

NOTES:

1. All vehicles shall display two 360-degree yellow flashing vehicle lights or strobes.
2. The separation distance between the striper and the last shadow vehicle should be determined by the track free time of the pavement marking material.
3. Any vehicle(s) operated totally or partially in a high speed traffic lane should be equipped with a truck mounted attenuator.
4. If tracking of the wet paint is anticipated, the use of cones or stationary "Wet Paint" signs should be considered.

FRONT FACING SIGNS



All optional vehicles shall have the same signing as the striper.

OPTIONAL



REAR FACING SIGNS



WET PAINT
KEEP OFF
LINES



or



or



Select appropriate message



WET PAINT
KEEP OFF
LINES

or

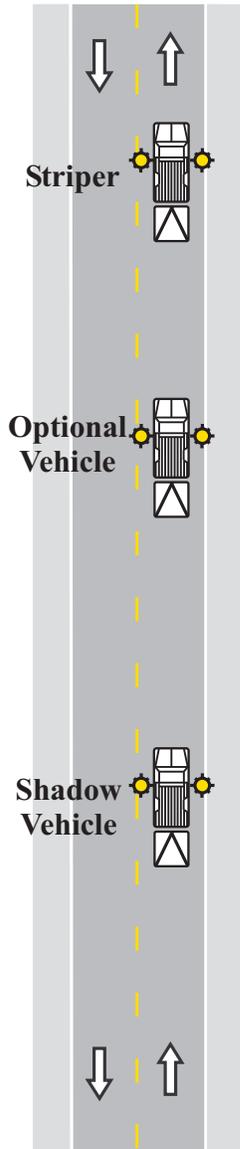


**WET
PAINT**

and

**KEEP
OFF**

Select appropriate message



**STRIPING OPERATIONS
TWO LANE TWO WAY ROAD**

NOTES:

1. All vehicles shall display two 360-degree yellow flashing vehicle lights or strobes.
2. The separation distance between the striper and the last shadow vehicle should be determined by the track free time of the pavement marking material.
3. Any vehicle(s) operated totally or partially in a high speed traffic lane should be equipped with a truck mounted attenuator.
4. If tracking of the wet paint is anticipated, the use of cones or stationary "Wet Paint" signs should be considered.

FRONT FACING SIGNS

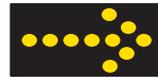


All optional vehicles shall have the same signing as the striper.

OPTIONAL



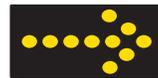
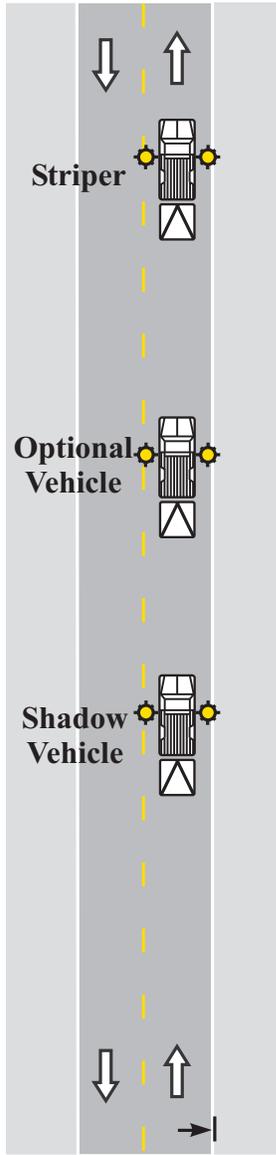
REAR FACING SIGNS



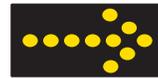
OR



OR



or



WET PAINT

and

PASS ON SHOULDER

Select appropriate message



OR



OR



10 foot Minimum width

**STRIPING OPERATIONS
TWO LANE TWO WAY ROAD - PASSING ON SHOULDER**

NOTES:

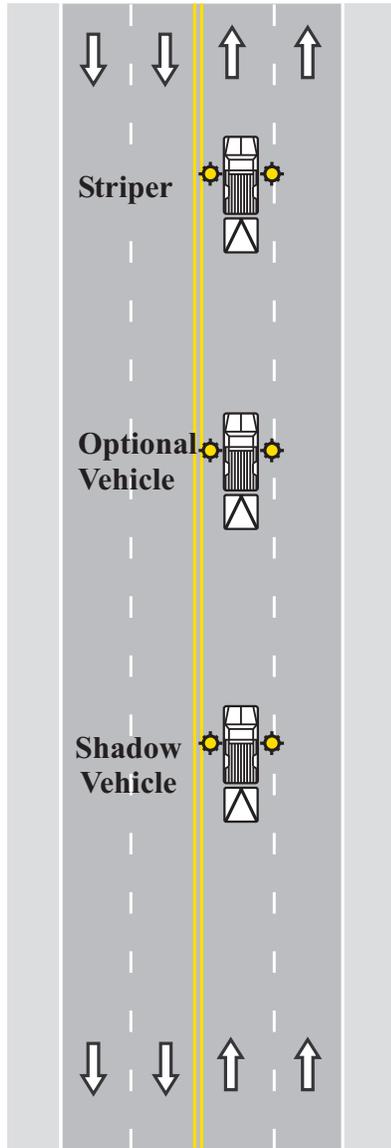
1. All vehicles shall display two 360-degree yellow flashing vehicle lights or strobes.
2. The separation distance between the striper and the last shadow vehicle should be determined by the track free time of the pavement marking material.
3. Any vehicle(s) operated totally or partially in a high speed traffic lane should be equipped with a truck mounted attenuator.
4. If tracking of the wet paint is anticipated, the use of cones or stationary "Wet Paint" signs should be considered.
5. Remove sign when operating this vehicle in the right lane.

FRONT FACING SIGNS

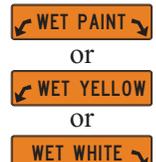


All optional vehicles shall have the same signing as the striper.

REAR FACING SIGNS



Select appropriate message



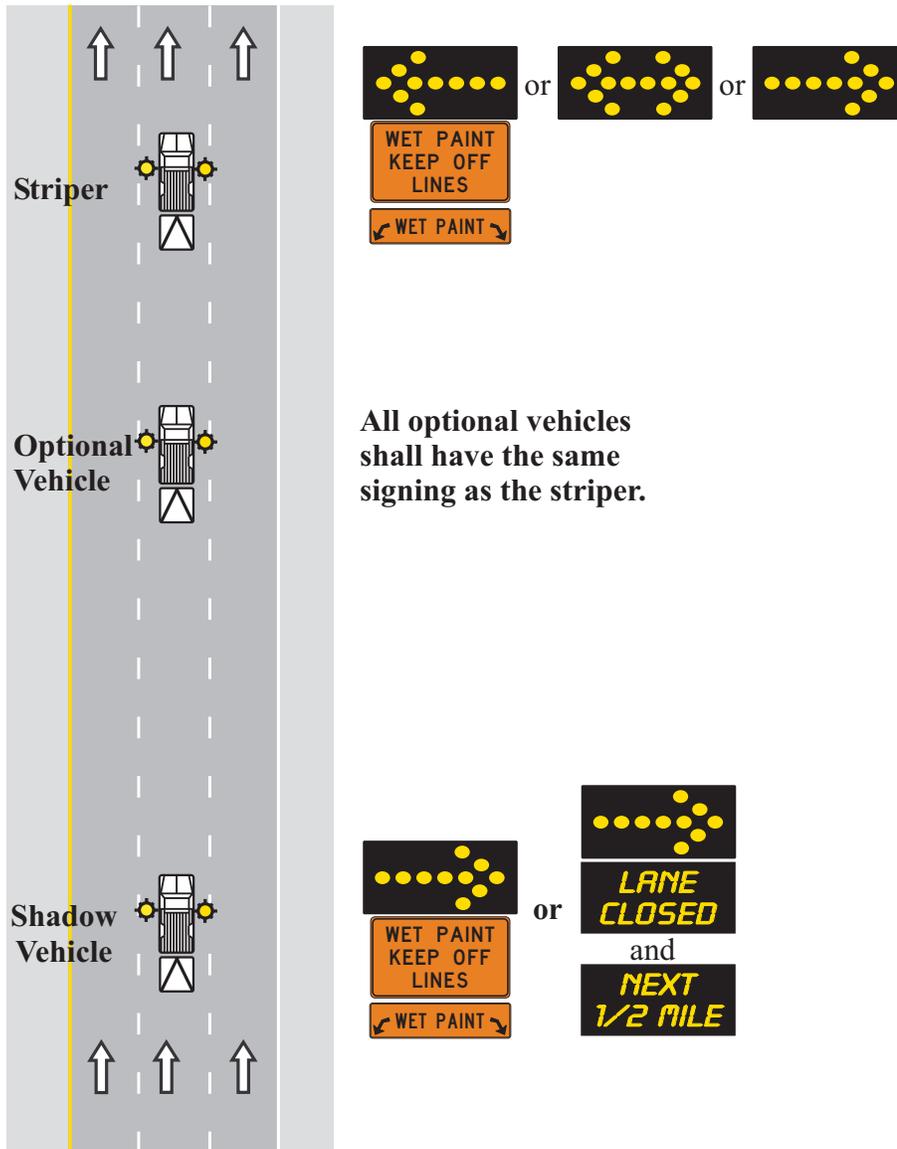
Select appropriate message

**STRIPING OPERATIONS
CENTERLINE - LANE LINE - EDGELINE STRIPING
FOUR LANE UNDIVIDED ROAD**

NOTES:

1. All vehicles shall display two 360-degree yellow flashing vehicle lights or strobes.
2. The separation distance between the striper and the last shadow vehicle should be determined by the track free time of the pavement marking material.
3. Any vehicle(s) operated totally or partially in a high speed traffic lane should be equipped with a truck mounted attenuator.
4. If tracking of the wet paint is anticipated, the use of cones or stationary "Wet Paint" signs should be considered.

REAR FACING SIGNS

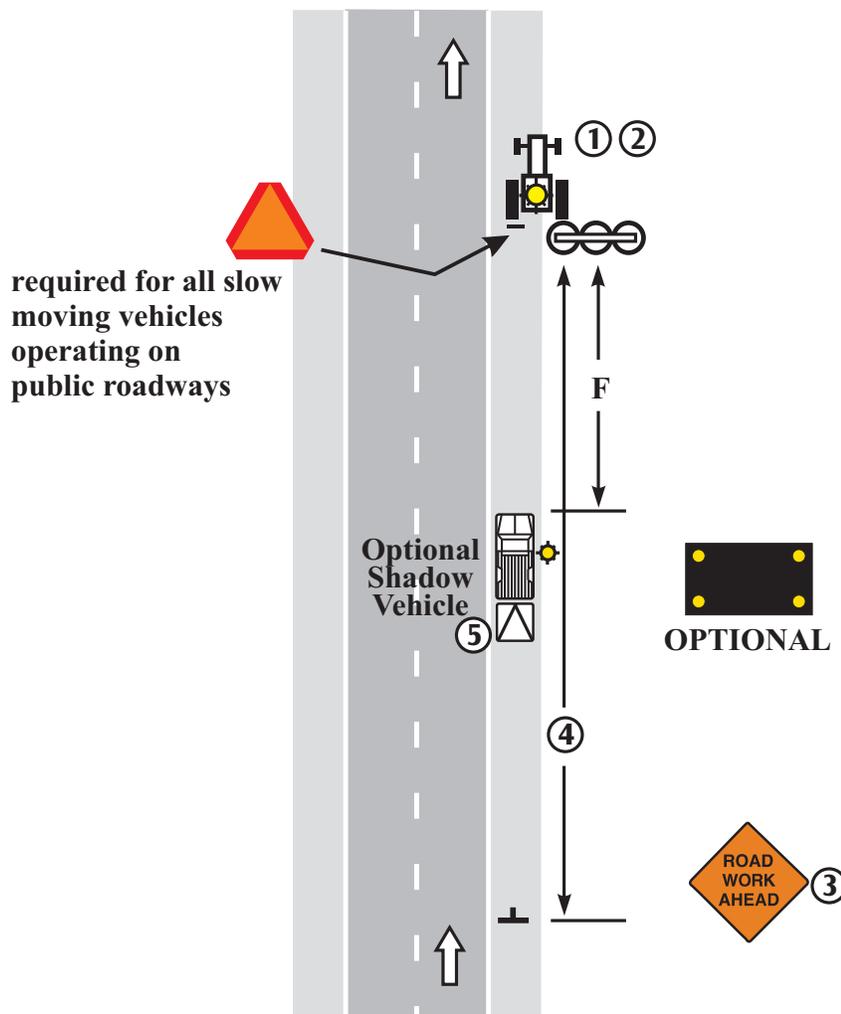


**STRIPING OPERATIONS
LANE LINE STRIPING - CENTER LANE OPERATIONS
MULTI-LANE DIVIDED ROAD**

NOTES:

1. The operations should be scheduled and completed during daylight work shifts and have little or no interference with traffic. The work should be suspended during periods of poor weather or visibility.
2. All vehicles shall be equipped with a flashing vehicle light visible 360-degrees around the vehicle when viewed from a distance of 60 feet.
3. The ROAD WORK AHEAD sign may be omitted when there is an adequate approach decision sight distance to the equipment along the majority of the route.
4. When advance warning signs are used, the signs should be no more than 3 miles from the work vehicle. The location of the signs should be determined by the sources of traffic, such as major cross roads.
5. On roadways where decision sight distance is restricted and the equipment must encroach into the traffic lane routinely, a shadow vehicle may be used as shown.

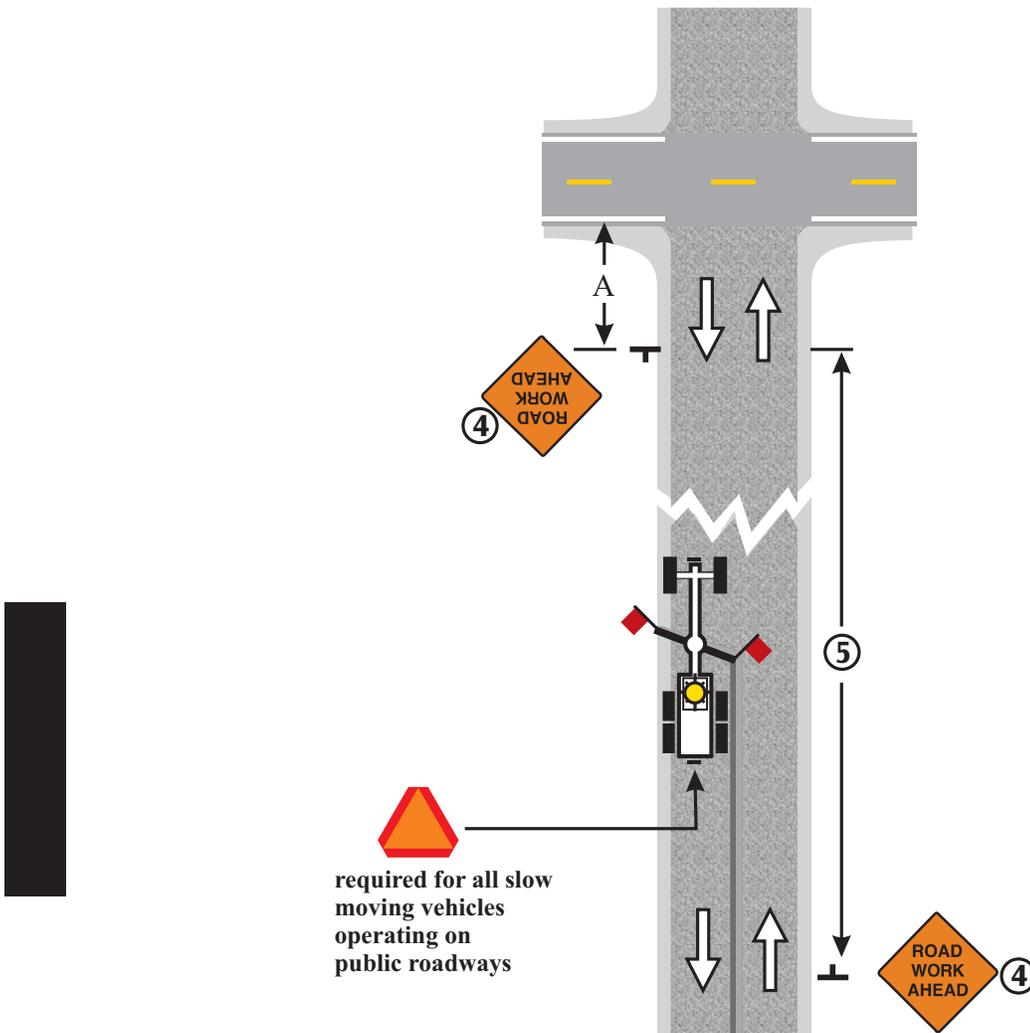
**SEE
NOTE 5**



**WORK OFF ROADWAY
MOBILE OPERATIONS HAVING LITTLE
OR NO INTERFERENCE WITH TRAFFIC**

NOTES:

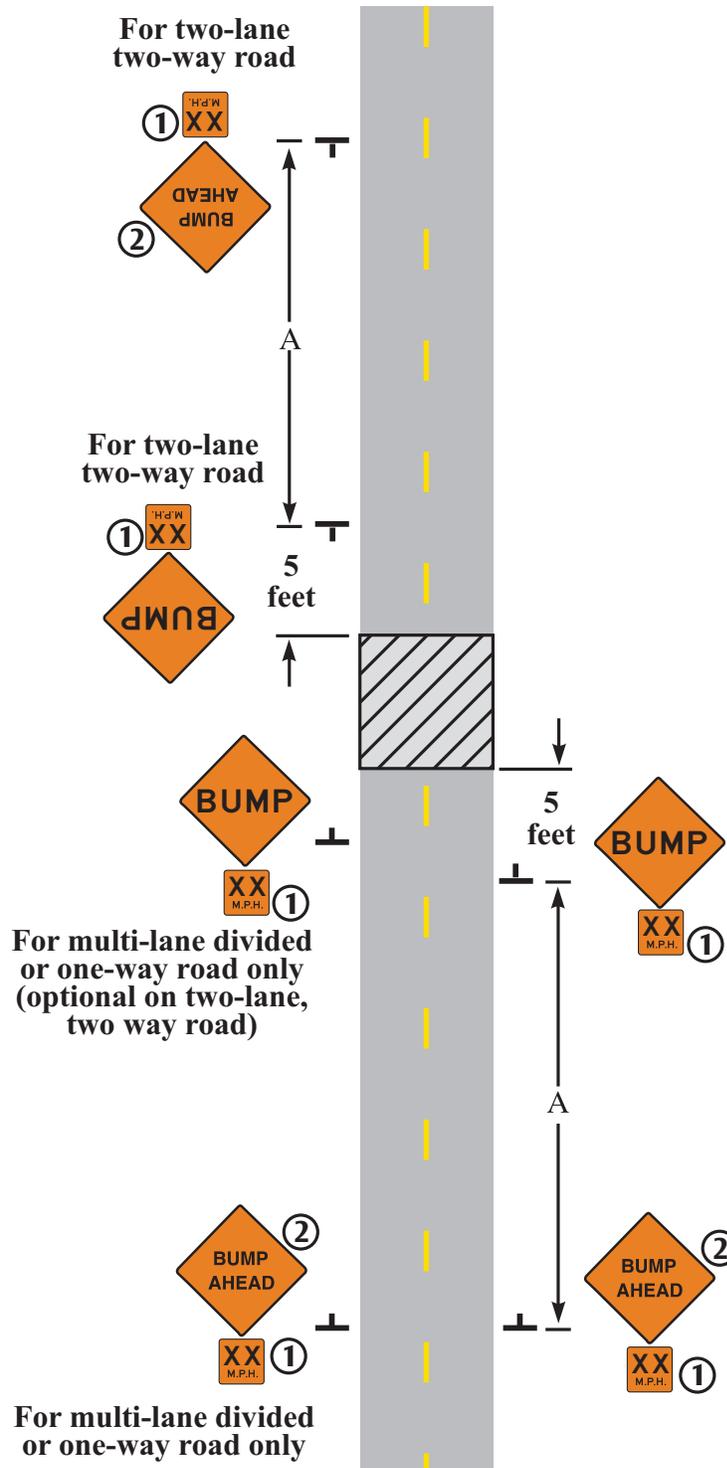
1. Grading operations should be scheduled and completed during daylight work shifts. Work should be suspended during poor weather or visibility conditions.
2. Motor Graders shall be equipped with a flashing vehicle light visible 360 degrees around the vehicle when viewed from a distance of 60 feet.
3. Motor grader blade end(s) may be marked with red or orange flags to provide additional warning and make the equipment more visible to passing vehicles.
4. The ROAD WORK AHEAD signs may be omitted when there is an adequate approach decision sight distance to the motor grader along the majority of the route.
5. When advance warning signs are used, the signs should be no more than 3 miles from the work vehicle. The location of the signs should be determined by the sources of traffic, such as major cross roads.



**GRAVEL ROAD MAINTENANCE
GRADING OPERATIONS
TWO LANE TWO WAY ROAD**

NOTES:

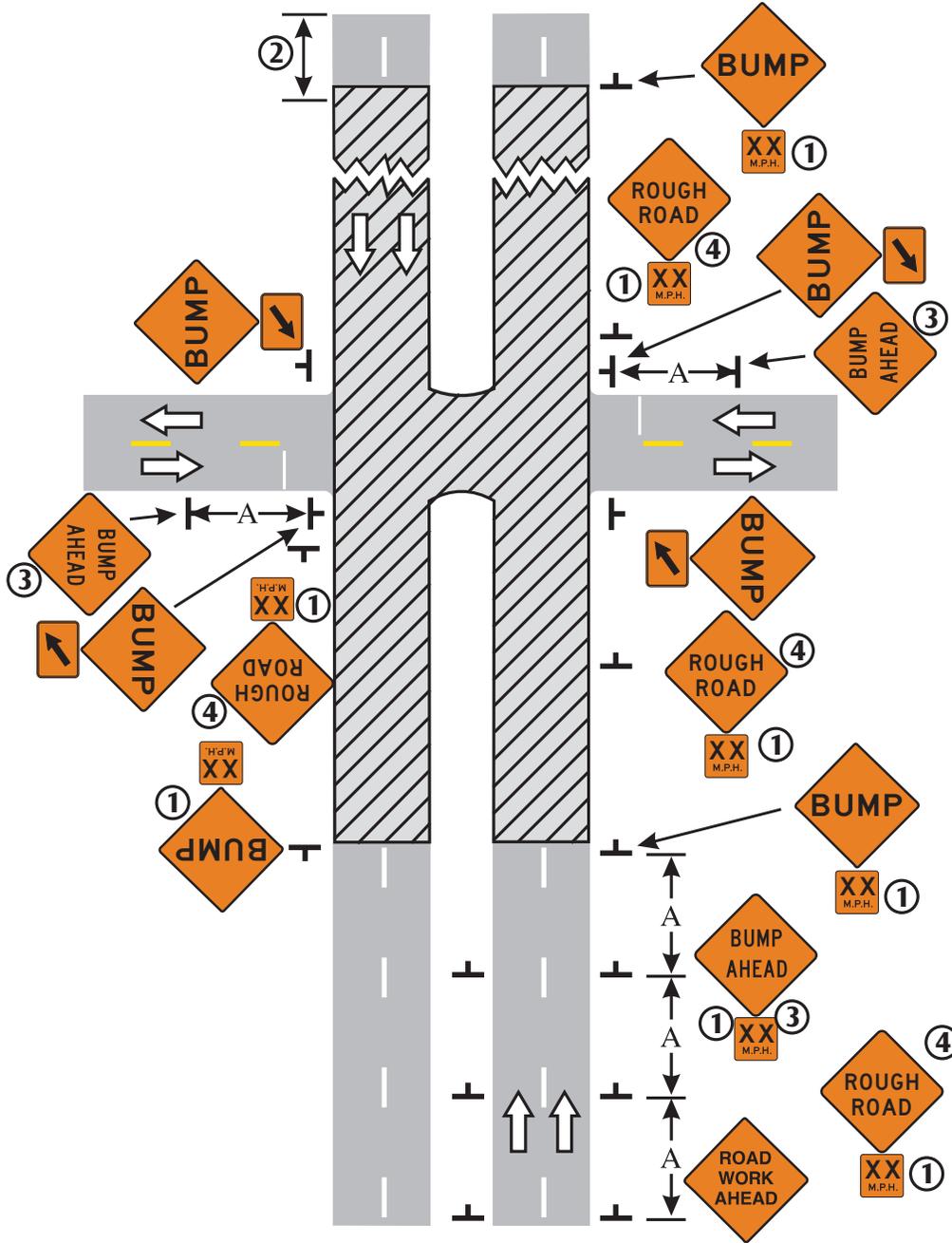
1. When used, Advisory Speed plaques shall be installed below the appropriate warnings.
2. These devices may be omitted when the posted speed limit is 40 mph or less.



TYPICAL BUMP SIGNING

NOTES:

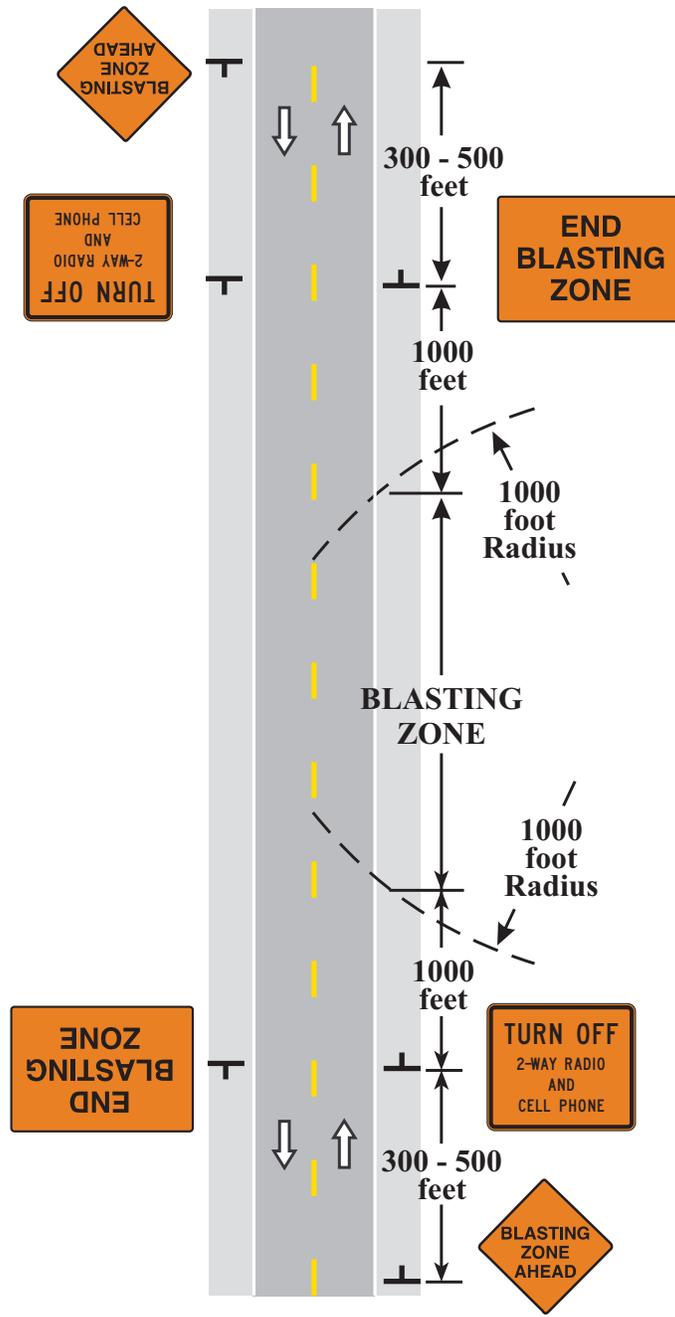
1. When used, Advisory Speed plaques shall be installed below the appropriate warnings.
2. Use the same advance warning signs and spacings for the other approach to the milled roadway surface area.
3. The BUMP AHEAD and Advisory Speed plaque may be omitted when the posted speed is 40 mph or less.
4. Use the appropriate advance warning sign for the roadway condition, i.e. GROOVED PAVEMENT, LOOSE GRAVEL, ROUGH ROAD, STEEL PLATE AHEAD. A Motorcycle plaque may be installed below the appropriate advance warning sign if the warning is directed primarily to motorcyclists.



**RE-SURFACING OPERATION
WORK SPACE BEFORE AND THRU INTERSECTION
MULTI-LANE DIVIDED ROAD**

NOTES:

1. Whenever electric blasting caps are used for blasting within 1000 feet of a roadway, the signing shown shall be used. On a divided highway, the signs should be installed on both sides of the directional roadways.
2. The signs shall be covered or removed when there are no explosives in the area or the area is otherwise secure.
3. Any intersecting road within the 1000-foot radius of the blasting area shall be signed in a similar manner.
4. Prior to blasting, the blaster in charge shall determine whether highway traffic in the blasting zone will be endangered by the blasting operation. If there is danger, highway traffic will not be permitted to pass through the blasting zone during blasting operations. See Layouts 81, 82, or 83.

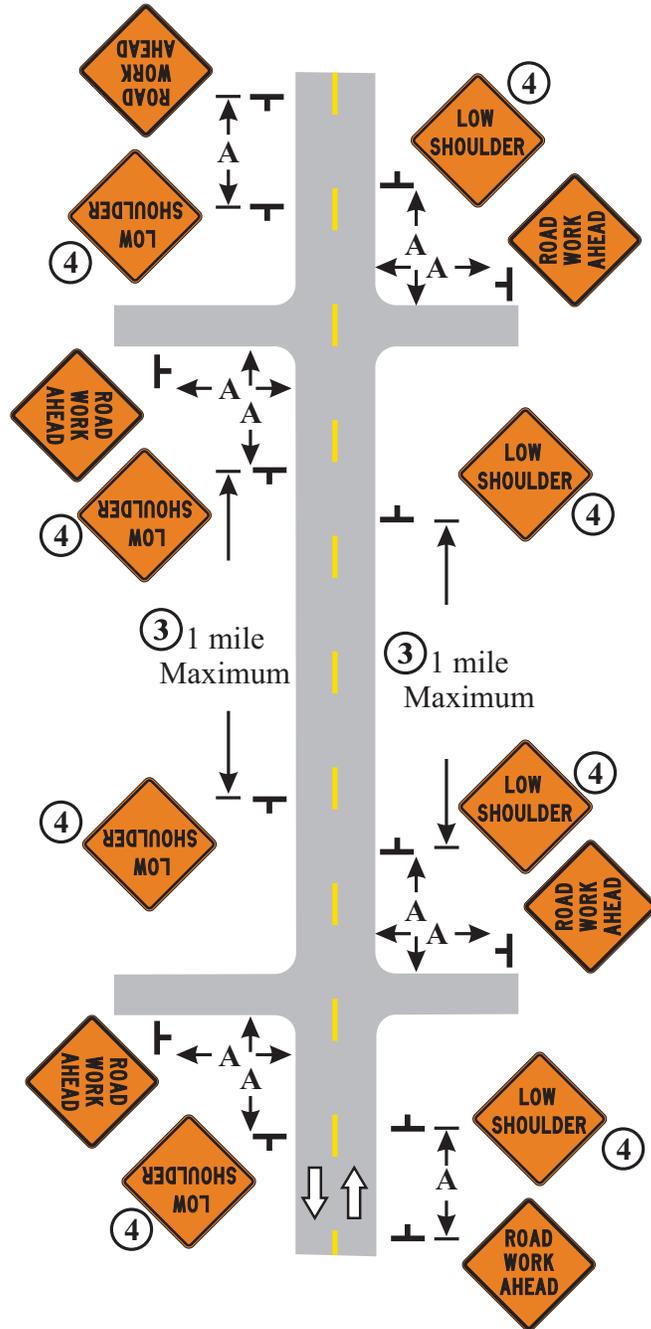


BLASTING ZONE

NOTES:

1. This layout should be used for those stationary temporary traffic control zones that extend over a relatively long segment of roadway.
2. The appropriate layout shall be used for the active work space (such as area of paving, etc).
3. Confirmation signing for a continuous condition should be placed at approximately 1 mile spacing.
4. Use the appropriate advance warning sign for the roadway condition, i.e. GROOVED PAVEMENT, LOOSE GRAVEL, ROUGH ROAD STEEL PLATE AHEAD.

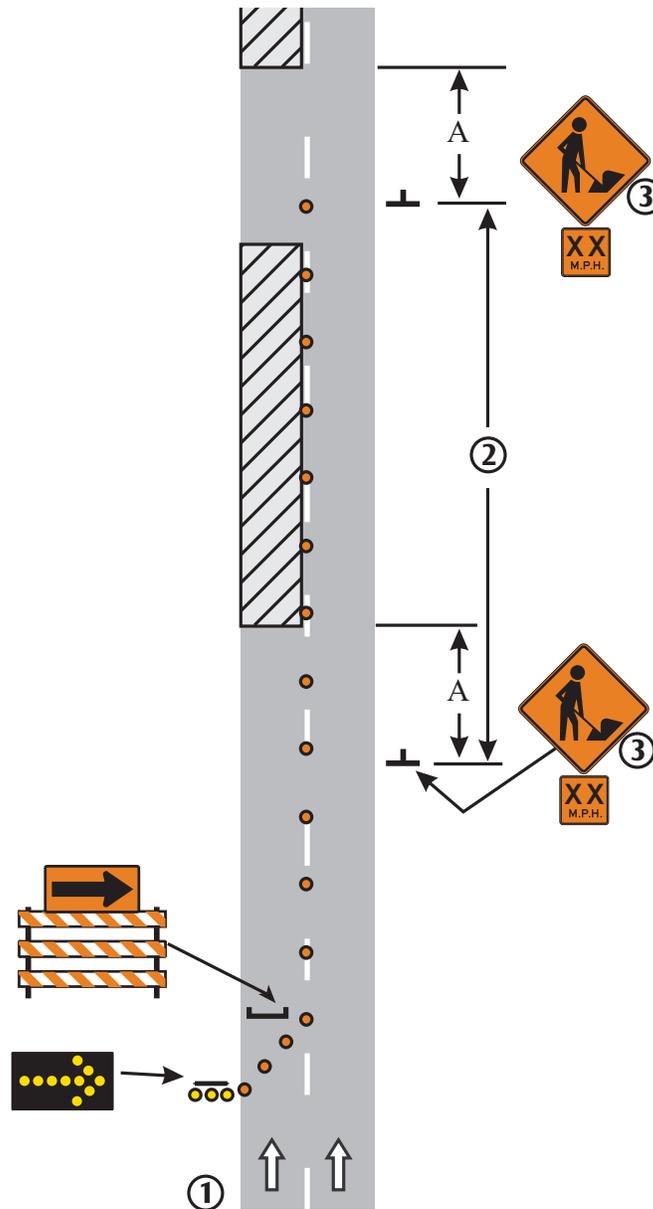
A Motorcycle plaque may be installed below the appropriate advance warning sign if the warning is directed primarily to motorcyclists.



**CROSSROAD & CONFIRMATION SIGNING
TRAFFIC CONTROL ZONE**

Notes:

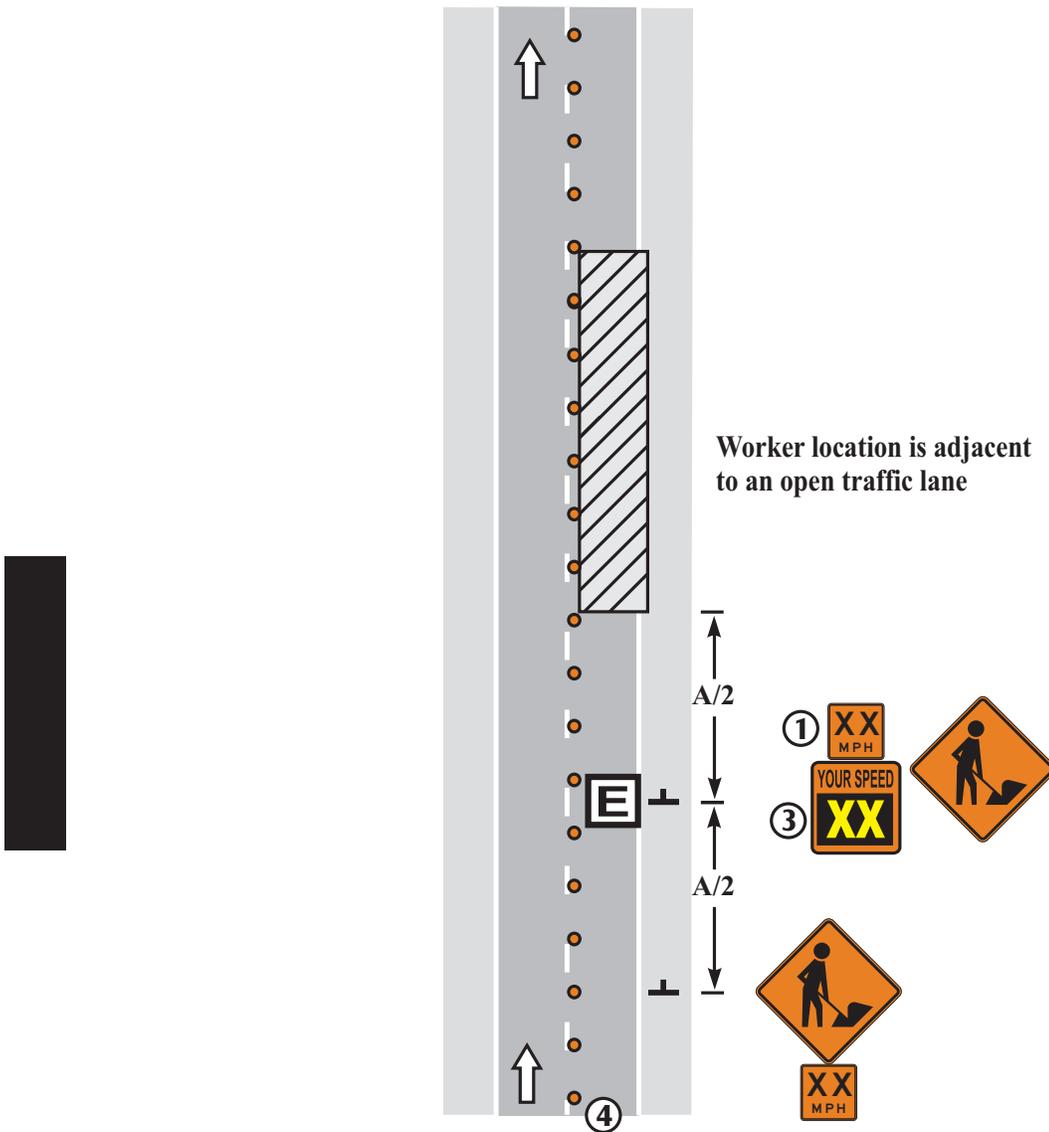
1. Use the appropriate layout for channelizing, advance signing, and spacing.
2. In long work zones, this sign assembly may be repeated before each worker area. When used, it shall be installed less than one mile in advance of the workers.
3. If used, an Advisory Speed Limit plaque shall be installed beneath the Worker Ahead symbol sign or the appropriate advance warning sign(s).
4. The advisory speed value shall not be higher than any in-place regulatory speed limit.
5. An advance warning sign with an Advisory Speed Limit plaque should not be placed near a regulatory speed sign.
6. See "Work Zone Speed Limit Guidelines" for more information on work zone speed limits.



**ADVISORY SPEED LIMIT
MULTI-LANE ROAD**

NOTES:

1. The advisory speed plaque and appropriate warning sign should be located near the Dynamic Speed Display (DSD) (also known as "YOUR SPEED") sign, but may be up to a maximum of 100 feet ahead if found necessary.
2. The advisory speed plaque shall be removed when workers are not present, and the DSD sign should be removed, disabled, or re-programmed for the posted speed limit.
3. If the DSD sign is used with a regulatory speed limit (black on white sign), then the "YOUR SPEED" sign on the DSD device shall also be black legend on a white background.
4. TTC devices required to closed the traffic lane have not been shown.
5. Refer to the *"Work Zone Speed Limit Guidelines"* for additional guidance on setting Advisory Speed Limits and optimum layout distances.



**DYNAMIC SPEED DISPLAY SIGN
(YOUR SPEED SIGN)**

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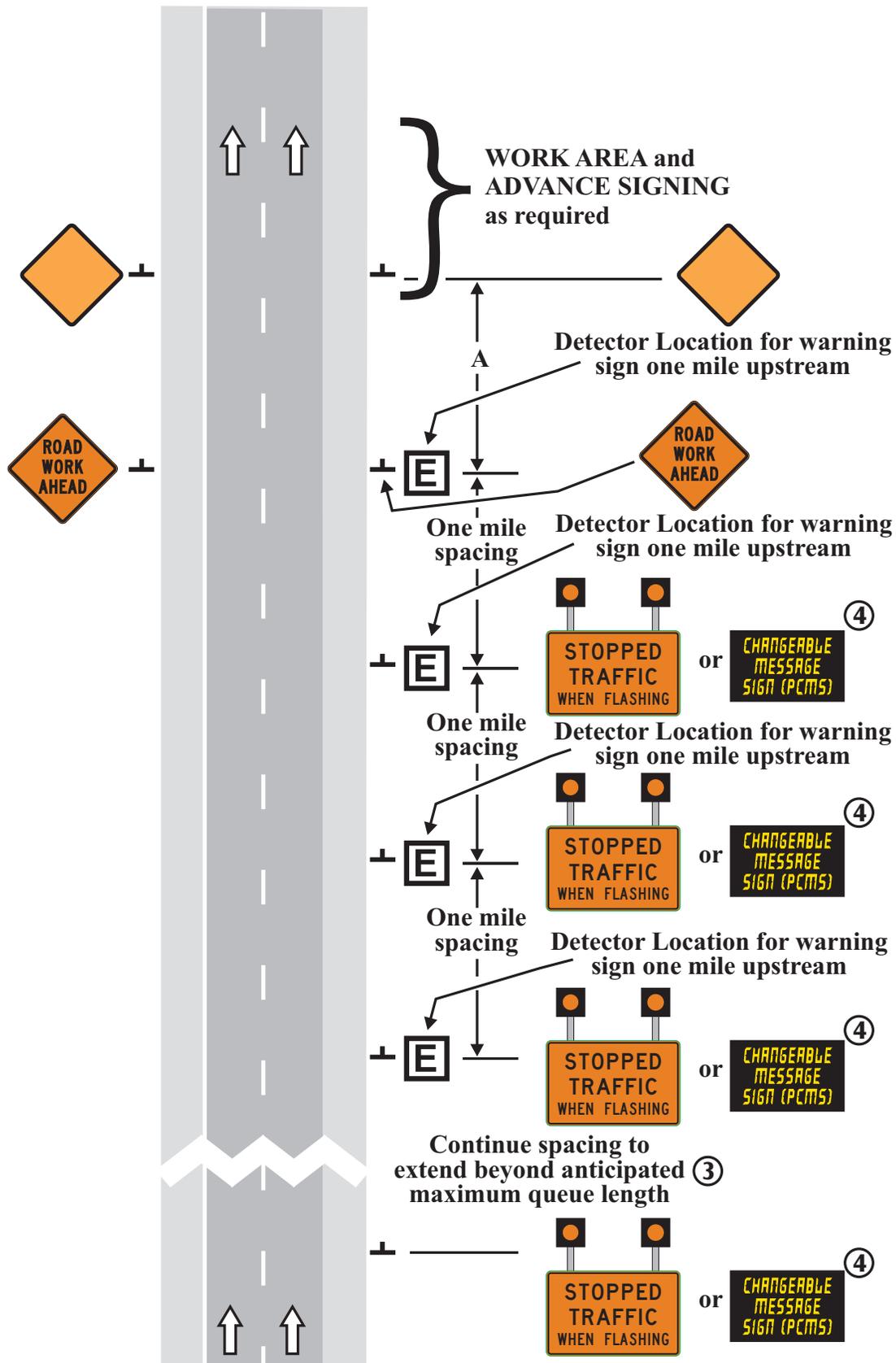
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NOTES:

1. The layout only shows the additional signs and devices required to setup a Stopped Traffic System. See other Temporary Traffic Control layouts for the proper temporary traffic control devices beyond the ROAD WORK AHEAD signs.
2. The STOPPED TRAFFIC WHEN FLASHING signs or the PCMS should activate and deactivate when the downstream detector senses average traffic speeds meeting threshold values as set by the engineer. A maximum one minute average speed drop of 20 mph or more below the posted speed limit (posted prior to road work in the queue area) may typically be used for a threshold value on high speed roadways. To deactivate the signage, the maximum one minute average speed typically should recover to within 10 mph of the posted speed limit or higher.
3. The estimated maximum queue length may be determined by engineering analysis or previous experience, and should be reviewed and field adjusted to fit actual traffic conditions such that the first warning device is upstream of the queue.
4. When PCMS devices are used, the two part message should read: STOPPED TRAFFIC - - PREPARE TO STOP and the PCMS may be used for other appropriate messages whenever the stopped traffic message is not required.

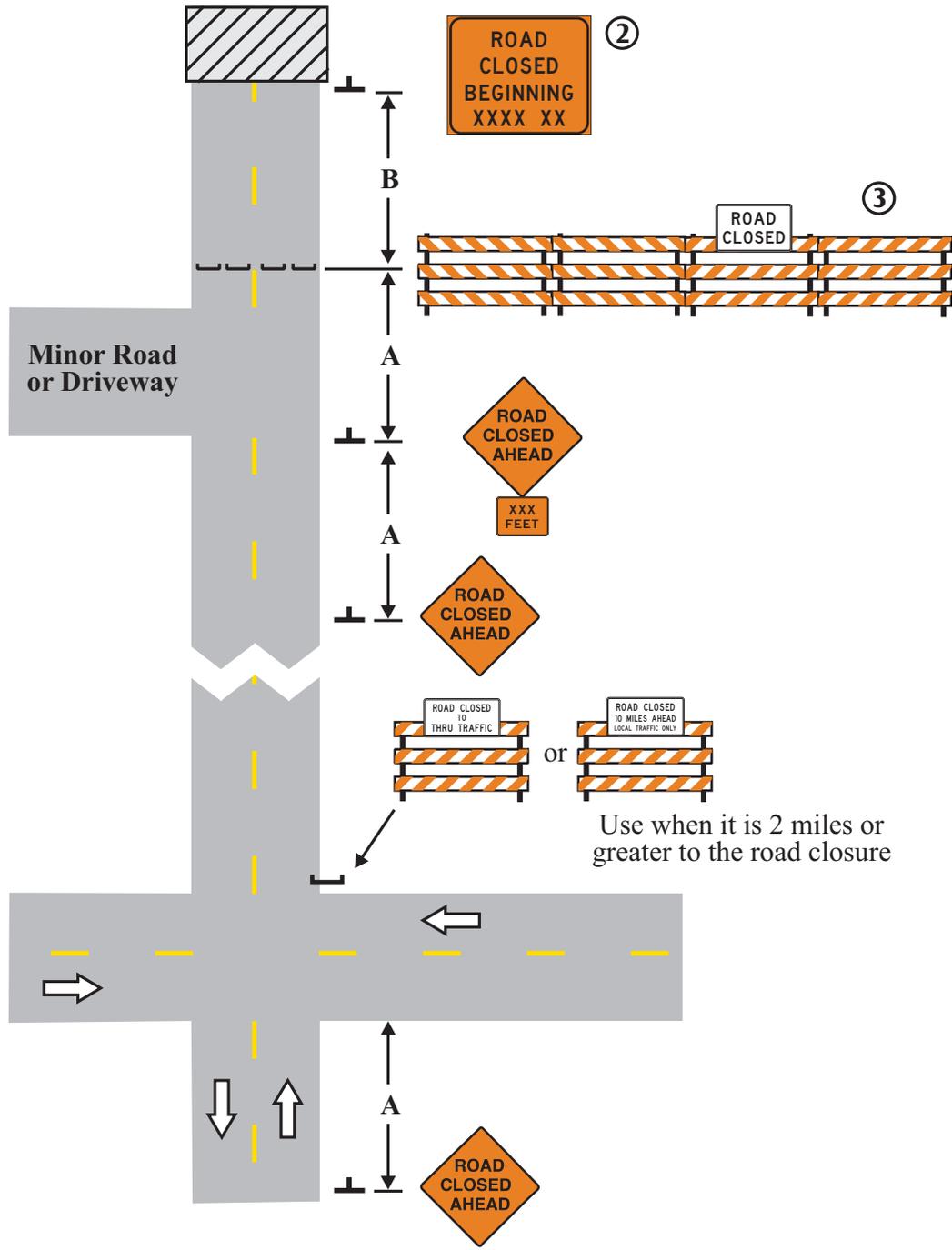
STOPPED TRAFFIC AHEAD WARNING SYSTEM
Layout 79a



STOPPED TRAFFIC AHEAD WARNING SYSTEM
Layout 79b

NOTES:

1. The Road Authority will determine if a detour is required and specify the detour route.
2. Road Closure Notice sign should be installed seven days in advance of the closure.
3. Install at the last driveway or intersection beyond which there is no public access.

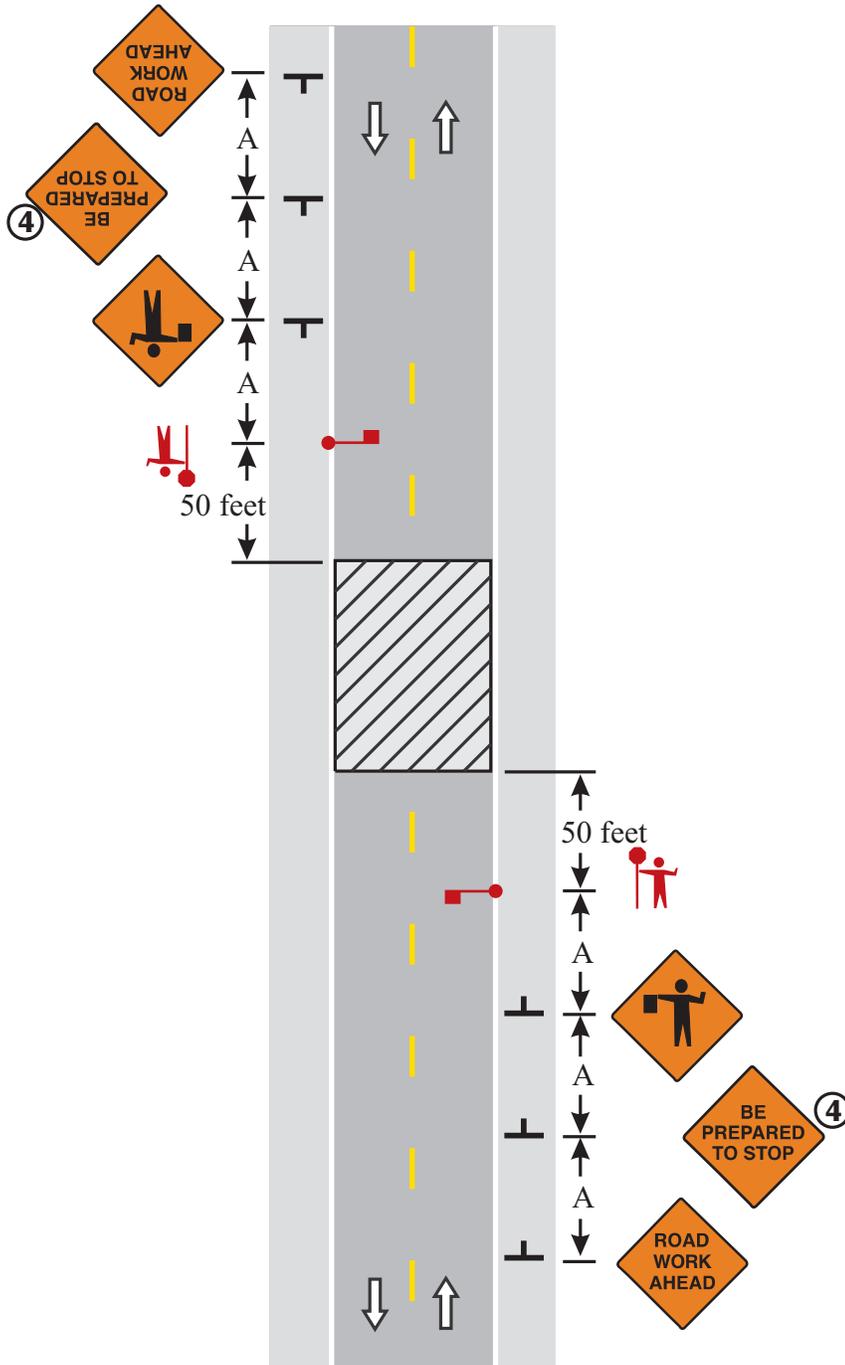


Use when it is 2 miles or greater to the road closure

ROAD CLOSURE

NOTES:

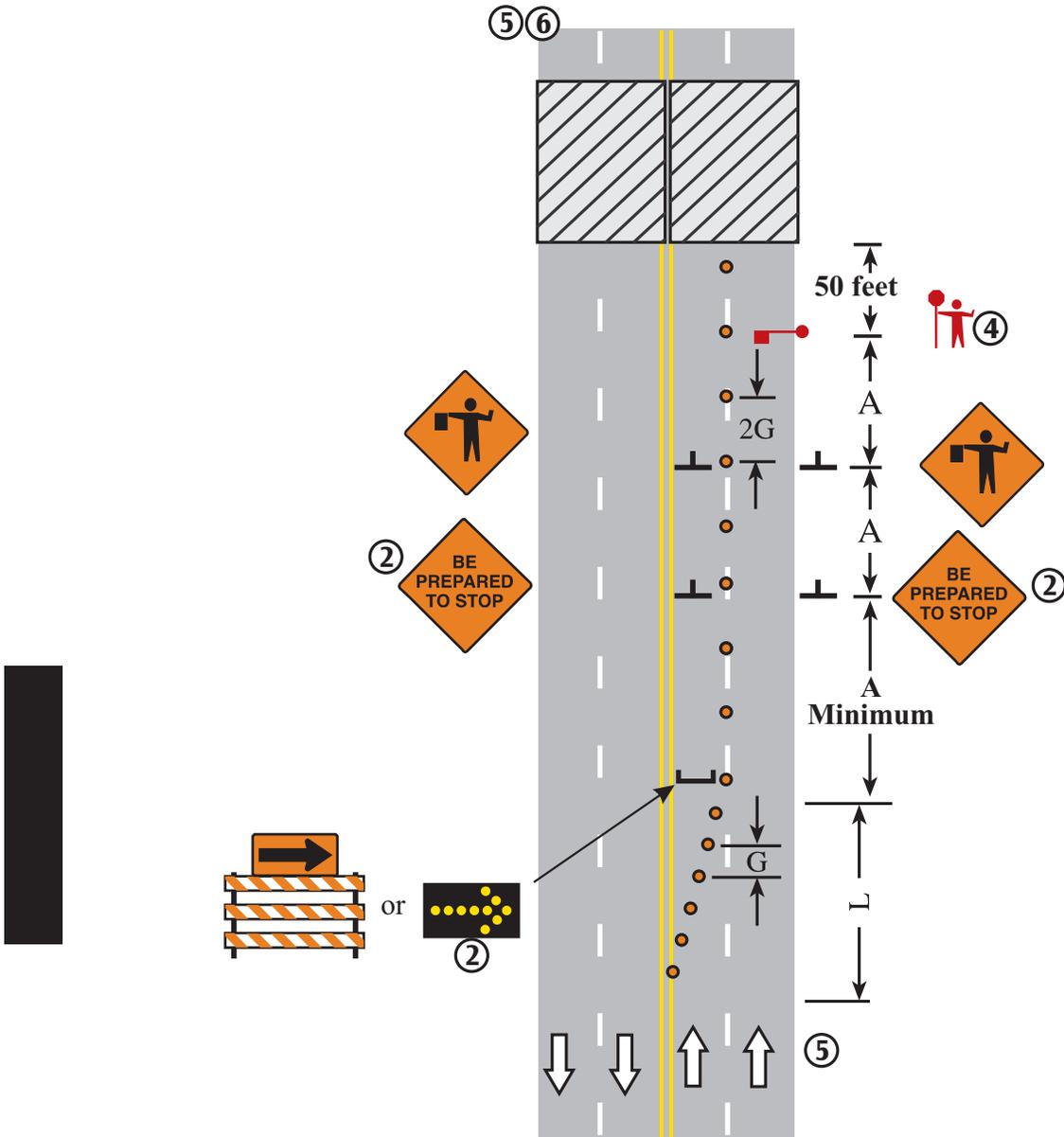
1. The traffic from both lanes should not be stopped for more than 15 minutes.
2. Conditions represented are for work during daytime hours only.
3. For night closures, the following should be used:
 - a. Law enforcement officers with squad car for flaggers.
 - b. A changeable message sign in each direction.
4. The BE PREPARED TO STOP sign may be omitted when the posted speed limit is 40 mph or less.



**TEMPORARY ROAD CLOSURE
TWO LANE TWO WAY ROAD**

NOTES:

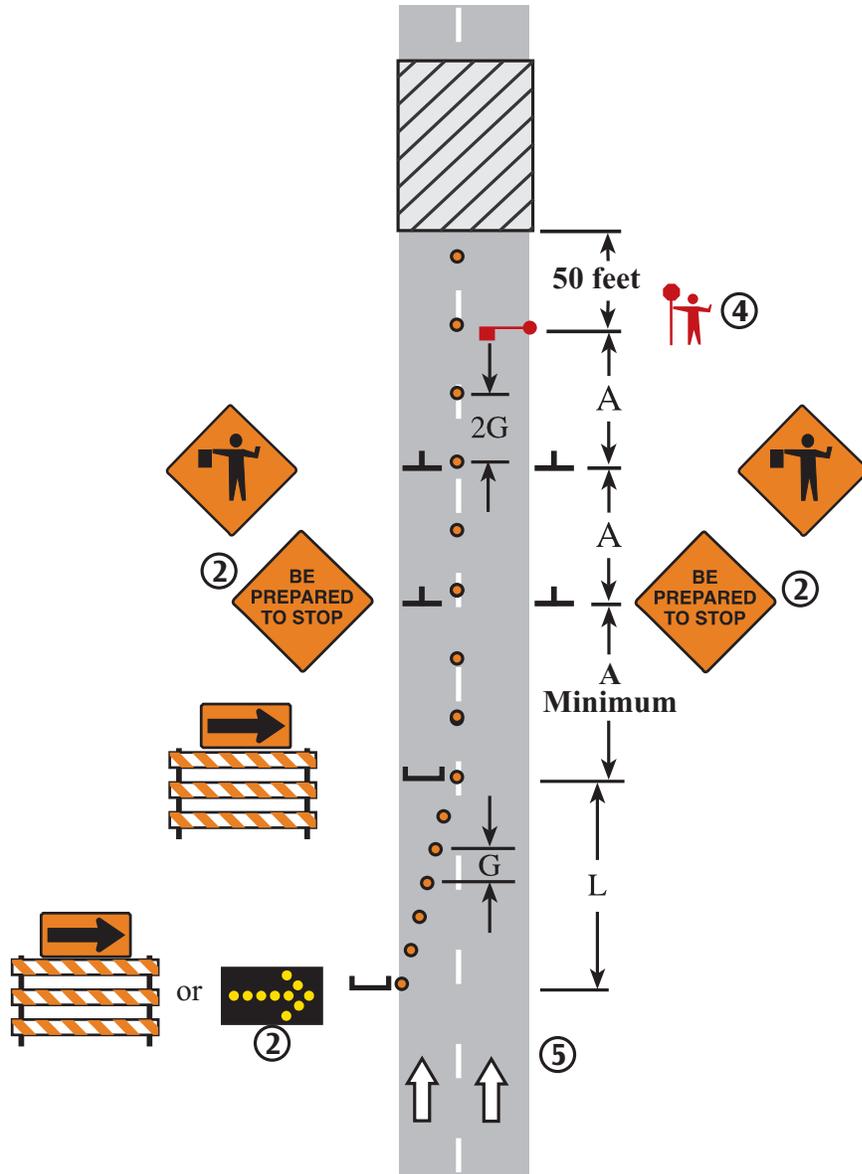
1. The traffic from both lanes should not be stopped for more than 15 minutes.
2. The BE PREPARED TO STOP sign and the flashing arrow board shall be used when the posted speed limit is 45 mph or greater.
3. For roads with 3 or more lanes of traffic in one direction, use the appropriate stationary layout.
4. A law enforcement officer with squad car shall be used instead of a flagger during night operations.
5. Advance traffic control devices for a left lane closure shall be as shown in Layouts 34 or 35.
6. The advance warning sign sequence is shown for one way direction only. The other direction shall be identical.



**TEMPORARY ROAD CLOSURE
MULTI-LANE UNDIVIDED ROAD**

NOTES:

1. The traffic from both lanes should not be stopped for more than 15 minutes.
2. The BE PREPARED TO STOP sign and the flashing arrow board shall be used when the posted speed limit is 45 mph or greater.
3. For roads with 3 or more lanes of traffic in one direction, use the appropriate stationary layout.
4. A law enforcement officer with squad car shall be used instead of a flagger during night operations.
5. Advance traffic control devices for a left lane closure shall be as shown in Layout 52.

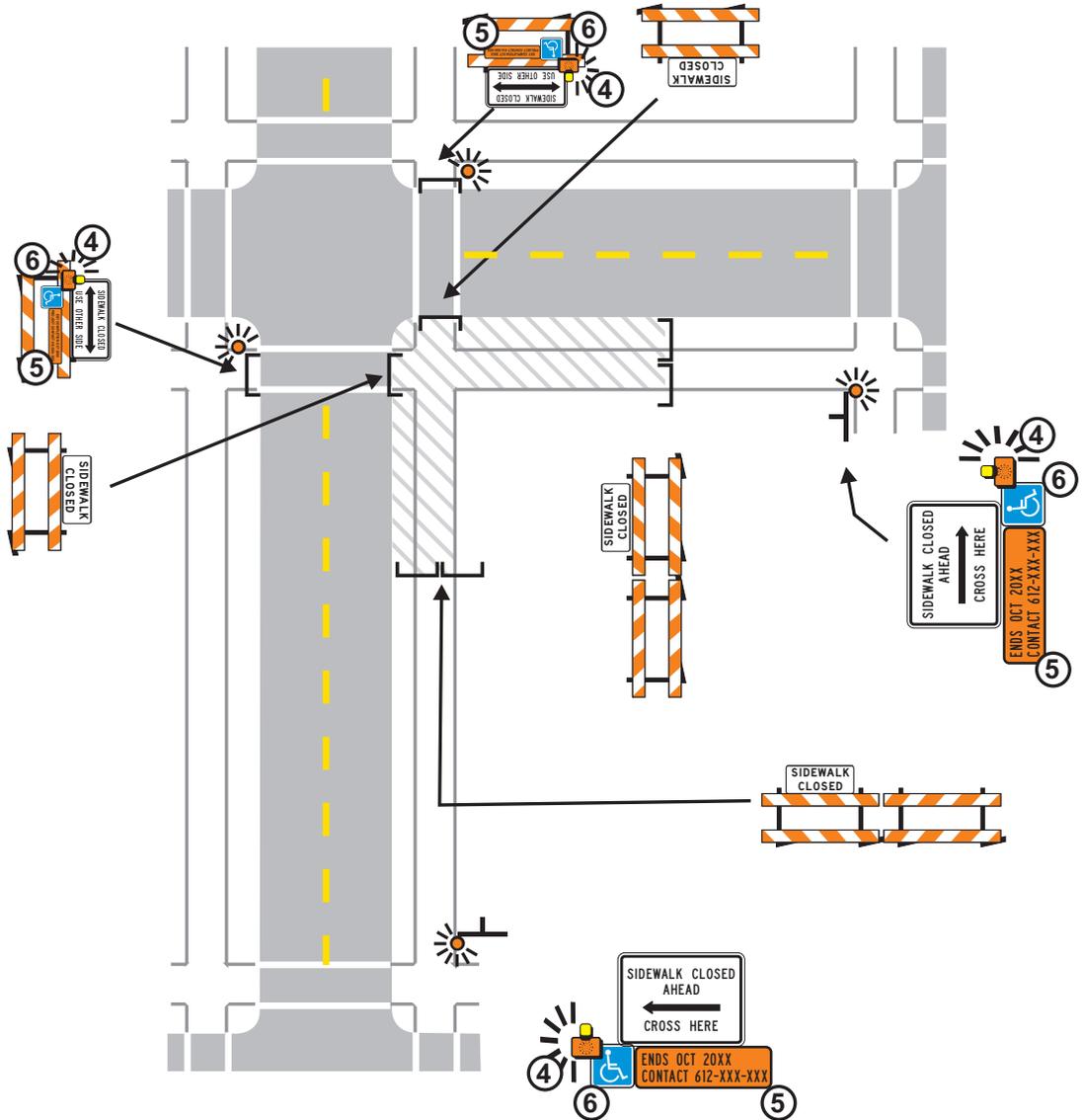


**TEMPORARY ROAD CLOSURE
MULTI-LANE DIVIDED ROAD**

NOTES:

1. When crosswalks, sidewalks or other pedestrian facilities are blocked, closed or relocated, temporary facilities shall include accessibility features consistent with the features present in the existing pedestrian facility.
2. The examples show only key typical dimensions. Refer to the MnDOT Pedestrian Accommodations Through Work Zones website (<http://www.dot.state.mn.us/trafficeng/workzone/apr.html>) for standards, guidance and options when blocking, closing, or relocating pedestrian facilities.
3. Only traffic control devices controlling pedestrian flows are shown. Other devices may be needed to control traffic on the streets.
4. An approved audible message device or tactile message should be provided for sight-impaired pedestrians. When used, a message device should provide a complete physical description of the temporary pedestrian detour including duration, length of (and/or distance to) the by-pass, any restrictions or hazards and project information as listed in note 5 below. The number and location of devices should be determined for each project prior to starting work. Devices may be placed prior to sidewalk work to warn regular users of the planned work.
5. Typical sign message for a temporary pedestrian detour should include information such as the duration of the walkway restrictions (beginning and/or end dates) and a project contact number for 24/7 questions or reporting hazards.
6. The International Symbol of Accessibility should be displayed when any walkway through a work zone has been determined to be TPAR compliant. The Symbol of Accessibility shall not be displayed if persons with disabilities should not use the primary temporary pedestrian detour. The reason for the non-compliance should be posted and an alternate route should be posted when the primary temporary pedestrian detour is non-complaint to TPAR standards.
7. Conditions that are beyond recommended standards should be documented. A walkway is non-compliant if it is missing key ADA elements such as curb ramp(s), truncated domes, and detectable edging. Other restrictions or hazards may include insufficient width or pinch-point widths, traffic conflicts, steep grades, non-continuous railings, tripping hazards, or uneven/rough/soft surface conditions, etc.
8. Pedestrian traffic signal displays controlling closed crosswalks shall be covered.
9. Pedestrian detour trailblazing signs should be used if the pedestrian detour is located someplace other than across the street from the sidewalk closure.

**CROSSWALK CLOSURES AND PEDESTRIAN DETOURS
LAYOUT 84a**



CROSSWALK CLOSURES AND PEDESTRIAN DETOURS LAYOUT 84b

3 DAYS or LESS

6K-84b

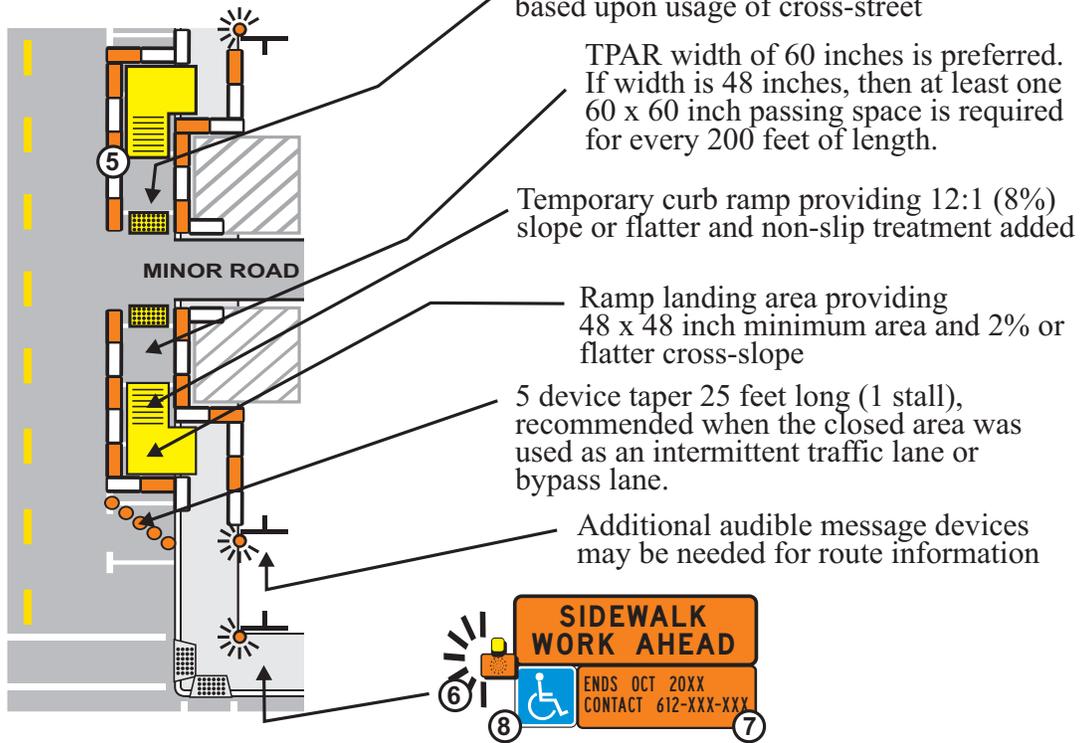
LAYOUT 84a & b

NOTES:

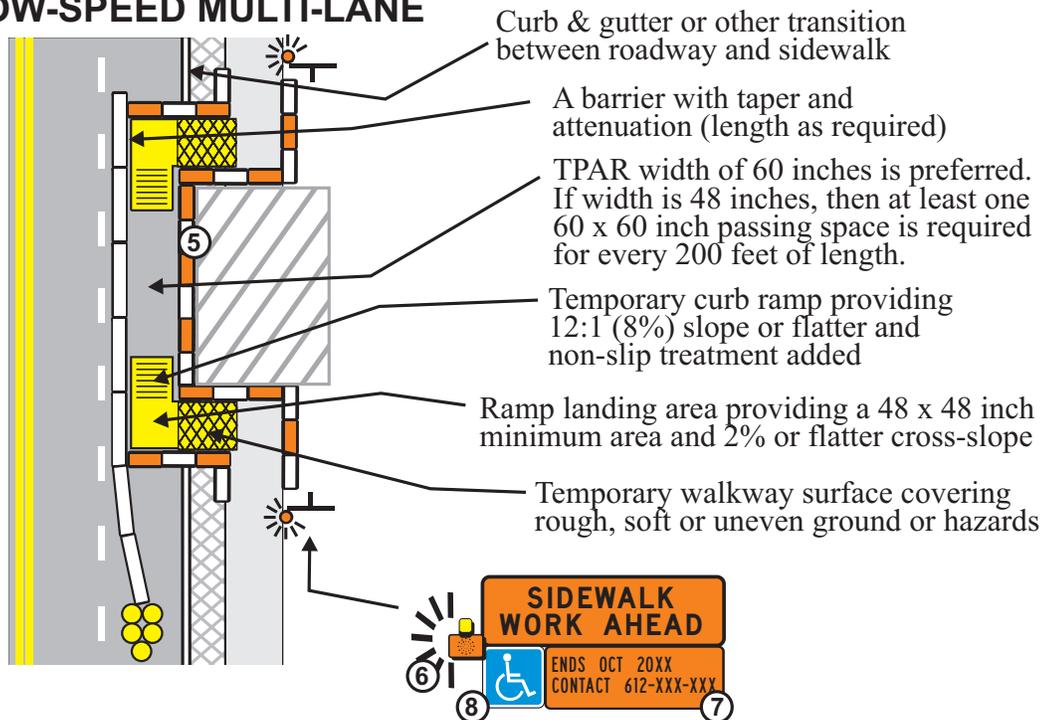
1. When crosswalks, sidewalks or other pedestrian facilities are blocked, closed or relocated, temporary facilities shall include accessibility features consistent with the features present in the existing pedestrian facility.
2. The examples show only key typical dimensions. Refer to the MnDOT Pedestrian Accommodations Through Work Zones website (<http://www.dot.state.mn.us/trafficeng/workzone/apr.html>) for standards, guidance and options when blocking, closing, or relocating pedestrian facilities.
3. Where high speeds and/or high traffic volumes are anticipated, barrier should be used to separate the temporary pedestrian walkway from vehicular traffic. When used, barriers shall be installed as detailed in the MN MUTCD Part 6F.
4. Only traffic control devices controlling pedestrian flows are shown. Other devices may be needed to control traffic on the streets.
5. When both sides of a temporary pedestrian bypass require channelizing devices, then the devices should be a similar type (railing system, barricade, or fencing system), excluding when a barrier (such as concrete barrier) is used to protect pedestrians from an open traffic lane.
6. An approved audible message device or tactile message should be provided for sight-impaired pedestrians. When used, a message device should provide a complete physical description of the temporary pedestrian by-pass including duration, length of (and/or distance to) the bypass, any restrictions or hazards and project information as listed in note 7 below. The message device(s) may also describe an alternate route. The number and location of devices should be determined for each project prior to starting work. Devices may be placed prior to sidewalk work to warn regular users of the planned work.
7. Typical sign message for a temporary pedestrian bypass should include information such as the duration of the walkway restrictions (beginning and/or end dates) and a project contact number for 24/7 questions or reporting hazards.
8. The International Symbol of Accessibility should be displayed when any walkway through a work zone has been determined to be TPAR compliant. The Symbol of Accessibility shall not be displayed if persons with disabilities should not enter the temporary pedestrian by-pass. An alternate route should be posted when the temporary pedestrian bypass is non-complaint to TPAR standards.
9. Conditions that are beyond recommended standards should be documented. A walkway is non-compliant if it is missing key ADA elements such as curb ramp(s), truncated domes, and detectable edging. Other restrictions or hazards may include insufficient width or pinch-point widths, traffic conflicts, steep grades, non-continuous railings, tripping hazards, or uneven/rough/soft surface conditions, etc.
10. When a sidewalk is closed but workers are present who will provide assistance or directions to pedestrians, then the devices as shown are not required.

**SIDEWALK BY-PASS
LAYOUT 85a**

LOW-SPEED ROADWAY



HIGH-SPEED ROADWAY or LOW-SPEED MULTI-LANE

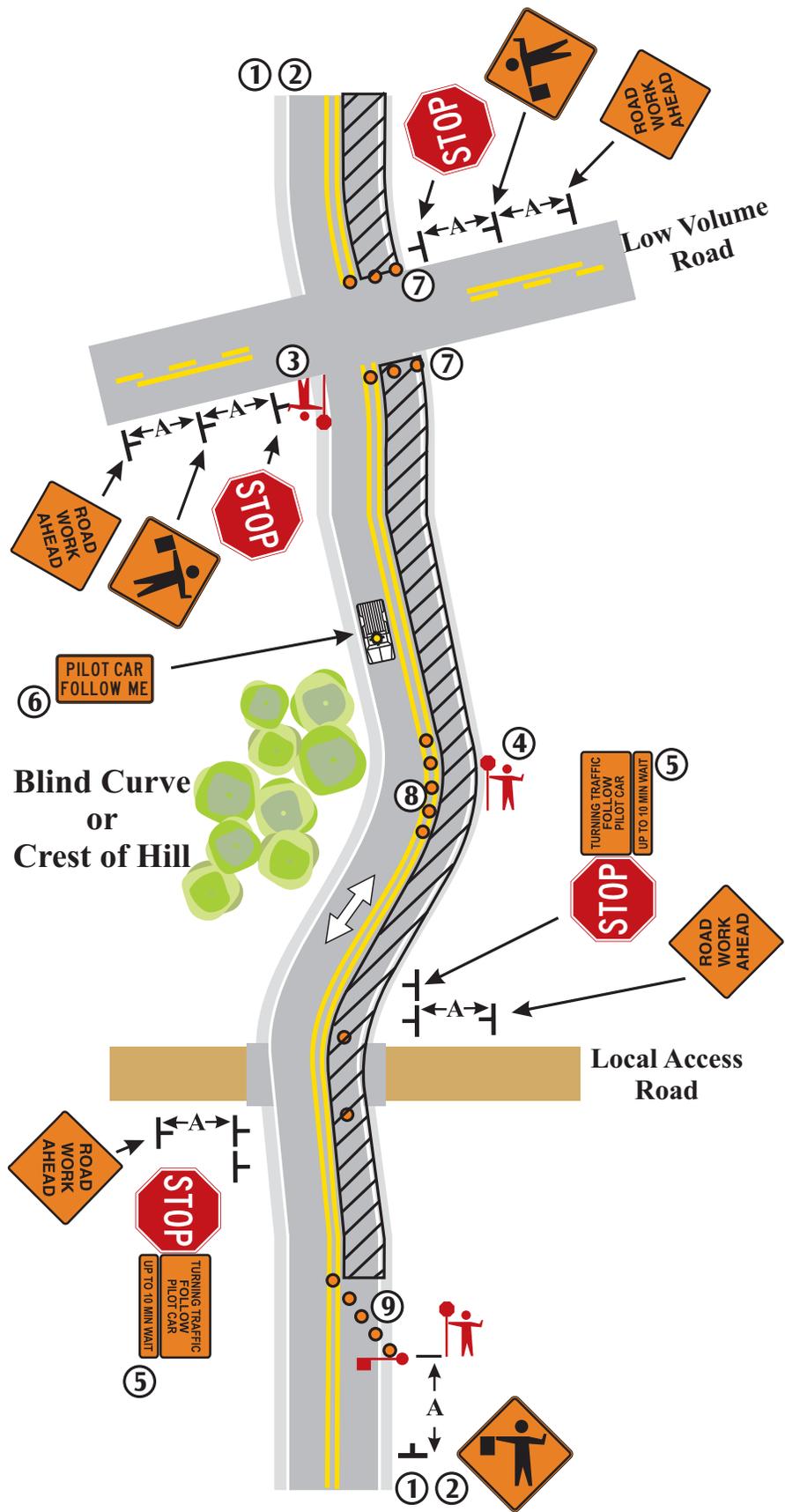


SIDEWALK BY-PASS LAYOUT 85b

NOTE:

1. Approach signs are the same in both directions.
2. Full flagging station signing and pilot car turn-around areas shall be located at both ends of the work area.
3. When a flagger is positioned at a low volume intersection, they:
 - shall have 2-way radio communications with the pilot car; and
 - may need additional flaggers to direct traffic when the crossroad consistently has multiple vehicles per direction waiting each pilot car cycle.
4. A flagger may be placed at a blind curve, crest of a hill or other site obstruction where traffic might enter from other driveways or entrances to warn the pilot car that there may be oncoming traffic.
When used, the flagger:
 - shall be located to clearly see traffic from both directions;
 - shall not be positioned in the open traffic lane;
 - shall have 2-way radio communications with the pilot car;
 - shall have a flagger paddle; and
 - should have a means to warn an errant driver such as a air horn.
5. This sign may be used in work areas where pilot car brochures have been distributed to the local residents and businesses.
6. This sign shall be mounted on the pilot car.
7. Channelizers shall be placed near intersections and flagging stations.
8. Channelizers are optional with pilot car operations.
9. The two-way taper should be 50 feet using 5 equally spaced channelizing devices.

**FLAGGING CROSSROADS AND BLIND CURVES
PILOT CAR OPERATIONS
LAYOUT 86a**



**FLAGGING CROSSROAD AND BLIND CURVES
PILOT CAR OPERATIONS
LAYOUT 86b**

3 DAYS or LESS

6K-86b

LAYOUT 86a & b

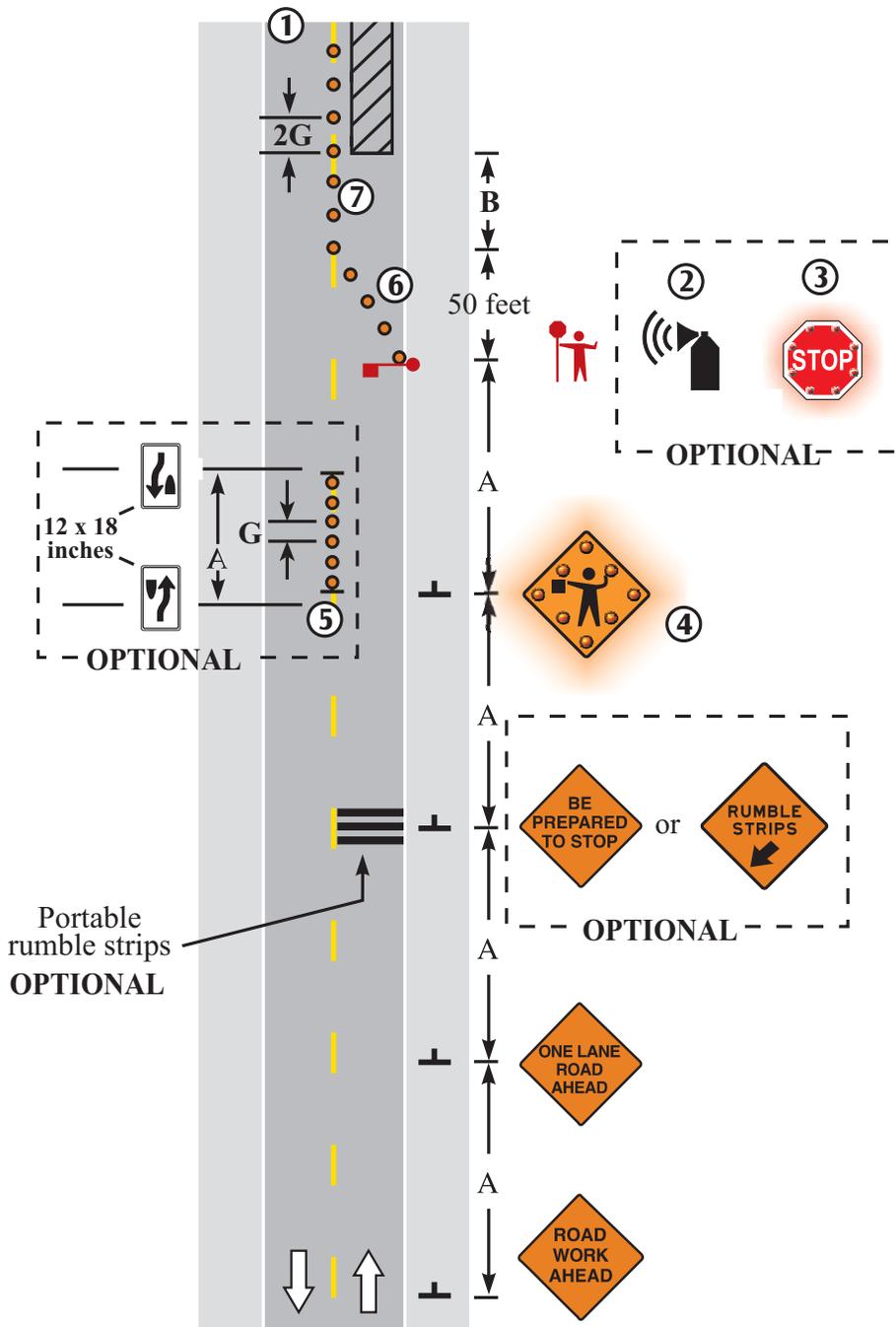
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NOTE:

1. Approach signs are the same in both directions.
2. The flagger may be equipped with an airhorn.
3. The STOP/SLOW paddle may have flashing conspicuity lights on the signs.
4. The Flagger Ahead sign may have flashing conspicuity lights on it.
5. Type A channelizing devices such as weighted channelizers, cones, tubular markers, or centerline delineators.
6. The two-way taper should be 50 feet using 5 equally spaced channelizing devices.
7. The centerline channelizers are optional with pilot car operations.
8. The portable rumble strips shall be spaced according to the manufacturer's recommendations or typical 4 foot on center.

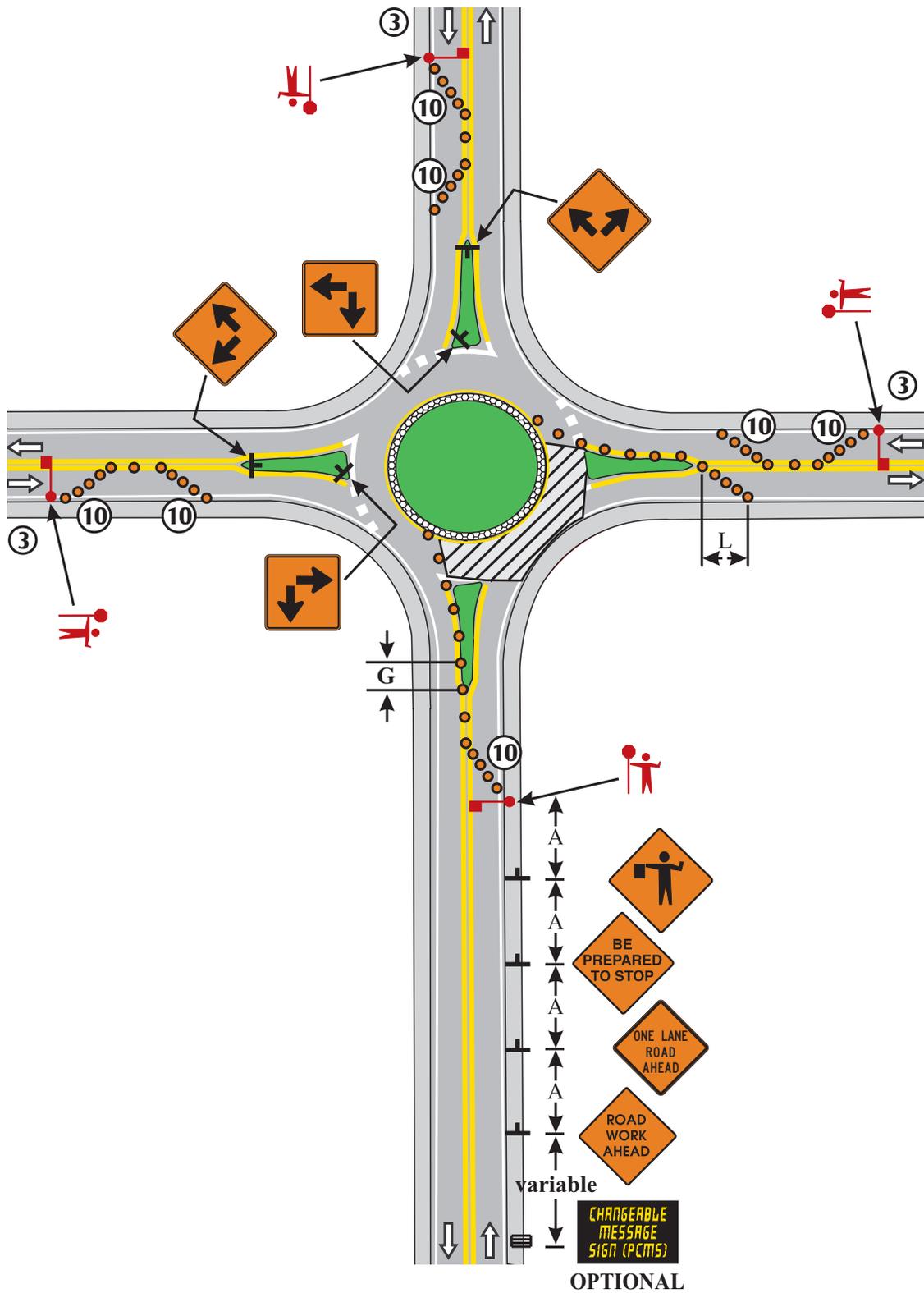


**FLAGGING STATION OPTIONS
TWO-LANE TWO-WAY ROAD**

NOTES:

1. Each roundabout is unique and the traffic control shall be developed to meet the specific conditions of the location and the work operation.
A detour could better serve traffic movement and shall be considered as an alternative to the flagger operation.
2. Flagging operations may not be necessary when working on the shoulders or in the island of the roundabout. If a driving lane(s) width of at least 10 feet (or more) can be maintained while shoulder work on an approach is being conducted, the driving lane(s) may remain open to traffic.
3. Approach signs are the same in all directions.
4. Flaggers shall control traffic flow on all approaches of the one-lane roundabout.
5. A lead flagger shall be designated and radio communication shall be used by the flaggers.
6. Only one approach of traffic shall be released at a time.
7. At night, flagger stations shall be illuminated. Street lights and vehicle headlights shall not be used to illuminate the flagger station.
8. Type B channelizers may be used.
9. A PCMS sign should be considered as part of this operation to provide clear guidance to motorists on all approaches of the roundabout, especially approaches that must reverse traffic flow.
10. The two-way taper should be 50 feet using 5 equally spaced channelizing devices.

**LANE CLOSURE IN ROUNDABOUT
SINGLE LANE ROUNDABOUT
LAYOUT 88a**



**LANE CLOSURE IN ROUNDABOUT
SINGLE LANE ROUNDABOUT
LAYOUT 88b**

3 DAYS or LESS

6K-88b

LAYOUT 88a & b

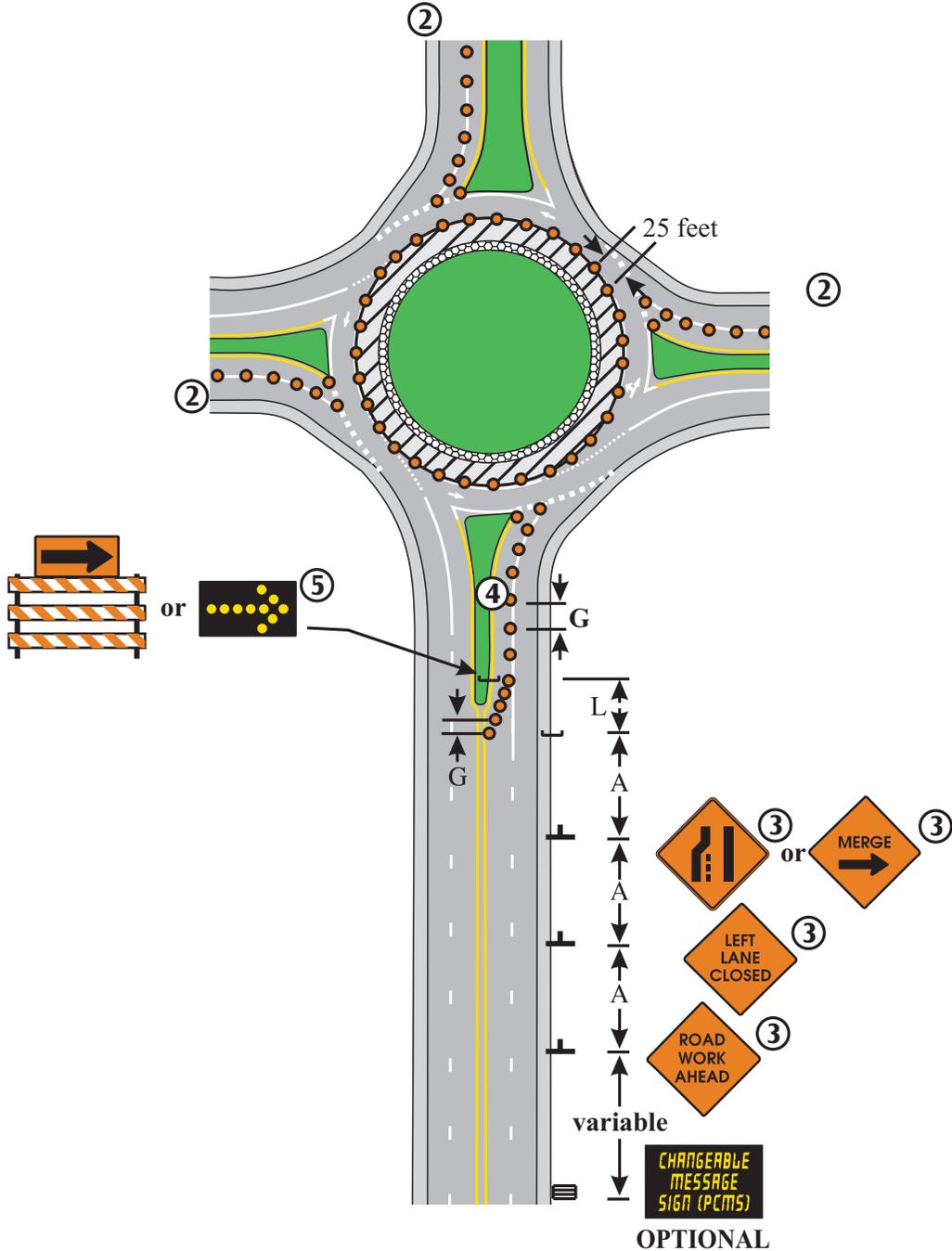
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NOTES:

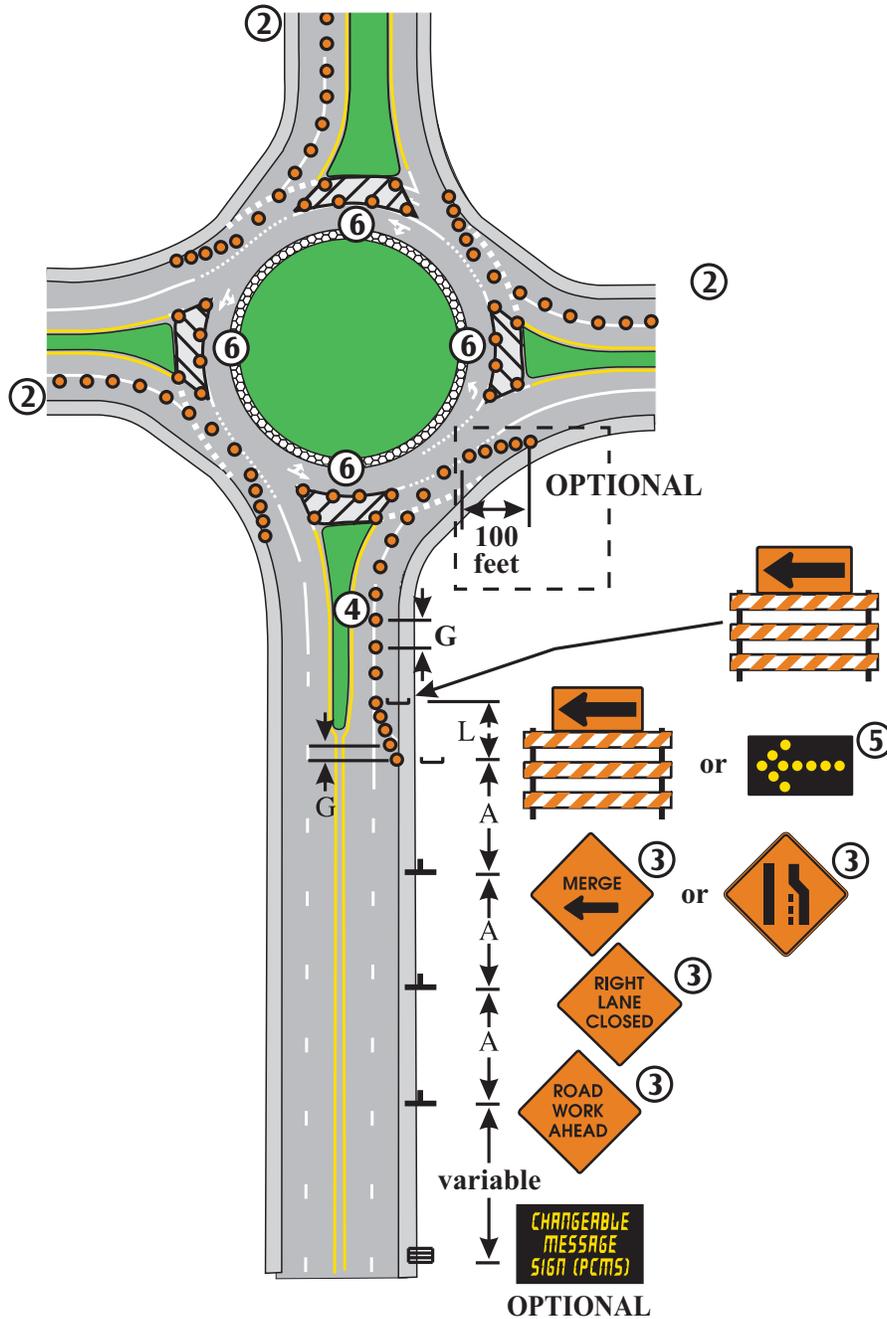
1. Each roundabout is unique and the traffic control shall be developed to meet the specific conditions of the location and the work operation.
A detour could better serve traffic movement and shall be considered as an alternative to the flagger operation.
2. Approach signs are the same in all directions.
3. On divided highways having a median wider than 8 feet, right and left sign assemblies shall be required.
4. Type B channelizers may be used.
5. The flashing arrow board shall be used when the posted speed limit is 45 mph or greater.



**LEFT LANE CLOSURE IN ROUNDABOUT
TWO LANE ROUNDABOUT**

NOTES:

1. Each roundabout is unique and the traffic control shall be developed to meet the specific conditions of the location and the work operation.
A detour could better serve traffic movement and shall be considered as an alternative to the flagger operation.
2. Approach signs and devices are the same in all directions.
3. On divided highways having a median wider than 8 feet, right and left sign assemblies shall be required.
4. Type B channelizers may be used.
5. The flashing arrow board shall be used when the posted speed limit is 45 mph or greater.
6. The distance between channelizing devices should be 10 feet or adjusted for local conditions.



**RIGHT LANE CLOSURE IN ROUNDABOUT
TWO LANE ROUNDABOUT**