Multi-Lane Divided Road

Two separate roadways where opposing traffic is separated by a median

Multi-Lane Divided
Pages 91-124

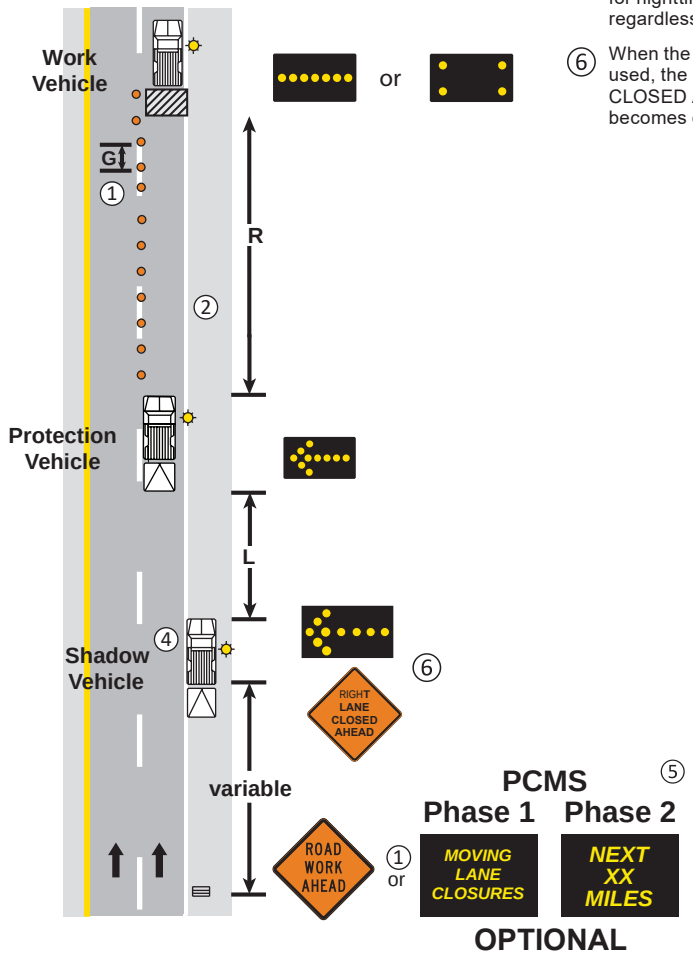
***Drawings Not To Scale**

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	4		71	
Work on Shoulder	7		71	
Work off Shoulder	6			
Work off Roadway	8			
Shoulder or Parking Lane Closure	6, 71			
Partial Shoulder Closure for Trailer Mounted Devices	5			
Lane Closures				
Mobile/Short Duration	45, 46, 47			
Near Intersection	58	59, 60, 61, 70		
Center Lane	51			
Left/Right Lane	52, 53			
Turn Lane	29, 30, 70			
Turn Lane on Dual Turn Lanes	70			
Double Lane	47		54, 55	
Extended Lane	56			
Lane Shift	57			
Near Ramp	62, 63, 64, 65			
Partial Ramp Closure	66			
Ramp Closure	48, 49, 50		67, 68	
Closure at Top of Entrance Ramp	69			
Re-Surfacing Operation	61			
Temporary Road Closure	28			
Sidewalk Closure	85, 86			
Crossroad and Confirmation Signing	31			

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

NOTES:

1. Channelizing devices and Advance Warning Sign (PCMS or ROAD WORK AHEAD) 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. Any Shadow Vehicle and Protection Vehicle operating totally or partially in a traffic lane shall be equipped with a TMA.
4. Shadow Vehicle 1 may encroach into the traffic lane when the shoulder is too narrow to drive on.
5. The PCMS shall be used for nighttime operations regardless of duration.
6. When the PCMS is used, the RIGHT LANE CLOSED AHEAD sign becomes optional.

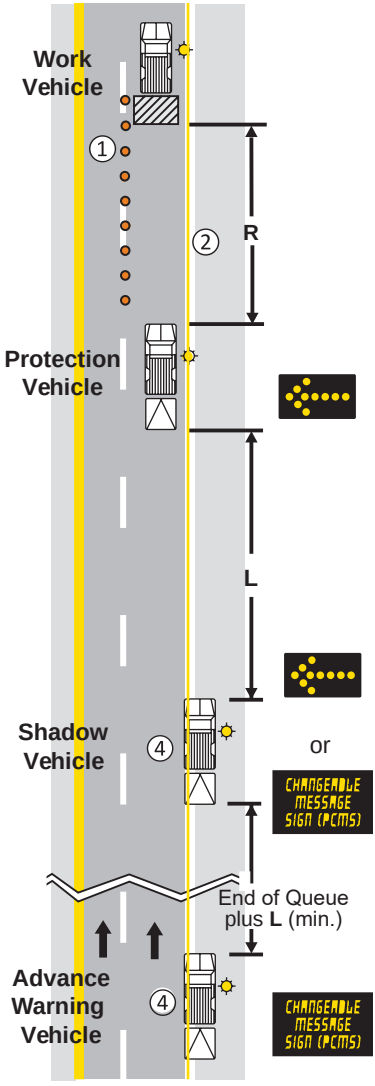


MOBILE/SHORT DURATION LANE CLOSURE
MULTI-LANE DIVIDED ROAD

1 HOUR or LESS **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. Any Shadow Vehicle, Protection Vehicle, and Advance Warning Vehicle operating totally or partially in a traffic lane shall be equipped with a TMA.
4. Shadow Vehicle and the Advance Warning Vehicle may encroach into the traffic lane when the shoulder is too narrow to drive on.



*Shadow Vehicle Operator is responsible for observing the traffic queue and changing the PCMS message appropriately for the conditions. Operators of the two PCMS shall have radio communication.

PCMS

Phase 1	Phase 2
MERGE HERE	TAKE TURNS

*** Queuing Observed**

Signage shall be at least Distance **F** before queue (area where traffic slows).

PCMS

Phase 1	Phase 2
STAY IN LANE	DO NOT MERGE

*** Queuing Observed**

MOBILE/SHORT DURATION LANE CLOSURE
ACTIVE ZIPPER MERGE
MULTI-LANE ROAD

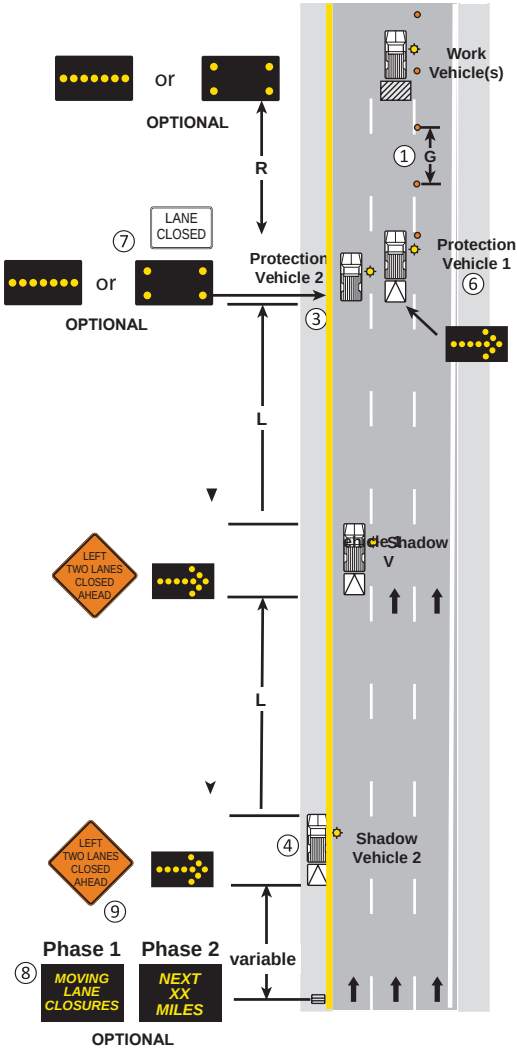
1 HOUR or LESS **LAYOUT 46**

NOTES:

(1) Channelizing devices may be omitted if the operation moves at least the Decision Sight Distance (D) every 15 minutes (mobile operation).

2. May reduce channelizer spacing as needed to prevent intrusions.

(3) May use additional Protection Vehicle(s) (not shown on layout) to close shoulder and/or adjacent lane in advance of the Work Vehicle(s).



(4) Shadow Vehicle may encroach into the traffic lane when the shoulder is too narrow to drive on. If so, a PCMS is required.

5. Any Shadow Vehicle operating totally or partially in a traffic lane shall be equipped with a TMA.

(6) Protection Vehicle 1 shall be equipped with a TMA.

(7) Flashing Arrow Board and/or TMA are optional on Protection Vehicle 2.

(8) The PCMS shall be used for nighttime operations.

(9) When the PCMS is used, the LEFT TWO LANES CLOSED AHEAD sign becomes optional.

10. Maximum spacing between Protection Vehicle 1 and closest Work Vehicle should not exceed 2R.

11. When channelizing devices are not used, the maximum distance between work vehicles is R.

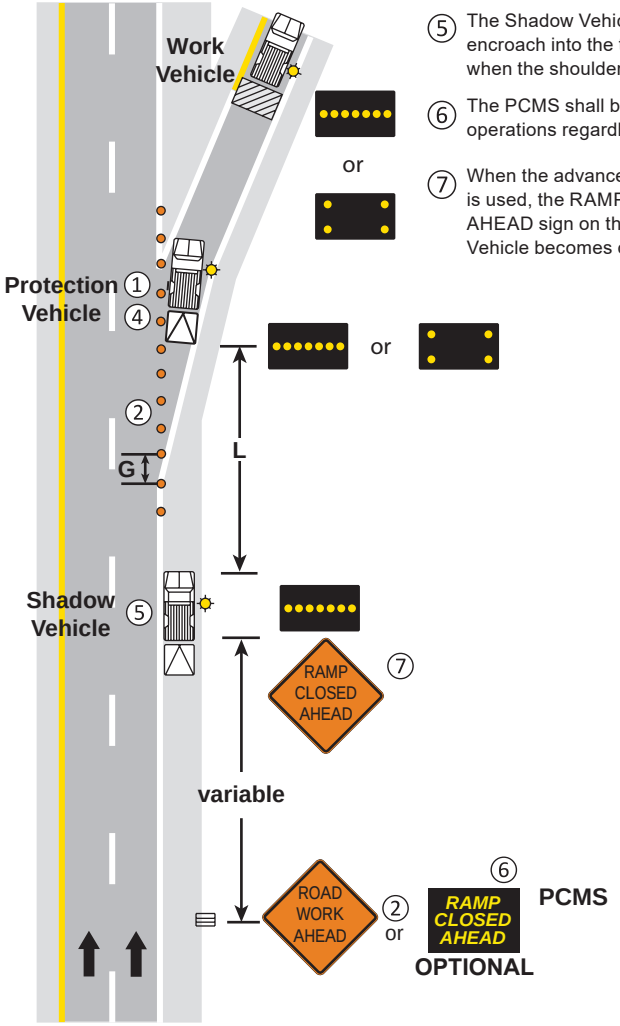
12. If closing the right 2 lanes, ramp closures should be considered.

MOBILE/SHORT DURATION MULTI-LANE CLOSURE
MULTI-LANE DIVIDED ROAD

1 HOUR or LESS **LAYOUT 47**

NOTES:

1. The Protection Vehicle should remain positioned near the ramp gore to prevent traffic from using the exit ramp. An optional second Protection Vehicle may be needed to block wider exit ramps. If a Protection Vehicle follows the Work Vehicle up the ramp, then it shall remain a minimum distance R from the work area.
2. Channelizing devices and Advance Warning Sign (PCMS or ROAD WORK AHEAD) may be omitted if the ramp will be opened within 15 minutes.
3. Any Shadow Vehicle and Protection Vehicle operating totally or partially in a traffic lane shall be equipped with a TMA.
4. The vehicle(s) blocking the exit ramp shall not encroach into lanes open to traffic.
5. The Shadow Vehicle should not encroach into the traffic lane except when the shoulder is too narrow.
6. The PCMS shall be used for nighttime operations regardless of duration.
7. When the advance warning PCMS is used, the RAMP CLOSED AHEAD sign on the Shadow Vehicle becomes optional.

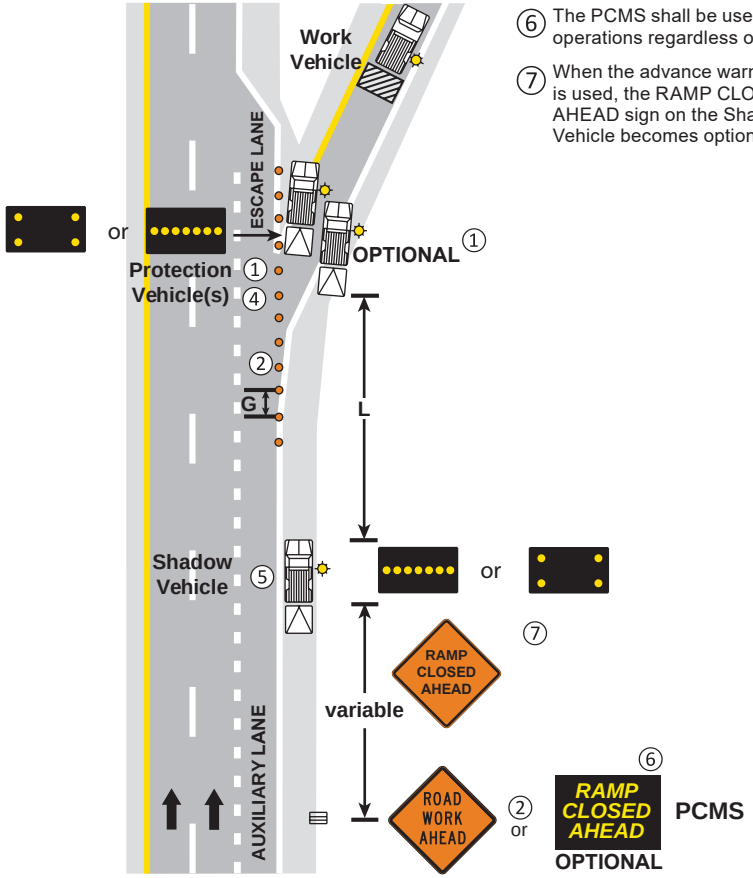


MOBILE/SHORT DURATION RAMP CLOSURE
MULTI-LANE DIVIDED ROAD

1 HOUR or LESS **LAYOUT 48**

NOTES:

1. The Protection Vehicle should remain positioned near the ramp gore to prevent traffic from using the exit ramp. An optional second Protection Vehicle may be needed to block wider exit ramps. If a Protection Vehicle follows the Work Vehicle up the ramp, then it shall remain a minimum distance R from the work area.
2. Channelizing devices and Advance Warning Sign (PCMS or ROAD WORK AHEAD) may be omitted if the ramp will be opened within 15 minutes.
3. Any Shadow Vehicle and Protection Vehicle operating totally or partially in a traffic lane shall be equipped with a TMA.
4. The vehicle(s) blocking the exit ramp shall not encroach into lanes open to traffic.
5. The Shadow Vehicle should not encroach into the traffic lane except when the shoulder is too narrow.
6. The PCMS shall be used for nighttime operations regardless of duration.
7. When the advance warning PCMS is used, the RAMP CLOSED AHEAD sign on the Shadow Vehicle becomes optional.

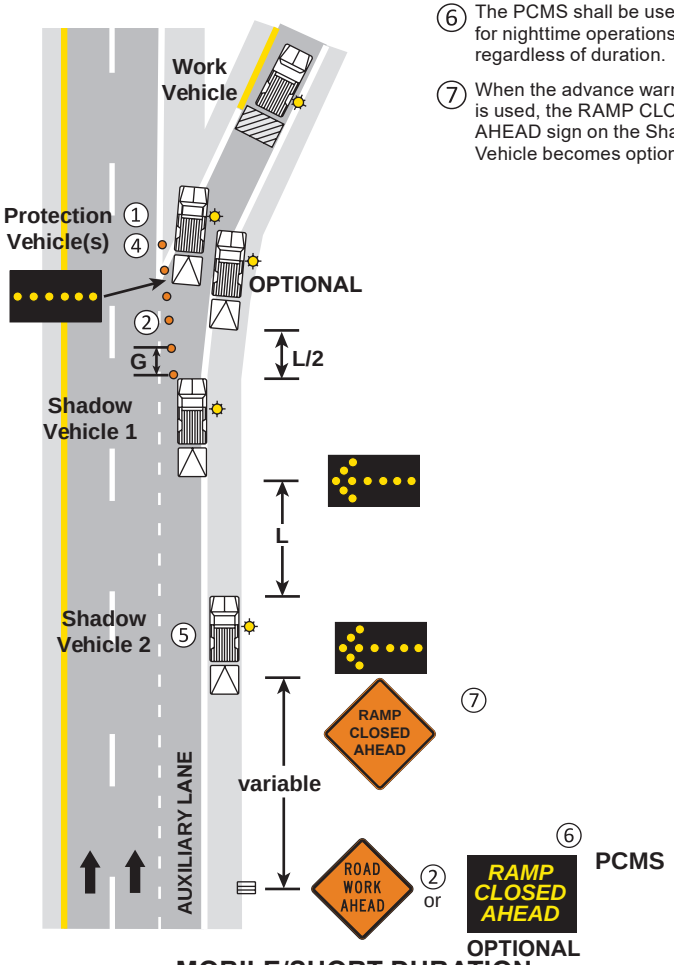


MOBILE/SHORT DURATION
RAMP CLOSURE WITH ESCAPE LANE
MULTI-LANE DIVIDED ROAD

1 HOUR or LESS **LAYOUT 49**

NOTES:

1. The Protection Vehicle should remain positioned near the ramp gore to prevent traffic from using the exit ramp. An optional second Protection Vehicle may be needed to block wider exit ramps. If a Protection Vehicle follows the Work Vehicle up the ramp, then it shall remain a minimum distance R from the work area.
2. Channelizing devices and Advance Warning Sign (PCMS or ROAD WORK AHEAD) may be omitted if the ramp will be opened within 15 minutes.
3. Any Shadow Vehicles and Protection Vehicles operating totally or partially in a traffic lane shall be equipped with a TMA.
4. The vehicle(s) blocking the exit ramp shall not encroach into lanes open to traffic.
5. Shadow Vehicle 2 should not encroach into the traffic lane except when the shoulder is too narrow.
6. The PCMS shall be used for nighttime operations regardless of duration.
7. When the advance warning PCMS is used, the RAMP CLOSED AHEAD sign on the Shadow Vehicle becomes optional.

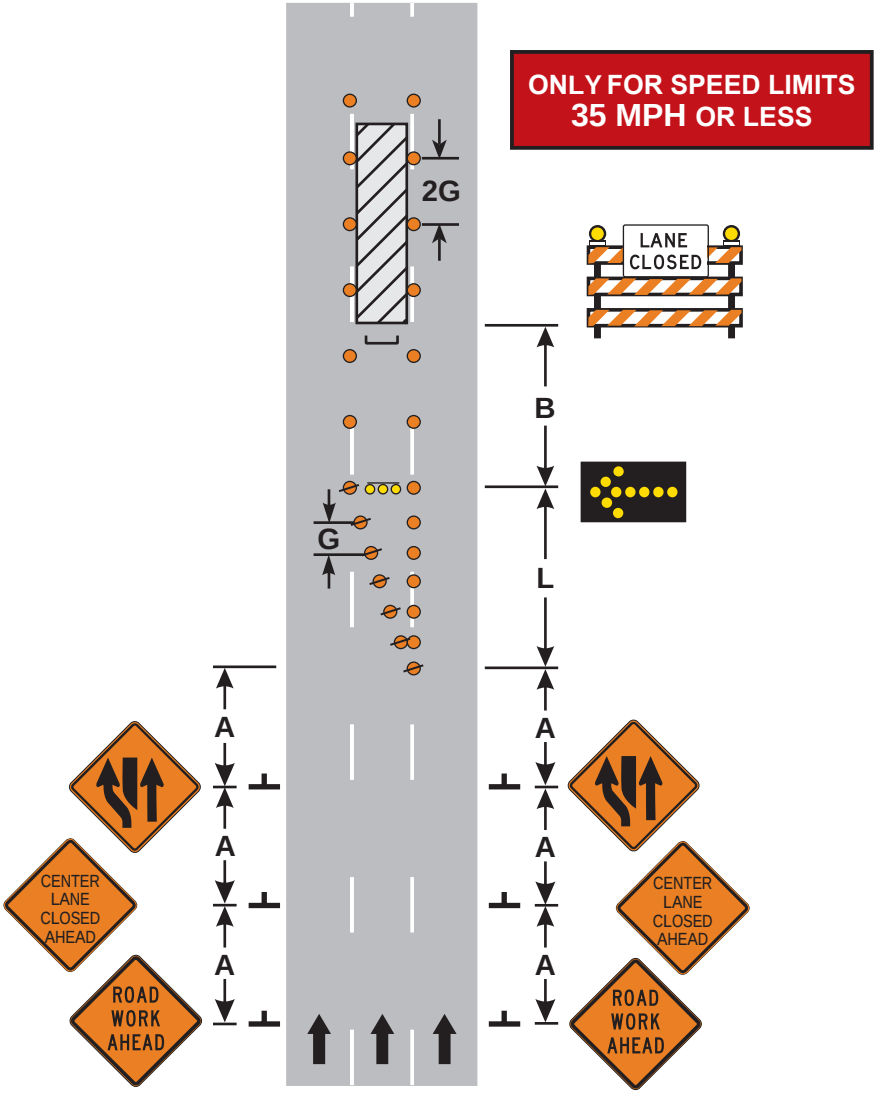


MOBILE/SHORT DURATION
RAMP CLOSURE WITH LANE DROP
MULTI-LANE DIVIDED ROAD

1 HOUR or LESS **LAYOUT 50**

NOTES:

1. If traffic volumes are low, a double lane closure is preferred.
2. Consider a double lane closure when workers are present.
3. END ROAD WORK sign should be placed 500 feet past work area.
4. When available width is less than 16 feet, a Max Width (W12-52) sign should be used with a posted width 1 foot less than available width.
5. If frequently accessing and egressing from the work area, a double lane closure is preferred.

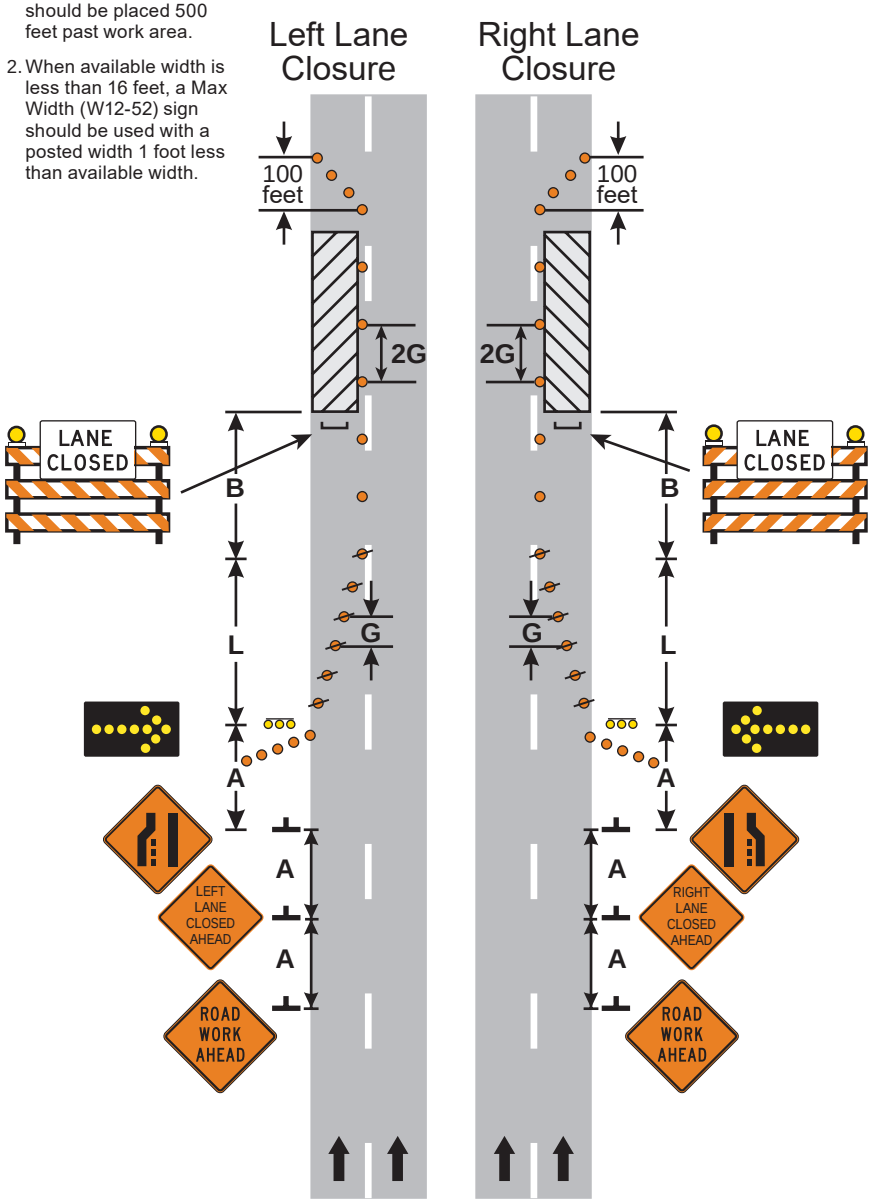


CENTER LANE CLOSURE
MULTI-LANE DIVIDED or ONE WAY ROAD

3 DAYS or LESS **LAYOUT 51**

NOTES

1. END ROAD WORK sign should be placed 500 feet past work area.
2. When available width is less than 16 feet, a Max Width (W12-52) sign should be used with a posted width 1 foot less than available width.

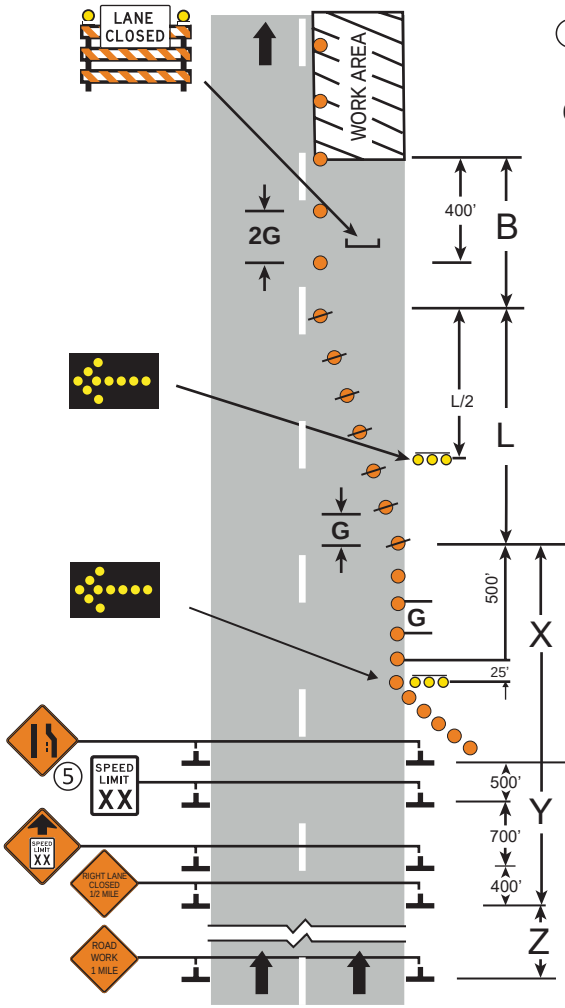


45 MPH AND LESS
LANE CLOSURE
MULTI-LANE DIVIDED ROAD

3 DAYS or LESS **LAYOUT 52**

NOTES

1. This lane closure is typical for closing a right lane, reverse for closing left lane.
2. All in place speed limit signs shall be covered when work zone speed limit is implemented.
3. Work zone speed limit assemblies shall be removed, covered, or modified to the existing posted speed limit when workers are not present.
4. A Speed Limit sign shall be located 1,500 feet beyond end of acceleration lane of each entrance ramp. Place a speed limit sign every 3 miles. Include a resume Speed Limit sign 200 feet minimum (500 feet desirable) beyond END OF ROAD WORK sign. Signs not shown in layout.



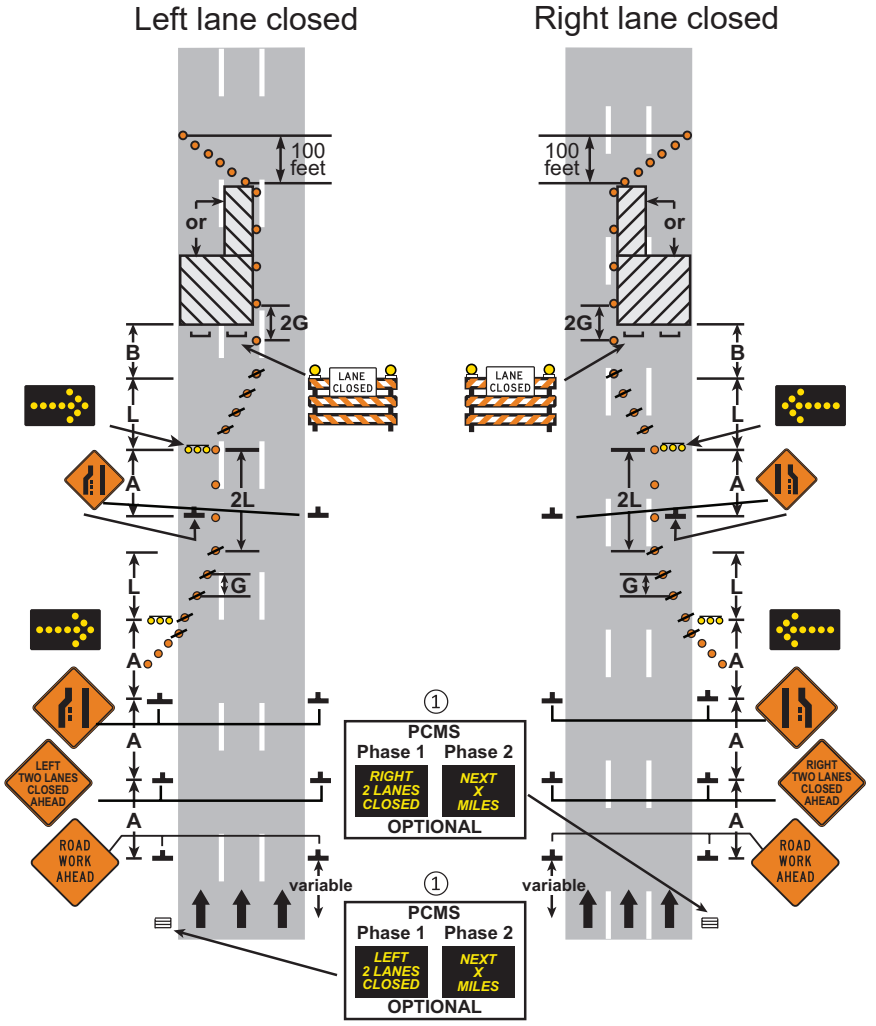
5. Only use on roadways 70 or 65 mph. Reduce 70 mph to 55 mph and 65 mph to 55 mph.
6. When available width is less than 16 feet, a Max Width (W12-52) sign should be used with a posted width 1 foot less than available width.

50 MPH AND ABOVE
LANE CLOSURE
MULTI-LANE DIVIDED ROAD

3 DAYS or LESS **LAYOUT 53**

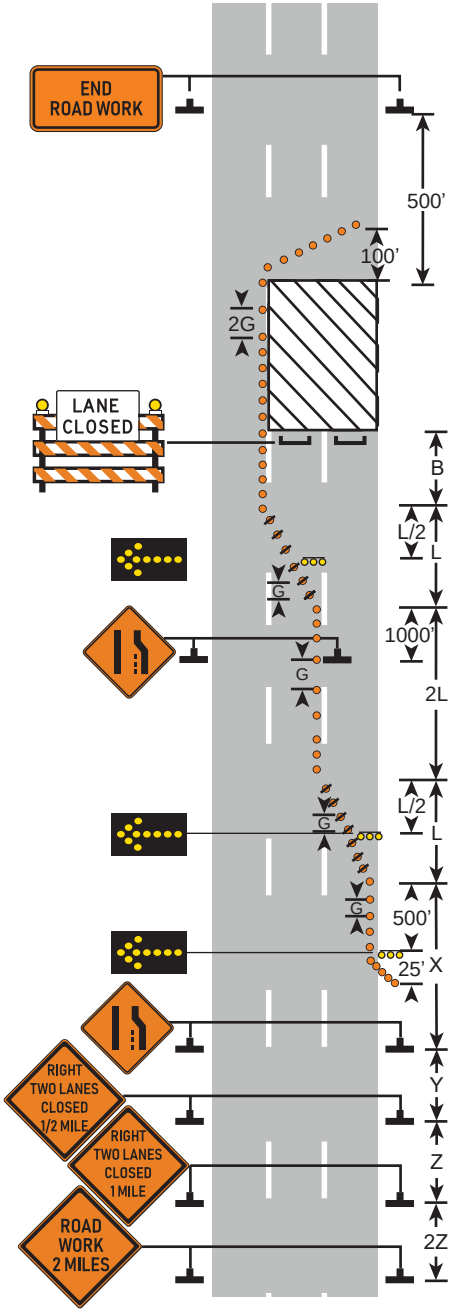
NOTES

1. Place PCMS in advance to allow drivers to direct or use alternate routes.
2. END ROAD WORK sign should be placed 500 feet past work area.
3. When available width is less than 16 feet, a Max Width (W12-52) sign should be used with a posted width 1 foot less than available width.



45 MPH OR LESS
MULTI-LANE DIVIDED ROAD

12 HOURS or LESS **LAYOUT 54**



NOTES:

1. When available width is less than 16 feet, a Max Width (W 12-52) sign should be used with a posted width 1 foot less than availabe width.
2. A speed reduction may be used. The reduce speed sign and regulatory sign will be placed in the Y dimension the same as Layout 53.

50 MPH AND GREATER TWO LANE CLOSURE MULTI-LANE DIVIDED ROAD

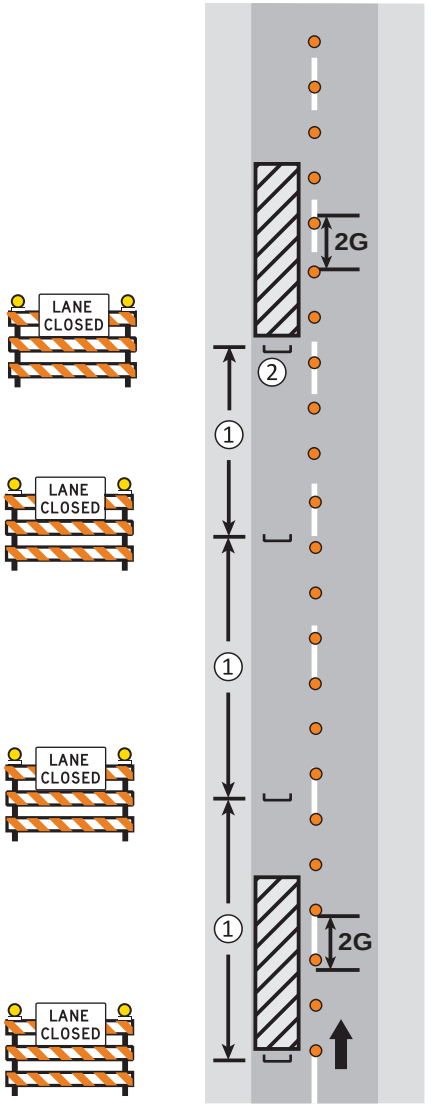
12 HOURS or LESS **LAYOUT 55**

NOTES:

① Install a Type III barricade at the beginning of each work space and at 1/4 mile intervals within the closed lane.

② The Type III barricade within the work space may be temporarily removed when it interferes with active work operations. The barricade must be replaced when active work operations end.

3. Type A Warning Lights (Flashing) shall be used on barricades if installed overnight.



LANE CLOSURE EXTENSION
MULTI-LANE DIVIDED or ONE WAY ROAD

3 DAYS or LESS **LAYOUT 56**

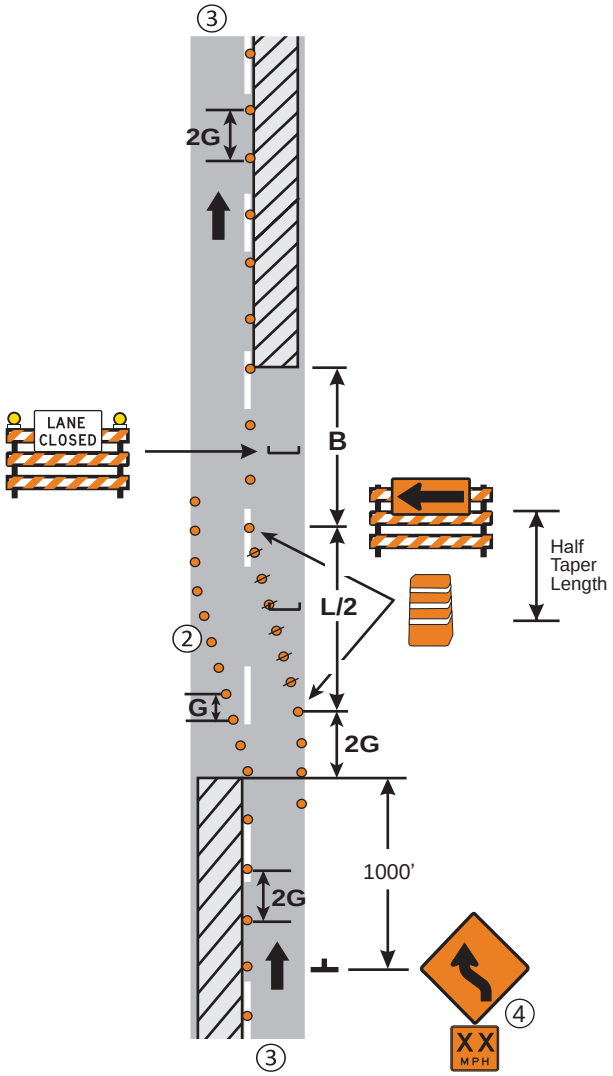
NOTES:

1. For one lane of traffic only.

(2) Continue the pattern and the spacing of devices for additional lateral shift if shifting from right lane to left lane on more than a 2-lane roadway.

(3) For advance signing, placement of traffic control devices, lane taper, see the appropriate stationary layout.

(4) Use Advisory Speed Sign if design speed is 10 MPH below posted speed.

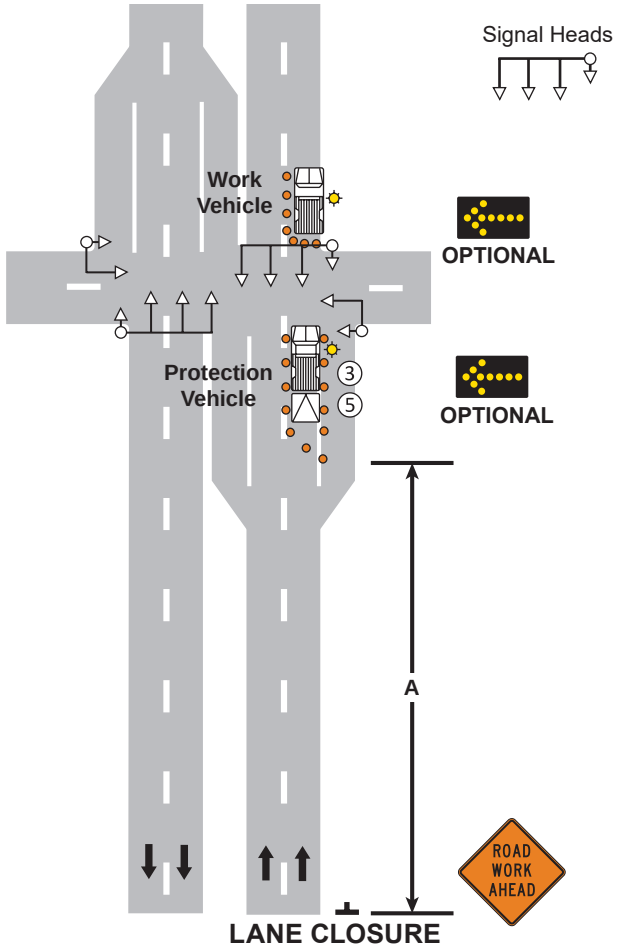


LANE SHIFT
MULTI-LANE DIVIDED or ONE WAY ROAD

3 DAYS or LESS **LAYOUT 57**

NOTES:

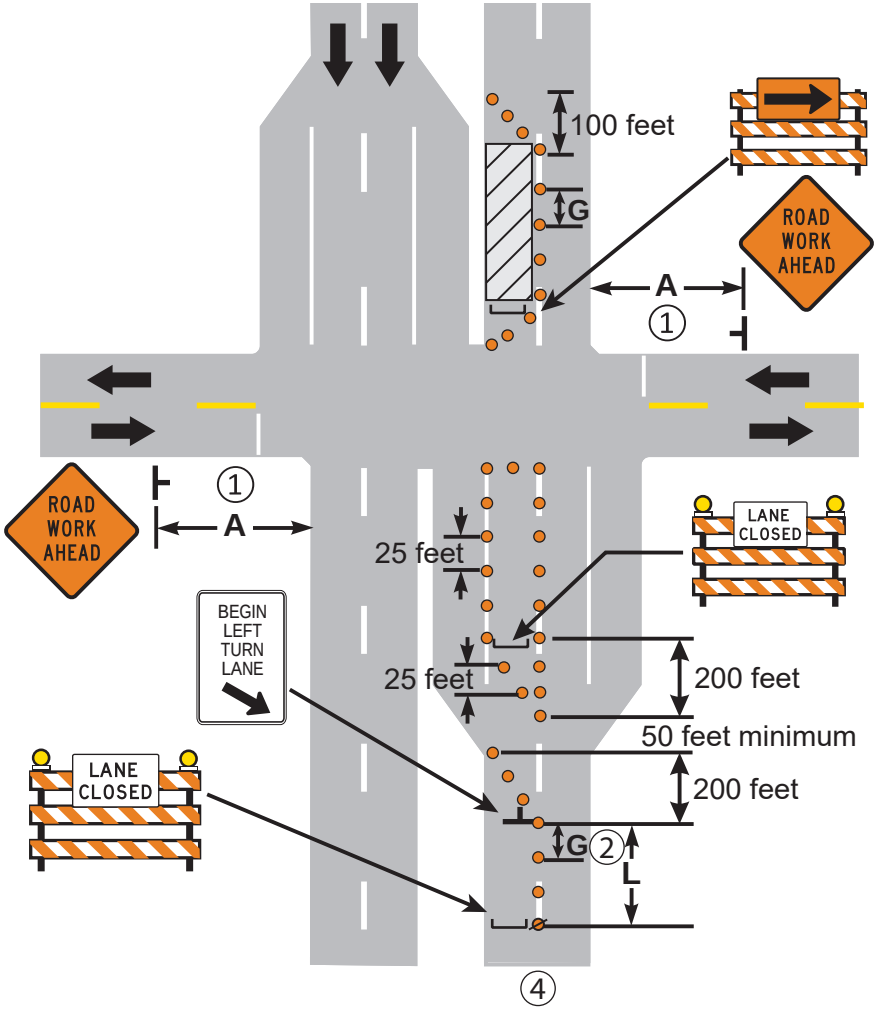
1. The operation shall not remain in one location for more than 15 minutes.
2. If the work space is not visible for at least the Decision Sight Distance (D), the appropriate stationary layout shall be used.
3. The traffic control signal should be put in an ALL-RED flash mode to facilitate traffic control at the work site. The Protection Vehicle may be omitted when signal is placed in ALL-RED flash mode. Channelizing devices may be omitted if a Protection Vehicle with a Flashing Arrow Board and TMA is used.
4. There should be little or no encroachment into the cross-street traffic path.
5. If signals are not placed in ALL-RED flash, the Protection Vehicle shall be equipped with a TMA and a Flashing Arrow Board.
6. The Work Vehicle shall be equipped with operating vehicle warning lights visible for 360 degrees.
7. The work vehicle and worker shall not be fully or partially suspended over the live lane of traffic.



LANE CLOSURE
AT FAR SIZE OF SIGNALIZED INTERSECTION
15 MINUTES or LESS **LAYOUT 58**

NOTES

1. Use the appropriate advance warning sign spacing for the speed on the cross road.
2. Space channelizing devices closer (typically 25 feet apart) 100 feet before turn lane starts.
3. END ROAD WORK sign should be placed 500 feet past work area.
4. For advanced signing, placement of traffic control devices, and lane closure, see the appropriate stationary layout.

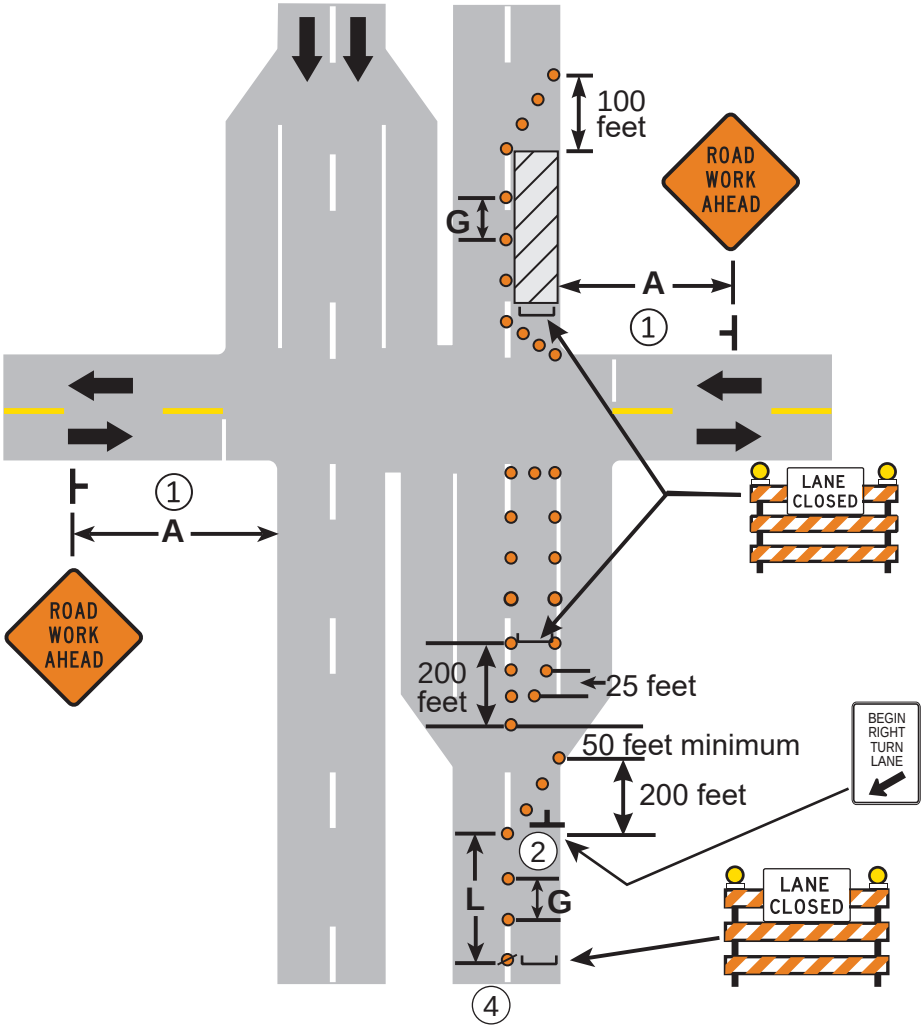


LEFT LANE CLOSURE
WORK SPACE BEYOND INTERSECTION
MULTI-LANE DIVIDED ROAD

3 DAYS or LESS **LAYOUT 59**

NOTES:

1. Use the appropriate advance warning sign spacing for the speed on the cross road.
2. Space channelizing devices closer (typically 25' apart) 100' before turn lane starts.
3. END ROAD WORK sign should be placed 500 feet past work area.
4. For advance signing, placement of traffic control devices, and lane closure, see the appropriate stationary layout.

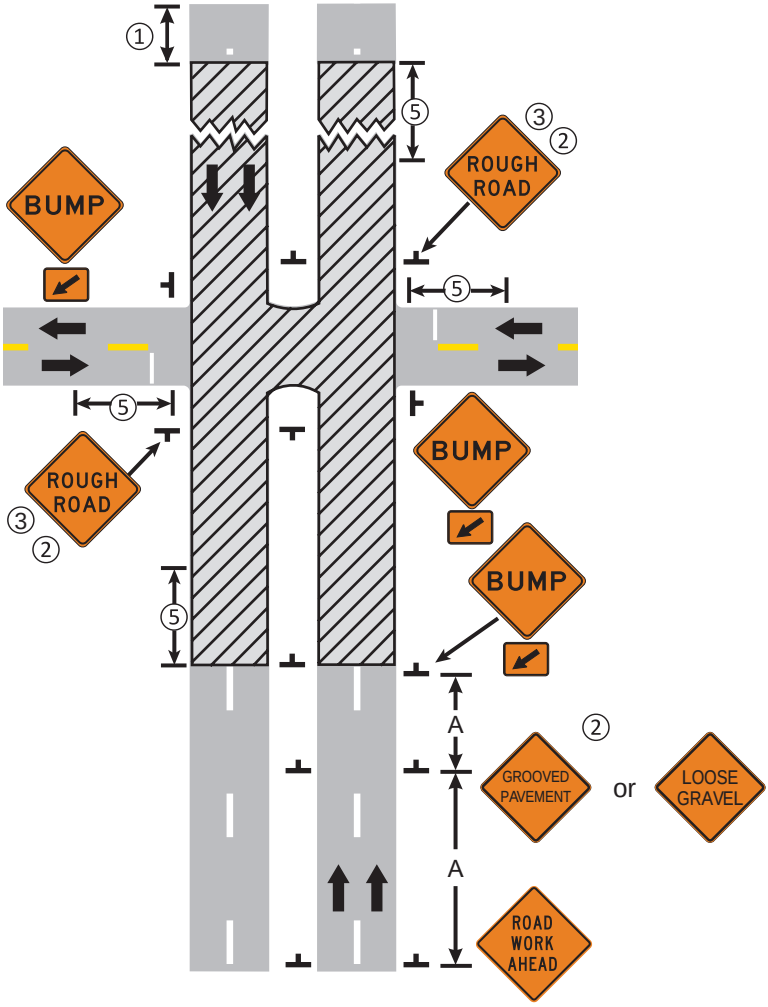


RIGHT LANE CLOSURE
WORK SPACE BEYOND INTERSECTION
MULTI-LANE DIVIDED ROAD

3 DAYS or LESS **LAYOUT 60**

NOTES

1. Use the same warning signs and spacings for the other approach to the milled roadway surface area.
2. Use the appropriate warning sign for the roadway condition. (e.g., GROOVED PAVEMENT, LOOSE GRAVEL.)
3. Refer to Layout 31 for confirmation signing.
4. Consider delineating raised structures (manhole covers, etc.)
5. Refer to Layout 80 for bump signing.
6. END ROAD WORK sign should be placed 500 feet past work area.

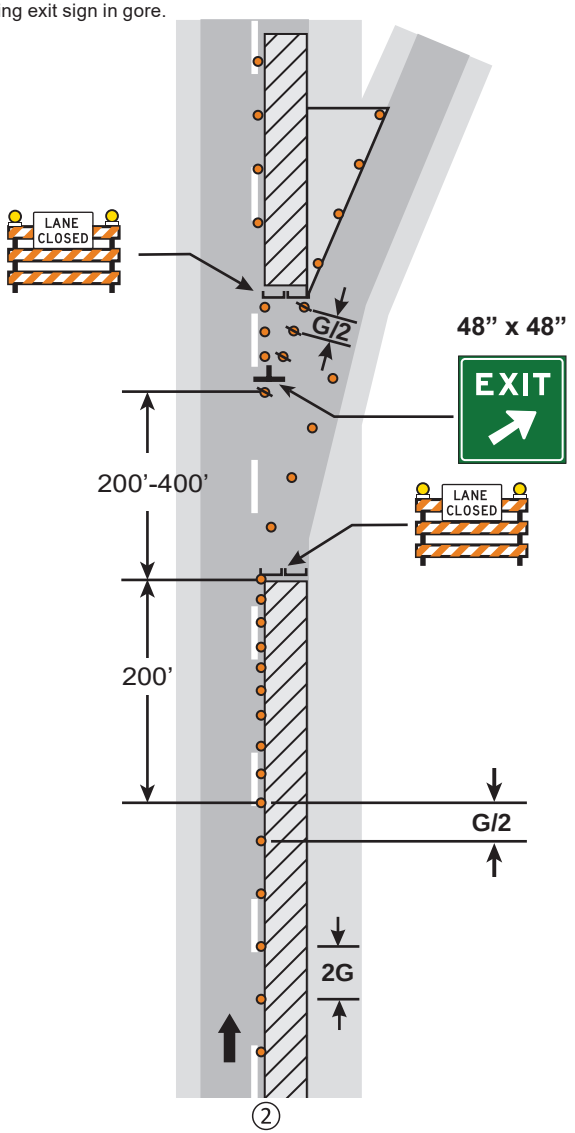


RESURFACING OPERATION
WORK SPACE BEFORE AND THROUGH INTERSECTION
MULTI-LANE DIVIDED ROAD

3 DAYS or LESS **LAYOUT 61**

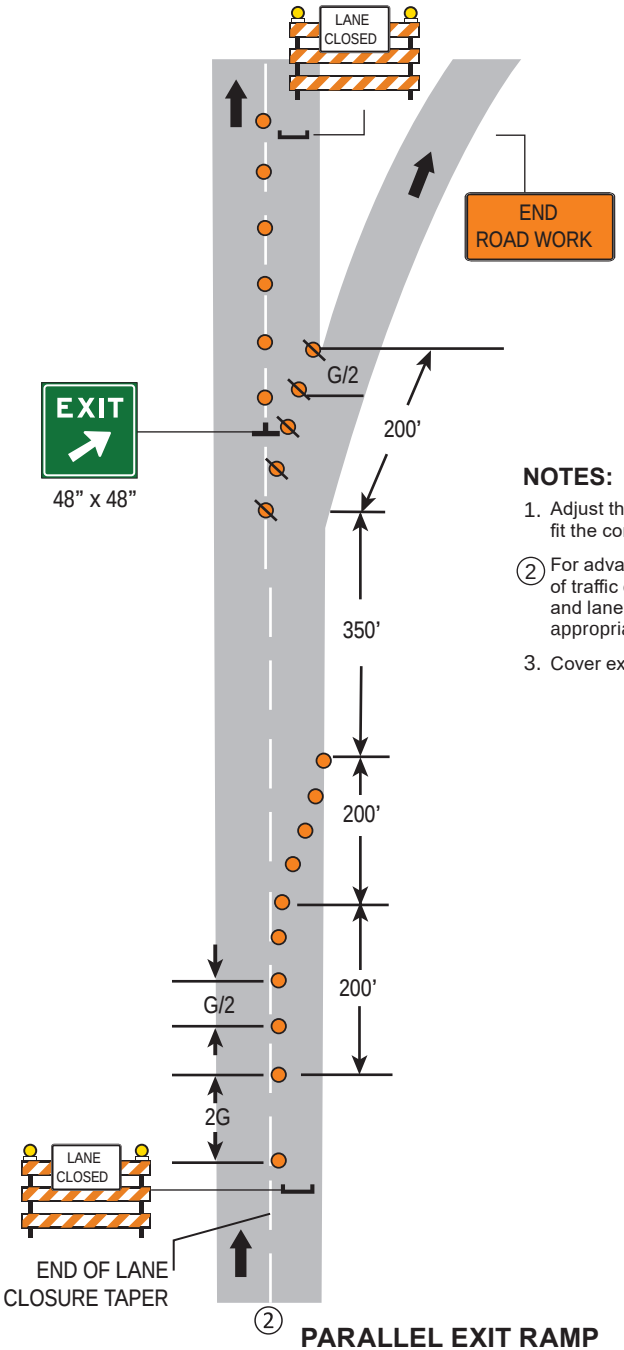
NOTES:

1. Adjust the ramp exit to fit the conditions.
2. For advance signing, placement of traffic control devices, and lane closure, see the appropriate stationary layout.
3. Use this layout when working in close proximity to the exit ramp. Otherwise use layout 63.
4. Cover existing exit sign in gore.



MAINLINE RIGHT LANE CLOSED
EXIT RAMP OPEN

3 DAYS or LESS **LAYOUT 62**



NOTES:

1. Adjust the ramp exit to fit the conditions.
2. For advance signing, placement of traffic control devices, and lane closure, see the appropriate stationary layout.
3. Cover existing exit sign in gore.

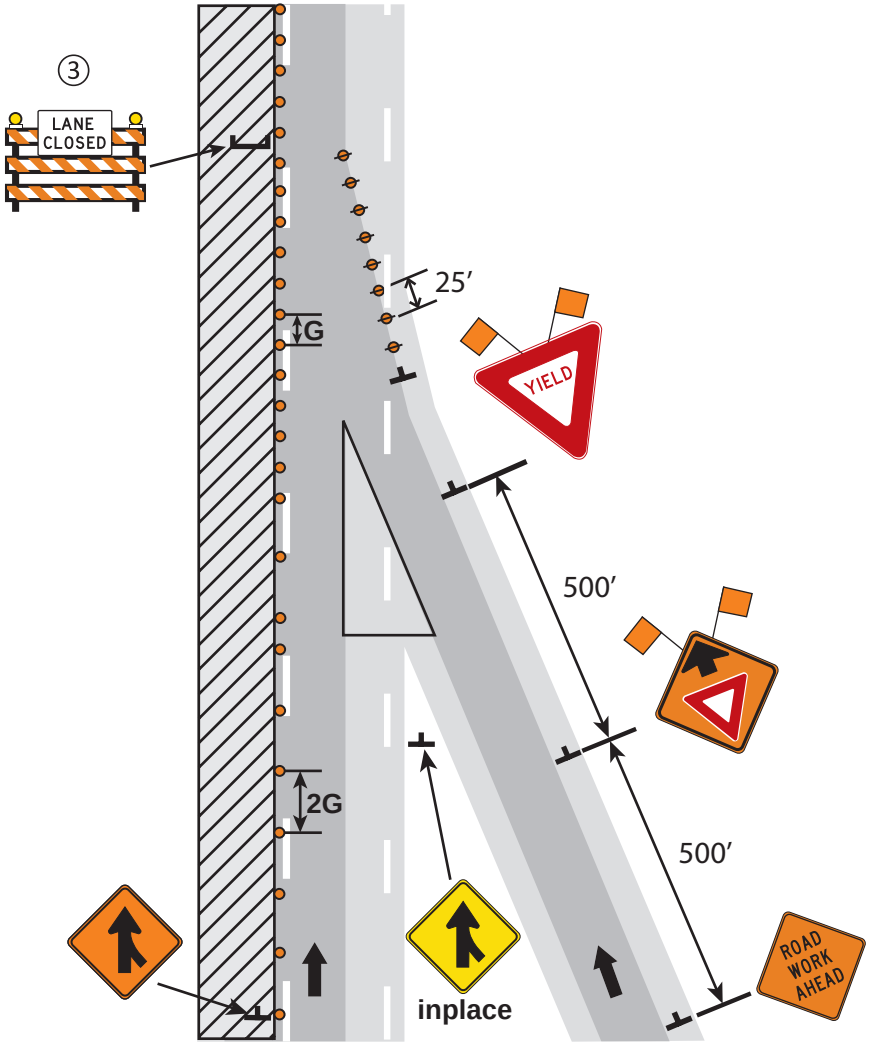
PARALLEL EXIT RAMP

3 DAYS or LESS **LAYOUT 63**

NOTES:

1. YIELD and Yield Ahead signs may be added when geometry and traffic conditions do not allow for normal merging behavior, (see Layout 65). Place Yield Sign to provide adequate sight and acceleration distance.
2. The advance warning sign spacing is dependent on the ramp length and the location of in-place signing. The spacing should be as long as is practical.

(3) Place the Type III Barrier approximately opposite the end of the ramp taper.



MAINLINE LEFT LANE CLOSED
ENTRANCE RAMP OPEN

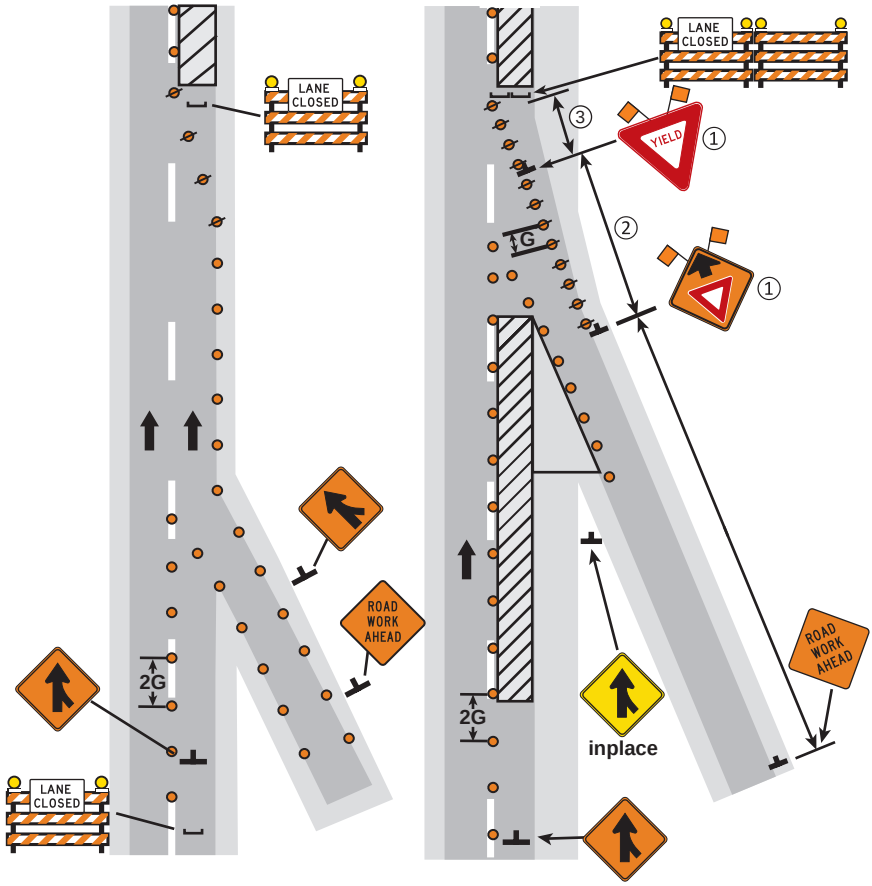
3 DAYS or LESS **LAYOUT 64**

NOTES:

(1) Adjust the ramp entrance to fit the conditions to allow a ramp acceleration lane if possible. YIELD and Yield Ahead signs may be omitted when geometry and traffic conditions allow for normal merging behavior.

(2) The advance warning sign spacing is dependent on the ramp length and the location of in-place signing. The spacing should be as long as is practical.

(3) Provide adequate acceleration distance based on speed and ADT (typically 600 feet). Consult Regional Work Zone Engineer if reduced length is needed.

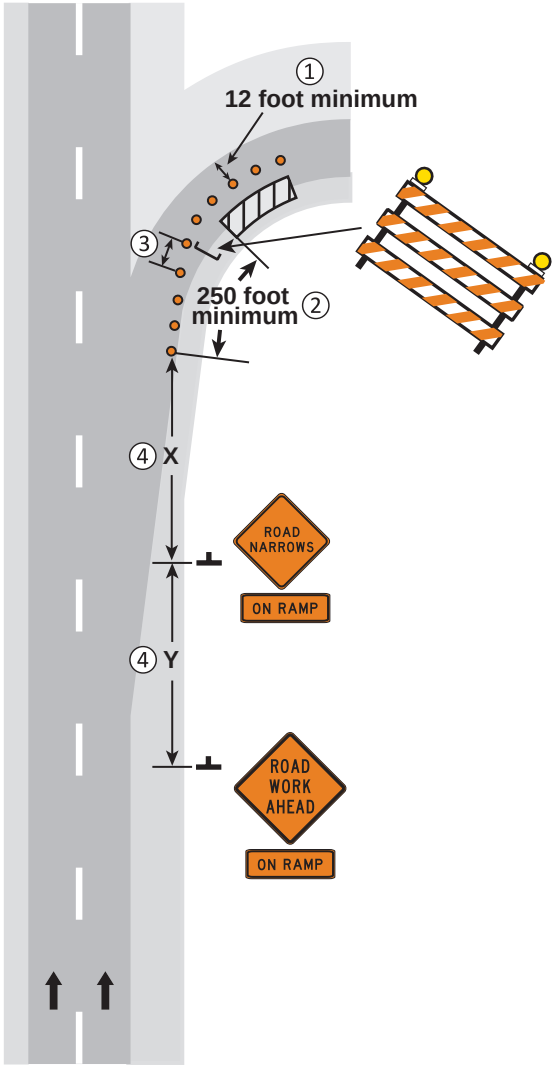


MAINLINE RIGHT LANE CLOSED
ENTRANCE RAMP OPEN

3 DAYS or LESS **LAYOUT 65**

NOTES:

1. Truck off-tracking should be considered when determining whether the 12-foot minimum lane width is adequate.
2. Use a 250-foot minimum taper.
3. For loops, use 25-foot spacing between devices. For ramps, use 50-foot spacing between devices.
4. Adjust spacing of advance warning signs depending on the design of the interchange and the location of in-place signing.



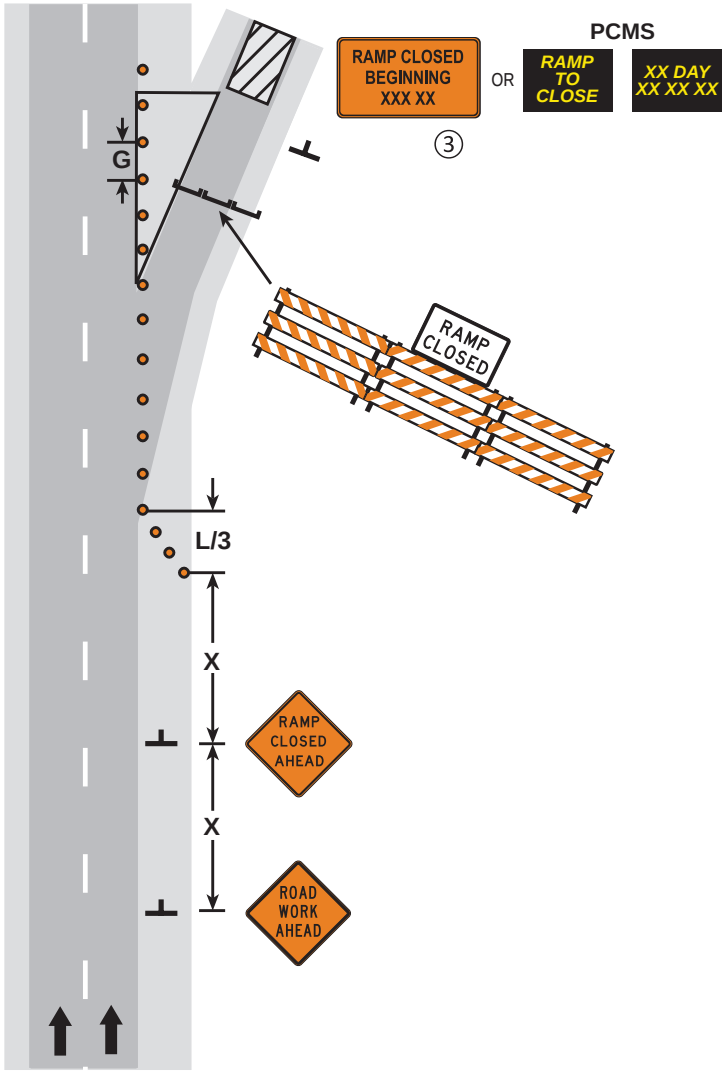
PARTIAL RAMP CLOSURE

3 DAYS or LESS **LAYOUT 66**

NOTES:

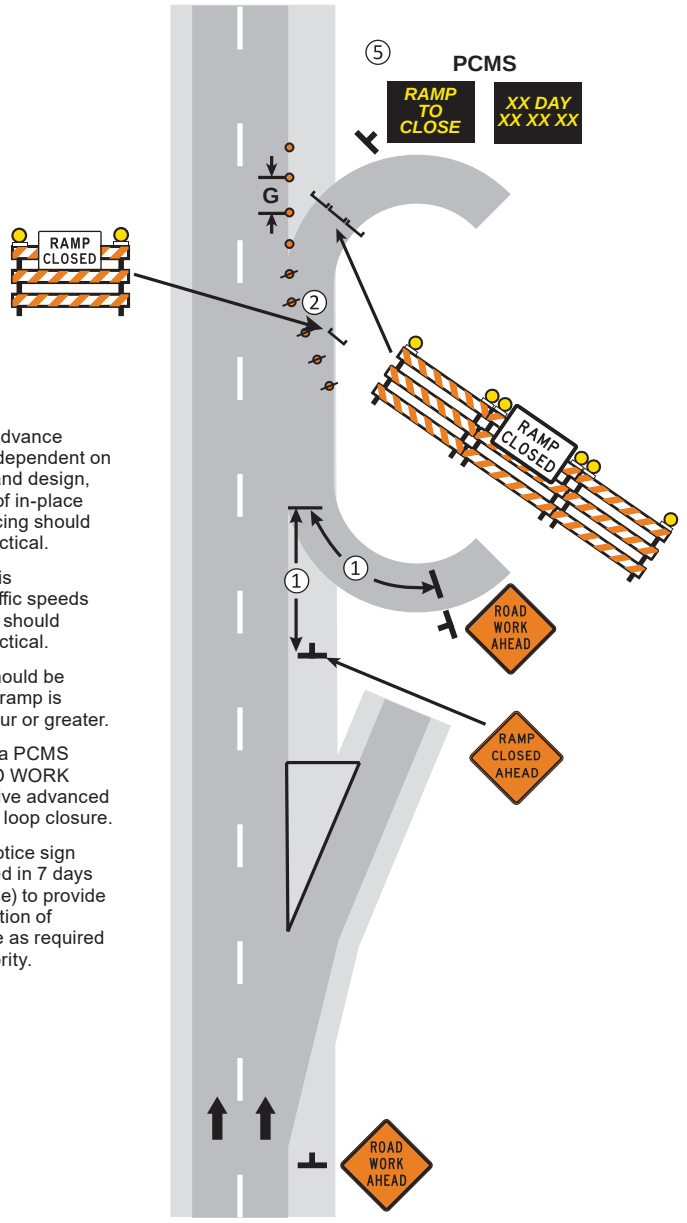
1. Detour signing should be considered if the ramp is closed one hour or greater.
2. Consider adding a PCMS prior to the ROAD WORK AHEAD sign to give advanced notification of the ramp closure.

③ Ramp Closure Notice sign should be installed 7 days in advance (timewise) to provide adequate notification of upcoming closure as required by the road authority.



EXIT RAMP CLOSURE

3 DAYS or LESS **LAYOUT 67**



NOTES:

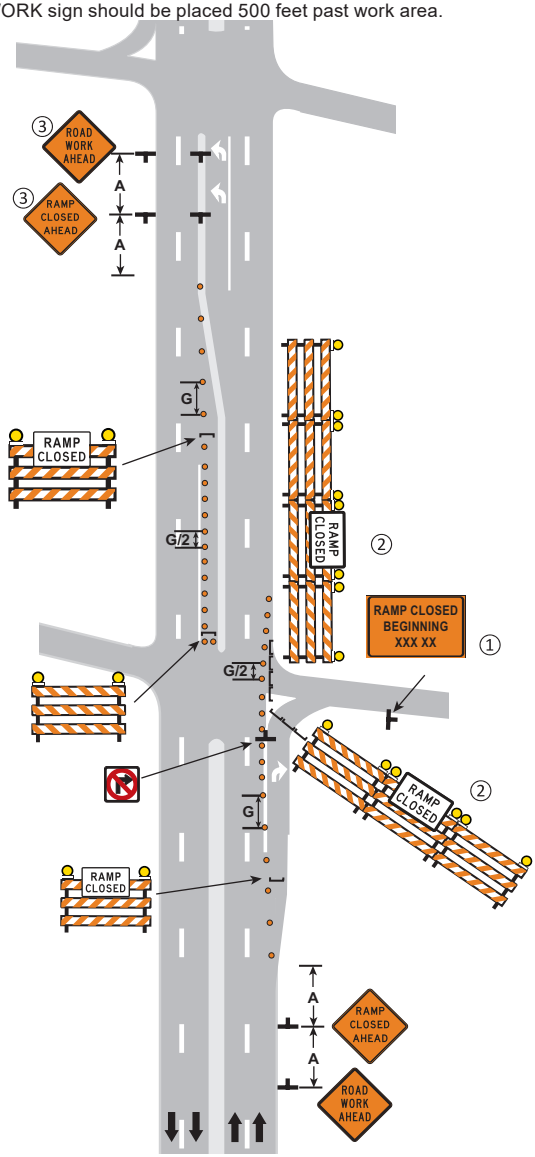
1. The spacing for advance warning signs is dependent on the ramp length and design, and the location of in-place signing. The spacing should be as long as practical.
2. The taper length is dependent on traffic speeds and volumes and should be as long as practical.
3. Detour signing should be considered if the ramp is closed for one hour or greater.
4. Consider adding a PCMS prior to the ROAD WORK AHEAD sign to give advanced notification of the loop closure.
5. Ramp Closure Notice sign should be installed in 7 days advance (timewise) to provide adequate notification of upcoming closure as required by the road authority.

EXIT LOOP CLOSURE

3 DAYS or LESS **LAYOUT 68**

NOTES:

1. Ramp Closure Notice sign should be installed in 7 days advance (timewise) to provide adequate notification of upcoming closure as required by the road authority.
2. Use ROAD CLOSED (R11-2) when road is closed.
3. Place on left shoulder/median when possible.
4. END ROAD WORK sign should be placed 500 feet past work area.



CLOSURE AT TOP OF ENTRANCE RAMP
MULTI-LANE DIVIDED ROAD

3 DAYS or LESS **LAYOUT 69**

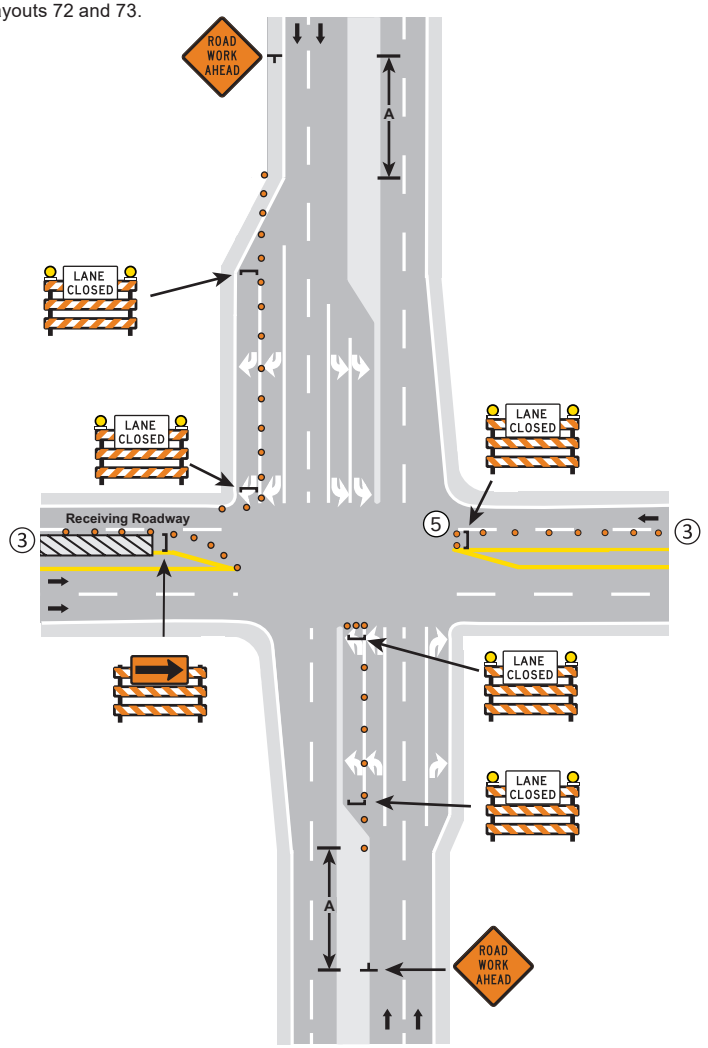
NOTES:

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.

4. END ROAD WORK sign should be placed 500 feet past work area.

(5) See Layouts 72 and 73.

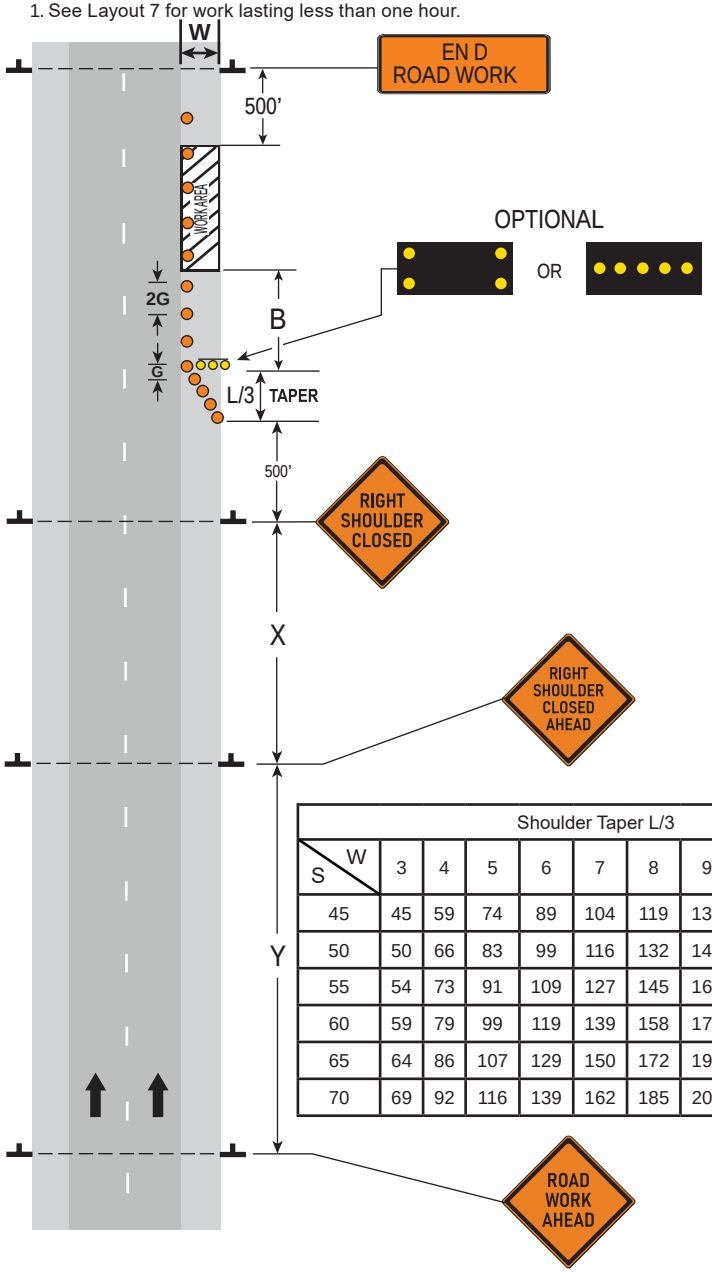


CLOSING ONE TURN I.ANE ON DUAL TURN LANES
WORK ON INTERSECTING ROADWAY

3 DAYS or LESS **LAYOUT 70**

NOTES:

1. See Layout 7 for work lasting less than one hour.

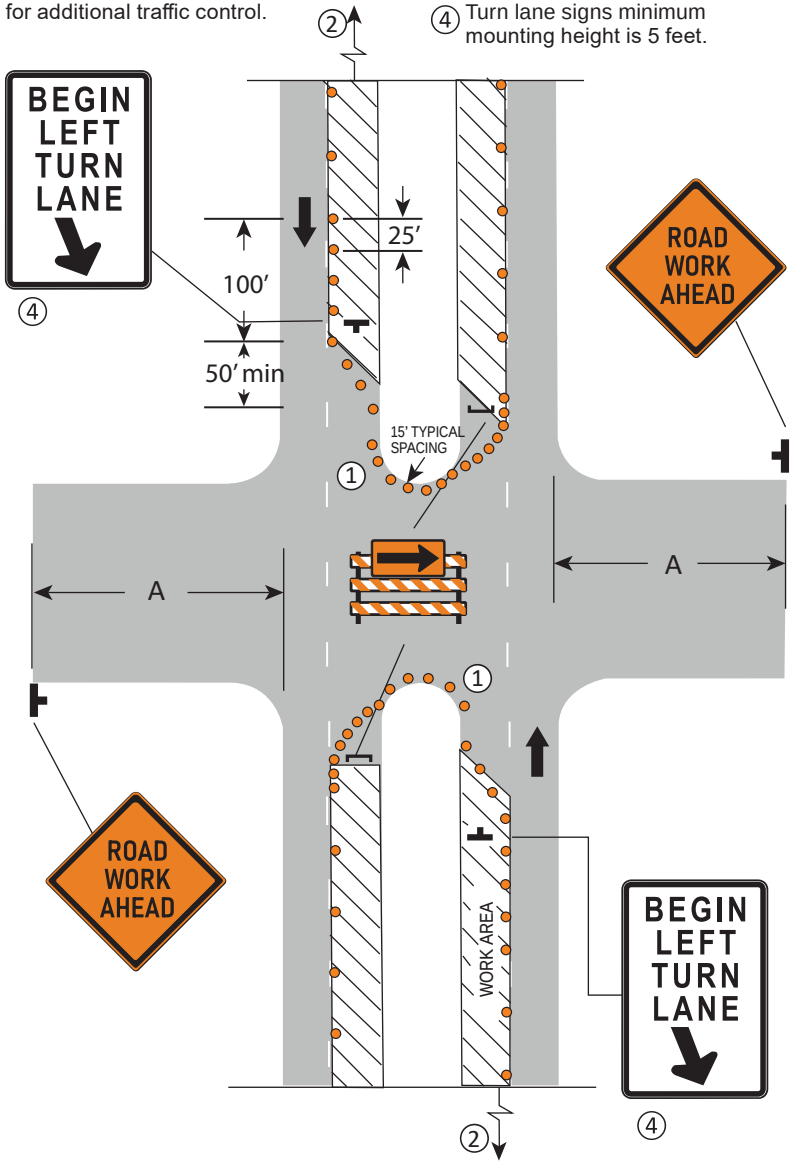


Shoulder Taper L/3										
S \ W	3	4	5	6	7	8	9	10	11	12
45	45	59	74	89	104	119	134	149	163	178
50	50	66	83	99	116	132	149	165	182	198
55	54	73	91	109	127	145	163	182	200	218
60	59	79	99	119	139	158	178	198	218	238
65	64	86	107	129	150	172	193	215	236	257
70	69	92	116	139	162	185	208	231	254	277

SHOULDER CLOSURE ON DIVIDED ROADWAY
SPEEDS GREATER THAN 40 MPH
3 DAYS or LESS **LAYOUT 71**

NOTES

1. Also use barricade and 15-foot typical drum spacing at commercial driveways.
2. See separate lane closure detail for additional traffic control.
3. Provide turn lanes at intersections whenever staging of work allows. Taper and turn lane lengths based on field conditions.
4. Turn lane signs minimum mounting height is 5 feet.

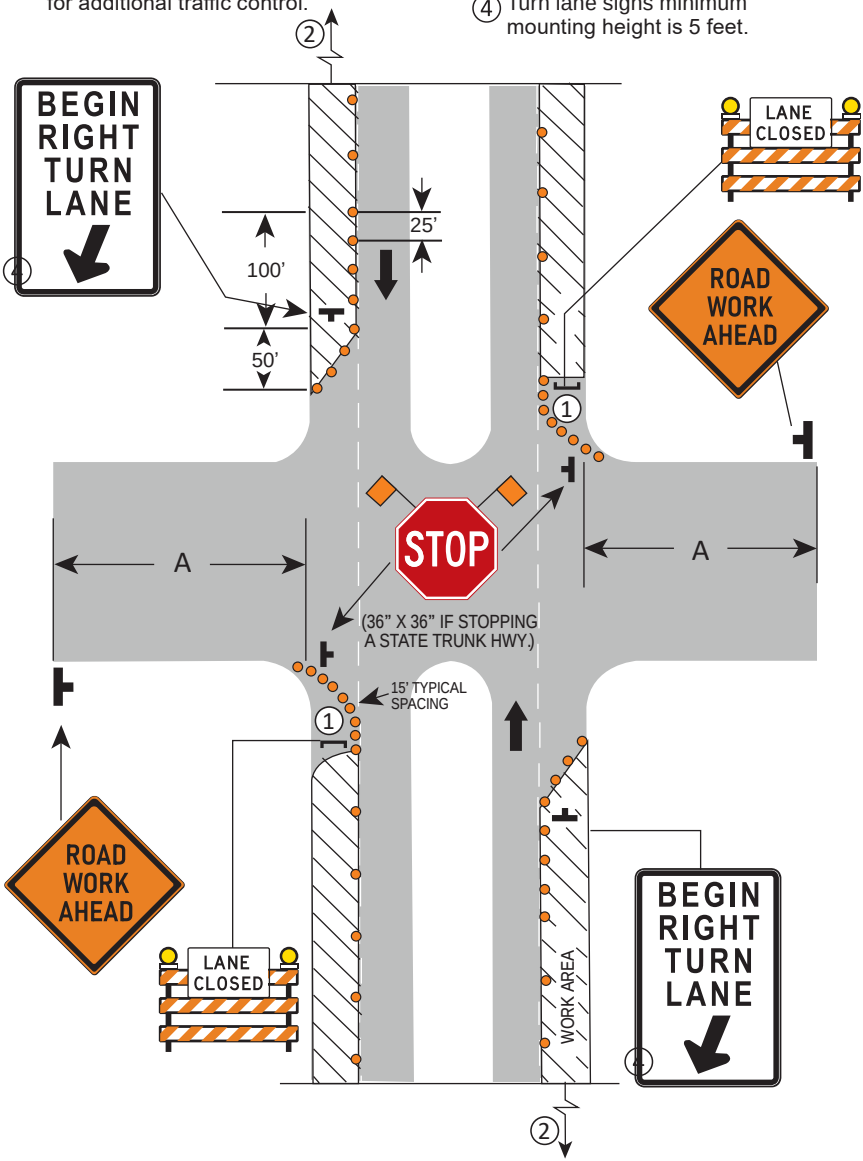


LEFT LANE CLOSURE AT INTERSECTION OR MEDIAN OPENING

3 DAYS or LESS **LAYOUT 72**

NOTES:

1. Also use barricade and 15-foot typical drum spacing at commercial driveways.
2. See separate lane closure detail for additional traffic control.
3. Provide turn lanes at intersections whenever staging of work allows. Taper and turn lane lengths based on field conditions.
4. Turn lane signs minimum mounting height is 5 feet.

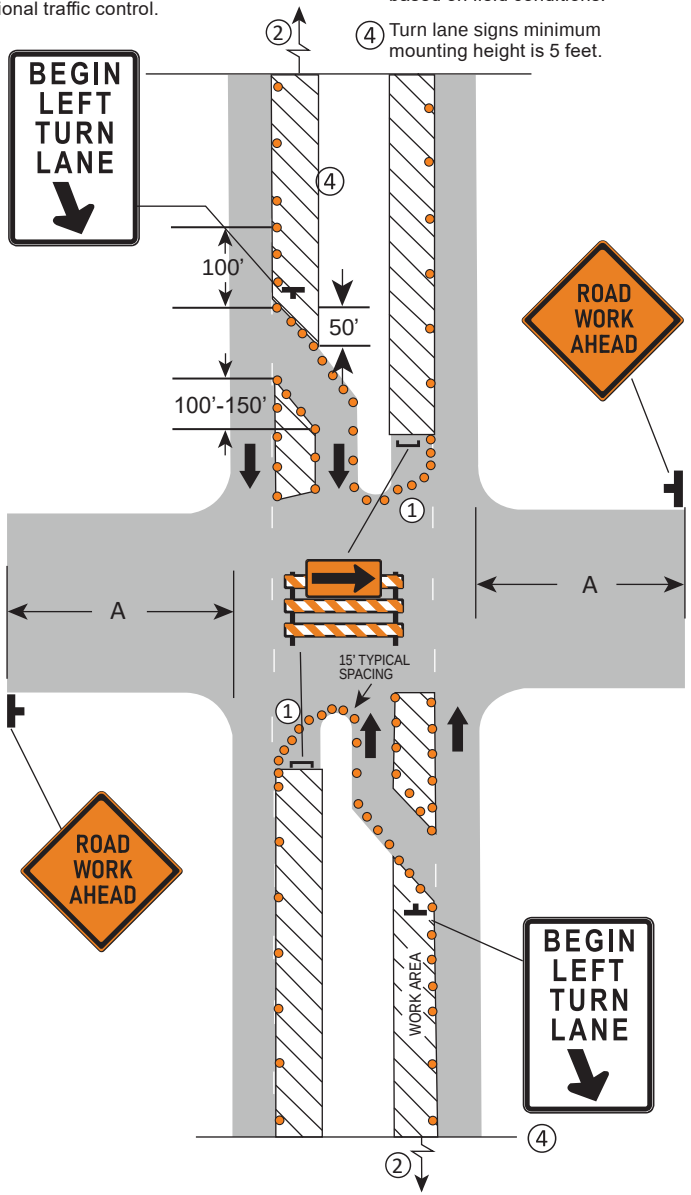


RIGHT LANE CLOSURE AT INTERSECTION

3 DAYS or LESS **LAYOUT 73**

NOTES:

1. Also use barricade and 15-foot typical drum spacing at commercial driveways.
2. See separate lane closure detail for additional traffic control.
3. Provide turn lanes at intersections whenever staging of work allows. Taper and turn lane lengths based on field conditions.
4. Turn lane signs minimum mounting height is 5 feet.

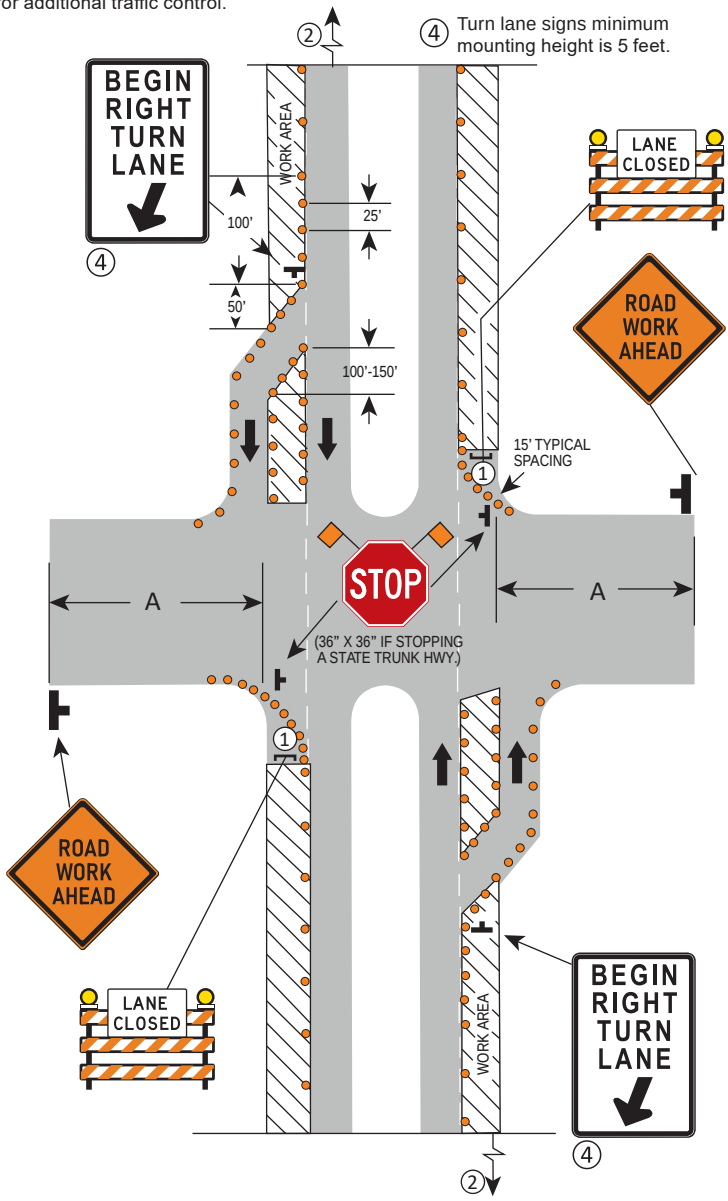


LEFT LANE CLOSURE AT INTERSECTION OR MEDIAN OPENING (WITH LEFT TURN BAY OPEN)

3 DAYS or LESS **LAYOUT 74**

NOTES:

1. Also use barricade and 15-foot typical drum spacing at commercial driveways.
2. See separate lane closure detail for additional traffic control.
3. Provide turn lanes at intersections whenever staging of work allows. Taper and turn lane lengths based on field condition.
4. Turn lane signs minimum mounting height is 5 feet.



RIGHT LANE CLOSURE AT INTERSECTION (WITH RIGHT TURN BAY OPEN)

3 DAYS or LESS **LAYOUT 75**