

# Work Site Protection Manual

## For Operations Activities and Emergency

Callouts



**Illinois Department of Transportation**

October, 2010

Issue #9

# Work Site Protection Manual

## For Operations Activities and Emergency

Callouts



**Illinois Department of Transportation**

October, 2010

Issue #9

Printed by the Authority of the State of Illinois  
October, 2010  
7,500 copies

Printed by the Authority of the State of Illinois  
October, 2010  
7,500 copies

# Contents

Foreword.....	2 - 3
Traffic Control Devices.....	4 - 15
General Requirements.....	16
Locating Distances.....	17
Glossary, Areas in a Work Zone, Buffer Zones.....	18-24
Guide for Work Zone Cases.....	25 - 36
Emergency Callout.....	37 - 43
Short Term Encroachments.....	44 - 45
Shoulder Work.....	46 - 55
2 Lane 2 Way.....	56 - 67
Multilane.....	68 - 91
Ramps.....	92 - 95
Intersections.....	96 - 103
Miscellaneous .....	104 - 105
Additional Cases.....	106 - 110

# Foreword

This booklet was prepared for employees of the Illinois Department of Transportation only. This is the Department's policy for the proper application of traffic control devices for all operations work. Snow and ice control worker and emergency traffic patrol worker requirements are covered by the Safety Code. These cases establish the minimum requirements. If additional devices are needed to enhance safety, they should be added when necessary.

The proper use and most effective placement of traffic control devices is required to prevent injury to employees and the public. Planning should be part of every job so that work can proceed in a safe, efficient, and orderly manner with minimal interference to motorists.

Each Case herein has been developed to meet the requirements of the "Manual on Uniform Traffic Control Devices for Streets and Highways, Part VI."

# Foreword - Continued

**These cases establish minimum requirements which will provide a reasonable level of safety.** Application of these requirements cannot, however, guarantee the safety of every work site. Each worker and supervisor should therefore be alert for any circumstance which could require change, including the application of additional devices. When specific operations are not covered, a Traffic Control Plan should be developed for the special application.

Each employee is responsible for the maintenance of devices and adjustments of traffic control to ensure the safety of the employees and the motorists. For work operations expected to be in place for more than 48 hours, a Traffic Control Plan must be developed and approved by the Operations Manager.

**All employees must be in compliance with Section 24 of the "Employee Safety Code" for proper outer wear.**

**See "Flagger Handbook" for flagging requirements.**

# Traffic Control Devices

The following pages describe some of the most frequently used traffic control devices. For these devices to perform successfully they must be of good quality, their placement must be proper and their position must be maintained. All devices should be periodically evaluated using the Quality Standard for Work Zone Traffic Control Devices.

Distances stated in this manual are guides. Field conditions may force adjustments to maximize visibility of flaggers and signs in some work zones. In general, small increases in distance are acceptable. Decreases in distance should only be used for unique situations where an increase in distance will not work.

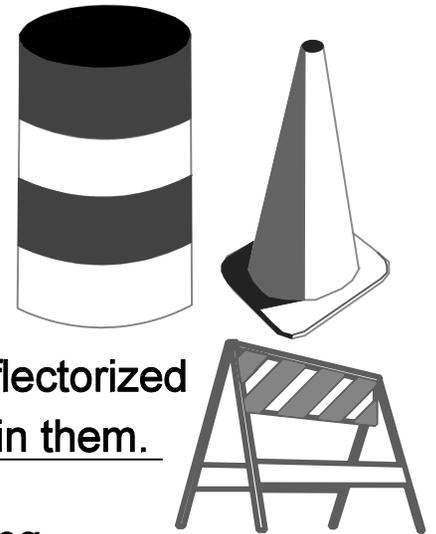
## General Safety Requirement:

- a) When a lane is closed, the taper and buffer space should be free of equipment, trucks, and materials, when applicable.
- b) All equipment, trucks, and materials should be parked on the shoulder or downstream from the protective truck.

# Drums, Barricades and Cones

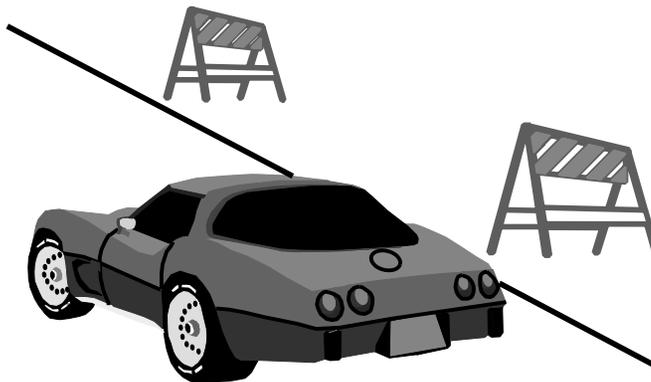
Traffic cones are used to guide traffic from one lane to another and to separate work zones from the traveled way. Cones shall be a minimum height of 18 inches. Cones having a height of 28 inches shall be used on roadways having speeds of 45 mph and greater and for installations at night.

At night, reflectorized cones, drums, or barricades shall be utilized. When reflectorized cones are used for night time operations, workers must be present to maintain them.

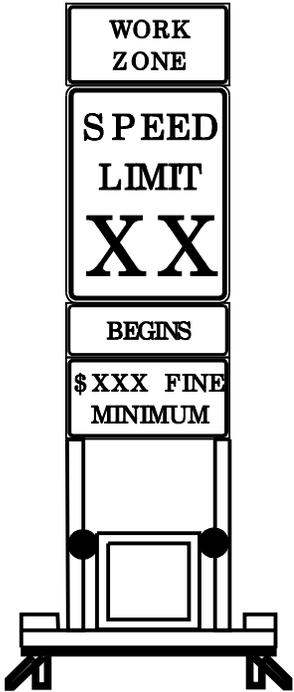


Sandbags may only be used on the lower barricade rails. Striped panels facing traffic shall not be covered. Weights of concrete, stone or other materials shall not be used.

**Barricades are to be placed so that the stripes slant downward toward the side on which traffic is to pass.**



# Work Zone Speed Limit Sign



- A 45 or 55 mph work zone speed limit sign will be used on multilane roadways with posted speed limits of either 55 mph or 65 mph where one lane is closed for more than 8 hours, in accordance with the appropriate case. It is legal for IDOT to drop the speed limit 20 mph (in 10 mph increments) from 65 mph to 45 mph in work zones when a work zone speed limit sign is utilized. The sign may be utilized at other locations where work zone speed reduction is desired. When reduced speed limit signs are utilized, all permanent regulatory signs within the work zone must be properly covered.

- This sign should not be mounted on a vehicle. If used with a moving operation, the sign should be relocated on a frequent basis.

- This sign should only be used within a standard series of warning signs. For an example of placement see Case No. WZ-41.

- Contact the Central Bureau of Operations for the current fine amount.

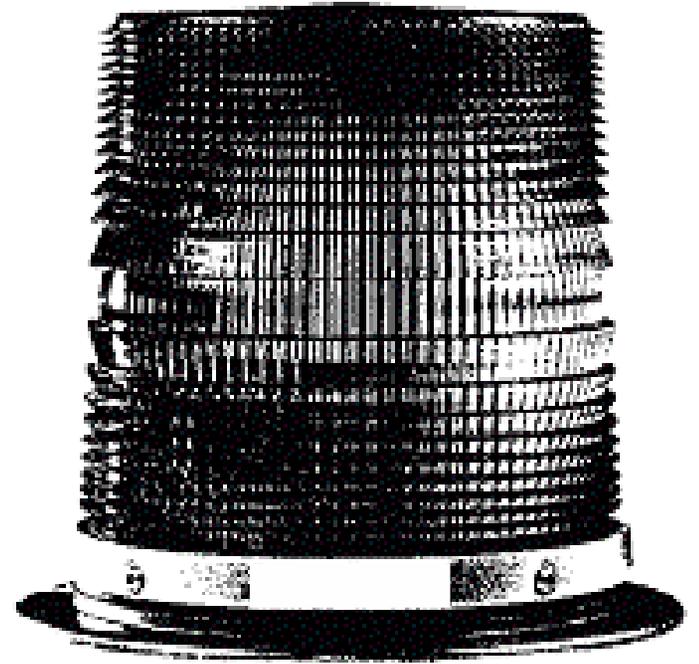
# Strobe Lights

When vehicles are located on or within 15 feet of the pavement edge, mounted strobe lights will be utilized. This requirement includes all vehicles parked on the shoulder. Revolving lights are adequate for tractors, while non-truck mounted equipment is exempt, i.e. air compressors, asphalt kettles, etc.

Please Note: Revolving lights on existing vehicles may be utilized until the light wears out or the vehicle is replaced.

Illinois law allows the use of amber/white lights by IDOT personnel, but only when engaged in work operations.

Exception: Unoccupied vehicles, such as vans or pickups with equipment needed for the current work activity, parked in a closed lane as support vehicles. The lane shall be closed using cones, drums, or barricades with a spacing not to exceed 50'. This would apply to those work activities which exceed one hour. The protective vehicles and actual work vehicles, such as a lift, asphalt truck, drill rig, etc. shall have their strobe lights operating.



# Warning Signs



Portable signs are for use on streets and roads as a warning of the presence of workers. They are diamond-shaped panels with the symbol for WORKERS in black on a fluorescent orange reflective background.

All warning signs shall be a minimum of 48 inches by 48 inches. Signs mounted on portable stands shall be no less than 12 inches above the travel way. When warning signs are used on a paved surface, sandbags should be used to minimize movements. Signs shall be a minimum of 2 feet and a maximum of 10 feet from the edge of the pavement or face of curb. Placement should be adjusted to field position conditions so they are readily seen by motorists. In general, small increases in sign spacing are acceptable. Spacing of signs should only be decreased when warranted by unique site conditions. The last sign in series should be repeated 500 feet past major intersections and interchanges outside of urban areas.

# Message Boards SHALL:

- 1) Be aimed at approaching traffic.
- 2) Be dimmed at night.
- 3) Be placed in advance of any hill crests or sharp corners that would limit visibility to approaching traffic.
- 4) Be disconnected from tow vehicles for periods of time more than two hours.
- 5) Provide real time information to motorists on traffic conditions ahead.

On WZ cases 42, 44, and 45 the message board shall be used to display status of lanes within the project. The primary message shall be: "RIGHT LANE CLOSED" / "X MILES AHEAD," "LEFT LANE CLOSED" / "X MILES AHEAD" or "ALL LANES OPEN."

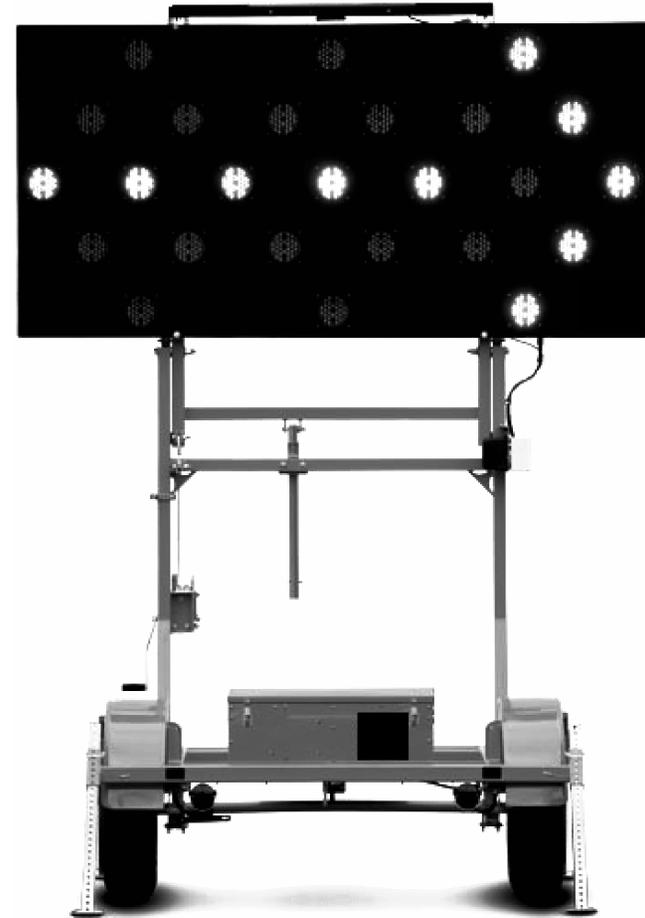


# Flashing Arrow Boards (AB) SHALL:

- 1) Be "aimed" at approaching traffic.
- 2) Be dimmed when used at night.
- 3) **Be used in the caution mode only for:**
  - A) Work on roadway and shoulders of two-lane two-way roads;
  - B) Work on shoulder;
  - C) When closing a shoulder;
  - D) Roadside work close to the shoulder;
  - E) When parked in a closed lane beyond the taper.
- 4) Be placed in advance of any hill crests or sharp corners that would limit visibility to approaching traffic.
- 5) Be placed at or close to the start of the lane taper.
- 6) Be disconnected from tow vehicle for periods of time more than two hours. (Tow vehicle shall be moved so as not to be a hazard.)
- 7) Have yellow panels closed when not in use.
- 8) Have yellow panels match direction of flashing arrow.

Sequential arrow displays and chevrons shall not be used.

Note: When a truck mounted AB is utilized, it replaces an AB shown on the case drawing.



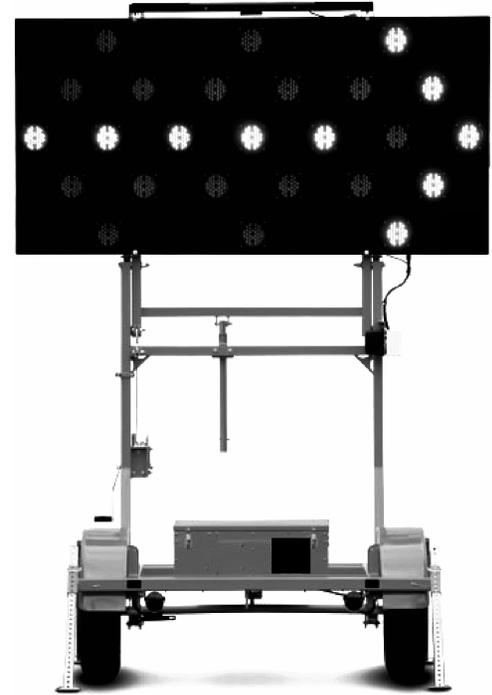
# Flashing Arrow Boards (AB) Continued

An AB shall comply with the following requirements, any device not meeting these criteria may only be used as a supplemental device. An AB must be rectangular in shape, be of solid construction, and be finished in non-reflective black.

Type A - truck mounted 48" X 24" AB mounted at least 6' high for speeds less than 45 mph.

Type B - truck or trailer mounted 60" X 30" AB mounted at least 6' high for all speeds but less than 24 hour duration.

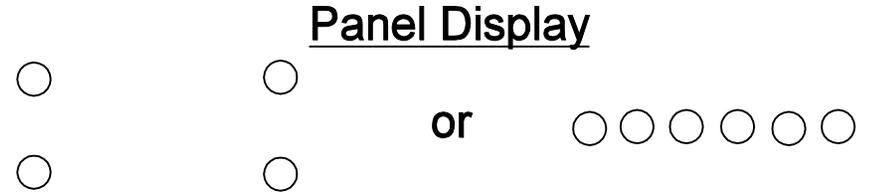
Type C - truck or trailer mounted 96" X 48" AB shall have a height of 7' for all speeds and all lengths of time.



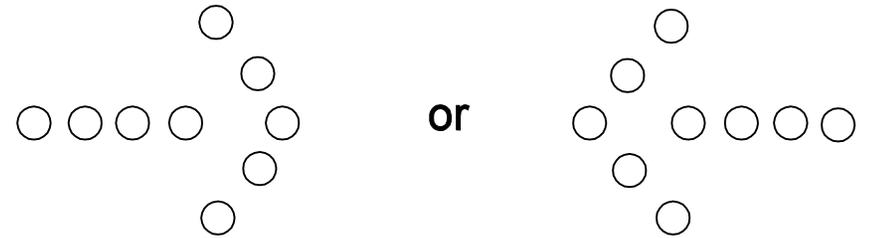
# Flashing Arrow Boards - Continued

## Proper Procedures:

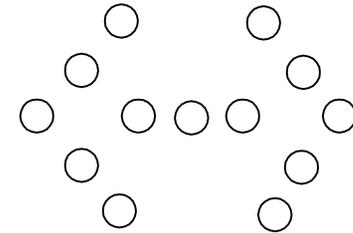
1) Two-lane two-way highway



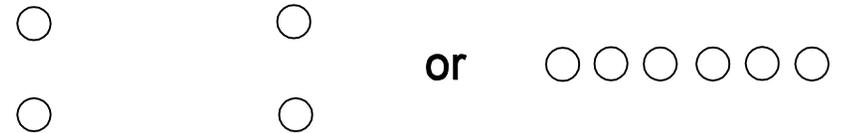
2) Multiple Lane Roadway



3) Merge right or left  
(center lane closure)



4) Caution



# Work During Non-Daylight Hours

Work during non-daylight hours sharply reduces worker's and the motorist's visibility of the work area. As a minimum, all workers assigned to work in open traffic lanes at night, such as night maintenance and flaggers, shall wear ANSI Class III Protective Clothing. Other staff working in emergency assignments such as downed tree limbs or sign replacement, are required to wear ANSI Class II garments while outside their vehicle.

Special attention should be given to assure maximum sign retroreflectivity and that lighting of devices is operational. Steady burn lights should be used on barricades and drums when these devices are used for delineation of the traveled way. Flashing lights are used to mark obstructions and hazards. If cones are used at nighttime, retroreflective collars are required and workers must be present to maintain the devices. The flagger station must be lit during non-daylight hours. In addition, consideration should be given to illuminating the work site. Special attention should be given to assuring that auxiliary lights/floodlights do not create a disabling glare for the motorists.

Current highway traffic control standards and details should be followed when developing a traffic control plan for a nighttime operation.

# Protective Vehicles with Truck Mounted Attenuators (TMAs)

The purpose of a protective vehicle is to protect both the workers and the motorists. When a protective vehicle is required on a case, a truck mounted attenuator and an arrow board is required unless the protective vehicle is entirely on the shoulder. TMAs shall be utilized at locations shown on the Cases.

Where the TMAs are labeled as optional, extra consideration should be given to the following:

- 1) Heavy truck volumes.
- 2) Traffic volumes and speeds.
- 3) Limited sight distance.

Please note: When a TMA is not available and one is required, the activity shall be postponed until one is available. An arrow board is not an acceptable substitute for a TMA.

# Truck Mounted Attenuators (TMA)

When required on a case drawing, a TMA shall be dispatched with the crew.

The driver should exit the truck when the truck is to be stopped for more than 15 minutes.

The truck should have an actual weight of no less than 11,000 pounds and no greater than 26,000 pounds. Higher weights may be used when approved by the TMA manufacturer. The truck should be positioned to allow a roll-ahead distance as follows (or other as recommended by manufacturer):

**Stationary Operations - 100 feet minimum**

**Moving Operations - 180 feet minimum**

**Note:** When utilized in a stationary work operation, the truck should be in neutral and the parking brake engaged.



# General Requirements

**All traffic control devices** should be placed in the order that drivers will see them, starting with the sign or device that is farthest from the work area, placing the others as the work area is approached. Removal should be done in the reverse order or under cases WZ 20, or WZ 40 for moving operations.

**All vehicles, equipment, workers** (except flaggers) and their **activities** are restricted at all times to one side of the pavement unless otherwise authorized by their supervisor or the applicable work zone case. At locations where all vehicles, equipment, workers or their activities are more than 15 feet from the edge of pavement, no traffic control devices are required.

**WORKERS and/or FLAGGER signs** are to be removed when no work is being performed for more than one hour.

If at all possible, lane closure tapers and the buffer area (see page 18) are to be kept free of any materials, equipment, or workers, except as shown herein.

# Locating Distances

All devices shown on CASES should be properly placed and their position maintained. All of the dimensions shown on the Cases for the placement of devices are shown below. Distances on most roadways can easily be located by counting permanent skip-dash stripes. Since the dimensions are minimums and the stripes are spaced at 40 feet centers, adding 1/2 stripe cycle (20 ft.) when needed will keep it simple.

Distance in feet	Number of stripes*		Distance in feet / mi.	Number of stripes*		Distance in feet / mi.	Number of stripes*
100	2 1/2		320	8		800	20
120	3		400	10		1000(2/10)	25
180	4 1/2		500	12 1/2		1100	27 1/2
200	5		540(1/10)	13 1/2		1200	30
220	5 1/2		600	15		1320	33
240	6		660	16 1/2		1500	37 1/2
260	6 1/2		720	18		1600(3/10)	40
300	7 1/2		780	19 1/2		2000	50
						2600(1/2)	65

\* Cycles

# Glossary

**ADT** - Average Daily Traffic volumes. Use most recent ADT's on IDOT Internet site.

**Buffer Area** - An area between the lane closure taper and the work area that provides a recovery space for an errant vehicle.

**Intermittent/ Moving Operation** - Operations that stop briefly then move on and operations that are continuously moving.

**Multilane** - Any roadway with more than one lane in each direction, including interstate highways and freeways.

**Roadway type and duration of work** - Major factors to determine the number, placement and type of devices used for temporary traffic control.

**Short Term Operation** - Less than one hour, usually activities in which it takes longer to setup and remove the traffic control than to do the work.

**Work Area** - That portion of a roadway or shoulder that is closed to traffic and set aside for workers, equipment, and materials. It may be stationary or moving.

Note: math symbols defined:

< less than

$\leq$  less than or equal to

> greater than

$\geq$  greater than or equal to

# Buffer Areas:

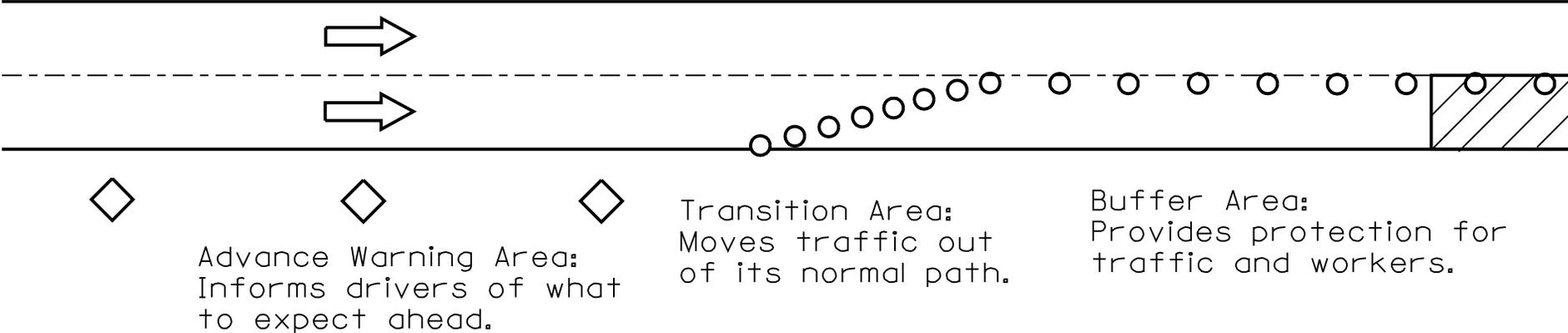
The buffer area as shown in WZ10, pages 20 and 21, provides recovery space for errant vehicles. Neither work activity nor storage should occur in this space.

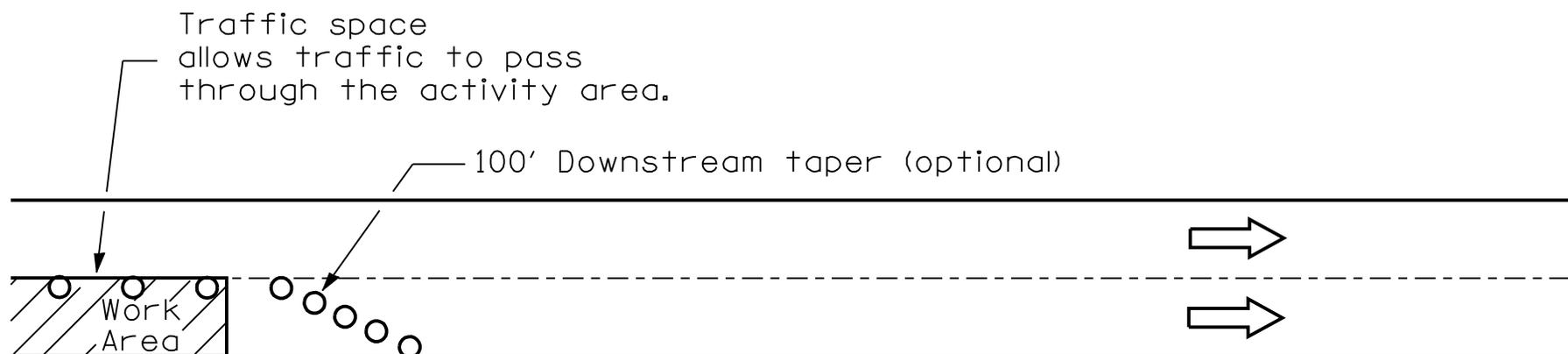
A guide for the length of longitudinal buffer area is provided. The length may be adjusted to meet individual work site conditions.

## Guide For Length of Longitudinal Buffer Area

Speed (mph)	Length (feet)
30	85
35	120
40	170
45	220
50	280
55	335
60	415
65	485

# AREAS IN WORK ZONE





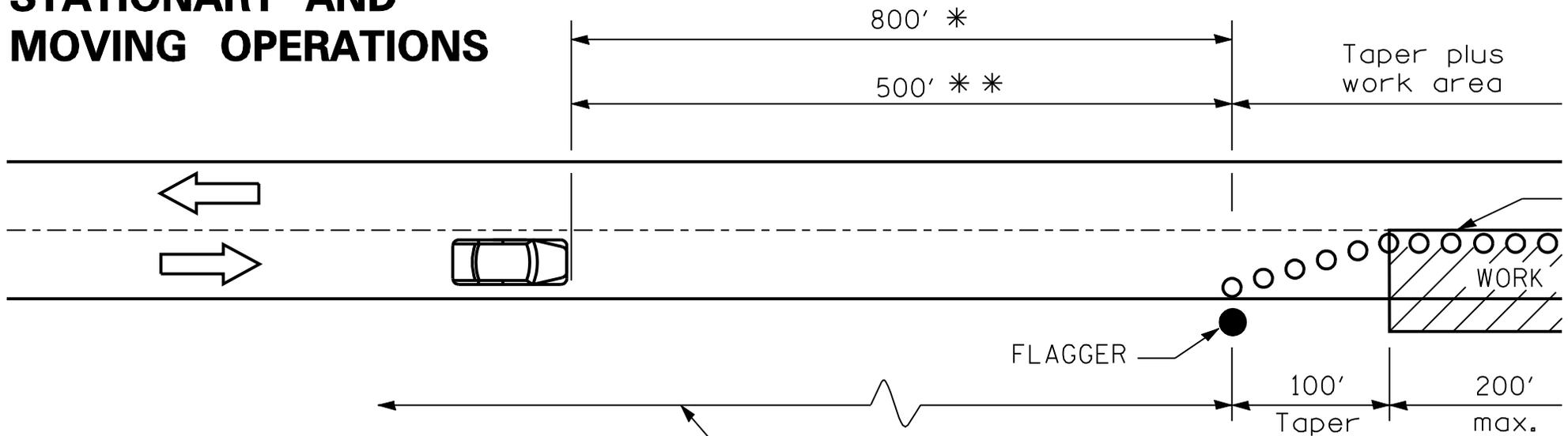
**Work Space:**  
Is set aside for workers,  
equipment, and material  
storage.

**Termination Area:**  
Lets traffic resume  
normal driving.

# USE OF 1 FLAGGER ALL SPEEDS STATIONARY AND MOVING OPERATIONS

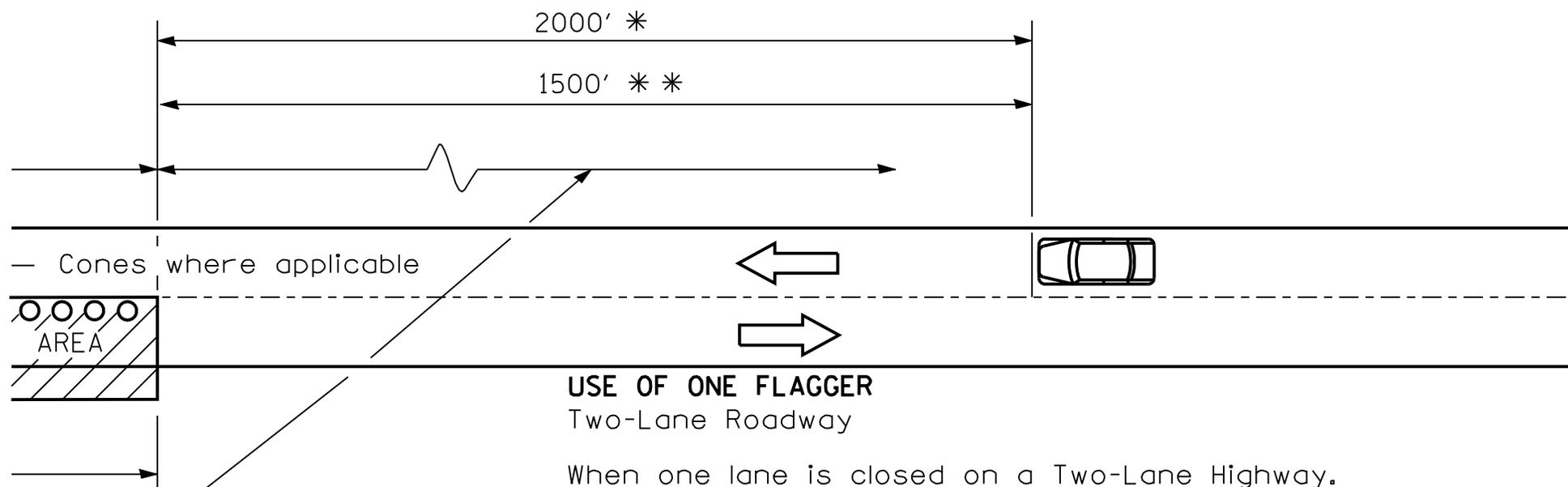
\* UNRESTRICTED SIGHT DISTANCE  
45 MPH OR MORE

\*\* UNRESTRICTED SIGHT DISTANCE  
40 MPH OR LESS



Note:  
The flagger controls traffic in the closed lane only. The other lane operates free flow.

Advance warning signs and other devices must be in place in accordance with traffic control plans in this manual.



### USE OF ONE FLAGGER Two-Lane Roadway

When one lane is closed on a Two-Lane Highway.  
One flagger may be used when:

- A. The flagger has an unrestricted sight distance beyond the work area as indicted in the diagram.
- B. The work area does not exceed 200 feet.
- C. The traffic is not delayed more than 3 minutes.
- D. The advance warning signs are in place, when applicable.

Unless all of the above conditions are met, two flaggers shall be used.



# Guide For Work Zone Cases

Guide for Work Zone Cases Number Selection.....	26 - 36
Emergency Call Outs.....	37 - 43
Short Term Encroachments.....	44 - 45
Shoulder Work.....	46 - 55
2 Lane 2 Way Roadways .....	56 - 67
Multilane Roadways .....	68 - 91
Ramps.....	92 - 95
Intersections.....	96 - 103
Miscellaneous .....	104 - 105
Additional Cases.....	106 - 110

# Guideline for Work Zone Case Selection:

The following pages contain listings for most of the work activities together with the MMIS code numbers for day-to-day maintenance and traffic work that are conducted on or adjacent to roads and streets open to traffic. The listings are presented here in the same order they appear on the field reports. In most situations, this reference should help field crews to select the proper traffic control for the type of work and its location.

## General notes:

- 1) Whenever possible, work should be conducted without any intrusion into a travel lane or within 2 feet of a travel lane. For work on shoulders that must intrude upon the above area, signs, protective vehicles and / or flaggers may be required as called for in the Work Zone Cases listed and for short term encroachments (see page 45)
- 2) Roadside and some bridge work can usually be conducted sufficiently removed from traffic. The use of vehicle lights as shown on page 7 will be all that is needed. The Case Numbers shown should be reviewed to determine if they apply.

- 3) The index guides for work zone case number selection show most typical applications for each work activity, but may not be all inclusive. Other appropriate work zone cases or Design Standards may be utilized if the work site situations are applicable.
- 4) When an activity does not have a case number: a) Either the work is more than 15 feet off of the roadway or more than 2 feet beyond curb; b) A case must be selected which applies; c) A special detail must be developed.
- 5) Special work requires special attention. Work activities that are not conducted under normal conditions and work activities at locations that require special considerations should be planned in advance of the time workers are scheduled to make the repairs. Each worker and supervisor should be alert for any circumstance which would require change. Major deviations from the Case Number selection index should be with the approval of the supervisor.

# Index Guide for Work Zone Case No. Selection

Code	Pavement Work Activity	2-lane 2-way	Multilane	Intersection
410	Pothole Patching	20,21,22,30	7b,40,41,42,46,46A, 48,63,64,65,66	92,93
411	Partial Depth Patching	20,21,22	40,41,42,44,50,51,64, 65,66	92,93
412	Full Depth Patching	20,21	40,41,42,44,50,51,64, 65,66	92,93
413	Bituminous Overlay	20,22	41,42,44,50,51,64,65, 66	92,93
414	C.R.C. Pavement Patching	21	41,42,44,50,51,64,65, 66	92,93
415	Bump Burning or Planing	20,21,22	40,46,46A,47,48,49, 63,64,65,66	92,93
416	Crack & Joint Sealing - Hand Poured	20,22	40,46,46A,47,48,49, 63,64,65,66	92,93
417	Sealing or Skin Patching	20,22	40,46,46A,47,48,49, 63,64,65,66	92,93
510	Pothole Patching - Liquid Asphalt & Chips	20,21,22	40,46,46A,48,49,50, 63,64,65,66	92,93
516	Crack & Joint Routing	20,22	40,46,46A,48,49,50, 63,64,65,66	92,93
517	Crk & Jt Clean & Seal with Rubzd Asphalt	20,22	40,46,46A,,48,49,50, 63,64,65,66	92,93

# Index Guide for Work Zone Case No. Selection

Code	Work Activity Shoulders & Side Approaches	2-lane 2-way	Multilane
420	Patch & Repair Paved Shoulders	4,5,6,7a,22	4,5,6,7b,40,41,63
421	Add and Spread Aggregate - Hand	4,5,6,7a,24	4,5,6,7b,63
422	Add and Spread Aggregate - Machine	5,7a,22,24	5,7b,63
423	Sealcoat Application	5,7a,22,24	5,7b,63
424	Cutting High Shoulders	5,7a,22,24	5,7b,63
425	Blading and Dragging	5,7a,22,24	5,7b,63
426	Shoulder Wedging	5,7a,22,24	5,7b,63

# Index Guide for Work Zone Case No. Selection

Code	Drainage Work Activity	2-lane 2-way	Multilane	Intersection
430	Repairing Earth Slopes	3,4,6,7a,20,21	3,4,6,7b,40,41,42,64, 65,66	
431	Ditches - Hand	3,4,6,7a,20,21	3,4,6,7b,40,41,42,64, 65,66	
432	Ditches - Machine	3,4,6,7a,20,21,22	3,4,6,7b,40,41,42,64, 65,66	
433	Inlet, Manhole & Catch Basin Cleaning	4,6,7a	4,6,7b,63,64,65,66	
434	Inlet, Manhole & Catch Basin Repair	3,4,6,20,21	3,4,6,40,41,42,64,65, 66	
435	Sewer Line, Pipe & Culvert Cleaning	3,4,6,7a,20,21,22	3,4,6,7b,40,41,42,63, 64,65,66	
436	Sewer Line, Pipe & Culvert Repair	3,4,6,20,21	3,4,6,40,41,42,64,65, 66	92,93
438	Underdrain Maintenance	3,4,6,20,21	3,4,6,7b,40,41,42,64, 65,66	

# Index Guide for Work Zone Case No. Selection

Code	Roadside Work Activity	2-lane 2-way	Multilane	Intersection
440	Tree, Brush & Shrub Removal	4,7a,20,21,22	4,7b,40,41,42,64,65,66	
441	Landscape, Tree, Shrub & Plant Maint	4,7a,20,21	4,7b,40,41,42,64,65,66	
442	Mowing - Hand	4,7a	4,7b	
443	Mowing - Machine	4,5,7a	4,7b	
444	Area Vegetation Spraying	4,5,7a	4,7b	
445	Strip Vegetation Spraying	5,7a,96	5,7b,96	
446	Mechanical Sweeping		5,52	
447	Litter Pickup	7a	7b	
448	Road Patrol and Debris Cleanup			
741	Tree and Shrub Planting	4,7a	4,7b	
742	Tree Spraying	4,7a	4,7b	
743	Mulching	4,7a	4,7b	
744	Fertilizer Application	4,7a	4,7b	
745	Seeding	4,7a	4,7b	
746	Sodding	4,7a	4,7b	

# Index Guide for Work Zone Case No. Selection

Code	Drainage Work Activity	2-lane 2-way	Multilane	Intersection
454	Bridge Inspection (Lane Closure)	3,20,21,30	3,40,41,42,44,45,60,61,63,64,65,66	92
455	Bridge Sealing	20,21,24	3,40,41,42,44,64,65,66	
550	Bridge Cleaning (over 1 hr. duration)	5,20,21,22	5,40,41,42,44,45,60,61,64,65,66	92
550	Bridge Cleaning (less than 1 hr.)	3,20,21	3,40	
551	Partial Depth Bridge Deck Patching	20,21	3,41,42,44,45,60,61,64,65,66	92
552	Full Depth Bridge Deck Patching	21	3,41,42,44,45,60,61,64,65,66	92
553	Deck Drain Cleaning	3,5,20,21	3,5,40,41,42,44,45,60,61,64,65,66	92
554	Deck Drain Repair	3,20,21	3,41,42,44,45,60,61,64,65,66	92
555	Joint Protection Shielding	20,21	3,40,41,42,44,45,60,61,64,65,66	92
556	Joint Deck Slab Shoring	20,21	3,40,41,42,44,45,60,61,64,65,66	92
557	Expansion Joint Repair	3,20,21	3,40,41,42,44,45,60,61,64,65,66	

# Index Guide for Work Zone Case No. Selection

Code	Bridge Work Activity	2-lane 2-way	Multilane	Intersection
558	Roadway Joint Maintenance	3,20,21	3,41,42,45,63,64,65,66	
559	Handrail Repair / Maintenance	3,20,21	3,40,41,42,45,64,65,66	
650	Bridge Guardrail Terminal Repair	3,20,21	3,40,41,42,45,63,64,65,66	
652	Bridge Bearing Maintenance (Exc. Actv. 653 and 654)	3,20,21	3,40,41,42,45,64,65,66	
653	Bridge Bearing Cleaning	20,21	40,41,42,45,64,65,66	
654	Bridge Bearing Painting	20,21	40,41,42,45,64,65,66	
655	Structural Steel Repair	3,20,21	3,40,41,42,45,64,65,66	
656	Jacking and Cribbing	3,20,21	40,41,64,65,66	
657	Pin and Link Inspection and Maintenance	20,21	40,41,42,45,64,65,66	
750	Bridge Concrete Repair	3,20,21	3,40,41,42,45,64,65,66	
751	Bridge Epoxy Injection	20,21		

# Index Guide for Work Zone Case No. Selection

Code	Other Work Activity	2-lane 2-way	Multilane
752	Slope Wall Repair	3,4,6,20,21	3,4,6,40,41,42,50,64,65,66
753	Collection Gutter Cleaning	3,4,6,20,21	3,4,6,40,41,42,50,64,65,66
754	Collection Gutter Repair	3,4,6,20,21	3,4,6,40,41,42,50,64,65,66
755	Rip Rap Placement	3,4,6,20,21	3,4,6,40,41,42,50,64,65,66
756	Channel Maintenance	3,4,6,20,21	3,4,6,40,41,42,50,64,65,66
919	Accidents / Emergencies	1	2

# Index Guide for Work Zone Case No. Selection

Code	Work Activity Traffic Services and Facilities	2-lane 2-way	Multilane	Intersection
460	Guardrail Maintenance	3,4,6,7a,21	3,4,6,7b,41,42,63,64,65,66	
461	Fence Maintenance	3,4,6	3,4,6	
462	Barrier Wall Maintenance & Repair	3,4,6	3,4,6	
463	Attenuator Maintenance	3,4,6	3,4,6	
466	Advertising Sign Removal	3,4,6	3,4,6	
467	Delineator Maintenance	4,6	4,6,63	

# Index Guide for Work Zone Case No. Selection

Code	Work Activity Traffic Duties	2-lane 2-way	Multilane	Intersection
200	Sign Maintenance	3,4,20,22	3,4,40,41,50,60,64,65,66	91,92,93,94
220	Center / Lane Striping	23	52	
222	Edge Line Striping	23	52	
223	Simultane Striping	23	52	
224	Spec Pvmt Marking	20	40,50	92,93
225	Curb Marking	20,21	40,41,42	92,93
226	Marking Removal	20	40,50	92,93
227	Rd / Cb Marker Maint	4,6	4,6,48	92,93
240	Traffic Signal Maint	4,20,21	40,41,42	91,92,93,94
241	Highway Lighting Maint	3,4,20	3,4,40,41	92
242	Flash Beacon Maint	3,4,20		
467	Delineator Maint	4,6	4,6	
468	Sign & Traffic Activity			

# Emergency Call Outs

# Traffic Control Plan For Emergency Call Outs

Call outs for emergency operations may vary from potholes, down power lines, trees, blowups, to accidents. When the nature or extent of the call out is not known, the following information should be considered in calling out equipment and manpower.

- 1) Multilane, primary, or secondary system.
- 2) Traffic Volume.
- 3) Time of day.
- 4) Is police backup available?

If the situation can be safely cleared within 60 minutes, it should be done. If after arriving at the scene of a call out, it is determined that more than 60 minutes will be required:

- 1) Arrangements shall be made immediately to get additional traffic control to project.
- 2) Until additional traffic control arrives, work under emergency case to protect motorists and to direct traffic.

# Using Fusees Safely and Effectively

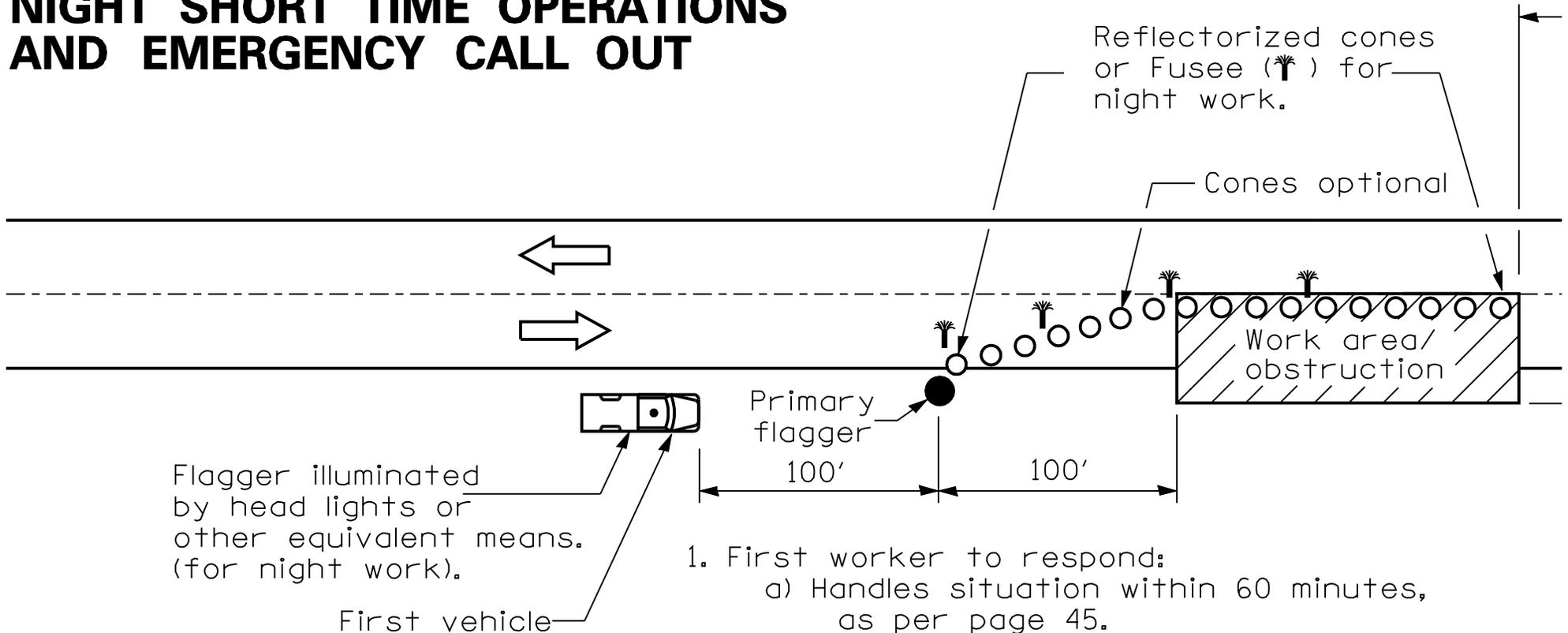
Fusees are effective for emergency warning at accident scenes and other hazardous locations.

Be aware of the following:

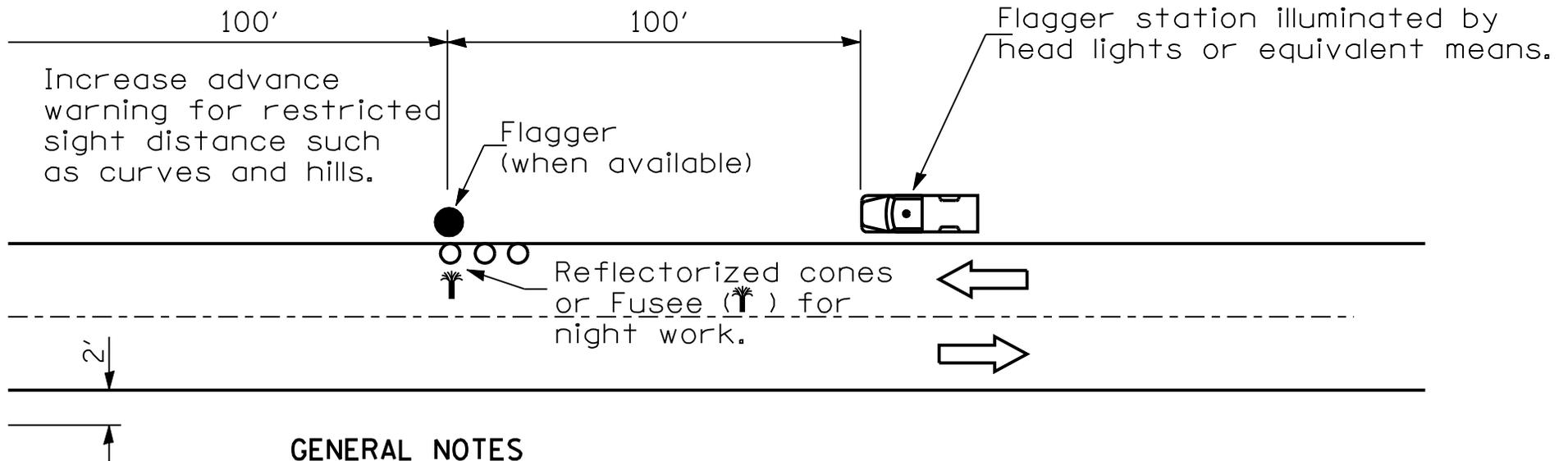
- A) Fusees have a limited burning time; therefore, if an emergency exists beyond the burning time of the fusees additional fusees must either be reset or be replaced with reflectorized cones, drums or barricades.
- B) The molten sulfur from a burning fusee is quite hazardous; therefore, extreme care must be taken when handling a lit fusee.
- C) To minimize the possibility of fire and / or explosion, **never place lit fusees near the vehicles at an accident scene or other flammable materials.**

# FIRST RESPONSE ALL SPEEDS 2 LANE - 2 WAY NIGHT SHORT TIME OPERATIONS AND EMERGENCY CALL OUT

Note:  
Cones at 20 ft. centers  
on taper and at 50 ft.  
centers along travel way.



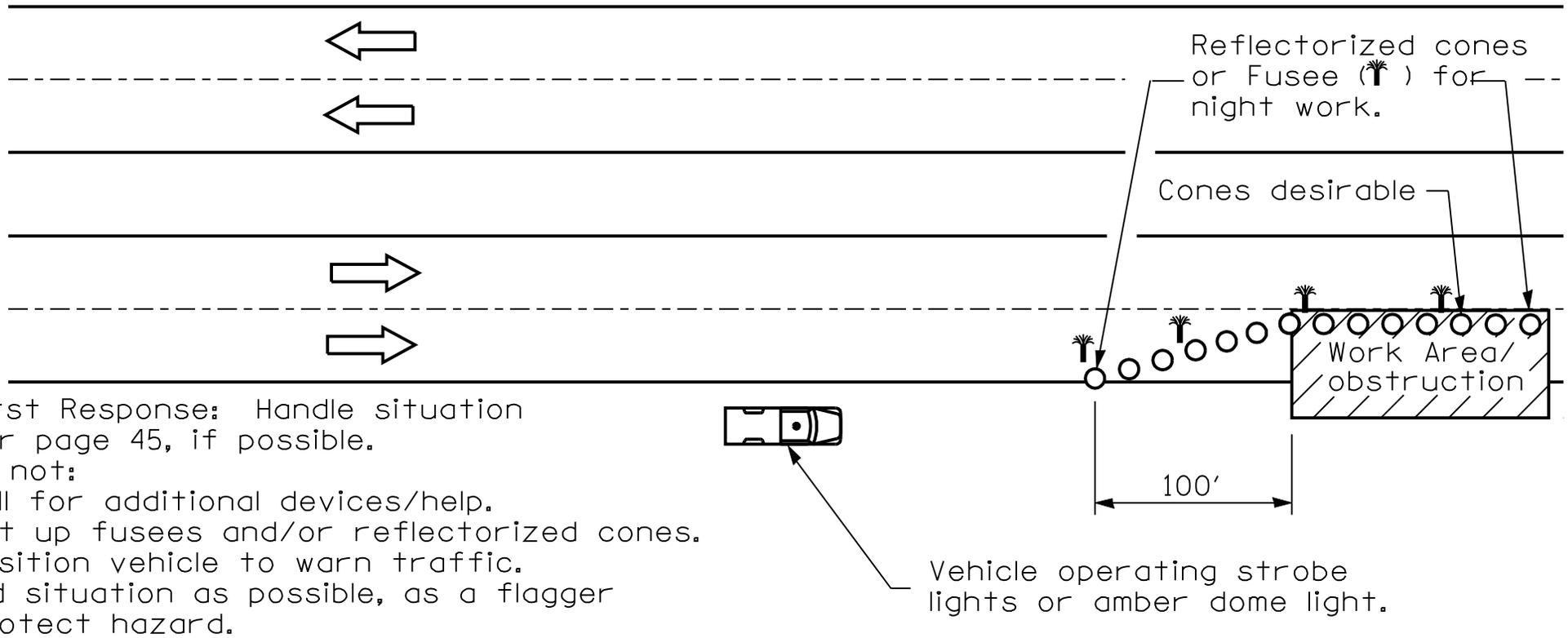
1. First worker to respond:
  - a) Handles situation within 60 minutes, as per page 45.
  - or:
  - b) Radios for help, sets up fusees/cones and flags as a single flagger, page 23.
2. Second worker to arrive, sets up an approved case.



1. All vehicles with amber rotating warning or strobe warning lights in operation.
2. Arrow Board in CAUTION mode optional.
3. Approved protective clothing shall be used for night work.
4. ReflectORIZED cones or Fusees are required for night work longer than 15 minutes.
5. When lane closure is to be in place for more than 2 hours, a full lane closure should be installed. Inform District dispatcher or Station 1 of situation.

# FIRST RESPONSE ALL SPEEDS MULTILANE NIGHT SHORT TIME OPERATIONS AND EMERGENCY CALL OUTS

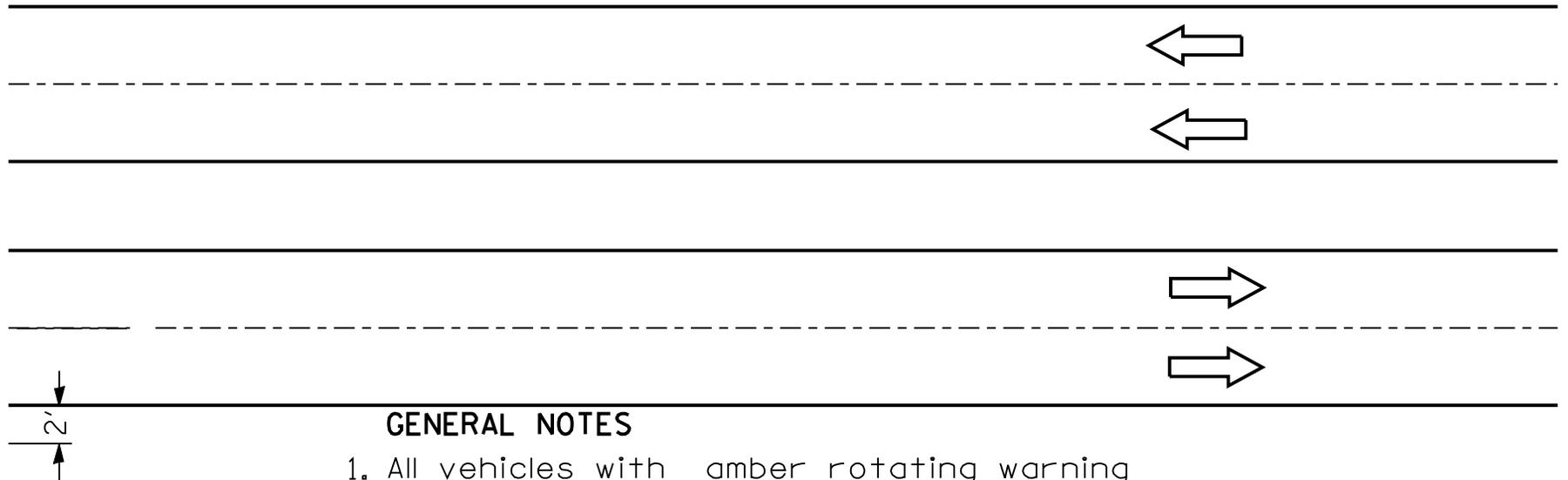
Note:  
Cones at 20 ft. centers  
on taper and at 50 ft.  
centers along travel way.



First Response: Handle situation per page 45, if possible.

If not:

1. Call for additional devices/help.
2. Set up fuses and/or reflectorized cones.
3. Position vehicle to warn traffic.
4. Aid situation as possible, as a flagger protect hazard.



## GENERAL NOTES

1. All vehicles with amber rotating warning or strobe warning lights in operation.
2. If >2' off shoulder, vehicle to set on shoulder with strobe lights on.
3. Approved protective clothing shall be used for night work.
4. Reflectorized cones or fusees are required after 15 minutes.
5. When lane closure is to be in place for more than 2 hours, a full lane closure should be installed. Inform District Dispatcher or Station One of situation.

# Short Term Encroachment

# Short Term Encroachments on Pavement:

- A. **No attempts shall be made to stop, slow, or direct traffic into another lane except by properly equipped flagger with proper warning signs in place. In an emergency, signs may be installed after the initial response and more crews arrive.**
- B. May be performed without a flagger, provided all vehicles are completely off traveled lanes.
  - 1. Each task must be performed with extreme care.
  - 2. The amount of time the workers are on the pavement shall be minimized.
  - 3. Workers shall enter onto the pavement only during appropriate gaps in traffic.
  - 4. If workers must remain in traffic lane and appropriate gaps do not exist, the lane must be closed with proper traffic control signs and devices.
  - 5. Vehicle shall be as far off the edge of pavement as possible.
  - 6. When possible, work on the same side of road as the vehicle.
  - 7. **Employee shall wear approved high visibility outer wear. Vehicle shall have its strobe light on.**
  - 8. Multi-lane roadways; at slow speeds, drive on shoulder with strobe lights on.
- C. This provision does not apply to pavement pothole or bridge deck patching.
- D. When it is necessary for vehicle to stop on the roadway, traffic control shall be in accordance with the proper case.
- E. Full lane closure should be considered when work at one location would exceed one hour.

# Shoulders

**ALL SPEEDS  
TWO-LANE & MULTILANE  
SHOULDER WORK WITH  
MINOR ENCROACHMENT  
60 MINUTES OR LESS  
SIGHT DISTANCE OF 1000' TO  
APPROACHING TRAFFIC REQUIRED**

**WZ 03  
DAY AND NIGHT**

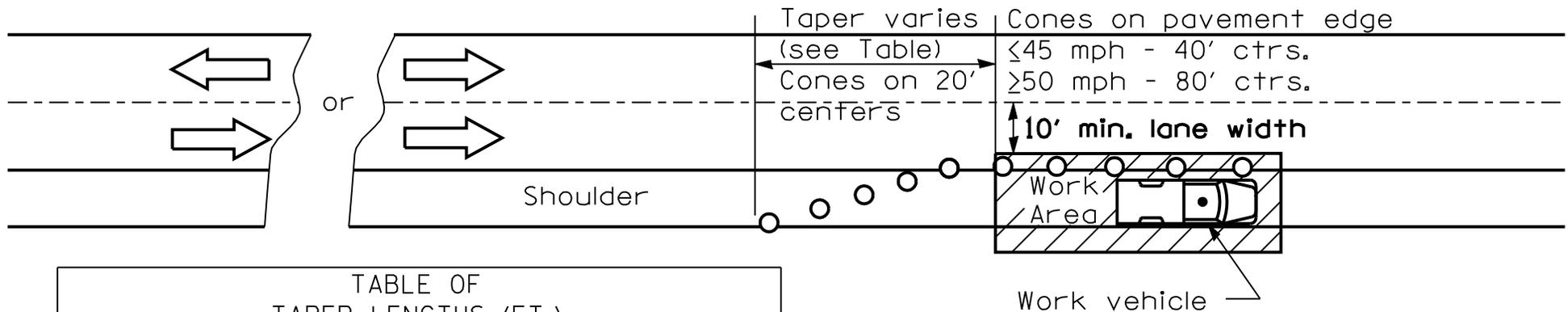


TABLE OF TAPER LENGTHS (FT.)					
SPEED MPH	SHOULDER WIDTH (FT.)				
	2	4	6	8	10
65	45	90	130	175	220
55	40	75	110	150	185
45	30	60	90	120	150
40	20	35	55	70	90
35	15	30	40	55	70
30	10	20	30	40	50

When workers encroach onto roadway, a protective vehicle is required (see page 14). All vehicles shall operate strobe lights.

**THIS CASE IS ONLY ALLOWED  
DURING NON-PEAK TRAFFIC.**

**ALL SPEEDS  
TWO-LANE AND MULTILANE  
LESS THAN 60 MINUTES  
SHOULDER WORK**

**WZ 04  
DAY OR NIGHT**

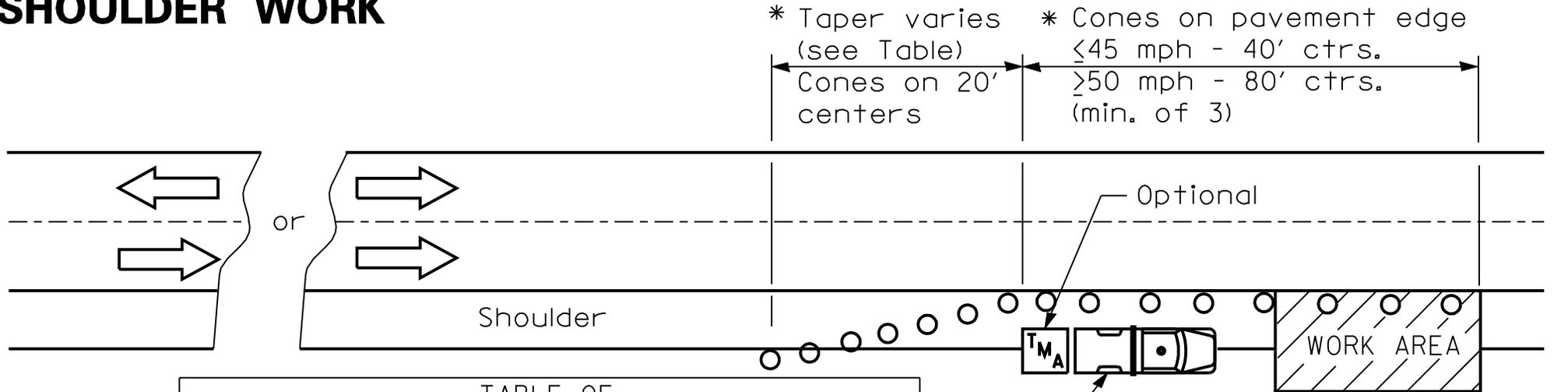


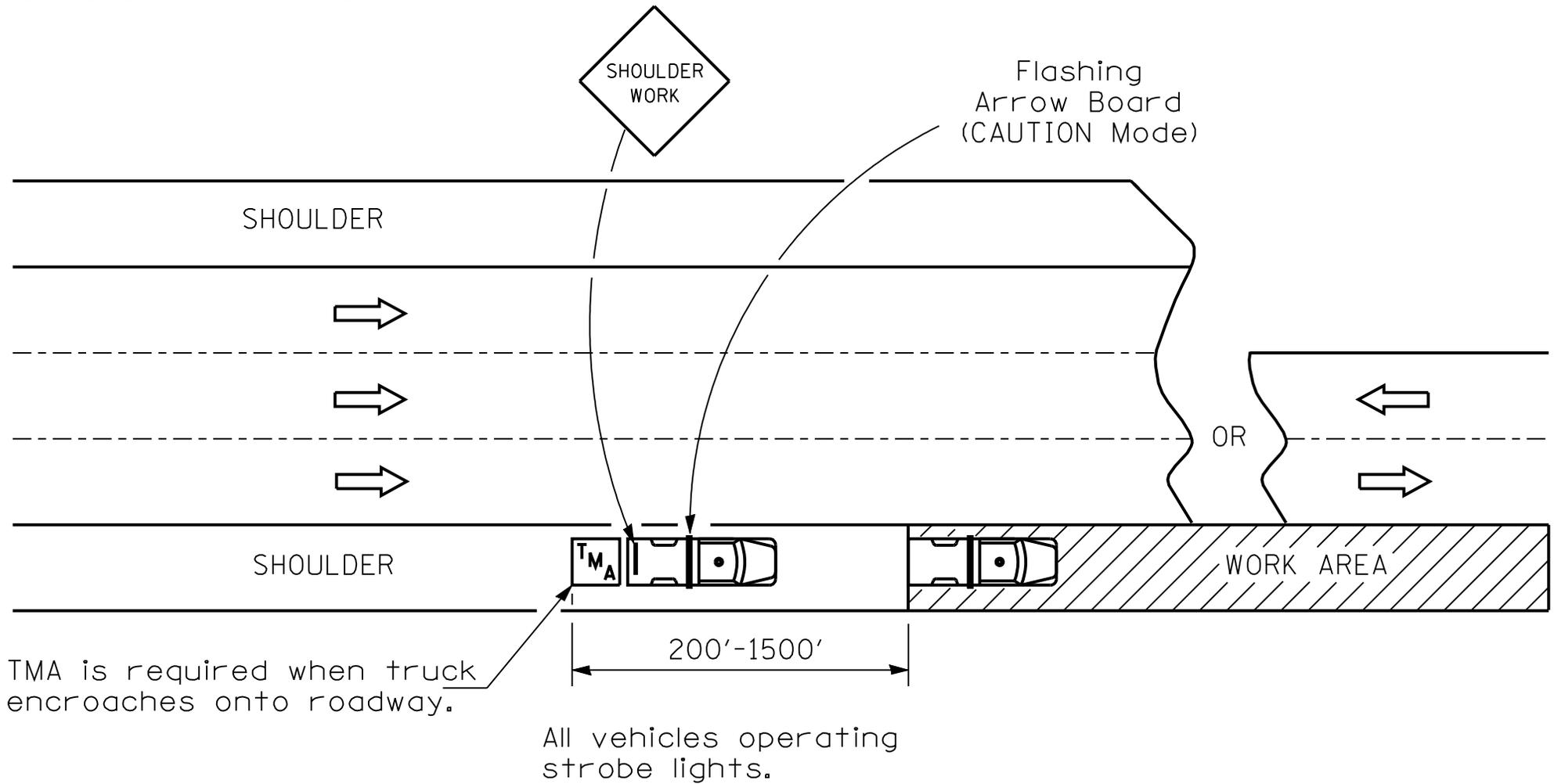
TABLE OF TAPER LENGTHS (FT.)					
SPEED MPH	SHOULDER WIDTH (FT.)				
	2	4	6	8	10
65	45	90	130	175	220
55	40	75	110	150	185
45	30	60	90	120	150
40	20	35	55	70	90
35	15	30	40	55	70
30	10	20	30	40	50

All vehicles operating strobe lights.

\* Cones required when work is within 2' of pavement.

# INTERMITTENT/MOVING OPERATION SHOULDER WORK

WZ 05



# ALL SPEEDS TWO-LANE AND MULTILANE 60 MINUTES OR MORE SHOULDER WORK

For work more than 2 hours an Arrow board is required.

TABLE OF TAPER LENGTHS (FT.)					
SPEED MPH	SHOULDER WIDTH (FT.)				
	2	4	6	8	10
65	45	90	130	175	220
55	40	75	110	150	185
45	30	60	90	120	150
40	20	35	55	70	90
35	15	30	40	55	70
30	10	20	30	40	50

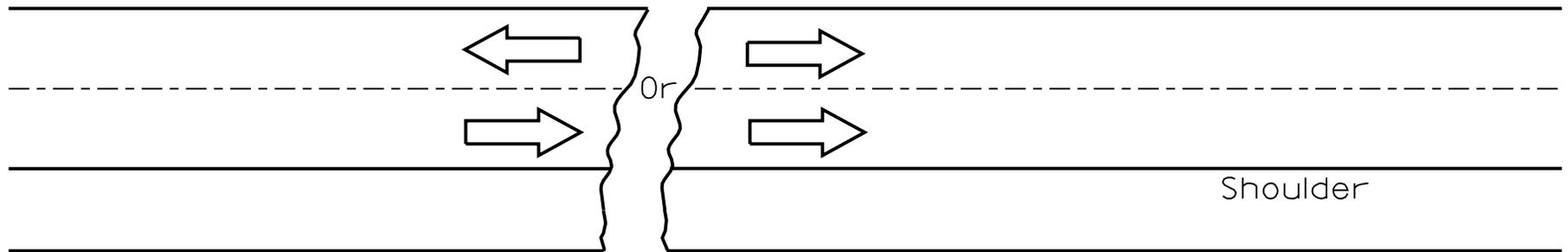


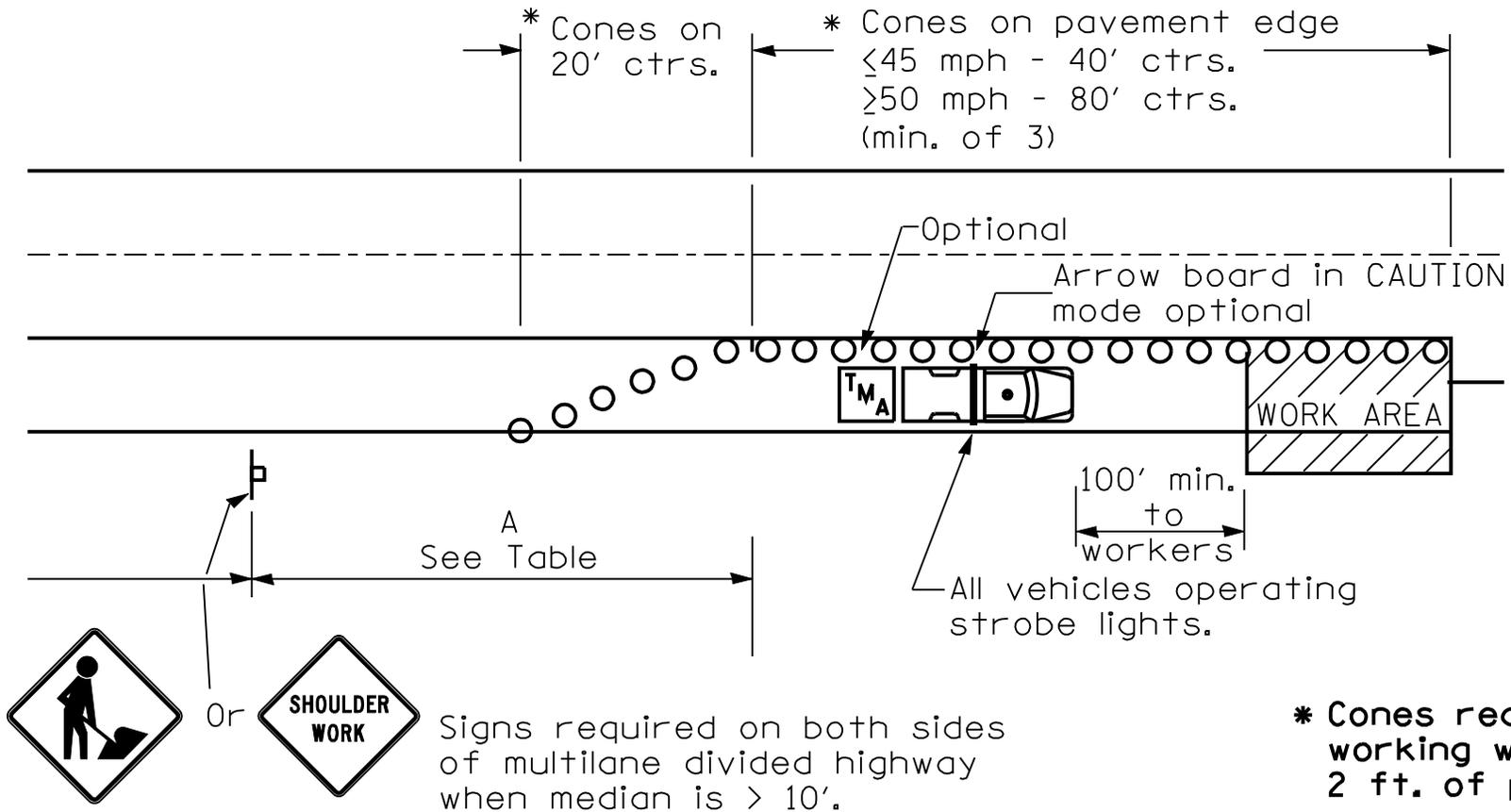
TABLE OF SIGN SPACING		
SPEED MPH	LENGTH A	LENGTH B
65	1,000'	1,600'
55-60	500'	500'
45-50	350'	350'
≤40	100'	100'



If work area is >15' from pavement edge, no signs are required.

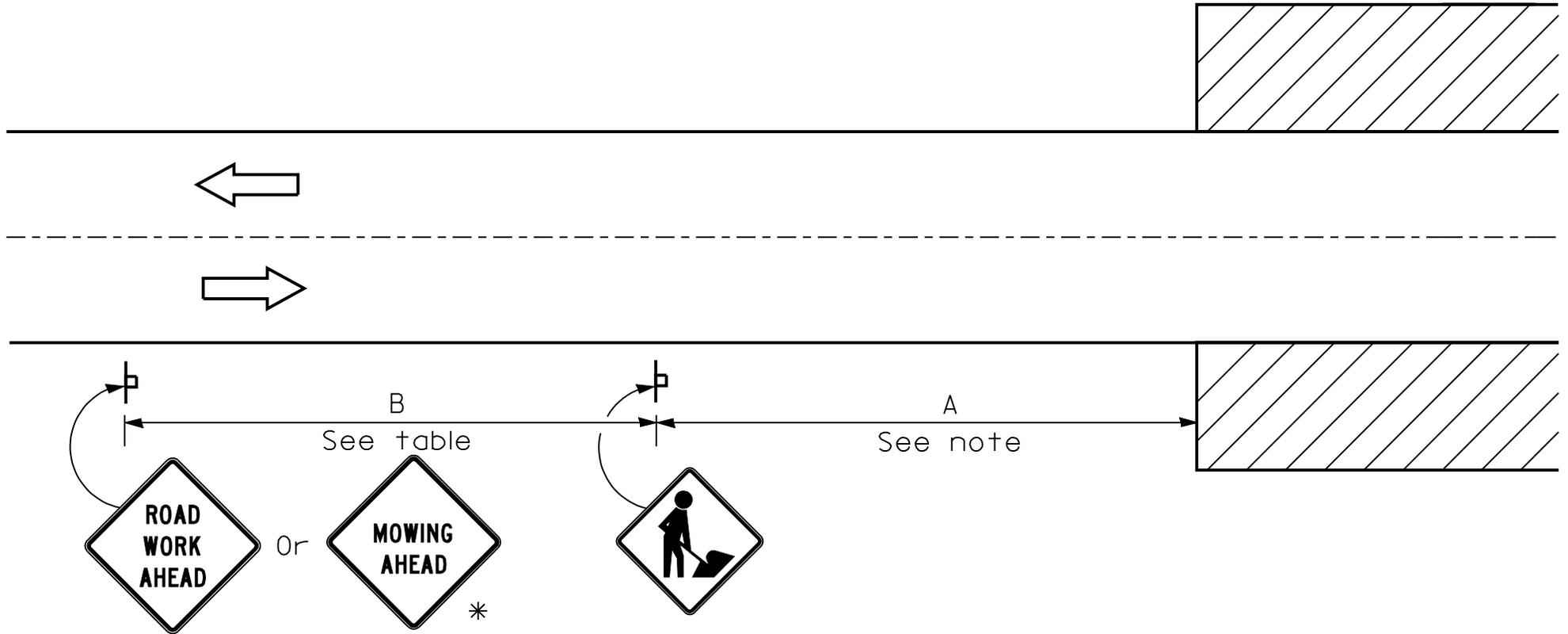


Arrow board in CAUTION mode, required when sight distance is not available.



\* Cones required when working within 2 ft. of pavement. **51**

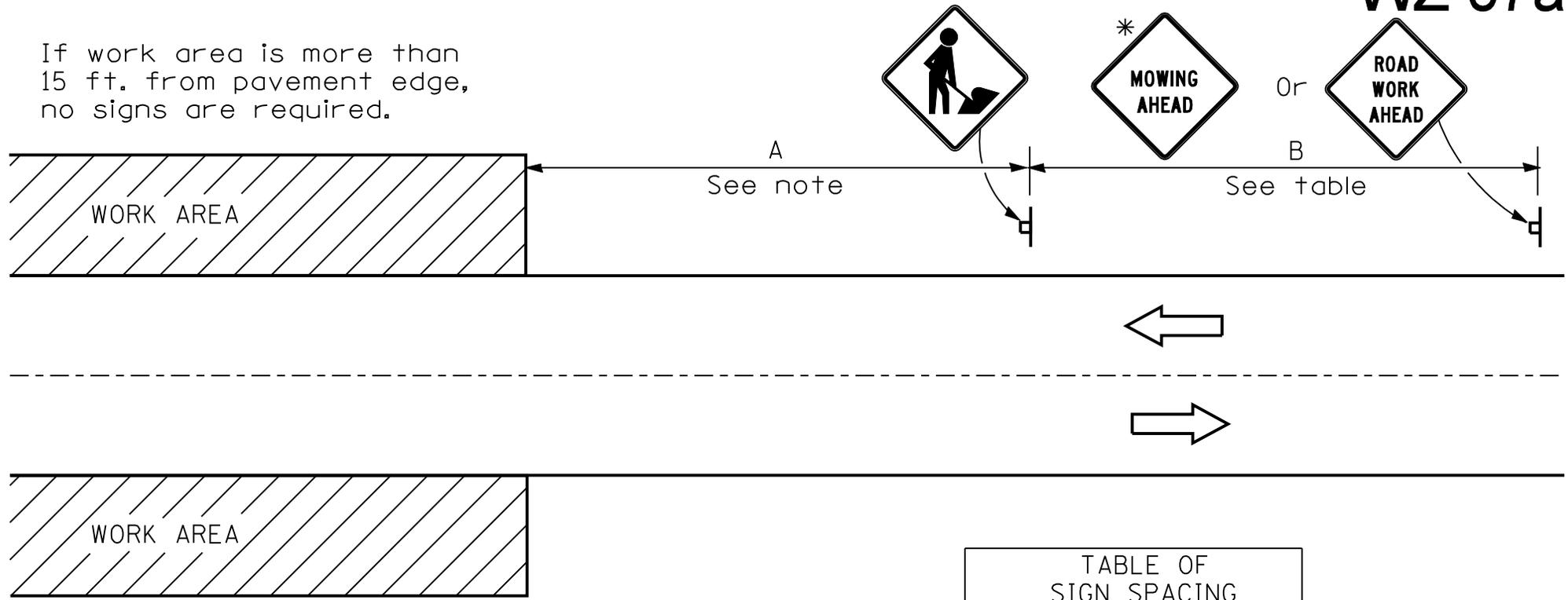
**ALL SPEEDS  
2 LANE 2 WAY  
OFF ROAD MOVING OPERATION  
NO TIME LIMIT**



\* May be used for maintenance mowing operations

# WZ 07a

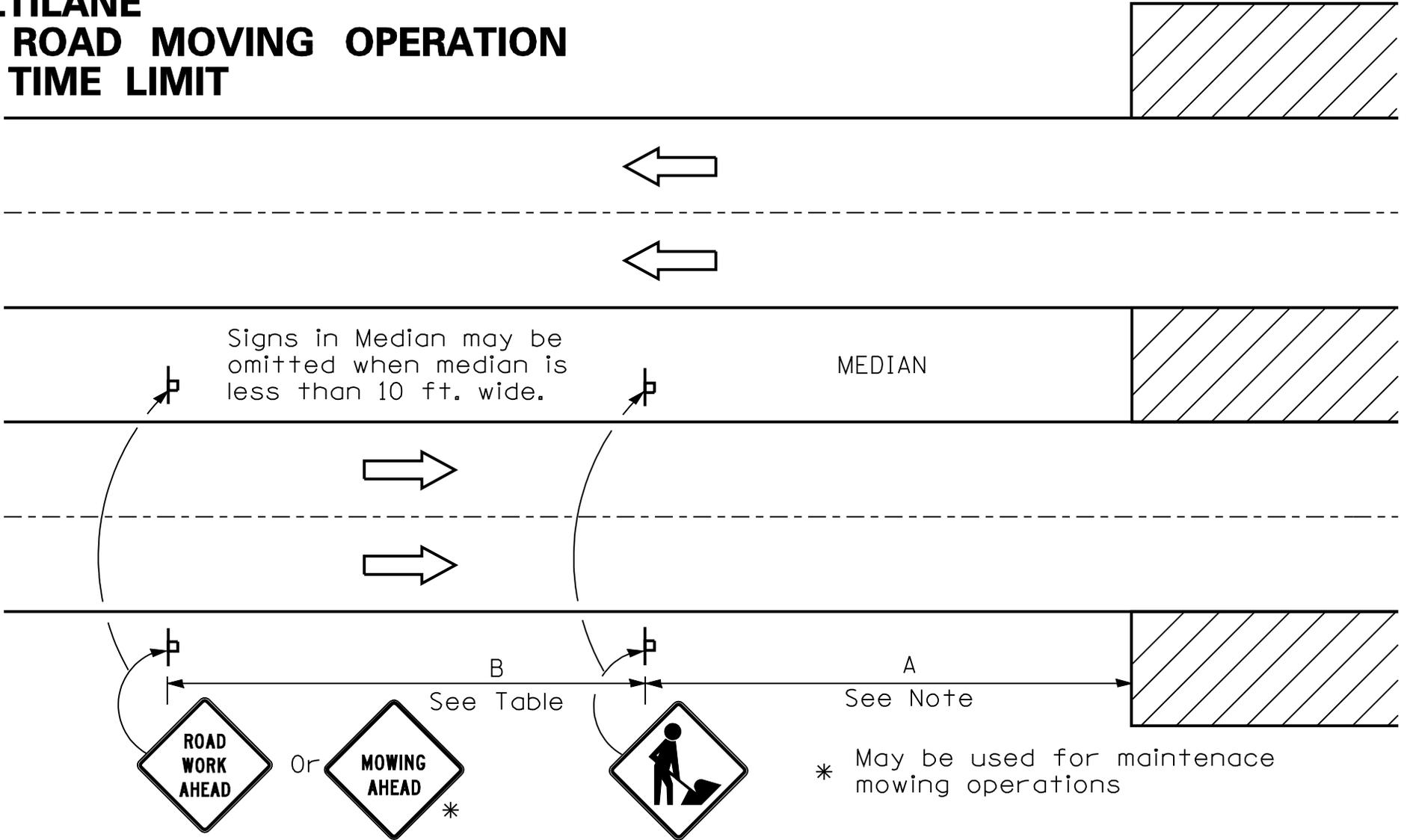
If work area is more than 15 ft. from pavement edge, no signs are required.



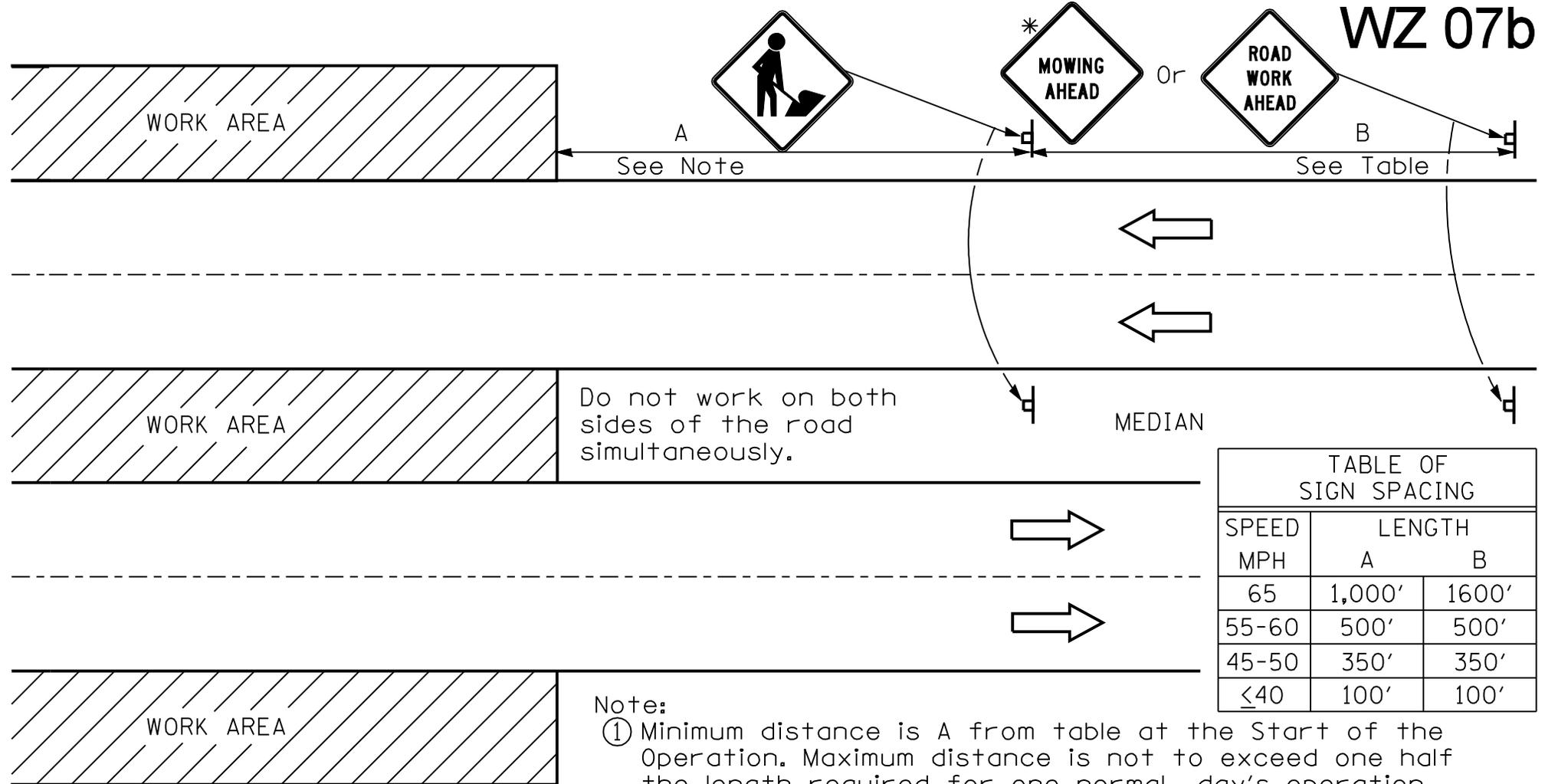
Note:  
 Minimum distance is A from table at the Start of the Operation. Maximum distance is not to exceed one half the length required for one normal day's operation (4 miles maximum).

TABLE OF SIGN SPACING		
SPEED MPH	LENGTH	
	A	B
55	500'	500'
45-50	350'	350'
≤40	100'	100'

**ALL SPEEDS  
MULTILANE  
OFF ROAD MOVING OPERATION  
NO TIME LIMIT**



# WZ 07b



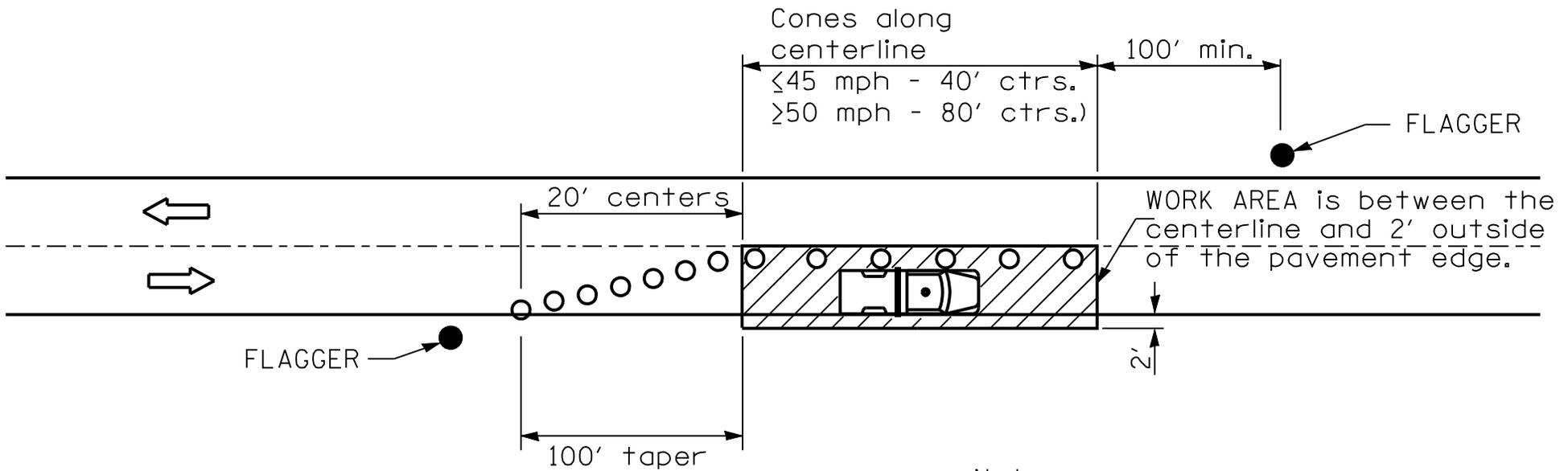
If work area is more than 15 ft. from pavement edge, no signs are required.

- Note:
- ① Minimum distance is A from table at the Start of the Operation. Maximum distance is not to exceed one half the length required for one normal day's operation (4 miles maximum).
  - ② No Advance Warning Signs are required in opposite direction if work is on outside shoulder only.

# 2-Lane 2-Way

**ALL SPEEDS  
LESS THAN 60 MINUTES**

**WZ 20**



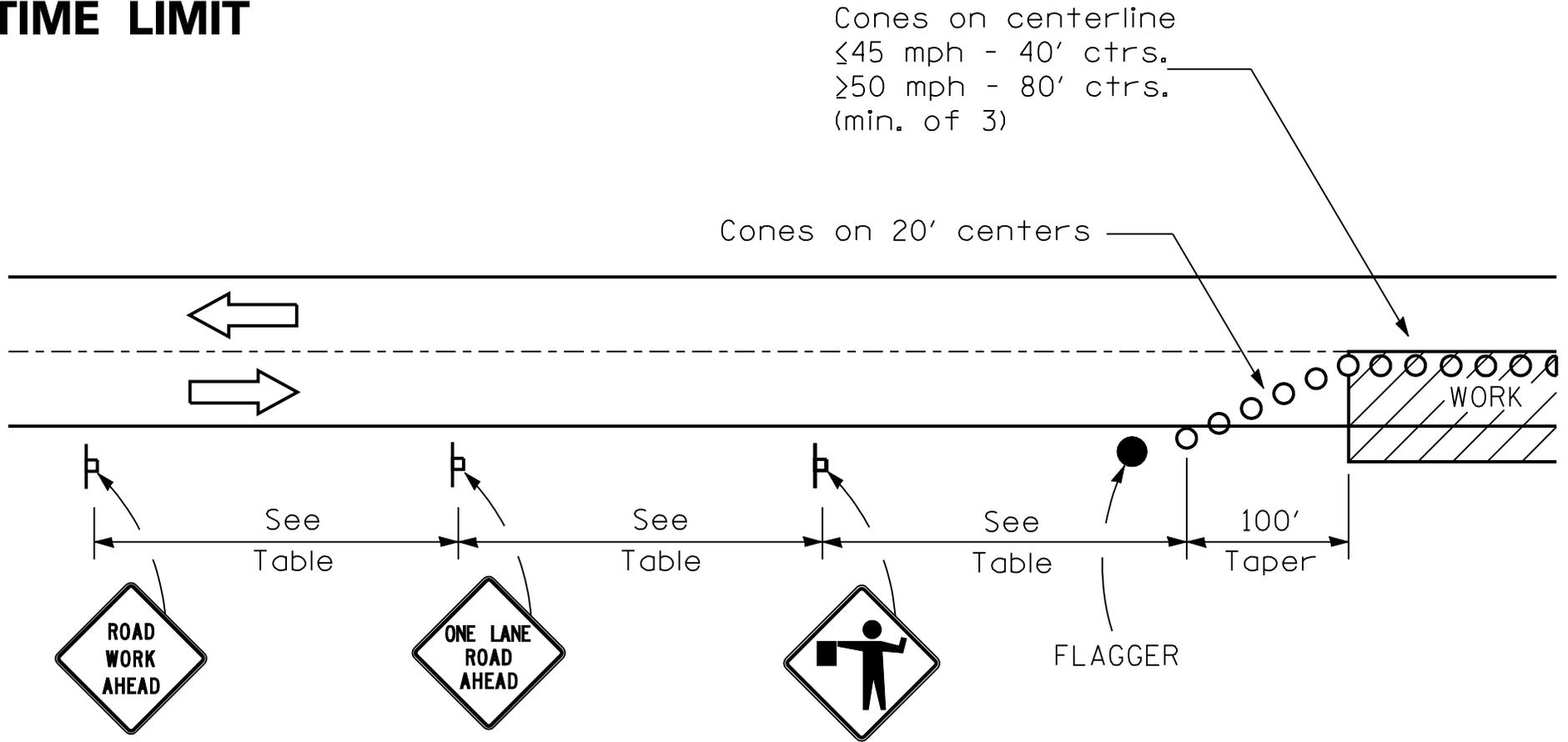
Notes:

**Cones required after 30 minutes.**

All vehicles operating  
strobe lights.

Adequate sight distance of 1000' required  
otherwise utilize CASE WZ-21.

# ALL SPEEDS NON-MOVING OPERATION NO TIME LIMIT



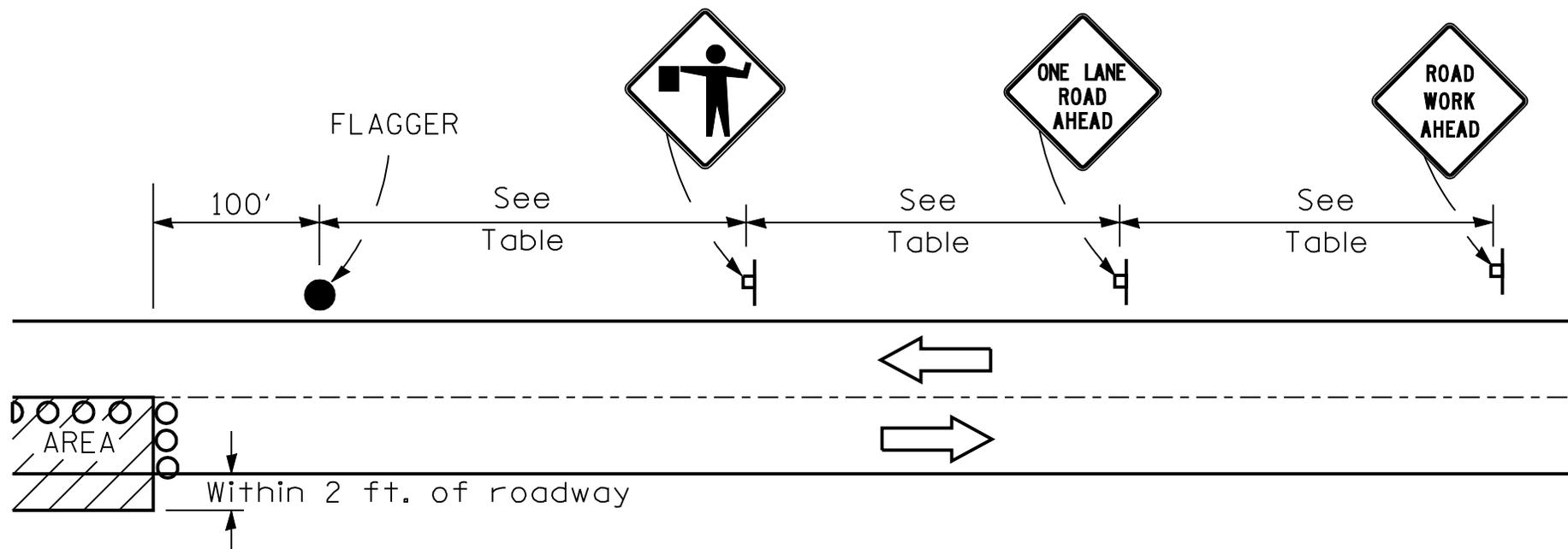
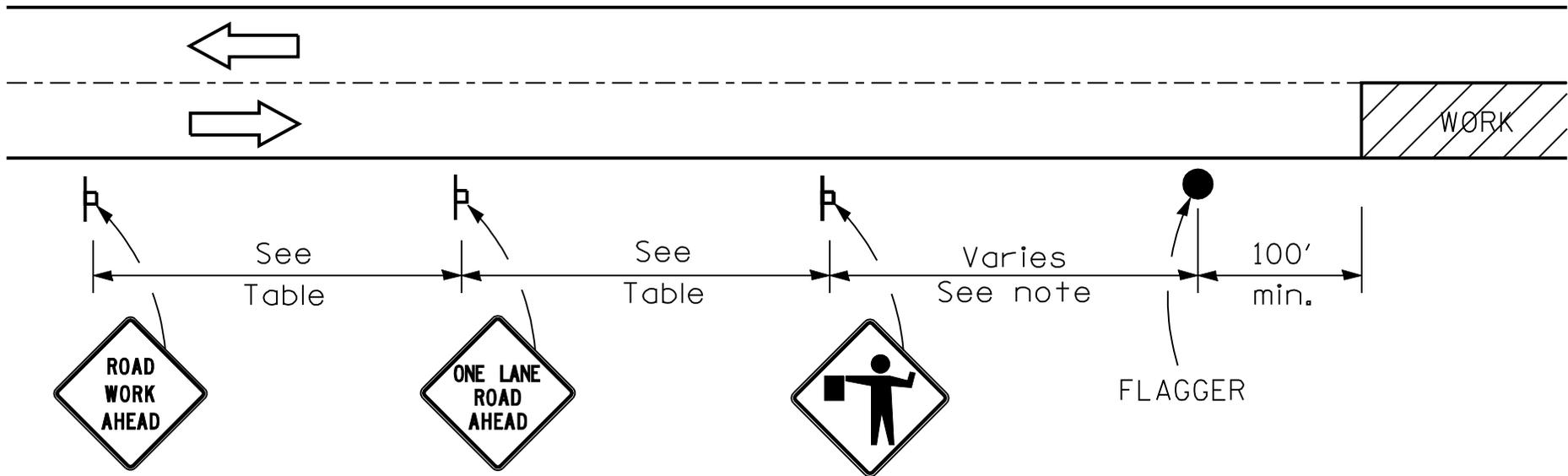


TABLE OF SIGN SPACING	
SPEED MPH	LENGTH
55	500'
45-50	350'
≤40	100'

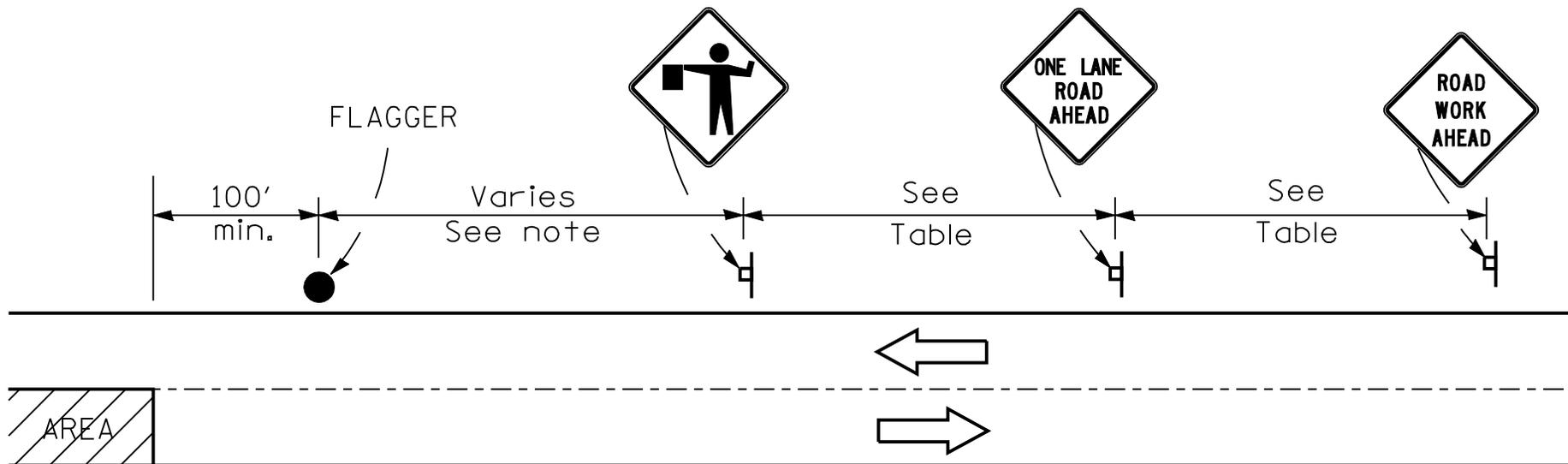
# ALL SPEEDS MOVING OPERATION NO TIME LIMIT

Flaggers used for moving operations are dependent on the travel speed. If the work operation moves too fast for flaggers, the flaggers may be omitted and the FLAGGER signs shall be replaced with WORKER signs. In lieu of flaggers, a protective vehicle with a TMA and an arrow board in CAUTION mode shall be used in advance of the work area.



If work operation exceeds 2 miles per 1/2 day, utilize detail WZ24.

All vehicles operating strobe lights.

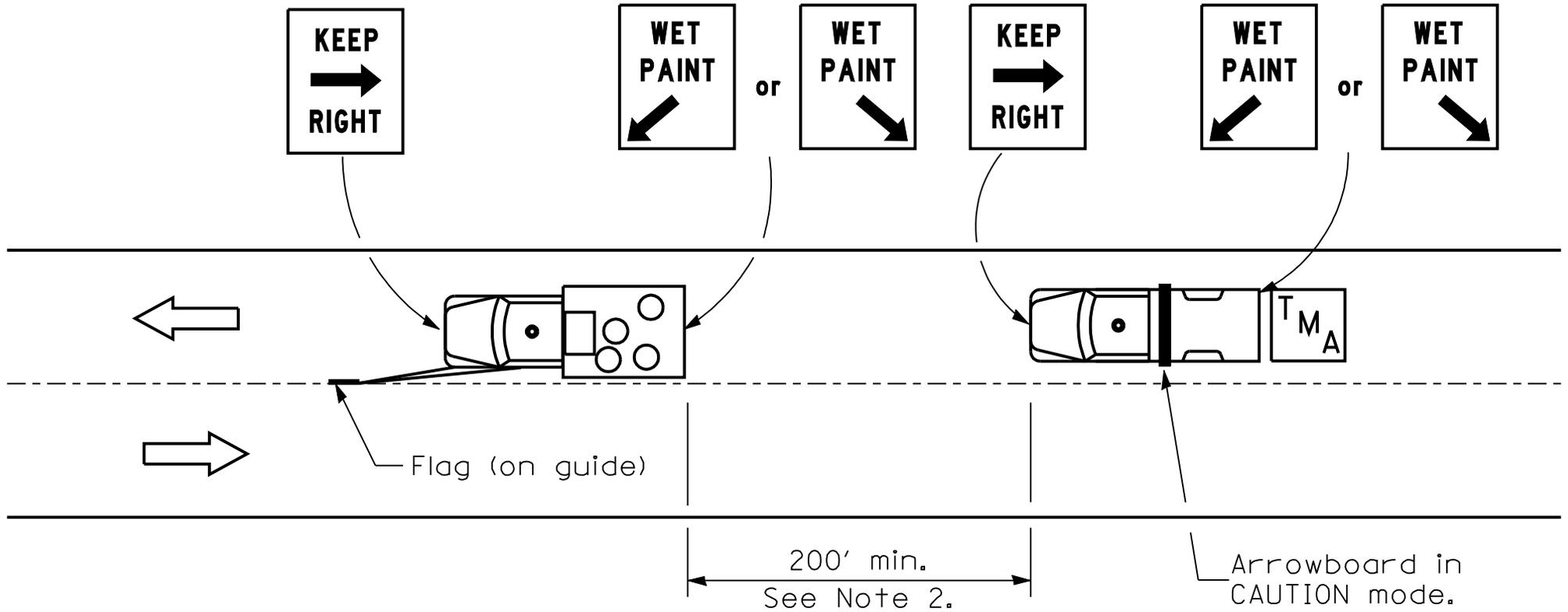


See Flagger Handbook for flagger instructions and requirements

TABLE OF SIGN SPACING	
SPEED MPH	LENGTH
55	500'
45-50	350'
≤40	100'

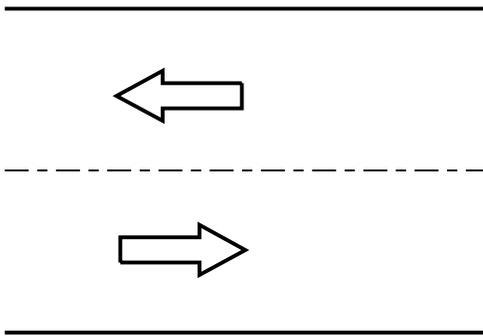
NOTE:  
 Minimum distance is 200 ft. at Start of Operation. Maximum distance is 2 miles but in no case to exceed one half the distance required for one normal day's operations, whichever is less.

# MINIMUM TRAFFIC CONTROL STRIPING



## Notes:

1. Striping machine and all vehicles in convoy (except law enforcement vehicles) are to have headlights operating and are to display amber colored oscillating, rotating, flashing, or strobe lights. At least one amber light is to be visible from any direction.
2. The distance trailing vehicles follow the striping machine will vary depending on the terrain and susceptibility of the painted line to wheel tracking. Whenever adequate stopping sight distance exists to rear, the protection vehicle shall maintain minimal distance. The protection vehicle should slow down in advance of vertical and horizontal curves that restrict sight distance.
3. Striping operation may be supported by additional traffic control devices.

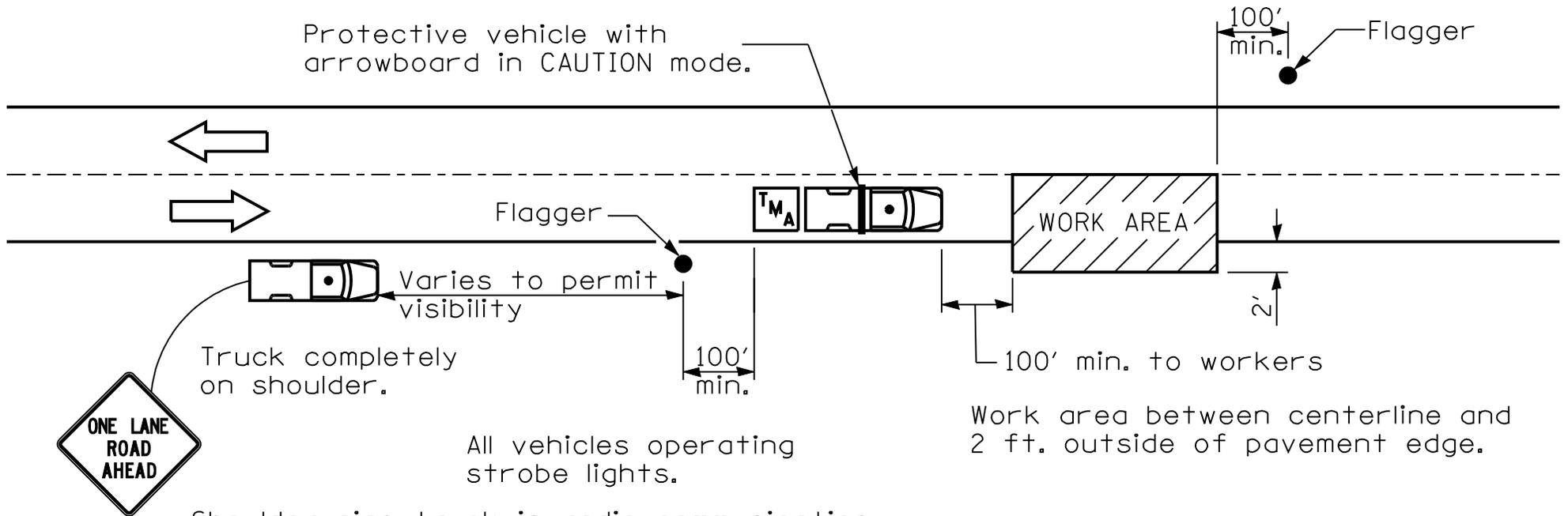




# ALL SPEEDS INTERMITTENT /MOVING OPERATION TWO-LANE, TWO-WAY TRAFFIC

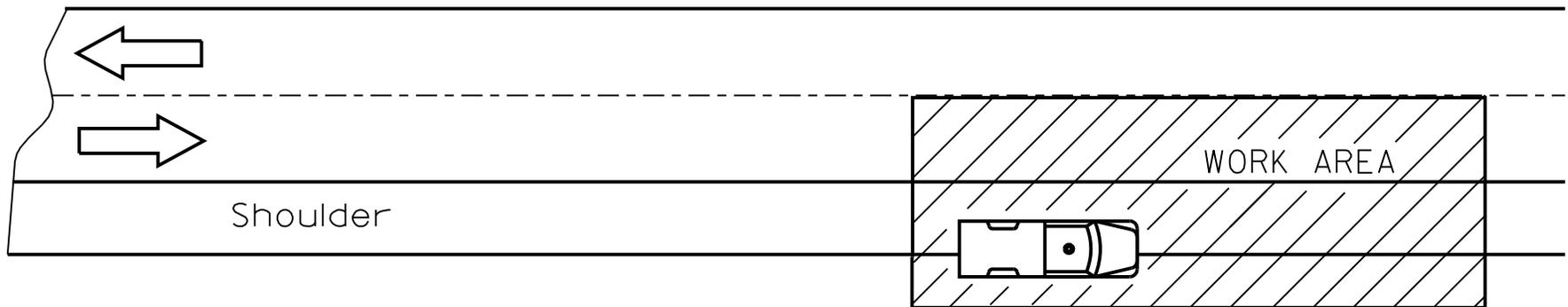
**WZ 24  
DAY OR NIGHT**

Flaggers use for moving operations is dependent on the travel speed. If the work operation moves too fast for flaggers, the flaggers may be omitted and the FLAGGER signs shall be replaced with WORKER signs. In lieu of flaggers, a protective vehicle with a TMA and an arrow board in CAUTION mode shall be used in advance of the work area.



Shoulder sign truck in radio communication with protective vehicle to provide proper distance to provide advance warning. Required when visibility is not adequate.

**ALL SPEEDS  
INTERMITTENT POTHOLE PATCHING  
2 LANE ROADWAY  
LESS THAN 5,000 ADT**



All vehicles operating  
strobe lights.

A. May be performed without a flagger, provided all vehicles are completely off traveled lanes:

1. Each task must be performed with extreme care.
2. The amount of time the workers are on the pavement shall be minimized.
3. Workers shall enter onto the pavement only during appropriate gaps in traffic.
4. Adequate sight distance must be available to utilize this case.
5. If workers must remain in traffic lane and appropriate gaps do not exist, the lane must be closed with proper traffic control signs and devices.
6. Vehicle may not encroach onto the pavement.
7. When possible, work on the same side of road as the vehicle.
8. Employee shall wear approved high visibility outer wear and hat.
9. Vehicle shall have its strobe lights on.

B. No attempts shall be made to stop, slow, or direct traffic into another lane except by a properly equipped flagger with proper warning signs in place.

C. When it is necessary for the vehicle to stop on the roadway, traffic control shall be in accordance with the proper case.

D. This case is only allowed during non-peak traffic.

# Multilanes

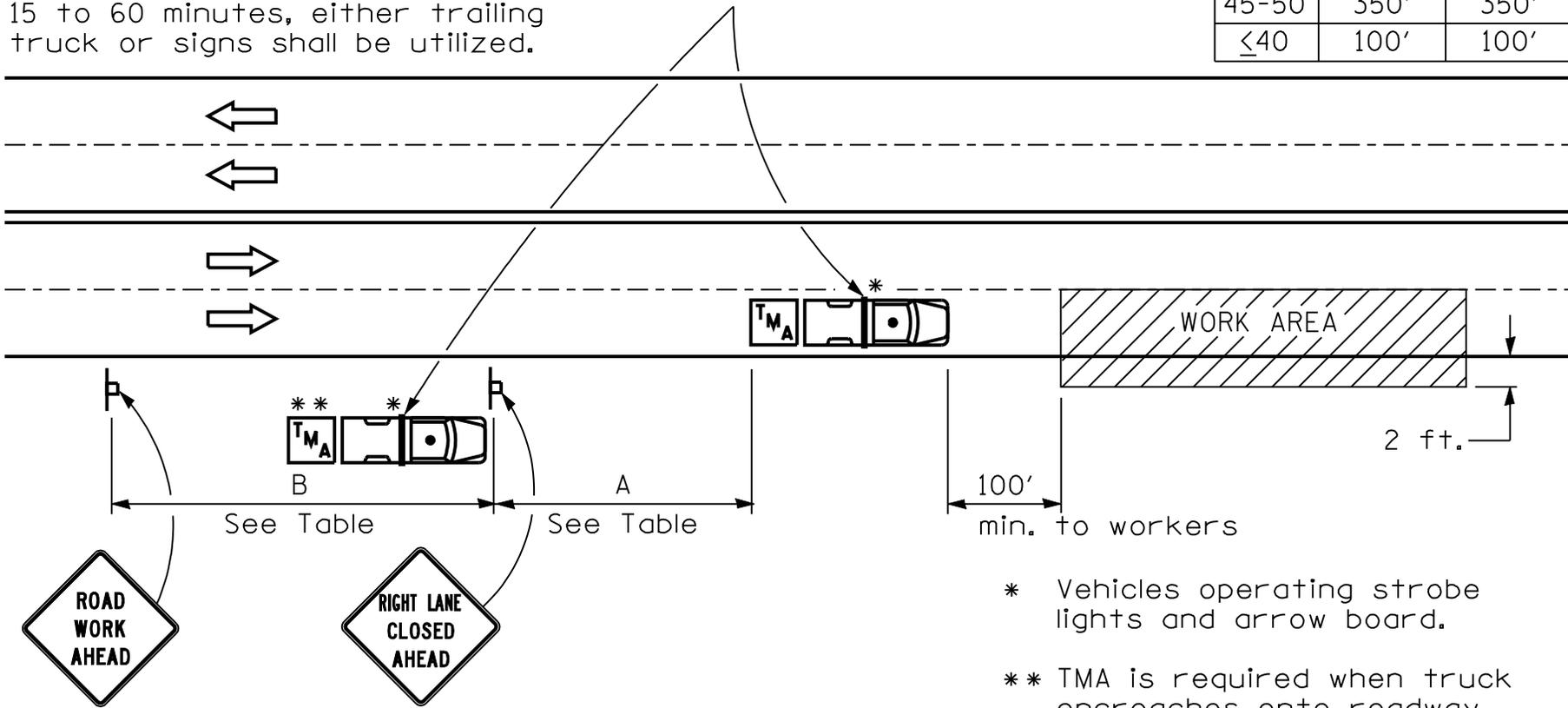
## ALL SPEEDS MULTILANE UP TO 60 MINUTES

For left lane closure use corresponding left lane information. If median  $\geq 10$  ft., signs are required in median.

SPEED MPH	LENGTH	
	A	B
65	1000'	1600'
55-60	500'	500'
45-50	350'	350'
$\leq 40$	100'	100'

Less than 15 minutes, both trailing truck and signs optional.  
15 to 60 minutes, either trailing truck or signs shall be utilized.

Arrowboard in ARROW mode

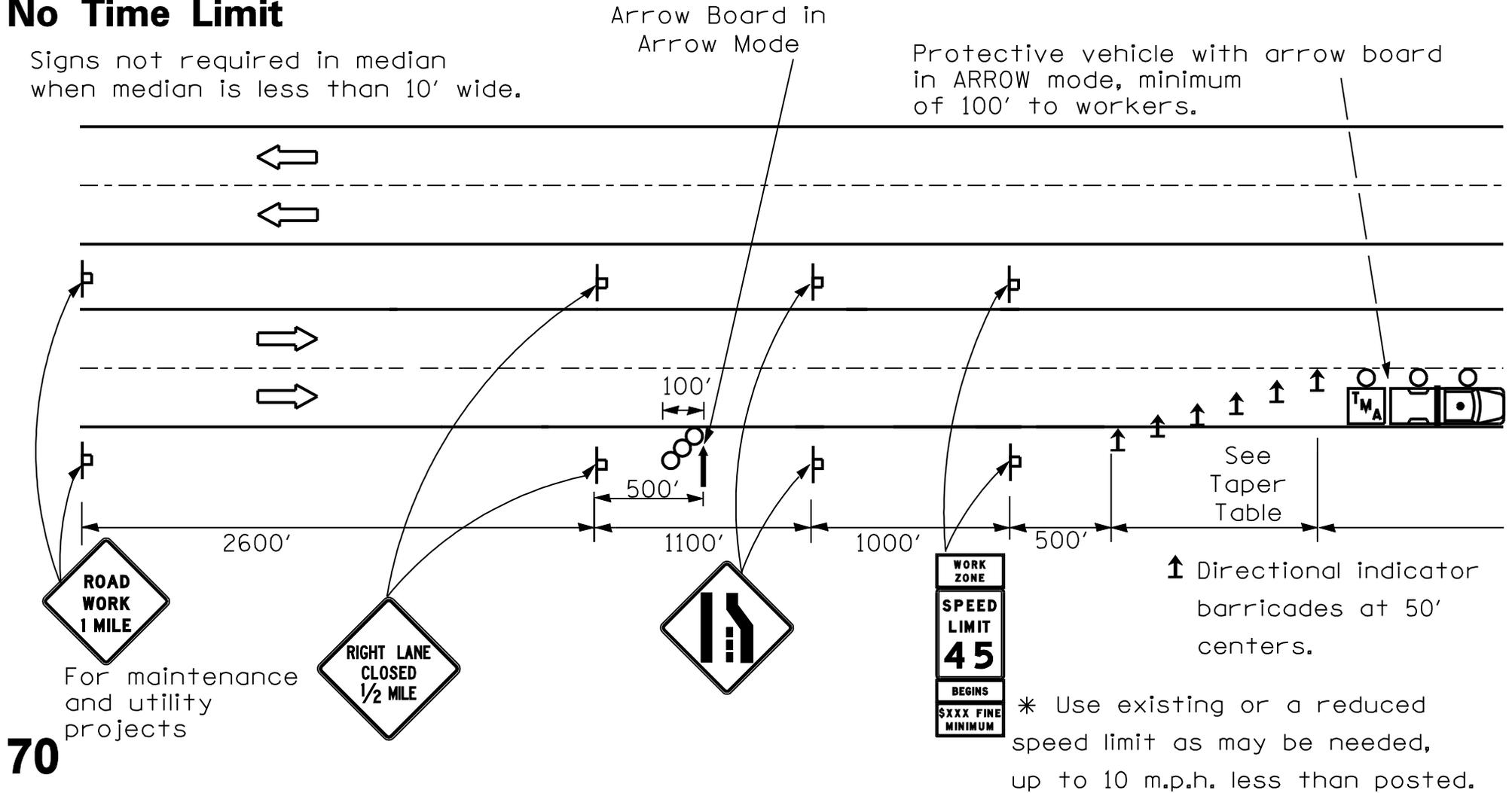


# MULTILANE Less than or equal to 55 mph ONE LANE CLOSURE No Time Limit

Signs not required in median when median is less than 10' wide.

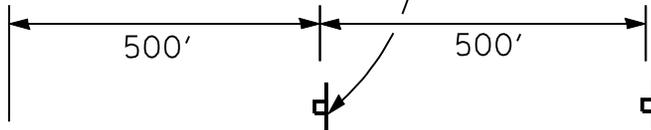
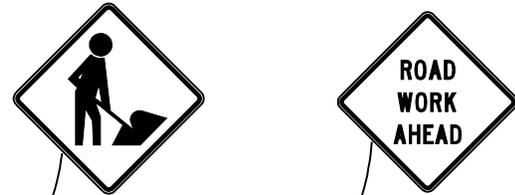
When protective vehicle is moved forward to protect workers, an arrow board shall be placed at the start of the taper.

Protective vehicle with arrow board in ARROW mode, minimum of 100' to workers.

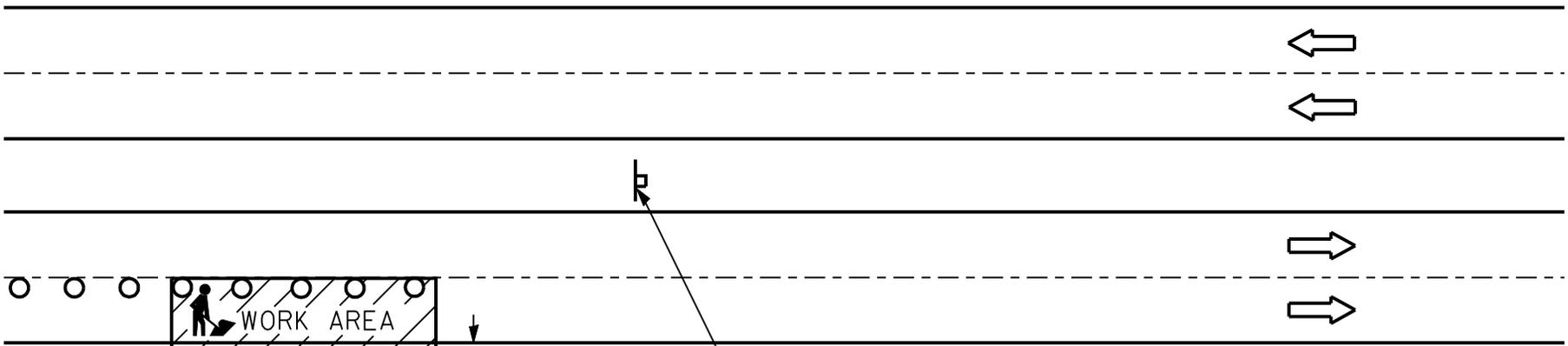


Add these signs when work is being performed in the left lane for an undivided highway.

The opposing inside lane should be closed when work is within 2' of the centerline.



All vehicles operating strobe lights.



When work is being performed in the left lane, corresponding left lane information shall be used.

150 m min.  
(500')

Taper Table	
Speed	Length
55 mph	660'
45 mph	540'
40 mph	320'
35 mph	245'
30 mph	180'

Cones at 50' centers.

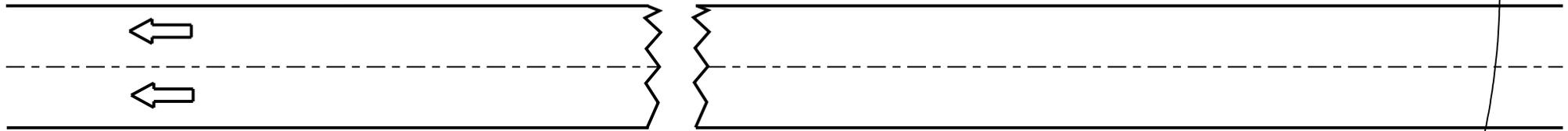
When drums or barricades are used, the 50' spacing may be doubled.

# INTERSTATE ONE LANE CLOSURE NO TIME LIMIT ANY SPEED

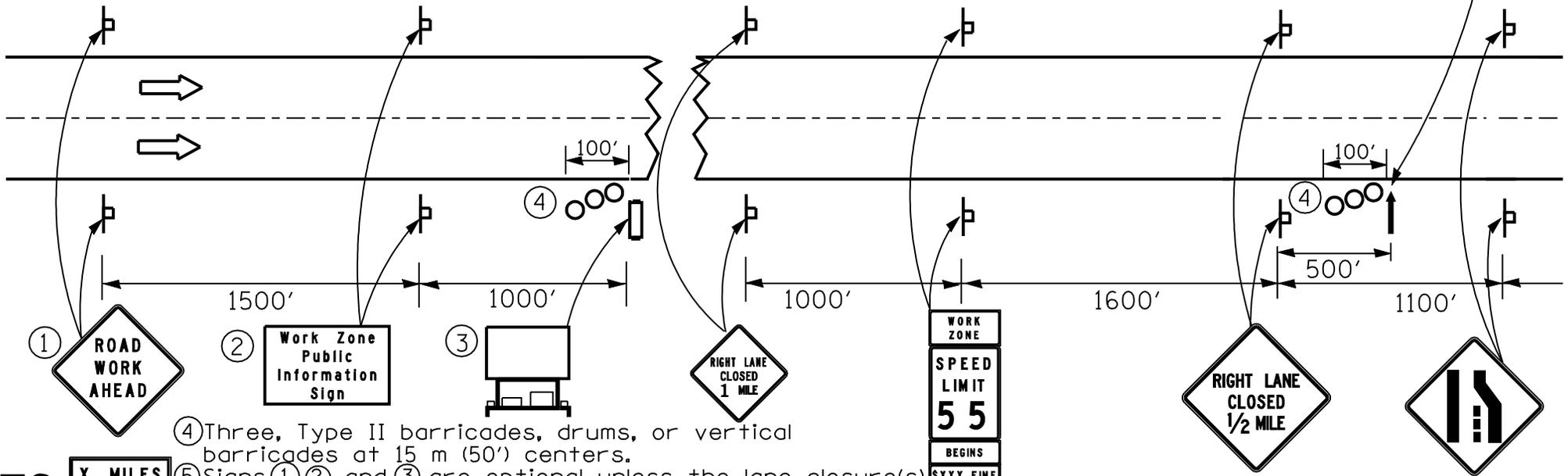
The first 2 signs and message board are stationary.

- ① The Road Work Ahead sign shall be located 3 to 5 miles in advance of the project limits.
- ② The message and size of the Work Zone Public Information sign shall be as specified by the Bureau of Operations.
- ③ The message board shall be used to display status of lane within the project. The primary message shall be:  
"Right Lane Closed"/ "X Miles Ahead"  
"Left Lane Closed"/"X Miles Ahead"  
"All Lanes Open"

Arrow Board in  
Arrow Mode



Signs not required in median when median is less than 10' wide.

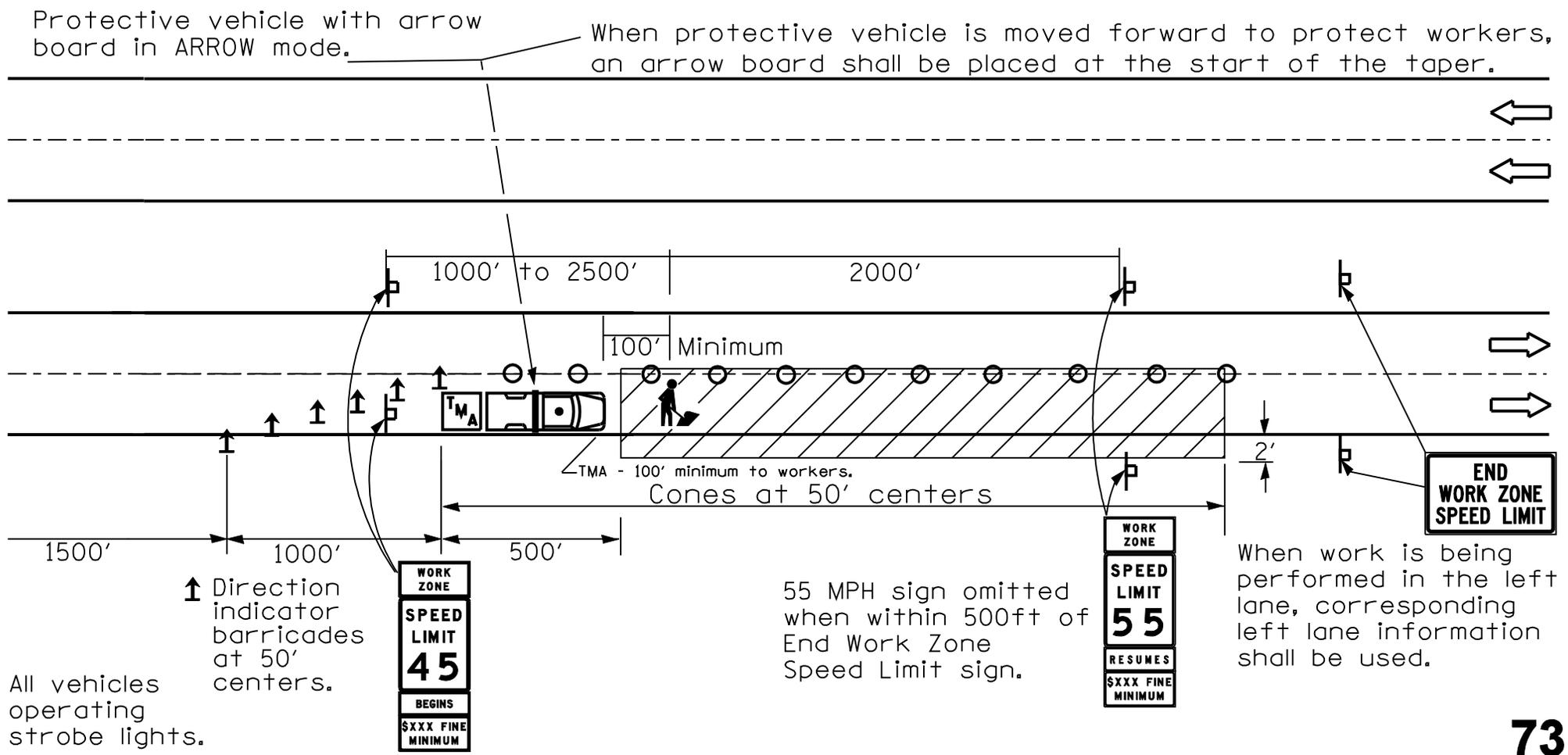


④ Three, Type II barricades, drums, or vertical barricades at 15 m (50') centers.

⑤ Signs ①, ②, and ③ are optional unless the lane closure(s) last(s) overnight or traffic backups are anticipated.

⑦ If signs ①, ②, and ③ are not used, replace the RIGHT LANE CLOSED 1 MILE with ROAD WORK AHEAD sign.

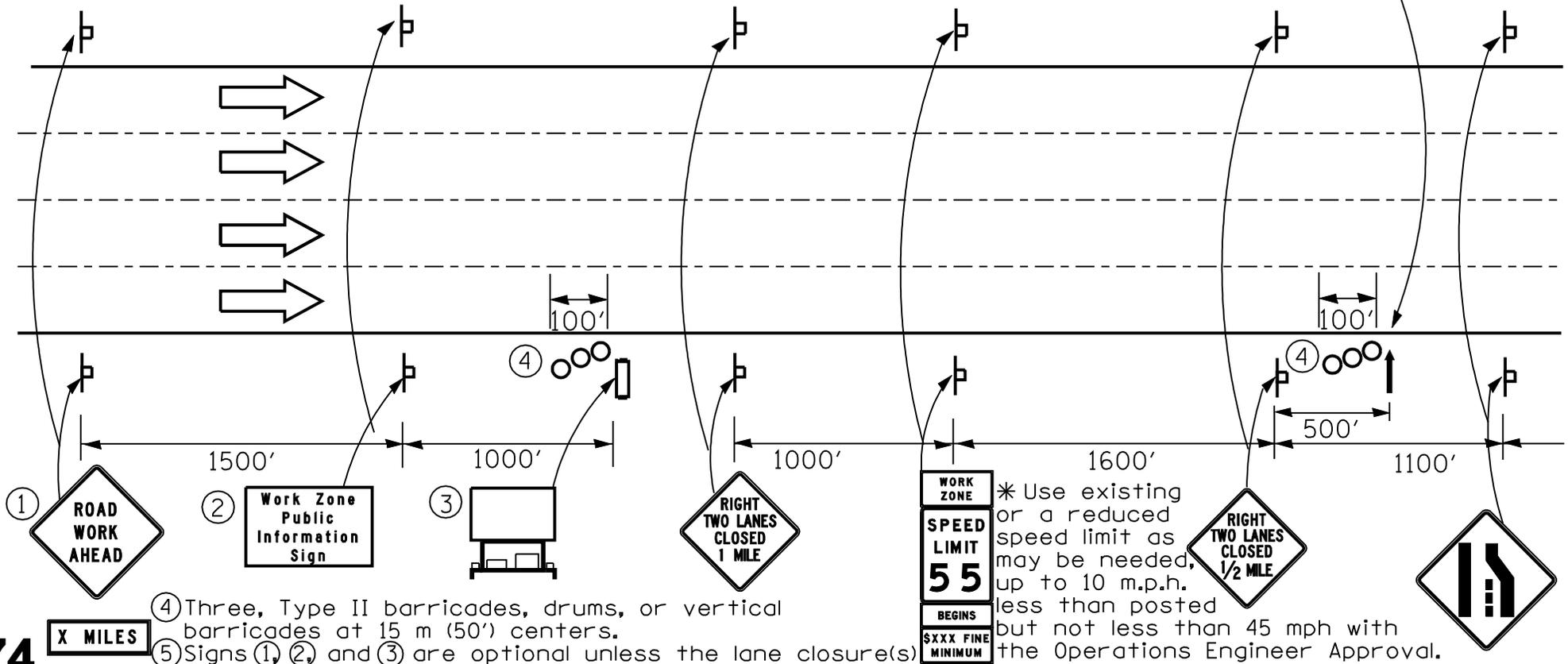
⑥ Work Zone speed limit 45 signs shall be moved as necessary to maintain the required spacing between the signs and the workers in each separate work activity.



# MULTILANE DIVIDED TWO LANE CLOSURE NO TIME LIMIT

Signs not required in median when median is less than 10' wide.

- ① The Road Work Ahead sign shall be located 3 to 5 miles in advance of the project limits.
- ② The message and size of the Work Zone Public Information sign shall be as specified by the Bureau of Operations.
- ③ The message board shall be used to display status of lane within the project. The primary message shall be:  
"Right 2 Lanes Closed"/ "X Miles Ahead"  
"Left 2 Lanes Closed"/"X Miles Ahead"  
"All Lanes Open"



- ④ Three, Type II barricades, drums, or vertical barricades at 15 m (50') centers.
- ⑤ Signs ①, ②, and ③ are optional unless the lane closure(s) last(s) overnight or traffic backups are anticipated.
- ⑦ If signs ①, ②, and ③ are not used, replace the RIGHT TWO LANES CLOSED 1 MILE with ROAD WORK AHEAD sign.

**74** X MILES

- ⑥ Work Zone speed limit 45 signs shall be moved as necessary to maintain the required spacing between the signs and the workers in each separate work activity.

# WZ 44

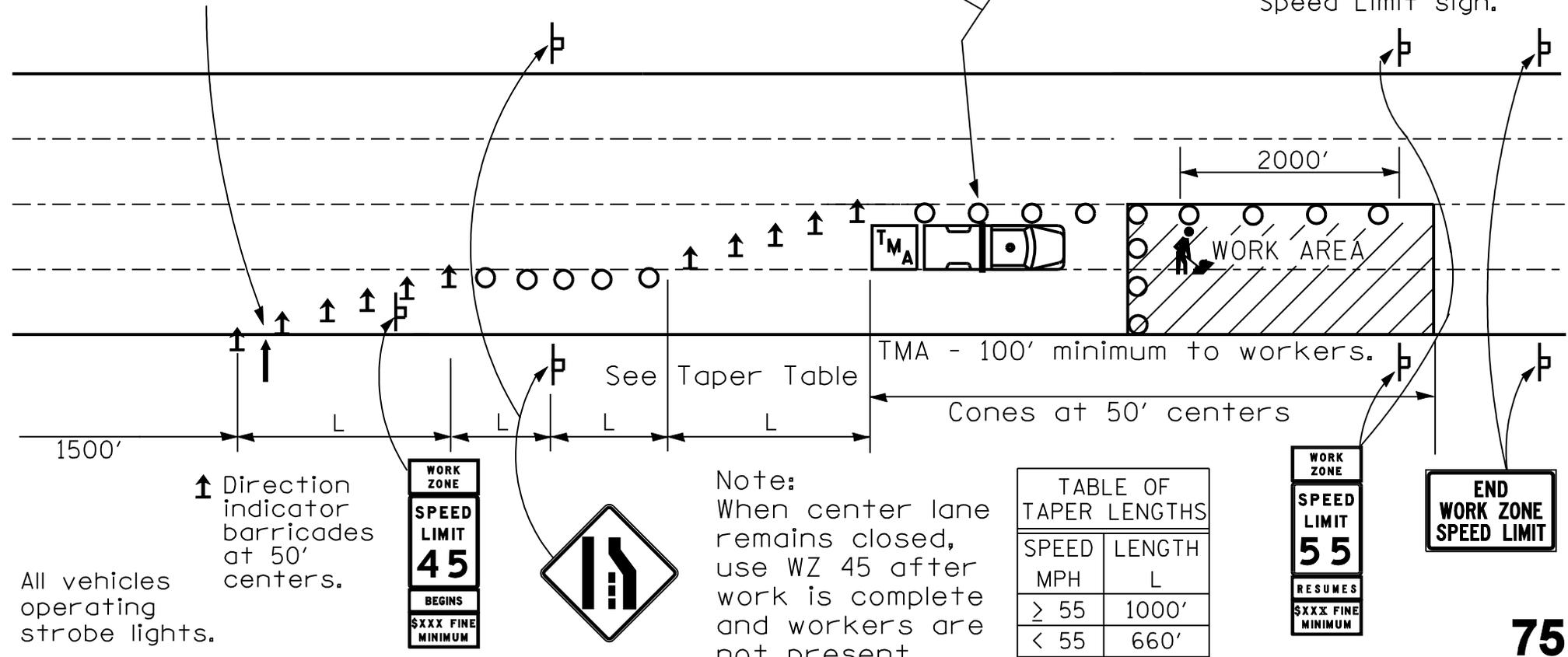
All vehicles operating strobe lights.

When protective vehicle is moved forward to protect workers, an arrow board shall be placed at the start of the taper.

55 MPH sign omitted when within 500ft of End Work Zone Speed Limit sign.

Flashing arrow board in ARROW mode.

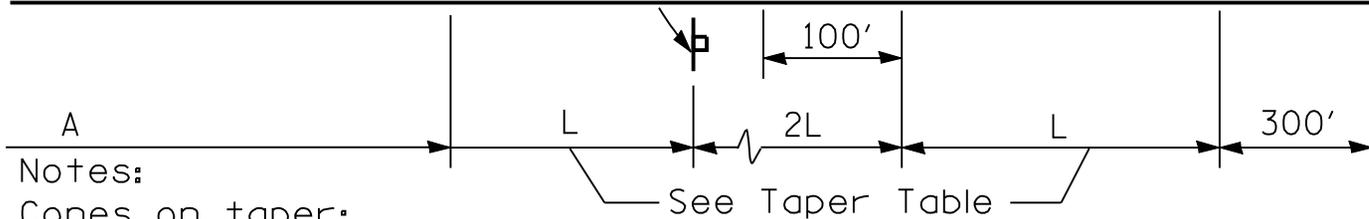
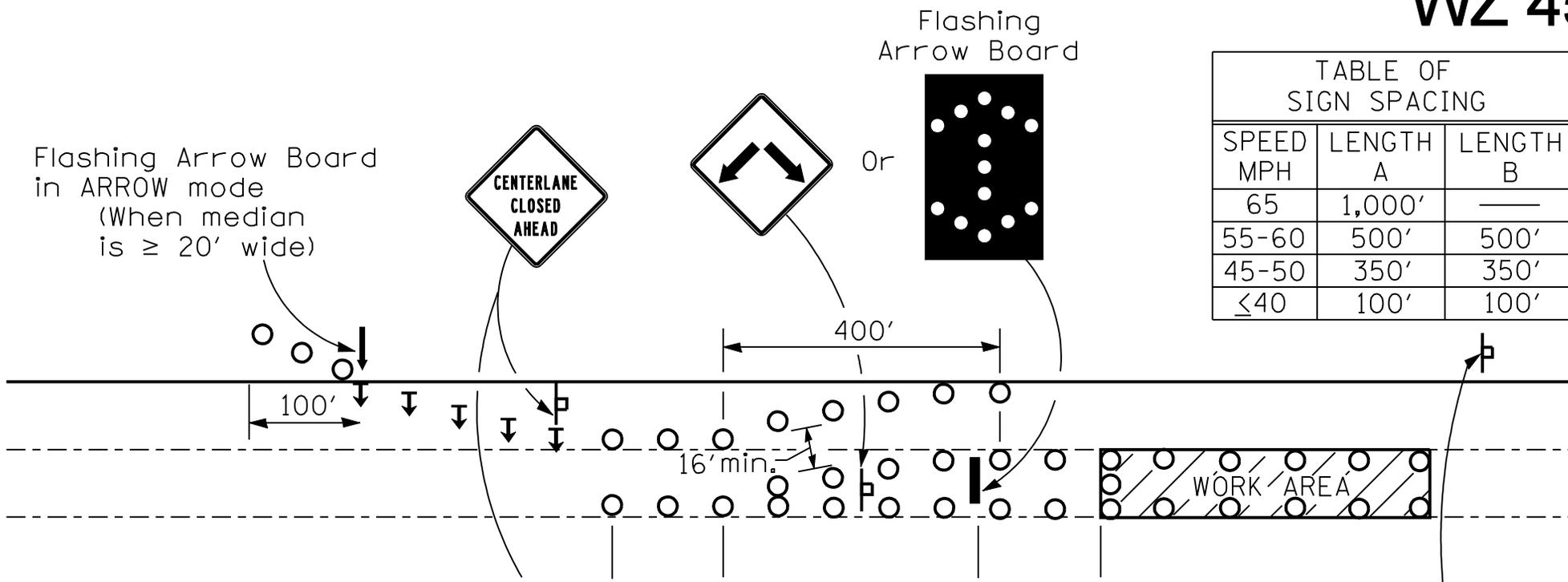
Protective vehicle with arrow board in ARROW mode.





# WZ 45

TABLE OF SIGN SPACING		
SPEED MPH	LENGTH A	LENGTH B
65	1,000'	—
55-60	500'	500'
45-50	350'	350'
≤40	100'	100'



Notes:

Cones on taper:

- $\leq 45$  mph - 20' ctrs.
- $\geq 50$  mph - 40' ctrs.

Cones on lane lines:

- $\leq 45$  mph - 40' ctrs.
- $\geq 50$  mph - 80' ctrs.

**\* Note:**  
This case may only be utilized when workers are not present.

Use WZ 44 while workers are present.

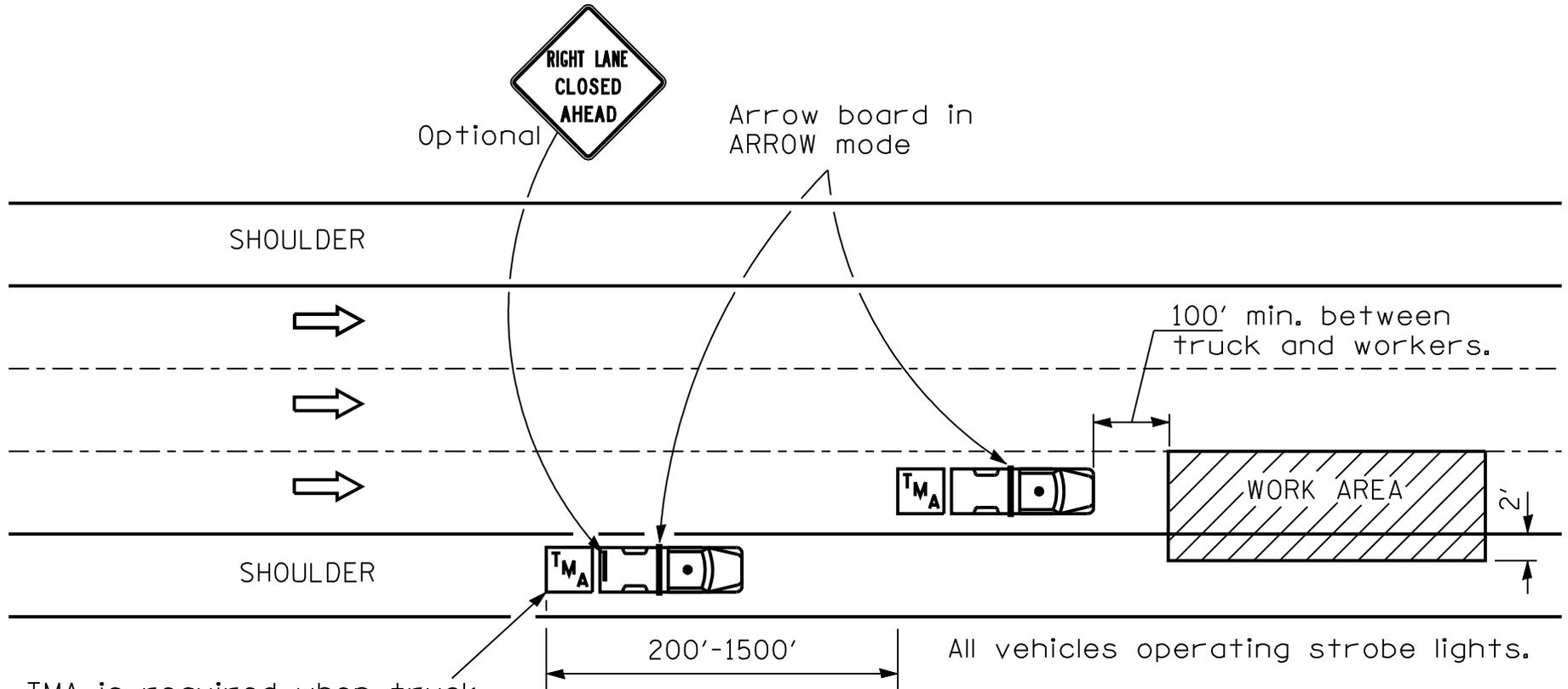
TABLE OF TAPER LENGTHS	
SPEED MPH	LENGTH L
65	1000'
55	660'
45	540'
40	320'
35	245'
30	180'

END WORK ZONE SPEED LIMIT

**ALL SPEEDS  
INTERMITTENT / MOVING OPERATION  
NO TIME LIMIT  
MORE THAN 4 MILE PER DAY**

**WZ 46**

If work production <4 mile/day,  
WZ48 must be utilized.



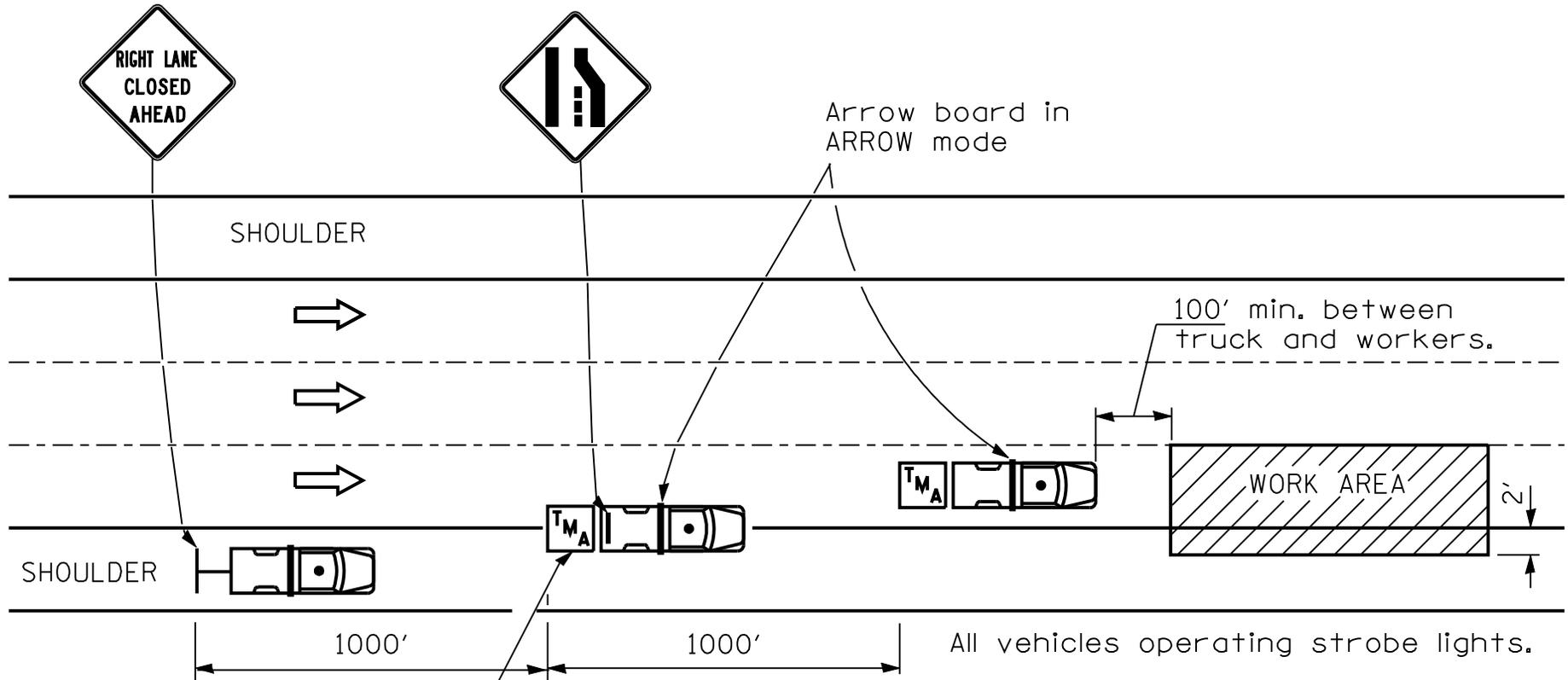
TMA is required when truck encroaches onto roadway.

Note: On roadways with ADT <25,000, all vehicles can travel on shoulder, then move into the traffic lane for intermittent operations such as pothole patching.

**ALL SPEEDS  
INTERMITTENT / MOVING OPERATION  
NO TIME LIMIT  
MORE THAN 4 MILE PER DAY**

**WZ 46A**

If work production < 4 mile/day,  
WZ48 must be utilized.



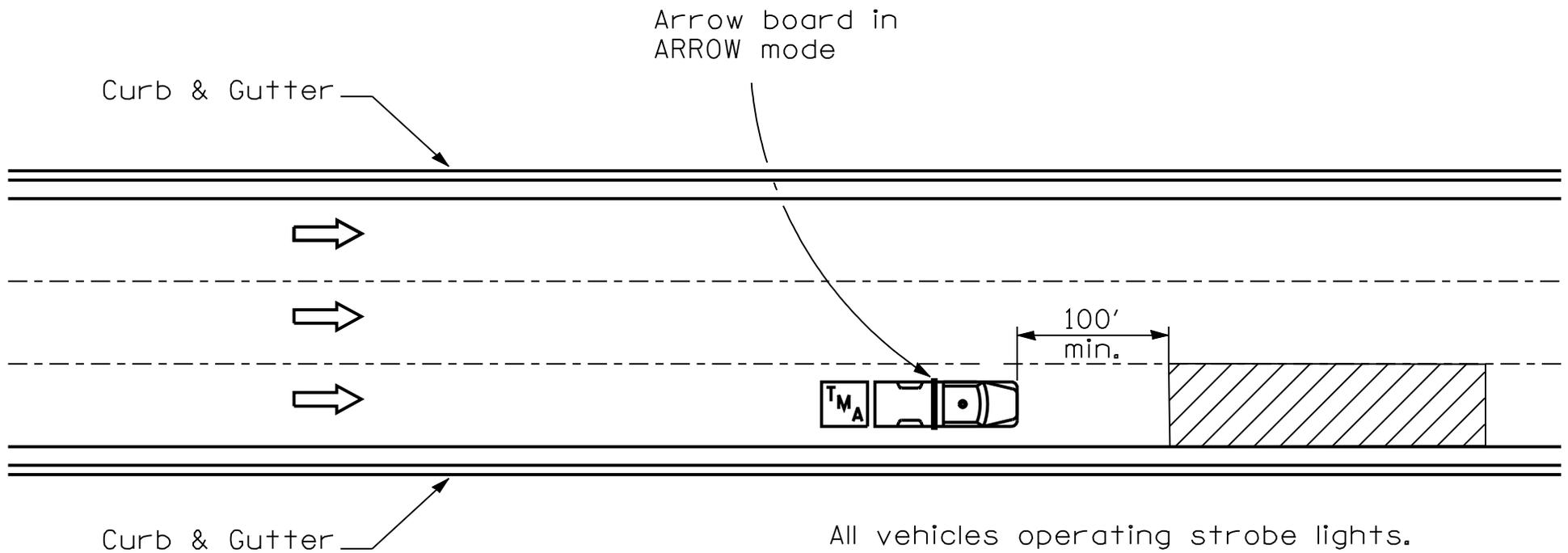
TMA is required.

Note: On roadways with ADT < 25,000, all vehicles can travel on shoulder, then move into the traffic lane for intermittent operations such as pothole patching.



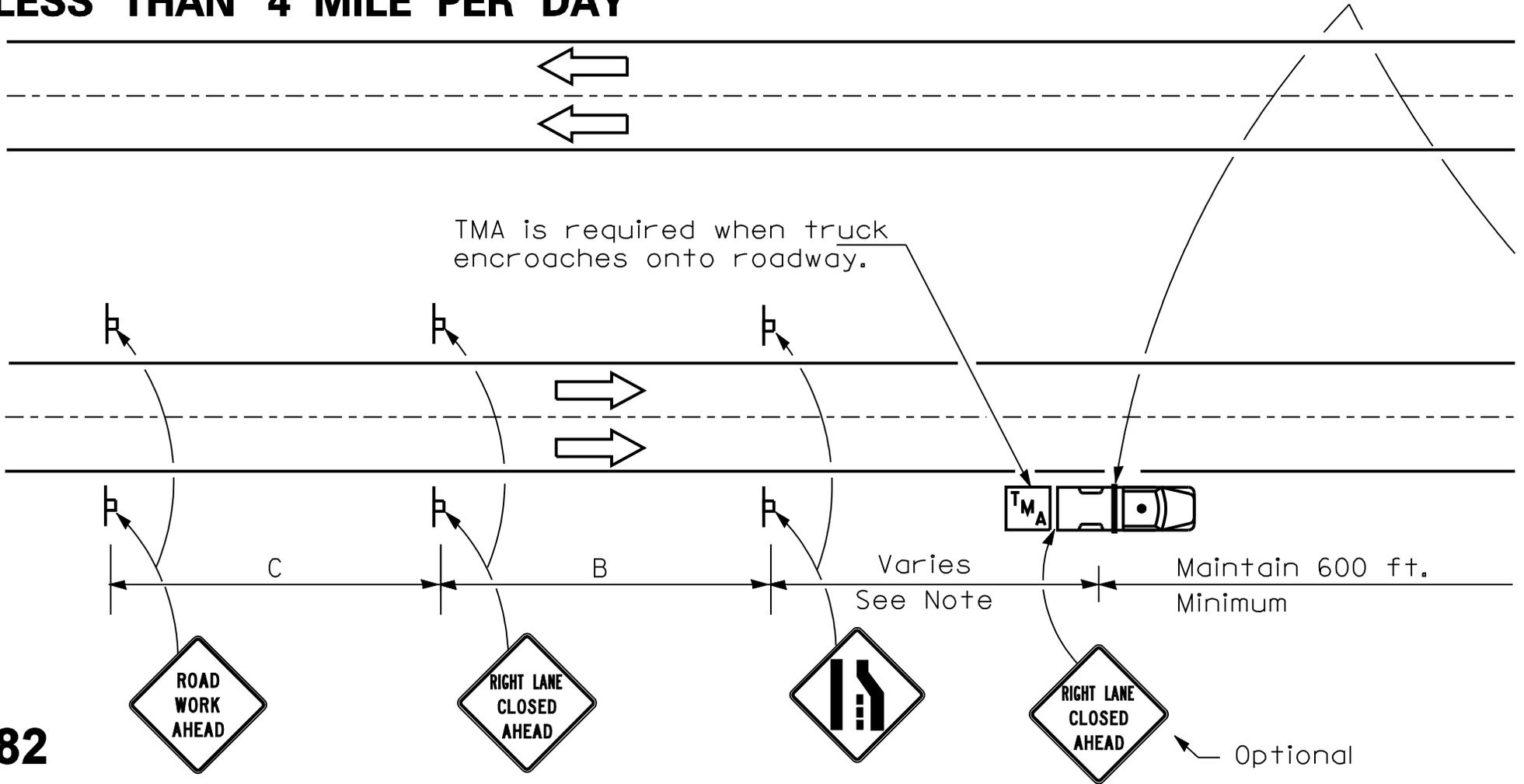
**45 MPH OR LESS  
INTERMITTENT / MOVING OPERATION  
WITH CURB AND GUTTER  
ONE LANE CLOSURE**

**WZ 47**

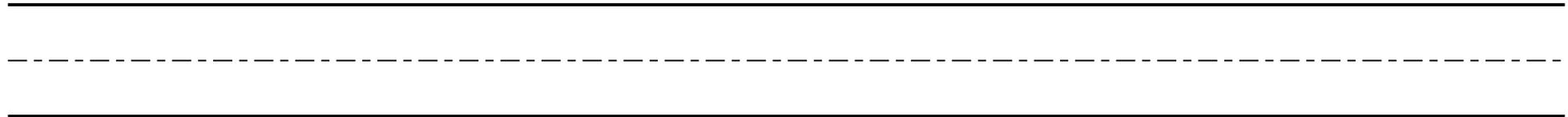


**ALL SPEEDS  
INTERMITTENT / MOVING OPERATION  
NO TIME LIMIT  
LESS THAN 4 MILE PER DAY**

Flashing Arrow board in ARROW mode  
All vehicles operating strobe lights



Note:  
 Minimum distance is 200 ft. at start of operation. Maximum distance is two miles, but in no case to exceed one half the length required for one normal day's operation.



Signs not required in median when median less than 10 ft. wide.

For left lane closure use corresponding left lane signage.

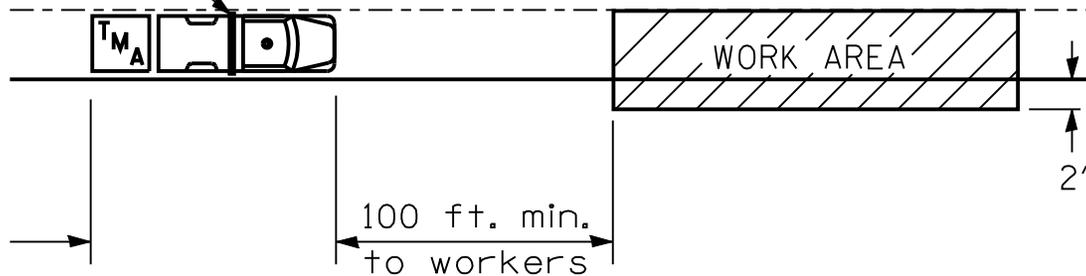
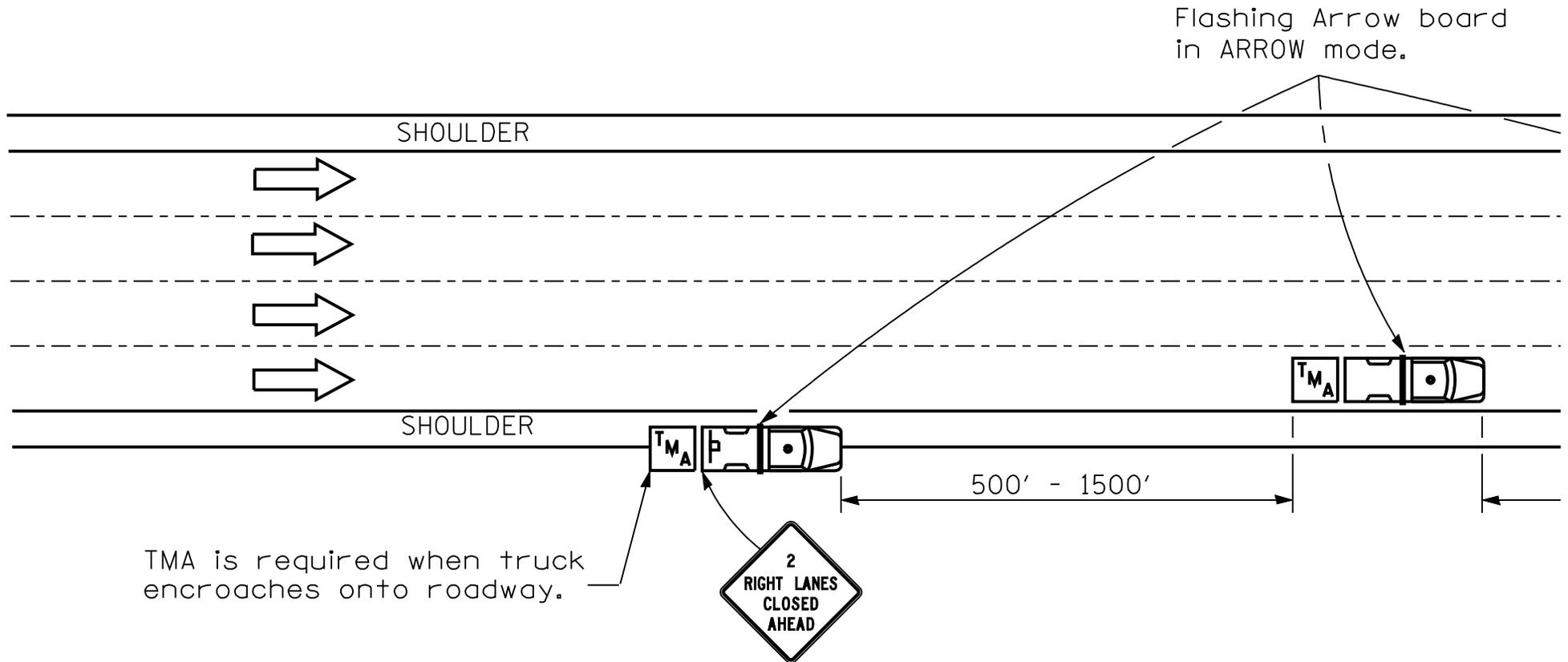
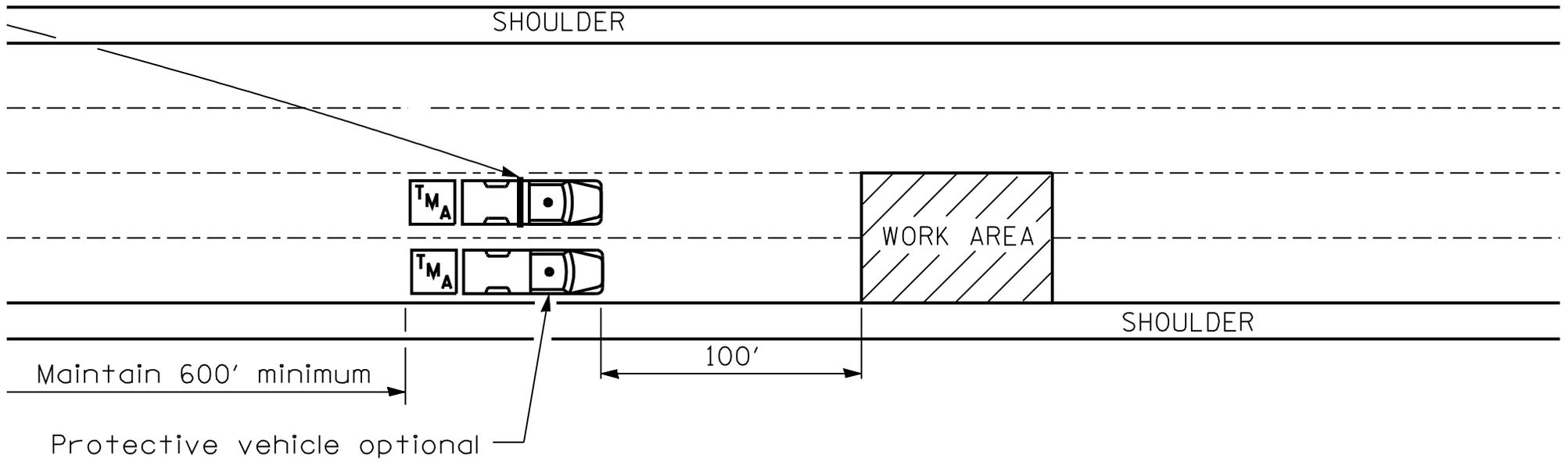


TABLE OF SIGN SPACING			
SPEED MPH	LENGTH A	LENGTH B	LENGTH C
65	1,000'	1,600'	2,600'
55-60	500'	500'	500'
45-50	350'	350'	350'
≤40	100'	100'	100'

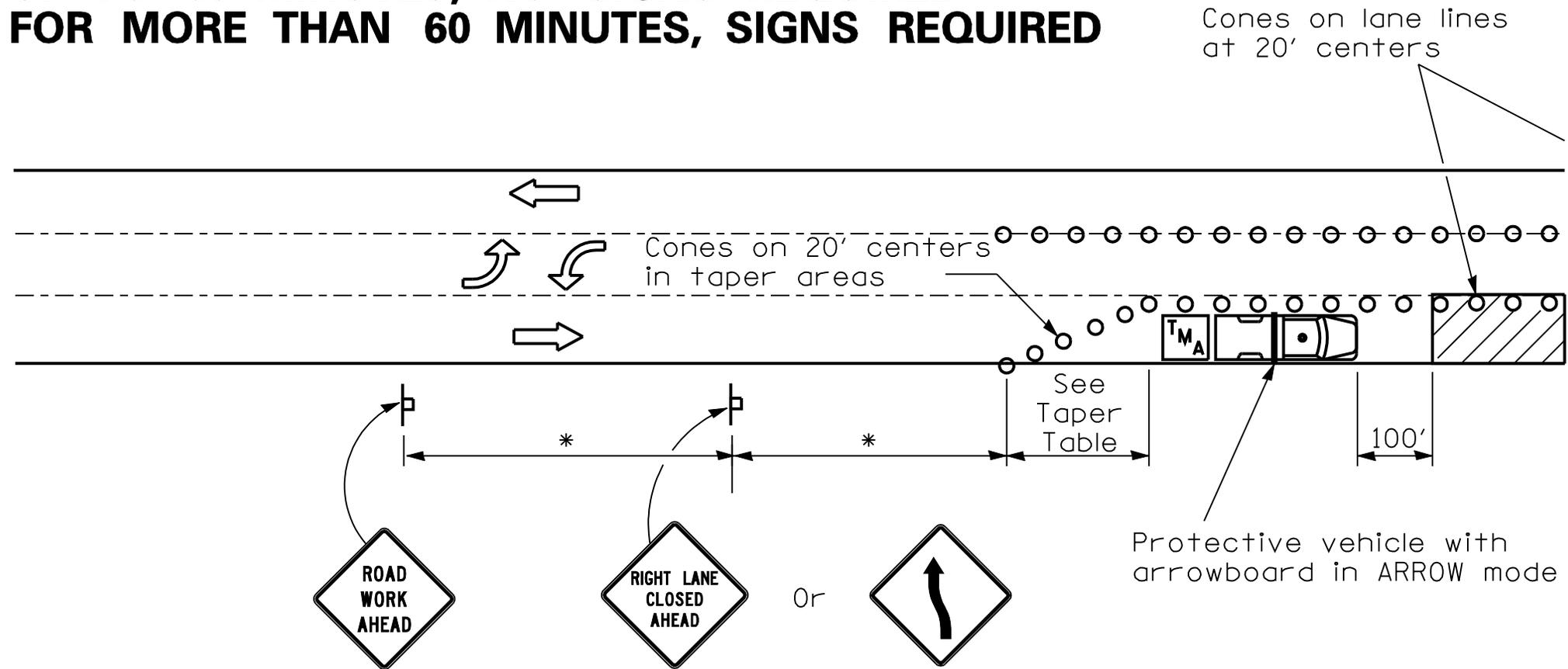
# INTERMITTENT / MOVING OPERATION TWO LANE CLOSURE



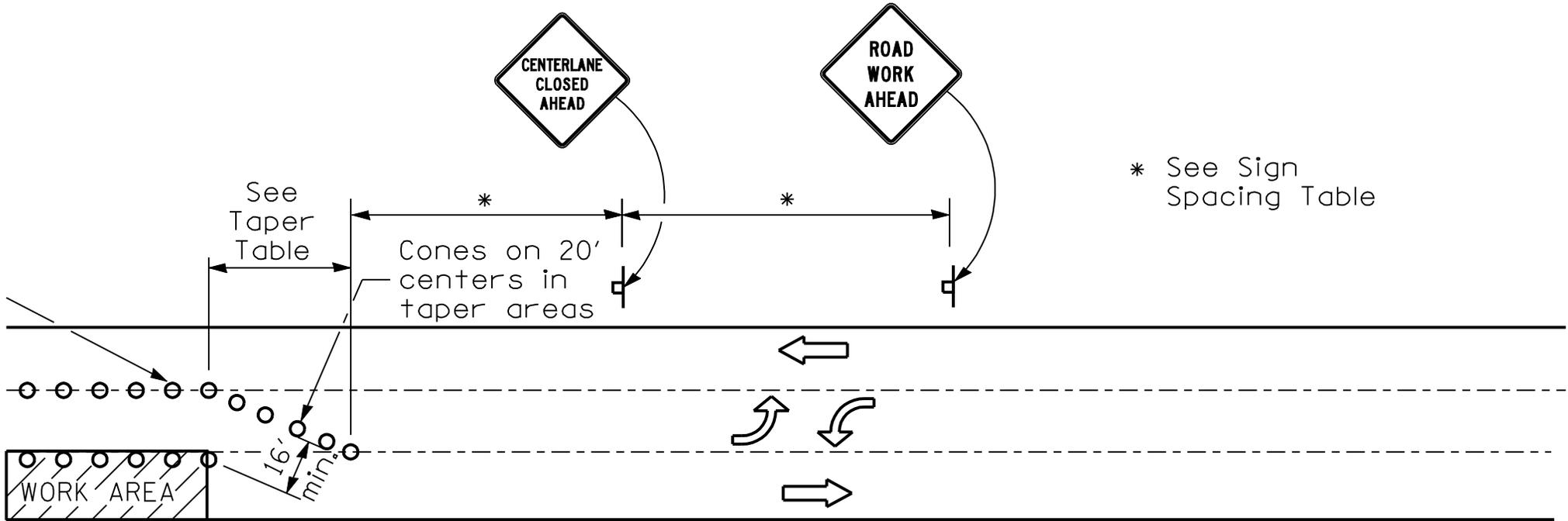


All vehicles operating strobe lights.

**45 MPH OR LESS  
 CENTER LANE USED AS  
 THRU LANE  
 NO TIME LIMIT  
 UP TO 60 MINUTES, NO SIGNS REQUIRED  
 FOR MORE THAN 60 MINUTES, SIGNS REQUIRED**



# WZ 50

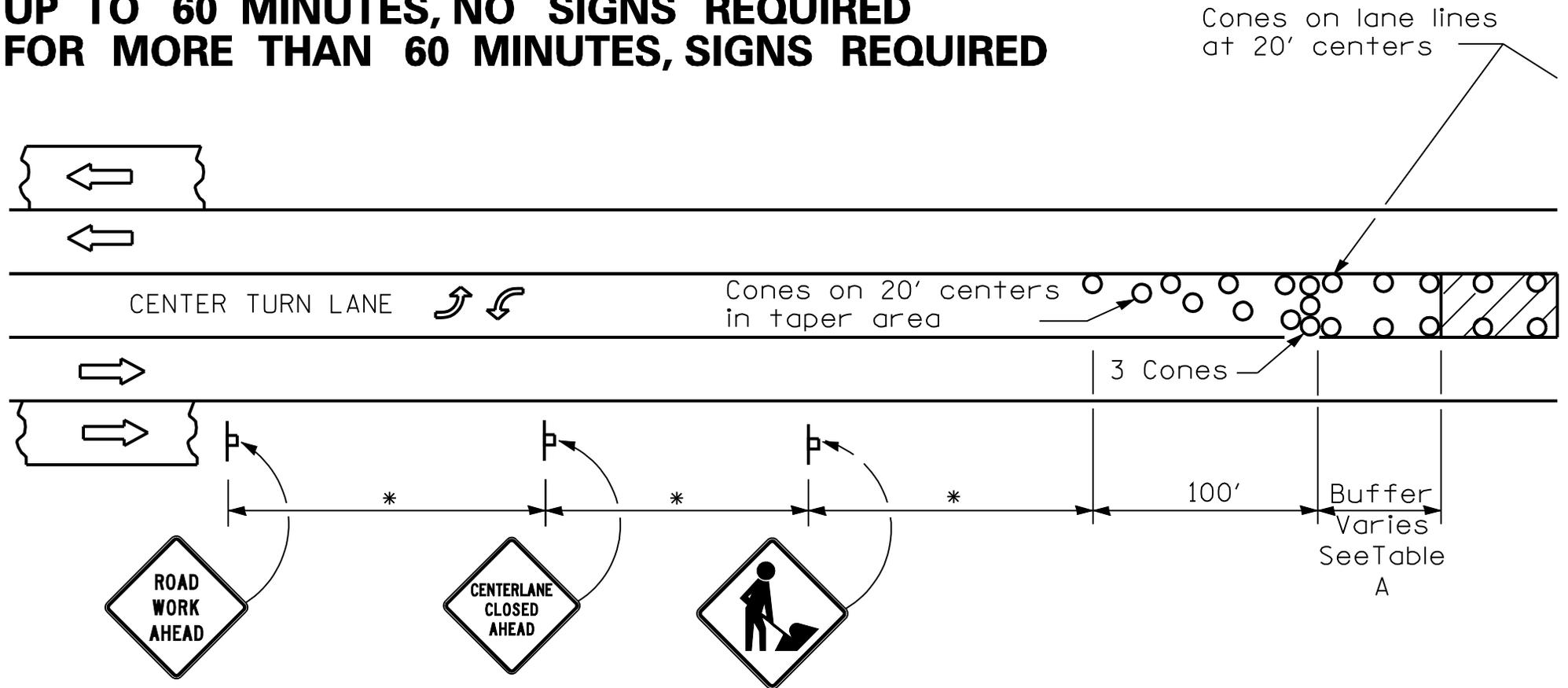


All vehicles operating strobe lights

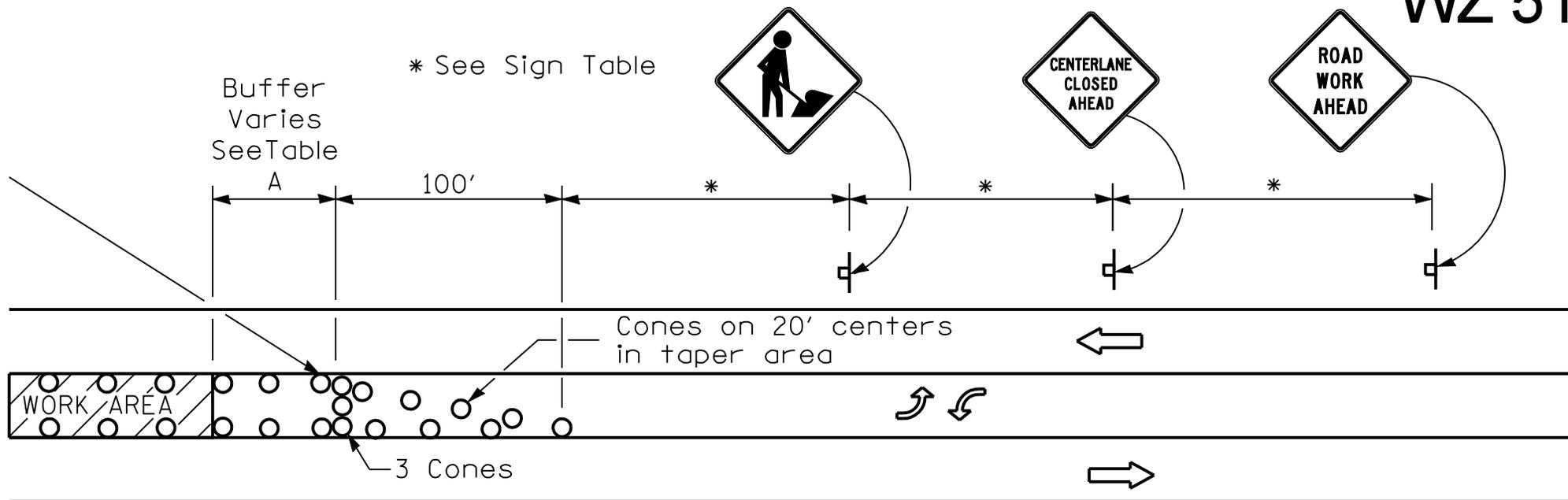
Taper Table Length	
Speed	Length
45	270'
40	170'
35	125'
30	90'

Sign Spacing	
Speed	Length
45	350'
≤40	100'

**45 MPH OR LESS  
 CENTER LANE CLOSURE  
 NO TIME LIMIT  
 UP TO 60 MINUTES, NO SIGNS REQUIRED  
 FOR MORE THAN 60 MINUTES, SIGNS REQUIRED**



# WZ 51



If operational problems are evident and caused by left-turning vehicles, the R3-9b signs in the immediate area of the work-zone should be temporarily covered and/or adjustments made in the lengths of the work area, buffer areas and tapers. All dimensions shown may be increased.

TABLE A	
SPEED MPH	BUFFER LENGTH
45	220'
40	170'
35	120'
30	85'

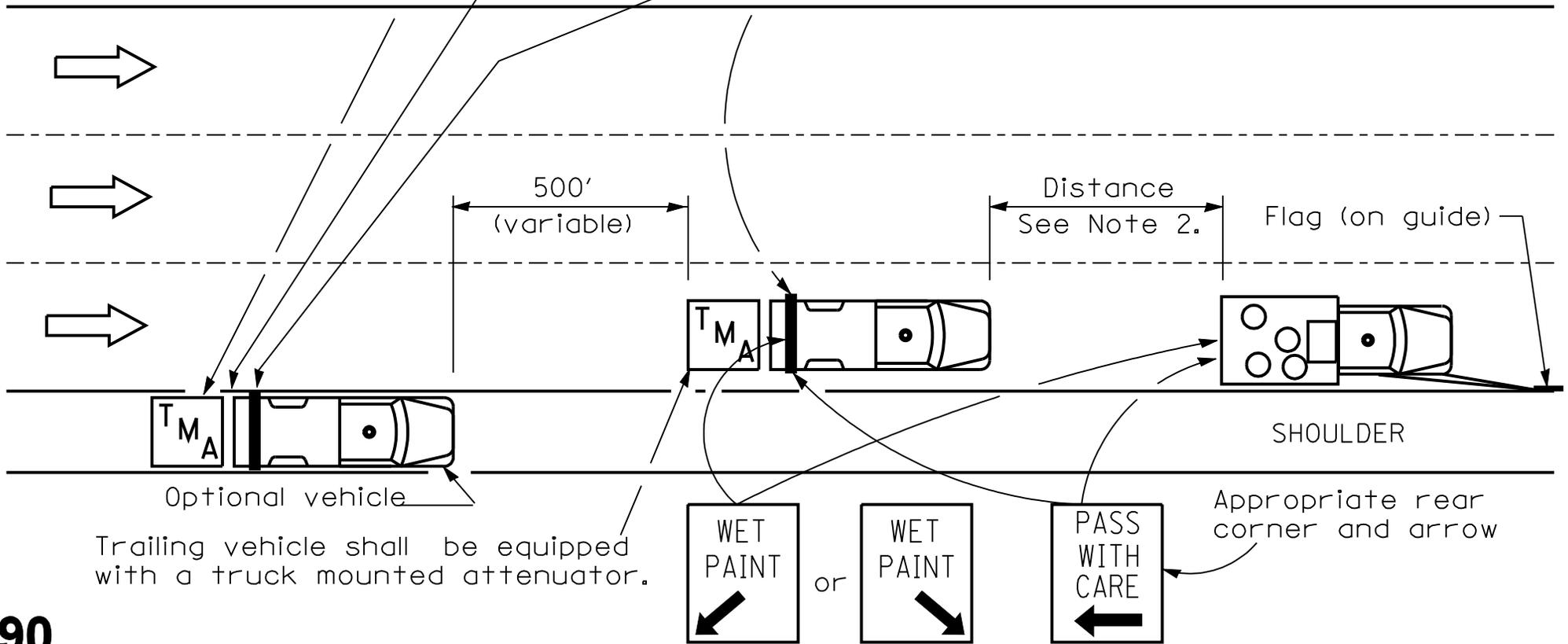
Sign Spacing	
Speed	Length
45	350'
≤40	100'

# ALL SPEEDS MULTILANE MOVING OPERATION

Optional:  
TMA required when truck  
encroaches onto roadway.

RIGHT LANE CLOSED AHEAD (Optional)

Arrowboard in ARROW mode



**Notes:**

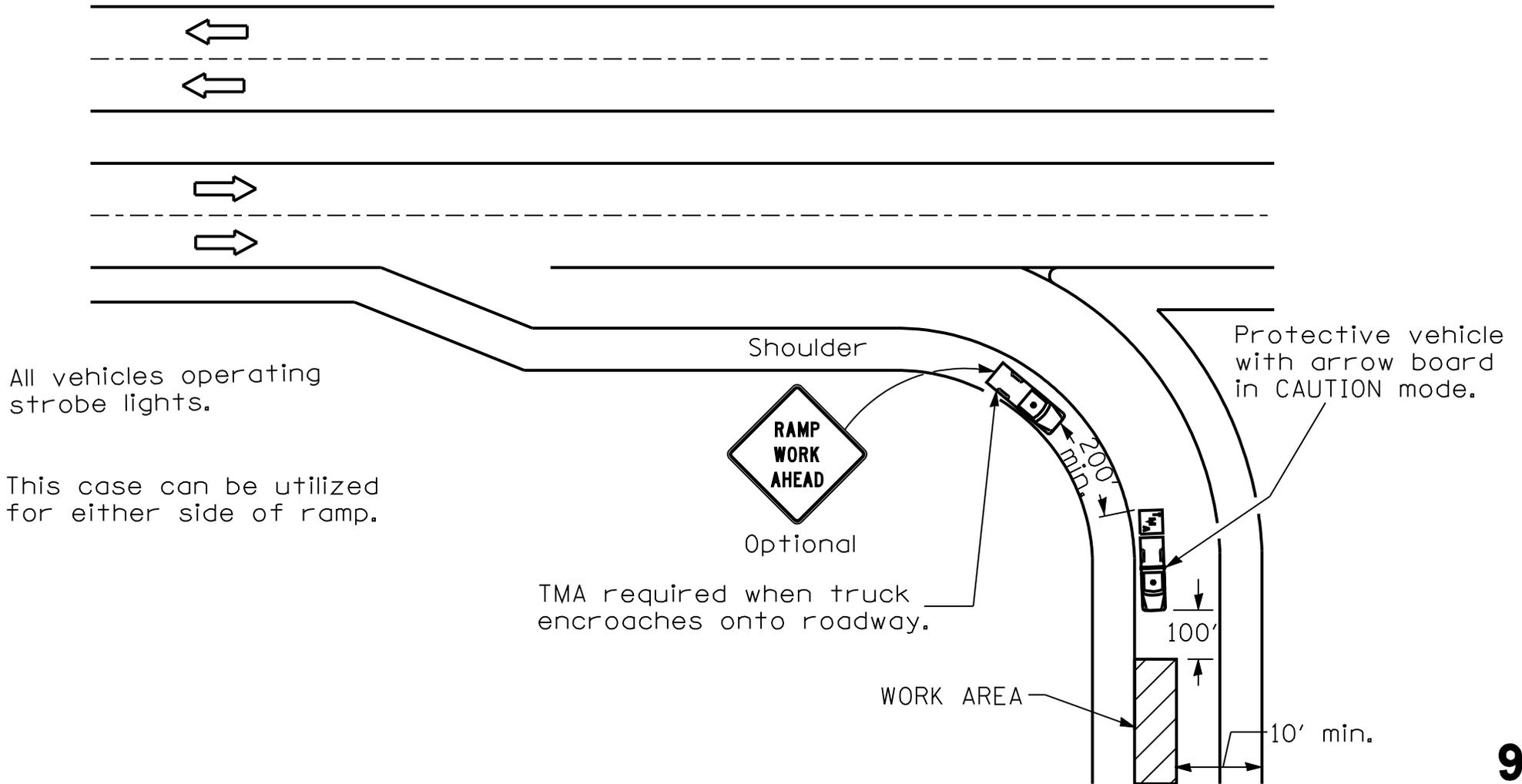
**WZ 52**

1. Striping machine and all vehicles in convoy (except law enforcement vehicles) are to have headlights operating and are to display an amber colored oscillating, rotating, flashing or strobe lights. At least one amber light is to be visible from any direction.
2. Distance trailing vehicle(s) follows striping machine will vary depending on terrain and susceptibility of painted line to wheel tracking, whenever adequate stopping site distance exists to rear, the protection vehicle shall maintain minimal distance. The protection vehicle should slow down in advance of vertical and horizontal curves that restrict sight distance.
3. Striping operation may be supported by additional traffic control devices.
4. Use WET PAINT and PASS WITH CARE signs on striping operations.
5. On curb and gutter sections, truck on shoulder is not required.

# Ramps

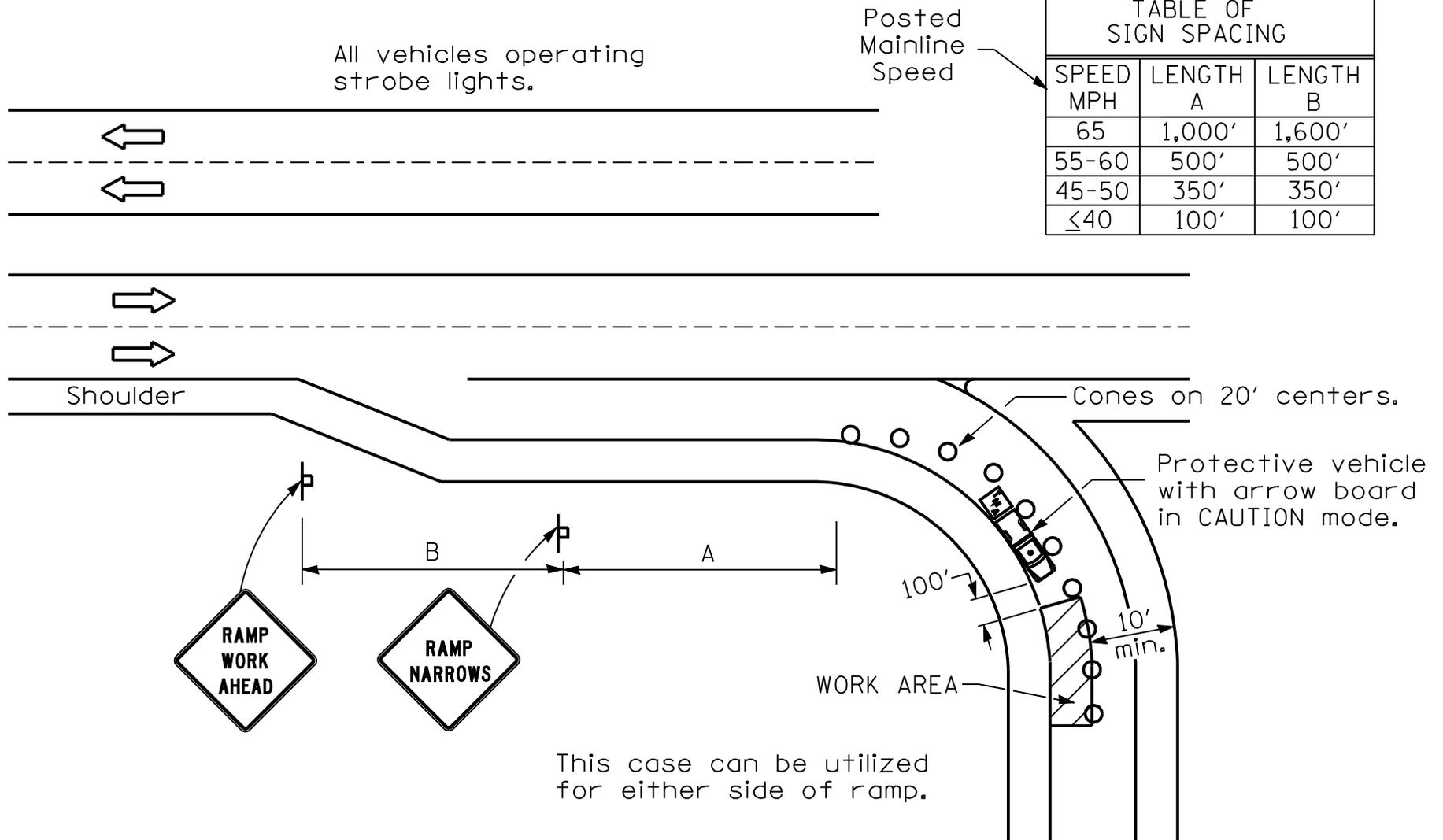
# RAMP WORK OF SHORT DURATION INTERMEDIATE TYPE WORK UP TO 60 MINUTES

WZ 60



# PARTIAL EXIT RAMP LANE CLOSURE NO TIME LIMIT

WZ 61



# TYPICAL ENTRANCE RAMP APPLICATION

WZ 62

If room on ramp,  
space signs on ramp

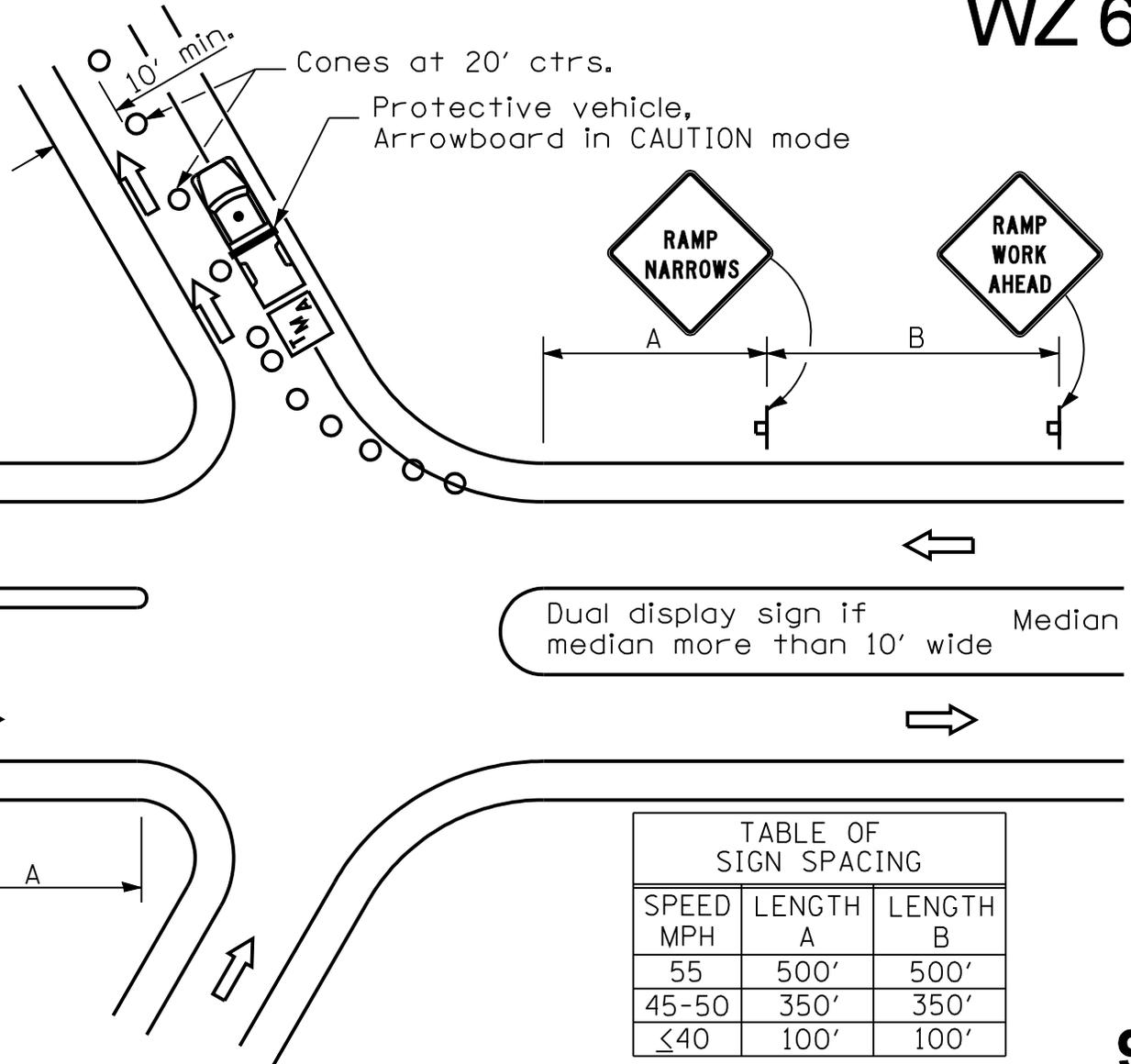


TABLE OF SIGN SPACING		
SPEED MPH	LENGTH A	LENGTH B
55	500'	500'
45-50	350'	350'
≤40	100'	100'

# Intersections

# ALL SPEEDS SIDEROAD WORK TWO LANE, TWO WAY 15 MINUTES OR LESS

WZ 91

All vehicles operating  
strobe lights.

100' Taper  
6 cones min.

All cones are optional

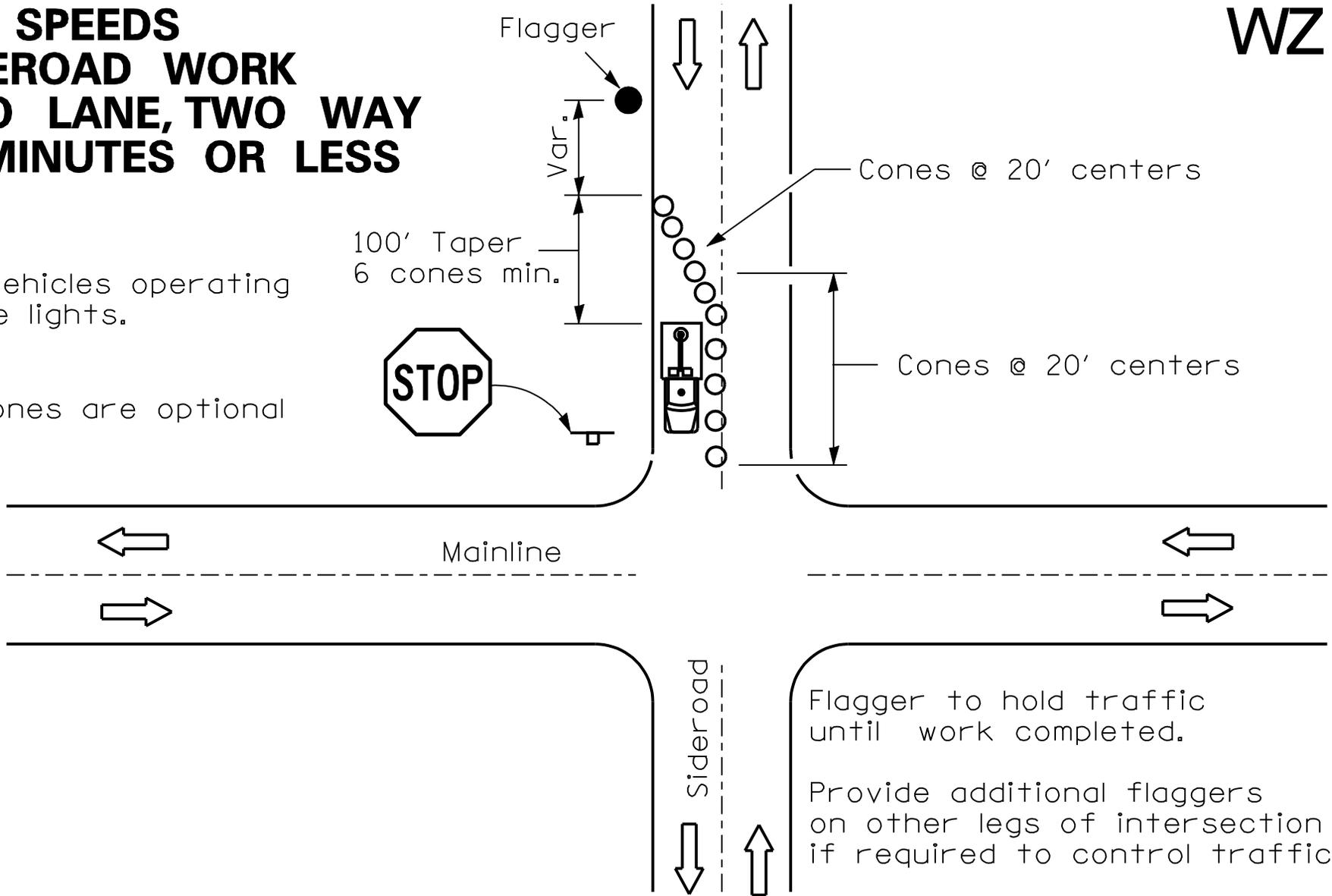


Flagger

Var.

Cones @ 20' centers

Cones @ 20' centers



Flagger to hold traffic  
until work completed.

Provide additional flaggers  
on other legs of intersection  
if required to control traffic.

# 45 MPH OR LESS INTERSECTION NO TIME LIMIT

\* TABLE OF  
SIGN SPACING

SPEED MPH	LENGTH
45	350'
≤40	100'

CONES ON TAPER	CONES ON LANE LINE
≤ 45 mph - 20' centers	≤ 45 mph - 40' centers
≥ 50 mph - 40' centers	≥ 50 mph - 80' centers

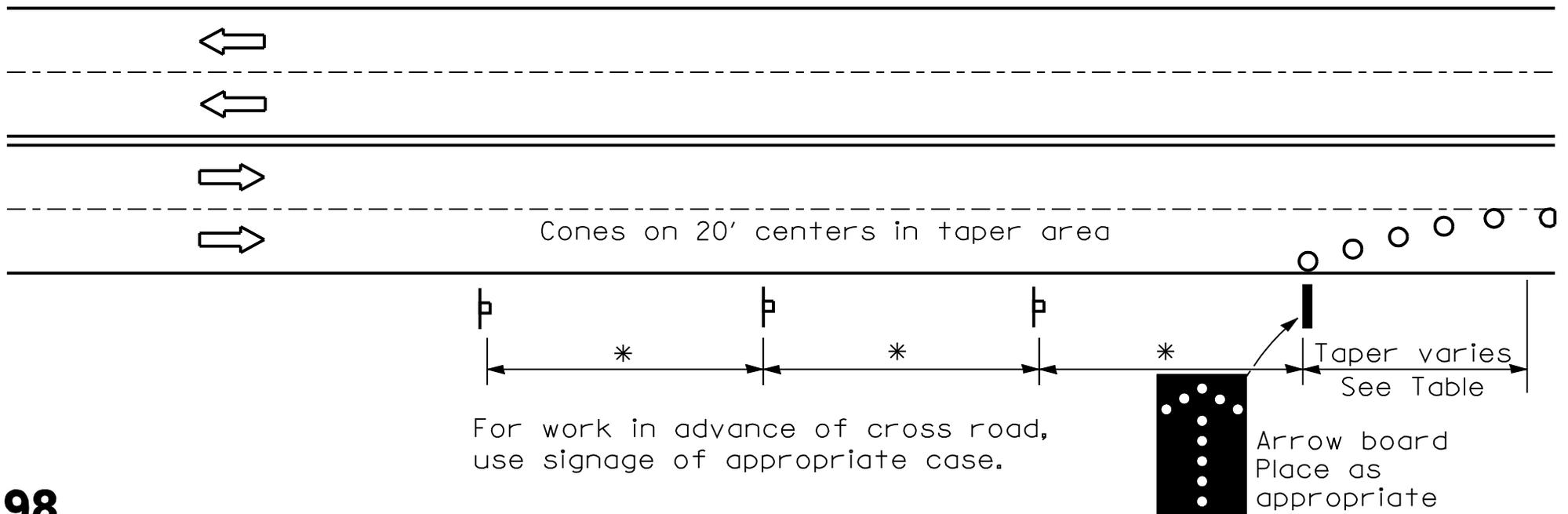
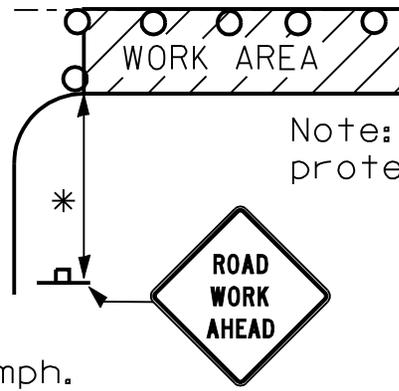
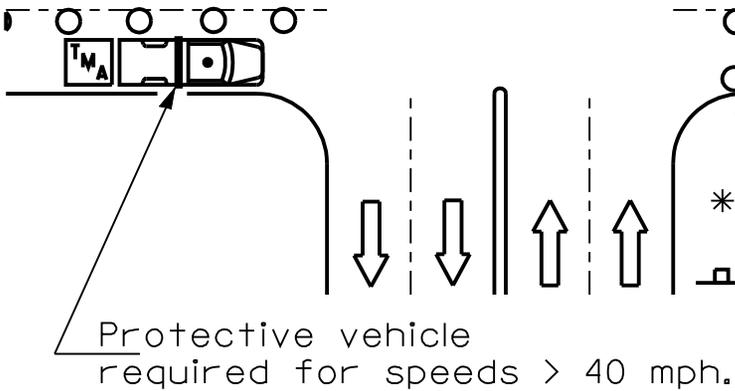
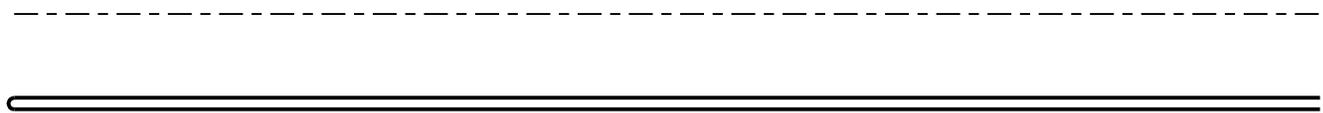
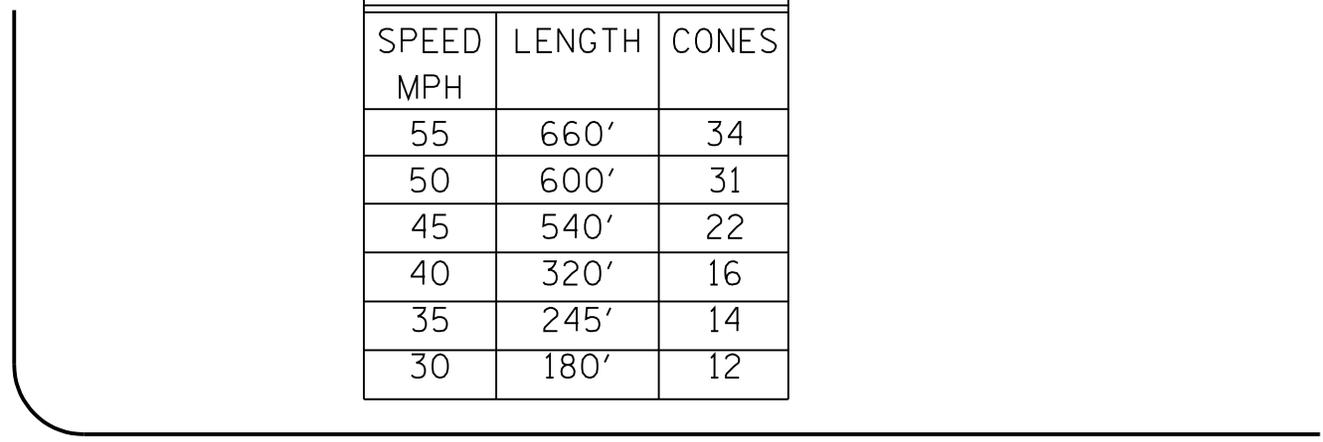
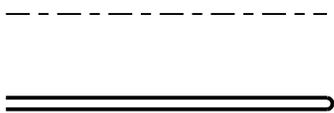
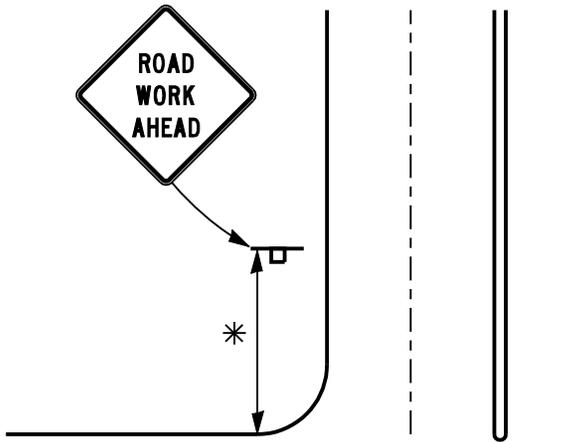


TABLE OF TAPER LENGTHS		
SPEED MPH	LENGTH	CONES
55	660'	34
50	600'	31
45	540'	22
40	320'	16
35	245'	14
30	180'	12



Note: When 150' space is available, place protection vehicle in advance of work area.

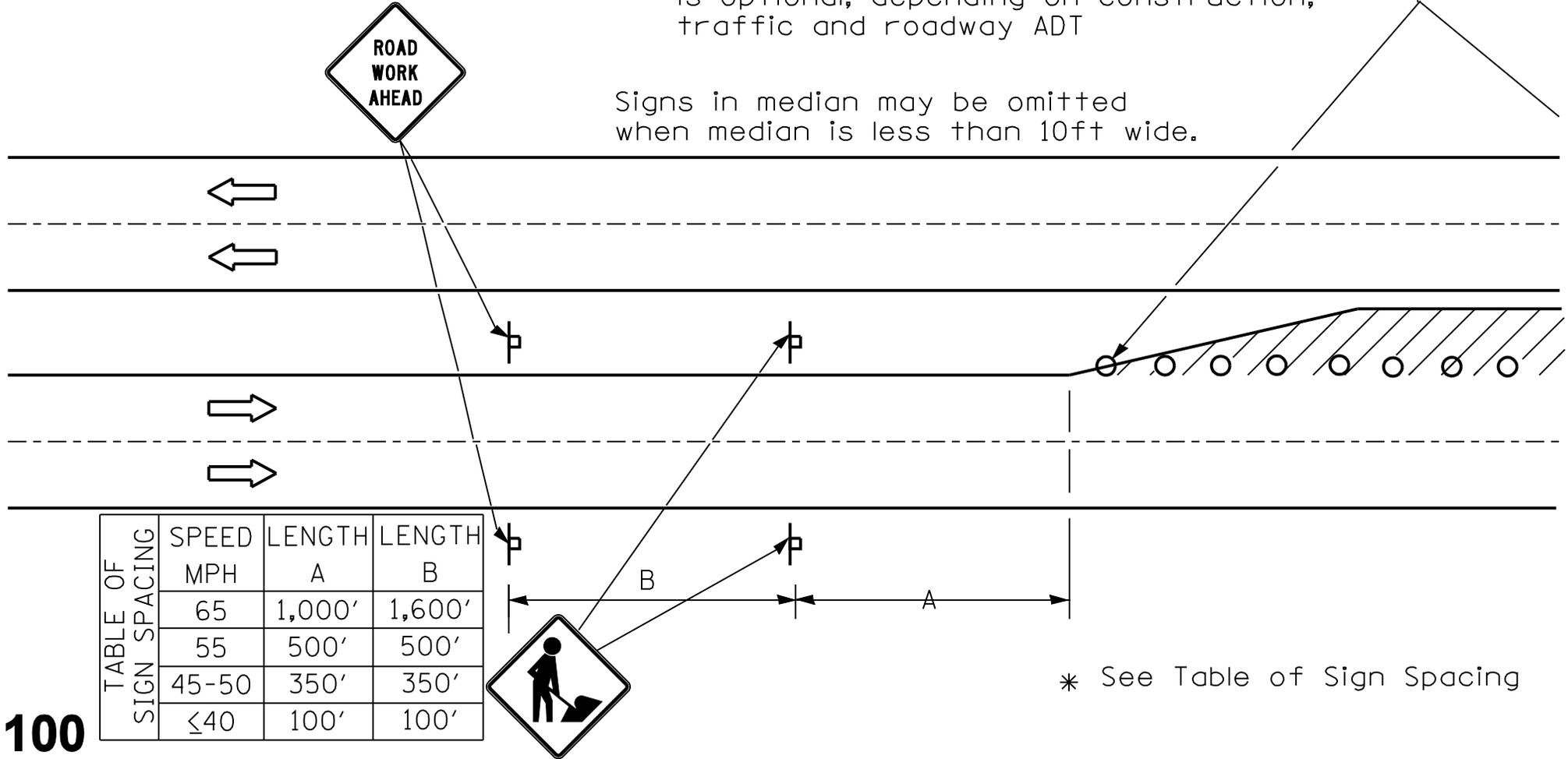
If work encroaches into side road, flagger and flagger signs are required.

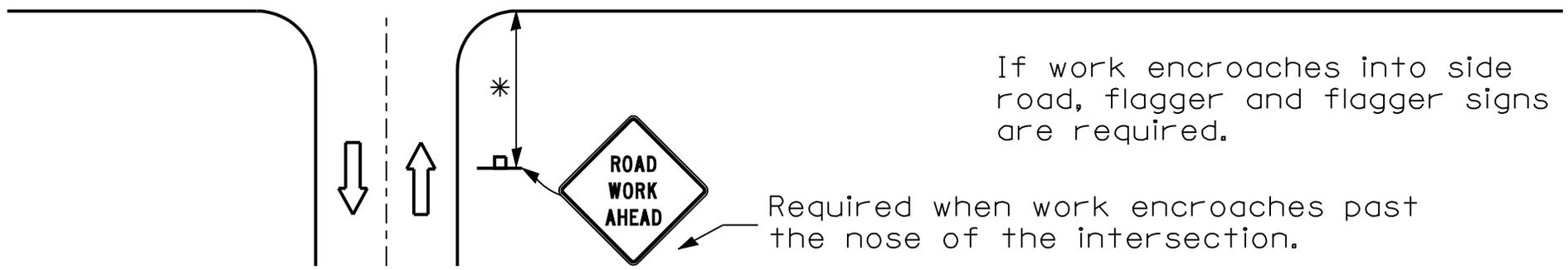
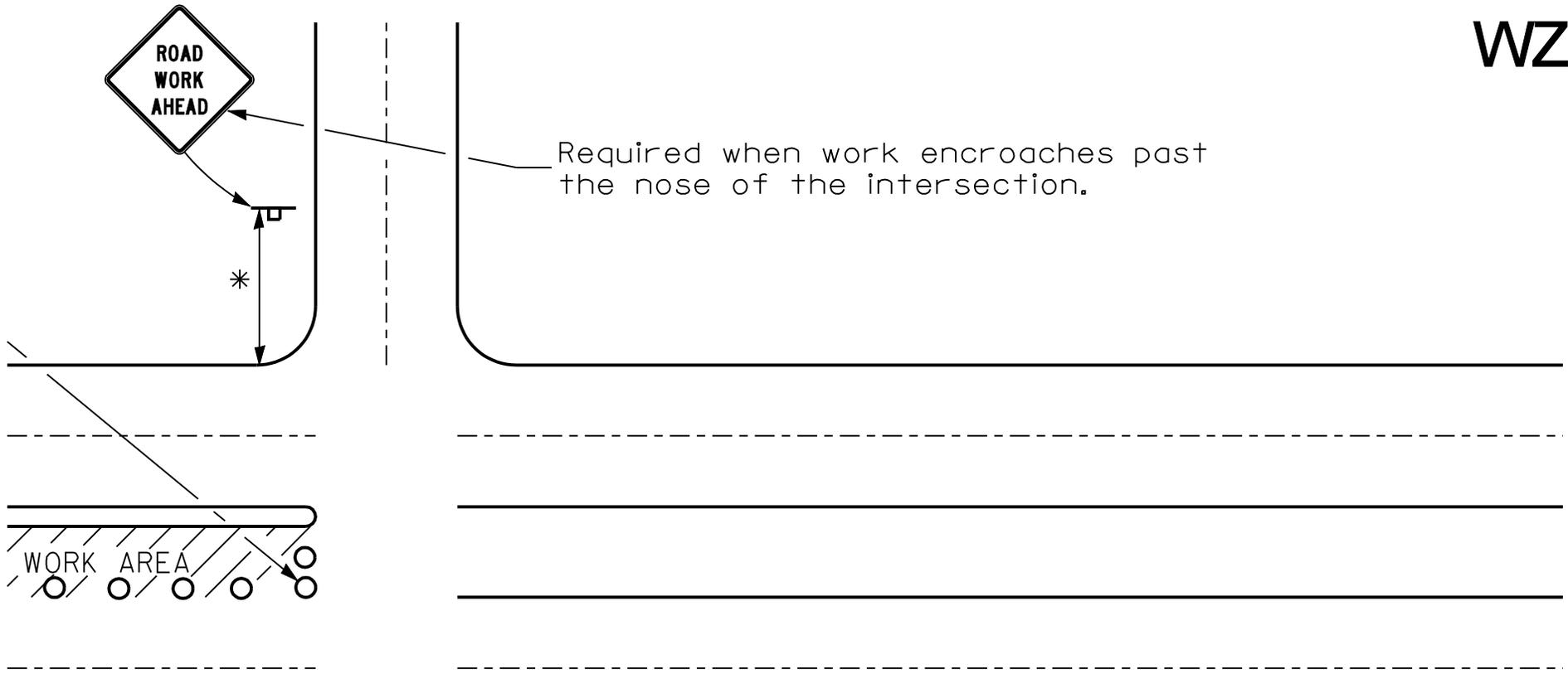
# ALL SPEEDS MULTILANE DIVIDED LEFT TURN LANE CLOSURE NO TIME LIMIT

Cones on lane line:  
 $\leq 45$  mph - 40' centers  
 $\geq 50$  mph - 80' centers

Use of a flagger and flagger sign is optional, depending on construction, traffic and roadway ADT

Signs in median may be omitted when median is less than 10ft wide.

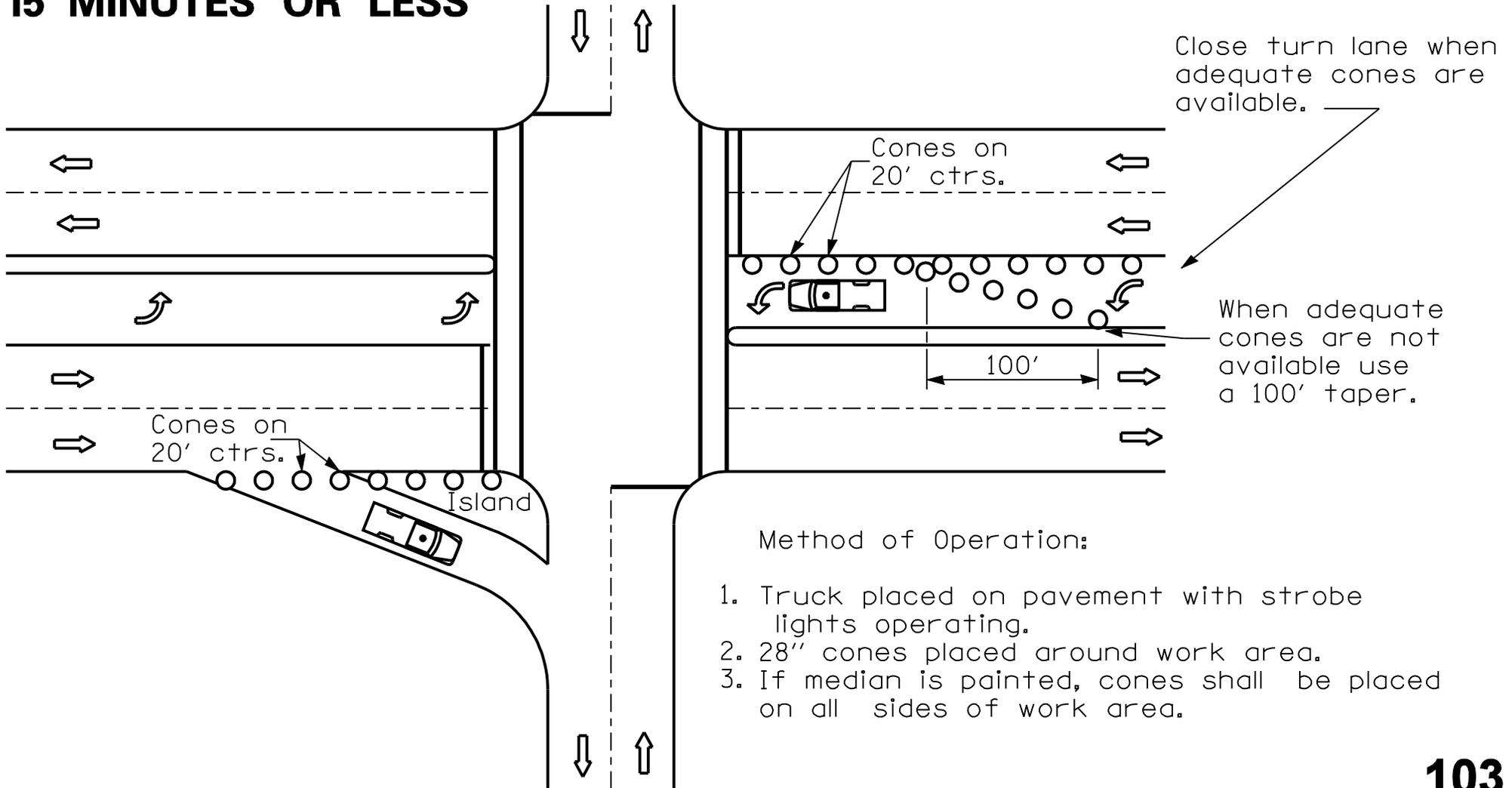






# ALL SPEEDS TURN LANE CLOSURE 15 MINUTES OR LESS

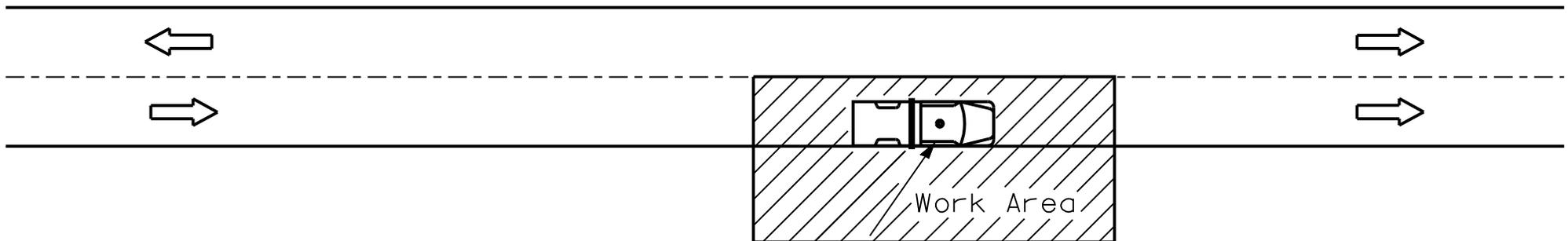
WZ 95



# Miscellaneous

**ALL SPEEDS  
INTERMITTENT/MOVING OPERATIONS  
WITH FREQUENT STOPS AND NO  
WORKERS OUT OF VEHICLE**

Limited to:  
Strip Vegetation Spraying, Power Brooming  
at Bridges, Intersections and short distances

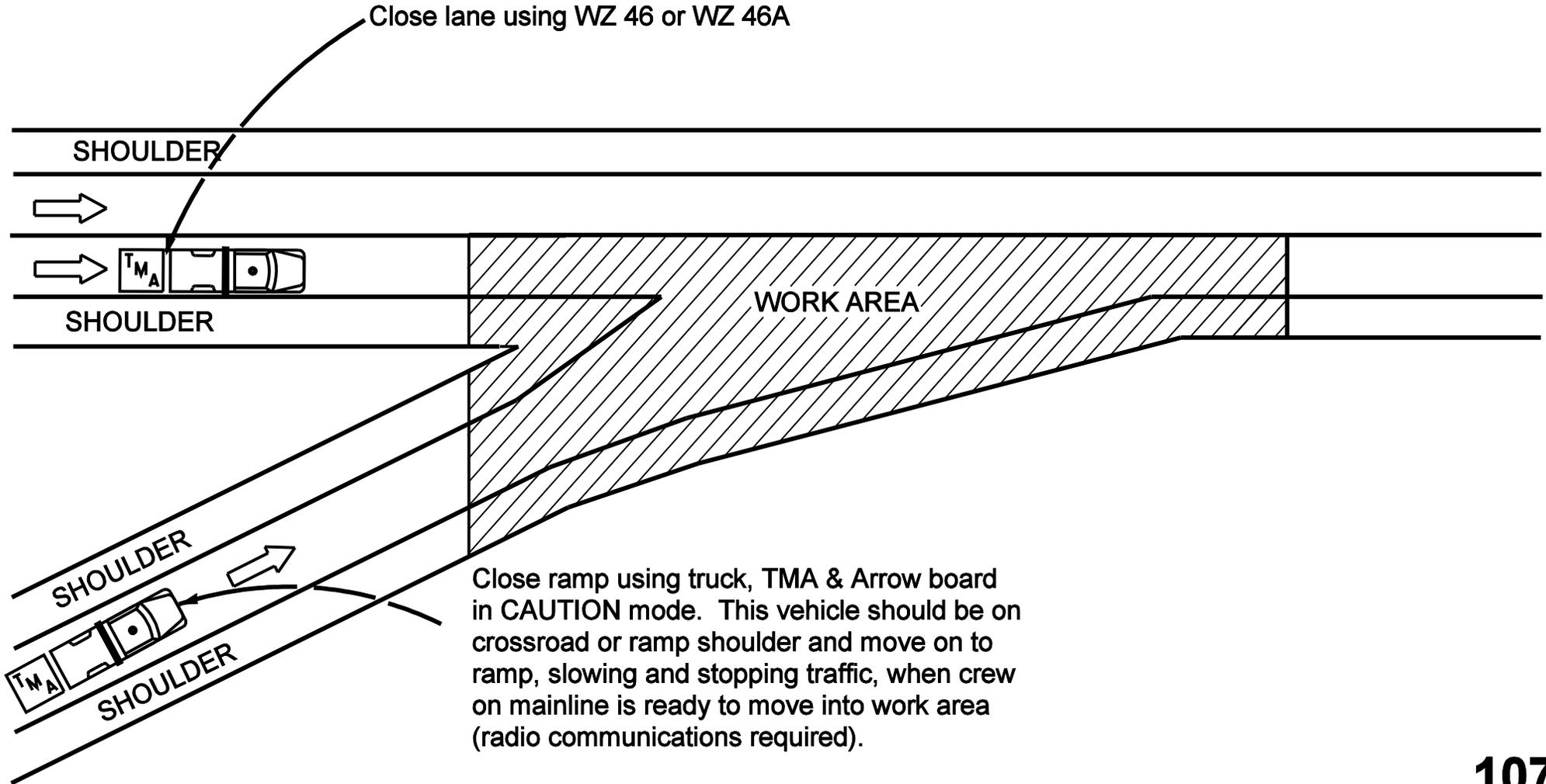


All vehicles operating  
strobe lights.

# Additional Cases

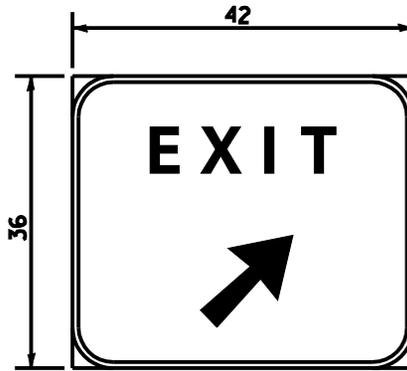
# MOVING OPERATION FOR WORK AT ENTRANCE RAMP (15 MIN. AND LESS)

WZ 63



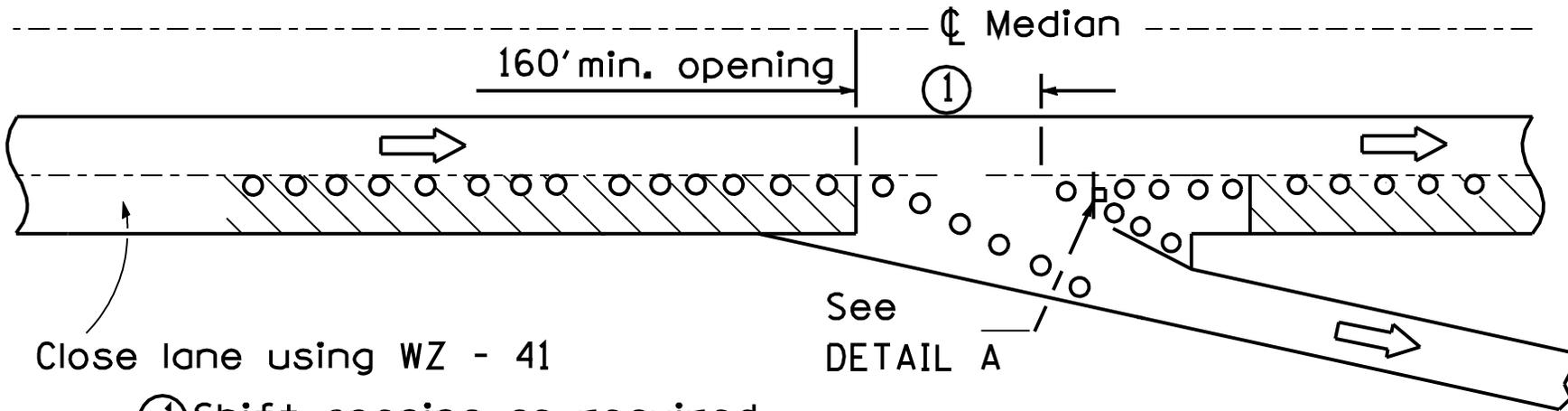
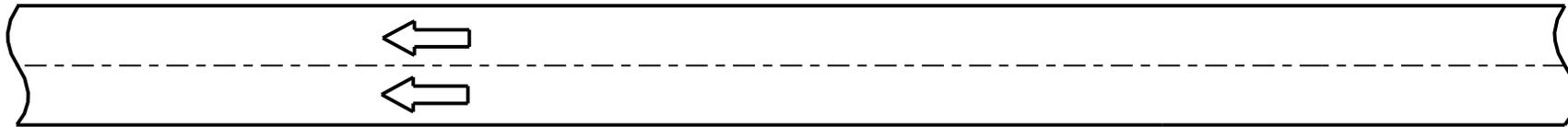
**LANE CLOSURE  
OFF RAMP  
NO TIME LIMIT**

**WZ 64**



Detail A

Exit sign may be omitted for short term operations (15 minutes or less)



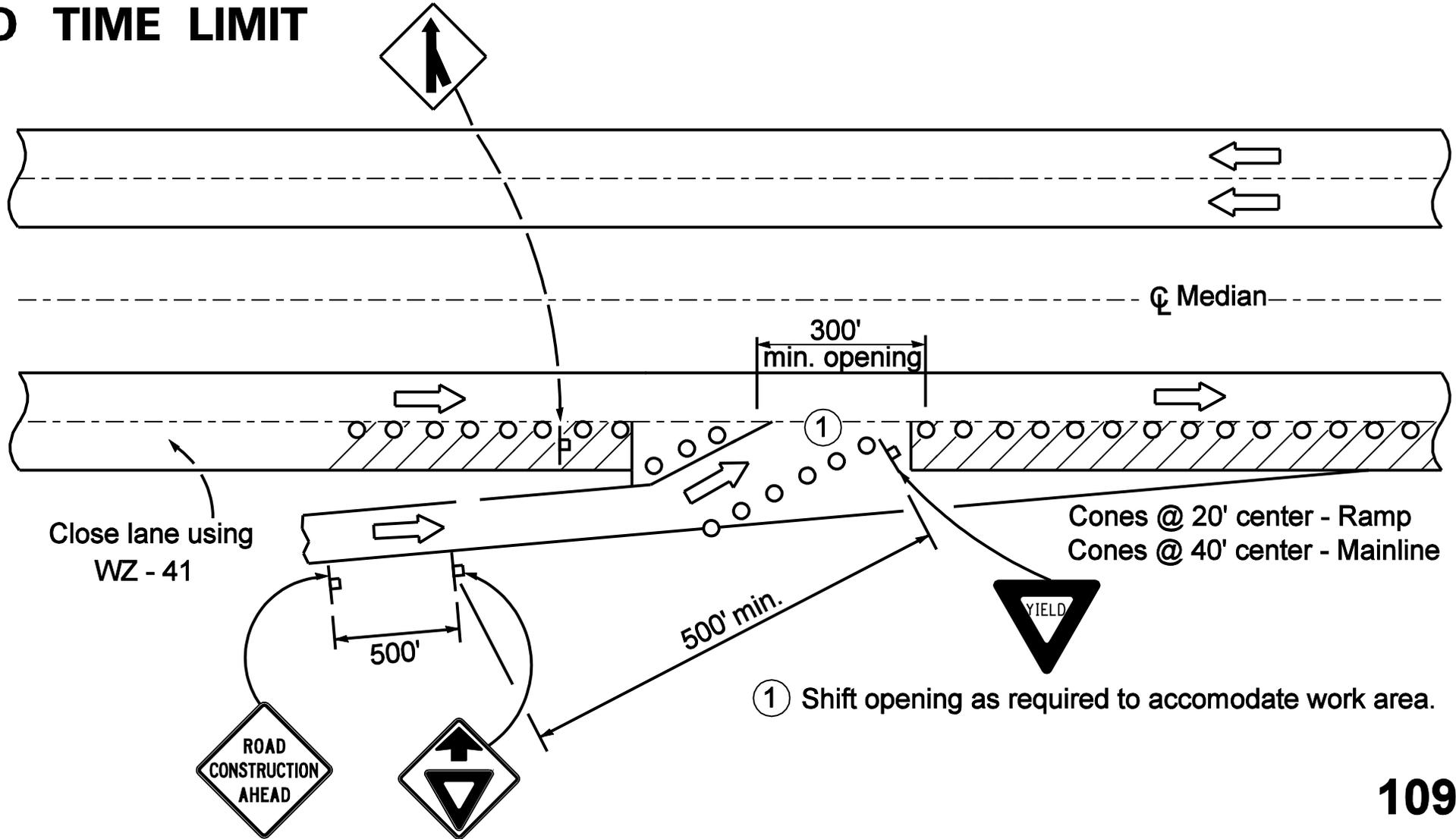
Close lane using WZ - 41

① Shift opening as required to accommodate work area.

Cones @ 20' center - Ramp  
Cones @ 40' center - Mainline

# LANE CLOSURE ON RAMP NO TIME LIMIT

# WZ 65



# WEAVING AREA CLOVERLEAF INTERCHANGE NO TIME LIMIT

## WZ 66

