

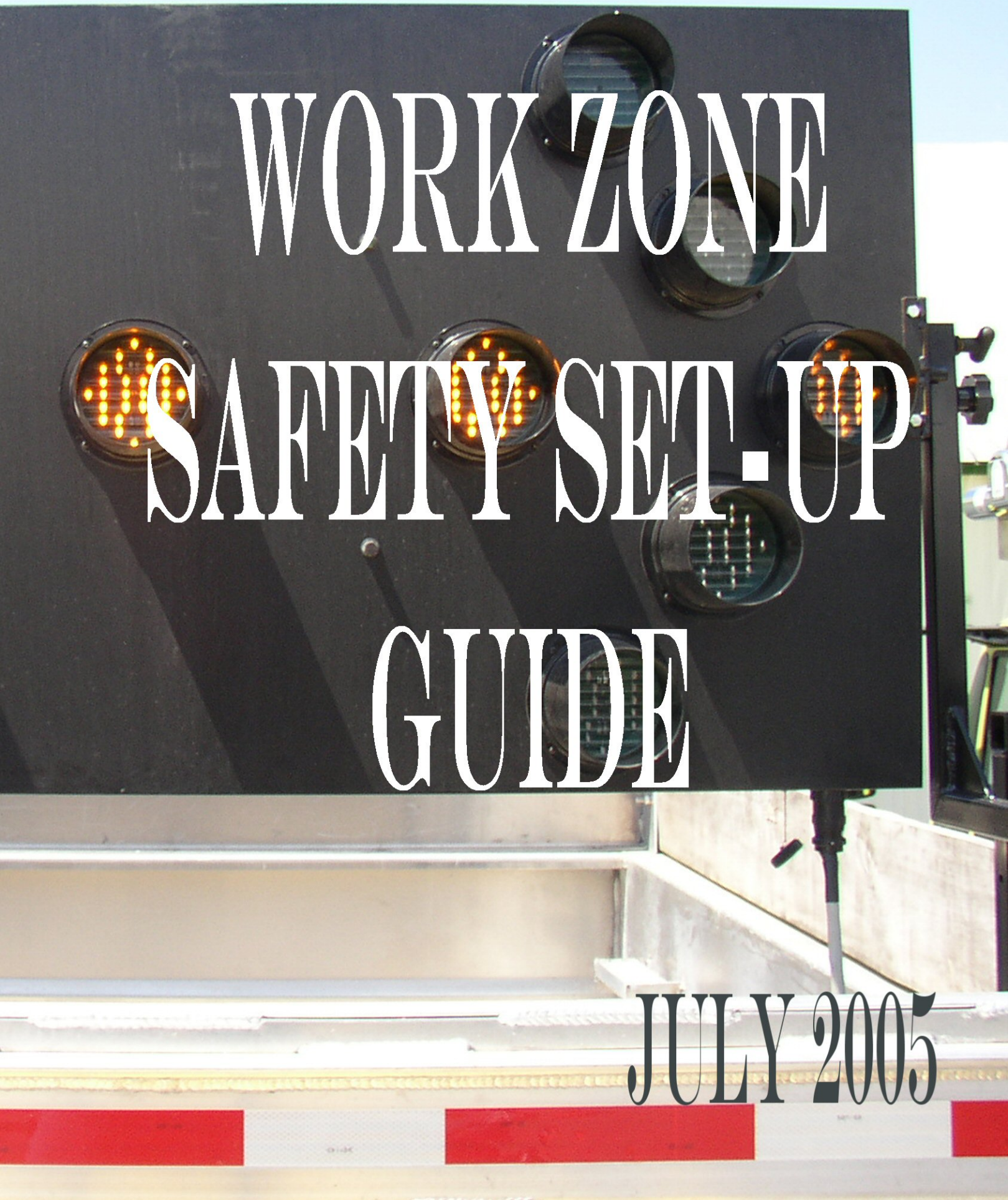
NEW JERSEY DEPARTMENT OF TRANSPORTATION

WORK ZONE

SAFETY SET-UP

GUIDE

JULY 2005



FORWARD

It shall be the responsibility of the person in charge to institute the placing of all appropriate cautionary devices and controls as may be required for the particular job. Traffic protection devices shall be placed in accordance with the diagrams shown in the most current Workzone Traffic Control Charts. (laminated charts also known as the Workzone Safety Set-up Guide) the Charts are incorporated as part of the NJDOT Safety Manual by reference. It should be emphasized that these are minimum desirable standards for normal situations and that additional protection should be considered when special complexities and hazards prevail.

In particular situations not adequately covered by the provision of this section, the protection of the traveling public and employees on the scene will dictate the measures to be taken, consistent with the general principles of traffic control. Workzone set-ups in accordance with the MUTCD or approved by a traffic engineer shall be used when the specific situation is not addressed by the work zone traffic control charts.

Please refer to the Safety Manual during any work operation where employees and equipment are engaged in work on or near the main pavement or shoulders of the highway, appropriate protective devices shall be provided to protect personnel and the traveling public.

No one set of traffic control devices can satisfy all conditions for a given project or incident. At the same time, defining details that would be adequate to cover all applications is not practical. Instead, the Workzone Charts (also known as the Workzone Safety Set-up Guide) depict typical common applications of traffic control devices. The devices selected for each situation depends on type of highway, road user conditions, duration of operation, physical constraints, and the nearness of the work space or incident management activity to road users. A road crew's responsibility should be directed toward the safe and expeditious movement of traffic through a construction or maintenance work site, and to the safety of the work force performing these operations.

**GENERAL NOTES FOR WORK ZONE SAFETY SET-UP
FOR OPERATIONS
Continued**

- 7. Protection Vehicle with attached Crash Cushion / Truck Mounted Attenuator (TMA)**
- Protection Vehicles are used to protect the maintenance worker from being directly hit by an errant vehicle. It should be placed at a sufficient distance in advance of the workers and/or equipment being protected so that there will be adequate distance, (but not so much so that an errant vehicles will travel around the Protection Vehicle and strike the protected workers and/or equipment). The recommended distance is 75 - 150 feet. Protection Vehicle must be equipped with an arrow panel.**

Protection Vehicles are also used to warn traffic of the operation ahead. During a Mobile/Moving operation, where adequate stopping sight distance is available, the Protection Vehicle should maintain the recommended distance as mentioned above and proceeds at the same speed as the work vehicle. The Protection Vehicle should slow down in advance of vertical or horizontal curves that restrict sight distance.

- 8. Arrow Panels**
- Arrow panels shall be 13 element TYPE B panel. Arrow Panels should be placed as shown on the charts. If the work area is closer to the taper, a TMA with an Arrow Panel should replace a stand-alone Arrow Panel. The 4-corner configuration is preferred. Use of the single bar is acceptable if the arrow board equipment does not allow the 4-corner configuration.**

- 9. Driver's View**
- The person in-charge of the safety or his/her designee, should at least one time, after the safety is set-up, drive and check the set-up from a driver's view. If the operation is for a longer duration the inspection should be done periodically.**

- 10. Mobile operation**
- Operation that moves intermittently (stops up to 15 minutes) or continuously in the immediate area (approximately 1000 linear feet).**

- 11. Short Duration**
- Short duration is work that occupies a location up to 1 hour.**

**GENERAL NOTES FOR WORK ZONE SAFETY SET-UP
FOR OPERATIONS
Continued**

12. **Short Term Stationary** **Short-term stationary is daytime work that occupies a location for more than 1 hour, but less than 12 hours.**
13. **Signs on left side** **Signs are warranted on the left side of the highway if the highway is:**
A. More than two lanes wide in the direction where the work is performed *AND*,
B. The median or the left shoulder is at least eight (8) feet wide. If the left lane or the center median width is less than eight (8) feet, at any of the specific locations required, and there is no other reasonable location close by, then skip that sign and place the rest of the signs. Try to place at least the advance warning signs such as ROAD WORK 1 MILE or ROAD WORK 2 MILES.
14. **Variable Message Sign (VMS)** **VMS can be used to supplement the existing safety setup. It is to be placed in a clear and visible shoulder location, with as much sight distance as possible. Traffic Operations should be consulted for appropriate messages, programming and recommended distance placement.**
15. **Intersection Options Chart 25** **A planned detour may be requested through Traffic Operations and appropriately signed to direct traffic.**

Police traffic directors may be utilized to assist with the flow of traffic.

In the event that there is heavy truck traffic turning right into the Work Area, an opposing left lane closure may be installed. See Chart 24 for the setup.
16. **Mobile Operation Sign Option** **An additional vehicle with a tail-gate mounted “Road Work Ahead” (RWA) sign can be used in place of the RWA advance warning sign.**

**GENERAL NOTES FOR WORK ZONE SAFETY SET-UP
FOR OPERATIONS
Continued**

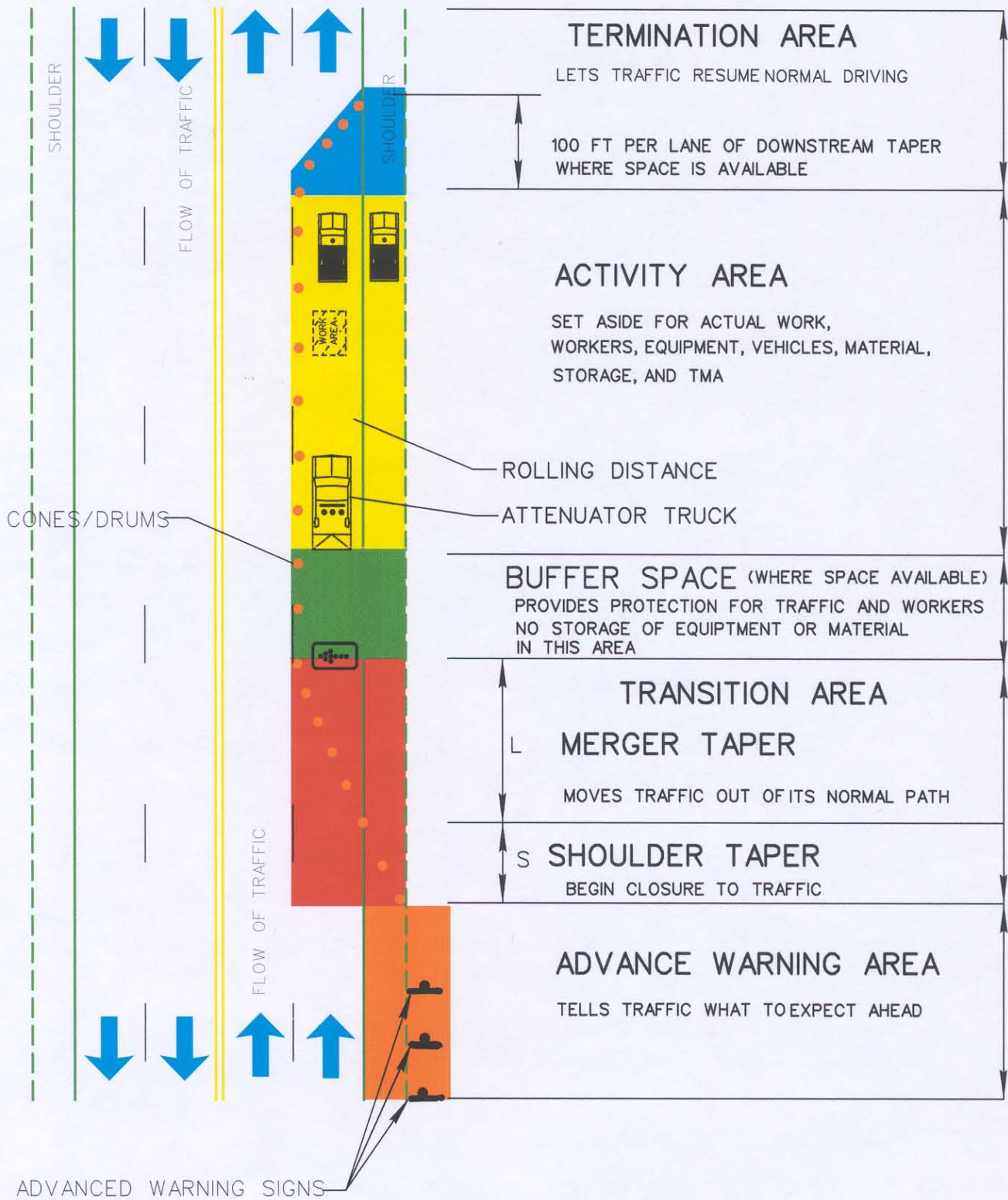
- 17. Emergent Condition** **An unplanned, unexpected emergency operation that is necessary to address an immediate hazard to the motoring public. An immediate hazard may be defined as an event that results in an unexpected situation urgently requiring prompt action. Examples include: large debris in the travel lanes; large debris in the shoulder that may find its way into the travel lane; disabled vehicles in the travel lanes or shoulder; snow and ice control; or IMRT response. All signs and channelizing devices may be eliminated if a vehicle with activated rotating lights or strobe lights is used. Other than snow and ice control, if the situation requires more than 15 minutes, then additional safety will be required. The additional safety measures can be uniformed law enforcement officer with vehicle lights activated in advance of the operation or a work-zone set-up as shown in the charts. Vehicles involved with snow and ice control must have all lights activated and in working order.**
- 18. Flagging** **For guidelines on flagging operations, see the Work Zone Section of the NJDOT Safety Manual.**
- Chart 10 Optional Flagger to be off the roadway and shoulder.**

TAPER LENGTHS AND NUMBER OF CONES CHART

Speed	25 MPH		30 MPH		35 MPH		40 MPH	
Width W Ft.	Taper Length L (Ft.)/ # of cones	Shoulder Taper S (Ft.)/ # of cones	Taper Length L (Ft.)/ # of cones	Shoulder Taper S (Ft.)/ # of cones	Taper Length L (Ft.)/ # of cones	Shoulder Taper S (Ft.)/ # of cones	Taper Length L (Ft.)/ # of cones	Shoulder Taper S (Ft.)/ # of cones
1	20 / 2	20 / 1	20 / 2	20 / 1	20 / 2	20 / 1	40 / 3	20 / 1
2	40 / 3	20 / 1	40 / 3	20 / 1	60 / 4	20 / 1	60 / 4	20 / 1
3	40 / 3	20 / 1	60 / 4	20 / 1	80 / 5	40 / 1	80 / 5	40 / 1
4	60 / 4	20 / 1	60 / 4	20 / 1	100 / 6	40 / 1	120 / 7	40 / 1
5	60 / 4	20 / 1	80 / 5	40 / 1	120 / 7	40 / 1	140 / 8	60 / 2
6	80 / 5	40 / 1	100 / 6	40 / 1	140 / 8	60 / 2	160 / 9	60 / 2
7	80 / 5	40 / 1	120 / 7	40 / 1	160 / 9	60 / 2	200 / 11	80 / 2
8	100 / 6	40 / 1	120 / 7	40 / 1	180 / 10	60 / 2	220 / 12	80 / 2
9	100 / 6	40 / 1	140 / 8	60 / 2	200 / 11	80 / 2	240 / 13	80 / 2
10	120 / 7	40 / 1	160 / 9	60 / 2	220 / 12	80 / 2	280 / 15	100 / 3
11	120 / 7	40 / 1	180 / 10	60 / 2	240 / 13	80 / 2	300 / 16	100 / 3
12	140 / 7	60 / 2	180 / 10	60 / 2	260 / 14	100 / 3	320 / 17	120 / 3

Speed	45 MPH		50 MPH		55 MPH		65 MPH	
Width W Ft.	Taper Length L (Ft.)/ # of cones	Shoulder Taper S (Ft.)/ # of cones	Taper Length L (Ft.)/ # of cones	Shoulder Taper S (Ft.)/ # of cones	Taper Length L (Ft.)/ # of cones	Shoulder Taper S (Ft.)/ # of cones	Taper Length L (Ft.)/ # of cones	Shoulder Taper S (Ft.)/ # of cones
1	60 / 4	20 / 1	60 / 4	20 / 1	60 / 4	20 / 1	80 / 5	40 / 1
2	100 / 6	40 / 1	100 / 6	40 / 1	120 / 7	40 / 1	140 / 8	60 / 2
3	140 / 8	60 / 2	160 / 9	60 / 2	180 / 10	60 / 2	200 / 11	80 / 2
4	180 / 10	60 / 2	200 / 11	80 / 2	220 / 12	80 / 2	260 / 14	100 / 3
5	240 / 13	80 / 2	260 / 14	100 / 3	280 / 15	100 / 3	340 / 18	120 / 3
6	280 / 15	100 / 3	300 / 16	100 / 3	340 / 18	120 / 3	400 / 21	140 / 4
7	320 / 17	120 / 3	360 / 19	120 / 3	400 / 21	140 / 4	500 / 26	160 / 4
8	360 / 19	120 / 3	400 / 21	140 / 4	440 / 23	160 / 4	520 / 27	180 / 5
9	420 / 22	140 / 4	460 / 24	160 / 4	500 / 26	180 / 5	600 / 31	200 / 5
10	460 / 24	160 / 4	500 / 26	180 / 5	560 / 29	200 / 5	660 / 34	220 / 6
11	500 / 26	180 / 5	560 / 29	200 / 5	620 / 32	220 / 6	720 / 37	240 / 6
12	540 / 28	180 / 5	600 / 31	200 / 5	660 / 34	220 / 6	780 / 40	260 / 7

AREAS IN A TRAFFIC CONTROL ZONE



DATE - 9/20/2004
 REVISION - 1:0
 /elcdes/elect3/workzone04.00b

LEGEND



Cone/Drum



Sign



Work Vehicle



Truck with
attached
attenuator
(TMA)



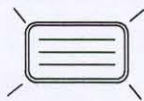
Use this sign
in addition to
the 1 MILE sign
when the speed
limit is 65 MPH



Use only if highway
is undivided



Arrow Panel



Variable
Message
Sign (VMS)



Stop/Slow
safety sign
paddle

W

Width of
closed road

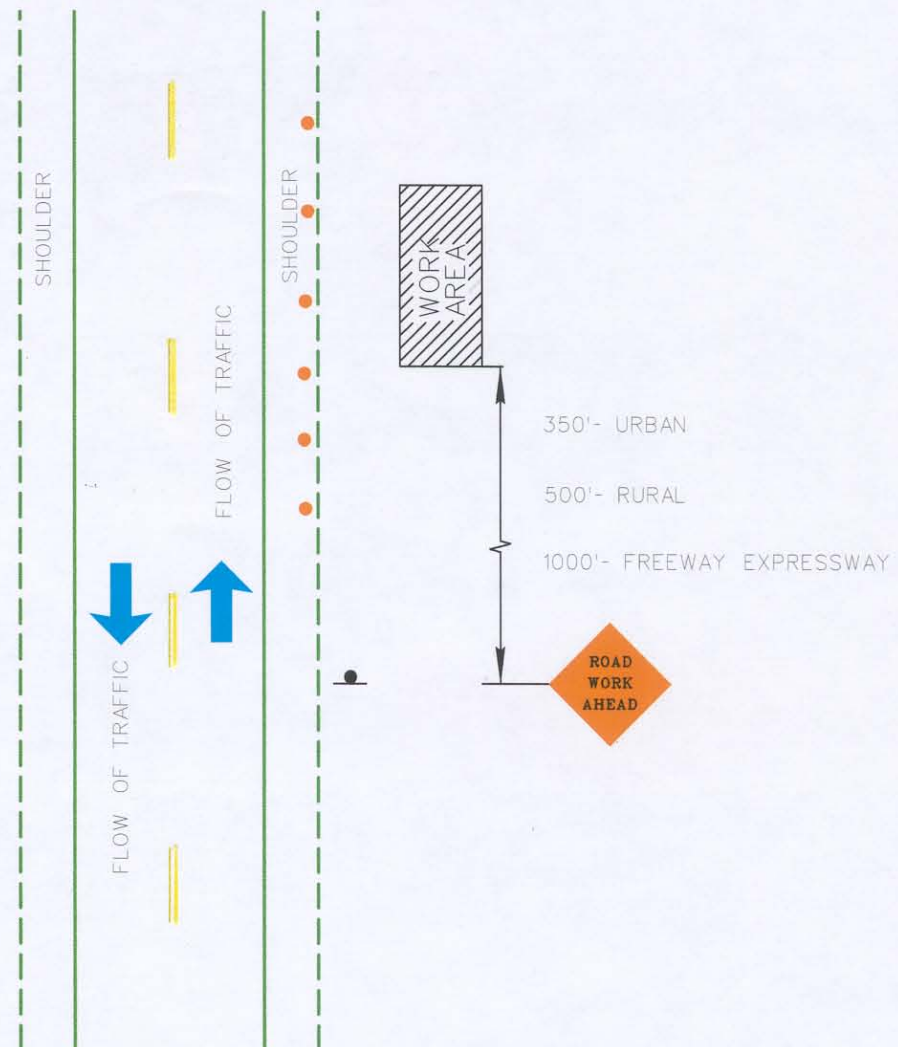
L

Taper Length

S

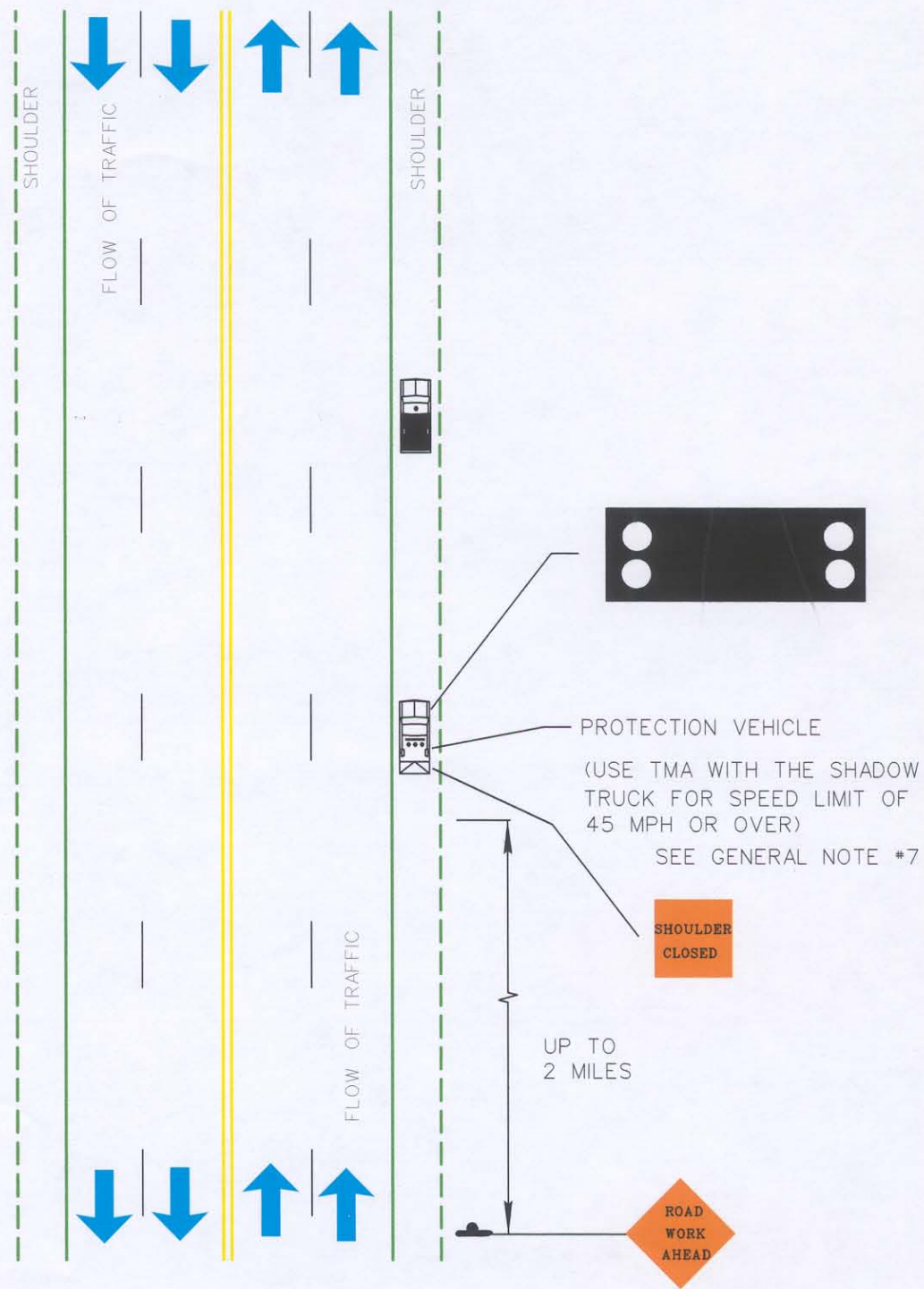
Shoulder Taper

WORK BEYOND THE SHOULDER



1. The ROAD WORK AHEAD sign may be replaced with other appropriate signs such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.
2. The ROAD WORK AHEAD sign may be omitted where:
The work space is behind a barrier or guide rail, or
More than 2 feet behind the curb, or
15 feet or more from the edge of any roadway.
3. See generalnote #4 for cone spacing.

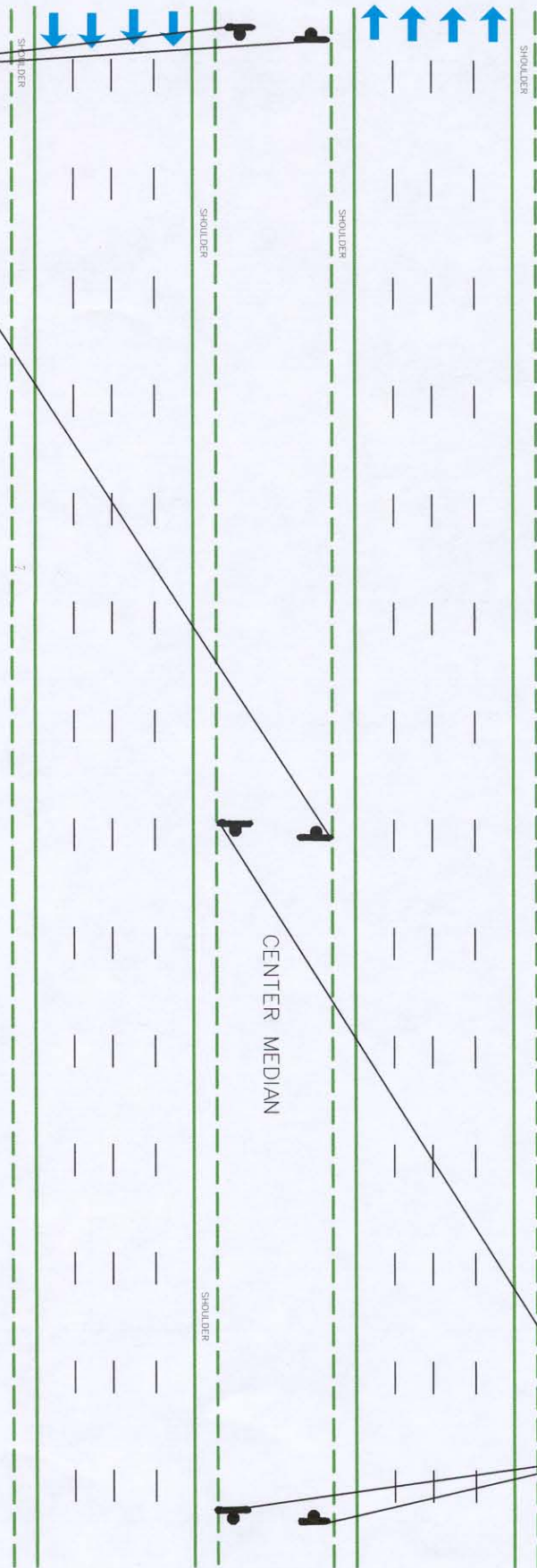
MOBILE OPERATION ON RIGHT SHOULDER



SEE GENERAL NOTE #16

MOBILE OPERATION IN CENTER MEDIAN

SIGN EVERY 2 MILES

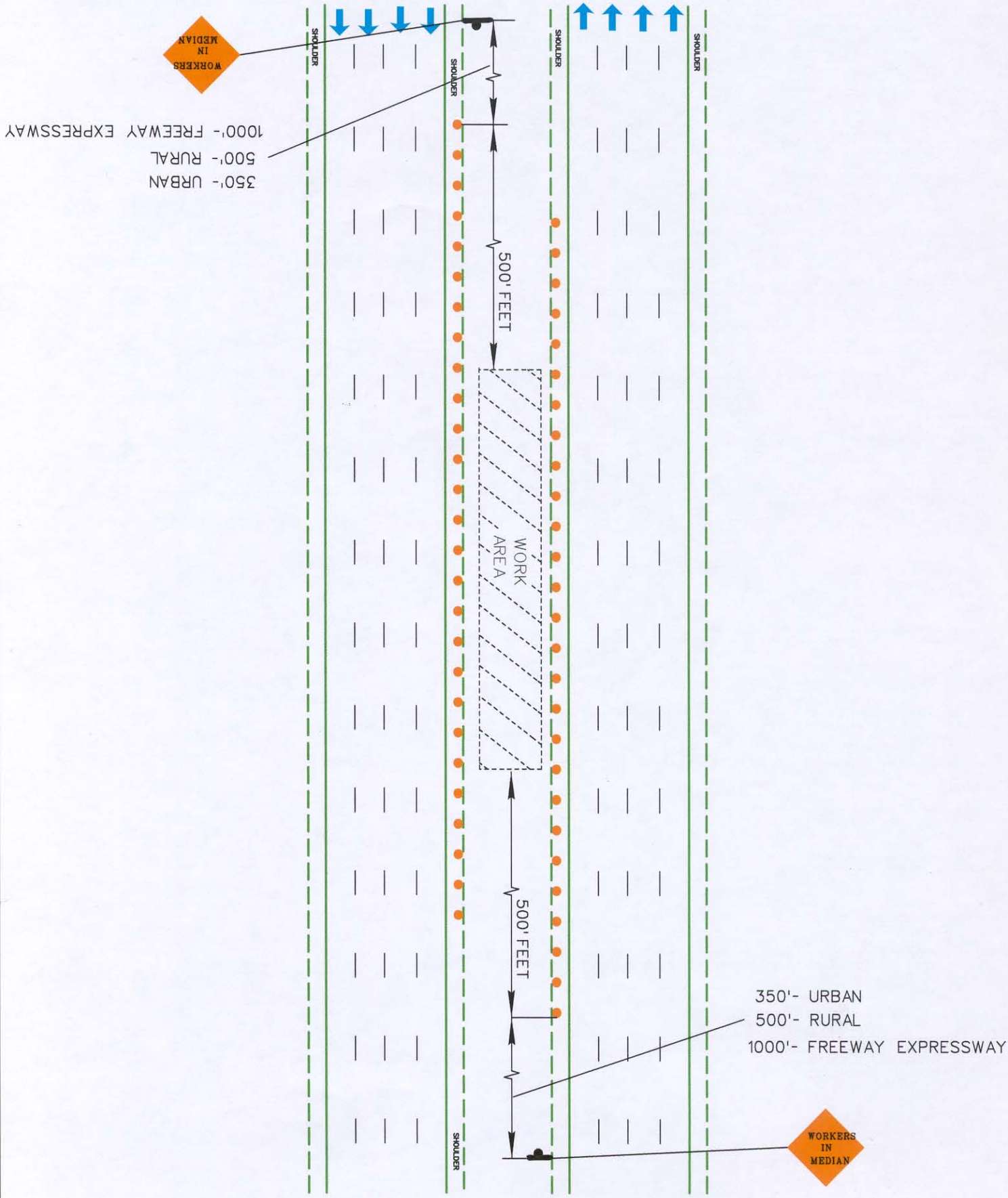


SEE GENERAL NOTE #7

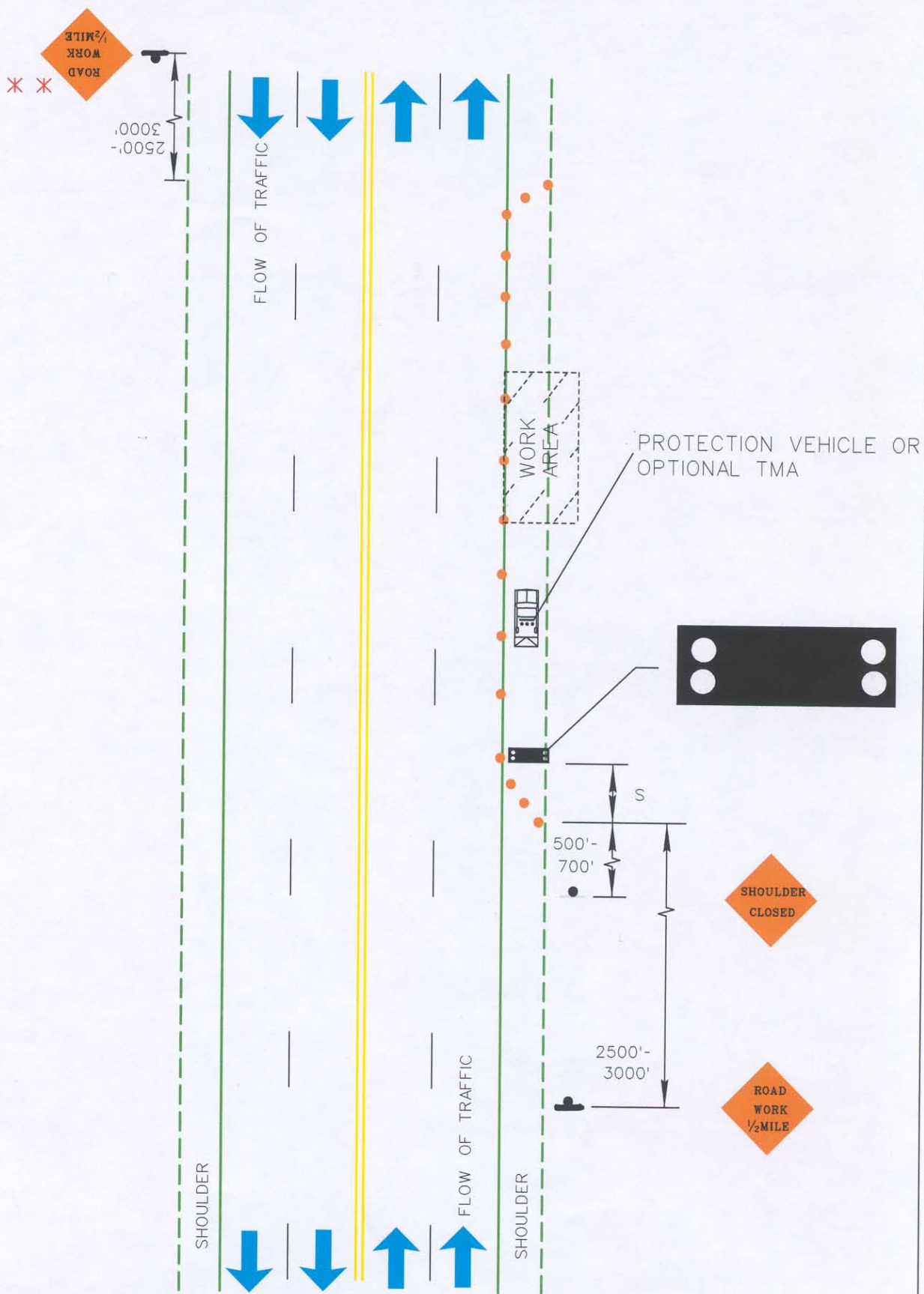


SIGN EVERY 2 MILES

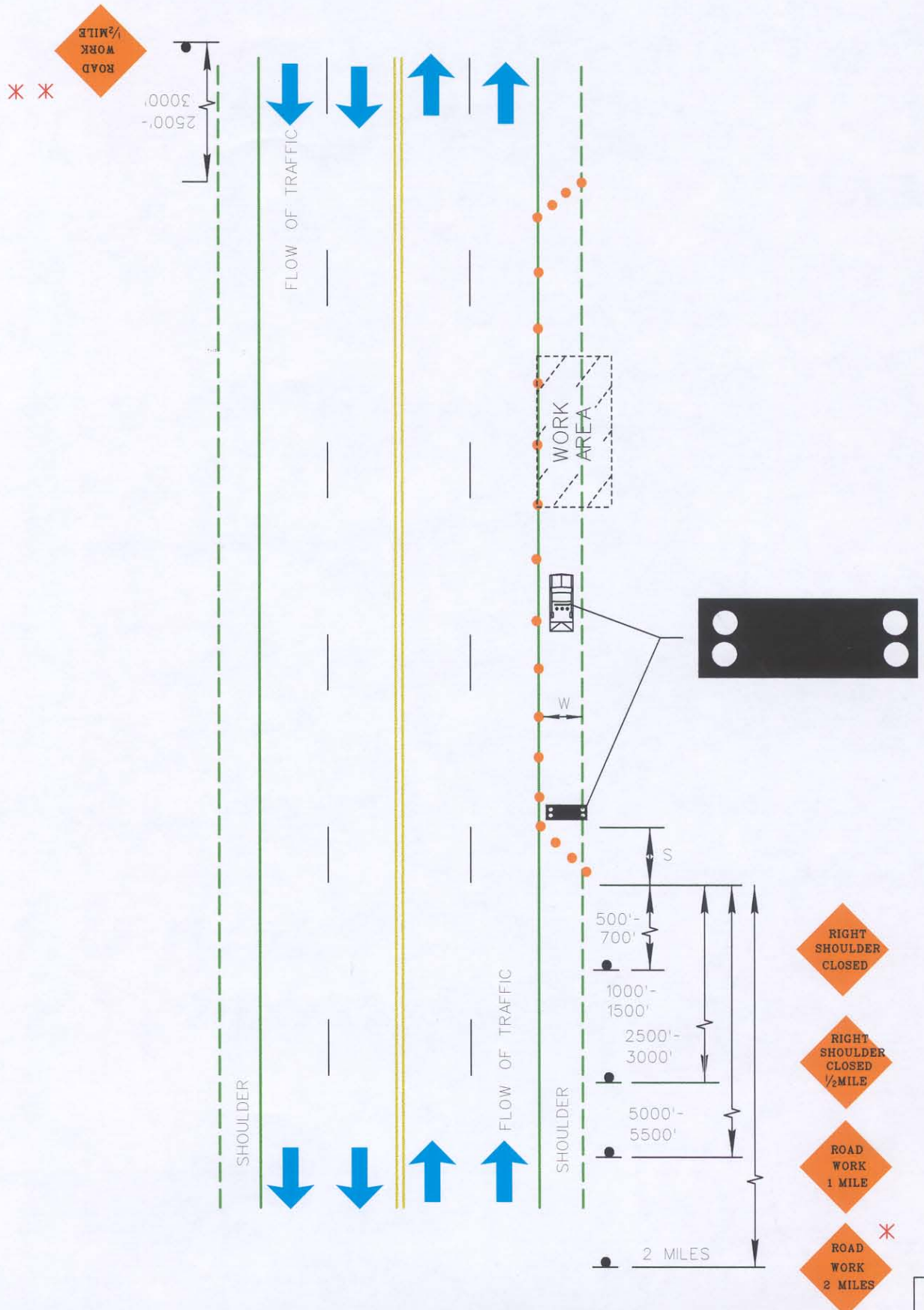
SHORT-TERM STATIONARY OPERATION IN CENTER MEDIAN



WORK AREA IN SHOULDER FOR SPEED LIMIT LESS THAN 45 MPH

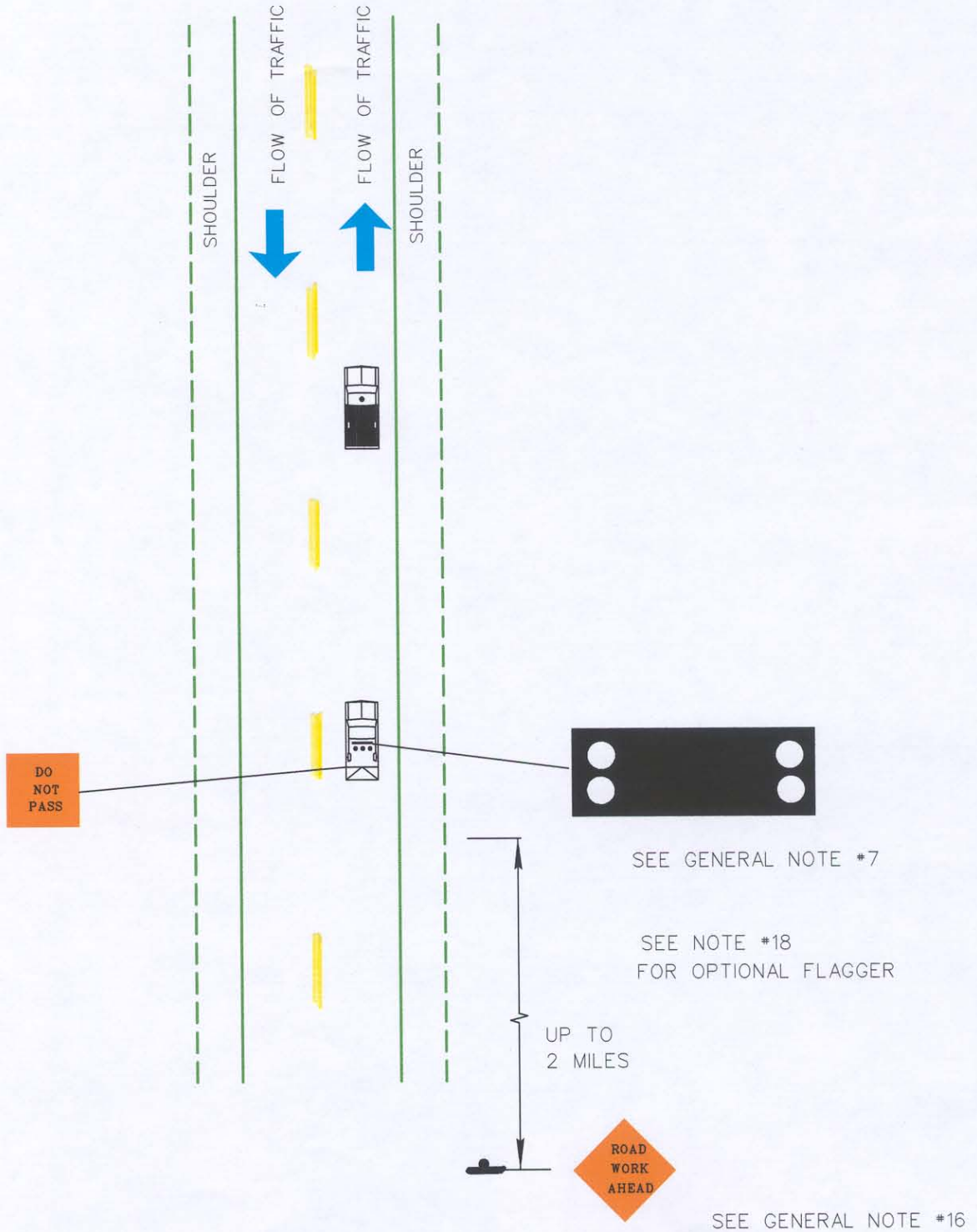


WORK AREA IN SHOULDER FOR SPEED LIMIT 45 MPH AND OVER



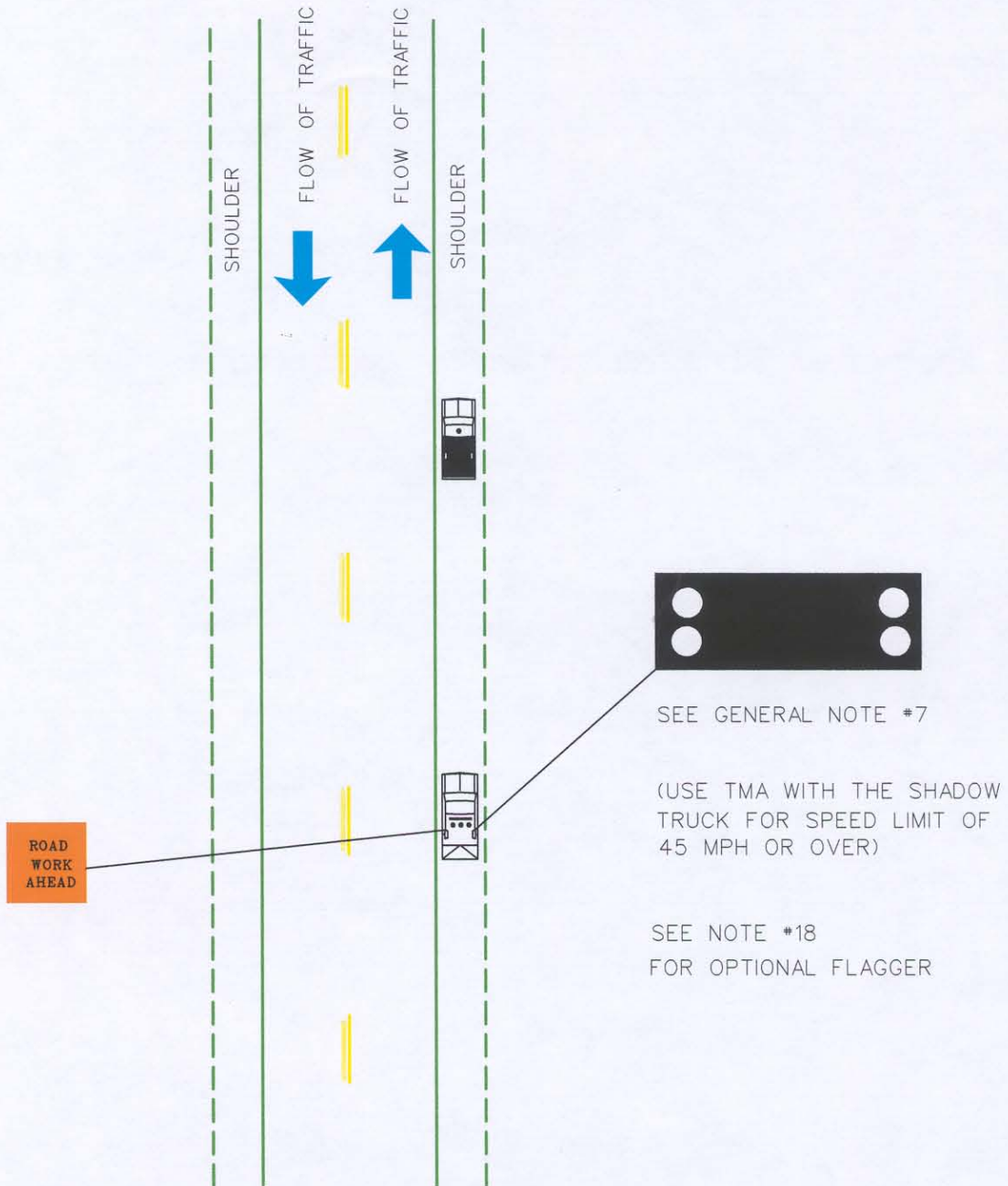
2 LANE ROAD

MOBILE OPERATION



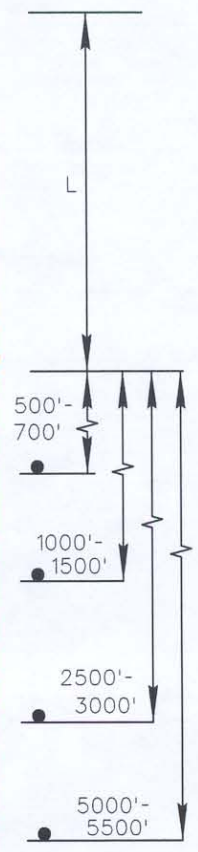
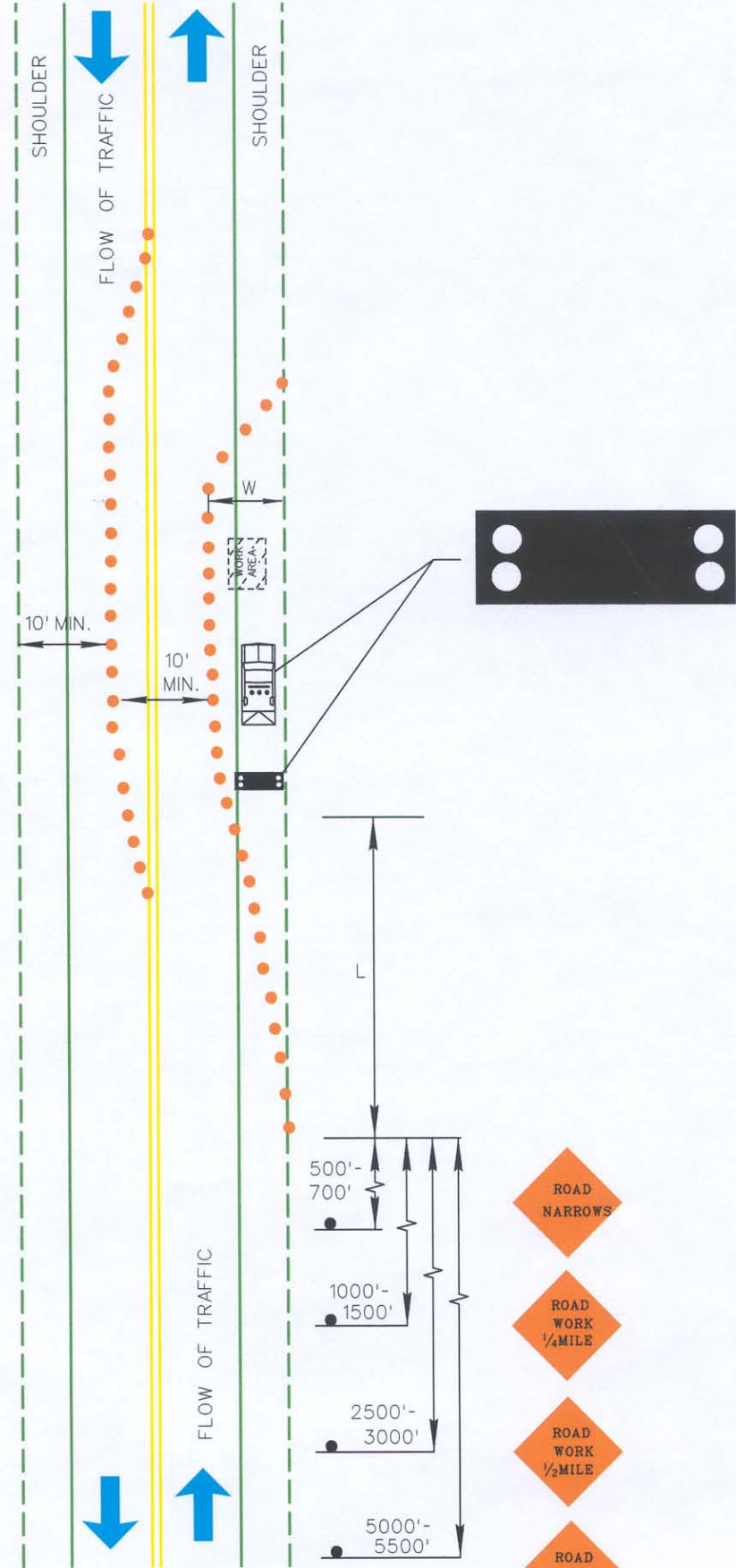
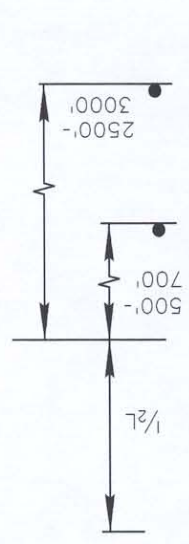
2 LANE ROAD

MOBILE OPERATION



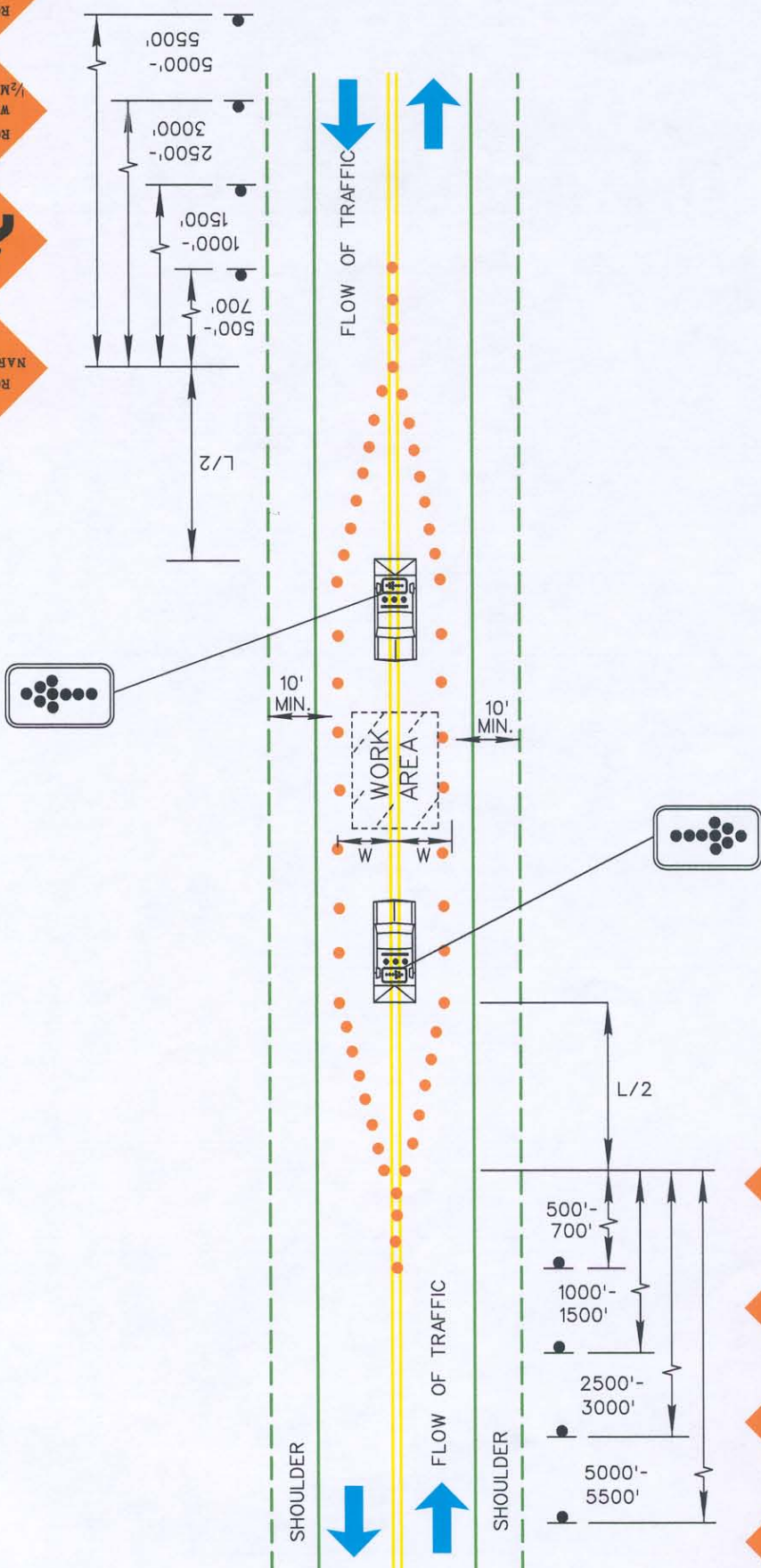
2 LANE ROAD

WORK AREA PARTIALLY IN LANE



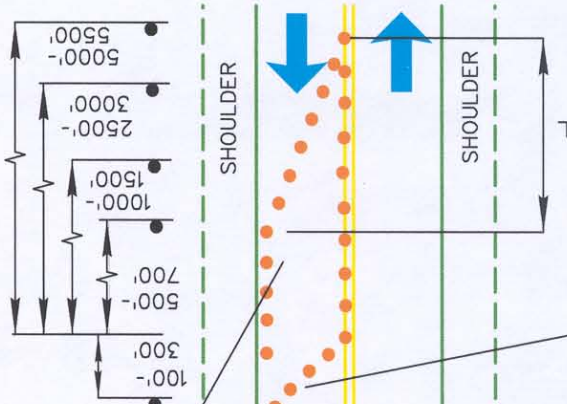
2 LANE ROAD

WORK AREA IN CENTER OF ROAD



2 LANE ROAD

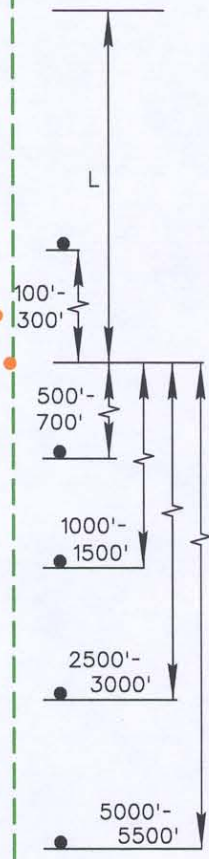
WORK AREA IN ONE LANE



100 FEET OF DOWNSTREAM TAPER WHERE SPACE IS AVAILABLE

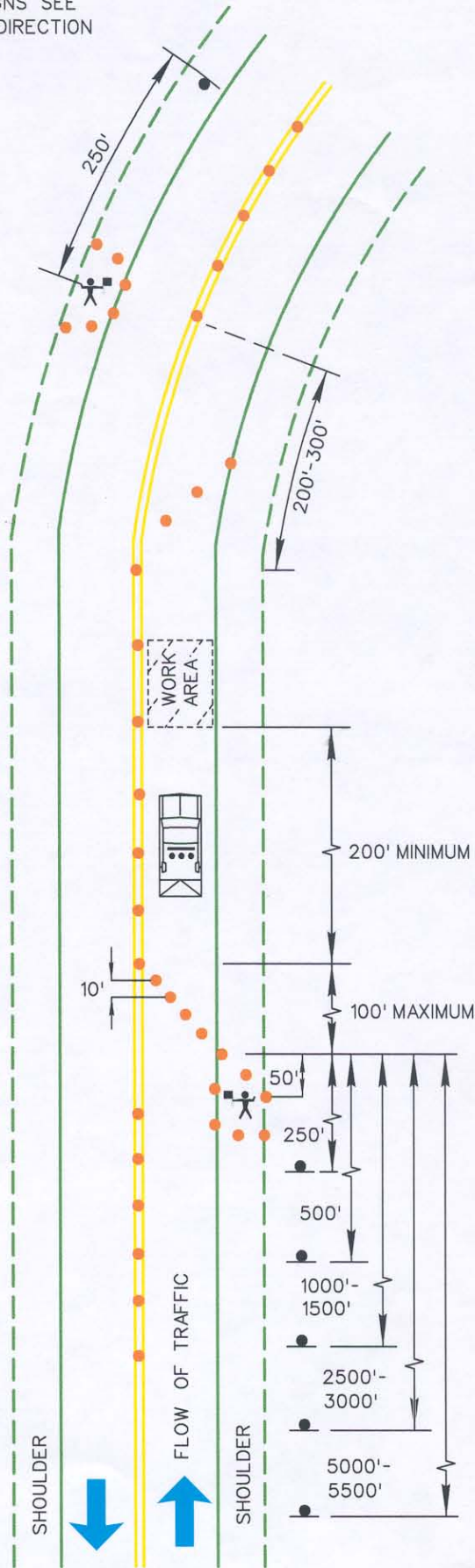


FLOW OF TRAFFIC



2 LANE ROAD WORK AREA IN LANE

FOR SIGNS SEE
OTHER DIRECTION



SEE NOTE #18



* ELIMINATE SIGNS
FOR OPPOSITE
DIRECTION



*

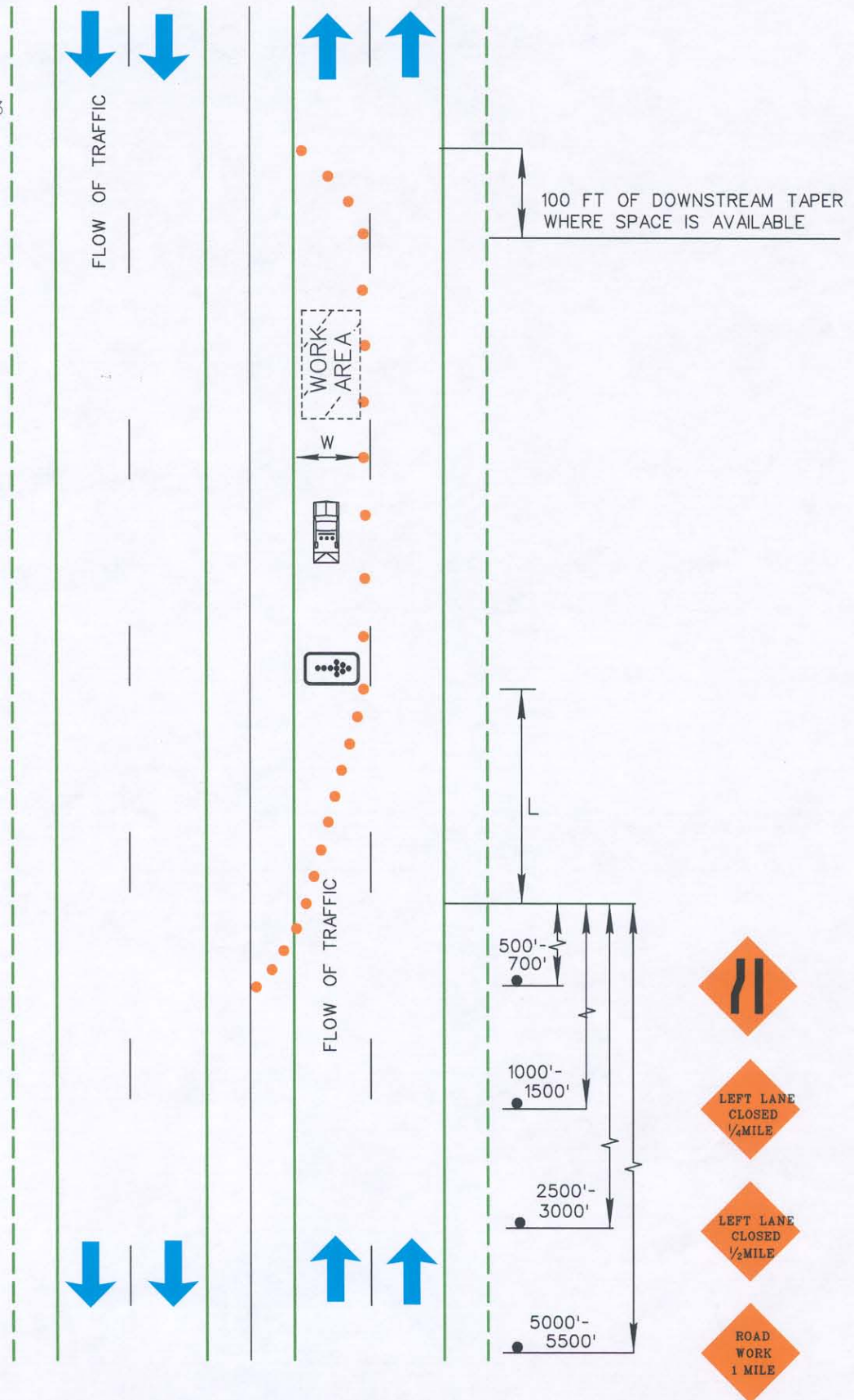


*

MULTI-LANE ROAD-DIVIDED (LESS THAN 65 MPH)

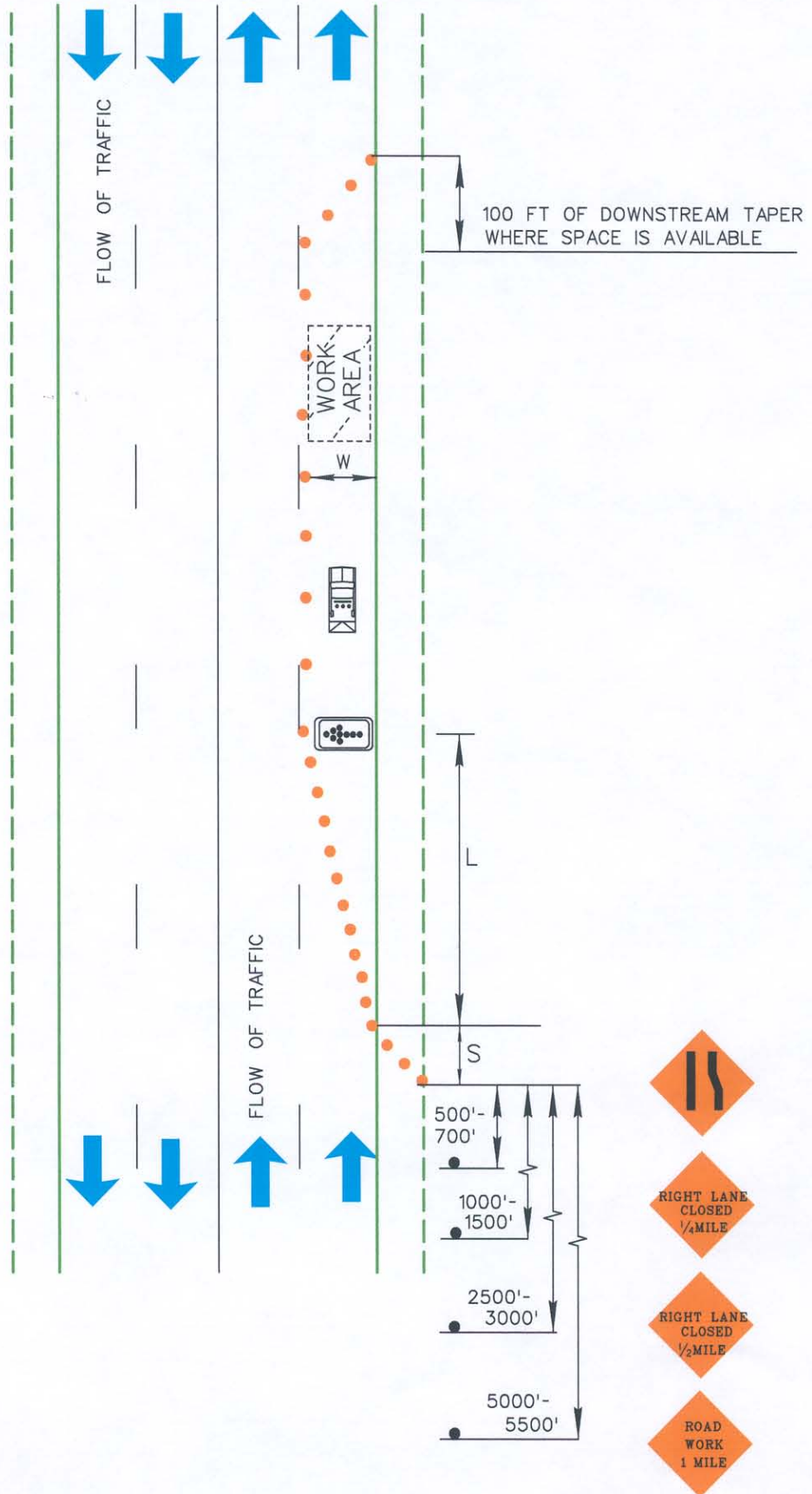
WORK AREA IN LEFT LANE

SEE GENERAL NOTE #13



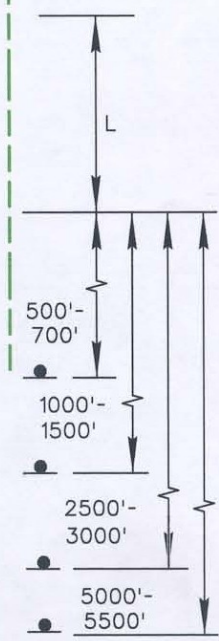
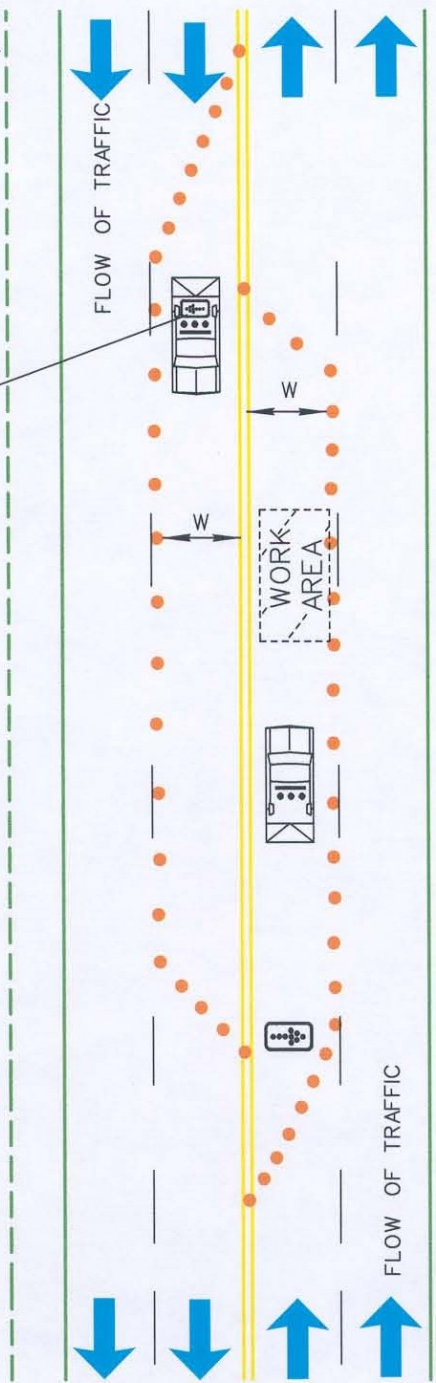
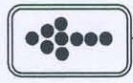
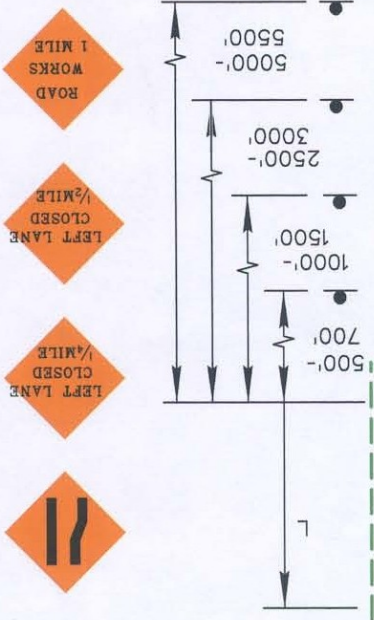
MULTI-LANE ROAD-DIVIDED (LESS THAN 65 MPH)

WORK AREA IN RIGHT LANE



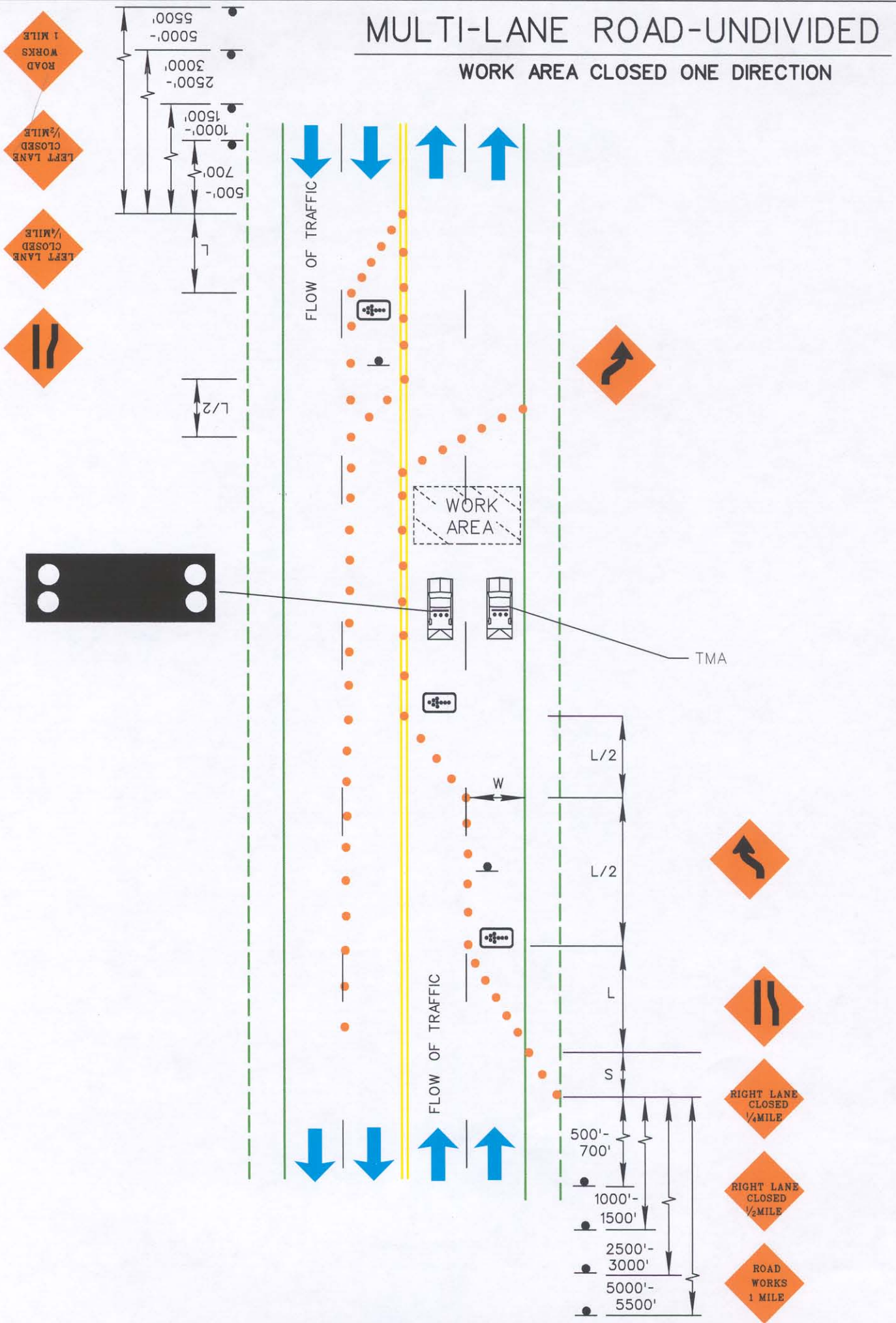
MULTI-LANE ROAD-UNDIVIDED

WORK AREA IN LEFT LANE

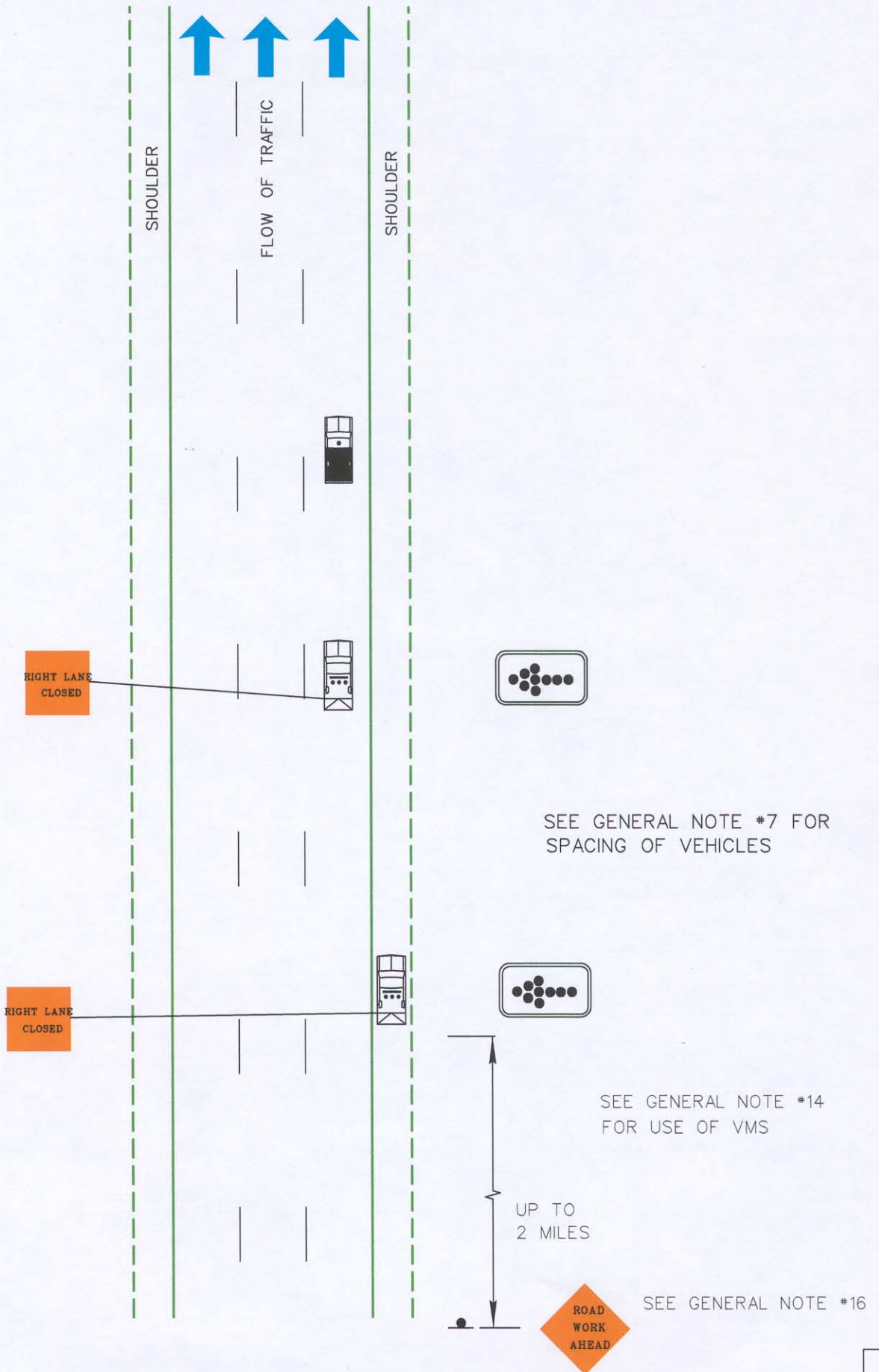


MULTI-LANE ROAD-UNDIVIDED

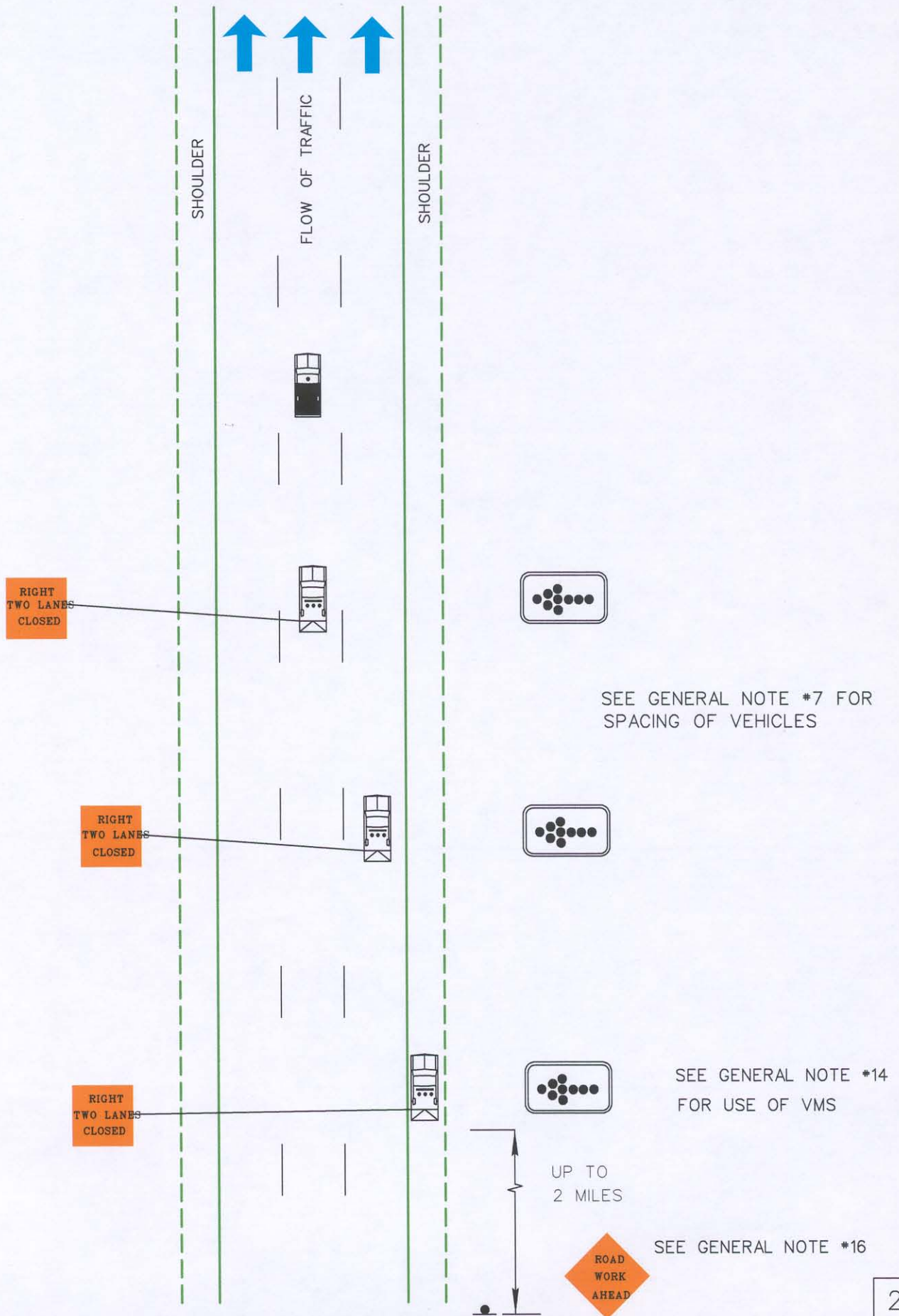
WORK AREA CLOSED ONE DIRECTION



MOBILE OPERATION ON MULTI-LANE ROAD

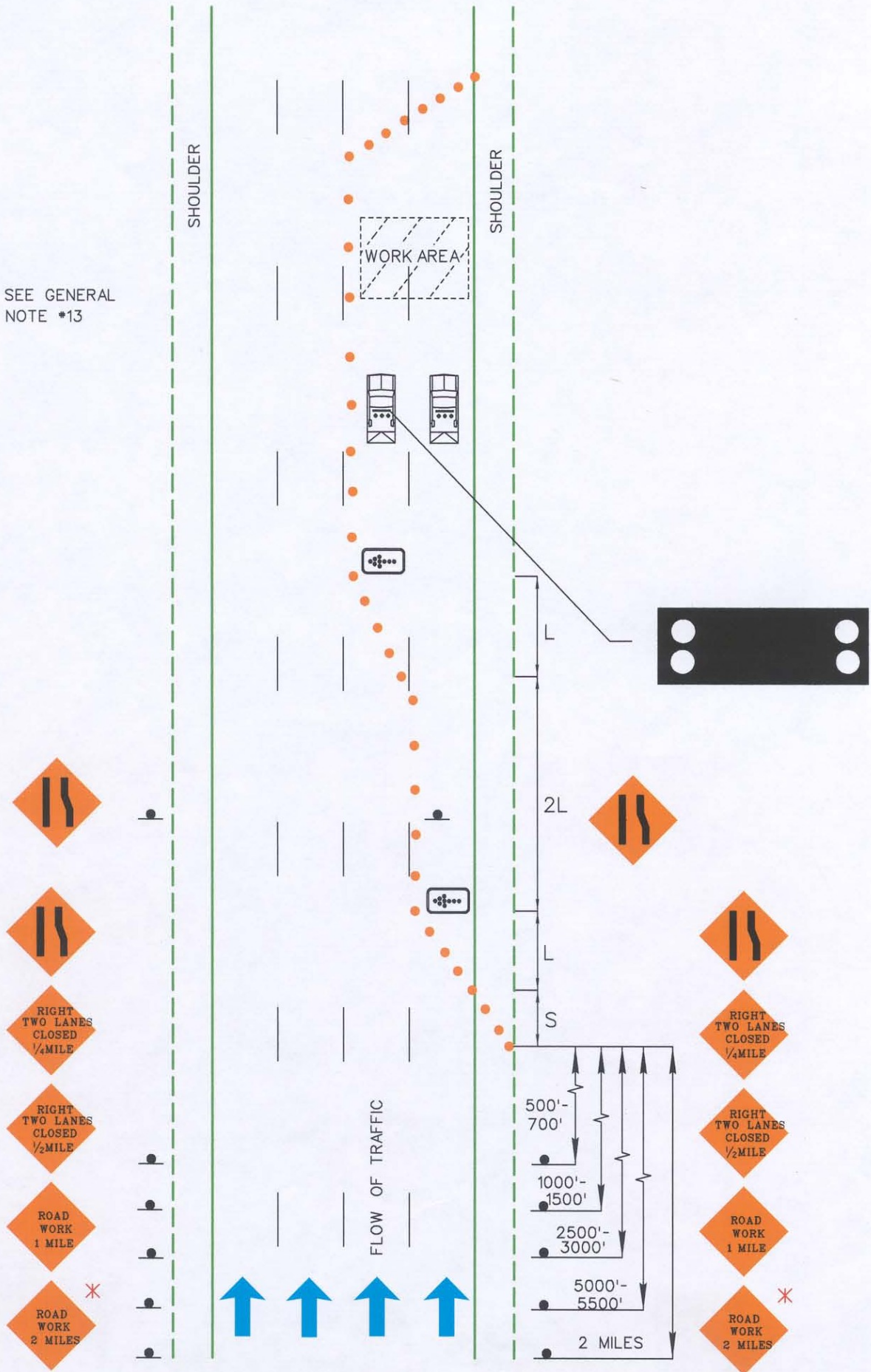


MOBILE OPERATION ON MULTI-LANE ROAD



RIGHT LANE OR TWO RIGHT LANES CLOSURE

SEE GENERAL NOTE #13

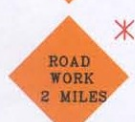
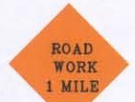
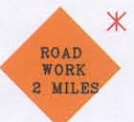
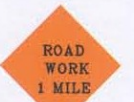
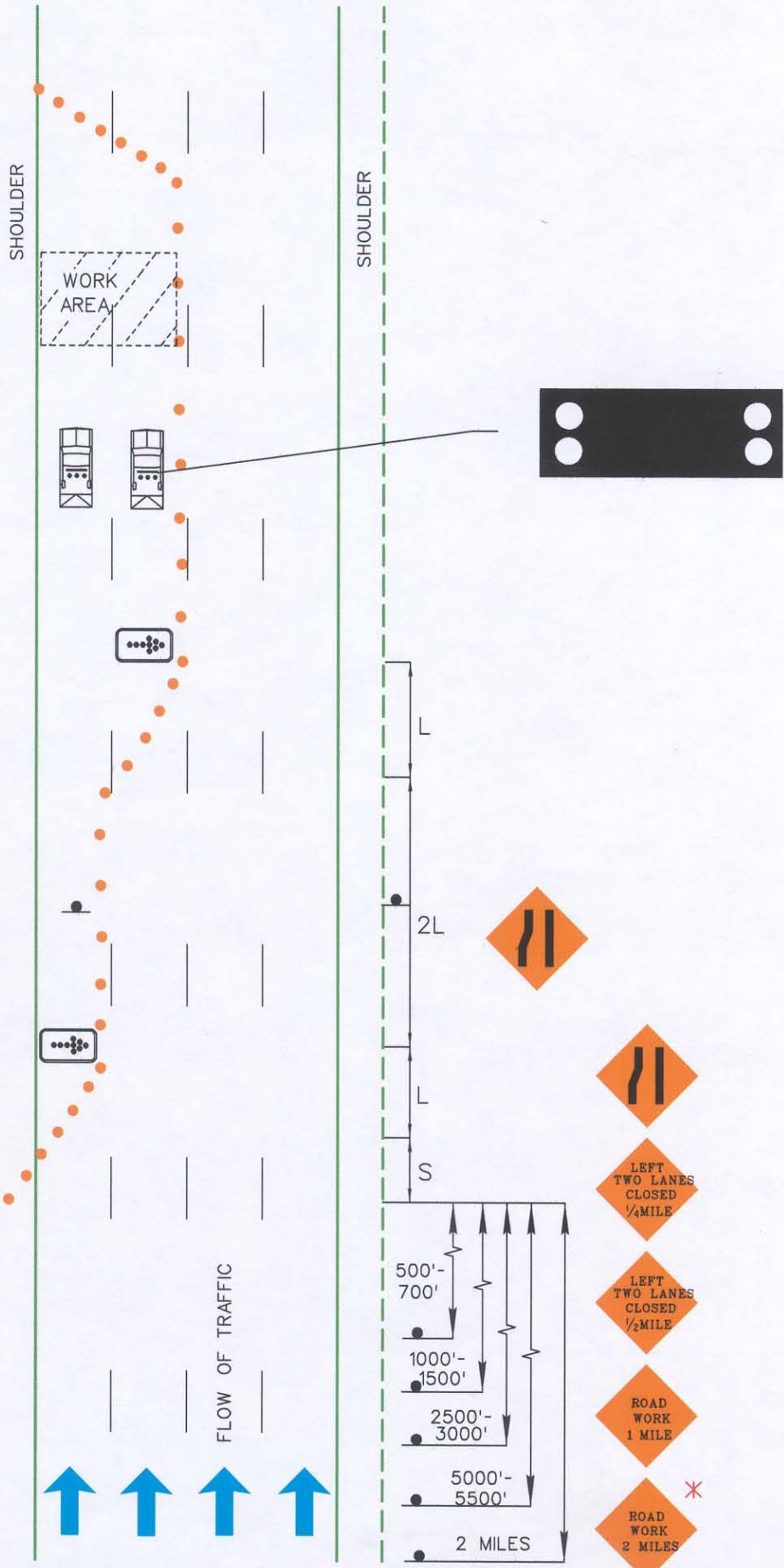


LEFT LANE OR TWO LEFT LANES CLOSURE

NOTE:

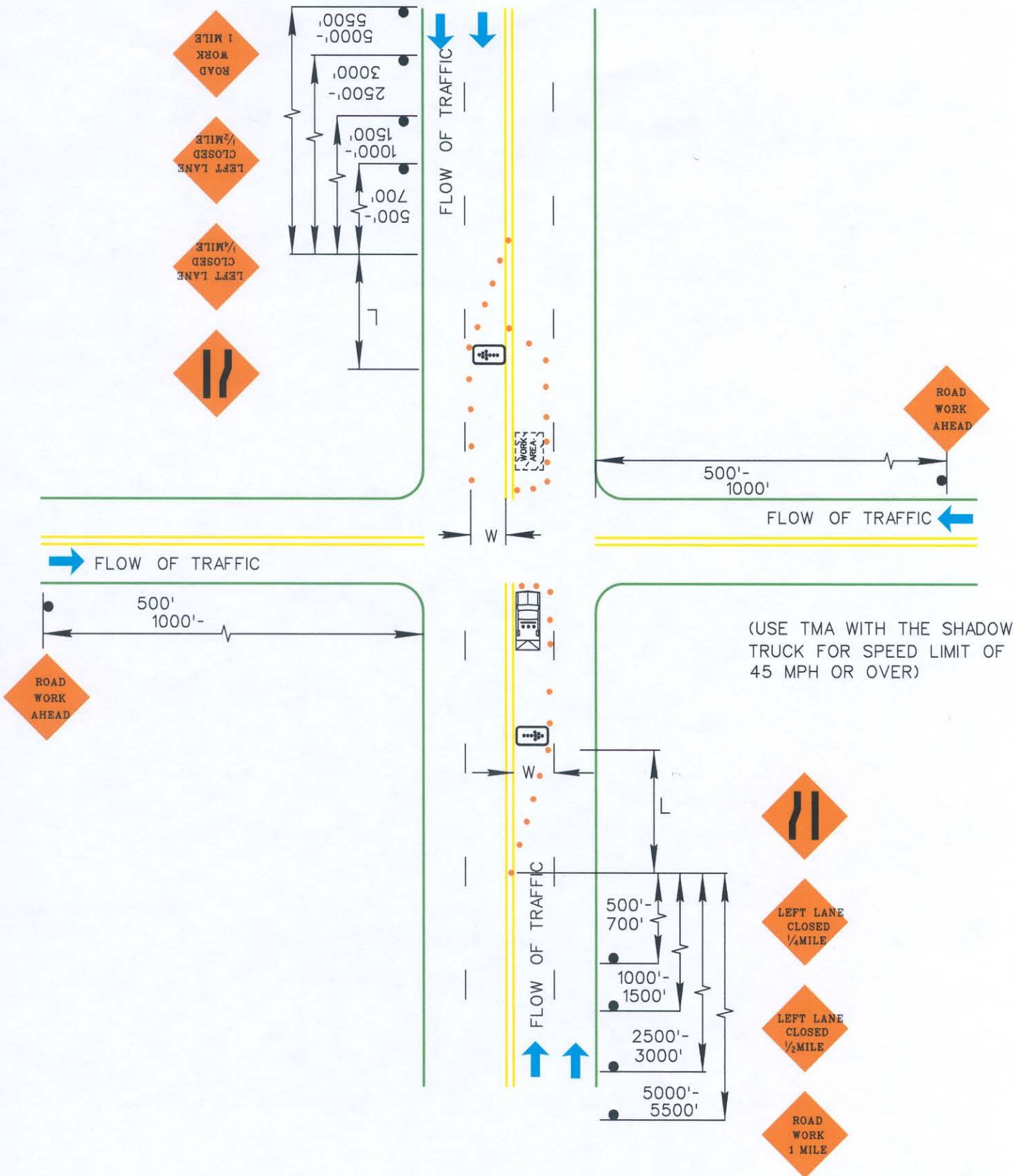
MAKE EVERY ATTEMPT TO INSTALL SIGNS ON LEFT SIDE IN THIS SCENARIO

SEE GENERAL NOTE *13



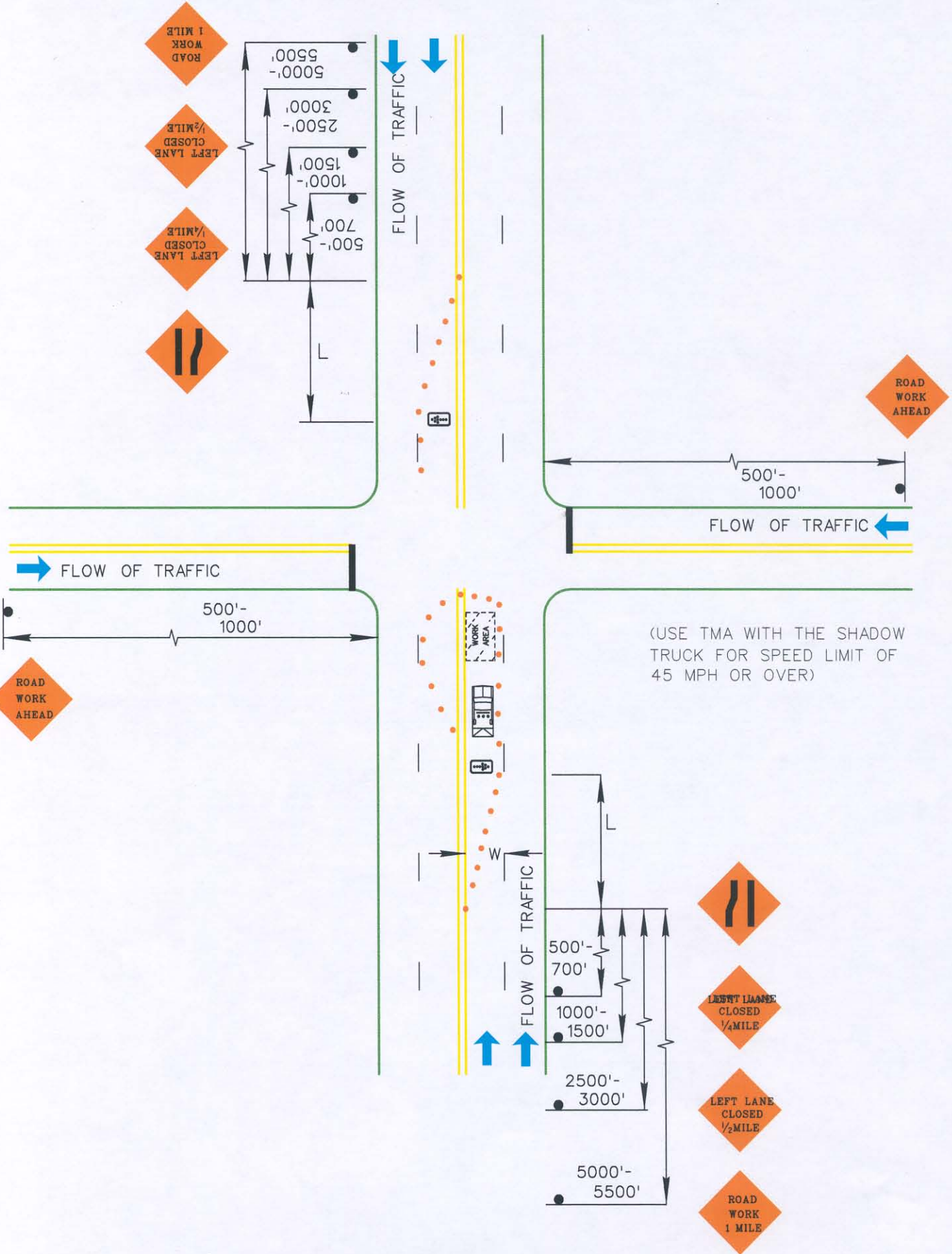
MULTI-LANE ROAD-UNDIVIDED

WORK AREA IN LEFT LANE AT INTERSECTION FAR SIDE



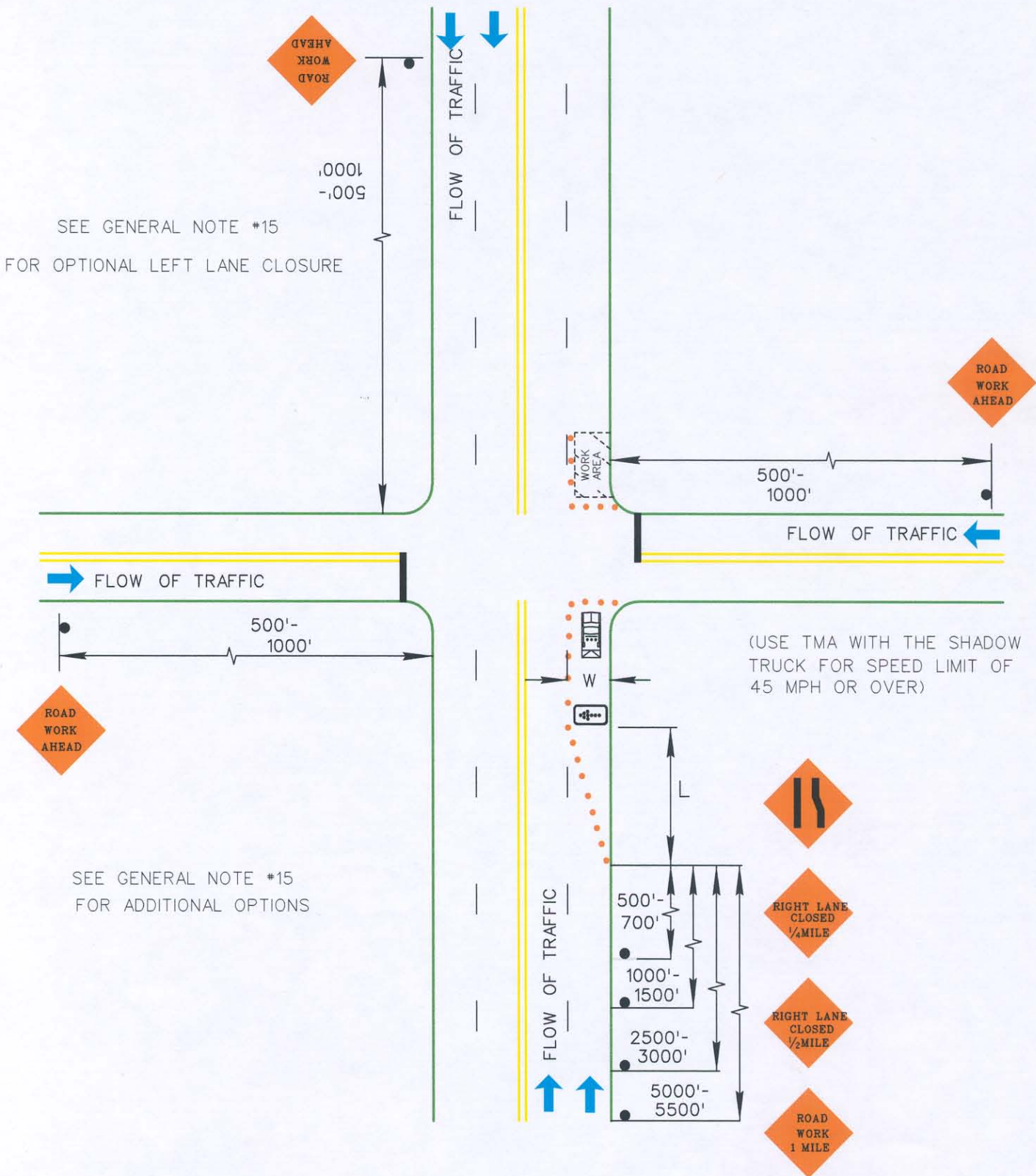
MULTI-LANE ROAD-UNDIVIDED

WORK AREA IN LEFT LANE AT INTERSECTION NEAR SIDE



MULTI-LANE ROAD-UNDIVIDED

WORK AREA IN RIGHT LANE AT INTERSECTION FAR SIDE



MULTI-LANE ROAD-UNDIVIDED

WORK AREA IN RIGHT LANE AT INTERSECTION NEAR SIDE

