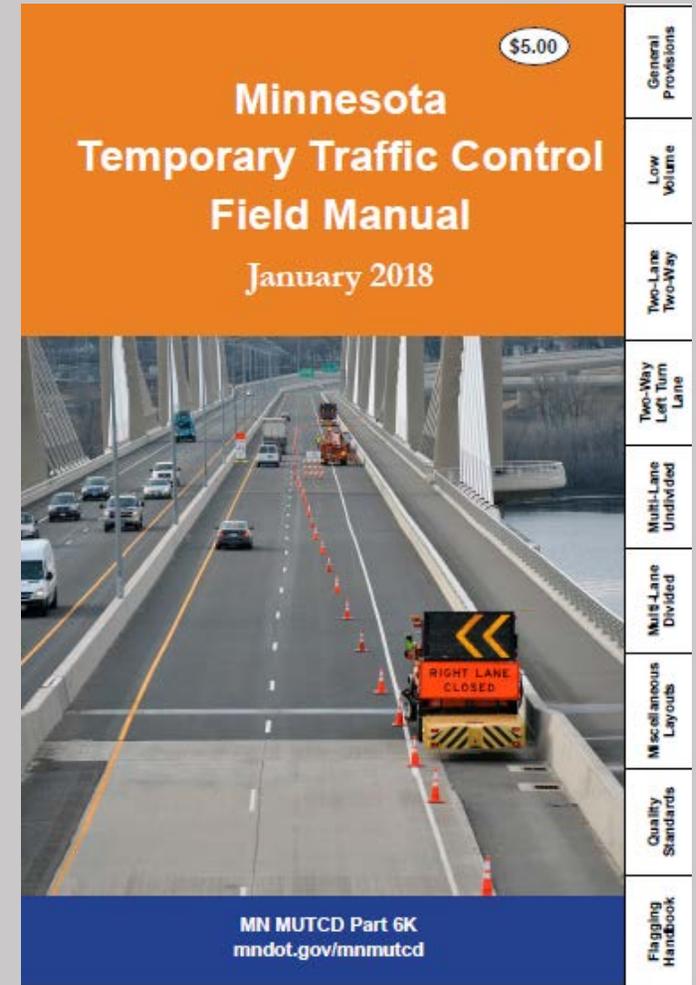
Planning Process

- Location
- Type of work
- User volumes and patterns
- Impact to users
- Special events
- Rush hour
- Times and duration of work



Field Manual Sections

The layouts are divided primarily by the type of roadway



General Provisions	Low Volume	Two-Lane Two-Way	Two-Way Left Turn Lane	Multi-Lane Undivided	Multi-Lane Divided	Miscellaneous Layouts	Quality Standards	Flagging Handbook
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Roadway Designations

- Low Volume Roads: Rural and Urban
 - For ADT of 400 or less
 - Urban Residential posted 30 or less
 - Rural
 - On Road or Roadside
 - Maintenance Activity-(unique to Low Volume section)
 - Duration

**Low Volume Roads:
Rural and Urban**

A Rural Highway with less than 400 ADT, and an Urban Residential Street with less than 400 ADT and speeds of 30 mph or less.

**Drawings Not To Scale*



mndot.gov/fieldmanual

Low Volume

Low Volume Roads

LOW VOLUME ROADS: RURAL AND URBAN				
Low Volume Less than 400 ADT	MOBILE 15 Minutes or Less	SHORT DURATION 1 Hour or Less	SHORT TERM 12 Hours or Less	INTERMEDIATE TERM 3 Days or Less
Work Vehicle Parked On Shoulder	6		8	
Work on Shoulder	9		8	
Work off Shoulder	8			
Work off Roadway	10			
Shoulder or Parking Lane Closure	8			
Partial Shoulder Closure for Trailer Mounted Devices	7			
Lane Closure	11			
Uncontrolled	4			
One Flagger Control	4*			
2 Flagger Control	16*			
Moving Work Spaces	17*			
Near Intersection	20*, 21*			
Near Railroad Xing	22*			
Pilot Car Operation	18*			
Flagging Crossroads and Blind Curves	19*			
Automated Flagger Assistance Device (AFAD)	24*			
Portable Signal Control	25			
STOP Sign Control	14			
Flagging Station Enhancements	23			
Turn Lane Closures	33, 34			
Lane Shift	29			
Work on Centerline	1 (30 mph or less only)			
Work in Center of Road	2			
Work in Intersection	3 (30 mph or less only)			
Temporary Road Closure (15 minute Intervals)	31			
Temporary Road Closure	32			
Road Closure - Special Events	5			
Sidewalk Closure	88, 89			
Gravel Road Maintenance	30			

In this section there are 2 ways to determine which layout to use

The standard method...

- Determine the Volume
- Type of work space
- Duration

Layout Selection Matrix by Maintenance Activity

The following are examples of situations where layouts may be used.
Layouts may be used for other operations.

URBAN		WORK DURATION			
		MOBILE 15 Minutes or Less	SHORT DURATION 1 Hour or Less	SHORT TERM 12 Hours or Less	
MAINTENANCE ACTIVITY					
On Road	Asphalt Pavement Patching	11	4	4	
	Concrete Pavement Patching			4	
	Pothole Patching	11	4		
	Crack Filling		4	4, 16	
	Crack Sealing - Route and Seal			4, 16	
	Surface Treatment			4, 16	
	Sweeping - Residential	11			
	Utility Repair - Centerline	1	1	1, 2	
	Utility Repair - Center of Intersection	3	3	3	
	Road Closure (e.g. water main break)	31	31	31, 32	
	Road Closure (for Special Event)	5	5	5	
	Utility Maintenance (partial road closure)			4	
	Roadside	Mowing	10		
		Tree/Brush Removal	10, 11	4	4
		Debris Removal - Routine (e.g. litter pickup)	8, 9	8, 9	
Debris Removal - Large Item (e.g. couch, roadkill)		11			
Utility Repair - Shoulder		8, 9	8, 9	8	
Sign Repair		8, 9, 11	8, 9		
Snow Cleanup		8, 9, 11	8, 9		

Or select a layout by Maintenance Activity

Layout Selection Matrix by Maintenance Activity

The following are examples of situations where layouts may be used.
Layouts may be used for other operations.

RURAL		WORK DURATION			
		MOBILE 15 Minutes or Less	SHORT DURATION 1 Hour or Less	SHORT TERM 12 Hours or Less	
MAINTENANCE ACTIVITY					
On Road	Asphalt Pavement Patching	11	4*	4*	
	Concrete Pavement Patching			4*	
	Temporary Pothole Patching	11	4*		
	Crack Filling		4*	16*	
	Crack Sealing - Route and Seal			16*	
	Surface Treatment			16*	
	Grading a Gravel Road	30			
	Road Closure (e.g. water main break)	31	31	31, 32	
	Culvert Maintenance (partial road closure)			4*	
	Shouldering Shoulder Disking/Blading	10, 11			
	Roadside	Mowing	10		
		Tree/Brush Removal	10, 11	4*	4*
Debris Removal - Routine (e.g. litter pickup)		11	8		
Debris Removal - Large Item (e.g. couch, roadkill)		11			
Utility Repair - Shoulder		8	8	8	
Sign Repair		11	8		
Snow Cleanup		11			
Driveway Culvert Maintenance		8	8	8	
Ditch Maintenance (Partial Road Closure)			8		

Low Volume Roads

Layout Selection Matrix by Maintenance Activity

The following are examples of situations where layouts may be used.
Layouts may be used for other operations.

		WORK DURATION		
		MOBILE 15 Minutes or Less	SHORT DURATION 1 Hour or Less	SHORT TERM 12 Hours or Less
URBAN	MAINTENANCE ACTIVITY			
	On Road	Asphalt Pavement Patching	11	4
Concrete Pavement Patching				4
Pothole Patching		11	4	
Crack Filling			4	4, 16
Crack Sealing - Route and Seal				4, 16
Surface Treatment				4, 16
Sweeping - Residential		11		
Utility Repair - Centerline		1	1	1, 2
Utility Repair - Center of Intersection		3	3	3
Road Closure (e.g. water main break)		31	31	31, 32
Road Closure (for Special Event)		5	5	5
Utility Maintenance (partial road closure)				4
Roadside		Mowing	10	
	Tree/Brush Removal	10, 11	4	4
	Debris Removal - Routine (e.g. litter pickup)	8, 9	8, 9	
	Debris Removal - Large Item (e.g. couch, roadkill)	11		
	Utility Repair - Shoulder	8, 9	8, 9	8
	Sign Repair	8, 9, 11	8, 9	
	Snow Cleanup	8, 9, 11	8, 9	

Urban/Residential or Rural?

Where is the work, on Road or Roadside?

What is the Maintenance Activity?

What is the duration?

Example: Patching scattered potholes on residential streets

Low Volume Roads

		WORK DURATION			
		MOBILE 15 Minutes or Less	SHORT DURATION 1 Hour or Less	SHORT TERM 12 Hours or Less	
On Road		MAINTENANCE ACTIVITY			
		Asphalt Pavement Patching	11	4"	4"
		Concrete Pavement Patching			4"
		Temporary Pothole Patching	11	4"	
		Crack Filling		4"	15"
		Crack Sealing - Route and Seal			15"
		Surface Treatment			15"
		Grading a Gravel Road	30		
		Road Closure (e.g. water main break)	31	31	31, 32
		Culvert Maintenance (partial road closure)			4"
		Shouldering Shoulder Disking/Blading	10, 11		
		Mowing	10		
		Tree/Brush Removal	10, 11	4"	4"
		Debris Removal - Routine (e.g. litter pickup)	11	8	
Debris Removal - Large Item (e.g. couch, roadkill)	11				
Roadside		Utility Repair - Shoulder	8	8	
		Sign Repair	11	8	
		Snow Cleanup	11		
		Driveway Culvert Maintenance	8	8	8
		Ditch Maintenance (Partial Road Closure)			8

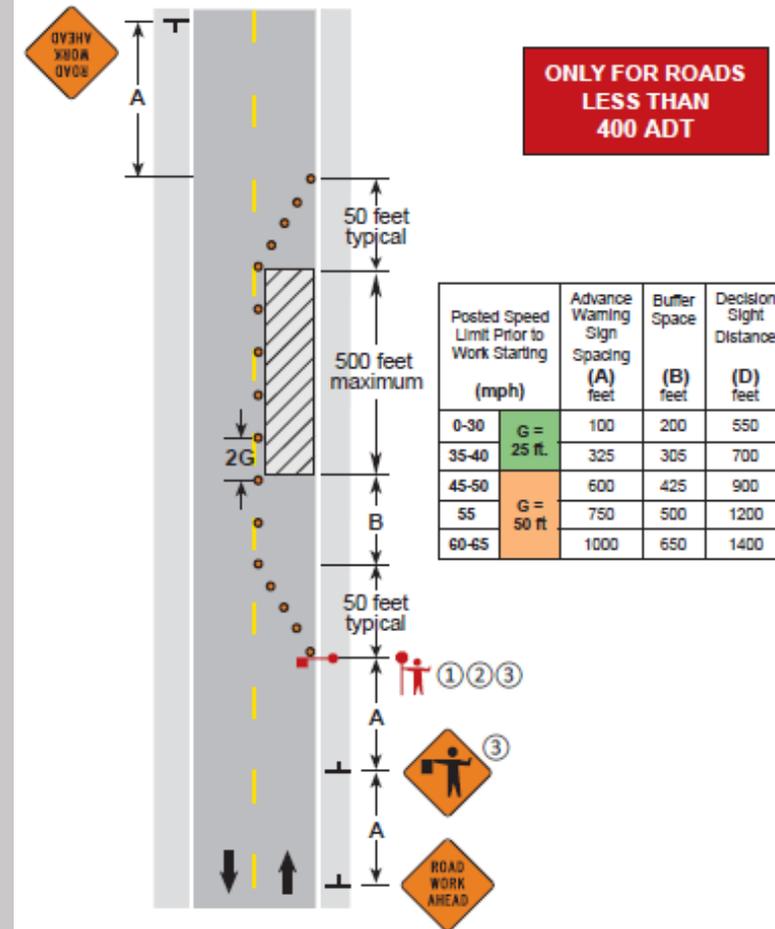
- Urban/Residential or Rural
- Where is the work, Road or Roadside?
- What is the Maintenance Activity?
- What is the Duration?

Example: A crack filling operation on a rural highway, work will remain in one location for about 45 minutes

NOTES:

- ① The approach sight distance to the flagger shall be at least the Decision Sight Distance (D).
- ② If the flagger's ability to see oncoming motorists beyond the work space is less than the Decision Sight Distance (D), two flaggers shall be used - See [Layout 16](#).
- ③ The Flagger and Flagger Ahead sign may be omitted if the operation is during daylight hours, 12 hours or less, and traffic is able to self-regulate.
4. If the work space must be left unattended at night use [Layout 14](#).

- Low Volume Road, less than 400 ADT
- Low Volume Road layouts have distance charts shown on layout
- Remember to read the notes

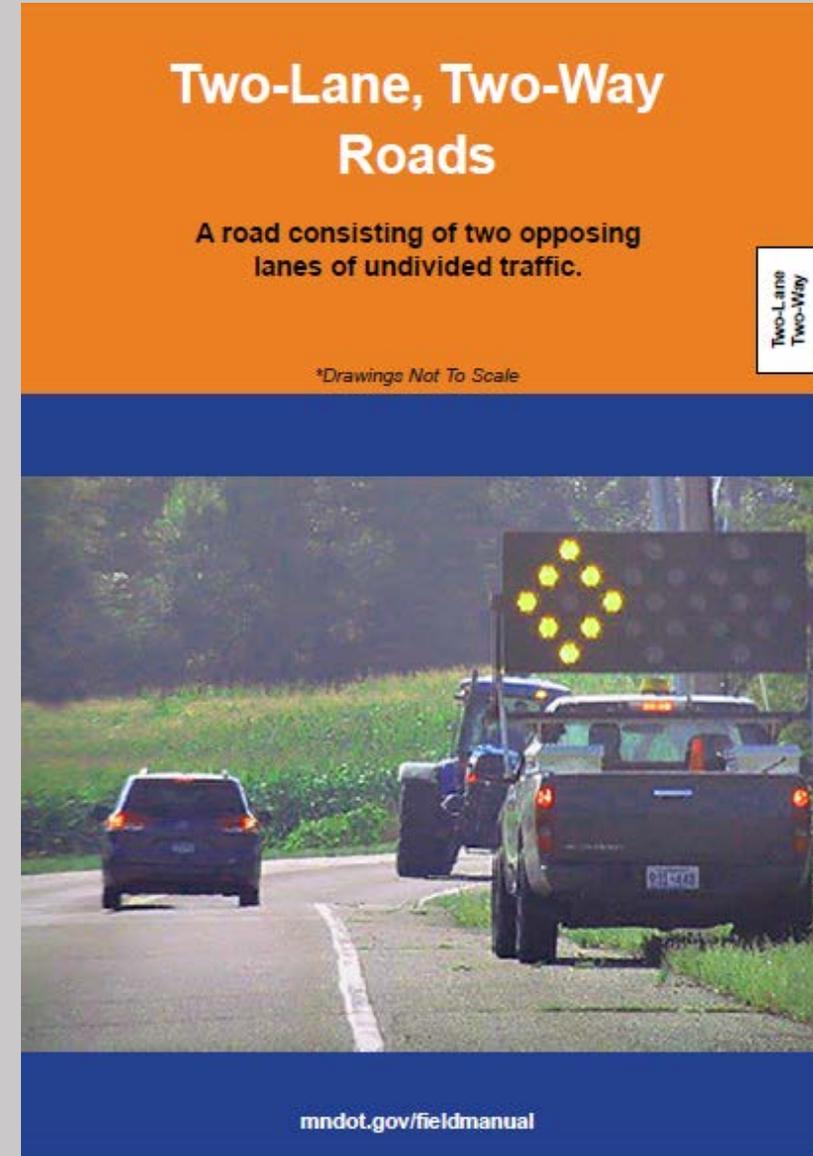


LANE CLOSURE, ONE FLAGGER
 TWO-LANE, TWO-WAY ROAD
 3 DAYS or LESS
 6K-4
 LAYOUT 4

Roadway Designations

- **Two-Lane, Two-Way**

Consists of two opposing lanes of undivided traffic



TWO-LANE, TWO-WAY ROADS				
Intermediate Volume Up to 1600 ADT	MOBILE 15 Minutes or Less	SHORT DURATION 1 Hour or Less	SHORT TERM 12 Hours or Less	INTERMEDIATE TERM 3 Days or Less
Lane Closure	11			
Flagger Control		26 *		15 *
STOP Sign Control			14	
Work in Center of Road		27 *		
All ADTs	MOBILE 15 Minutes or Less	SHORT DURATION 1 Hour or Less	SHORT TERM 12 Hours or Less	INTERMEDIATE TERM 3 Days or Less
Work Vehicle Parked on Shoulder		6		8
Work on Shoulder		9		8
Work off Shoulder			8	
Work off Roadway	10			
Shoulder or Parking Lane Closure			8	
Partial Shoulder Closure for Trailer Mounted Devices			7	
Lane Closure	12, 13 *			
2 Flagger Control			16 *	
Moving Work Spaces			17 *	
Near Intersection			20, 21 *	
Near Railroad Xing			22 *	
Pilot Car Operation			18 *	
Flagging Crossroads and Blind Curves			19 *	
Automated Flagger Assistance Device (AFAD)			24 *	
Portable Signal Control			25	
Flagging Station Enhancements			23	
Work in Center of Road		28 *		
Lane Shift			29	
Turn Lane Closures			33, 34	
Temporary Road Closure (15 minute intervals)		31 *		
Temporary Road Closure			32	
Sidewalk Closure			88, 89	
Bike Lane Closure			87	
Gravel Road Maintenance		30		
Crossroad and Confirmation Signaling			35	

See Low Volume Roads section for ADTs less than 400.

* This layout may be used for nighttime operations only if the flagging stations are occupied and illuminated with portable lights.

Two-Lane, Two-Way Roads

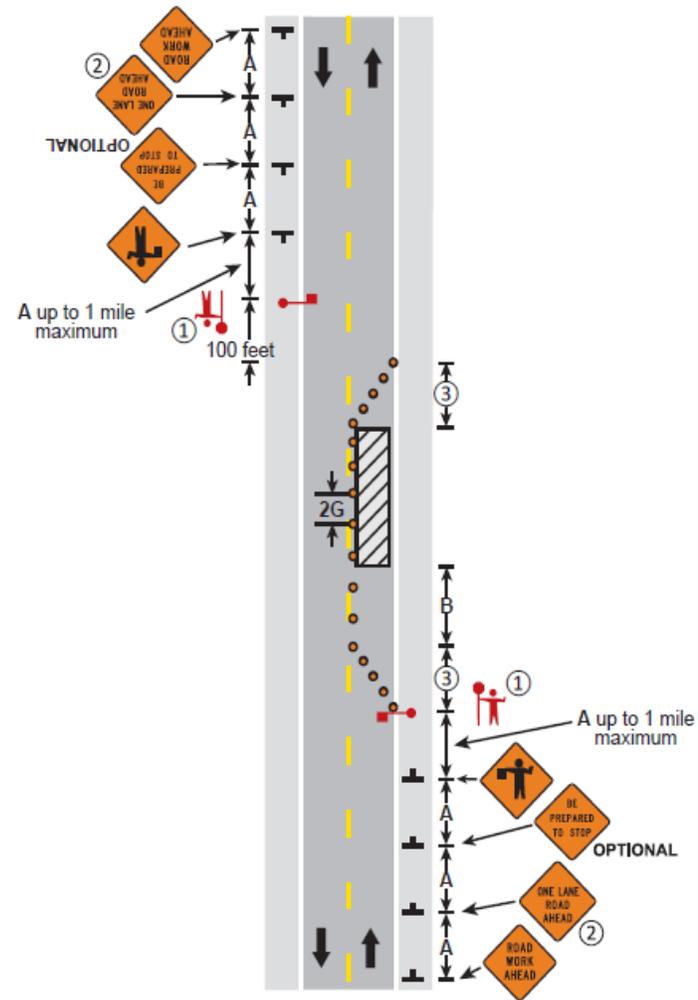
- To select the appropriate layout...
- Determine type of road
- Location of the work
- Duration of the work
- ADT

Example: Repair storm drain in the northbound lane, narrow two lane road, 5 hour duration

Volume of 14,000 ADT

NOTES:

- ① The approach sight distance to the flagger shall be at least the Decision Sight Distance (**D**).
- ② The ONE LANE ROAD AHEAD sign may be omitted when the posted speed limit is 40 mph or less.
- ③ The two-way taper should be 50 feet in length using 5 equally spaced channelizing devices.
4. If anticipating operational problems, the use of a Pilot Car (see Layout 18) may improve operations and safety.



LANE CLOSURE, TWO FLAGGERS
TWO-LANE, TWO-WAY ROAD

3 DAYS or LESS

LAYOUT 16

Roadway Designations

- Two-Way, Continuous Left Turn Lane

A roadway with a center lane between opposing lanes of traffic that allows traffic from either direction to make left turns off the roadway.



Two-Way, Continuous Left-Turn Lane

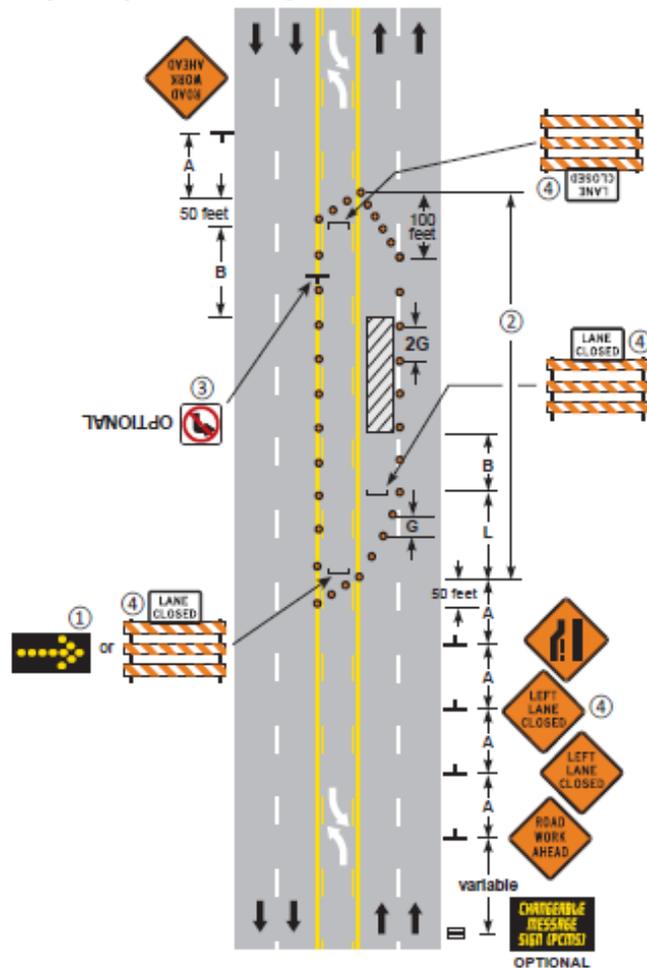
- To select the appropriate layout...
- Type of road
- Location of work and number of lanes
- Duration

Example: Full-depth asphalt repair in left lane on a 5 lane section of roadway. Operation will take about 3 hours

TWO-WAY, CONTINUOUS LEFT TURN LANE				
Lane Closures	MOBILE 15 Minutes or Less	SHORT DURATION 1 Hour or Less	SHORT TERM 12 Hours or Less	INTERMEDIATE TERM 3 Days or Less
Through Lane Closure (3 Lane Section)	38			
Right Lane Closure (5 Lane Section)		41		42
Left Lane Closure (5 Lane Section)		41		39
Two-Way, Continuous Turn Lane		36		37
Double Lane Closure (5 Lane Section)	40			

NOTES:

- ① The Flashing Arrow Board shall be used when the posted speed limit is 45 mph or greater.
- ② Parking and stopping may be prohibited along the work space and taper.
- ③ Left turning movements should be prohibited along the work space and taper. Reduce spacing of channelizing devices as needed in order to prevent turns. No Left Turn signs may be used throughout the work space and taper as appropriate.
- ④ The LANE CLOSED sign and/or LEFT LANE CLOSED sign may be omitted when the posted speed limit is 40 mph or less.



**LEFT LANE CLOSURE - 5 Lane Section
TWO-WAY CONTINUOUS LEFT TURN LANE**

3 DAYS or LESS

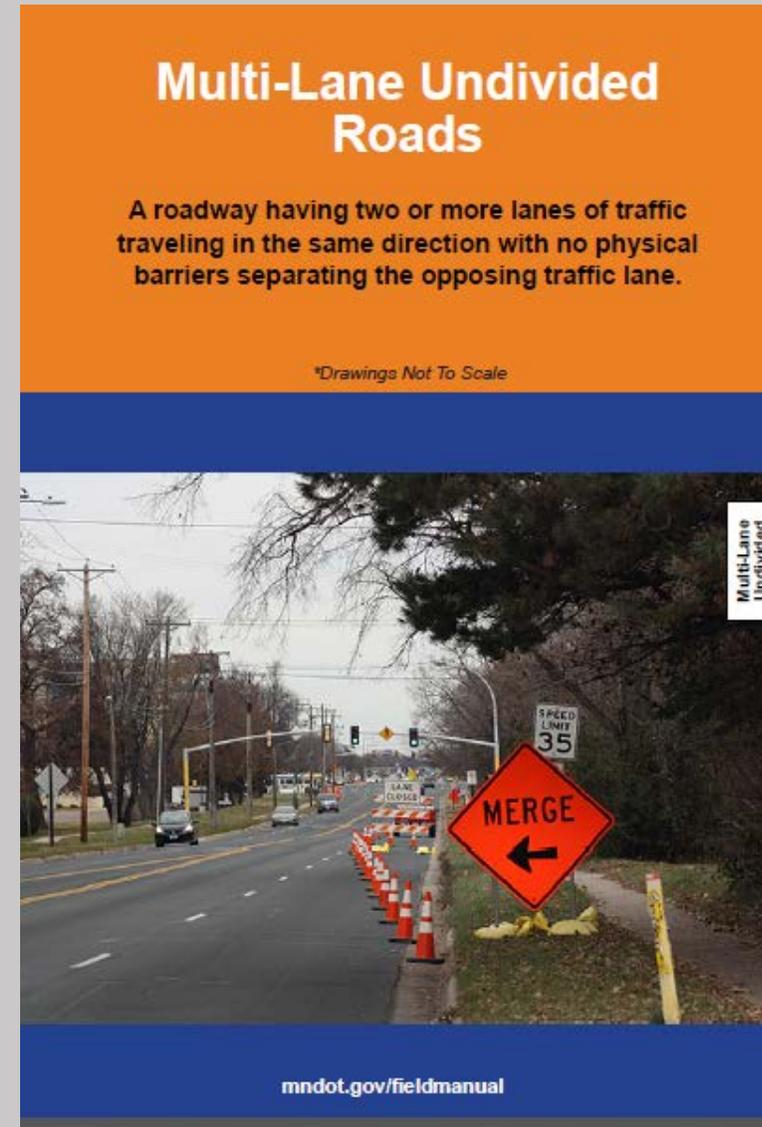
6K-39

LAYOUT 39

Roadway Designations

- Multi-Lane Undivided

A roadway having two or more lanes of traffic traveling in the same direction with no physical barriers separating the opposing traffic lane.



Multi-Lane Undivided

- To select the appropriate layout...
- Type of road
- Location of the work
- Duration

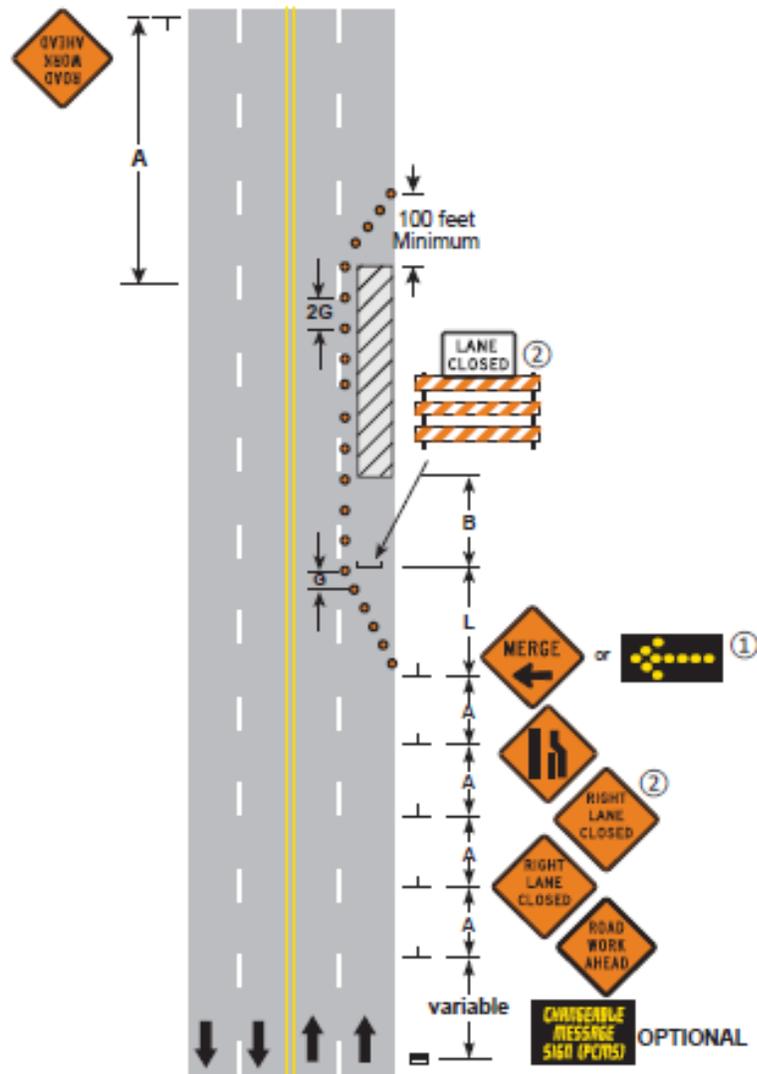
Example: Patching scattered potholes in the right lane, only stopping temporarily to throw a shovel of cold mix into the holes. Posted 30mph, 16,000 ADT

MULTI-LANE UNDIVIDED ROADS				
	MOBILE 15 Minutes or Less	SHORT DURATION 1 Hour or Less	SHORT TERM 12 Hours or Less	INTERMEDIATE TERM 3 Days or Less
Work Vehicle Parked on Shoulder	6		8	
Work on Shoulder	9		8	
Work off Shoulder	8			
Work off Roadway	10			
Shoulder or Parking Lane Closure	8			
Partial Shoulder Closure for Trailer Mounted Devices	7			
Lane Closures				
Mobile/Short Duration		41		
Near Intersection	63	33, 34, 45, 46, 47		
Left Lane	43, 45			
Right Lane	42, 45			
Turn Lane	33, 34			
Double Lane	44, 47			
Temporary Road Closure (15 minute intervals)	48			
Temporary Road Closure	32			
Sidewalk Closure	88, 89			
Bike Lane Closure	87			
Crossroad and Confirmation Signing	35			

See Two-Way Left Turn Lane Section for layouts appropriate for Two-Way Continuous Left Turn Lanes.

NOTES:

- ① The Flashing Arrow Board shall be used where the posted speed limit is 45 mph or greater, and shall be placed on the shoulder. If there is no shoulder, or the shoulder is too narrow, place at the end of the taper in lieu of the Type III barricade assembly.
- ② The RIGHT LANE CLOSED sign and/or LANE CLOSED sign may be omitted when the posted speed limit is 40 mph or less.
3. If there is a shoulder, close the shoulder using a shoulder taper.



**RIGHT LANE CLOSURE
MULTI-LANE UNDIVIDED ROAD**

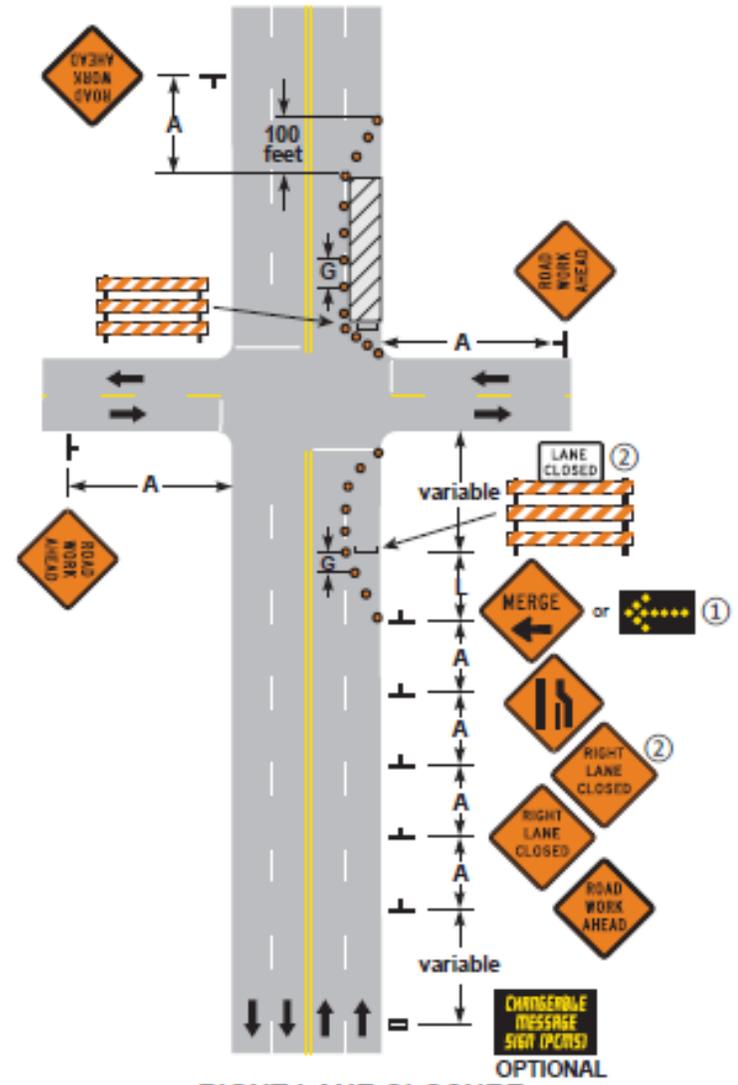
3 DAYS or LESS

6K-42

LAYOUT 42

NOTES:

- ① The Flashing Arrow Board shall be used where the posted speed limit is 45 mph or greater, and shall be placed on the shoulder. If there is no shoulder, or the shoulder is too narrow, place at the end of the taper in lieu of the Type III barricade assembly.
- ② The RIGHT LANE CLOSED and/or LANE CLOSED sign may be omitted when the posted speed limit is 40 mph or less.
3. If there is a shoulder, close the shoulder using a shoulder taper.



**RIGHT LANE CLOSURE
Work Space at Intersection
MULTI-LANE UNDIVIDED ROAD**

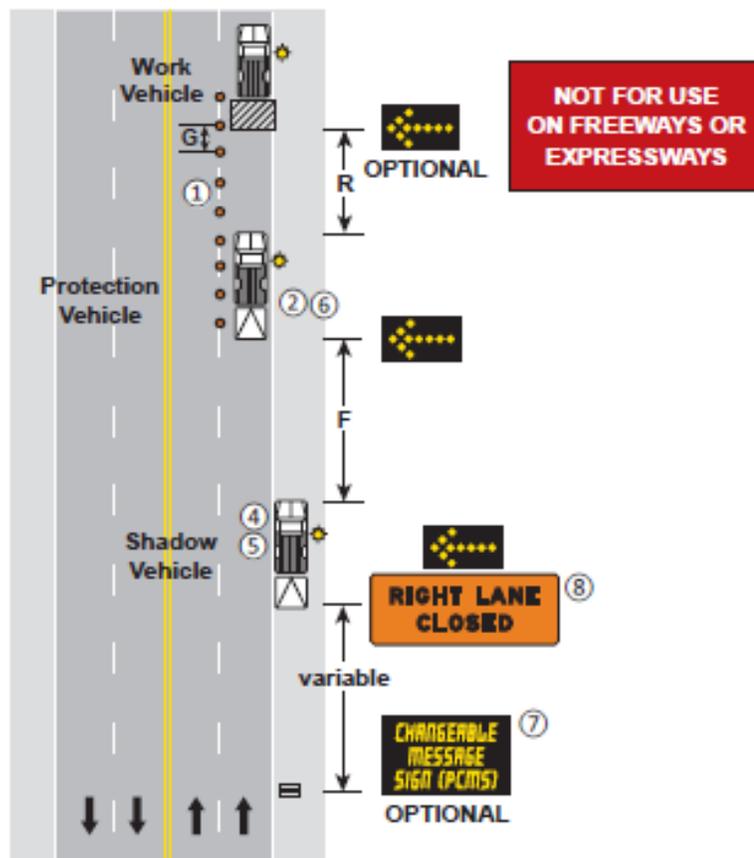
3 DAYS or LESS

6K-45

LAYOUT 45

NOTES:

- ① Channelizing devices may be omitted if the operation moves at least the Decision Sight Distance (D) every 15 minutes or less (mobile operation).
- ② May use additional Protection Vehicle (not shown on layout) to close shoulder in advance of Work Vehicle.
3. A Shadow Vehicle or Protection Vehicle operating totally or partially in a traffic lane should be equipped with a TMA.
- ④ The Shadow Vehicle may encroach into the traffic lane when the shoulder is too narrow to drive on.
- ⑤ The Shadow Vehicle may be omitted on roadways 40 mph or less.
- ⑥ If the Shadow Vehicle is not used and there is no PCMS, the Protection Vehicle must have a RIGHT LANE CLOSED sign.
- ⑦ The PCMS shall be used for nighttime operations.
- ⑧ When the PCMS is used, the RIGHT LANE CLOSED sign becomes optional.



MOBILE/SHORT DURATION LANE CLOSURE

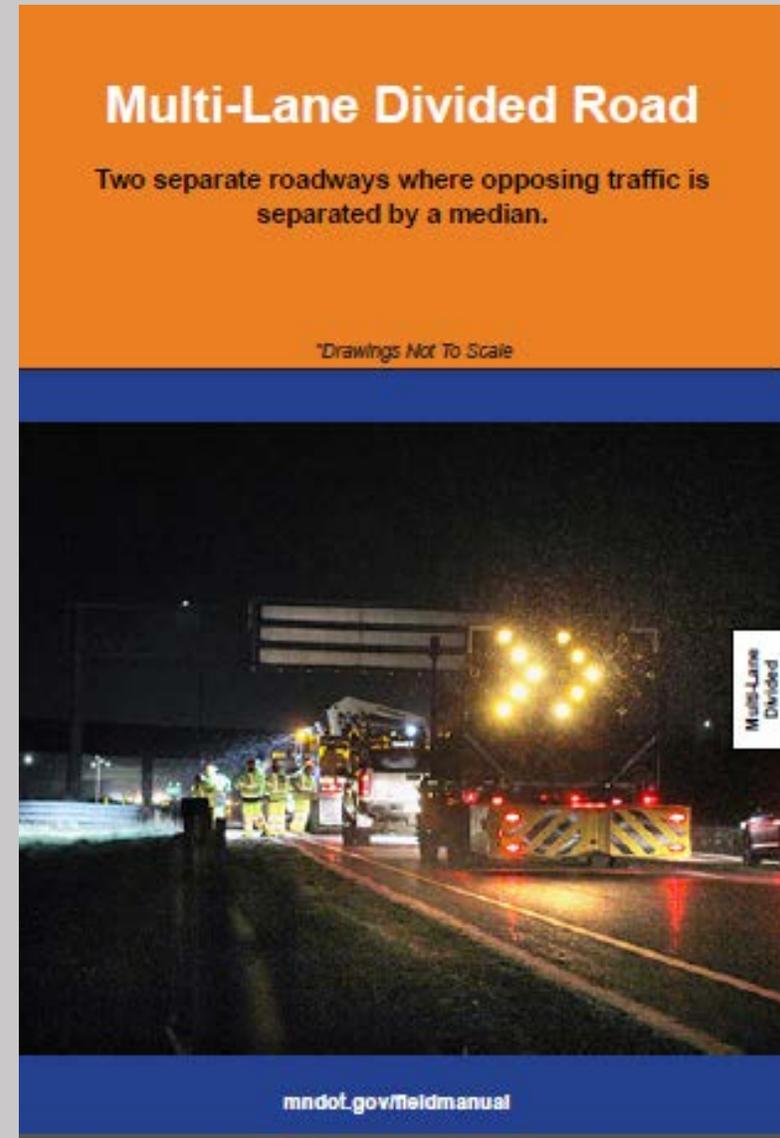
MULTI-LANE UNDIVIDED ROAD

1 HOUR or LESS

LAYOUT 41

Roadway Designations

- **Multi-Lane Divided Road**
Two separate roadways where opposing traffic is separated by a median.



Multi-Lane Divided Road

- To select the appropriate layout...
- Type of road
- Location of the work
- Duration

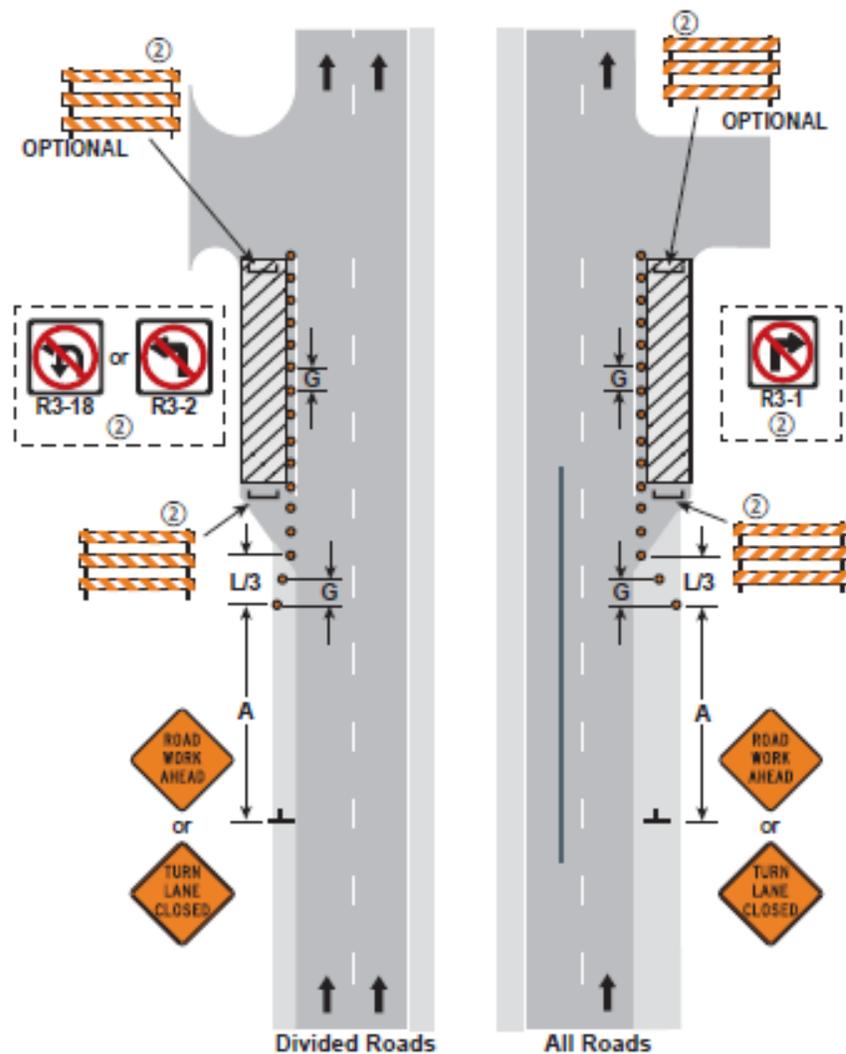
Example: Replacing concrete curb on island, left/inside turn lane, on a divided road

MULTI-LANE DIVIDED ROADS				
	MOBILE 15 Minutes or Less	SHORT DURATION 1 Hour or Less	SHORT TERM 12 Hours or Less	INTERMEDIATE TERM 3 Days or Less
Work Vehicle Parked on Shoulder	6		8	
Work on Shoulder	9		8	
Work off Shoulder	8			
Work off Roadway	10			
Shoulder or Parking Lane Closure	8			
Partial Shoulder Closure for Trailer Mounted Devices	7			
Lane Closures				
Mobile/Short Duration	49, 50, 51			
Near Intersection	63	33, 64, 65, 66, 75		
Center Lane	56 *			
Left/Right Lane	57, 58, 67, 65			
Turn Lane	33, 75			
Turn Lane on Dual Turn Lanes	75			
Double Lane	51	50, 60		
Extended Lane	61			
Lane Shift	62			
Near Ramp	67, 68, 69			
Partial Ramp Closure	70			
Ramp Closure	52, 53, 54	71, 72		
Closure at Top of Entrance Ramp	74			
Re-Surfacing Operation	66			
Temporary Road Closure (15 minute intervals)	55	73		
Temporary Road Closure	32			
Sidewalk Closure	88, 89			
Bike Lane Closure	87			
Crossroad and Confirmation Signing	35			

* NOTE: Posted Speed Limit 35 mph or less only.

NOTES:

1. Contact the appropriate road authority for signal timing modifications before beginning work at any signalized intersection.
2. Optional R3-1, R3-2, or R3-18 signs may be placed on sign stand or top of barricades on side closest to traffic. Signs are required if turns are prohibited.



Divided Roads

All Roads

TURN LANE CLOSURES

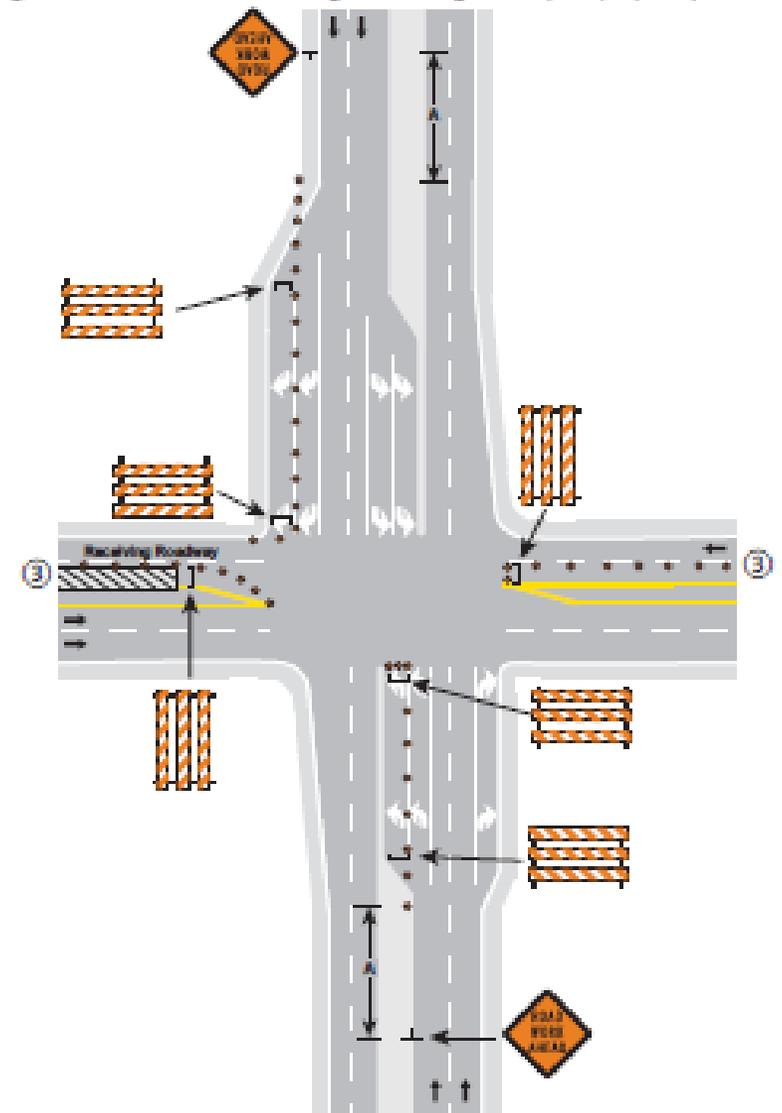
3 DAYS or LESS

6K-33

LAYOUT 33

NOTES:

1. Contact the road authority for signal timing modifications before beginning work at or near any signalized intersection.
2. It is preferable to close the left-most dual left turn lane and the right-most dual right turn lane regardless of which lane is closed on the receiving roadway. Verify that turning movements can be completed.
3. For traffic control on receiving/intersecting roadway see proper layout.



CLOSING ONE TURN LANE ON DUAL TURN LANES

3 DAYS or LESS

Work on Intersecting Roadway

6K-75

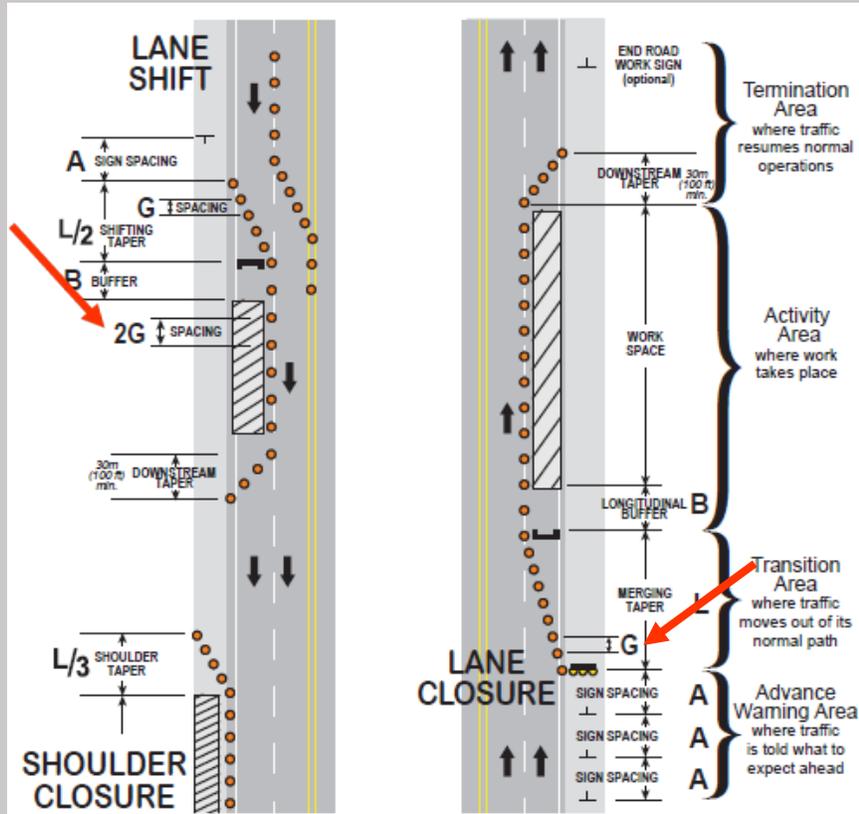
LAYOUT 75

Reading Charts

Temporary Traffic Control Distance Charts

Posted Speed Limit Prior to Work Starting (mph)	Advance Warning Sign Spacing (A) feet	Decision Sight Distance (D) feet	Taper Length (12 ft lane) (L) feet	Shifting Taper (12 ft lane) (L/2) feet	Typical Shoulder Taper (L/3) feet	Buffer Space (B) feet
0-30	100	550	200	100	75	200
35-40	325	700	325	175	125	305
45-50	600	900	600	300	200	425
55	750	1200	700	350	250	500
60-65	1000	1400	800	400	275	650
70-75	1200	1600	900	450	300	820

Posted Speed Limit Prior to Work Starting (mph)	Advance Warning Following Distance (F) feet	Roll Ahead Distance Charts			
		Recommended Spacing for Vehicles Weighing 9,900 to 22,000 lbs GVW (R) feet		Recommended Spacing for Vehicles Weighing Greater than 22,000 lbs GVW (R) feet	
		Stationary Operation	Moving Operation 15 MPH max	Stationary Operation	Moving Operation 15 MPH max
0-30	100 - 550	100	100	75	100
35-40	325 - 700	100	100	75	100
45-50	600 - 900	125	175	100	150
55	750 - 1200	125	175	100	150
60-65	1000 - 1400	175	225	150	175
70-75	1200 - 1600	175	225	150	175

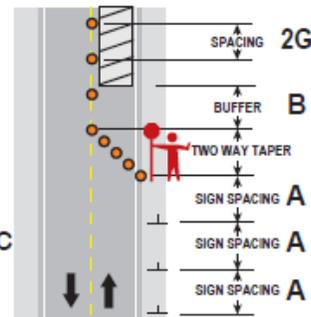


Activity Area where work takes place

Transition Area where traffic moves out of its normal path

Advance Warning Area where traffic is told what to expect ahead

2 WAY TRAFFIC

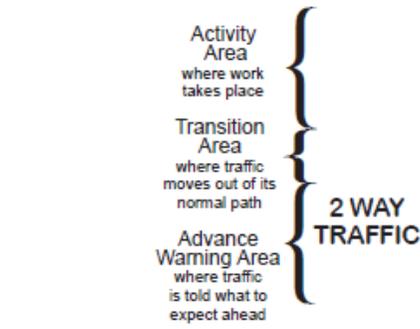
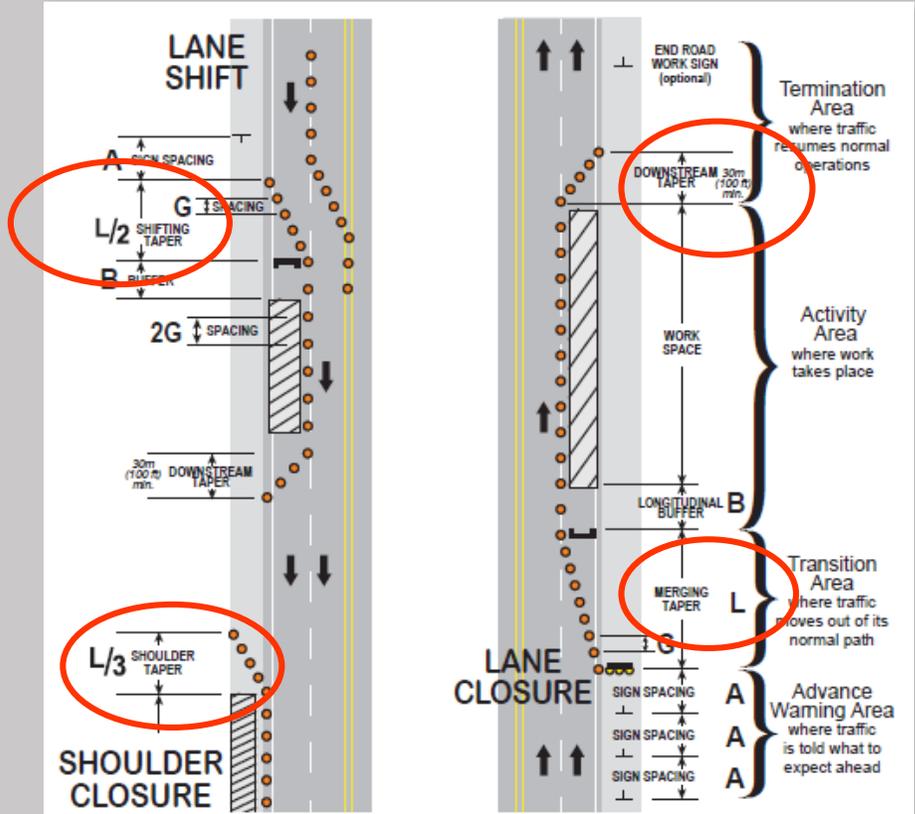


Components of a Stationary Temporary Traffic Control Zone

Figure 6K-9

Shadow and Protection Vehicle tires should be pointed straight ahead.

Types of Tapers



Components of a Stationary Temporary Traffic Control Zone
Figure 6K-9
6K-an

Temporary Traffic Control Distance Charts

Posted Speed Limit Prior to Work Starting (mph)	Advance Warning Sign Spacing (A) feet	Decision Sight Distance (D) feet	Taper Length (12 ft lane) (L) feet	Shifting Taper (12 ft lane) (L/2) feet	Typical Shoulder Taper (L/3) feet	Buffer Space (B) feet
0-30	G = 25 ft.	100	200	100	75	200
35-40		325	325	175	125	305
45-50	G = 50 ft.	600	600	300	200	425
55		750	700	350	250	500
60-65		1000	800	400	275	650
70-75		1200	900	450	300	820

Posted Speed Limit Prior to Work Starting (mph)	Advance Warning Following Distance (F) feet	Roll Ahead Distance Charts			
		Recommended Spacing for Vehicles Weighing 9,900 to 22,000 lbs GVW (R) feet		Recommended Spacing for Vehicles Weighing Greater than 22,000 lbs GVW (R) feet	
		Stationary Operation	Moving Operation 15 MPH max	Stationary Operation	Moving Operation 15 MPH max
0-30	G = 25 ft.	100 - 550	100	75	100
35-40		325 - 700	100	75	100
45-50	G = 50 ft.	600 - 900	125	100	150
55		750 - 1200	125	100	150
60-65		1000 - 1400	175	150	175
70-75		1200 - 1600	175	150	175

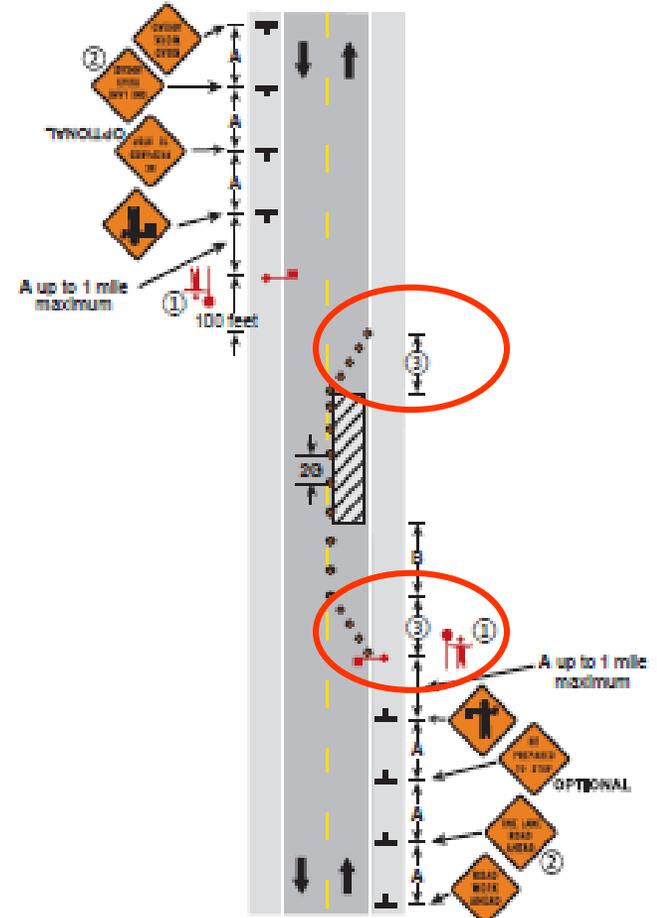
Shadow and Protection Vehicle tires should be pointed straight ahead.

Types of Tapers Continued

- Two-Way Taper
- Should be 50 feet using 5 equally spaced channelizers

NOTES:

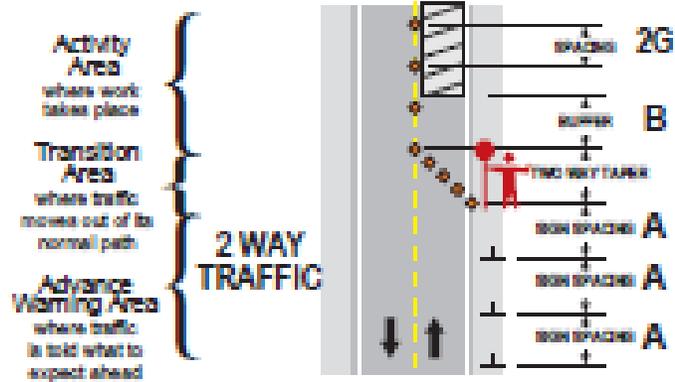
- ① The approach sight distance to the flagger shall be at least the Decision Sight Distance (D).
- ② The ONE LANE ROAD AHEAD sign may be omitted when the posted speed limit is 40 mph or less.
- ③ The two-way taper should be 50 feet in length using 5 equally spaced channelizing devices.
4. If anticipating operational problems, the use of a Pilot Car (see [Layout 18](#)) may improve operations and safety.



3 DAYS or LESS

6K-16

LAYOUT 16

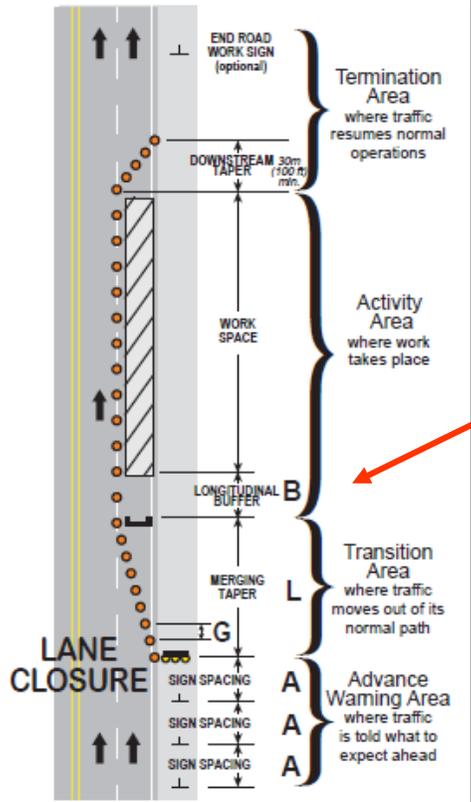
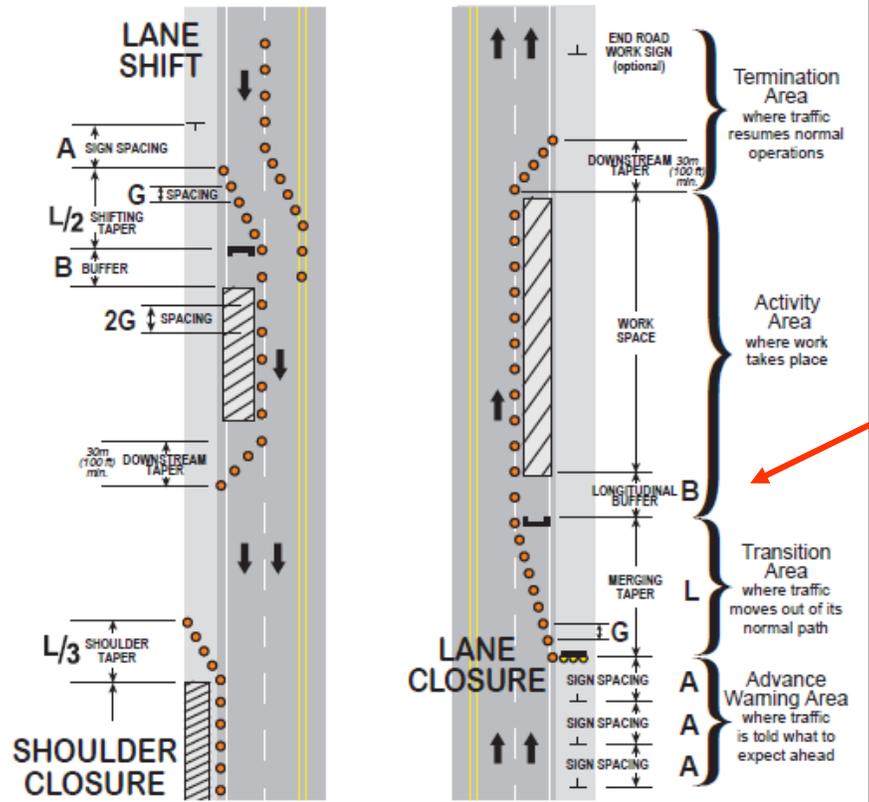


Components of a Stationary Temporary Traffic Control Zone

Figure 6K-9

6K-an

Reading the Charts

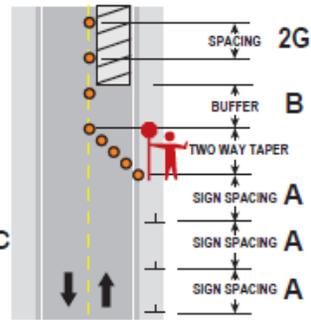


Activity Area where work takes place

Transition Area where traffic moves out of its normal path

Advance Warning Area where traffic is told what to expect ahead

2 WAY TRAFFIC



Components of a Stationary Temporary Traffic Control Zone
Figure 6K-9

6K-an

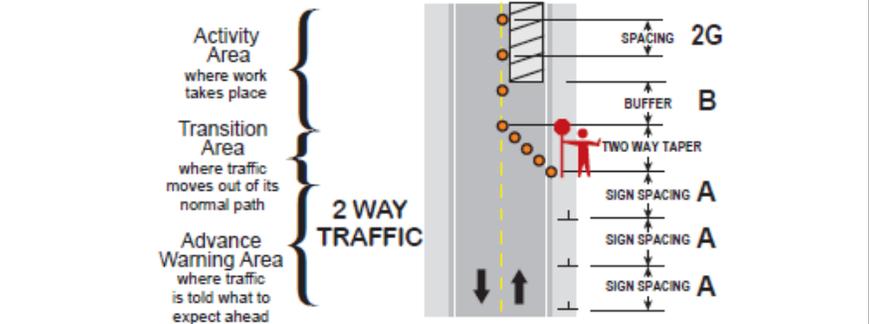
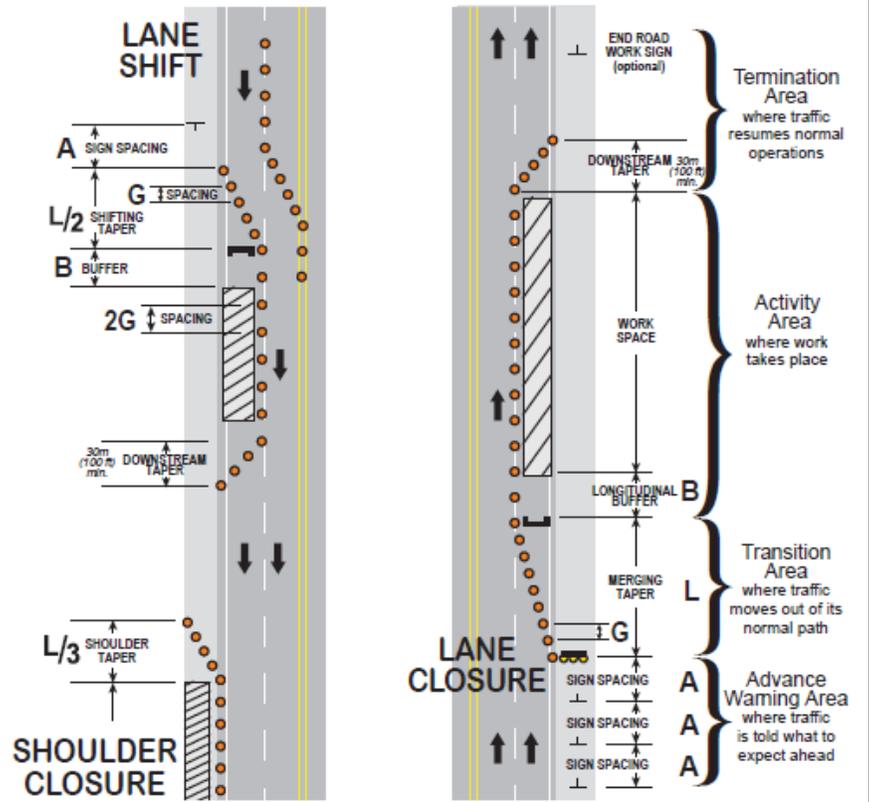
Temporary Traffic Control Distance Charts

Posted Speed Limit Prior to Work Starting (mph)	Advance Warning Sign Spacing (A) feet	Decision Sight Distance (D) feet	Taper Length (12 ft lane) (L) feet	Shifting Taper (12 ft lane) (L/2) feet	Typical Shoulder Taper (L/3) feet	Buffer Space (B) feet
0-30	G = 25 ft. 100	550	200	100	75	200
35-40	325	700	325	175	125	305
45-50	G = 50 ft. 600	900	600	300	200	425
55	750	1200	700	350	250	500
60-65	1000	1400	800	400	275	650
70-75	1200	1600	900	450	300	820

Posted Speed Limit Prior to Work Starting (mph)	Advance Warning Following Distance (F) feet	Roll Ahead Distance Charts			
		Recommended Spacing for Vehicles Weighing 9,900 to 22,000 lbs GVW (R) feet		Recommended Spacing for Vehicles Weighing Greater than 22,000 lbs GVW (R) feet	
		Stationary Operation	Moving Operation 15 MPH max	Stationary Operation	Moving Operation 15 MPH max
0-30	G = 25 ft. 100 - 550	100	100	75	100
35-40	325 - 700	100	100	75	100
45-50	G = 50 ft. 600 - 900	125	175	100	150
55	750 - 1200	125	175	100	150
60-65	1000 - 1400	175	225	150	175
70-75	1200 - 1600	175	225	150	175

Shadow and Protection Vehicle tires should be pointed straight ahead.

Reading the Charts



Components of a Stationary Temporary Traffic Control Zone
Figure 6K-9

6K-an

Temporary Traffic Control Distance Charts

Posted Speed Limit Prior to Work Starting (mph)	Advance Warning Sign Spacing (A) feet	Decision Sight Distance (D) feet	Taper Length (12 ft lane) (L) feet	Shifting Taper (12 ft lane) (L/2) feet	Typical Shoulder Taper (L/3) feet	Buffer Space (B) feet
0-30	G = 25 ft.	100	200	100	75	200
35-40		325	325	175	125	305
45-50	G = 50 ft.	600	600	300	200	425
55		750	700	350	250	500
60-65		1000	800	400	275	650
70-75		1200	900	450	300	820

Posted Speed Limit Prior to Work Starting (mph)	Advance Warning Following Distance (F) feet	Roll Ahead Distance Charts				
		Recommended Spacing for Vehicles Weighing 9,900 to 22,000 lbs GVW (R) feet		Recommended Spacing for Vehicles Weighing Greater than 22,000 lbs GVW (R) feet		
		Stationary Operation	Moving Operation 15 MPH max	Stationary Operation	Moving Operation 15 MPH max	
0-30	G = 25 ft.	100 - 550	100	100	75	100
35-40		325 - 700	100	100	75	100
45-50	G = 50 ft.	600 - 900	125	175	100	150
55		750 - 1200	125	175	100	150
60-65		1000 - 1400	175	225	150	175
70-75		1200 - 1600	175	225	150	175

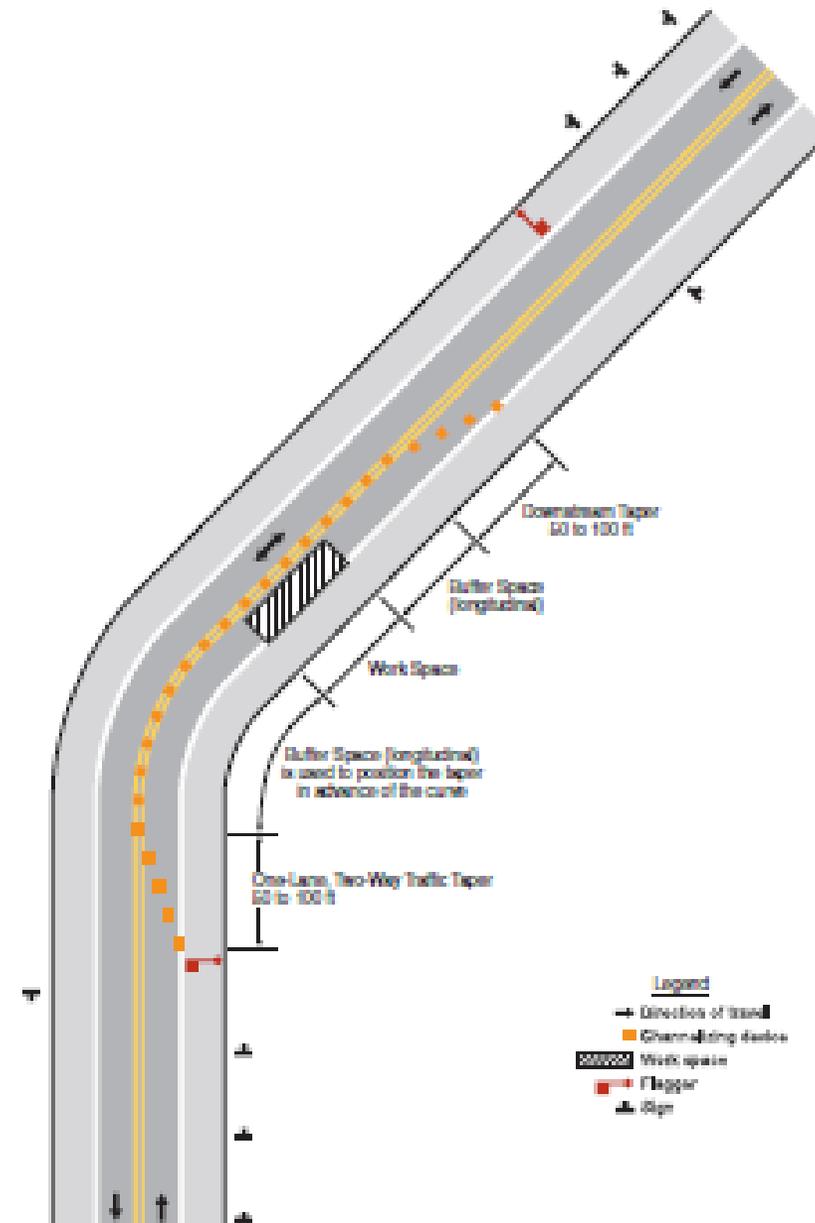
Shadow and Protection Vehicle tires should be pointed straight ahead.

Decision Sight Distance

- Decision Sight Distance (D) is used to determine the minimum distance required for the driver to see a flagger (as the flagger is located in a vulnerable location)
- It is also used to determine if an operation qualifies as a Mobile operation



Figure 6C-3. Example of a One-Lane, Two-Way Traffic Taper



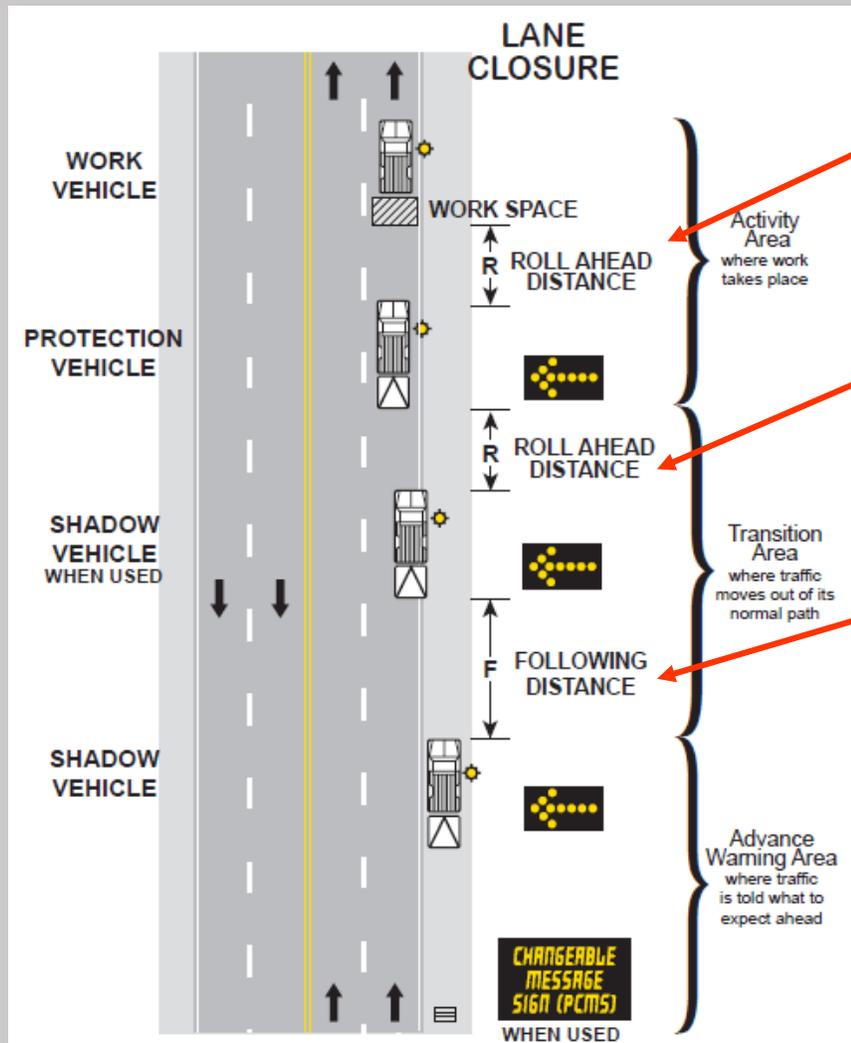
Am I visible from a great enough distance so that drivers will have time to stop?

Reading Charts

Temporary Traffic Control Distance Charts

Posted Speed Limit Prior to Work Starting (mph)	Advance Warning Sign Spacing (A) feet	Decision Sight Distance (D) feet	Taper Length (12 ft lane) (L) feet	Shifting Taper (12 ft lane) (L/2) feet	Typical Shoulder Taper (L/3) feet	Buffer Space (B) feet
0-30	G = 25 ft.	100	200	100	75	200
35-40		325	325	175	125	305
45-50	G = 50 ft.	600	600	300	200	425
55		750	700	350	250	500
60-65		1000	800	400	275	650
70-75		1200	900	450	300	820

Posted Speed Limit Prior to Work Starting (mph)	Advance Warning Following Distance (F) feet	Roll Ahead Distance Charts			
		Recommended Spacing for Vehicles Weighing 9,900 to 22,000 lbs GVW (R) feet		Recommended Spacing for Vehicles Weighing Greater than 22,000 lbs GVW (R) feet	
		Stationary Operation	Moving Operation 15 MPH max	Stationary Operation	Moving Operation 15 MPH max
0-30	G = 25 ft.	100 - 550	100	75	100
35-40		325 - 700	100	75	100
45-50	G = 50 ft.	600 - 900	125	100	150
55		750 - 1200	125	100	150
60-65		1000 - 1400	175	150	175
70-75		1200 - 1600	175	150	175



Components of a Mobile Temporary Traffic Control Zone

Figure 6K-10

6K-ao

Shadow and Protection Vehicle tires should be pointed straight ahead.