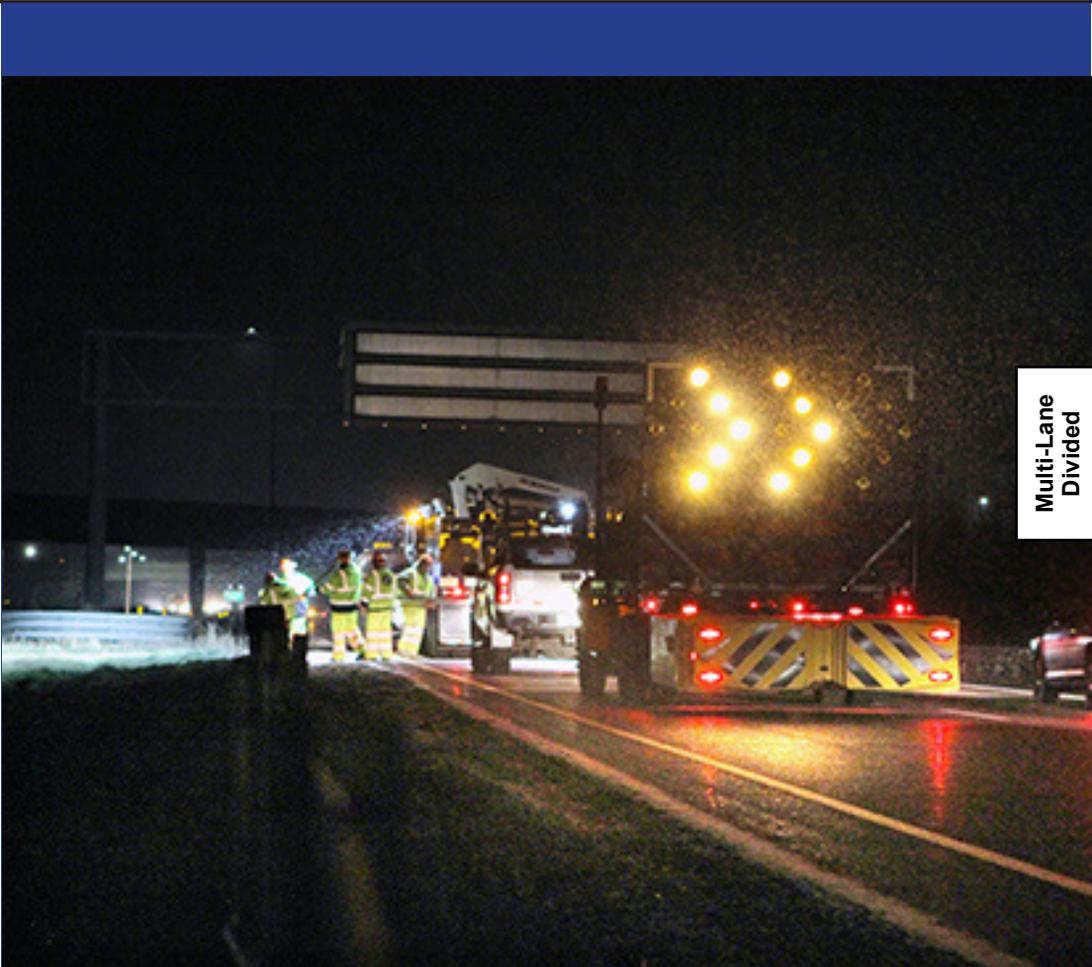


Multi-Lane Divided Road

Two separate roadways where opposing traffic is separated by a median.

**Drawings Not To Scale*



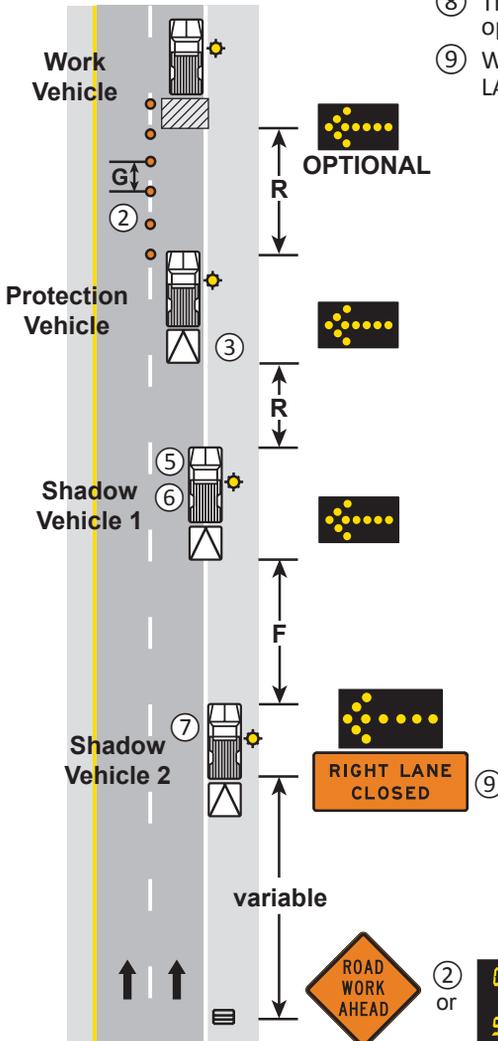
Multi-Lane
Divided

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, 64, 65			
Turn Lane	33, 75			
Turn Lane on Dual Turn Lanes	75			
Double Lane	51		59, 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. When the posted speed limit is 40 mph or less, Layout 41 may be used.
- ② 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).
- ③ May use additional Protection Vehicle (not shown on layout) to close shoulder in advance of Work Vehicle.
- 4. Any Shadow Vehicle and Protection Vehicle operating totally or partially in a traffic lane should be equipped with a TMA.
- ⑤ The lateral placement of Shadow Vehicle 1 may be adjusted to create a taper.
- ⑥ Shadow Vehicle 1 may be omitted when posted speed limit is 40 mph or less.
- ⑦ Shadow Vehicle 2 may encroach into the traffic lane when the shoulder is too narrow to drive on.
- ⑧ The PCMS shall be used for nighttime operations regardless of duration.
- ⑨ When the PCMS is used, the RIGHT LANE CLOSED sign becomes optional.



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

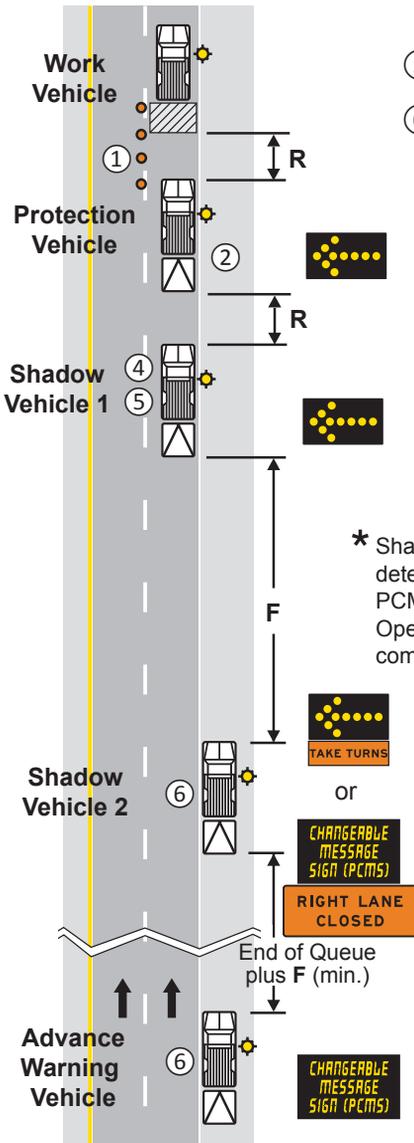
1 HOUR or LESS

LAYOUT 49

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 should be equipped with a TMA.

- ④ The lateral placement of Shadow Vehicle 1 may be adjusted to create a taper.
- ⑤ Shadow Vehicle 1 may be omitted when posted speed limit is 40 mph or less.
- ⑥ Shadow Vehicle 2 and the Advance Warning Vehicle may encroach into the traffic lane when the shoulder is too narrow to drive on.



* Shadow Vehicle 2 Operator is responsible for detecting the traffic queue and changing the PCMS message appropriately for the conditions. Operators of the two PCMS's shall have radio communication.

PCMS MESSAGE OPTIONS

MERGE LEFT	RT LANE CLOSED	No Queuing
MERGE LEFT	BEGIN MERGE	* Queuing Detected

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

PCMS MESSAGE OPTIONS

SLOW TRAFFIC	RT LANE CLOSED	No Queuing
STOPPED TRAFFIC	USE ALL LANES	* Queuing Detected

MOBILE/SHORT DURATION LANE CLOSURE

**Active Zipper Merge
MULTI-LANE ROAD**

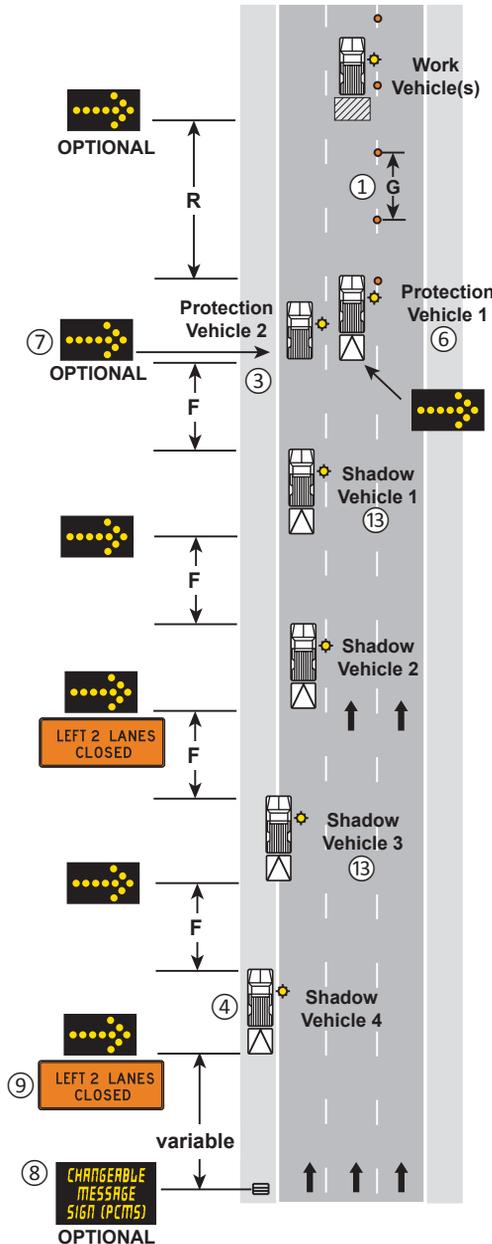
1 HOUR or LESS

6K-50

LAYOUT 50

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 decrease 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 4 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 should be equipped with a TMA.
- ⑥ Protection Vehicle 1 should 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 2 LANES CLOSED 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.
- ⑬ Shadow Vehicle 3 may be omitted at 40 mph or less.

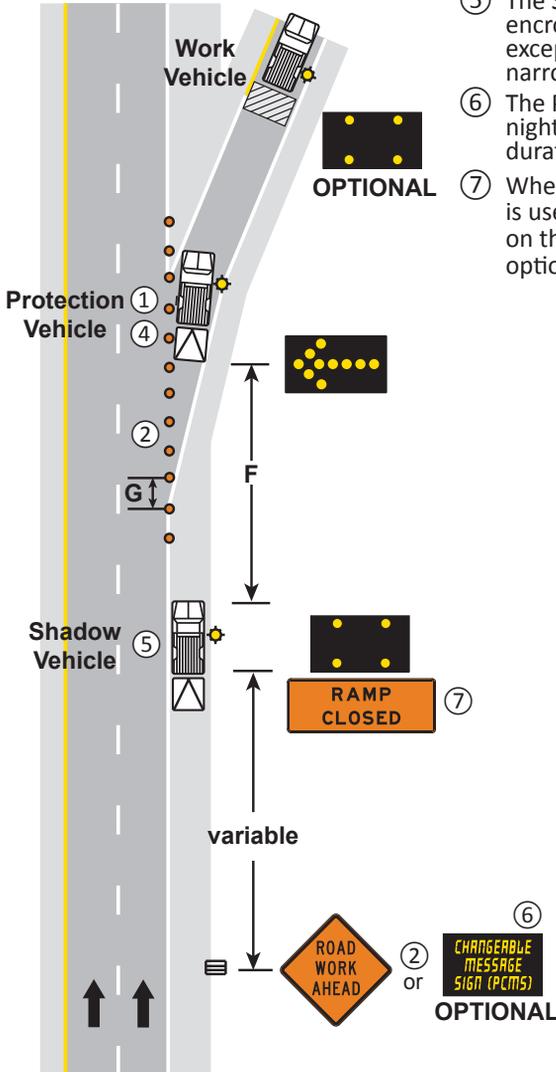
**MOBILE/SHORT DURATION MULTI-LANE CLOSURE
MULTI-LANE DIVIDED ROAD**

1 HOUR or LESS

LAYOUT 51

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 should 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 sign on the Shadow Vehicle becomes optional.



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

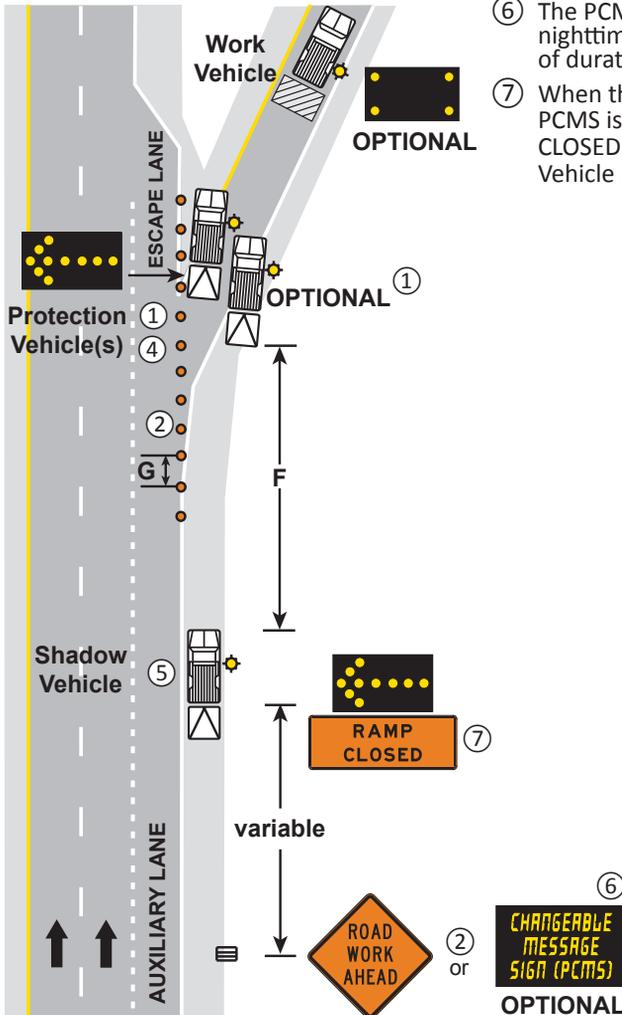
1 HOUR or LESS

LAYOUT 52

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 should 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 sign on the Shadow Vehicle becomes optional.



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

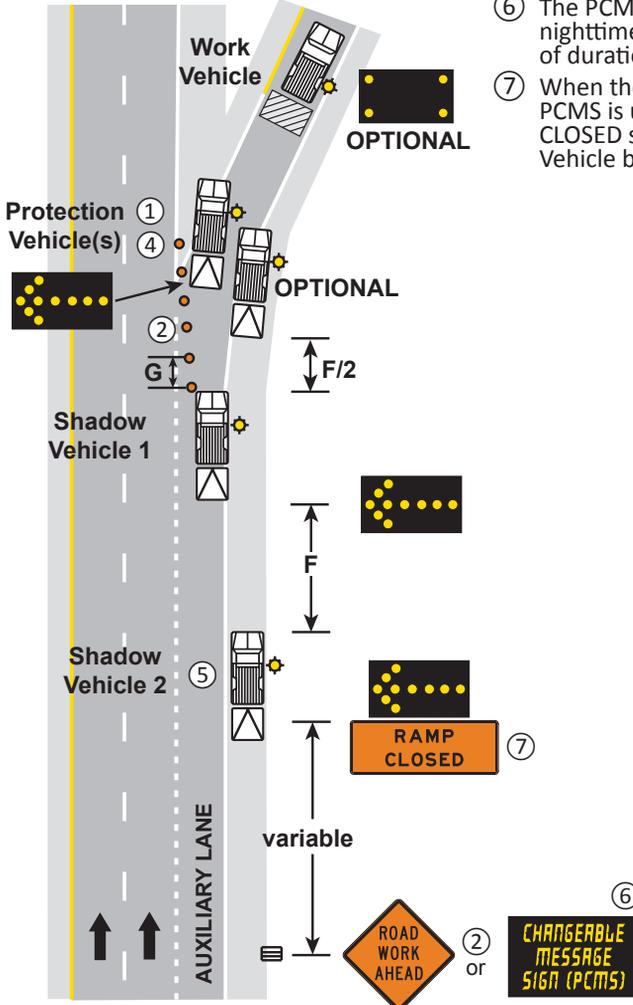
1 HOUR or LESS

LAYOUT 53

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 should 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.

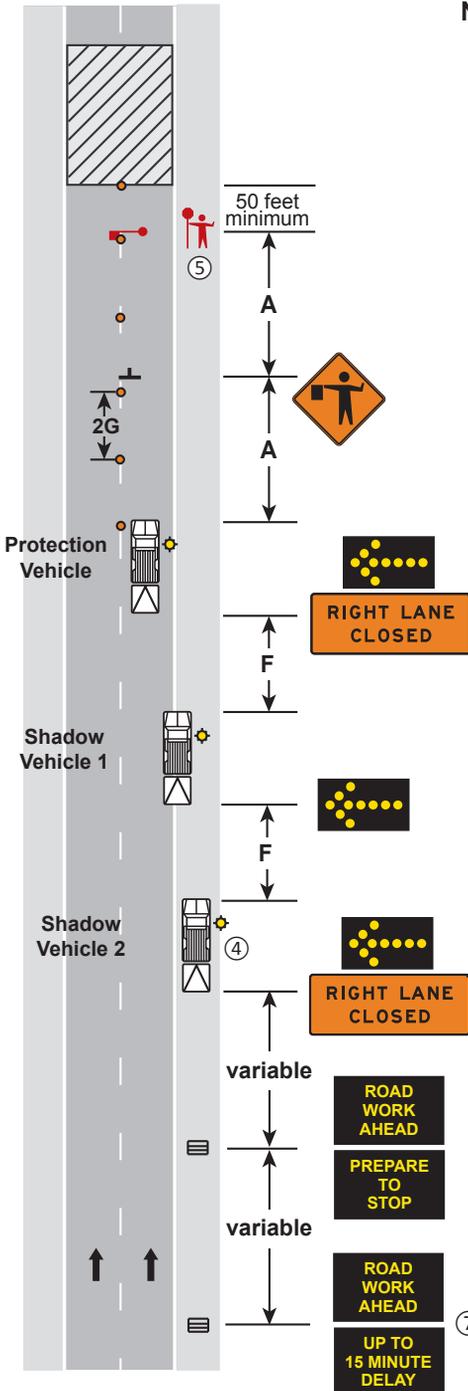
- ⑥ The PCMS shall be used for nighttime operations regardless of duration.
- ⑦ When the advance warning PCMS is used, the RAMP CLOSED sign on the Shadow Vehicle become optional.



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

1 HOUR or LESS

LAYOUT 54



NOTES:

1. The road authority shall be contacted prior to closure.
2. May decrease channelizer spacing as needed to prevent intrusions.
3. Any Shadow or Protection Vehicle operating totally or partially in a traffic lane should be equipped with a TMA.
- ④ Shadow Vehicle 2 may encroach into the traffic lane when the shoulder is too narrow to drive on.
- ⑤ Law Enforcement may be used instead of or in addition to a flagger.
6. Traffic should not be stopped for more than 15 minutes per occurrence.
- ⑦ Consider placement in advance of junction with alternate route.

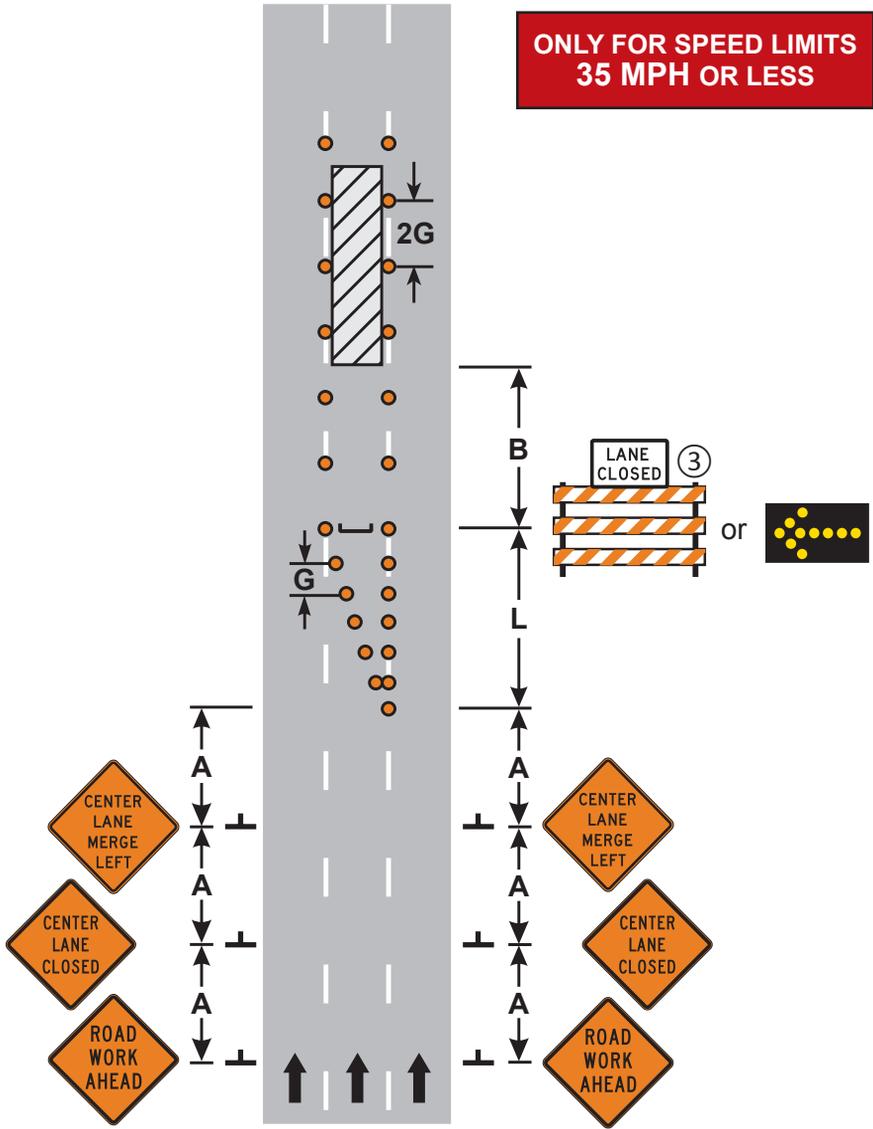
**MOBILE/SHORT DURATION ROAD CLOSURE
MULTI-LANE DIVIDED ROAD**

1 HOUR or LESS

LAYOUT 55

NOTES:

- 1. If traffic volumes are low, a double lane closure is preferred.
- 2. Consider a double lane closure when workers are present.
- ③ The LANE CLOSED sign is optional.



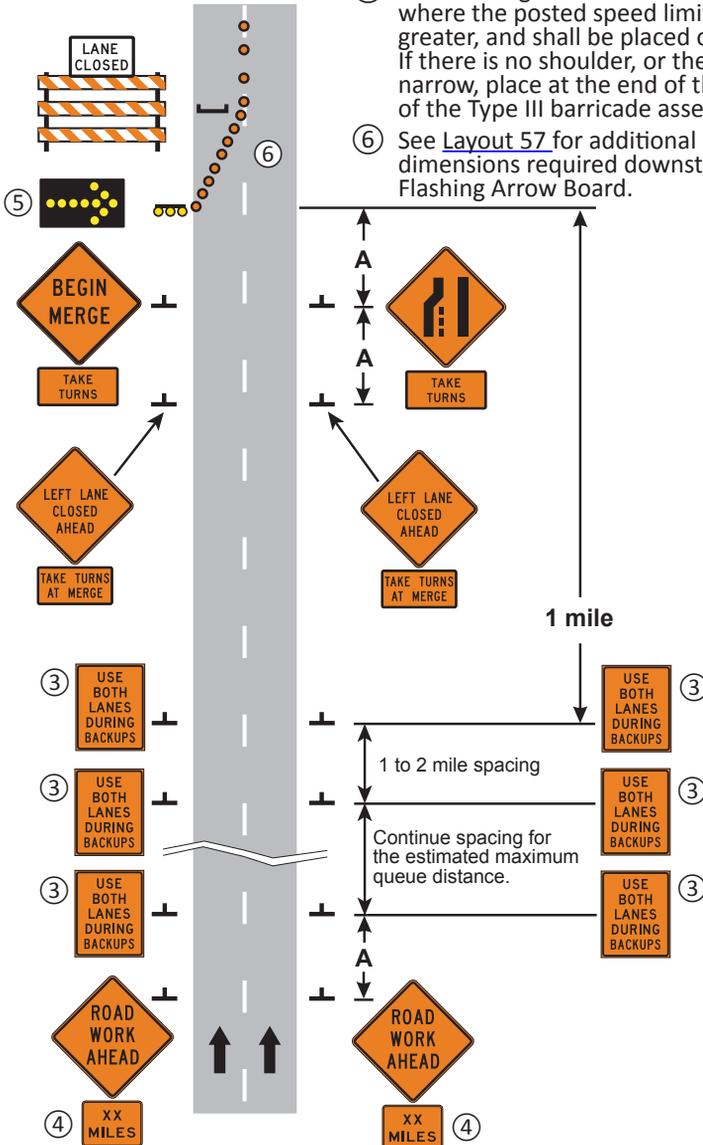
**CENTER LANE CLOSURE
MULTI-LANE DIVIDED OR ONE WAY ROAD**

3 DAYS or LESS

LAYOUT 56

NOTES:

1. This layout should be used on roadways 45 mph and greater where traffic queues may extend at least 0.5 mile upstream of the taper.
2. Use the appropriate traffic control devices for a left lane closure.
- ③ A PCMS may be used in place of a pair of USE BOTH LANES DURING BACKUPS signs.
- ④ XX MILES advisory plaques are recommended when the distance is 2 miles or more. Plaques shall be placed directly below or on the lower side of the warning sign nearest traffic.
- ⑤ 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.
- ⑥ See [Layout 57](#) for additional devices and dimensions required downstream of the Flashing Arrow Board.



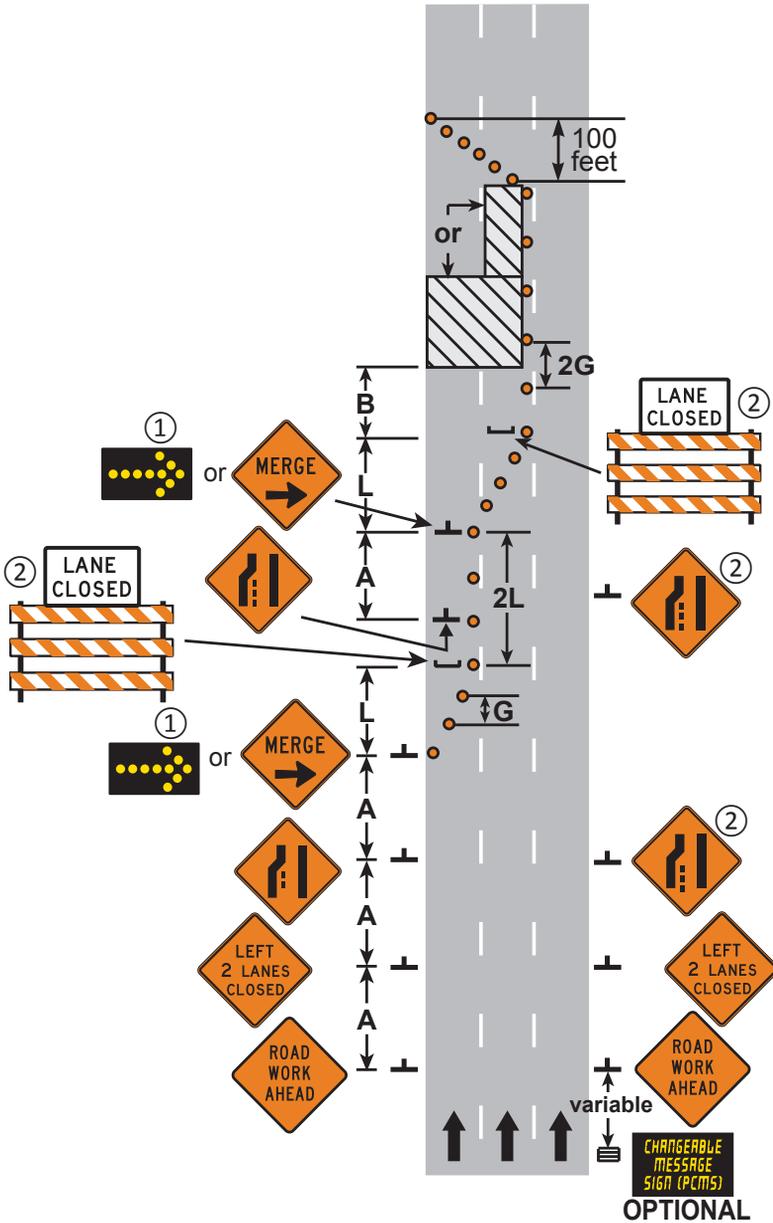
**LANE CLOSURE with PASSIVE ZIPPER MERGE
MULTI-LANE DIVIDED ROAD**

3 DAYS or LESS

LAYOUT 58

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 LANE CLOSED and/or the Lane Ends sign may be omitted when the posted speed limit is 40 mph or less.



**LEFT TWO LANES CLOSED
MULTI-LANE DIVIDED ROAD**

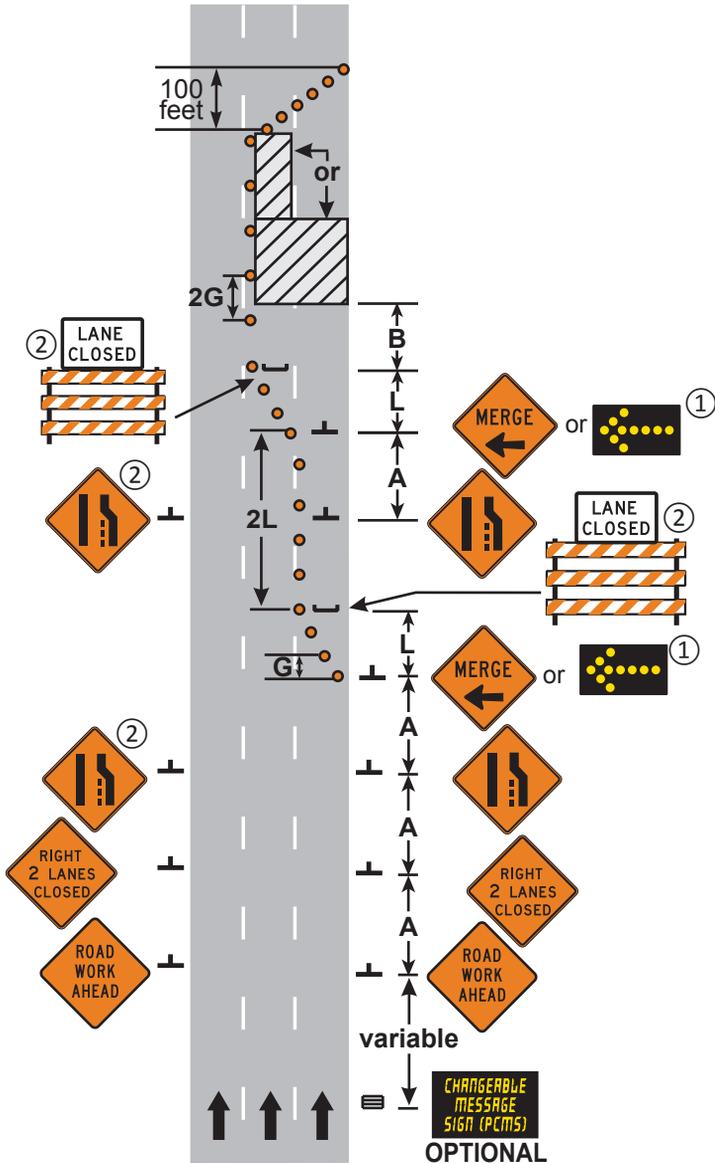
3 DAYS or LESS

6K-59

LAYOUT 59

NOTES:

- ① The Flashing Arrow Board shall be used where the posted speed limit is 45 mph or greater and 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 LANE CLOSED and/or the Lane Ends sign may be omitted when the posted speed limit is 40 mph or less.



**RIGHT TWO LANES CLOSED
MULTI-LANE DIVIDED ROAD**

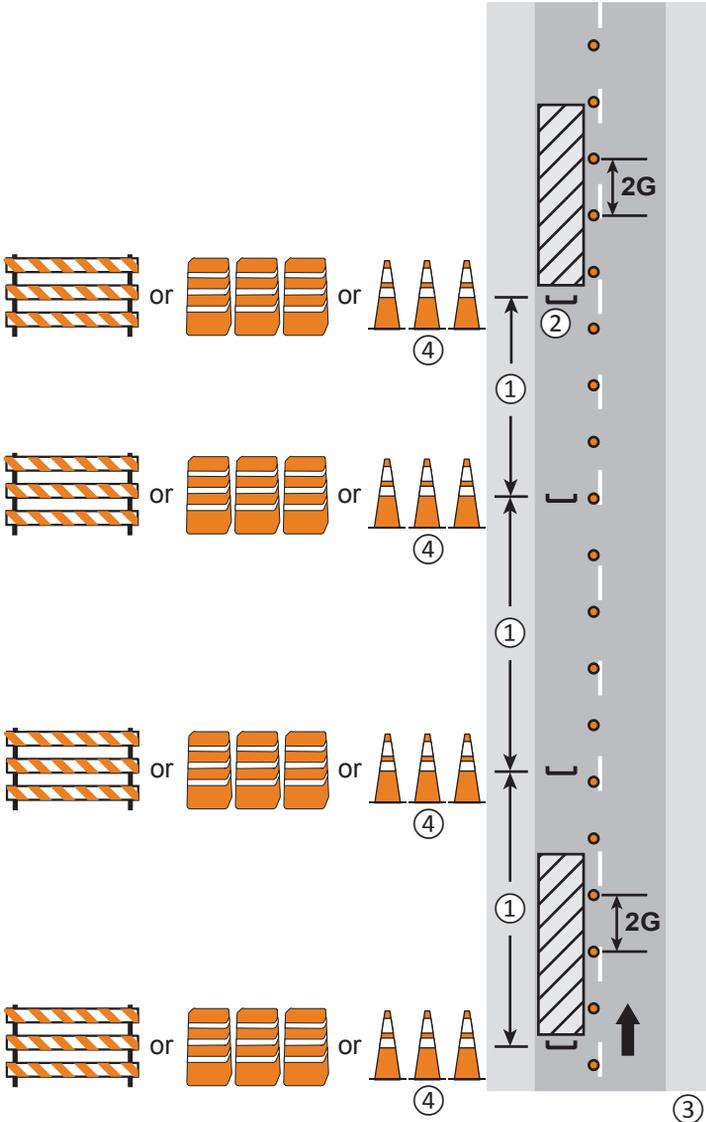
3 DAYS or LESS

6K-60

LAYOUT 60

NOTES:

- ① Install a Type III barricade at the beginning of each work space and at intervals from 500 feet minimum to 1000 feet maximum 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 For advance signing, placement of traffic control devices, and lane taper, see the appropriate stationary layout.
- ④ Type A channelizing devices may be used if the temporary traffic control zone is installed for less than 12 hours or is attended.



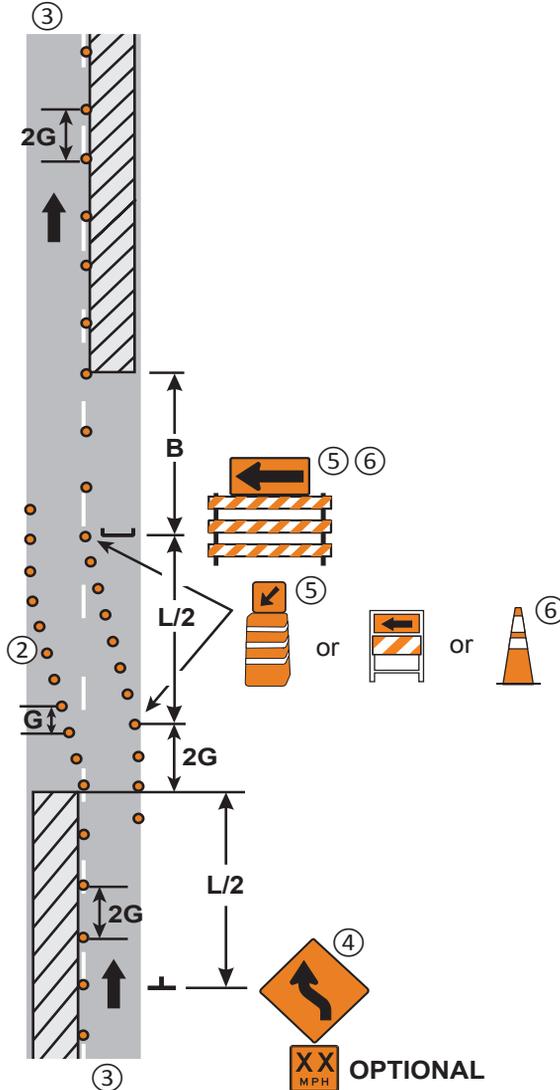
**LANE CLOSURE EXTENSION
MULTI-LANE DIVIDED or ONE WAY ROAD**

3 DAYS or LESS

LAYOUT 61

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 The Reverse Curve sign may be omitted when the posted speed limit is 40 mph or less.
- ⑤ Directional arrows shall be used on either the drums or the Type III barricade.
- ⑥ Cones may be used if work zone is attended. If using cones, a One Direction Large Arrow shall also be used.



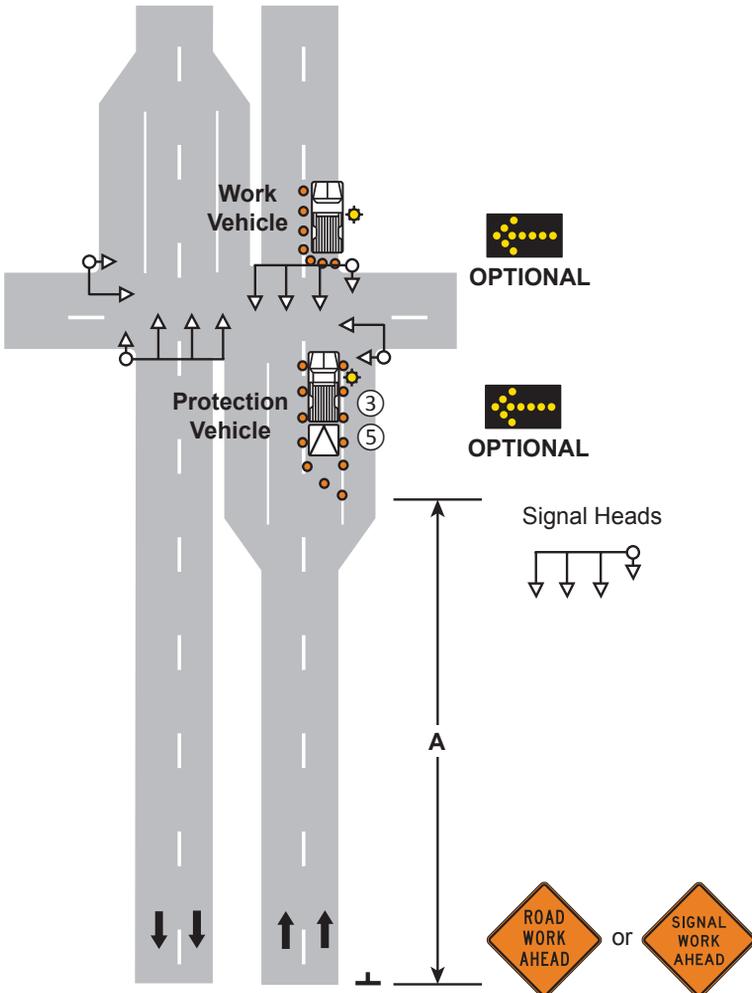
LANE SHIFT
MULTI-LANE DIVIDED or ONE WAY ROAD

3 DAYS or LESS

LAYOUT 62

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 should 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 around the vehicle at a minimum height of 3 1/2 feet and a radius of 60 feet or greater.



LANE CLOSURE

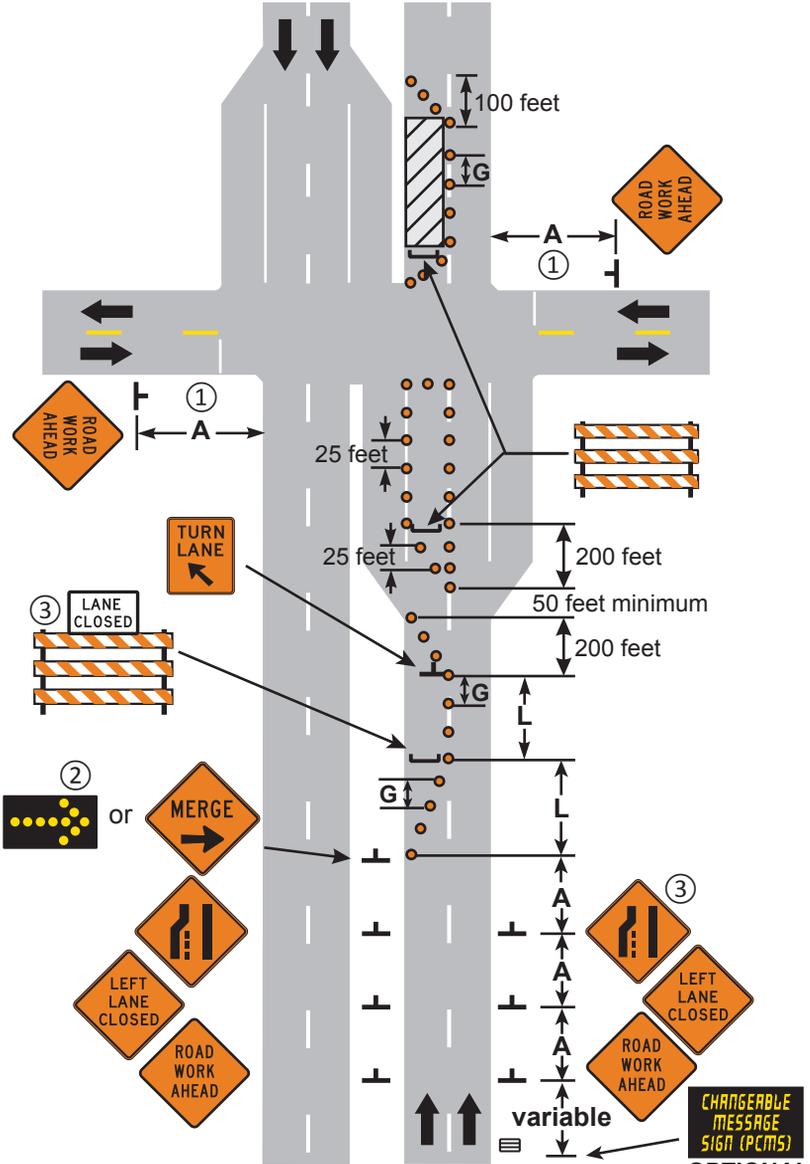
At Far Side of Signalized Intersection

15 MINUTES or LESS

LAYOUT 63

NOTES:

- ① Use the appropriate advance warning sign spacing for the speed on the cross road.
- ② The Flashing Arrow Board shall be used where the posted speed limit is 45 mph or greater and 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.
- ③ The LANE CLOSED and/or the Lane Ends sign may be omitted when the posted speed limit is 40 mph or less.



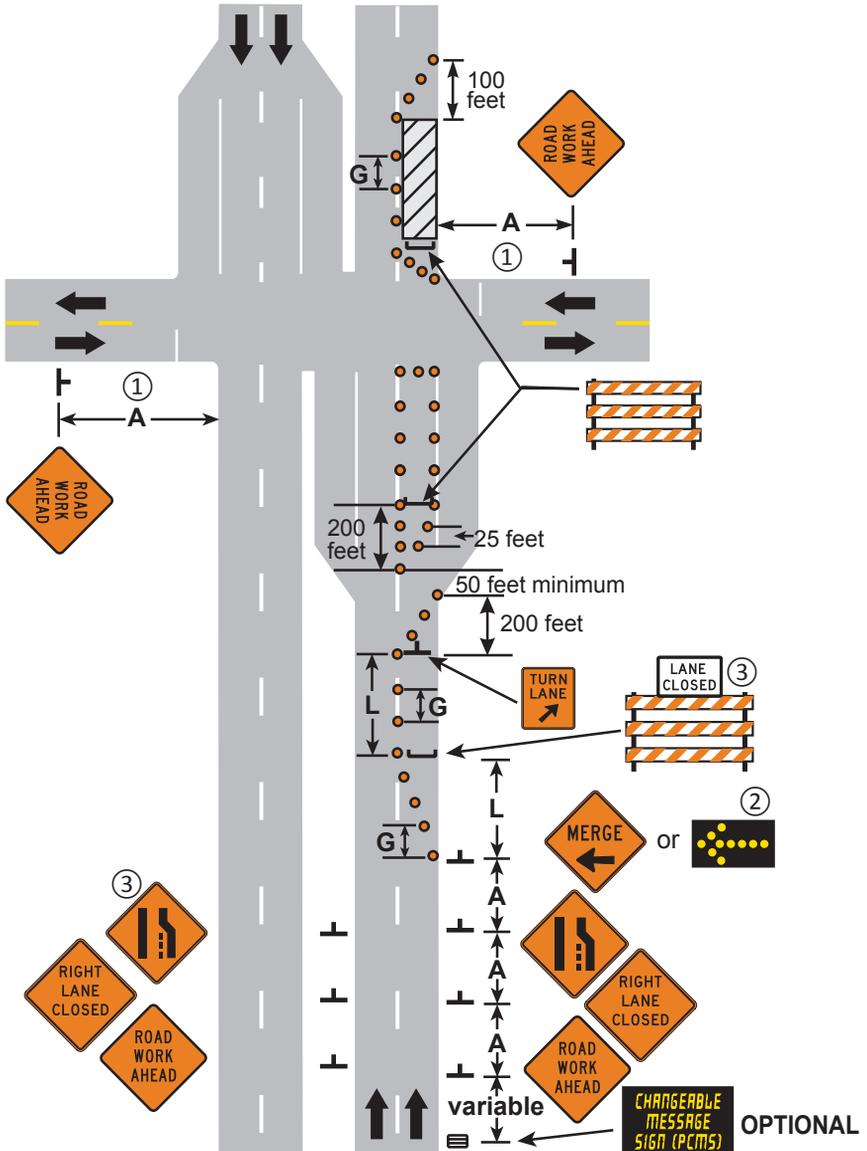
LEFT LANE CLOSURE
Work Space Beyond Intersection
MULTI-LANE DIVIDED ROAD

3 DAYS or LESS

LAYOUT 64

NOTES:

- ① Use the appropriate advance warning sign spacing for the speed on the cross road.
- ② 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, place at the end of the taper in lieu of the Type III barricade assembly.
- ③ The LANE CLOSED and/or the Lane Ends sign may be omitted when the posted speed limit is 40 mph or less.



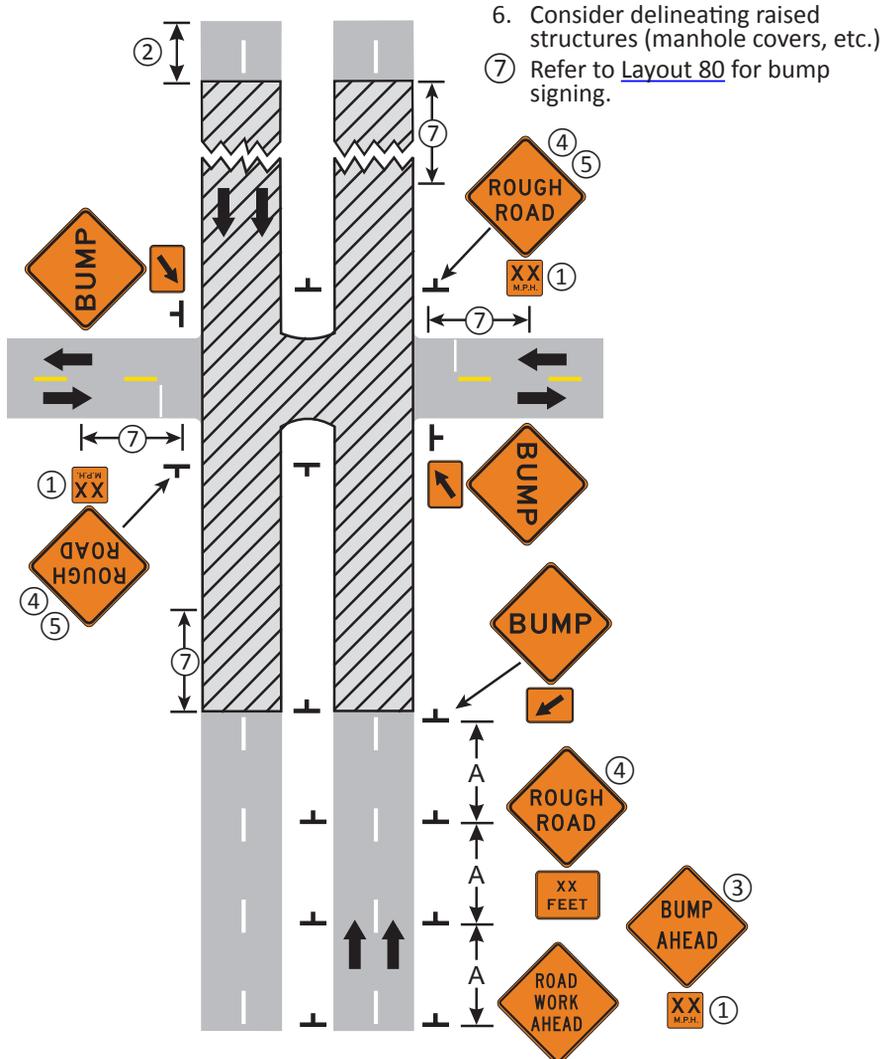
RIGHT LANE CLOSURE
 Work Space Beyond Intersection
 MULTI-LANE DIVIDED ROAD

3 DAYS or LESS

LAYOUT 65

NOTES:

- ① When used, XX MPH advisory speed plaques shall be placed directly below or on the lower side nearest traffic of the appropriate warning sign(s).
- ② Use the same warning signs and spacings for the other approach to the milled roadway surface area.
- ③ The BUMP AHEAD sign may be omitted if the speed reduction to navigate the bump is 10 mph or less.
- ④ Use the appropriate warning sign for the roadway condition, i.e. GROOVED PAVEMENT, LOOSE GRAVEL, ROUGH ROAD. An advisory Motorcycle plaque may be placed below or on the lower side nearest traffic of the appropriate warning sign if the warning is directed primarily to motorcyclists.
- ⑤ Refer to [Layout 35](#) for confirmation signing.



RE-SURFACING OPERATION

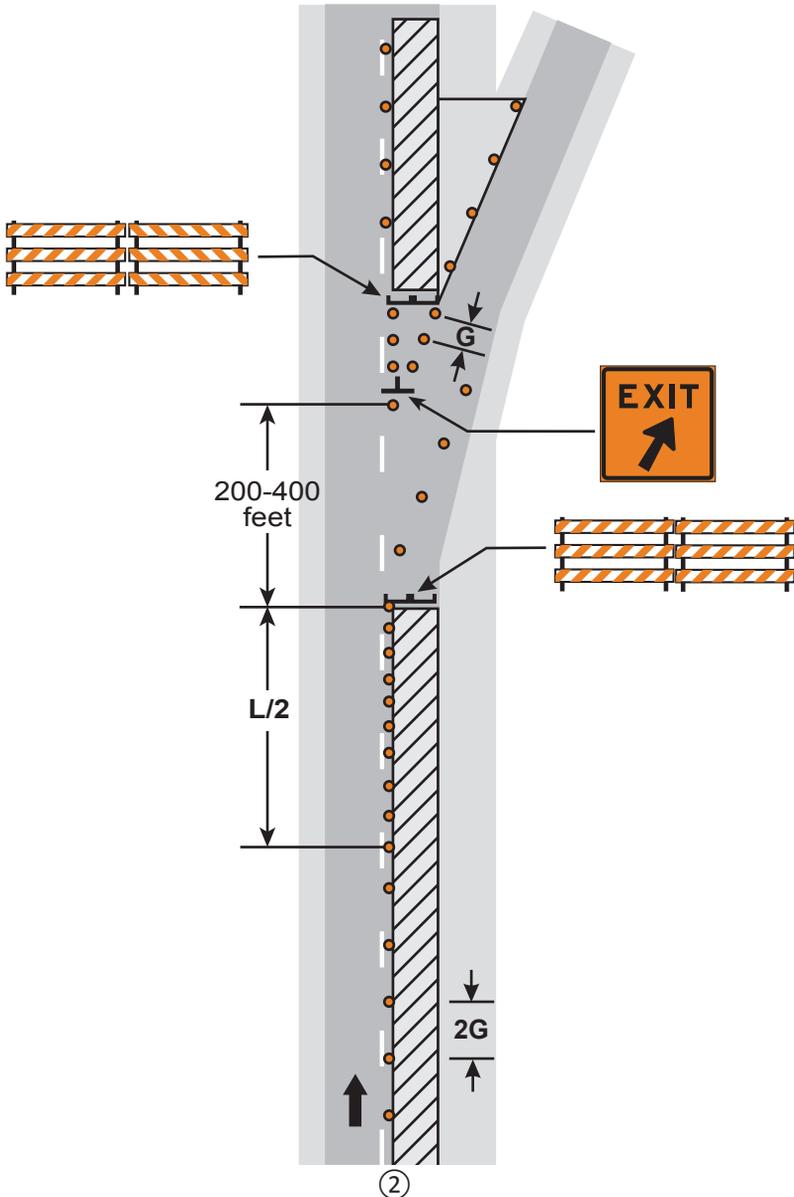
Work Space Before and Through Intersection
MULTI-LANE DIVIDED ROAD

3 DAYS or LESS

LAYOUT 66

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.



**MAINLINE RIGHT LANE CLOSED
EXIT RAMP OPEN**

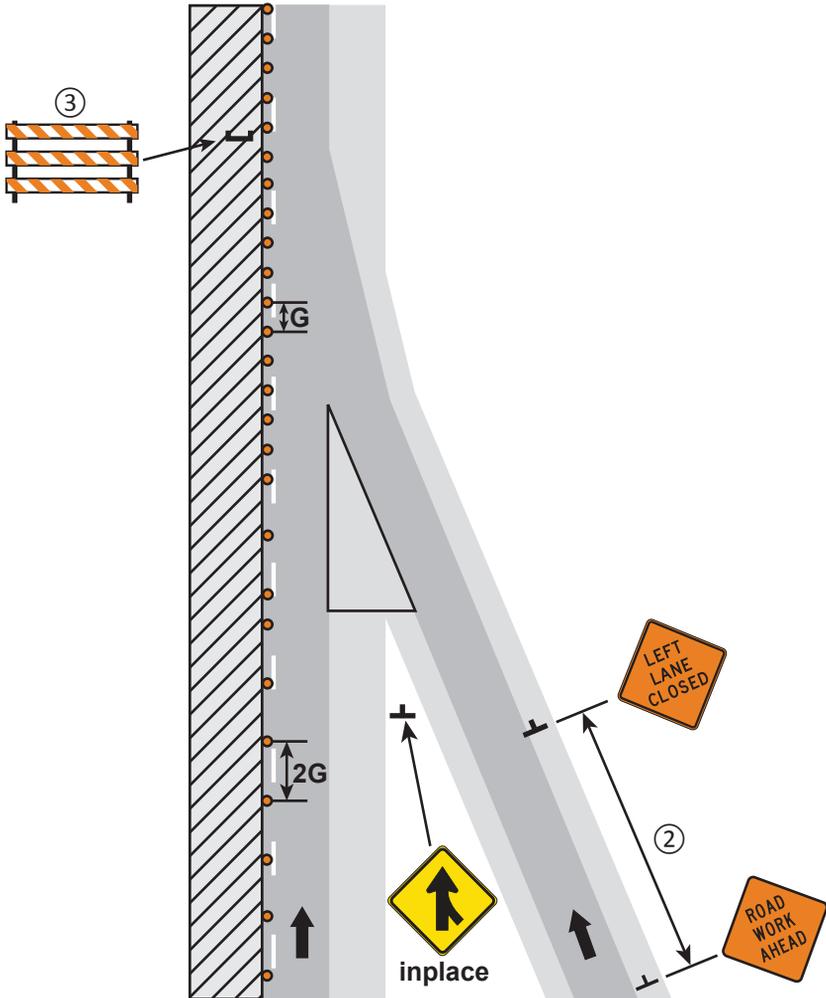
3 DAYS or LESS

6K-67

LAYOUT 67

NOTES:

- 1. YIELD and Yield Ahead signs may be added when geometry and traffic conditions do not allow for normal merging behavior, see [Layout 69](#).
- 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**

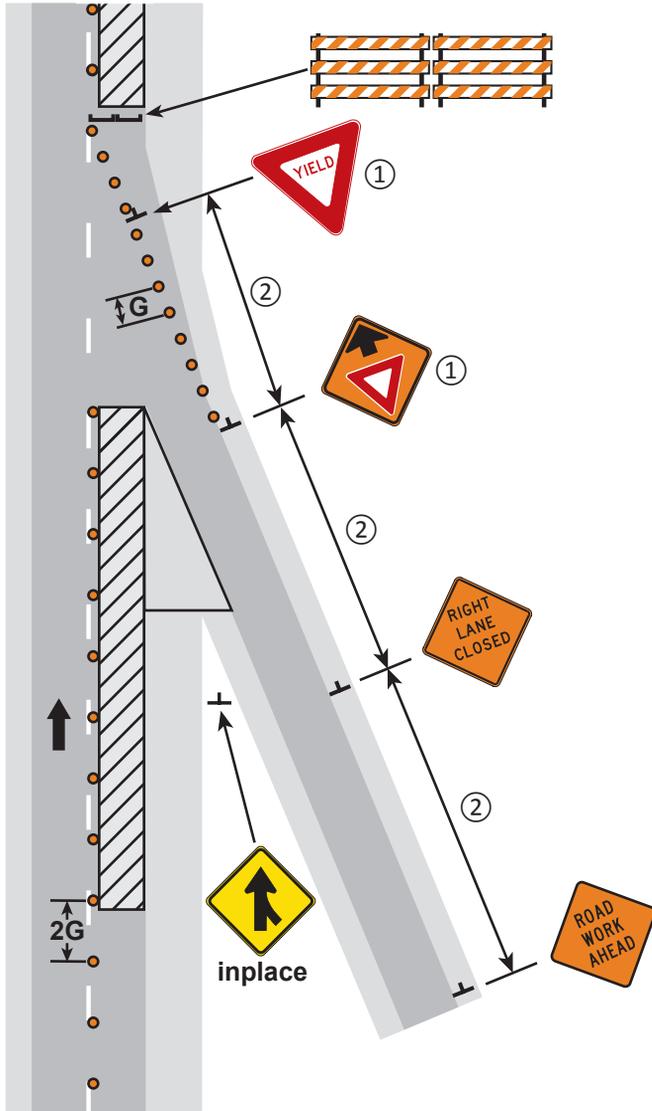
3 DAYS or LESS

6K-68

LAYOUT 68

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.



**MAINLINE RIGHT LANE CLOSED
ENTRANCE RAMP OPEN**

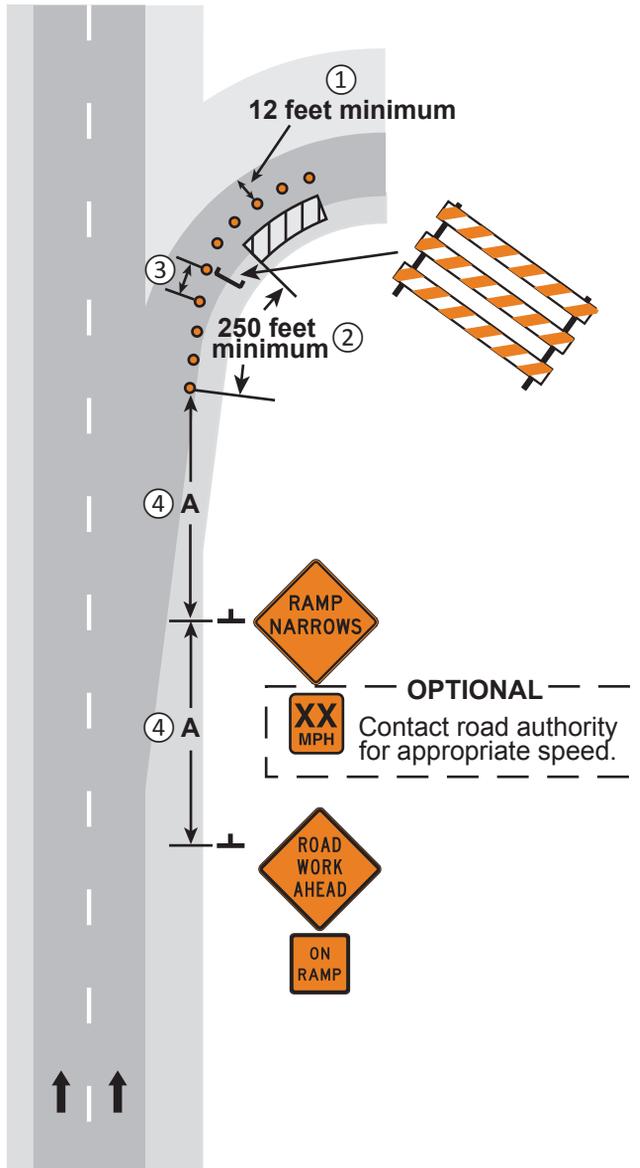
3 DAYS or LESS

6K-69

LAYOUT 69

NOTES:

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



PARTIAL RAMP CLOSURE

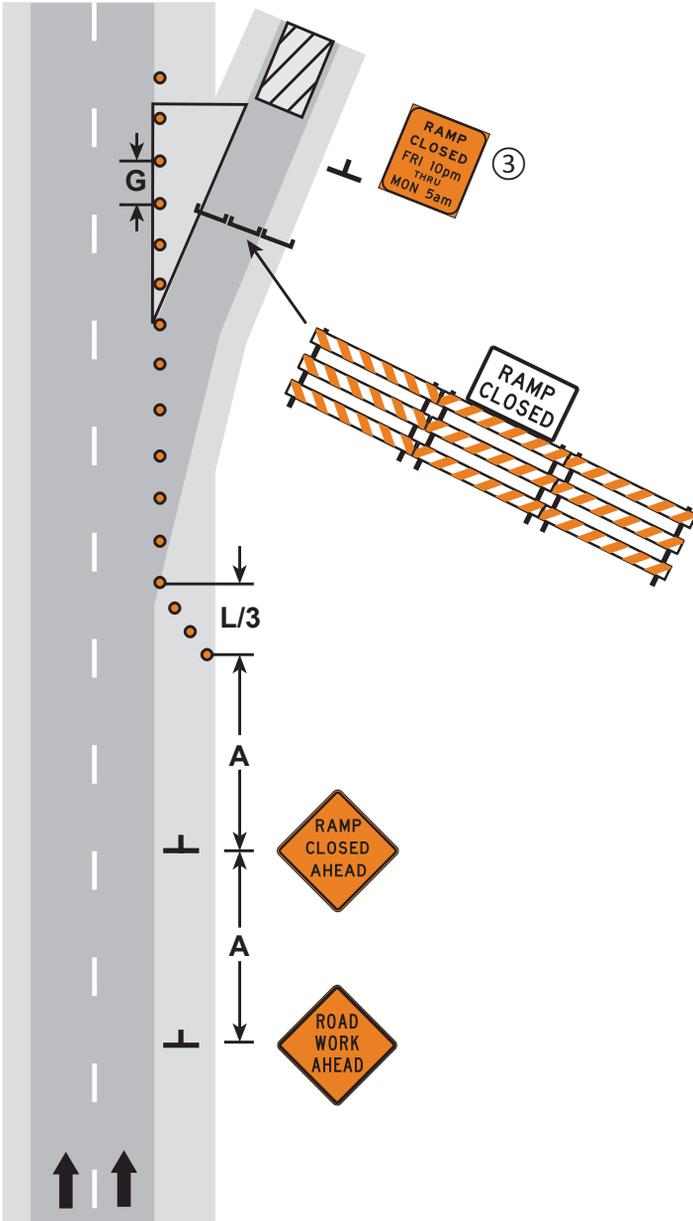
3 DAYS or LESS

6K-70

LAYOUT 70

NOTES:

1. Detour signing should be considered if the ramp is closed for 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 in advance (timewise) to provide adequate notification of upcoming closure as required by the road authority.



EXIT RAMP CLOSURE

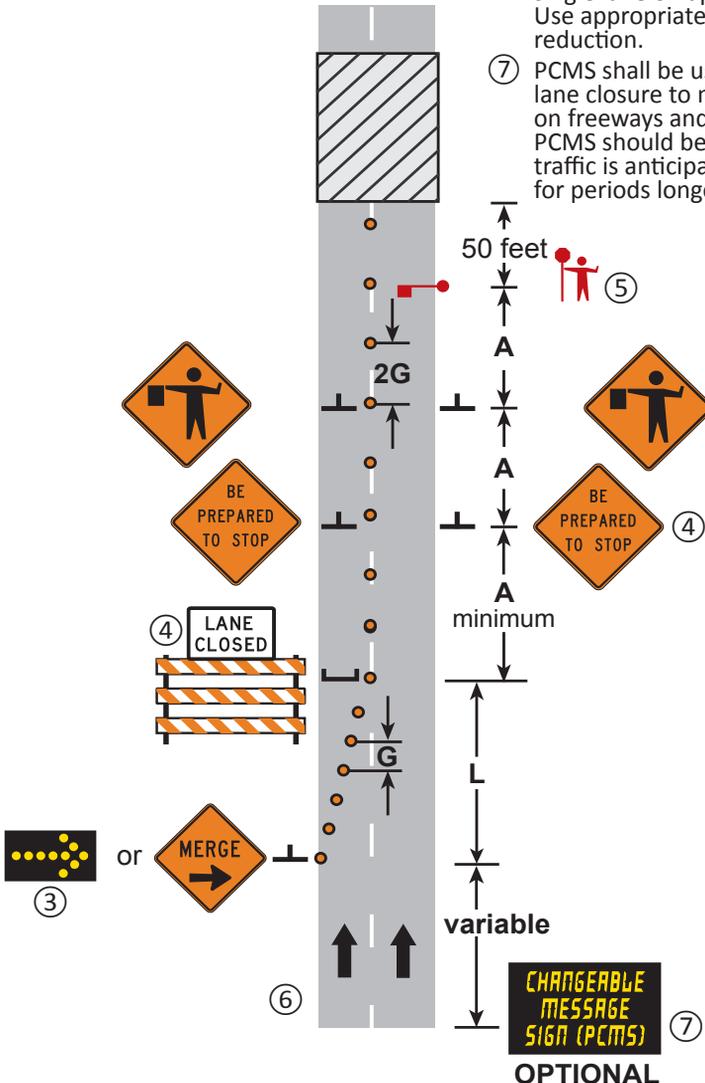
3 DAYS or LESS

6K-72

LAYOUT 72

NOTES:

1. The road authority shall be contacted prior to closure.
2. Traffic should not be stopped for intervals of greater than 15 minutes.
- ③ The Flashing Arrow Board shall be used when the posted speed limit is 45 mph or greater. The Flashing Arrow Board shall 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.
- ④ The LANE CLOSED sign and/or the BE PREPARED TO STOP sign may be omitted when the posted speed limit is 40 mph or less.
- ⑤ Law Enforcement may be used instead of or in addition to a flagger.
- ⑥ Traffic should be reduced to a single lane on approach to flagger. Use appropriate layout(s) for lane reduction.
- ⑦ PCMS shall be used prior to the lane closure to notify the public on freeways and expressways. PCMS should be used anytime traffic is anticipated to be stopped for periods longer than 5 minutes.



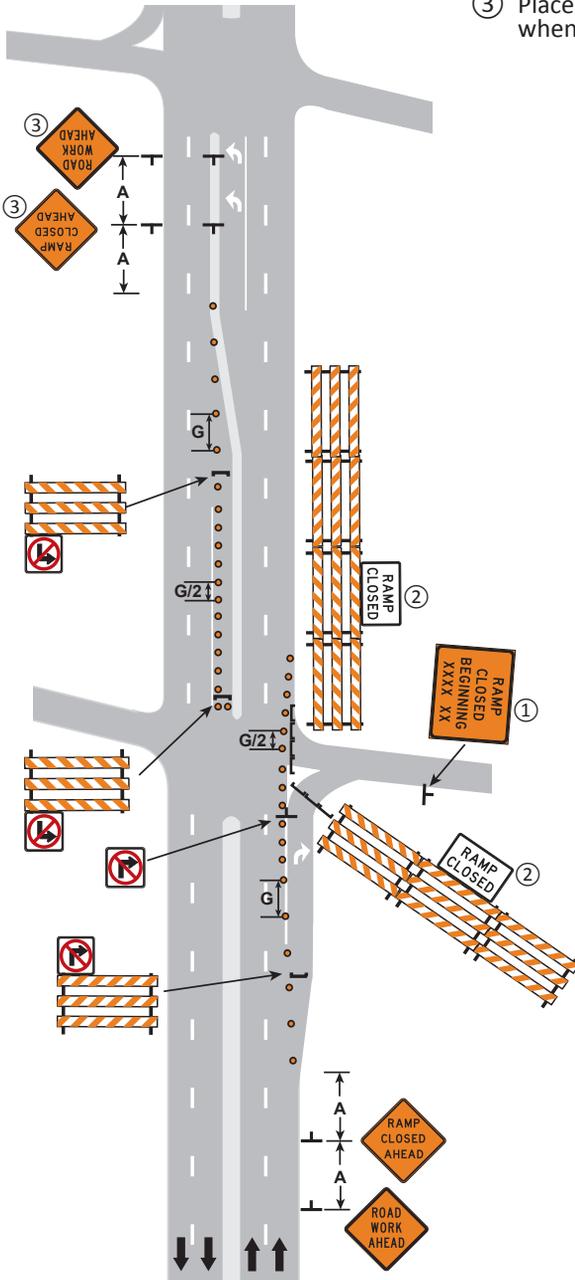
**TEMPORARY ROAD CLOSURE
MULTI-LANE DIVIDED ROAD**

12 HOURS or LESS

LAYOUT 73

NOTES:

- ① Ramp Closure Notice sign should be installed in 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.



**CLOSURE AT TOP OF ENTRANCE RAMP
MULTI-LANE DIVIDED ROAD**

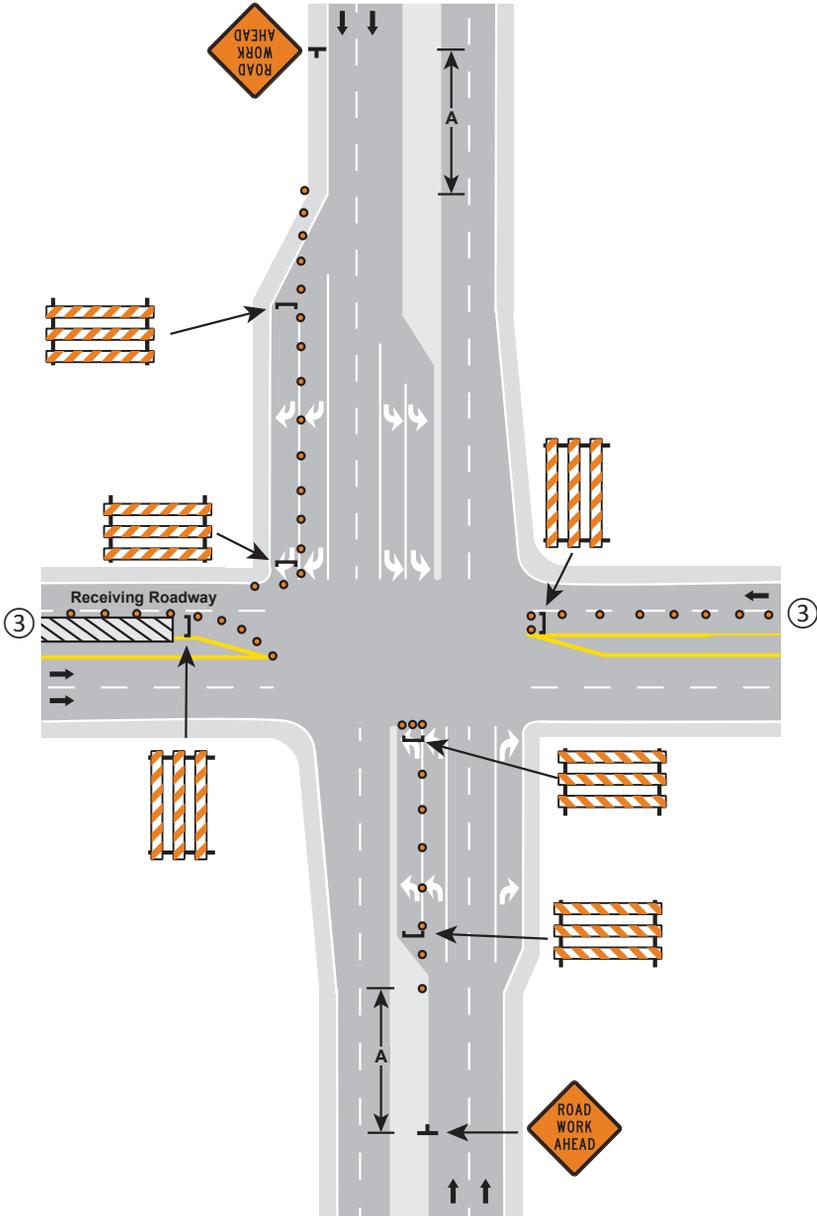
3 DAYS or LESS

6K-74

LAYOUT 74

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

Work on Intersecting Roadway

3 DAYS or LESS

LAYOUT 75