

# Maintenance and Protection of Traffic Standards



December 2019  
Change 1



## Application

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Pennsylvania Turnpike Commission (PTC) Maintenance and Protection of Traffic Standards applies to contractors; utilities; Federal, State, County, and Municipal governments; and others performing construction, maintenance, emergency, permit work, utility work, or any other type of work on highway or so closely adjacent to a highway that workers, equipment, or materials encroach on the roadway or interfere with the normal movement of traffic. This also includes any special event that necessitates the need for temporary traffic control. Refer to 67 Pa Code §212.402 for a complete list of types of work that are exempt from the requirements contained in this standard and the Manual on Uniform Traffic Control Devices (MUTCD).

The PTC Maintenance and Protection of Traffic Standard drawings mentioned hereafter will be referenced as PTS (Example: PTS 915-4).

PTC Maintenance and Protection of Traffic Standards have precedence over information found in PennDOT Publication 213 and the MUTCD. Furthermore, the PTS drawings shall be utilized in lieu of a Publication 213 or MUTCD Typical Application drawings when roadway conditions are similar (for example, PTS 905-3 and PTS 915-3 would have precedence over PATA 306, PATA 603, and MUTCD TA-35 for a mobile operation on a multi-lane highway). PTS Applications (000 series) are general in nature and meant to be a possible component of temporary traffic control zones shown in most PTS drawings (905 through 940 series). Multiple PTS drawings (905-940 series) may be combined to create a customized temporary traffic control zone, however, customized traffic control setups shall be approved by the PTC prior to implementation. Install traffic control devices as shown on an approved customized traffic control plan if a PTS, Publication 213, or MUTCD Typical Application drawing does not apply.

The traffic control schemes shown in this standard are normally applicable for both urban and rural areas. Since it is not practical to provide detailed guidelines for all the situations that may conceivably arise, applications are presented for only the most common situations. These are minimum desirable applications for normal situations, and additional protection may be needed when special complexities or potential hazards prevail. The protection prescribed for each situation shall be consistent with the general provisions found in the most recent editions of 67 Pa Code, Chapter 212, Official Traffic Control Devices and the MUTCD as issued by the Federal Highway Administration and should be based on common sense; engineering judgment; the speed and volume of traffic; the duration of the operation; the exposure to potential hazards; the physical features of the highway including horizontal alignment, vertical alignment, and the presence of intersections and driveways; and other important factors.

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## General Notes Definitions (Page 1 of 2)

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Automated Work Zone Speed Enforcement (AWZSE) – A system designed to more strictly enforce speed limits in work zones. The system uses speed measuring devices to detect and record motorists exceeding the posted speed limit by 11 mph or more in active Work Zones.

Buffer Zone – Area that separates traffic flow from the work zone. Buffer zones must remain clear of equipment, vehicles, workers, and materials. The length of longitudinal buffer zone is defined on the PTS figures and may be increased for downgrades or other conditions that affect stopping sight distance.

- Longitudinal buffer zone is located in advance of and after the work zone.
- Lateral buffer zone is located between flowing traffic and the work area.

Long-Term – Work that occupies a location for more than 12 hours for more than three (3) consecutive days.

Mobile Operation - An operation where the work zone beginning and ending points move as the work activity moves. Work that moves intermittently or continuously for up to 24 hours.

PATA (Pennsylvania Typical Application) - Drawings within PennDOT Publication 213 that depict temporary traffic control conditions.

Portable Sign Post - Rigid device with steel posts for mounting temporary traffic control devices where minimum mounting heights of at least 5' are required. Refer to PennDOT Publication 111, Traffic Control – Pavement Markings and Signing Standards TC-8717, for details.

Portable Sign Support - A folding, collapsible, or telescoping device for posting temporary traffic control devices where minimum mounting heights of 1' are acceptable.

Roadway - That portion of a highway improved, designed, or ordinarily used for vehicular travel, exclusive of the sidewalk, berm, or shoulder.

Runout - Length of the taper of a series of channelizing devices for the purpose of moving into the normal path. Located immediately after the end of the work zone.

Shadow Vehicle - A vehicle positioned within the activity in advance of the work zone and work vehicles. The primary purpose of the shadow vehicle is to provide advance information to approaching drivers while protecting workers and work vehicles. Shadow vehicles without a truck mounted attenuator must be a 33,000 lb GVW (Gross Vehicle Weight) or larger vehicle and loaded to weigh a minimum of 22,000 lbs., or as indicated on the Standard Drawings, in addition to meeting the requirements of PennDOT Publication 212. Vehicle must be equipped with a flashing, oscillating, or revolving amber warning light which is visible from any direction (360° visibility) and is not being used as a work vehicle. The amber warning light must be activated within an active work zone.

Short-Term - Work that occupies a location for less than 12 hours for three (3) or less consecutive days.

Shoulder - The part of a highway adjacent to the roadway which has a surface constructed with the same or similar material as the roadway. Shoulder width is measured from the center of the painted edge line to the outside edge of pavement, concrete, or finished surface.

Taper - A series of channelizing devices and/or paint lines installed for the purpose of moving traffic out of or into the normal path. Various taper types have differing minimum lengths, most of which are based upon an 'L' distance. The formula to determine distance L is shown on the corresponding PTS notes page. It should be noted that the taper length is a distance per lane; so if a single taper covers two lanes, the total taper length will be double the calculated or minimum distance.

- Merging Taper - Used when drivers in multiple lanes are required to merge into a common road space. Minimum length is L.
- Shifting Taper - Used when a lateral shift is needed. Minimum length required is distance  $1/2 L$ , unless traffic is approaching a one-lane, two-way condition; in this case the minimum length is 50'.
- Shoulder Taper - Required when closing a paved shoulder having a width of 8' or more; optional in other conditions. Minimum length is  $1/3 L$ , unless traffic is approaching a one-lane, two-way condition; in this case the minimum length is 25'.
- Downstream Taper - Used in the termination area to provide a visual cue to the driver that access is available back into the original lane or path that was closed. Minimum distance is 50' per lane.

Truck Mounted Attenuators (TMA) - Shall be mandatory for placement on shadow vehicles, as indicated on the standard details. When a TMA is used, the weight of the shadow vehicle must be greater than the minimum weight specified by the TMA manufacturer.

## General Notes Definitions (Page 2 of 2)

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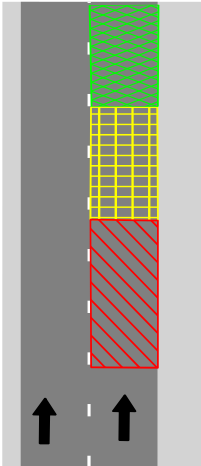


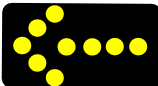






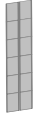









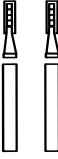



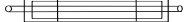





Warning Lights – Yellow, White or Red lights that operate in steady burn or flashing mode. Warning lights on authorized vehicles may flash or revolve. Type A, B, C, and D warning lights are portable, powered, lens-directed enclosed lights.

Worker - A person on foot whose duties place him or her within the right-of-way of a highway, such as highway construction and maintenance forces, survey crews, utility crews, responders to incidents, and law enforcement personnel when directing traffic, investigating crashes, and handling lane closures, obstructed roadways, and disasters within the right-of-way of a highway.

Work Vehicle - A vehicle available for use by workers within an activity area. All work vehicles shall be located outside of the buffer space and roll ahead space for shadow vehicles. Work vehicles being used in an active work zone must utilize the flashing, oscillating, or revolving amber warning lights which are visible from any direction (360° visibility).

Work Zone - The area of a highway where construction, maintenance, or utility work activities are being conducted, and in which traffic control devices are required in accordance with Title 67, Chapter 212.

## General Notes - Legend for Pennsylvania Turnpike Commission Standard Details

	<p>Work Zone</p> <p>Buffer Zone (No vehicles, equipment, material or workers in this area)</p> <p>Milled pavement</p> <p>Direction of traffic flow (Arrows)</p>		<p>Arrow Panel</p>
			<p>Arrow Panel in Caution Mode</p>
			<p>Arrow Panel in Merge Mode</p>
			<p>Dynamic Message Sign</p>
	<p>Work vehicle with activated amber warning light</p>		<p>Swift Gate</p>
	<p>Channelizing Device</p>		<p>Temporary Concrete Barrier</p>
	<p>Shadow vehicle with truck mounted attenuator and activated amber warning light</p>		<p>Temporary Concrete Barrier with glare screen</p>
	<p>Shadow vehicle with an activated amber warning light</p>		<p>Inlet</p>
	<p>Automated Work Zone Speed Enforcement (AWZSE) Device/Vehicle</p>		<p>Temporary impact attenuator</p>
	<p>Sign &amp; Support</p>		<p>Flagger</p>
	<p>Supply Vehicle</p>		<p>Rock construction entrance or paved surface</p>
	<p>Line Painting Machine</p>		<p>Toll Lane</p>
	<p>Type B White Flasher</p>		<p>PennDOT approved 28" traffic cone</p>
	<p>Type B Yellow Flasher</p>		<p>E-ZPass Gantry</p>
	<p>Type B Red Flasher</p>	<p>or</p> 	<p>E-ZPass Gantry</p>
<p>W/4"</p>	<p>Solid White Line/ Width</p>		
<p>BW/4"</p>	<p>Broken White Line/ Width</p>		
<p>W/6"</p>	<p>Solid White Line/ Width</p>		
<p>Y/4"</p>	<p>Solid Yellow Line/ Width</p>		
<p>Y/6"</p>	<p>Solid Yellow Line/ Width</p>		
	<p>Type III Barricade</p>		<p>Trailer-Mounted Equipment</p>
	<p>Light Plant / Projected Light</p>		

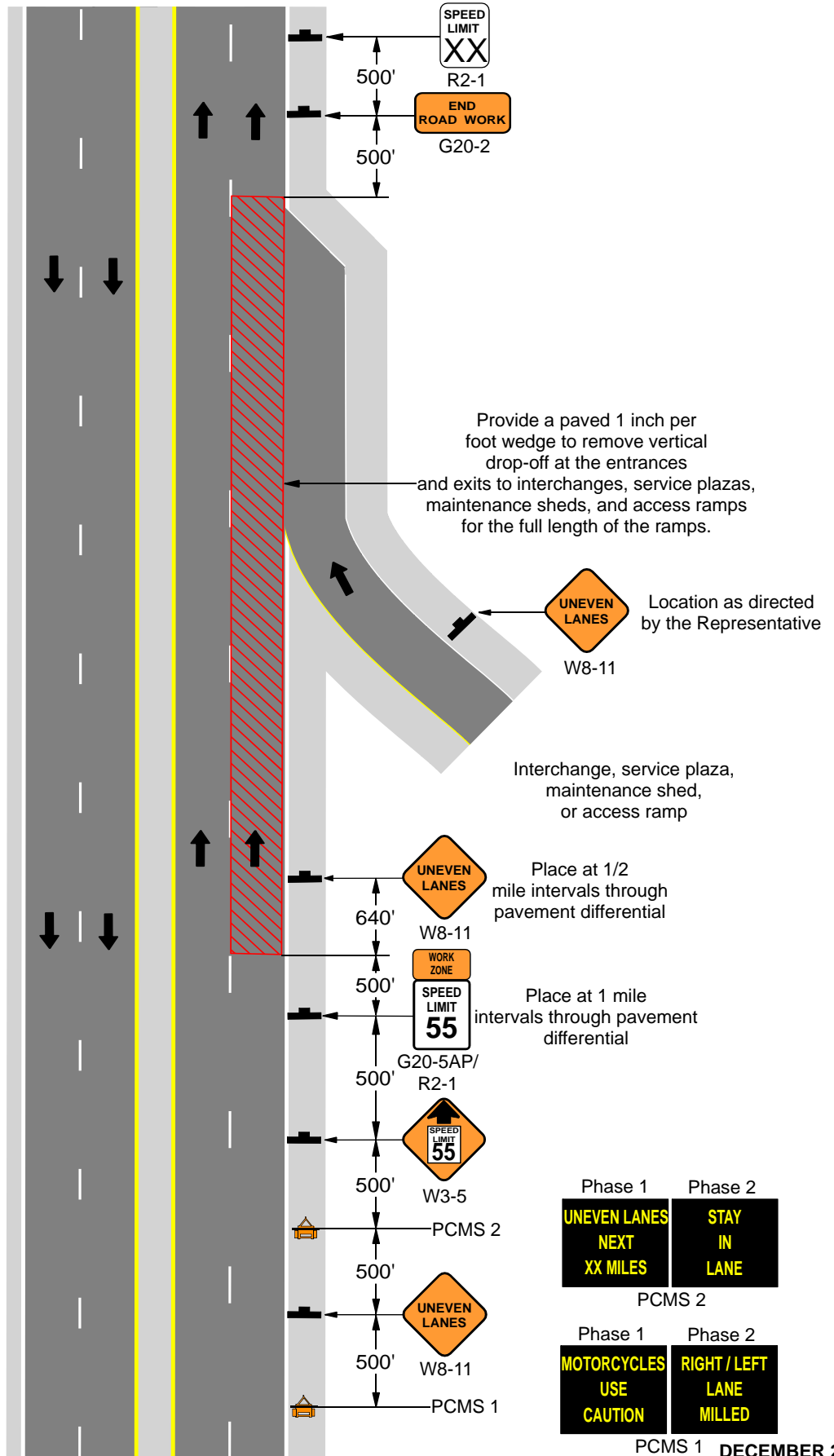


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# **General Standards**

(PTS 000 Series)

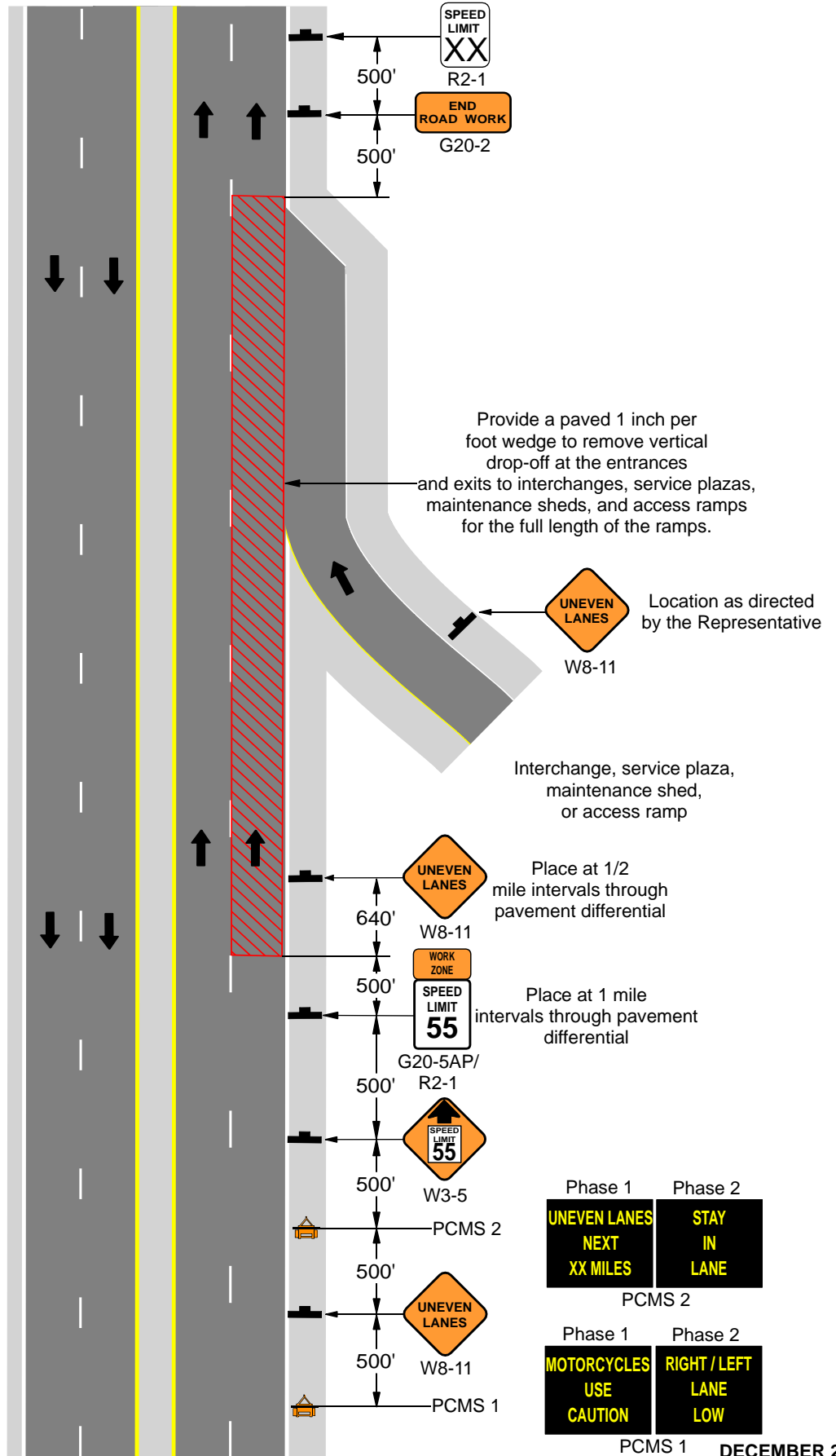
**PTS 001  
Maintenance and Protection of Traffic  
Milled Pavement Differential in Lane**



**NOTES:**

1. Completely cover conflicting signs and turn off PCMS when the milled pavement is within a closed lane.
2. See Appendix A for sign descriptions and sizes.

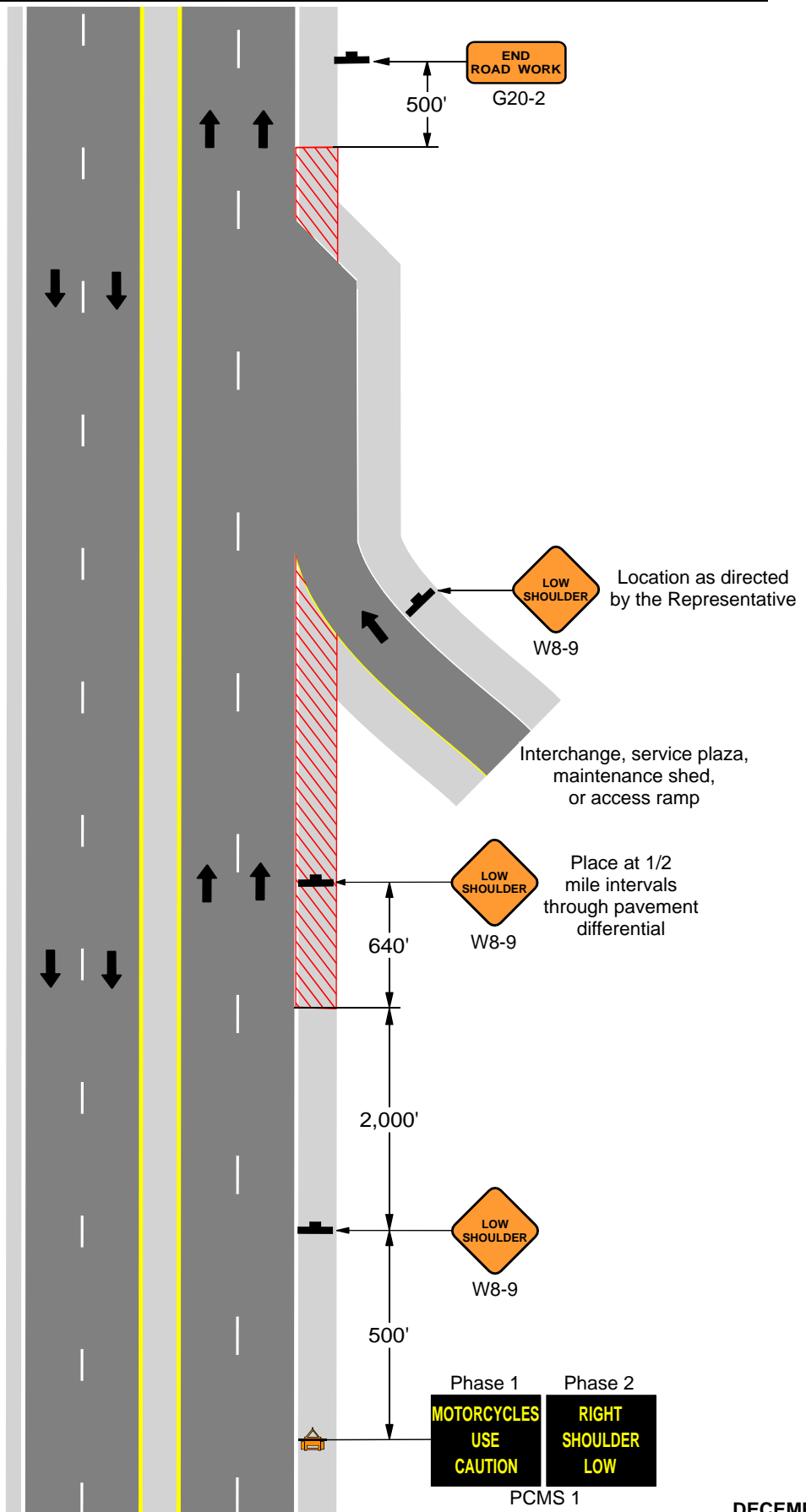
**PTS 002  
Maintenance and Protection of Traffic  
Binder Pavement Differential in Lane**



**NOTES:**

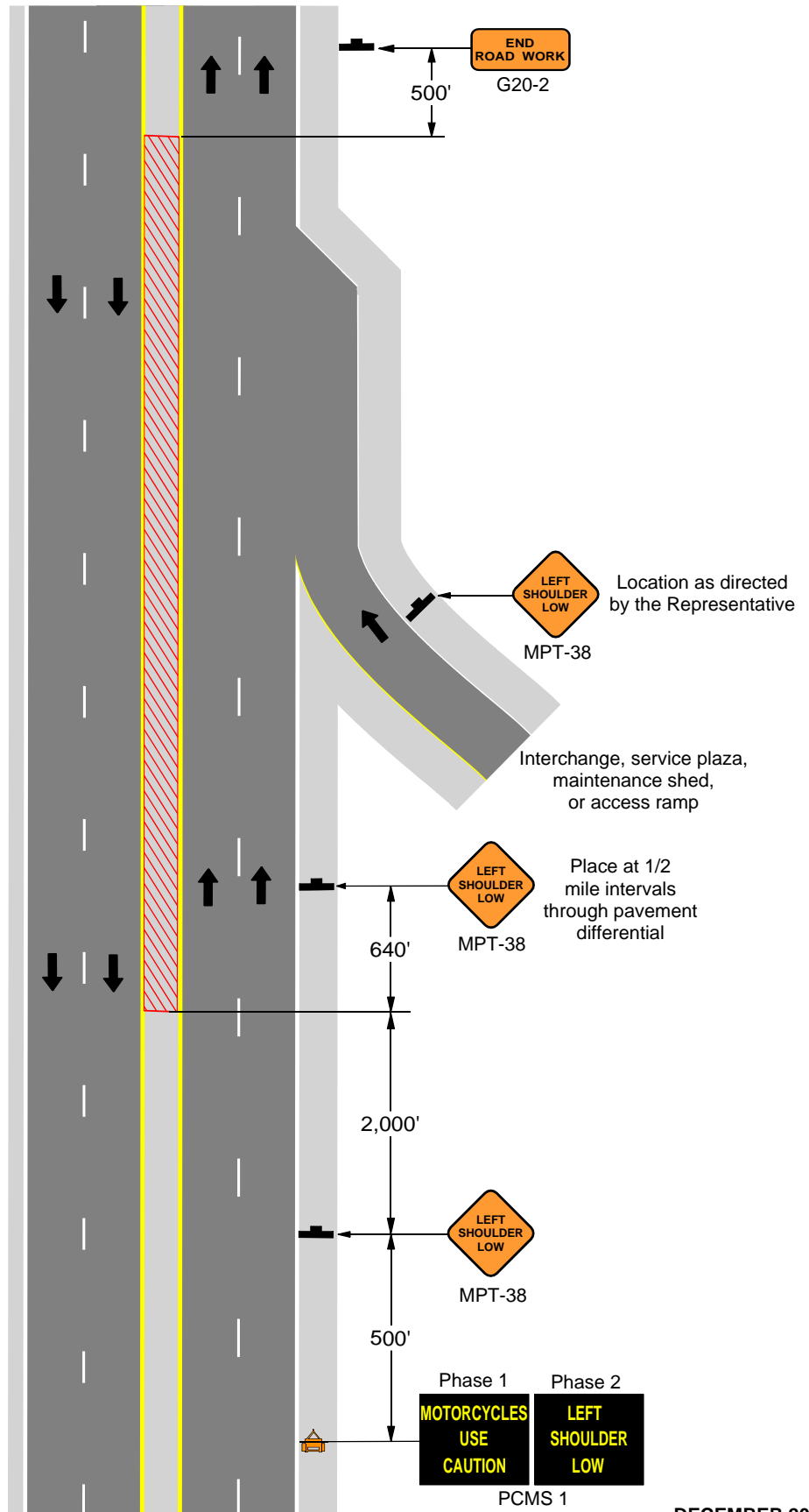
1. Completely cover conflicting signs and turn off PCMS when the milled pavement is within a closed lane.
2. See Appendix A for sign descriptions and sizes.

**PTS 003**  
**Maintenance and Protection of Traffic**  
**Pavement Differential on Right Shoulder**



- NOTES:**
1. Completely cover conflicting signs and turn off PCMS when the low pavement is within a closed lane or shoulder.
  2. See Appendix A for sign descriptions and sizes.

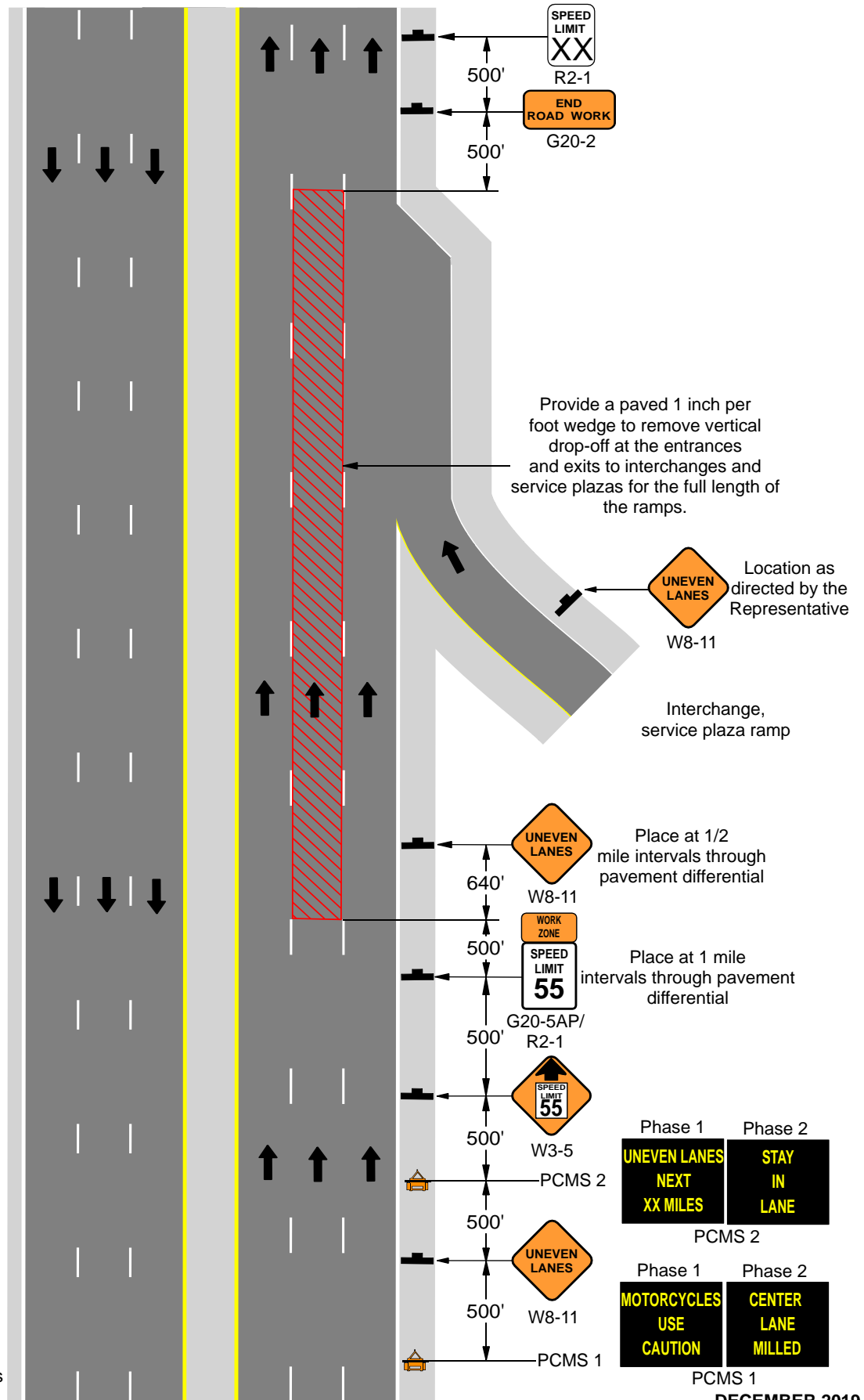
**PTS 004**  
**Maintenance and Protection of Traffic**  
**Pavement Differential in Median Shoulder**



**NOTES:**

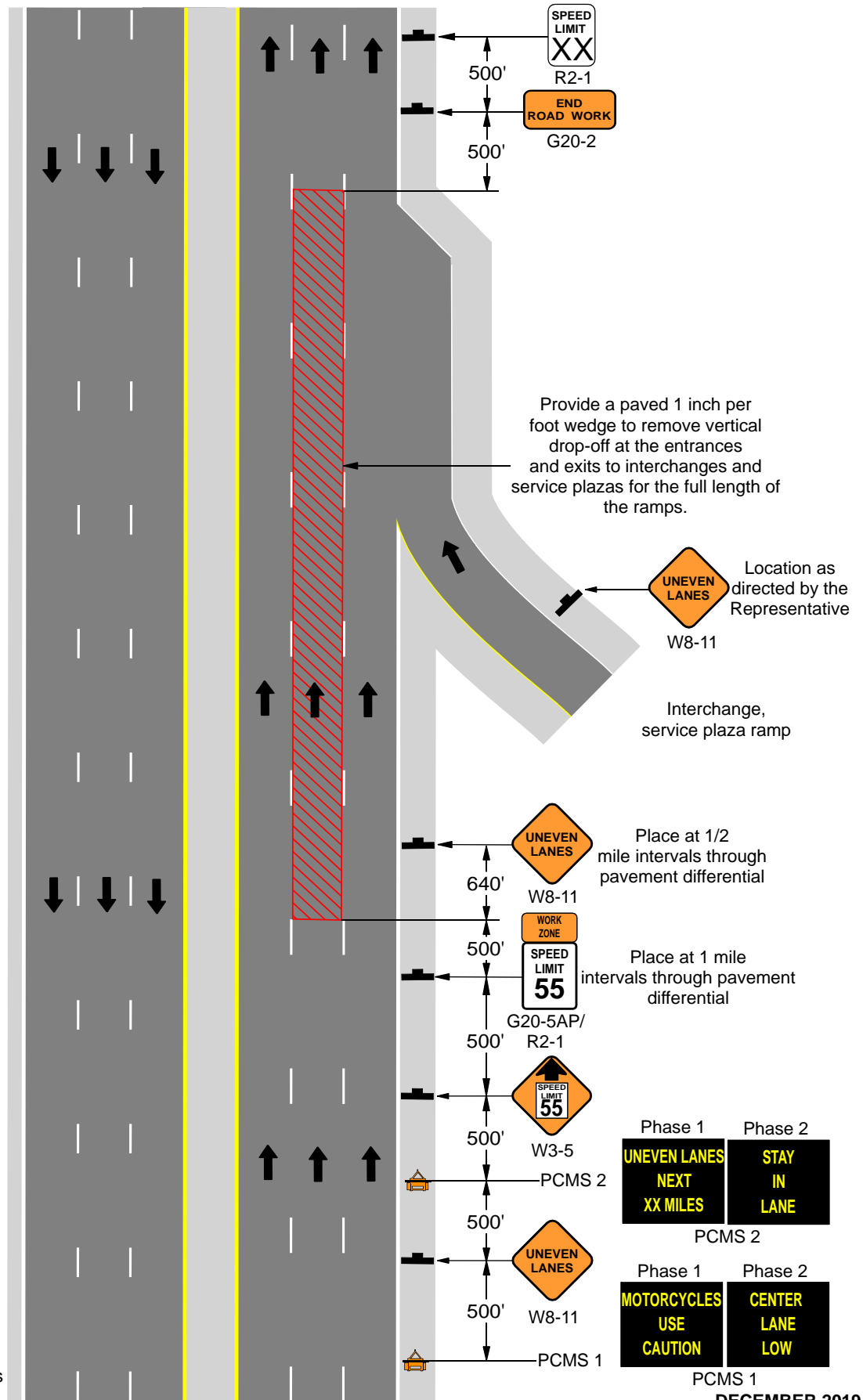
1. Completely cover conflicting signs and turn off PCMS when the low pavement is within a closed lane or shoulder.
2. See Appendix A for sign descriptions and sizes.

**PTS 005**  
**Maintenance and Protection of Traffic**  
**Milled Pavement Differential Center Lane of 3 Lane Section**



- NOTES:**
1. Completely cover conflicting signs and turn off PCMS when the low pavement is within a closed lane.
  2. See Appendix A for sign descriptions and sizes.

**PTS 006**  
**Maintenance and Protection of Traffic**  
**Binder Pavement Differential Center Lane of 3 Lane Section**



- NOTES:**
1. Completely cover conflicting signs and turn off PCMS when the low pavement is within a closed lane.
  2. See Appendix A for sign descriptions and sizes.



## PTS 007 - Notes

### Trailer-Mounted Equipment Placement

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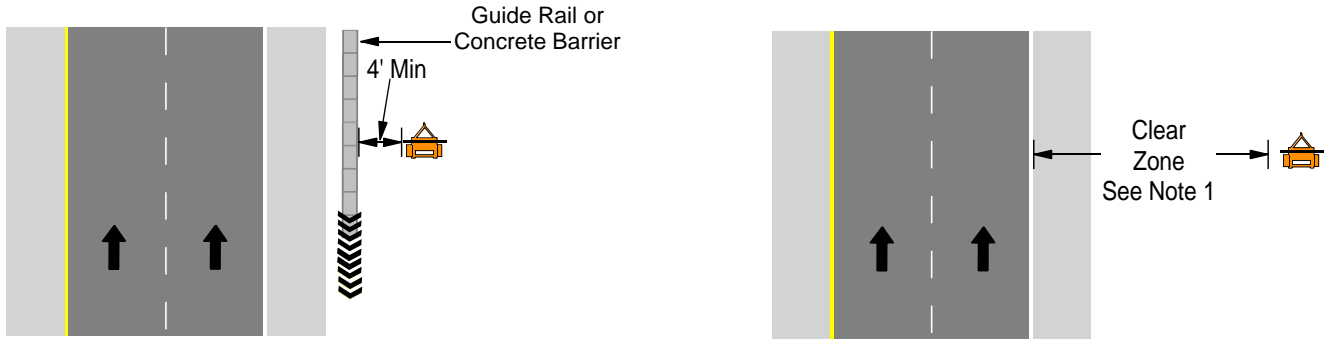
1. Clear Zone width in feet is shown on the table below.
2. Delineation with channelizing devices is required for trailer-mounted equipment located within the clear zone, except when protected by guide rail or barrier.
3. Place trailers in the safest locations that will provide maximum performance. The trailer hitch shall be on the opposite side of traffic approaching in the nearest lane as shown on the drawings.
4. Placement and delineation requirements apply to all trailer-mounted equipment such as Portable Changeable Message Signs (PCMS), Speed Display Trailer, Portable Cameras, etc.
5. PCMS shown on drawings; applicable to all trailer-mounted equipment.

**Clear Zone Width**  
(In Feet from Edge of Traveled Way)

Design speed	Design ADT	Foreslope		Backslope		
		1V:6H or Flatter	1V:5H or Steeper	1V:3H	1V:5H to 1V:4H	1V:6H or Flatter
55 MPH	<750	12	14	8	10	10
	750-1,500	16	20	10	14	16
	1,500-6,000	20	24	14	16	20
	>6,000	22	26	16	20	22
70 MPH	<750	18	20	10	14	14
	750-1,500	24	28	12	18	20
	1,500-6,000	28	30	16	22	26
	>6,000	30	30	22	26	28

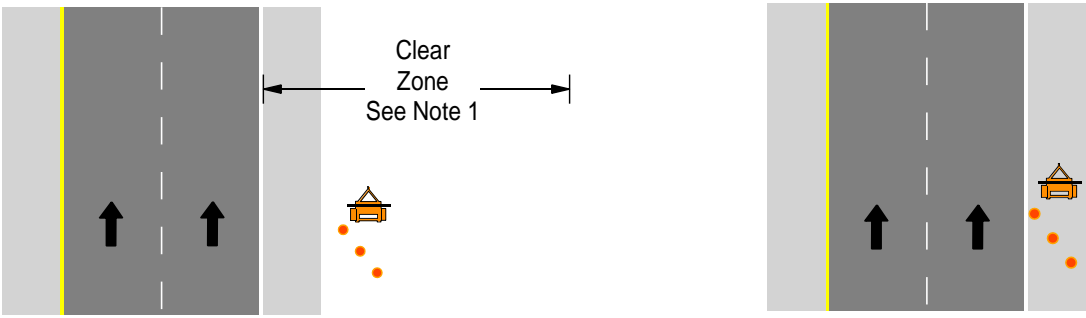
# PTS 007 Trailer-Mounted Equipment Placement

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**Most Preferred**  
Trailer Placed Behind Existing Guide Rail or Barrier or Outside Clear Zone Where Existing Guide Rail or Barrier is Not Available Delineation Not Required

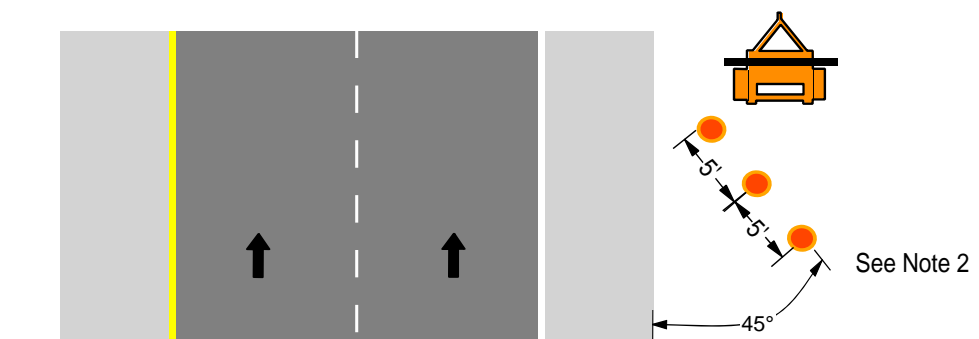
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**Where Guide Rail or Barrier Is Not Available**  
Trailer Placed Off Shoulder, But Within Clear Zone  
Delineation Is Required

**Least Preferred**  
Trailer Placed On Shoulder  
Delineation Is Required

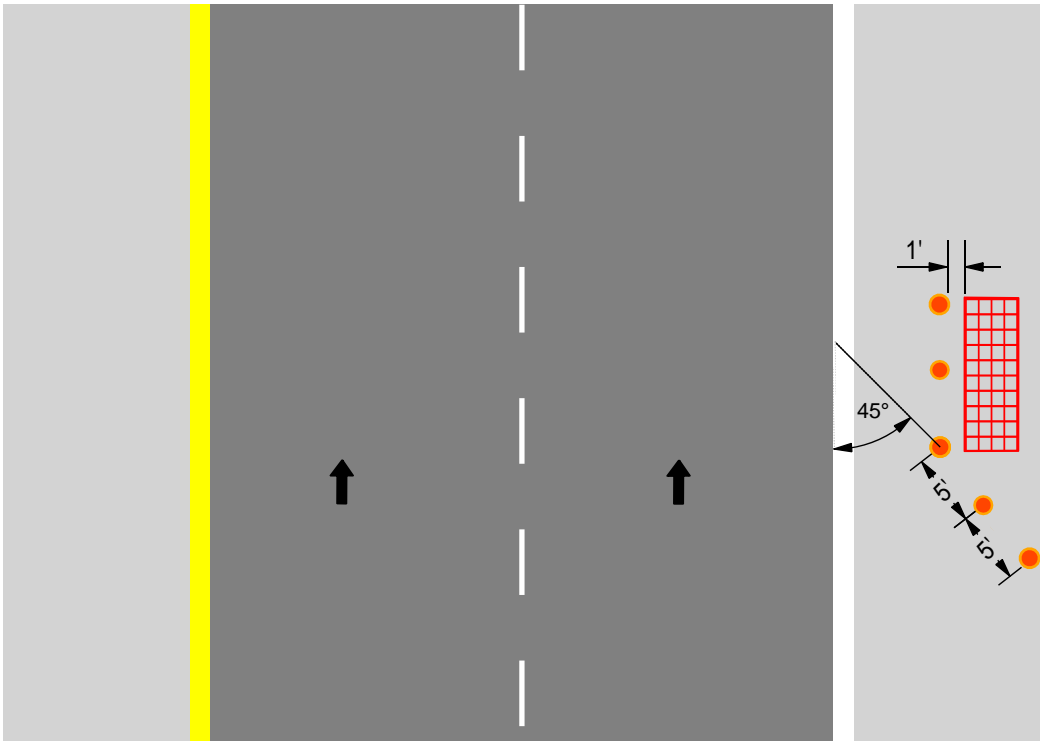
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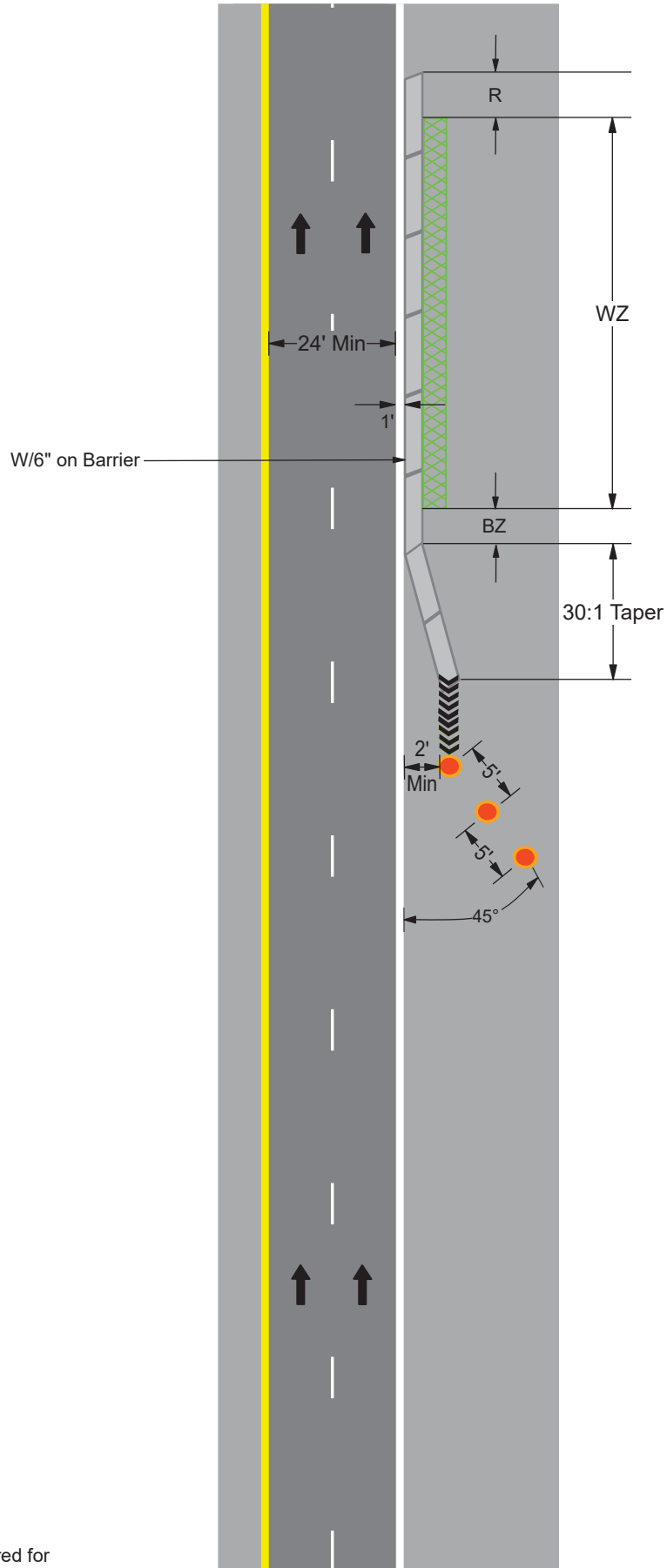
**Delineation Layout Detail for Trailer Placed Within the Clear Zone**

PTS 008  
Inlet Delineation

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**PTS 009**  
**Temporary Impact Attenuator Delineation**



NOTE:  
Channelizer placement is required for  
any attenuator placed on the paved shoulder.

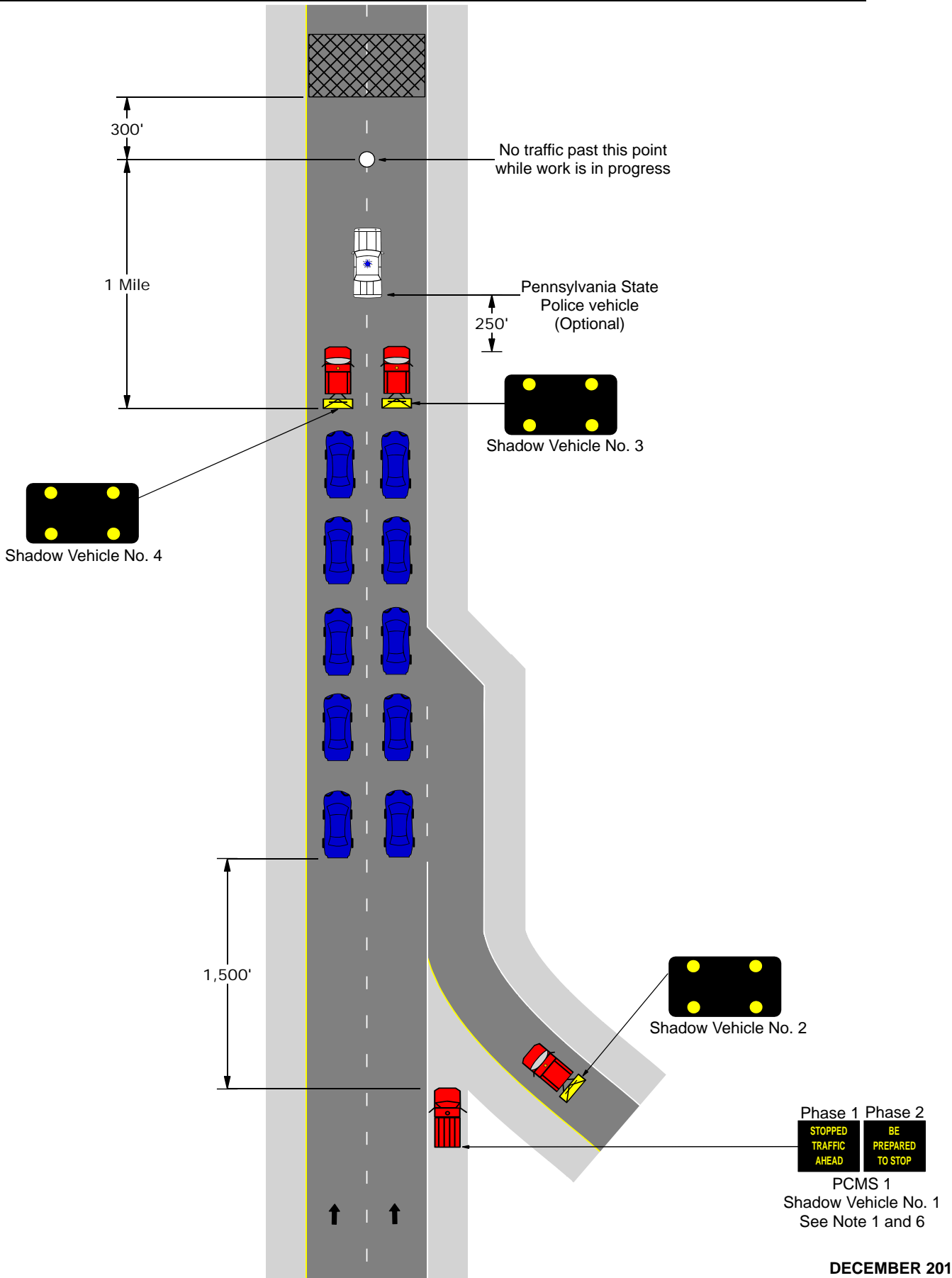
## **PTS 010- Notes**

### **Notes - Traffic Pace / Stoppage**

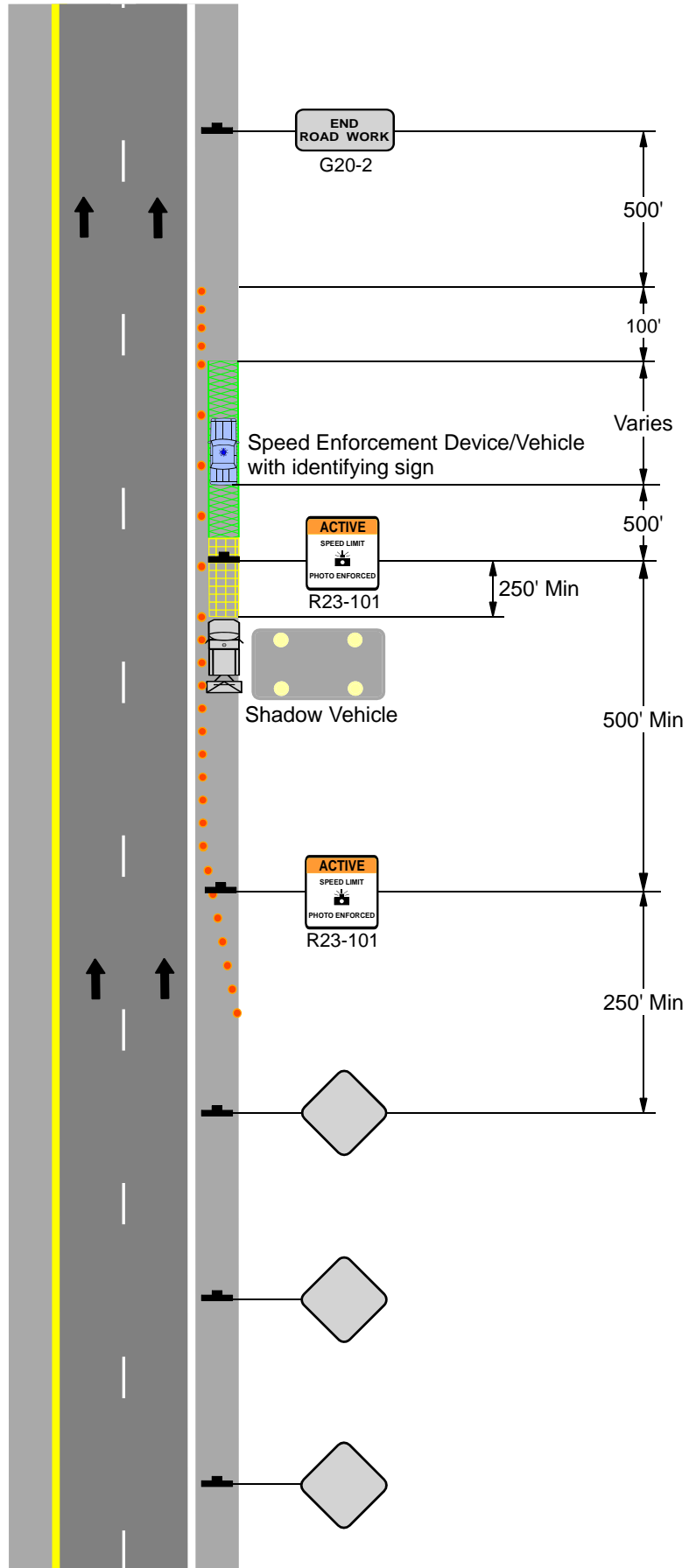
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1. If a ramp entrance is between Shadow Vehicle No. 1 and Shadow Vehicles No. 3 and No. 4, install Portable Changeable Message Sign (PCMS) prior to toll plaza with the message displaying the same as Shadow Vehicle No. 1. Provide necessary number of shadow vehicles on ramp (shown as Shadow Vehicle No. 2) to completely block ramp and prevent road users from driving between shadow vehicles.
2. A 7,000 lb GVW (Gross Vehicle Weight) or larger pickup truck loaded to weigh a minimum of 5,500 lbs may be used as Shadow Vehicle No. 1.
3. Position shadow vehicle No. 1 so that it is visible from behind for a minimum distance of 700 feet.
4. Have all shadow vehicles meet PennDOT and PTC requirements.
5. All arrow panels are to be truck mounted.
6. Shadow Vehicle No. 1 may not be located on the median shoulder.
7. All queued traffic shall be cleared and any succeeding traffic pace/stoppage shall not occur until traffic flow has returned to normal pre pace/stoppage conditions.

# PTS 010 Traffic Pace / Stoppage



**PTS 011**  
**AWZSE Shoulder Closure with Channelizing Devices**

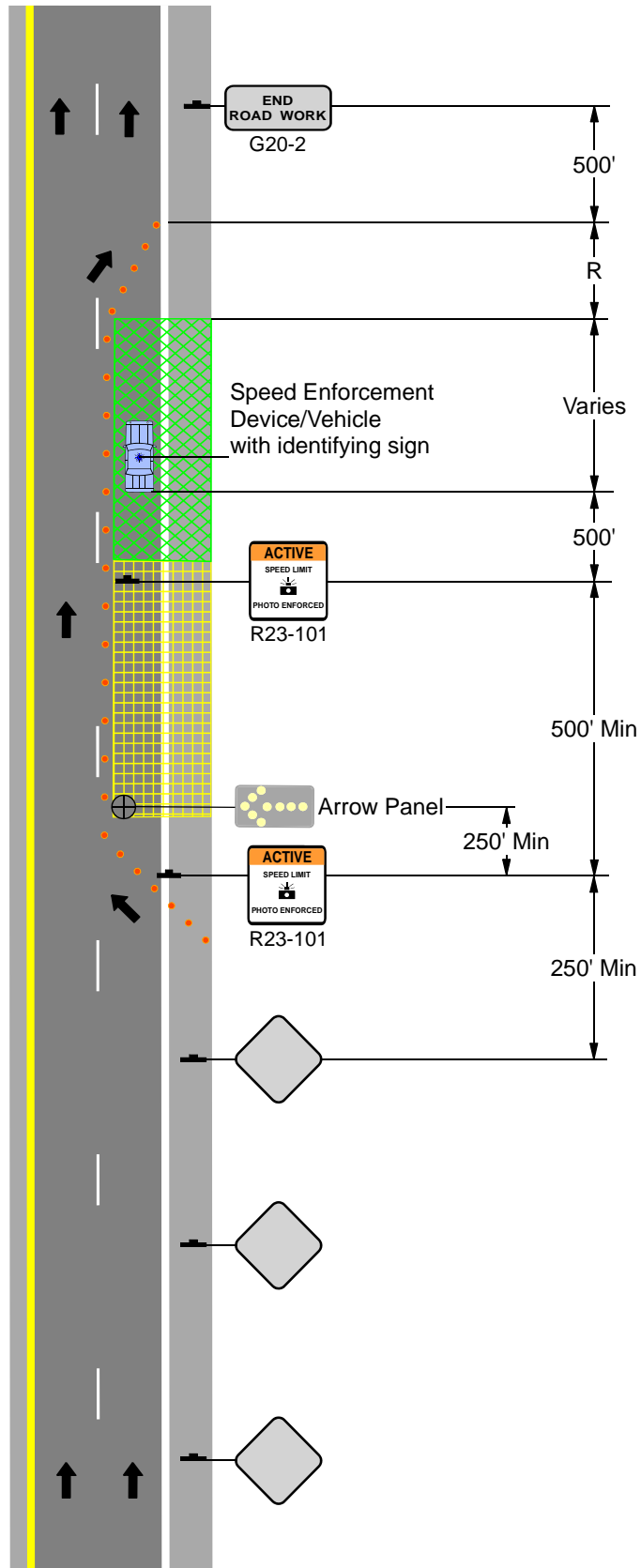


**NOTE:**  
 Provide minimum 250 feet spacing between R23-101 and adjacent signs. This standard is for the positioning and dimensioning of AWZSE unit and signing only. R23-101 signs and Speed Enforcement Device/Vehicle with identifying sign will be furnished, installed, maintained, and removed by AWZSE contracted System Administrator. R23-101 sign is not required to be located within the buffer zone, but minimum distance from Speed Enforcement Device/Vehicle must be maintained. All other traffic control will be per the appropriate standard.

**PTS 012**  
**AWZSE Lane Closure(s) with Channelizing Devices**

*Distance Chart*

Lane(s) Closed	R (FEET)
1	100
2	100

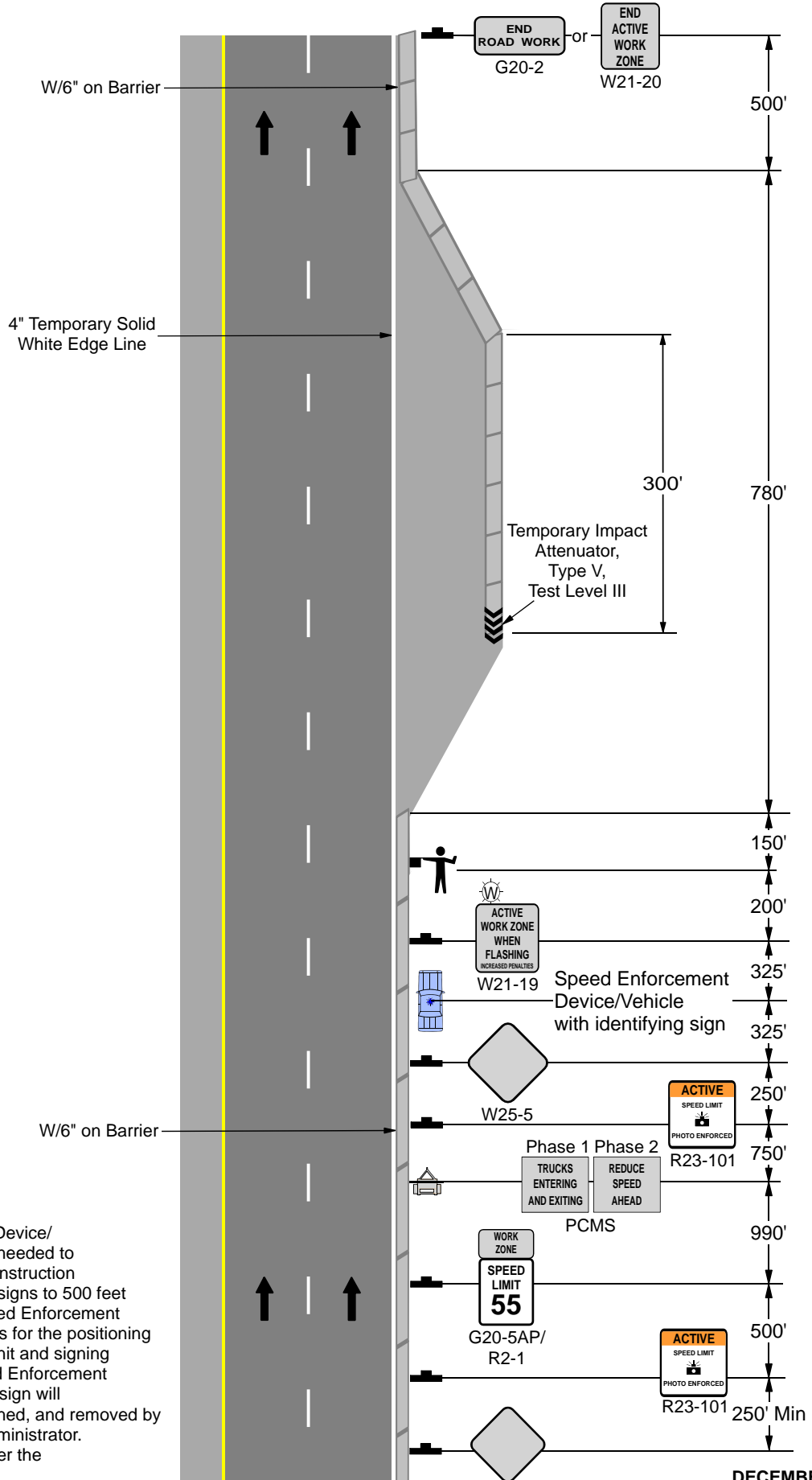


**NOTE:**  
 Provide minimum 250 feet spacing between R23-101 and adjacent signs. This standard is for the positioning and dimensioning of AWZSE unit and signing only. R23-101 signs and Speed Enforcement Device/Vehicle with identifying sign will be furnished, installed, maintained, and removed by AWZSE contracted System Administrator. R23-101 sign is not required to be located within the buffer zone, but minimum distance from Speed Enforcement Device/Vehicle must be maintained. All other traffic control will be per the appropriate standard.



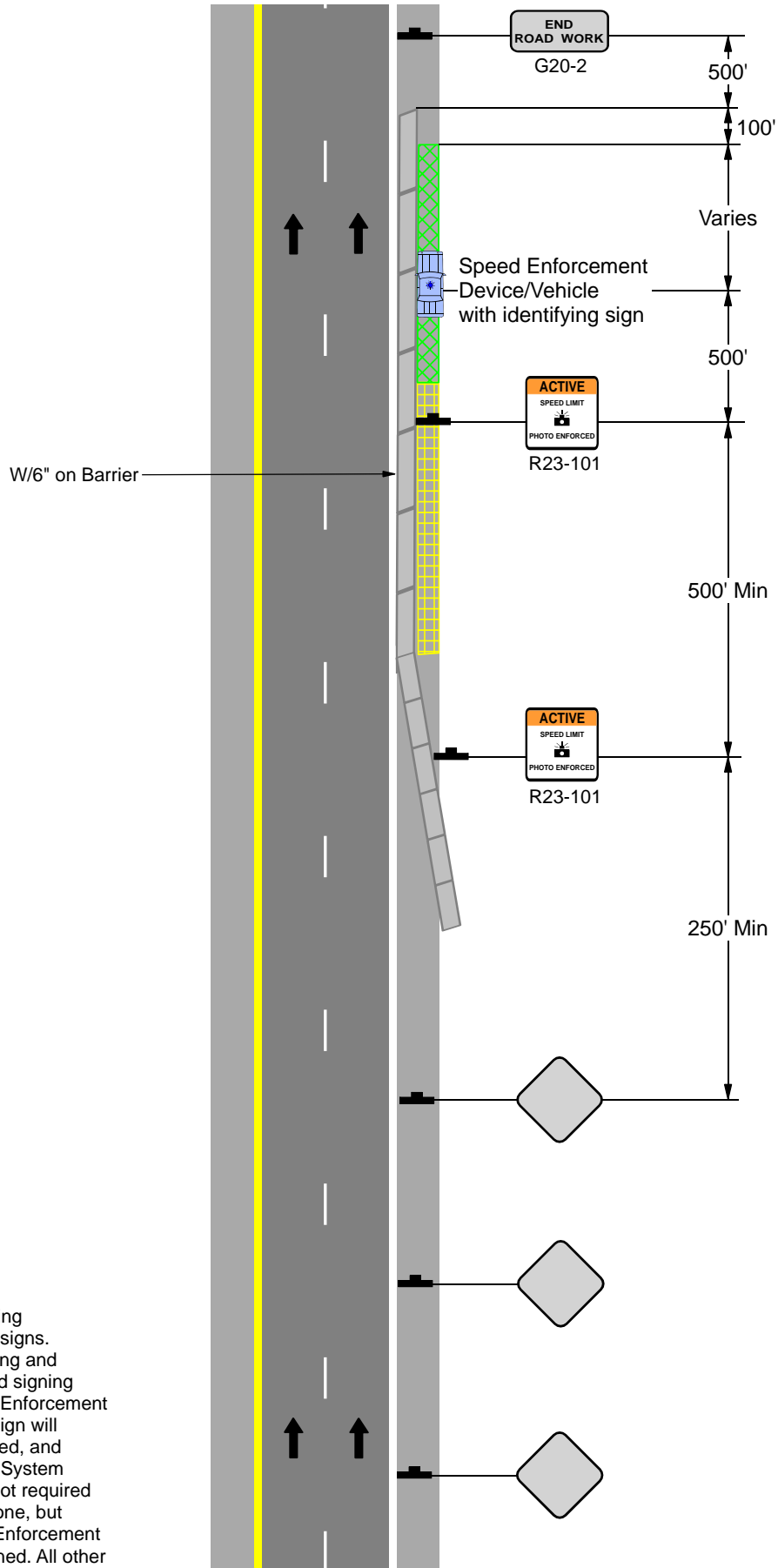
PTS 013

AWZSE Long-Term Shoulder Closure with Barrier near  
Emergency Pull-Off/Construction Access Point



NOTE:  
Relocate Speed Enforcement Device/  
Vehicle and R23-101 signs as needed to  
not interfere with flagging or construction  
operations. Relocate R23-101 signs to 500 feet  
and 1,000 feet prior to the Speed Enforcement  
Vehicle/Device. This standard is for the positioning  
and dimensioning of AWZSE unit and signing  
only. R23-101 signs and Speed Enforcement  
Device/Vehicle with identifying sign will  
be furnished, installed, maintained, and removed by  
AWZSE contracted System Administrator.  
All other traffic control will be per the  
appropriate standard.

PTS 014  
 AWZSE Long-Term Shoulder Closure with Barrier



NOTE:  
 Provide minimum 250 feet spacing between R23-101 and adjacent signs. This standard is for the positioning and dimensioning of AWZSE unit and signing only. R23-101 signs and Speed Enforcement Device/Vehicle with identifying sign will be furnished, installed, maintained, and removed by AWZSE contracted System Administrator. R23-101 sign is not required to be located within the buffer zone, but minimum distance from Speed Enforcement Device/Vehicle must be maintained. All other traffic control will be per the appropriate standard.

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# **Standards for Long-Term**

## **(PTS 905 Series)**

## **PTS 905-1 - Notes**

### **General Notes**

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1. Remove all traffic control signs and devices immediately upon the completion of the work unless otherwise specified in the special provisions.
2. Place all traffic control devices and have them inspected by the Representative before work begins.
3. Cover or remove from the site all signs not in use. Remove from the Turnpike right-of-way construction signs not needed or used for a period of two (2) or more weeks.
4. Maintain a minimum spacing of 200 feet between all regulatory, warning and destination signs.
5. Provide at minimum a 40 feet width beyond the edge of the travel lane free of obstacles and drop-offs greater than 2 inches in depth in work zone(s) during non-working hours or separate work zone(s) from motorists with temporary concrete barrier. Separation of work zone(s) is incidental to the MPT.
6. Details for the signs and devices can be found in these drawings, PennDOT Publication 236, PennDOT Publication 212 and are to be manufactured by a Department of Transportation approved manufacturer as listed in PennDOT Publication 35.
7. Use PennDOT approved Type XI reflectorized material for signs.
8. These plans are not intended to relieve the contractor of the responsibility for the protection of the public and the construction personnel. The standards prescribed are minimum and additional protection may be needed if problems are encountered during the term of the contract. The contractor will be expected to constantly review this plan for adequacy and to recommend changes for the Representative's approval when inadequacies are discovered.
9. Signs and devices may be adjusted to fit field conditions.
10. Concrete barrier details are to be according to PennDOT Standards for Roadway Construction, RC-57M, RC-59M, and PTC Standards for Roadway Construction.
11. Establish work zone speed limit of 55 MPH in all construction zones except when using tunnel cross-over traffic pattern establish work zone speed limit of 40 MPH.  
  
Establish work zone speed limit by installing 55 MPH work zone speed limit signs on the right shoulder in advance of construction area access openings and truck crossings as indicated on PTS 905-12C, 905-12D and 905-13.  
  
Establish work zone speed limit of 55 MPH when a pavement differential exists between any of the lanes.  
  
Normal posted speed limit signs within advanced signing area prior to any W3-5 sign are to remain uncovered.  
  
Cover or remove work zone speed limit signs when all normal lanes and all normal median and shoulder are available for the affected direction(s). Cover or remove work zone speed limit signs when temporary concrete barrier closes the median or shoulder.
12. Only traffic control devices are permitted within the buffer zone. Do not locate vehicles, equipment, material, or workers in this area.
13. Post the G20-2 (END ROAD WORK) sign and the normal speed limit for the area (55 MPH or 70 MPH) at the end of the work zone. If the physical work zone is followed by another physical work zone within 2 miles, then the G20-2 sign is not to be used and the R2-1 sign at the end of the first work zone is to be 55 MPH.
14. Type B light is to be mounted on the side closest to traffic as shown on PTS-980 (Sheet 36 of 40).
15. Existing R2-2-2, "WORK ZONE SPEED LIMIT 55 MPH", signs may only be used for the remainder of their serviceable life.
16. Type B yellow flashing warning lights may be used in conjunction with warning signs, unless otherwise indicated on the drawing.

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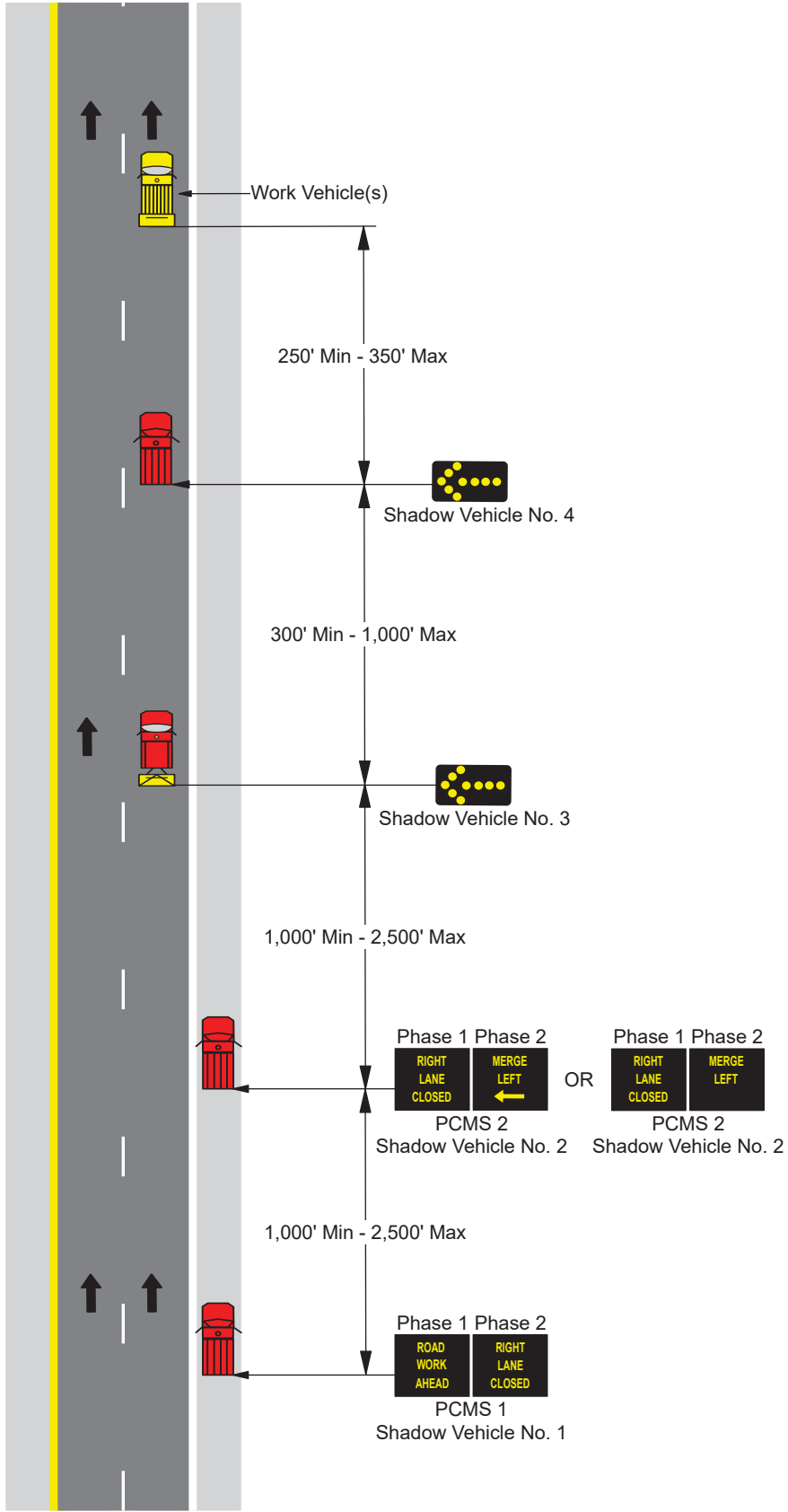
## **PTS 905-2 - Notes**

### **Mobile Operation for 2 Lanes**

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1. This figure applies where the operation moves intermittently or continuously at an average speed of more than 1 MPH (88 FT./MIN.). The operator is to be the only occupant of Shadow Vehicle No. 3. When the operation moves intermittently, the maximum time of stationary work is 15 minutes. If these conditions cannot be met, use a Single Lane Traffic Pattern as shown on PTS 905-4.
2. A 7,000 lb GVW (Gross Vehicle Weight) or larger pickup truck loaded to weigh a minimum of 5,500 lbs may be used as Shadow Vehicles No. 1 and 2.
3. Position Shadow Vehicle No. 1 so that it is visible from behind for a minimum distance of 700 feet.
4. Have all shadow vehicles meet PennDOT and PTC requirements.
5. All arrow panels and PCMS are to be truck-mounted or trailer-mounted and attached to the truck and shall move with the associated shadow vehicle.
6. The spacing between the work vehicles and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between, based on field conditions.
7. Shadow Vehicles No. 1 and 2 may be located on the median shoulder where the median shoulder width is a minimum of 12 feet.

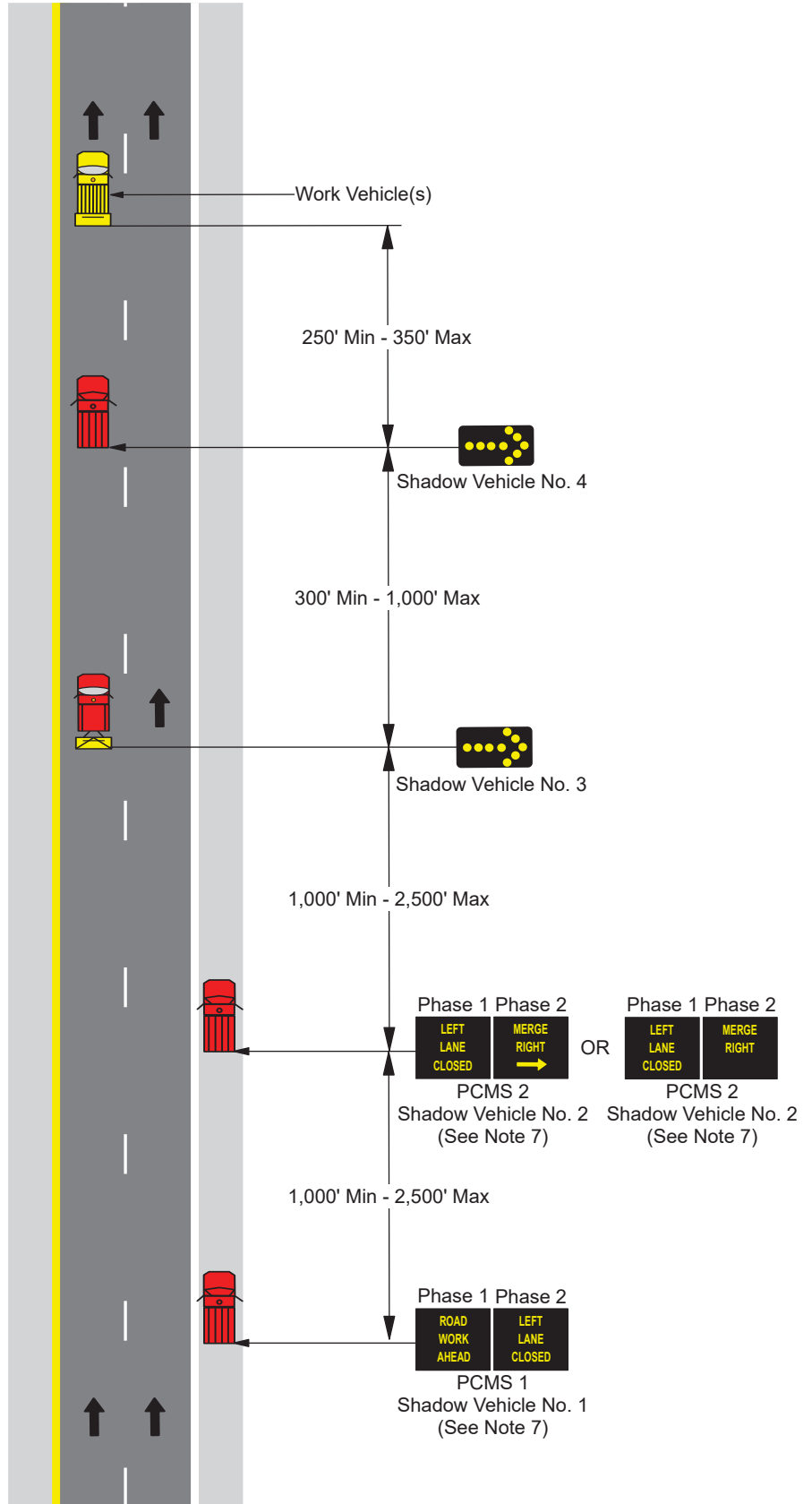
**PTS 905-2A**  
**Mobile Operation for 2 Lanes - Right Lane and Shoulder Work Zone**



NOTES:  
 See PTS 905-2 - Notes for applicable notes to this drawing



**PTS 905-2B**  
**Mobile Operation for 2 Lanes - Left Lane and Median Work Zone**



NOTES:  
 See PTS 905-2 - Notes for applicable notes to this drawing

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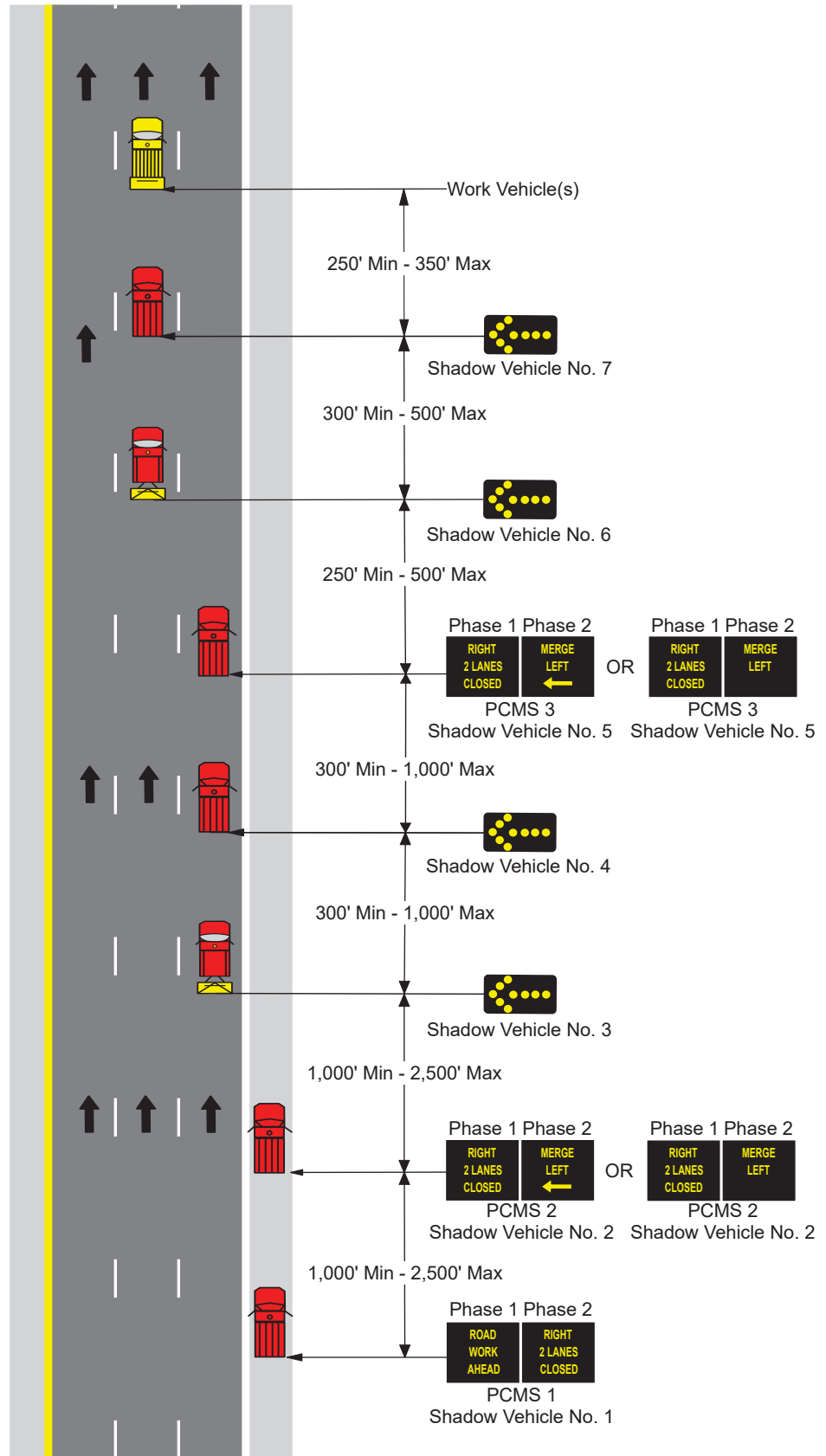
## **PTS 905-3 - Notes**

### **Mobile Operation for 3 Lanes**

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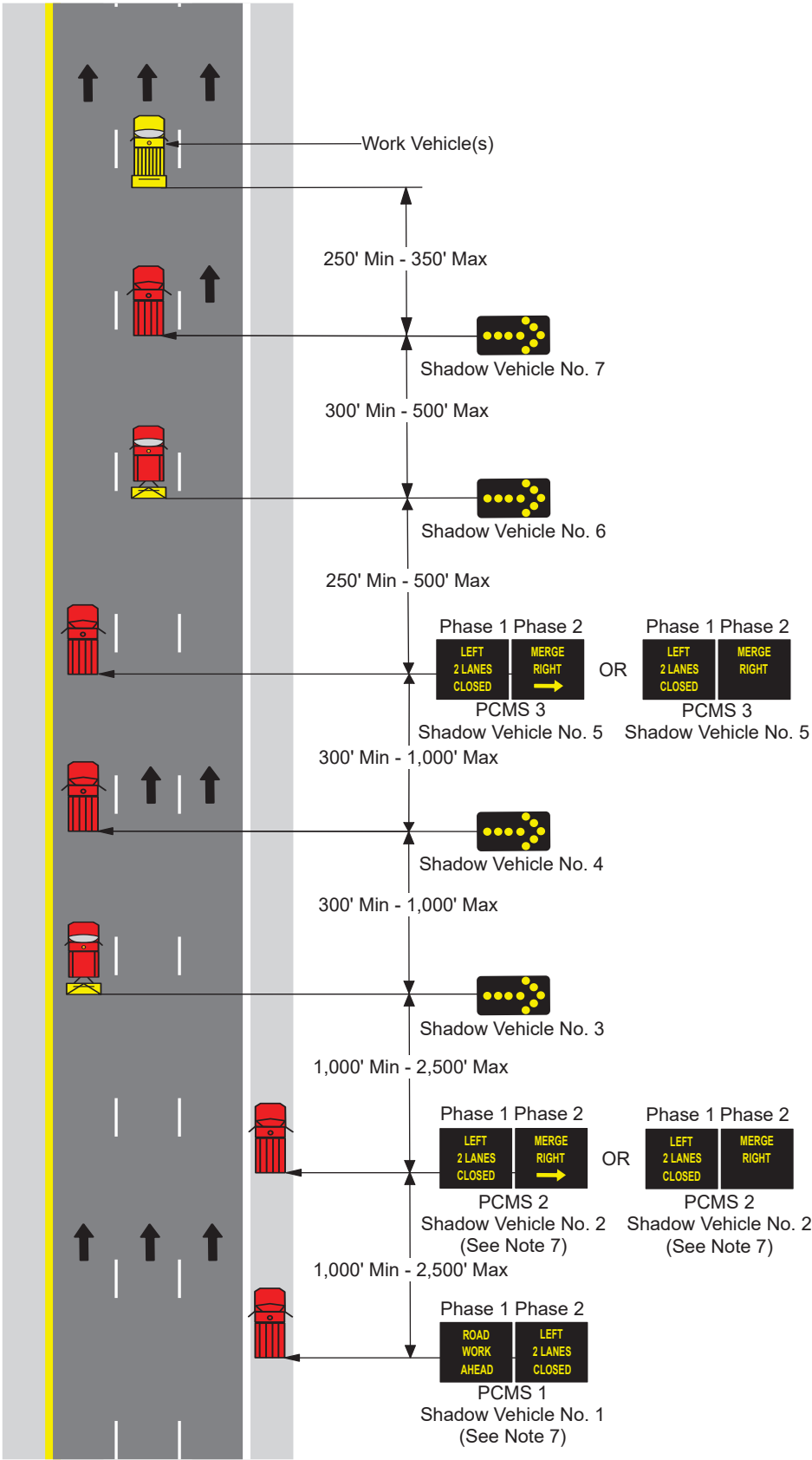
1. This figure applies where the operation moves intermittently or continuously at an average speed of more than 1 MPH (88 FT./MIN.). The operator is to be the only occupant of Shadow Vehicles No. 3 and 6. When the operation moves intermittently, the maximum time of stationary work is 15 minutes. If these conditions cannot be met, use a Single Lane Traffic Pattern as shown on PTS 905-5.
2. A 7,000 lb GVW (Gross Vehicle Weight) or larger pickup truck loaded to weigh a minimum of 5,500 lbs may be used as Shadow Vehicles No. 1 and 2.
3. Position Shadow Vehicle No. 1 so that it is visible from behind for a minimum distance of 700 feet.
4. Have all shadow vehicles meet PennDOT and PTC requirements.
5. All arrow panels and PCMS are to be truck-mounted or trailer-mounted and attached to the truck and shall move with the associated shadow vehicle.
6. The spacing between the work vehicles and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between, based on field conditions.
7. Shadow Vehicles No. 1 and 2 may be located on the median shoulder where the median shoulder width is a minimum of 12 feet.

# PTS 905-3A Mobile Operation for 3 Lanes - Right and Center Lane Work Zone



NOTES:  
See PTS 905-3 - Notes for applicable notes to this drawing

**PTS 905-3B**  
**Mobile Operation for 3 Lanes - Left and Center Lane Work Zone**



NOTES:  
 See PTS 905-3 - Notes for applicable notes to this drawing

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## PTS 905-4 - Notes Single Lane Traffic Pattern

1. For interchange and service plaza ramp signing within the work zone, see PTS 905-6.
2. For left lane work zone, use the same sign spacing, location, and pattern but with the signs and PCMS indicating a left lane closure.
3. Use channelizing devices with PennDOT approved sequential warning lights in the transition area for patterns used during hours of darkness.
4. Establish single lane traffic pattern only during active work periods. Shorten length of single lane pattern to only the length needed for construction operation. Work zone should not exceed four (4) miles in length.
5. Single lane should be established a minimum of 1,000 feet in advance of deceleration ramp or beyond acceleration ramp at interchanges and service plazas.
6. Install W3-5 sign only in the areas where the normal speed limit is 70 MPH.
7. Cover the Active Work Zone When Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.
8. Speed Display Sign shall only be used if the length of the physical work zone is greater than or equal to 500 feet.
9. Compute the minimum desirable taper length for reduction in lanes using the following formula:  

$$L = S \times W$$
 Where L = Minimum desirable taper length in feet  
 W = Width of offset in feet  
 S = Normal speed limit in miles per hour

### Signs



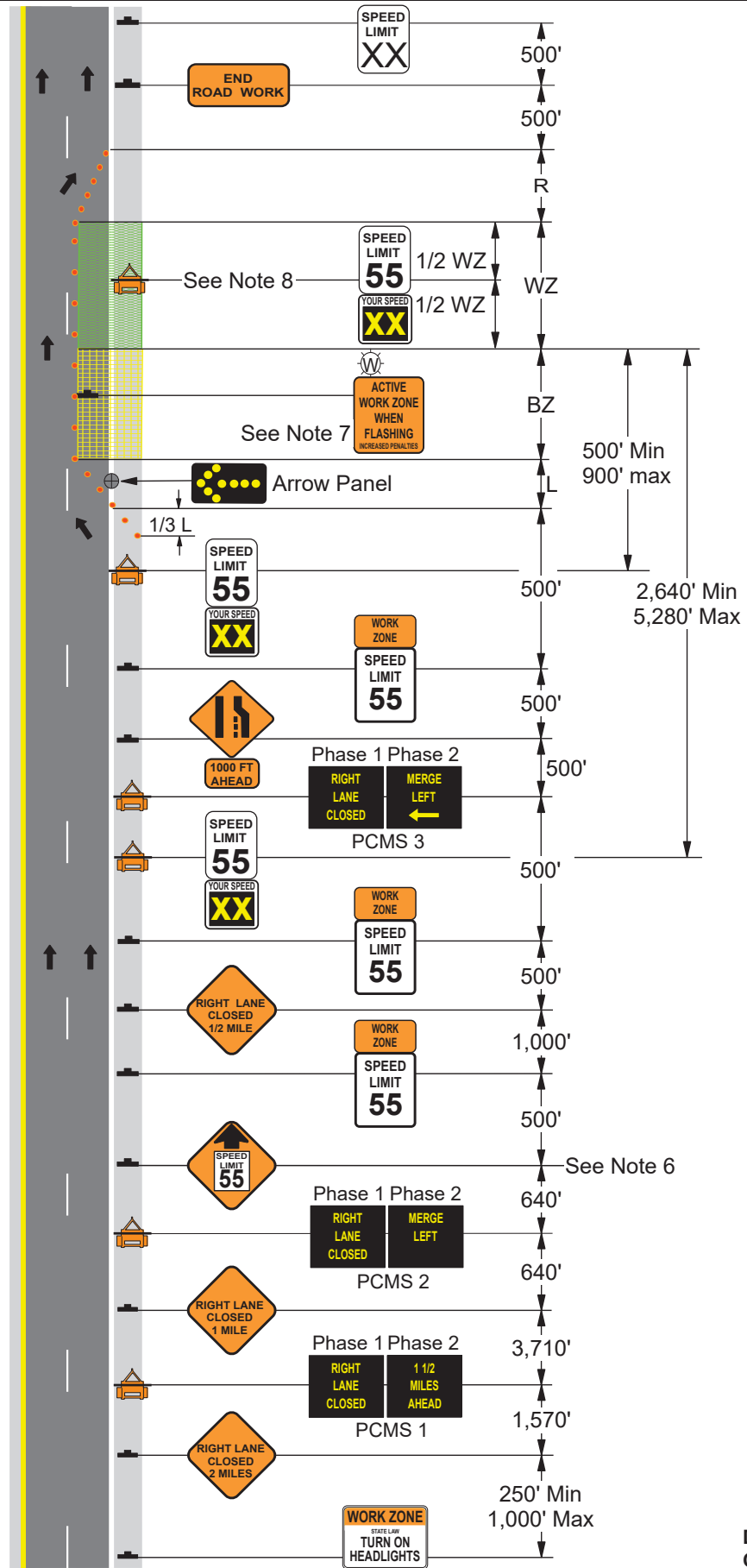
NOTE: See Appendix A for sign descriptions and dimensions.

### Distance and Spacing Quick Reference Chart

SPEED MPH	L Feet	1/3 L Feet	BZ Feet	WZ Mile(s)	R Feet	Maximum Channelizing Device Spacing (Feet)				
						L	1/3 L	BZ	WZ	R
<b>55</b>	660	220	500 (Min)	4 (Max)	100	50	50	100	100	20
<b>70</b>	840	280	750 (Min)	4 (Max)	100	50	50	100	100	20

L = Transition  
 1/3L = Shoulder Transition  
 BZ = Buffer Zone  
 WZ = Work Zone  
 R = Runout

# PTS 905-4 Single Lane Traffic Pattern



NOTES:  
See PTS 905-4 - Notes for applicable notes to this drawing



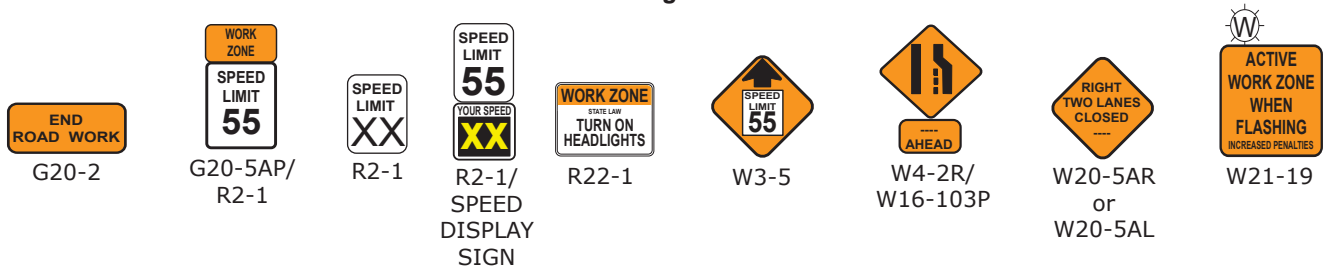
## PTS 905-5 - Notes

### Single Lane Traffic Pattern for 3 Lane Section

1. For interchange and service plaza signing within the work zone, see PTS 905-6.
2. For left and center lane work zone, use the same spacing, location, and pattern but with the signs and PCMS indicating a left and center lane closure.
3. Use channelizing devices with PennDOT approved sequential warning lights in the transition areas for patterns used during hours of darkness.
4. Establish single lane pattern only during active work periods. Shorten length of single lane pattern to only the length needed for the construction operation. Work zone should not exceed four (4) miles in length.
5. Single lane should be established a minimum of 1,000 feet in advance of deceleration ramp or beyond acceleration ramp at interchanges and service plazas.
6. Install W3-5 sign only in areas where the normal speed limit is 70 MPH.
7. Cover the Active Work Zone When Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.
8. Speed Display Sign shall only be used if the length of the physical work zone is greater than or equal to 500 feet.
9. Compute the minimum desirable taper length for reduction in lanes using the following formula:  

$$L = S \times W$$
 Where L = Minimum desirable taper length in feet  
 W = Width of offset in feet  
 S = Normal speed limit in miles per hour

#### Signs



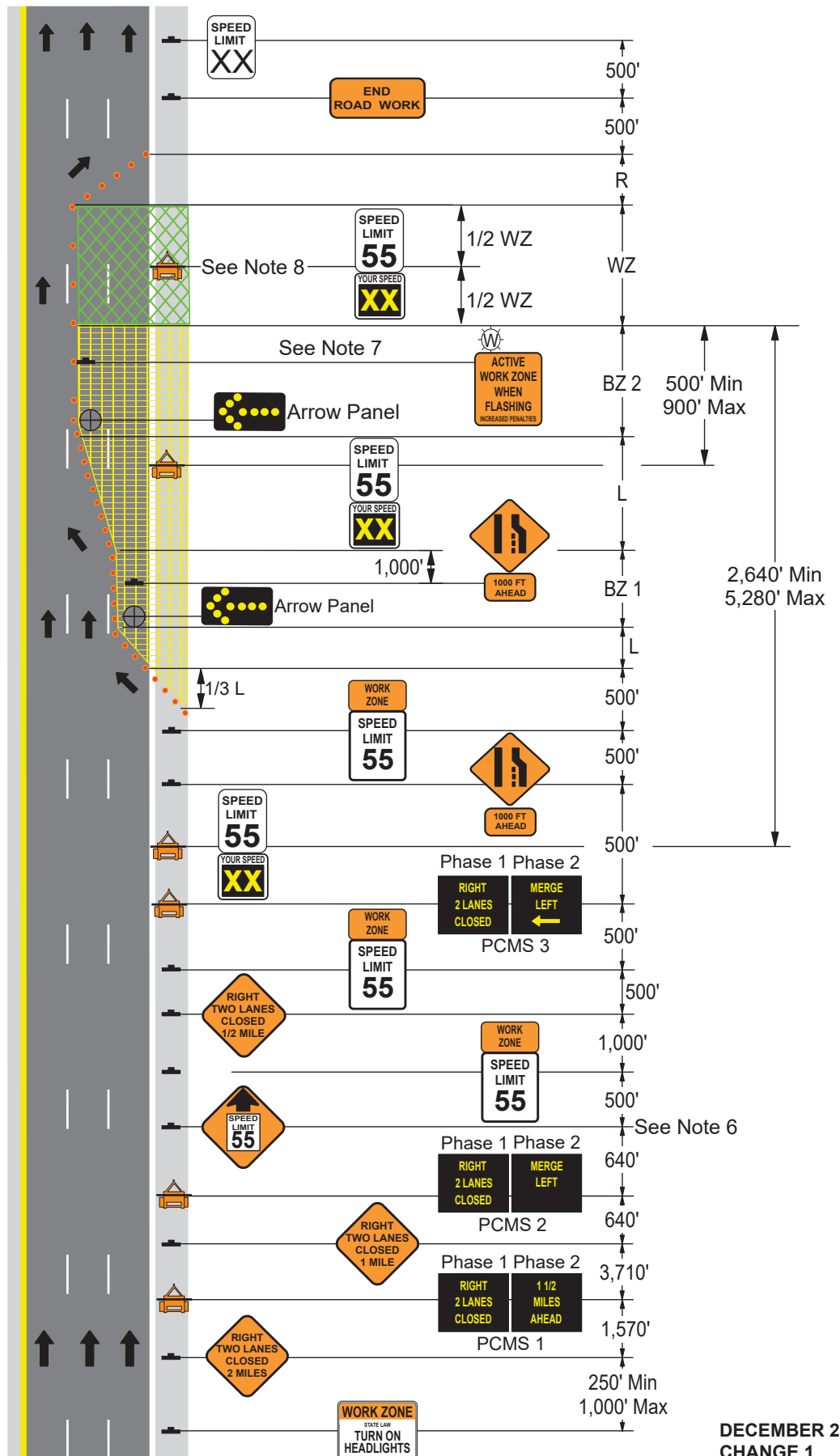
NOTE: See Appendix A for sign descriptions and dimensions.

#### Distance and Spacing Quick Reference Chart

SPEED	L	1/3 L	BZ 1	BZ 2	WZ	R	Maximum Channelizing Device Spacing (Feet)					
							L	1/3 L	BZ 1	BZ 2	WZ	R
<b>55</b>	660	220	1,320 (Min)	500 (Min)	4 (Max)	100	50	50	100	100	100	20
<b>70</b>	840	280	1,680 (Min)	750 (Min)	4 (Max)	100	50	50	100	100	100	20

L = Transition  
 1/3 L = Shoulder Transition  
 BZ 1 = Buffer Zone 1  
 BZ 2 = Buffer Zone 2  
 WZ = Work Zone  
 R = Runout

# PTS 905-5 Single Lane Traffic Pattern for 3 Lane Section



NOTES:  
See PTS 905-5 - Notes for applicable notes to this drawing

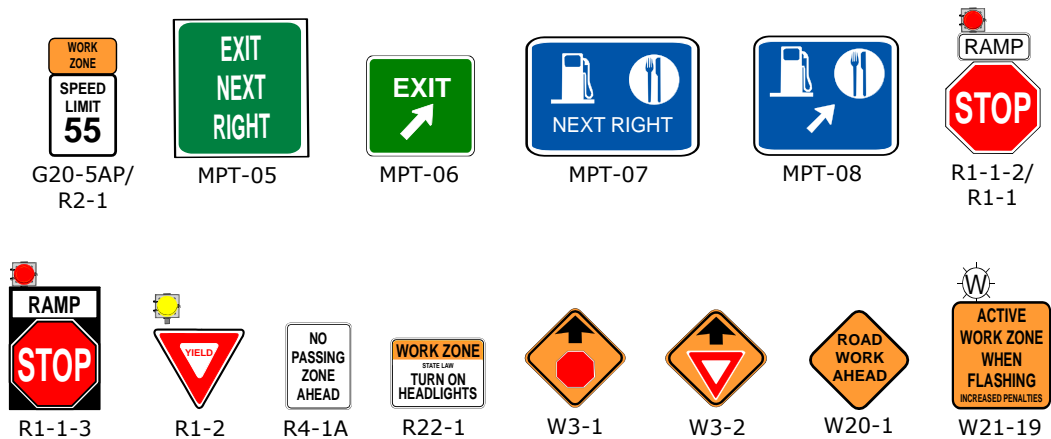
## PTS 905-6 - Notes

### Lane Closure Traffic Pattern for Interchange and Service Plaza Areas

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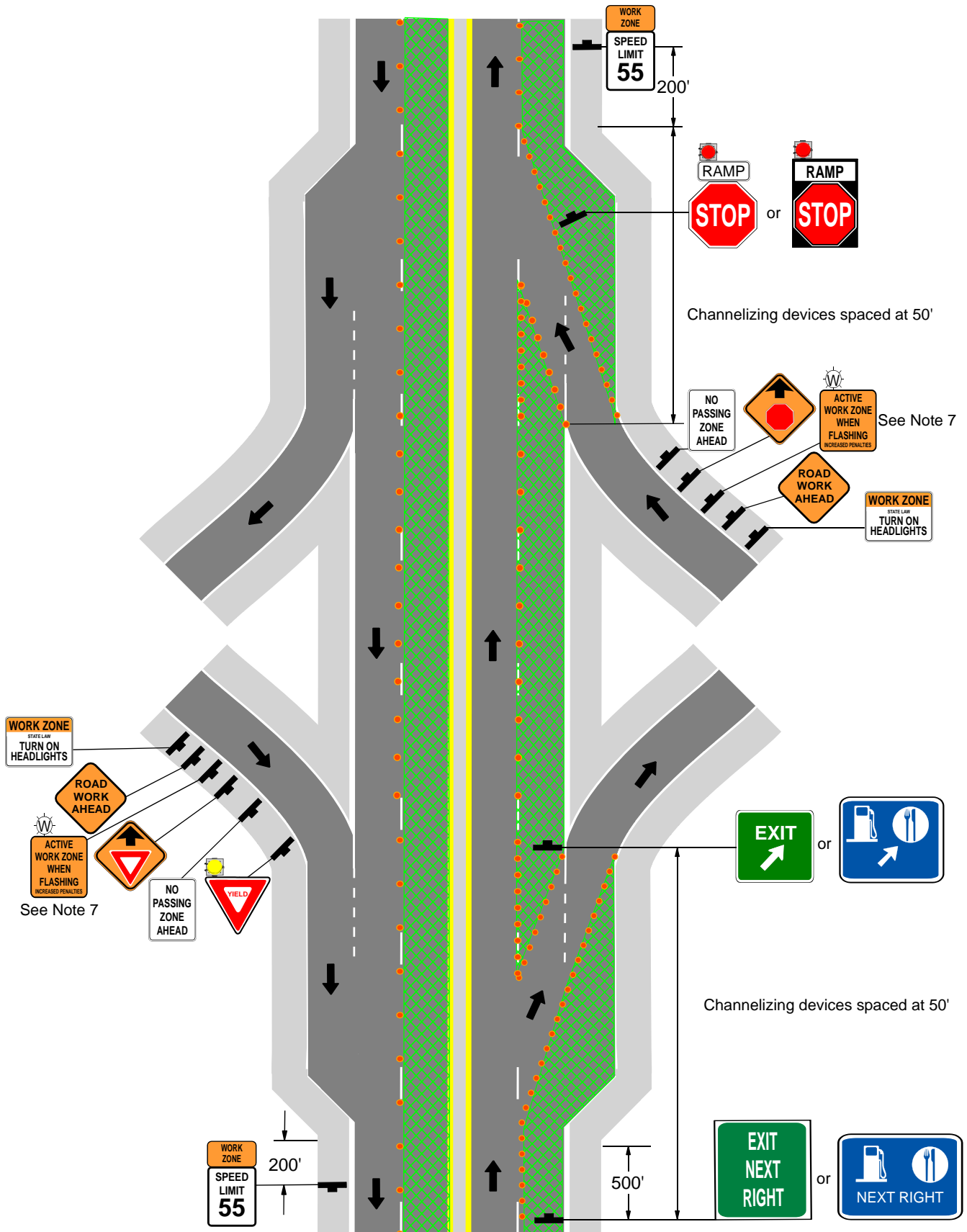
1. Single lane should be established a minimum of 1,000 feet in advance of deceleration ramp or beyond acceleration ramp.
2. MPT-05 and MPT-06 signs:
  - A. Use for interchange ramp only.
  - B. Cover or remove from the site when not in use.
3. MPT-07 and MPT-08 signs:
  - A. Use for service plaza ramp only.
  - B. Cover or remove from the site when not in use.
4. Existing MPT-07 and MPT-08 signs may only be used for remainder of their serviceable life.
5. Channelizing devices spaced at 100 feet except where noted.
6. Space signs evenly at 200 feet minimum spacing, or as conditions warrant.
7. Cover the Active Work Zone When Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.

#### Signs



NOTE: See Appendix A for sign descriptions and dimensions.

Lane Closure Traffic Pattern for Interchange and Service Plaza Areas



NOTES:  
See PTS 905-6 - Notes for applicable notes to this drawing

## PTS 905-7 - Notes

### Mobile Shoulder Operation

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1. All arrow panels and PCMS are to be truck mounted.
2. Have all shadow vehicles meet PennDOT and PTC requirements.
3. This figure applies where the operation moves intermittently or continuously at an average speed of more than 1 MPH (88 FT./MIN.). The operator is to be the only occupant of Shadow Vehicle No. 1. When the operation moves intermittently, the maximum time of stationary work is 15 minutes. If these conditions cannot be met, use either a Stationary Shoulder Closure with Channelizing Devices as shown on PTS 905-8 or a Single Lane Traffic Pattern as shown on PTS 905-4.

#### *Signs*

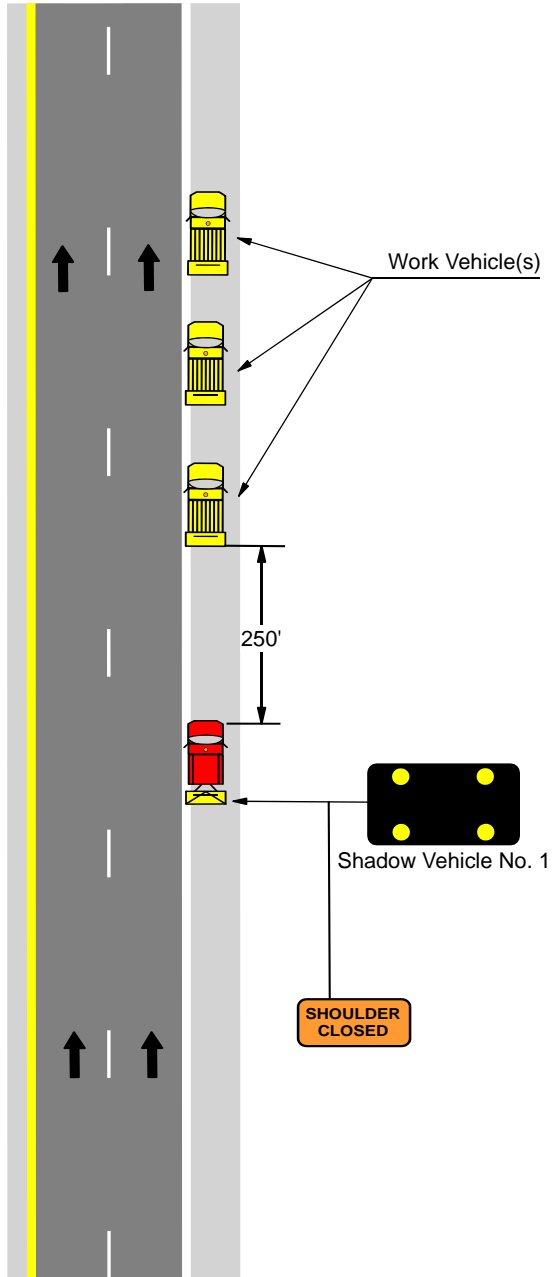


MPT-34

NOTE: See Appendix A for sign descriptions and dimensions.

PTS 905-7  
Mobile Shoulder Operation

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NOTES:  
See PTS 905-7 - Notes for applicable  
notes to this drawing

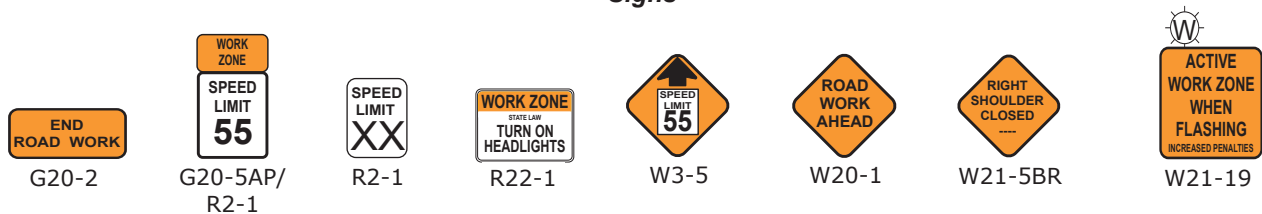
## PTS 905-8 - Notes

### Stationary Shoulder Closure with Channelizing Devices

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1. Arrow panel in caution mode to be used when vehicles, equipment with Channelizing Devices, materials, or workers are on the paved shoulder. Channelizing devices to remain in place until work is completed. Maintain normal traffic. Stationary shoulder closure with channelizing devices only permitted during allowable working hours.
2. For median operations, use Single Lane Traffic Pattern per PTS 905-4, left lane closed. Single lane traffic pattern to remain in place until work is completed.
3. Install W3-5 sign only in areas where the normal speed limit is 70 MPH.
4. All arrow panels are to be truck mounted.
5. Have all shadow vehicles meet PennDOT and Pennsylvania Turnpike Commission requirements.
6. Cover the Active Work Zone When Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.

#### Signs



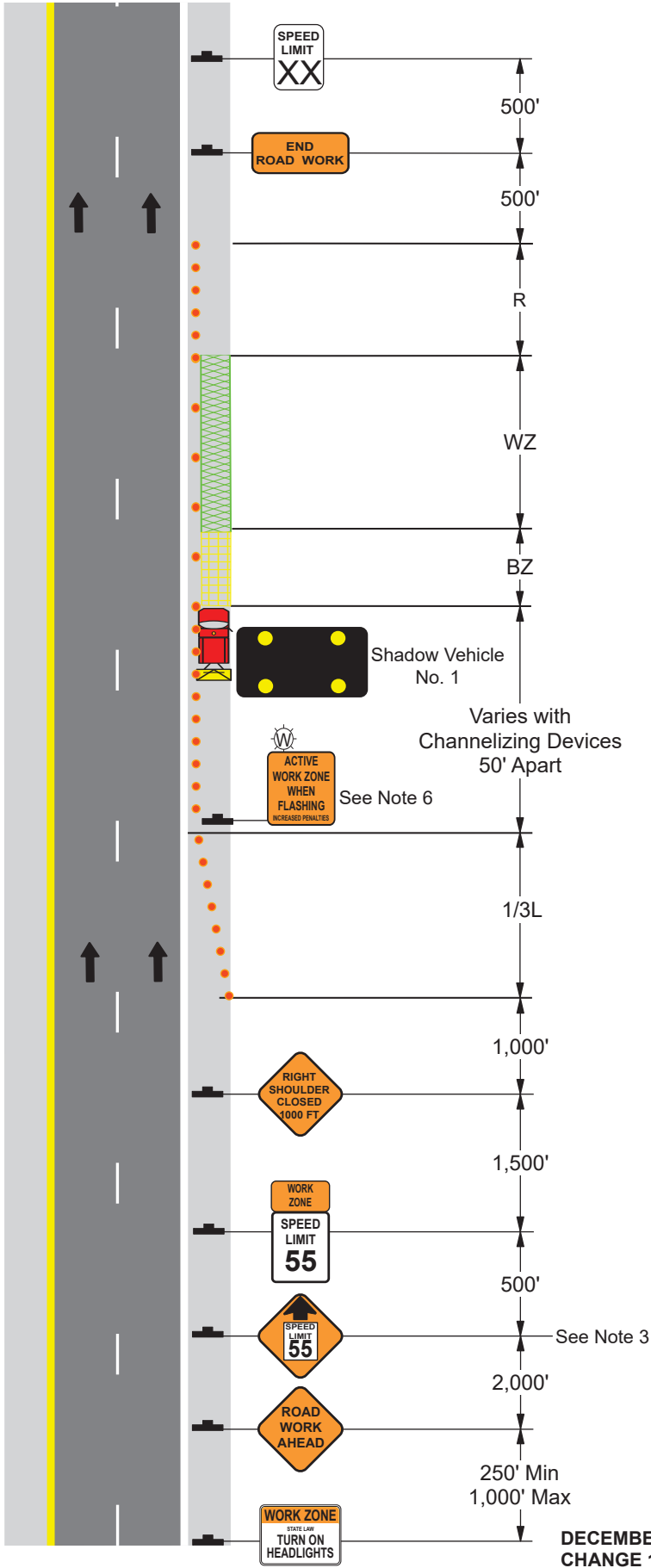
NOTE: See Appendix A for sign descriptions and dimensions.

#### *Distance and Spacing Quick Reference Chart*

SPEED	1/3 L	BZ	WZ	R	Maximum Channelizing Device Spacing (Feet)			
					1/3 L	BZ	WZ	R
<b>MPH</b>	<b>Feet</b>	<b>Feet</b>	<b>Mile(s)</b>	<b>Feet</b>				
<b>55</b>	220	250	4 (Max)	100	50	100	100	20
<b>70</b>	280	250	4 (Max)	100	50	100	100	20

1/3L = Shoulder Transition  
 BZ = Buffer Zone  
 WZ = Work Zone  
 R = Runout

# PTS 905-8 Stationary Shoulder Closure with Channelizing Devices



NOTES:  
See PTS 905-8 - Notes for applicable notes to this drawing



## PTS 905-9 - Notes

### Stationary Shoulder Closure with Temporary Concrete Barrier

1. Provide proper end treatment for barrier, by tapering barrier and burying, tapering barrier and connect to guide rail per PTS-135 or barrier, or tapering barrier and provide temporary impact attenuator.
2. For multiple stationary shoulder closures with temporary concrete barrier located within 1 mile of each other, install advanced signing prior to the first stationary shoulder closure only, with distance displayed on the MPT-31 sign as the length from the beginning of the first stationary shoulder closure to the end of the last stationary shoulder closure. The G20-2 sign is to be installed after the last stationary shoulder closure.
3. MPT-31 sign shall only be used if the length of the work zone is greater than 1 mile.
4. If the length of the work zone is greater than 1 mile and no construction accesses are active, provide G20-5AP / R2-1 signs to the right of traffic 1,500 feet before the beginning of the temporary concrete barrier and at 1 mile intervals throughout the shoulder closure.
5. Completely cover signs used with this pattern when the right lane is closed to traffic per PTS 905-4 or PTS 905-5.
6. Provide emergency pull-offs at a spacing of approximately 1 mile each direction through work zone when full 12 feet of right shoulder is not available.
7. When vehicles are accessing the work area from the travel lanes for a minimum of 15 minutes, provide the advanced signing for the active construction access point per PTS 905-12C or PTS 905-12D, as applicable. When construction access is not used for 60 minutes, cover signs, turn off Type B light and turn off PCMS.
8. Delineate attenuators placed on the paved shoulder per PTS 009.



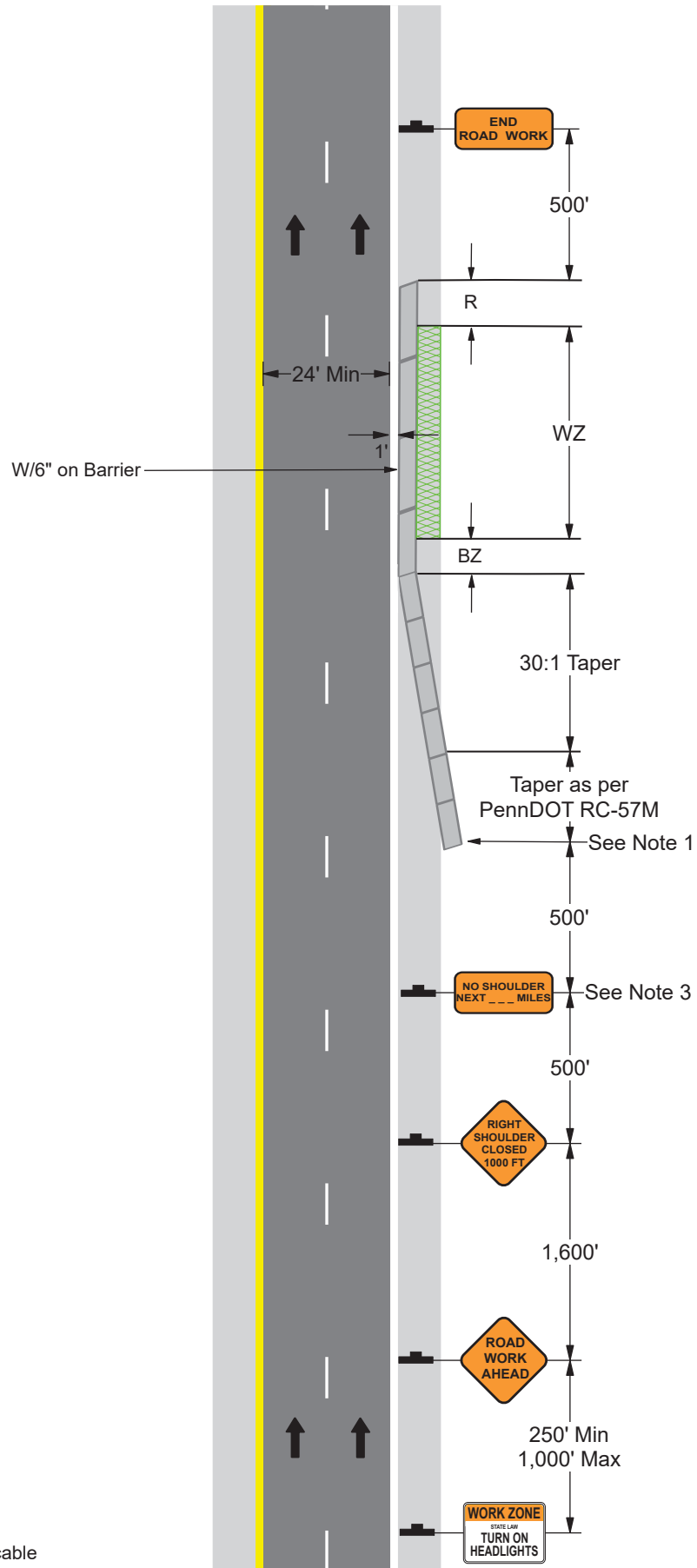
NOTE: See Appendix A for sign descriptions and dimensions.

#### *Distance and Spacing Quick Reference Chart*

SPEED	Shoulder	BZ	WZ	R	Maximum Channelizing Device Spacing (Feet)			
					Shoulder	BZ	WZ	R
<b>55</b>	30:1	100	4 (Max)	100	N/A	N/A	N/A	N/A
<b>70</b>	30:1	100	4 (Max)	100	N/A	N/A	N/A	N/A

Shoulder = Shoulder Transition  
 BZ = Buffer Zone  
 WZ = Work Zone  
 R = Runout

**PTS 905-9**  
**Stationary Shoulder Closure with Temporary Concrete Barrier**



NOTES:  
 See PTS 905-9 - Notes for applicable notes to this drawing

DECEMBER 2019  
 CHANGE 1

## PTS 905-10 - Notes Lanes Narrow

1. Use the two lane detail when  $W \leq 2.5$  FT. and  $A < 24$  FT. Use the three lane detail when  $W \leq 3.75$  FT. and  $A < 36$  FT.
2. When lanes narrow within a work zone use only W5-4-1(1,000') and W5-4-1 (500').
3. Provide emergency pull-offs at a spacing of approximately 1 mile each direction through work zone when full 12 feet of right shoulder is not available.
4. Taper 30:1 to outside edge of paved shoulder. From outside edge of paved shoulder, taper as per RC-57M. When lanes narrow to the right and a full taper is not feasible in median, then see Note 5.
5. Provide proper end treatment for barrier, by tapering barrier and burying, tapering barrier and connect to guide rail per PTS-135 or barrier, or tapering barrier and provide temporary impact attenuator.
6. From this point provide G20-5AP / R2-1 signs to the right of traffic at 2 mile maximum intervals through the narrow lane(s) pattern.
7. Erect the Active Work Zone When Flashing (W21-19) sign and activate white Type B light when construction access areas are active. Sign shall be covered and light shall be deactivated when construction access is not in use for 60 minutes.
8. MPT-31 sign shall only be used if the length of the work zone is greater than 1 mile.
9. Compute the minimum desirable transition / shift length for reduction in lanes using the following formula:

Lanes Narrow Variables:

$L = SWZ \times W$

L = Minimum desirable transition/shift length in feet

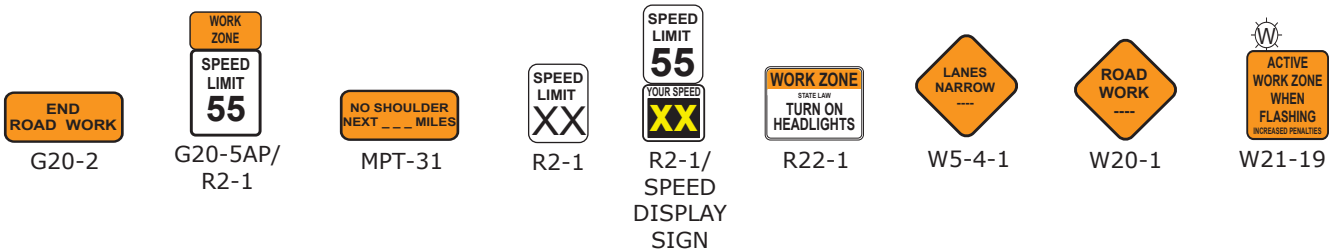
W = Width of offset in feet

SWZ = Work Zone speed limit in miles per hour

A = Width of travel lanes

10. Delineate attenuators placed on the paved shoulder per PTS 009.

### Signs



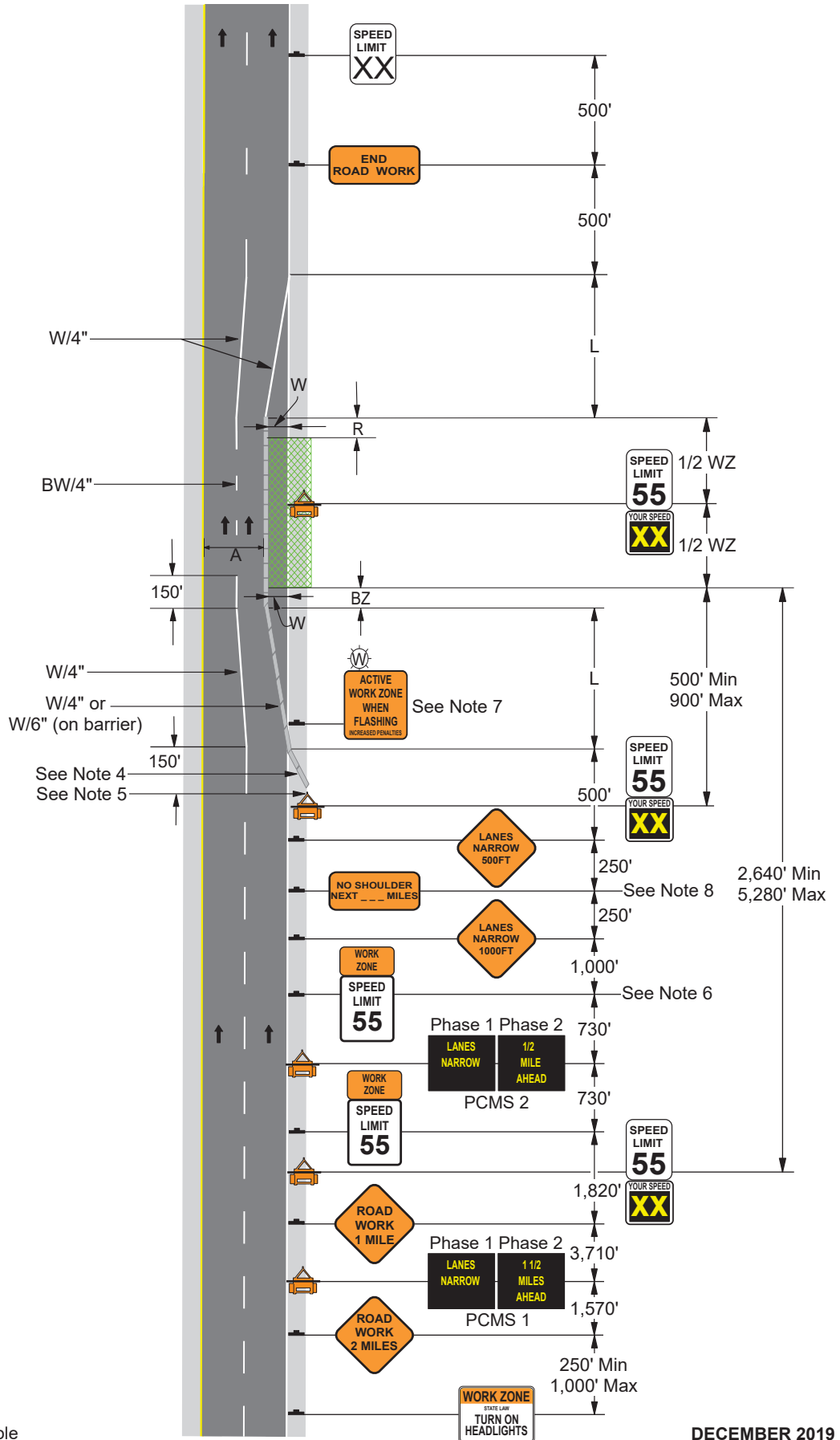
NOTE: See Appendix A for sign descriptions and dimensions.

### Distance and Spacing Quick Reference Chart

SPEED	Shoulder	L	BZ	WZ	R	Maximum Channelizing Device Spacing (Feet)				
						Shoulder	L	BZ	WZ	R
<b>55</b>	30:1	660	100	4 (Max)	100	N/A	N/A	N/A	N/A	N/A
<b>70</b>	30:1	840	100	4 (Max)	100	N/A	N/A	N/A	N/A	N/A

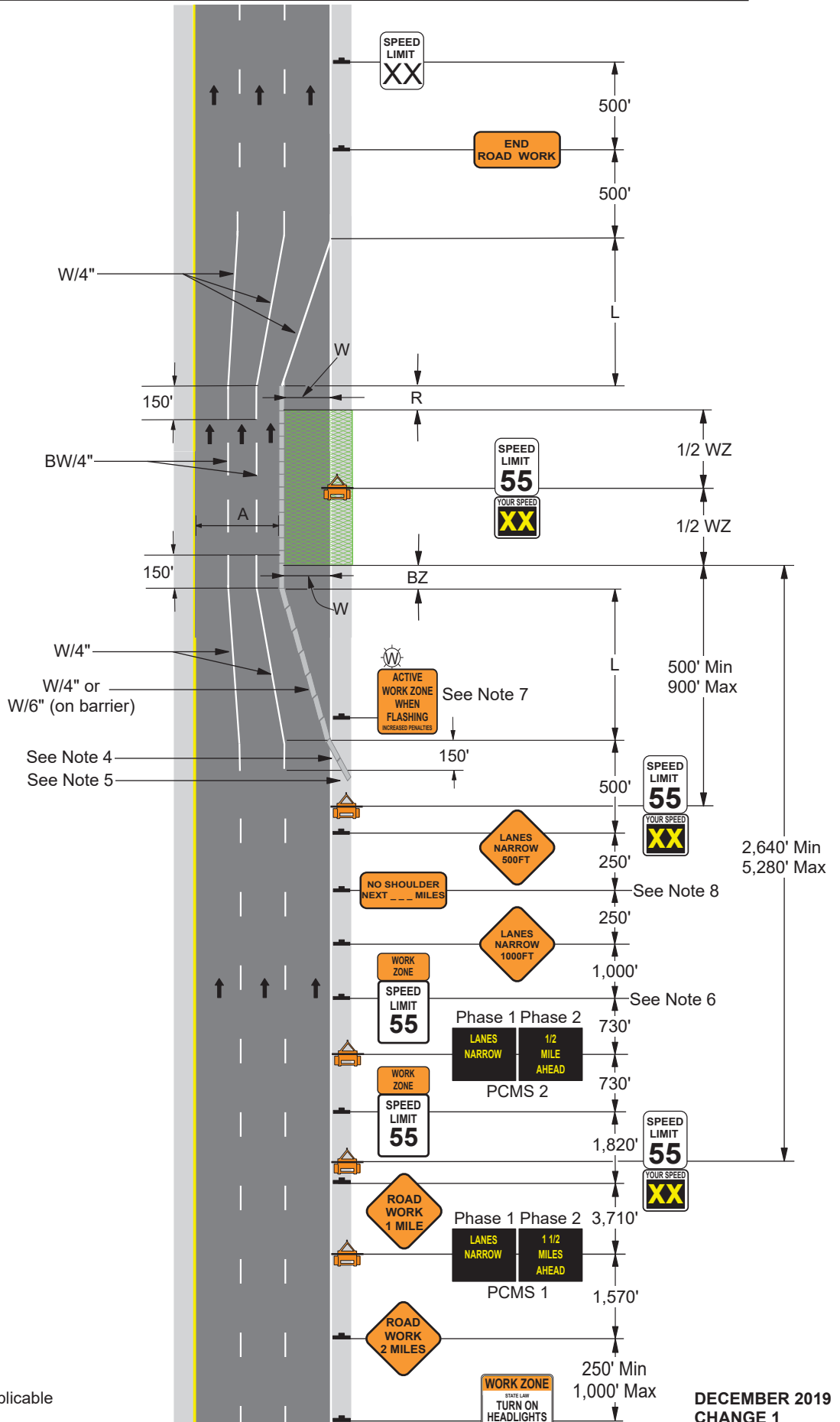
Shoulder = Shoulder Transition  
 L = Transition  
 BZ = Buffer Zone  
 WZ = Work Zone  
 R = Runout

**PTS 905-10A**  
**Lanes Narrow Detail - 2 Lanes Narrow ( $W \leq 2.5$  FT. and  $A < 24$  FT.)**



NOTES:  
 See PTS 905-10 - Notes for applicable notes to this drawing

**PTS 905-10B**  
**Lanes Narrow Detail - 3 Lanes Narrow ( $W \leq 3.75$  FT. and  $A < 36$  FT.)**



NOTES:  
 See PTS 905-10 - Notes for applicable notes to this drawing

DECEMBER 2019  
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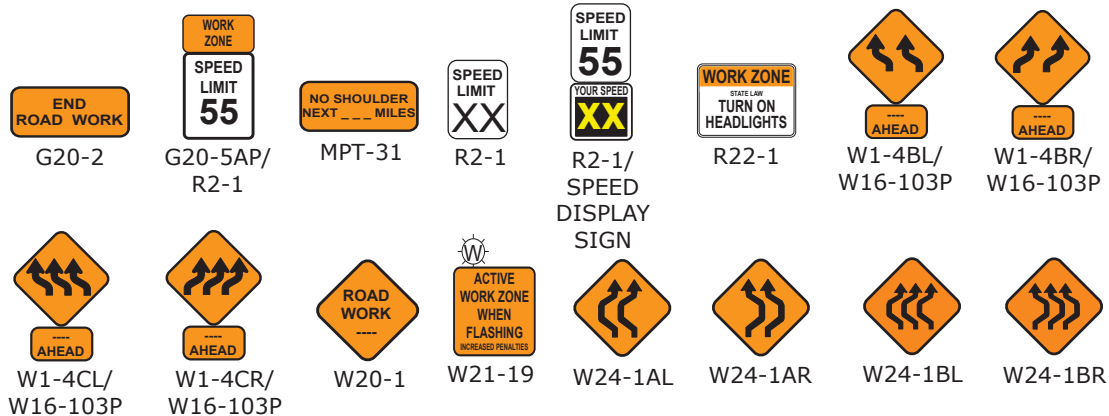
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## PTS 905-11 - Notes Lanes Shift Detail

1. Use the two lane detail when  $W > 2.5$  FT. or  $W < 2.5$  FT. and  $A = 24$  FT. Use the three lane detail when  $W > 3.75$  FT. and  $A = 36$  FT. Shift traffic prior to and after work zone.
2. When lanes shift to the right, replace either W1-4BL with W1-4BR or W1-4CL with W1-4CR.
3. W24-1AL and W24-1AR signs may be used in lieu of the W1-4BL and W1-4BR signs when the tangent distance for the shifted traffic makes it difficult to install a second set of two lane reverse curve signs (W1-4B series). W24-1BL and W24-1BR signs may be used in lieu of the W1-4CL and W1-4CR signs when the tangent distance for the shifted traffic makes it difficult to install a second set of three lane reverse curve signs (W1-4C series).
4. Provide emergency pull-offs at a spacing of approximately 1 mile each direction through work zone when full shoulder is not available.
5. Taper 30:1 to outside edge of paved shoulder. From outside edge of paved shoulder, taper as per RC-57M. If full taper is not feasible in median, then see Note 6.
6. Provide proper end treatment for barrier, by tapering barrier and burying, tapering barrier and connect to guide rail per PTS-135 or barrier, or tapering barrier to provide temporary impact attenuator.
7. From this point, provide G20-5AP / R2-1 signs to the right of traffic at 2 mile maximum intervals through the lane(s) shift pattern.
8. Erect the Active Work Zone When Flashing (W21-19) sign and activate white Type B light when construction access areas are active. Sign shall be covered and light shall be deactivated when construction access is not in use for 60 minutes.
9. MPT-31 sign shall only be used if the length of the work zone is greater than 1 mile.
10. Compute the minimum desirable transition / shift length for reduction in lanes using the following formula:
 

Lanes Shift Variables:  
 $L = S \times W$   
 $L$  = Minimum desirable transition/shift length in feet  
 $W$  = Width of offset in feet  
 $S$  = Work Zone speed limit in miles per hour  
 $A$  = Width of travel lanes
11. Delineate attenuators placed on the paved shoulder per PTS 009.

### Signs



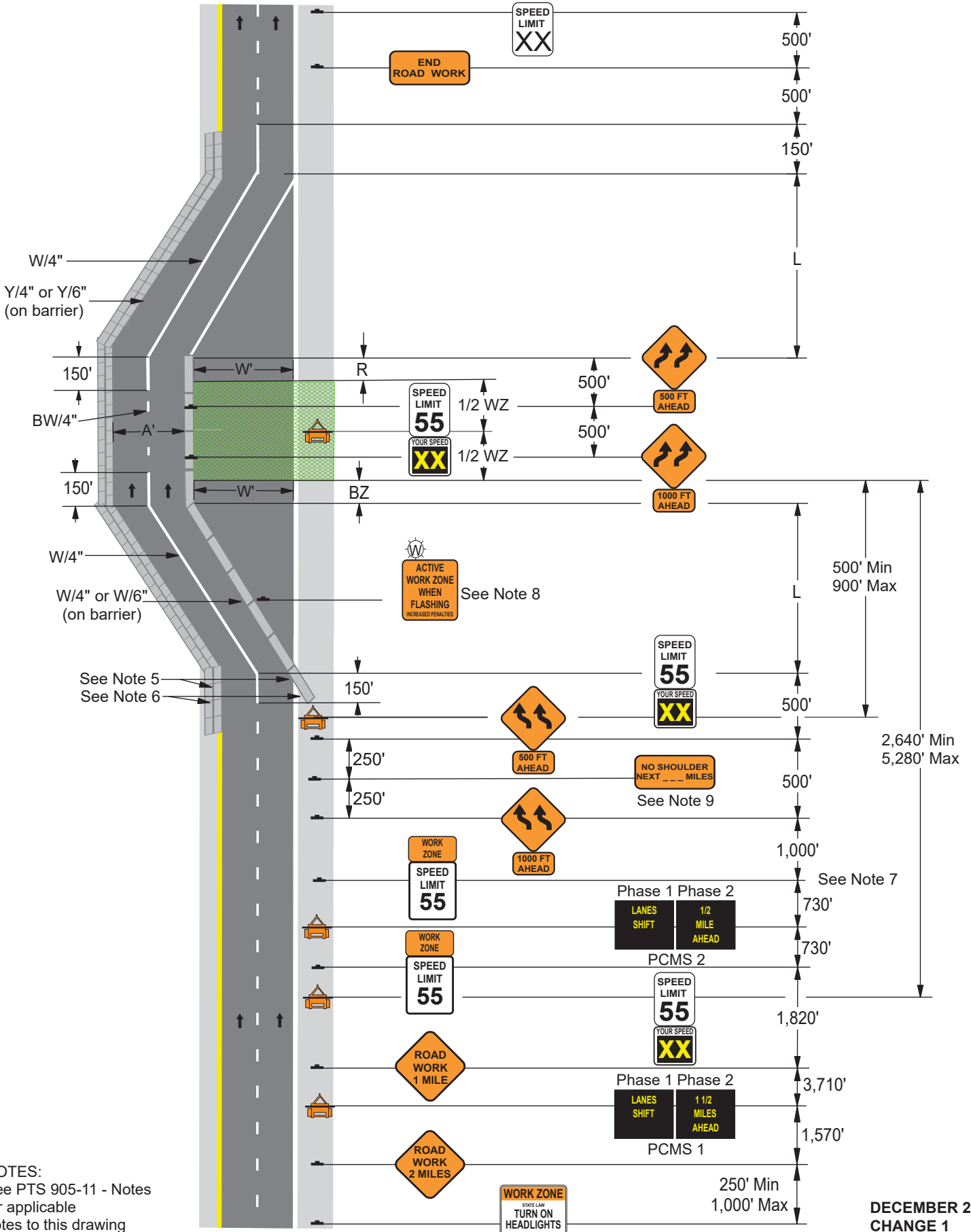
NOTE: See Appendix A for sign descriptions and dimensions.

### Distance and Spacing Quick Reference Chart

SPEED	L	BZ	WZ	R	Maximum Channelizing Device Spacing (Feet)			
					L	BZ	WZ	R
MPH	Feet	Feet	Mile(s)	Feet	L	BZ	WZ	R
55	660	100	4 (Max)	100	N/A	N/A	N/A	N/A
70	840	100	4 (Max)	100	N/A	N/A	N/A	N/A

L = Transition  
 BZ = Buffer Zone  
 WZ = Work Zone  
 R = Runout

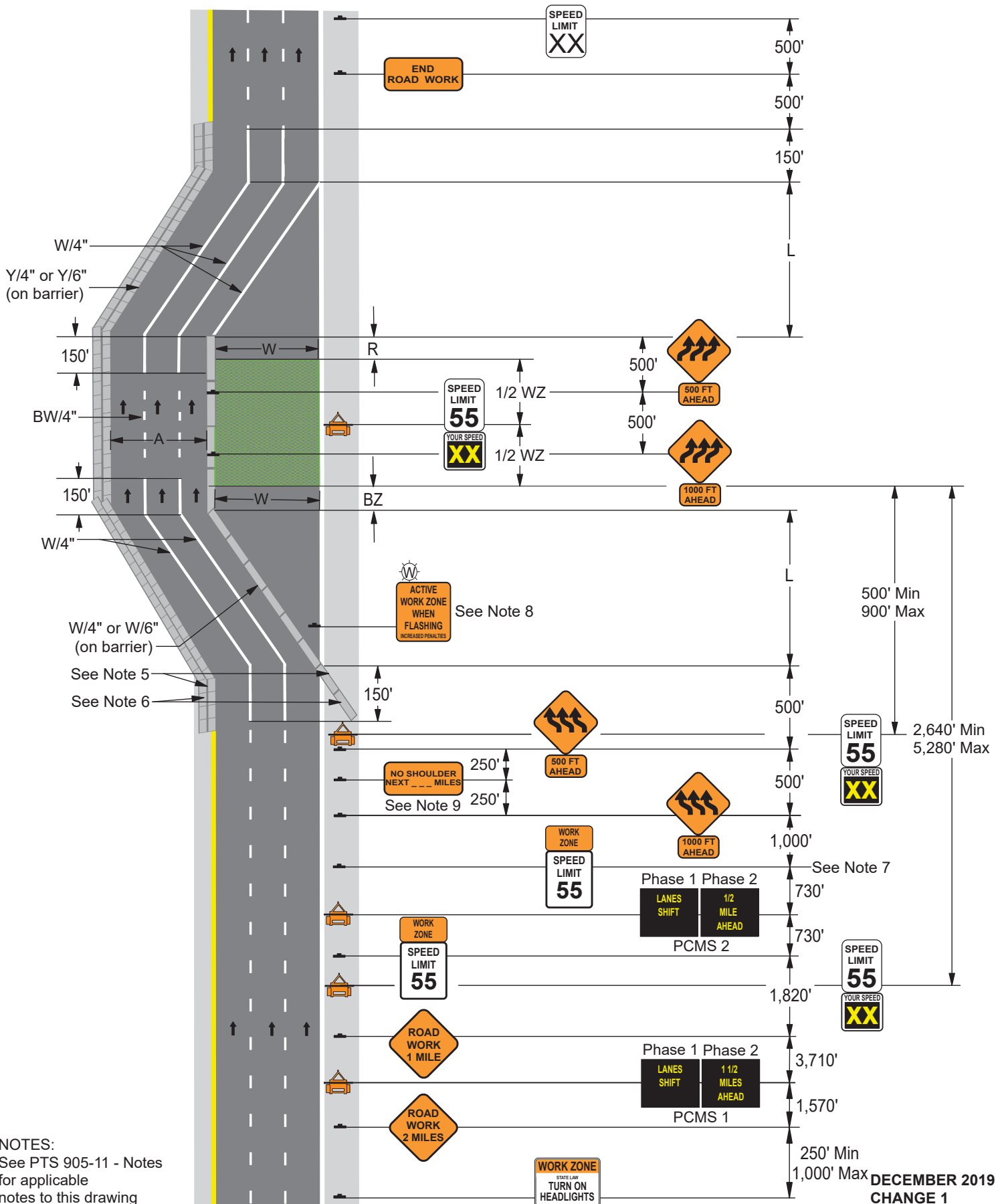
**PTS 905-11A**  
**Lanes Shift Detail - 2 Lanes Shift (W > 2.5 FT. and A = 24 FT. )**



NOTES:  
 See PTS 905-11 - Notes  
 for applicable  
 notes to this drawing



**PTS 905-11B**  
**Lanes Shift Detail - 3 Lanes Shift (W > 3.75 FT. and A = 36 FT.)**



NOTES:  
 See PTS 905-11 - Notes  
 for applicable  
 notes to this drawing

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## PTS 905-12AB - Notes Emergency Pull-Off

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1. Space emergency pull-offs at approximately 1 mile each direction to the right side of traffic.
2. Emergency Pull-Off - Type II uses an existing wide area with a minimum size as indicated for Type III. Sign according to Emergency Pull-Off - Type III requirements.
3. Relocate nearest tenth mile marker to each emergency pull-off. Locate to maximize visibility for the motorist and as approved by the Representative.
4. Locate to maximize visibility for the motorist and as approved by the Representative.
5. Emergency pull-offs may be used by the contractor to access construction areas only if the emergency pull-off is unoccupied. The Commission assumes no liability for the frequency of emergency pull-off use by its customers. If emergency pull-off is used by the contractor to access construction area, see Combined Emergency Pull-Off - Type I and Opening in Temporary Concrete Barrier for Access to Construction Area detail (PTS 905-12D).
6. Show the actual distance, based on field conditions, on the sign.

### *Signs*



D12-14A



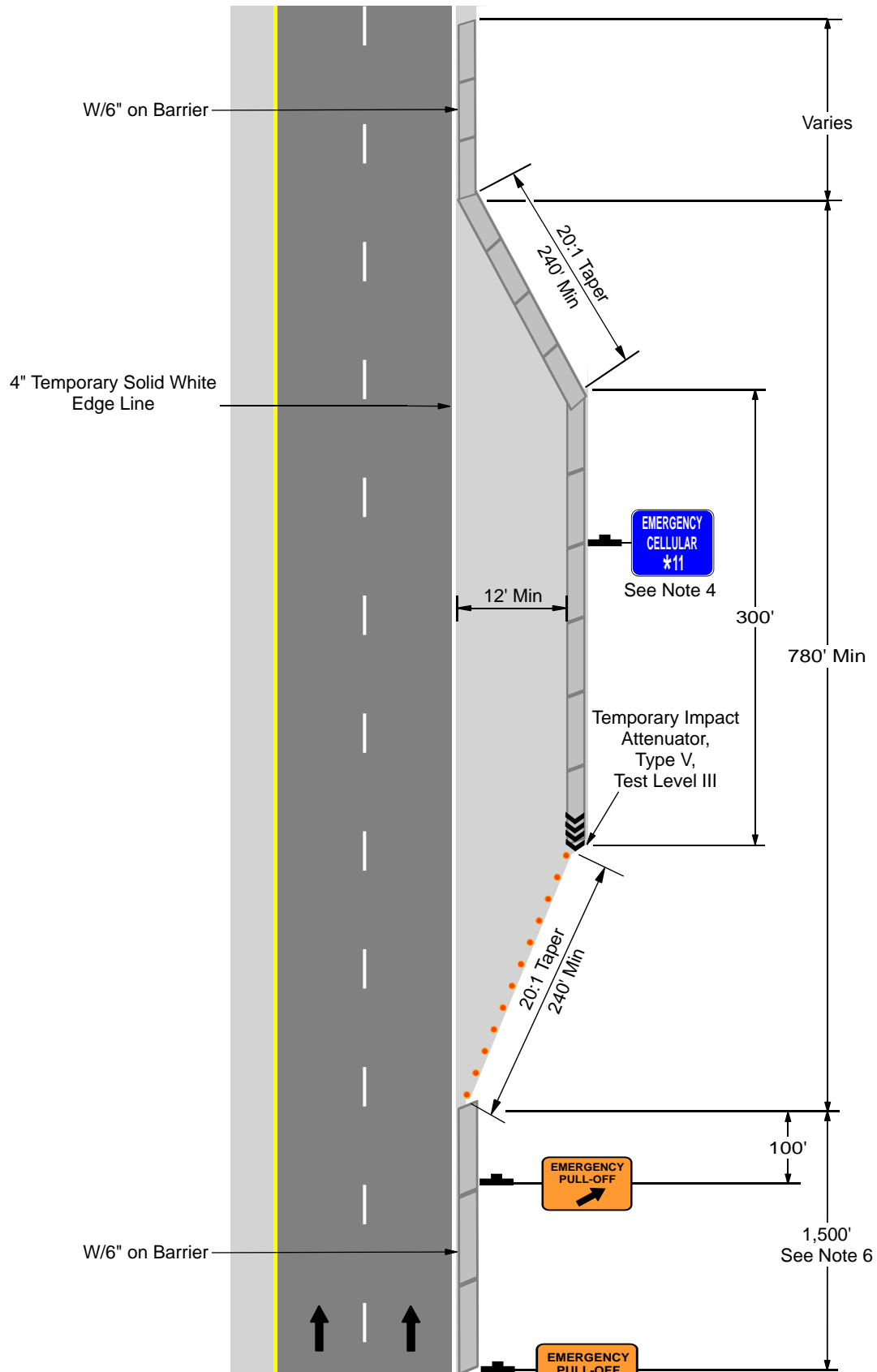
G30-1



G30-2

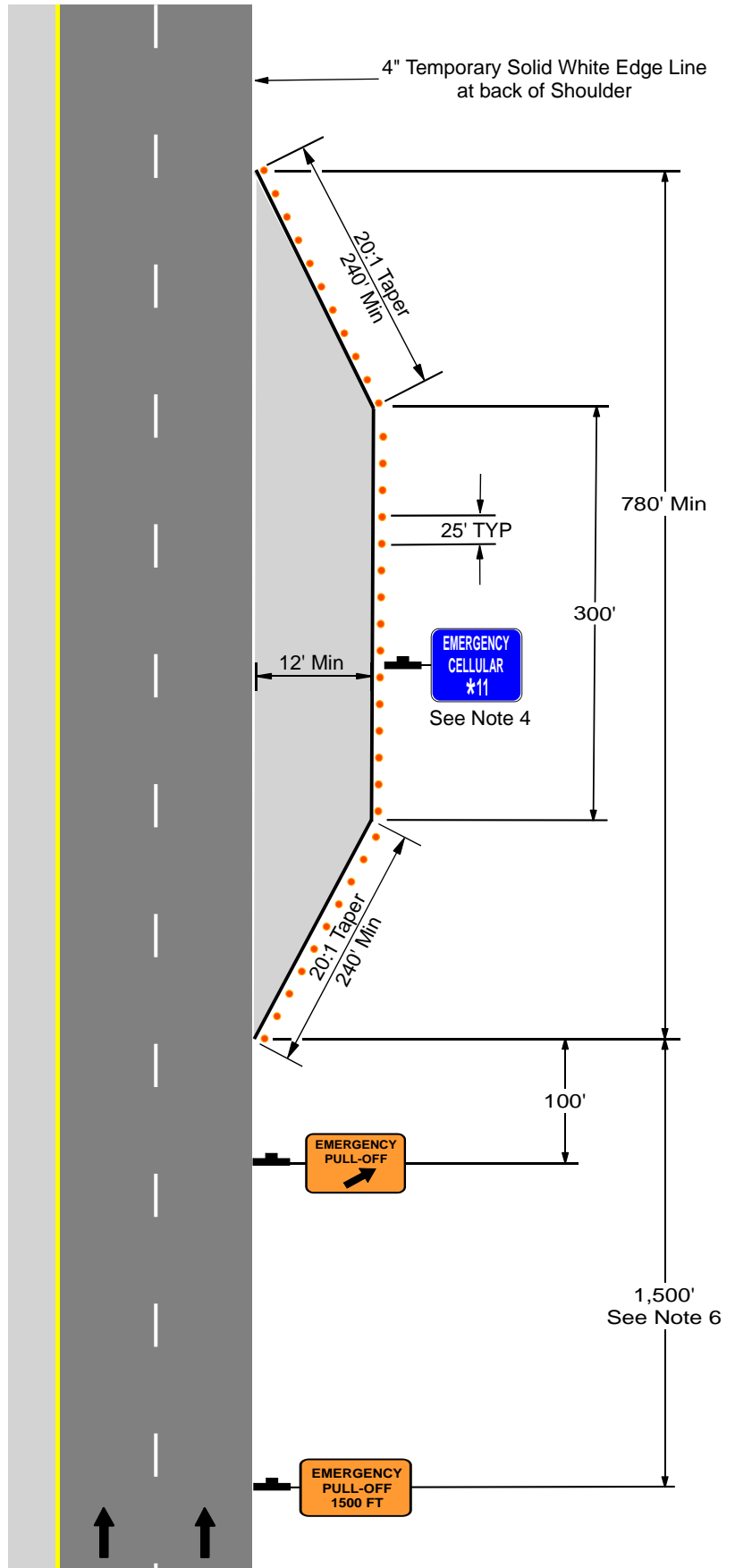
NOTE: See Appendix A for sign descriptions and dimensions.

**PTS 905-12A**  
**Emergency Pull-Off - Type I**  
**in Temporary Concrete Barrier**



NOTES:  
 See PTS 905-12AB - Notes for applicable notes to this drawing

PTS 905-12B  
Emergency Pull-Off - Type III



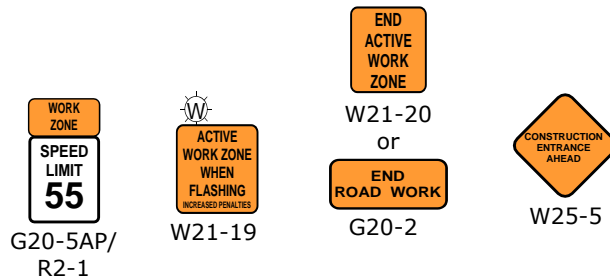
NOTES:  
See PTS 905-12AB - Notes for applicable notes to this drawing

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## PTS 905-12C - Notes Opening in Temporary Concrete Barrier for Access to Construction Area

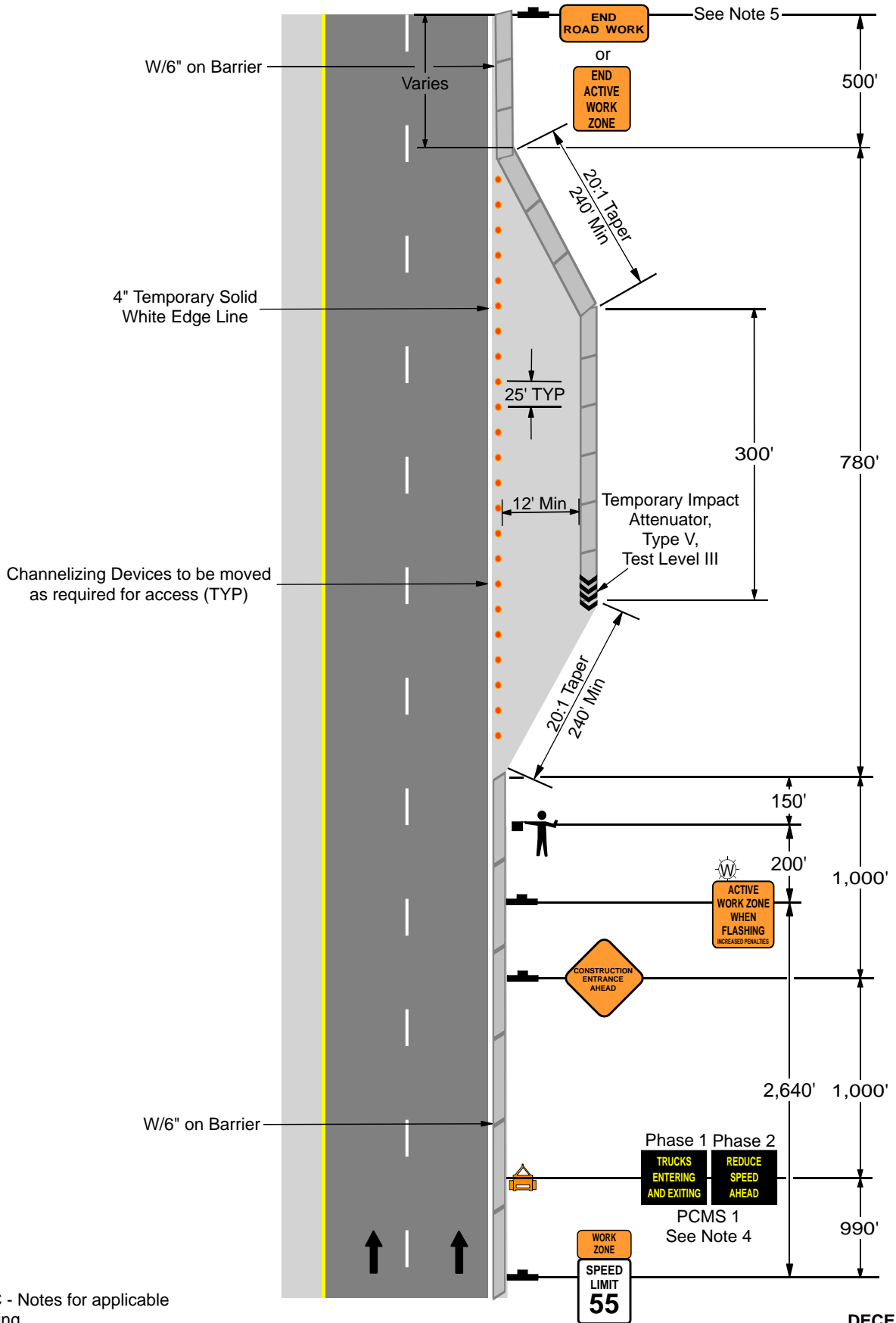
1. Close construction openings with temporary concrete barrier when not required for more than two weeks. This work is incidental to the MPT.
2. Location subject to approval by Representative.
3. Station flagger at access points when access area is active. Equip flagger with PennDOT approved, like new, stop/slow paddle with entire "STOP" panel covered. Provide a platform as necessary to allow the flagger to view oncoming traffic.
4. PCMS is incidental to MPT.
5. Post G20-2 sign at the end of the final work zone.
6. When area is not in use for construction access for 60 minutes, place channelizing devices as shown to completely close off access to the construction area, cover signs, turn off Type B light and turn off PCMS.

### *Signs*



NOTE: See Appendix A for sign descriptions and dimensions.

# PTS 905-12C Opening in Temporary Concrete Barrier for Access to Construction Area



NOTES:  
See PTS 905-12C - Notes for applicable notes to this drawing



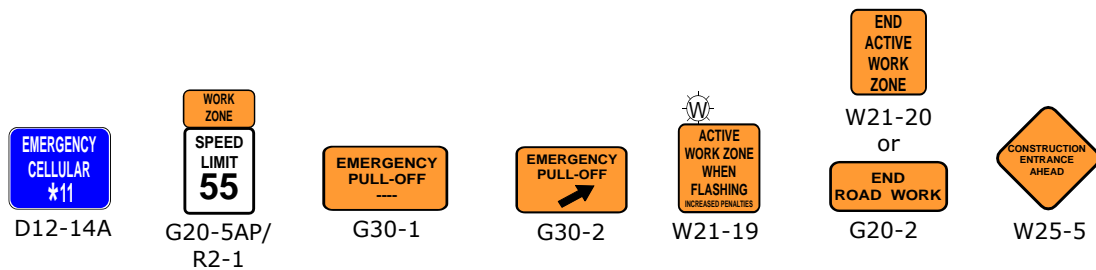
## PTS 905-12D - Notes

### Combined Emergency Pull-Off - Type I and Opening in Temporary Concrete Barrier for Access to Construction Area

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1. Space emergency pull-offs at approximately 1 mile each direction.
2. Emergency Pull-Off - Type II uses an existing wide area with a minimum size as indicated for Type III. Sign according to Emergency Pull-Off - Type III requirements.
3. Relocate nearest tenth mile marker to each emergency pull-off. Locate to maximize visibility for the motorist and as approved by the Representative.
4. Locate to maximize visibility for the motorist and as approved by the Representative.
5. Emergency pull-offs may be used by the contractor to access construction areas only if the emergency pull-off is unoccupied. The Commission assumes no liability for the frequency of emergency pull-off use by its customers. If emergency pull-off is used by the contractor to access construction area use PTS 905-12D.
6. Show the actual distance, based on field conditions, on the sign.
7. Close construction openings with temporary concrete barrier when not required for more than two weeks. This work is incidental to the MPT.
8. Location subject to approval by Representative.
9. Station flagger at access points when access area is active. Equip flagger with PennDOT approved, like new, stop/slow paddle with entire "STOP" panel covered. Provide a platform as necessary to allow the flagger to view oncoming traffic.
10. PCMS is incidental to MPT.
11. Post G20-2 sign at the end of the final work zone.
12. When combined area is not in use for construction access for 60 minutes, place channelizing devices as shown to completely close off access to the construction area, cover W25-5, G20-2, G20-5AP/R2-1, W21-19, and W21-20, turn off Type B light, and turn off PCMS.

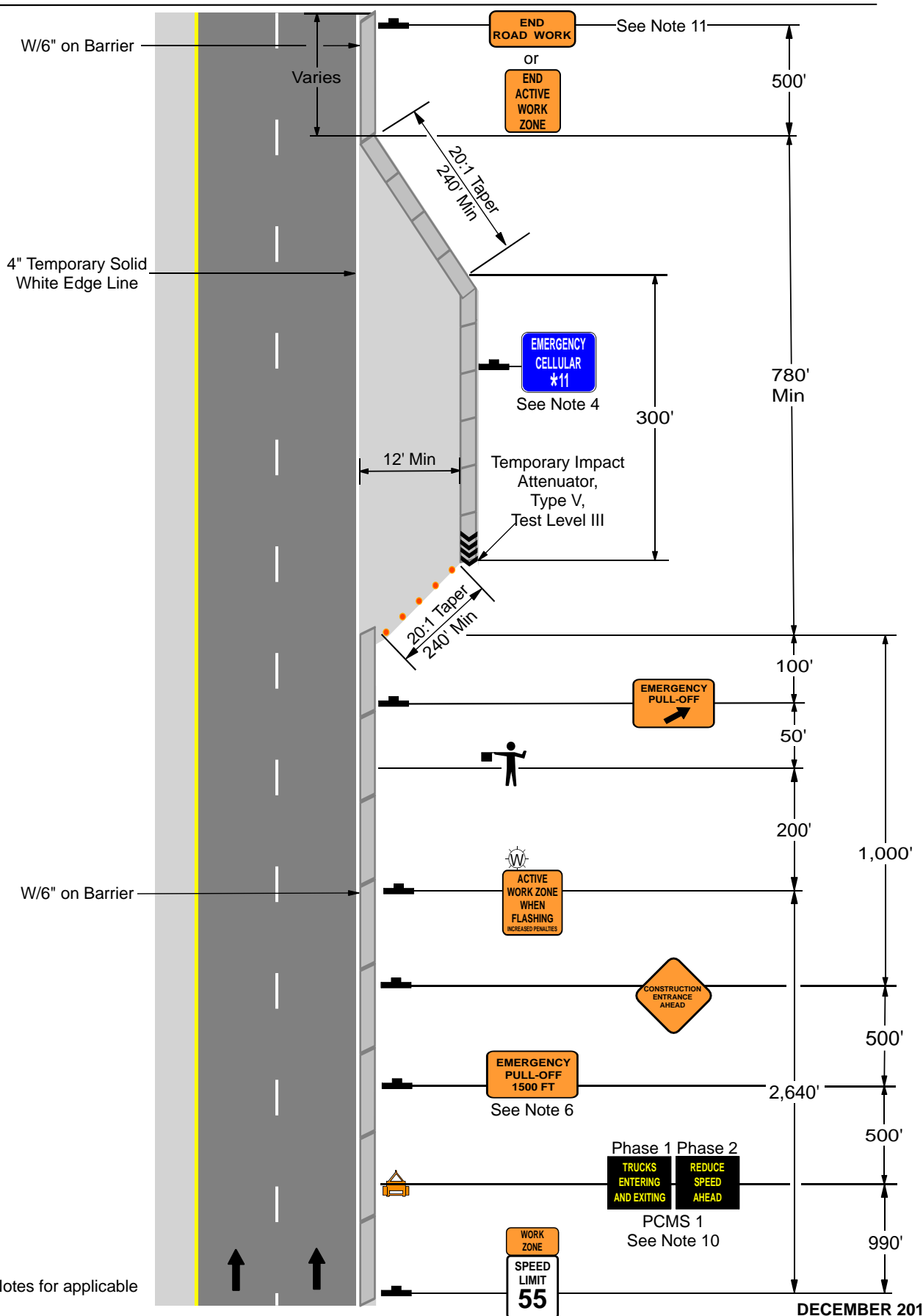
### Signs



NOTE: See Appendix A for sign descriptions and dimensions.

PTS 905-12D

Combined Emergency Pull-Off - Type I and Opening in Temporary Concrete Barrier for Access to Construction Area



NOTES:  
See PTS 905-12D - Notes for applicable notes to this drawing

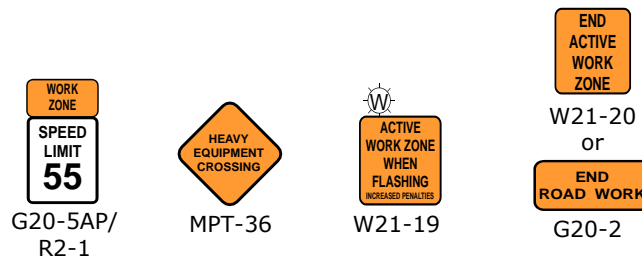
## PTS 905-13 - Notes

### Opening in Temporary Concrete Barrier with Truck Crossing

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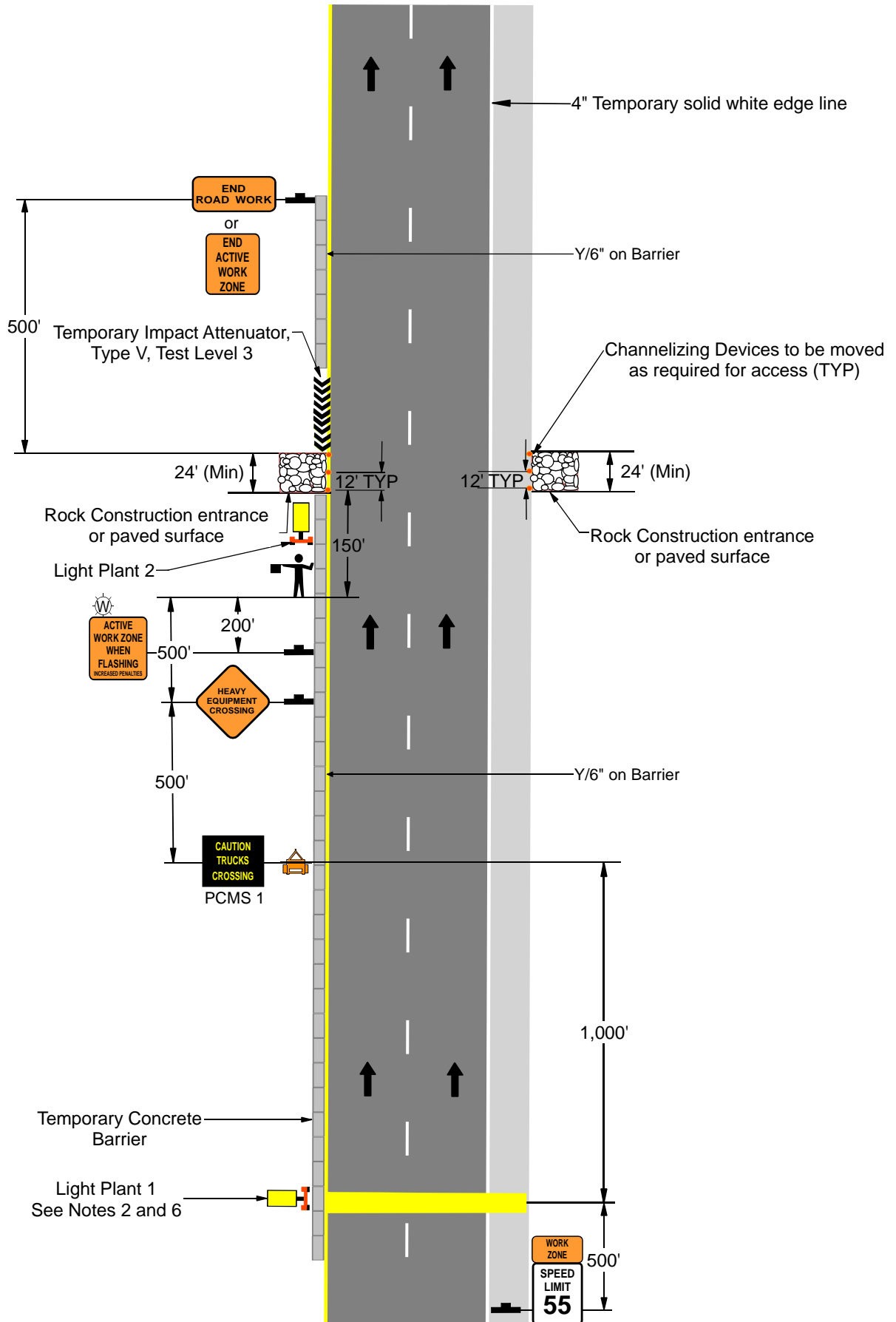
1. Close construction openings with temporary concrete barrier when not required for more than two weeks. This work is incidental to the MPT.
2. All lanes of traffic at Light Plant 1 location must be visible to flagger and unobstructed for a distance of 2,000 feet. Location subject to approval by Representative.
3. Station flagger with light plant illuminating the flagger 150 feet in advance of access points when truck crossing is active. Flagger shall be in constant communication with any vehicles using truck crossing. Equip flagger with PennDOT approved, like new, stop/slow paddle with entire "STOP" panel covered. Provide a platform as necessary to allow the flagger to view oncoming traffic.
4. PCMS is incidental to MPT.
5. Post G20-2 sign at the end of the final Work Zone.
6. Provide a light plant 2,000 feet in advance of flagger for truck crossings active during hours of darkness. Light plant shall illuminate travel lanes at this location, but shall not be directed at oncoming traffic.  
  
Provide a blank 48" x 48" diamond orange sign mounted on Type III barricades 2,000 feet in advance of flagger for truck crossings active during hours of daylight. Sign is to face flagger and not be visible to oncoming traffic.  
  
If a vehicle is between Light Plant 1 or blank sign and the crossing location, trucks are not permitted to cross the travel lanes.
7. Rock construction entrances shall be placed at both sides of the roadway as shown. Additional rock to maintain the rock construction entrances shall be stockpiled on site. Rock construction entrance not required if paved surface is present.
8. When truck crossing is not in use for 60 minutes, place channelizing devices as shown to completely close off the access points, cover MPT-36, G20-2, G20-5AP / R2-1, W21-19, and W21-20 turn off Type B light, and turn off PCMS.
9. Truck crossings to be active only during allowable working hours and during satisfactory weather conditions as determined by the Representative. Truck crossings are not permitted to be active during holiday periods.

### Signs



NOTE: See Appendix A for sign descriptions and dimensions.

# PTS 905-13 Opening in Temporary Concrete Barrier with Truck Crossing



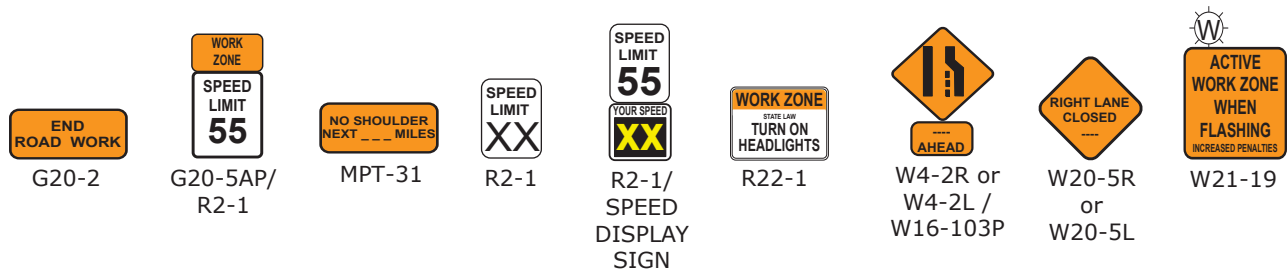
NOTES:  
See PTS 905-13 - Notes for applicable notes to this drawing

## PTS 905-14 - Notes

### 3 Lane to 2 Lane Long Term Closure

1. For left lane work zone, use the same sign spacing, location, and pattern but with the signs and PCMS indicating a left lane closure.
2. Provide emergency pull-offs at a spacing of approximately 1 mile each direction through work zone when full right shoulder is not available.
3. Remove conflicting white line between the center lane and right lane for a right lane closure or the left lane and center lane for a left lane closure.
4. Taper 30:1 to outside edge of paved shoulder. From outside edge of paved shoulder, taper as per RC-57M.
5. Provide proper end treatment for barrier by tapering barrier and burying, tapering barrier and connecting to guide rail per PTS-135 or barrier, or tapering barrier and providing temporary impact attenuator.
6. From this point, provide G20-5AP / R2-1 signs to the right of traffic at 2 mile maximum intervals through the long-term lane closure pattern.
7. Erect the Active Work Zone When Flashing (W21-19) sign and active white Type B light when construction access areas are active. Sign shall be covered and light shall be deactivated when construction access is not in use for 60 minutes.
8. MPT-31 sign shall only be used if the length of work zone is greater than 1 mile.
9. Delineate attenuators placed on the paved shoulder per PTS 009.

#### Signs



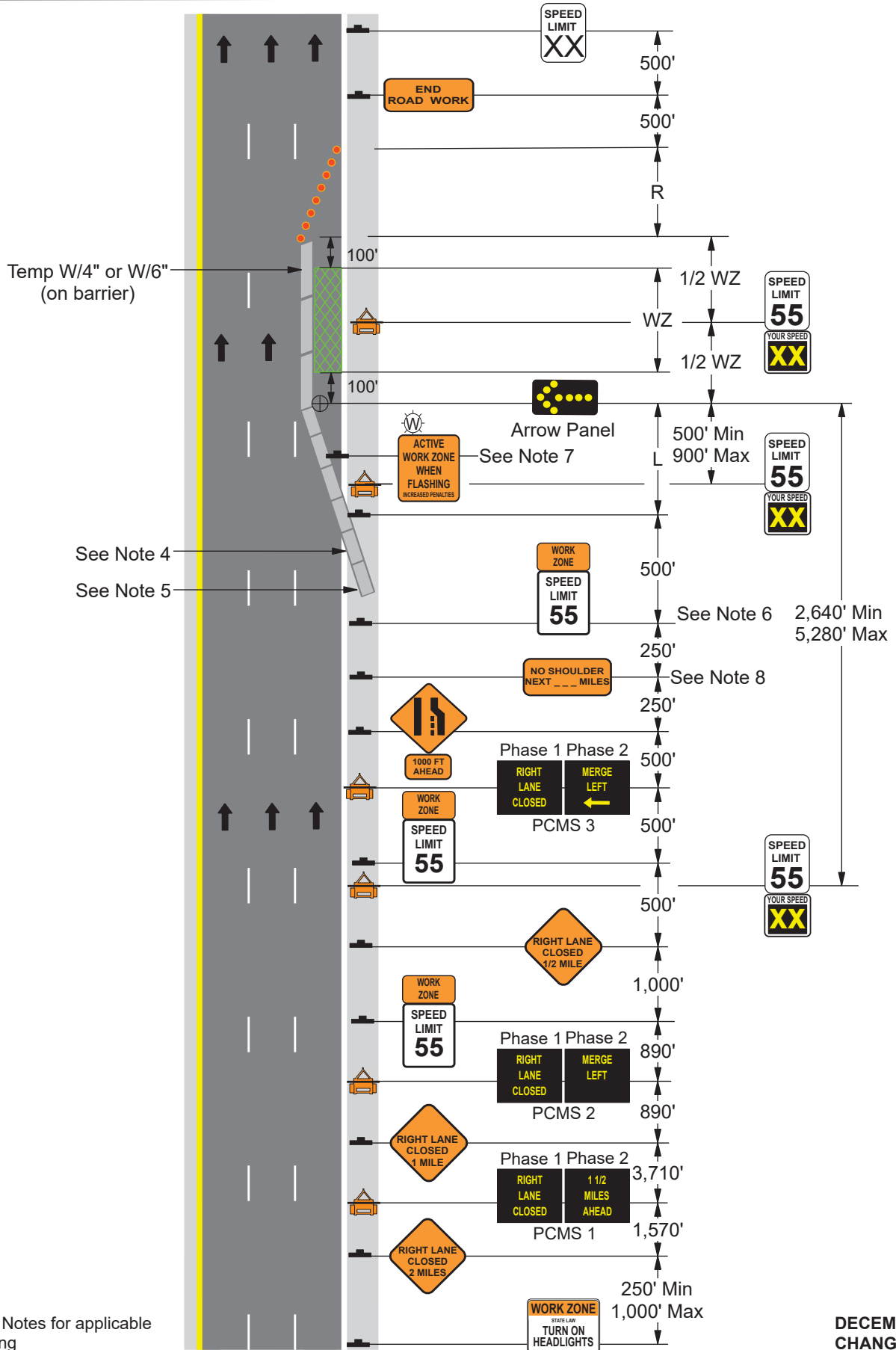
NOTE: See Appendix A for sign descriptions and dimensions.

#### Distance and Spacing Quick Reference Chart

SPEED	Shoulder	L	WZ	R	Maximum Channelizing Device Spacing (Feet)			
					Shoulder	L	WZ	R
MPH	Rate	Rate	Mile(s)	Feet	Shoulder	L	WZ	R
55	30:1	100:1	4 (Max)	100	N/A	N/A	N/A	20
70	30:1	100:1	4 (Max)	100	N/A	N/A	N/A	20

Shoulder = Shoulder Transition  
 L = Buffer Zone  
 WZ = Work Zone  
 R = Runout

# PTS 905-14 3 Lane to 2 Lane Long Term Lane Closure



NOTES:  
See PTS 905-14 - Notes for applicable notes to this drawing

## PTS 905-15 - Notes Crossover Traffic Pattern

1. Provide sufficient Type III barricades to close off the entire road.
2. Provide proper end treatment for barrier, by tapering barrier and burying, tapering barrier and connect to guide rail per PTS-135 or barrier, or tapering barrier and provide temporary impact attenuator.
3. Use channelizing devices with PennDOT approved sequential warning lights in the transition areas for patterns used during hours of darkness.
4. Single lane should be established a minimum of 1,000 feet in advance of deceleration ramp or beyond acceleration ramp at interchanges and service plazas.
5. For interchanges and service plaza ramp signing within work zone, see PTS 905-6.
6. From this point, provide G20-5AP/ R2-1 signs to the right of traffic at 2 mile maximum intervals through the crossover traffic pattern.
7. Erect the Active Work Zone When Flashing (W21-19) sign and activate white Type B light when construction access areas are active. Sign shall be covered and light shall be deactivated when construction access is not used for 60 minutes.
8. MPT-31 sign shall only be used if the length of the work zone is greater than 1 mile.
9. Compute the minimum desirable transition / shift length for reduction in lanes using the following formula:

Lane Shift Variables:

$$L_1 = S \times W$$

$$L_2 = S_{WZ} \times W$$

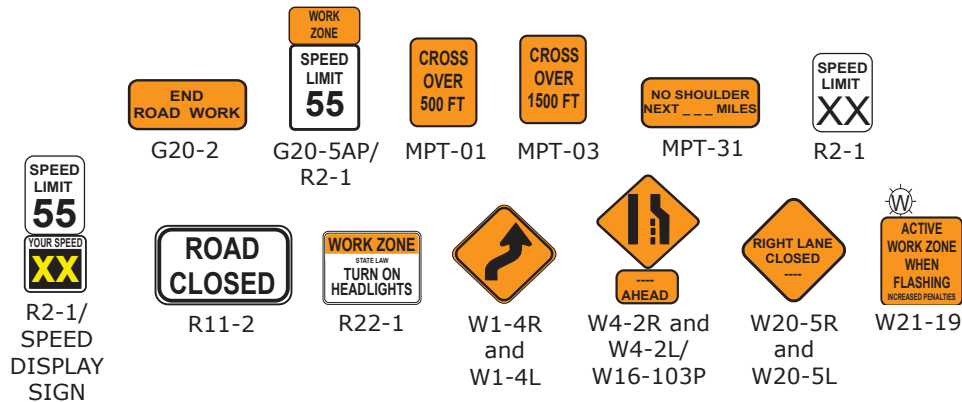
L = Minimum desirable transition/shift length in feet

W = Width of offset in feet

S = Normal speed limit in miles per hour

S<sub>WZ</sub> = Work Zone speed limit in miles per hour

### Signs



NOTE: See Appendix A for sign descriptions and dimensions.

### Distance and Spacing Quick Reference Chart

SPEED	L 1	L 2	1/3 L1	BZ	WZ	R	Maximum Channelizing Device Spacing (Feet)					
							1/3 L1	L 1	L 2	BZ	WZ	R
55	660	660	220	1,320 (Min)	4 (Max)	100	50	50	50	100	100	20
70	840	660	280	1,680 (Min)	4 (Max)	100	50	50	50	100	100	20

L 1 = Transition 1

L 2 = Transition 2

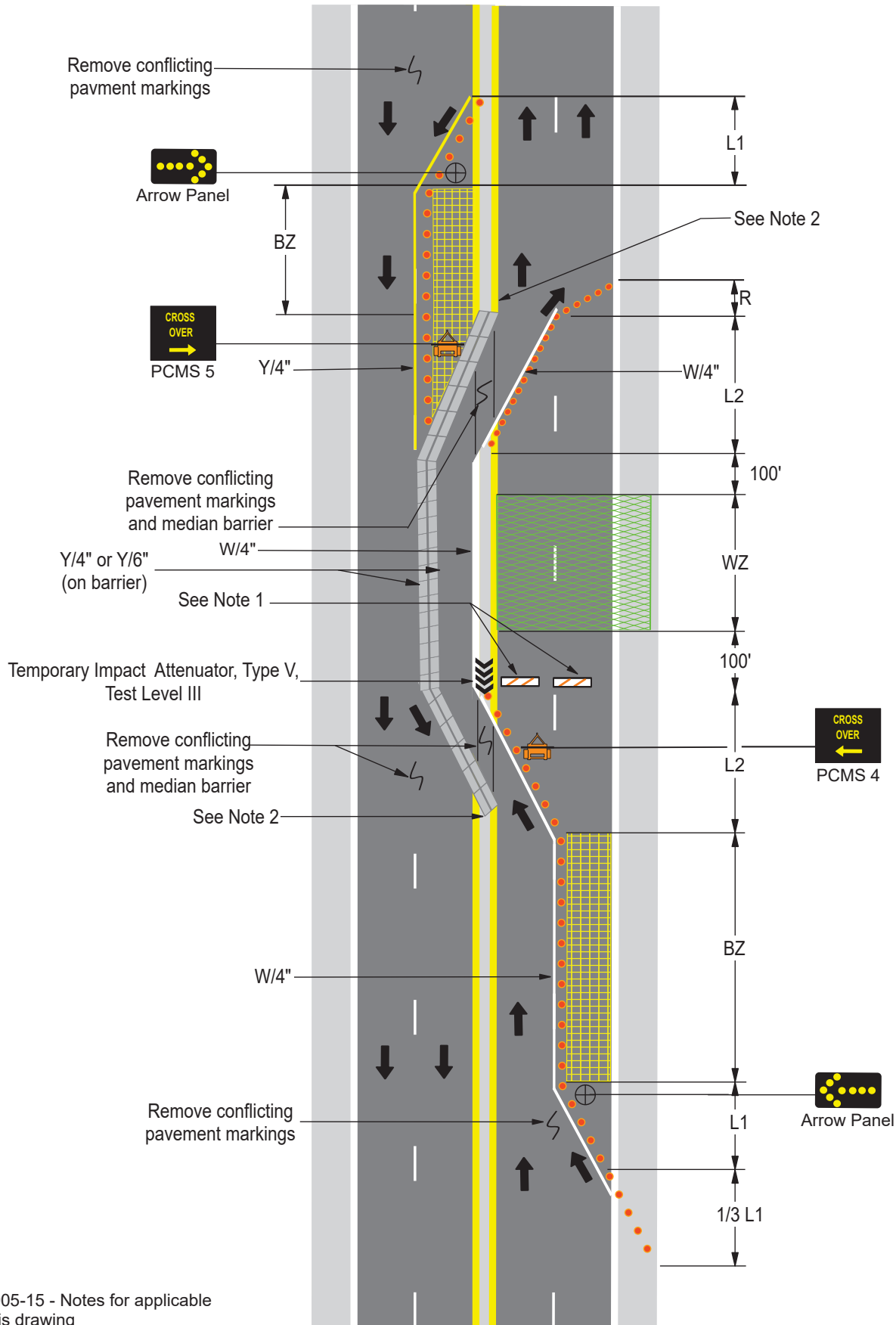
1/3 L = Shoulder Transition

BZ = Buffer Zone

WZ = Work Zone

R = Runout

**PTS 905-15  
Crossover Traffic Pattern Detail (Drawing 1 of 3)**

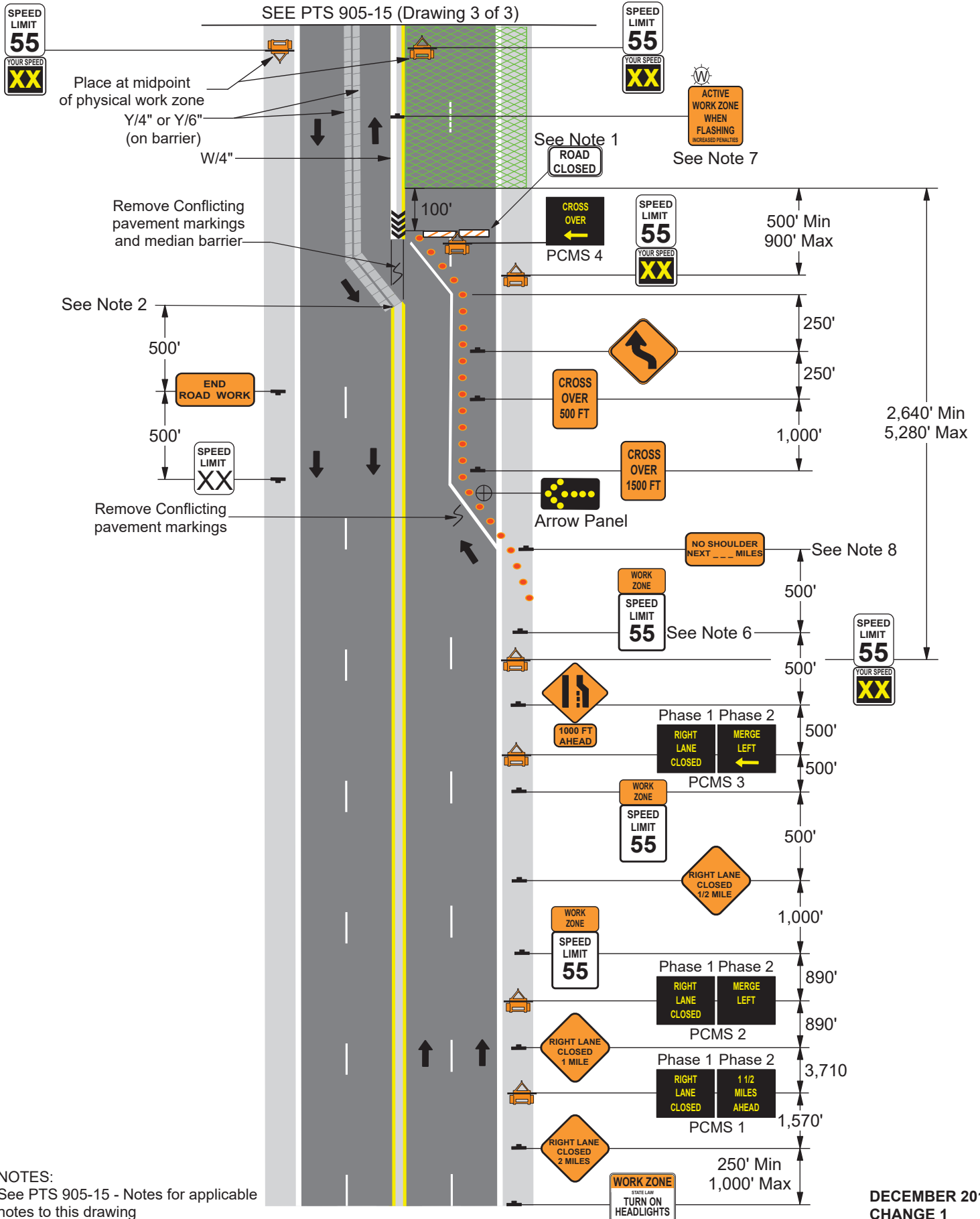


NOTES:  
See PTS 905-15 - Notes for applicable notes to this drawing

See PTS 905-15 Drawing 2 of 3 and 3 of 3 for signing layout.

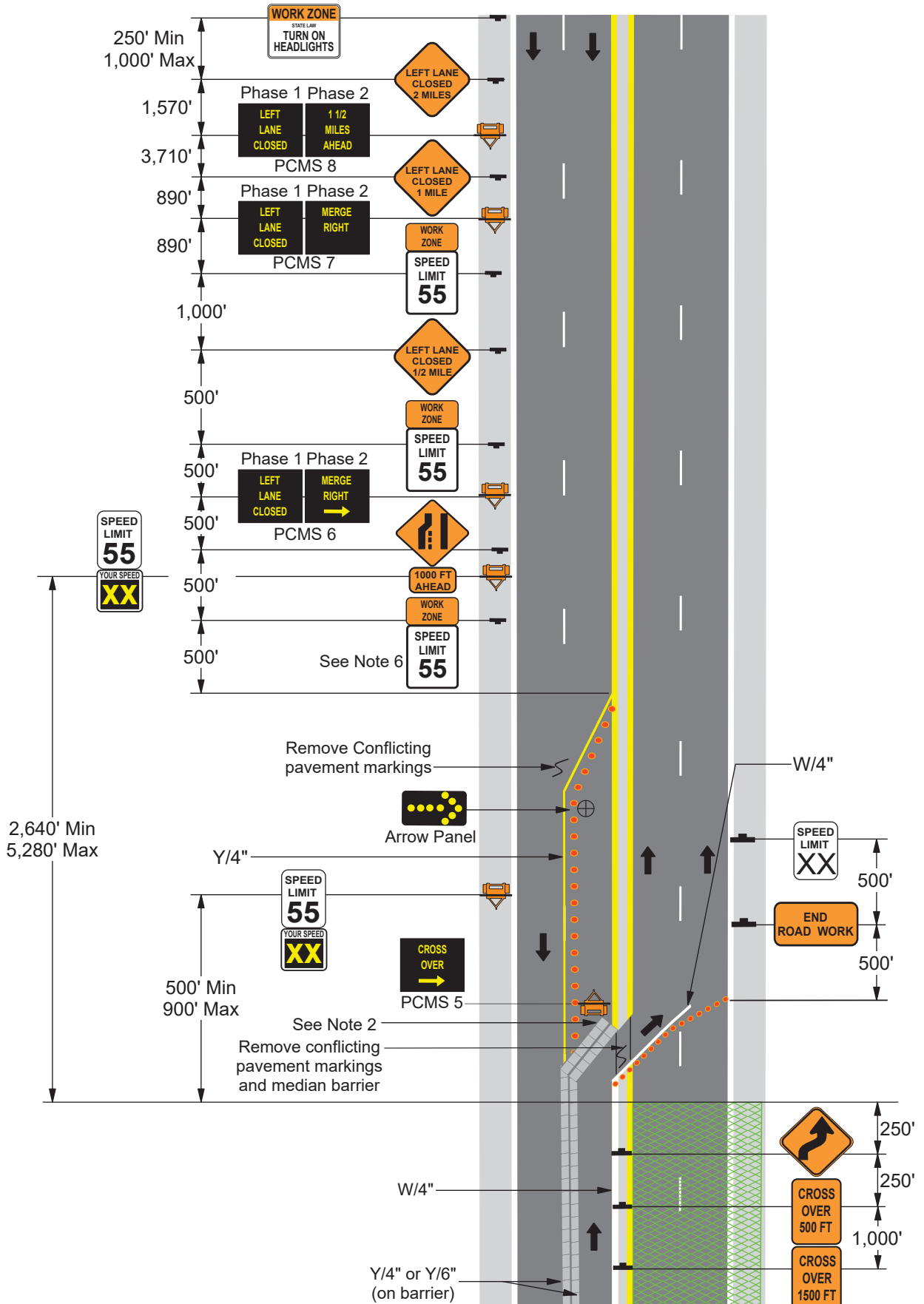


# PTS 905-15 Crossover Traffic Pattern Detail (Drawing 2 of 3)



NOTES:  
See PTS 905-15 - Notes for applicable notes to this drawing

# PTS 905-15 Crossover Traffic Pattern Detail (Drawing 3 of 3)



NOTES:  
See PTS 905-15 - Notes for applicable notes to this drawing

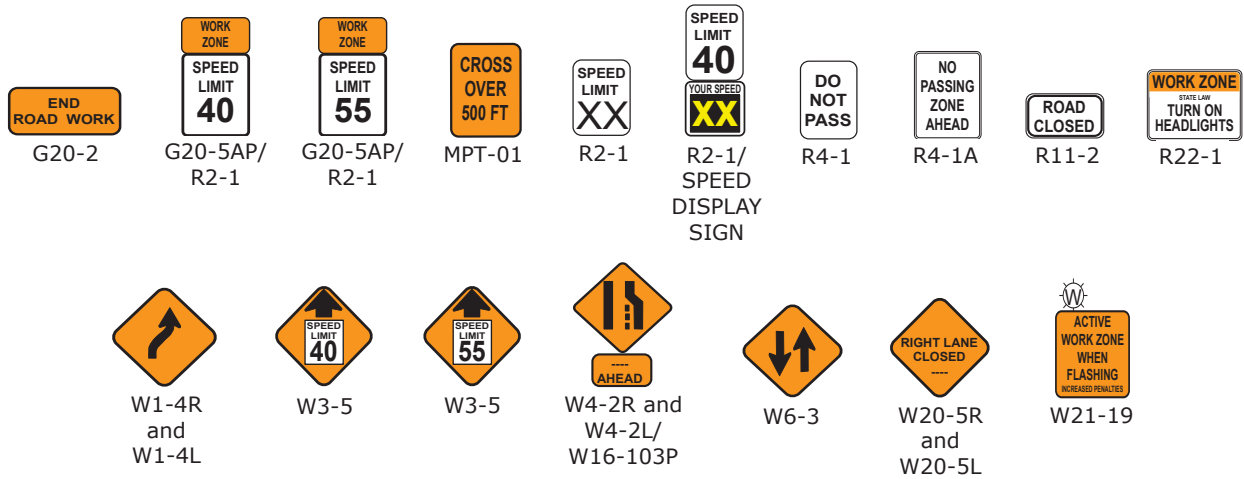
SEE PTS 905-15 (Drawing 2 of 3)

DECEMBER 2019  
CHANGE 1

## PTS 905-16 - Notes Tunnel Crossover Pattern

1. Use existing "DO NOT CROSS CENTER LINE" sign and existing traffic control signal at portal.
2. Westbound approach to Allegheny Tunnel requires left or right and center lane closure as indicated on PTS 905-5.
3. Use channelizing devices with PennDOT approved sequential warning lights in the transition areas for patterns used during hours of darkness.
4. Cover the Active Work Zone when Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.
5. Install W3-5 signs only in areas where the normal speed limit is 70 MPH.

### Signs



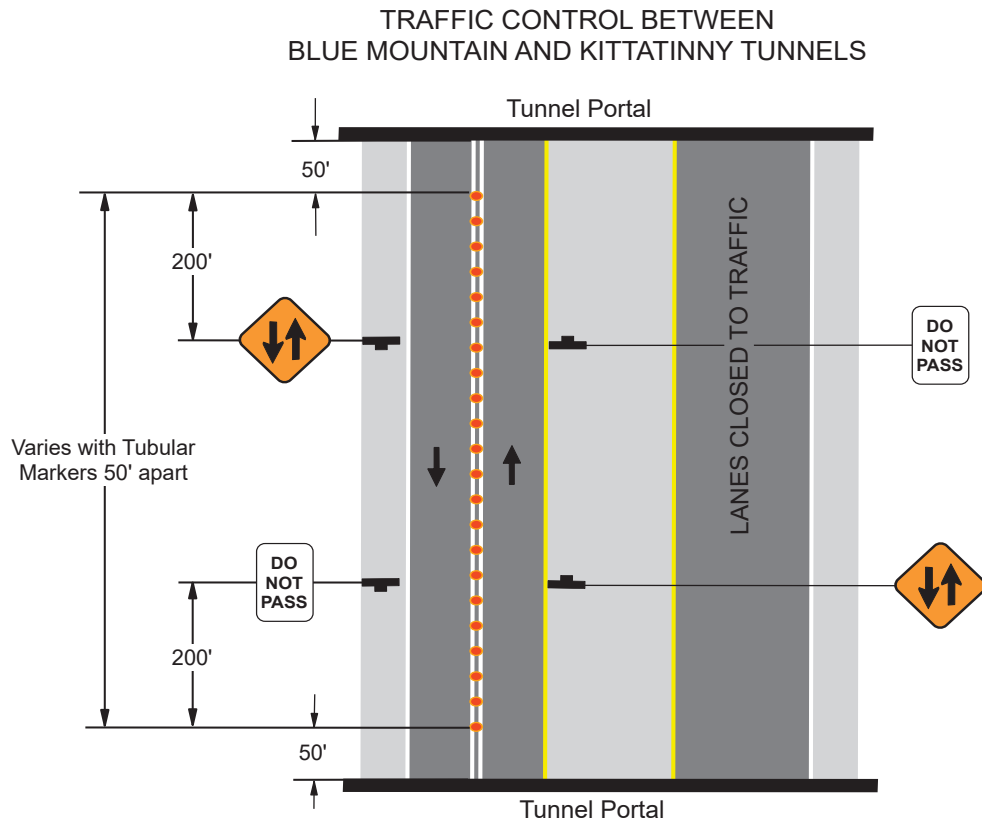
NOTE: See Appendix A for sign descriptions and dimensions.

### Distance and Spacing Quick Reference Chart

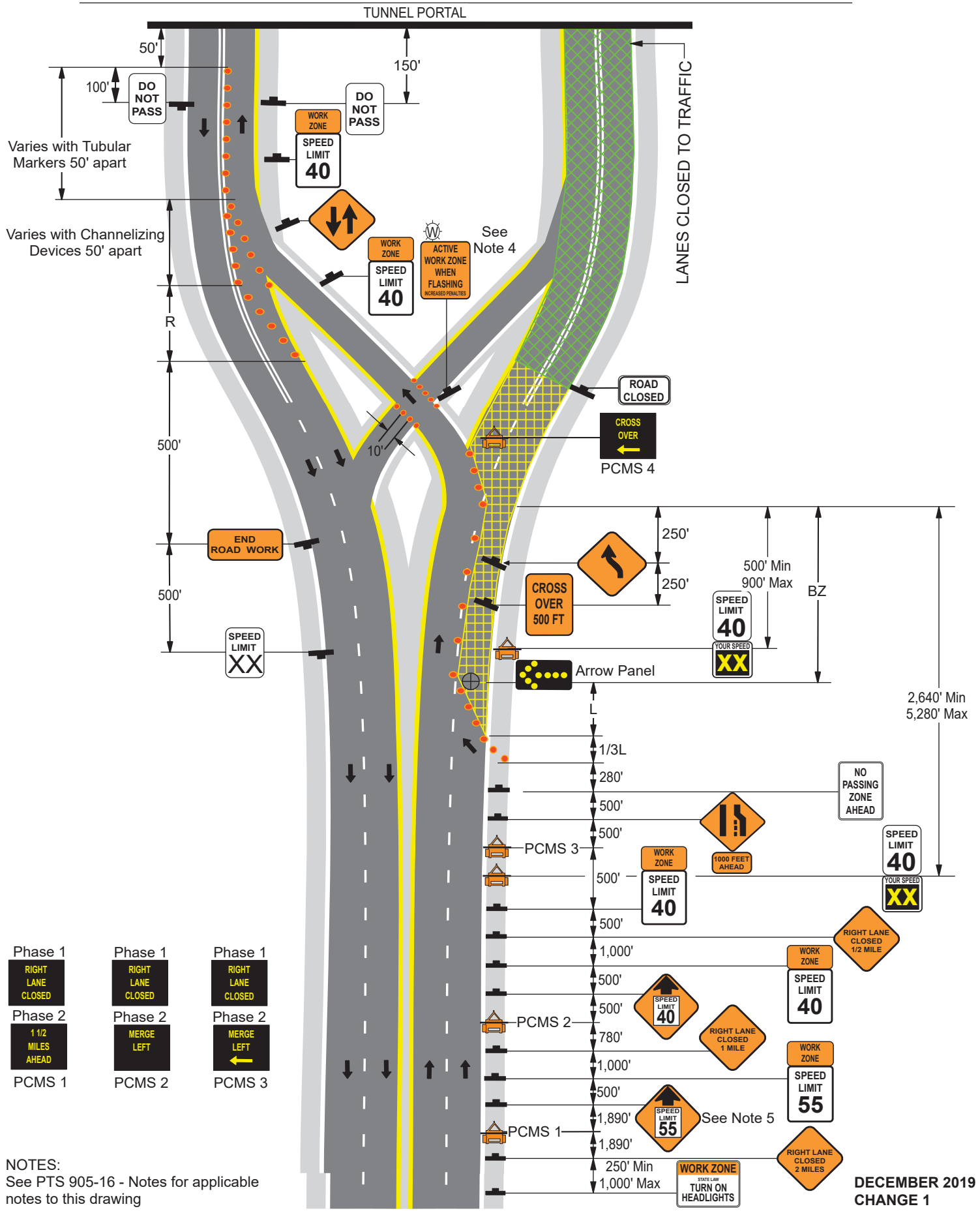
SPEED	L	1/3 L	BZ	R	Maximum Channelizing Device Spacing (Feet)			
					L	1/3 L	BZ	R
<b>55</b>	660	220	1,320 (Min)	100	50	50	100	20

L = Transition  
 1/3L = Shoulder Transition  
 BZ = Buffer Zone  
 R = Runout

# PTS 905-16 Tunnel Crossover Pattern

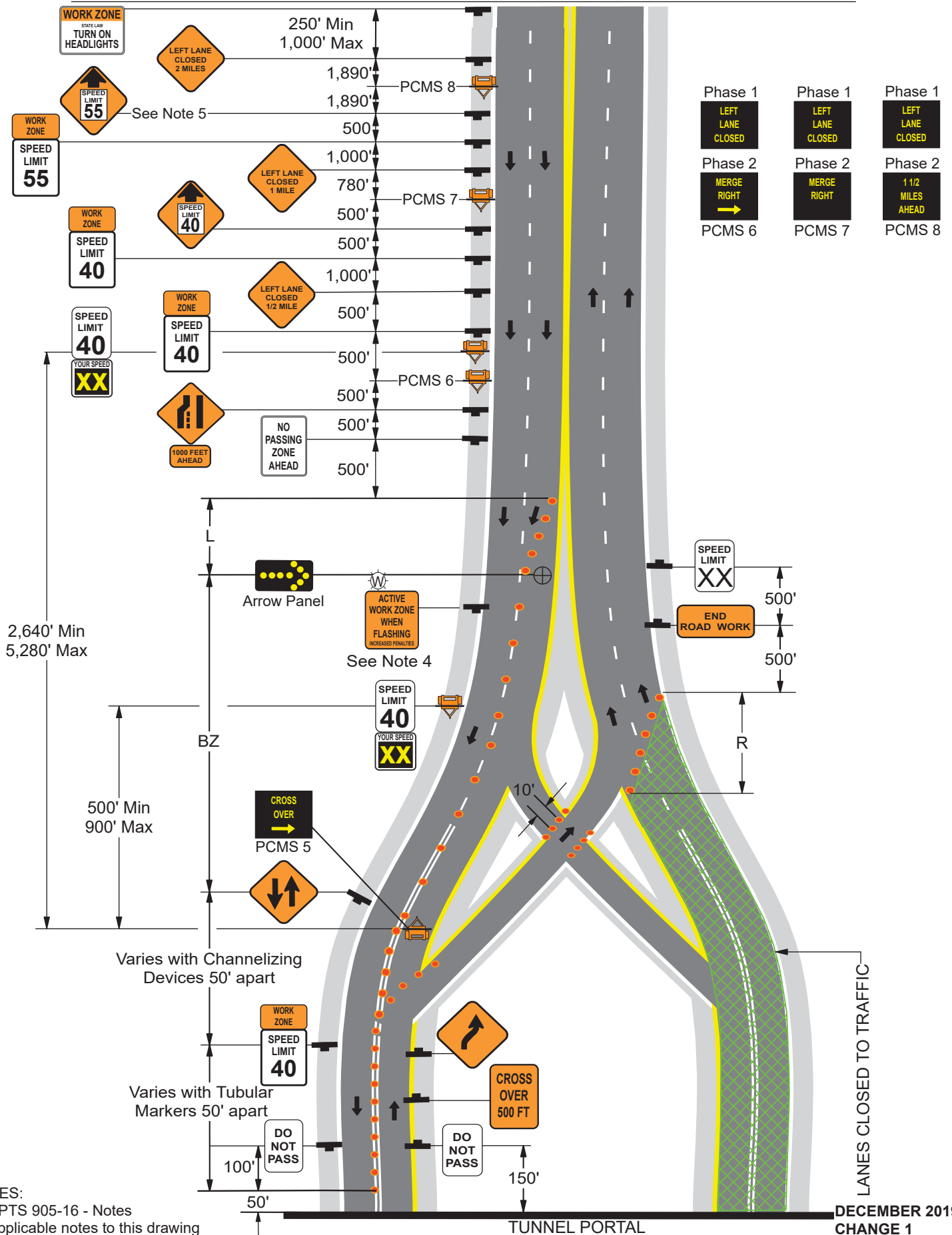


# PTS 905-16 Tunnel Crossover Pattern (Drawing 1 of 2)



NOTES:  
See PTS 905-16 - Notes for applicable notes to this drawing

# PTS 905-16 Tunnel Crossover Pattern (Drawing 2 of 2)



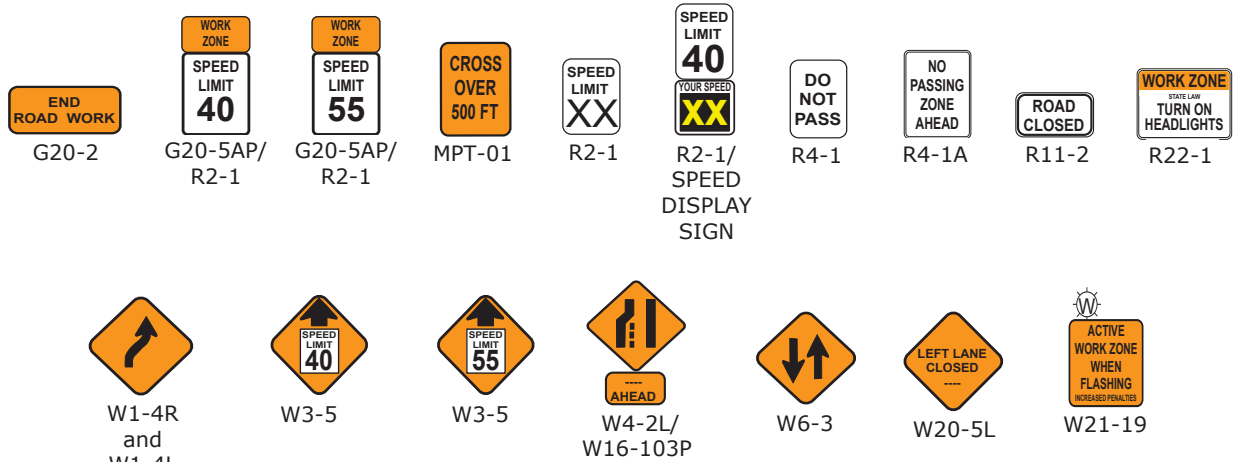
NOTES:  
See PTS 905-16 - Notes  
for applicable notes to this drawing

DECEMBER 2019  
CHANGE 1

## PTS 905-17 - Notes Tuscarora Tunnel Crossover Pattern

1. Use existing "DO NOT CROSS CENTER LINE" sign and existing traffic control signal at portal.
2. Cover the Active Work Zone when Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.
3. Buffer zone begins 250 feet in advance of the first swift gate and ends at the cross over.
4. Install W3-5 sign only in areas where the normal speed limit is 70 MPH.

### Signs



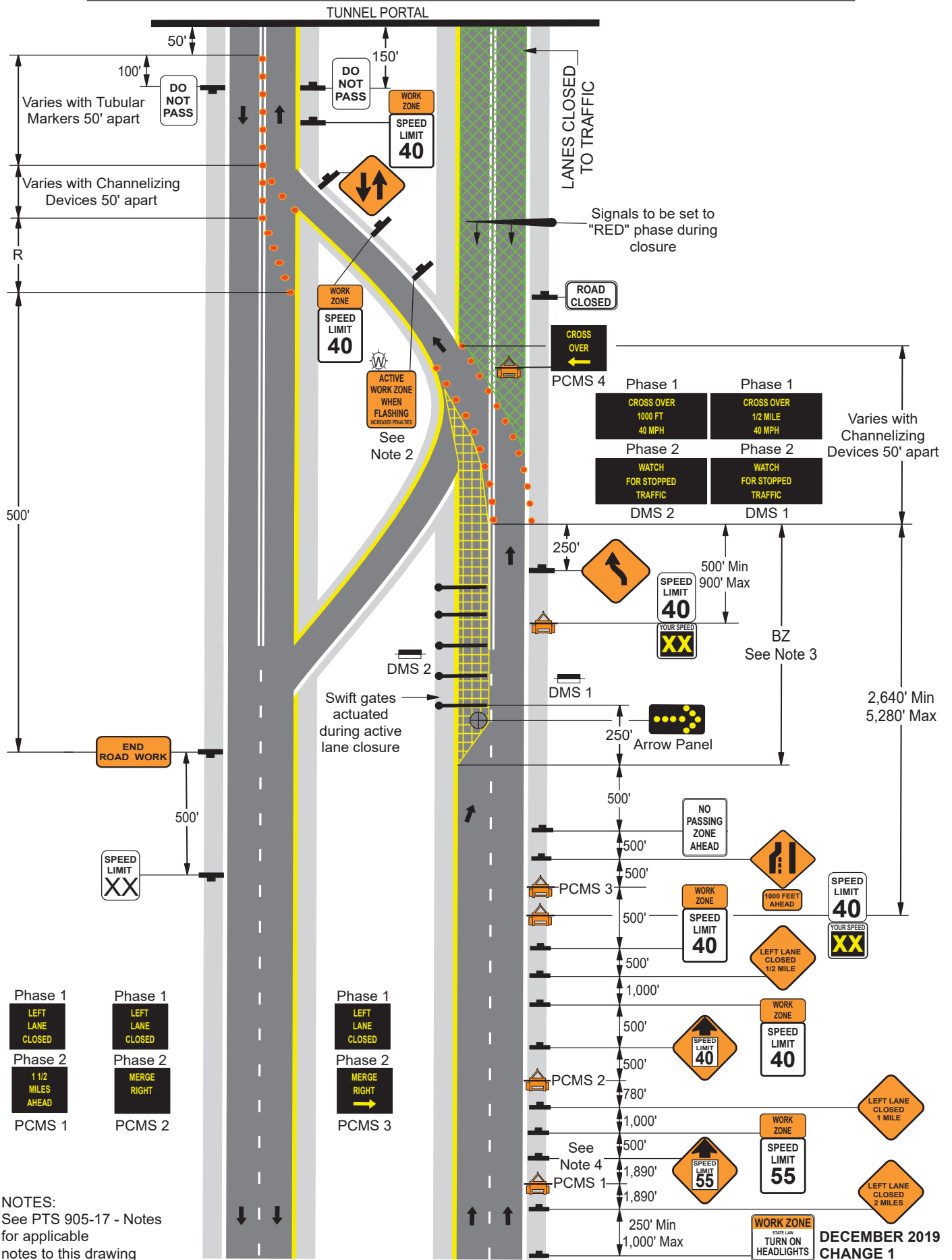
NOTE: See Appendix A for sign descriptions and dimensions.

### Distance and Spacing Quick Reference Chart

SPEED	BZ	R	Maximum Channelizing Device Spacing (Feet)	
			BZ	R
MPH	Feet	Feet		
55	See Note 3	100	100	20

BZ = Buffer Zone  
R = Runout

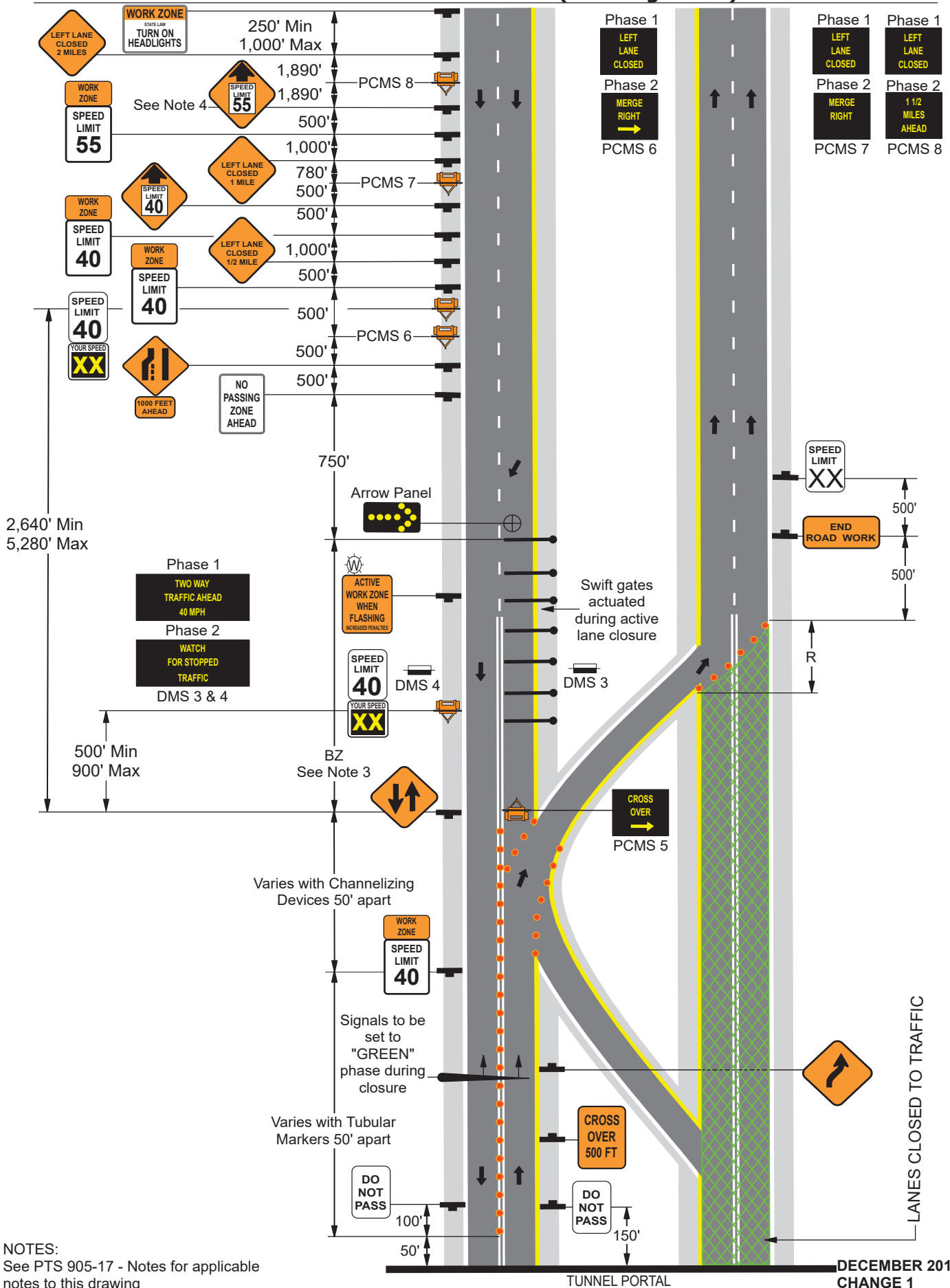
# PTS 905-17 Tuscarora Tunnel Crossover Pattern Tuscarora Tunnel - Eastbound (Drawing 1 of 2)



**NOTES:**  
See PTS 905-17 - Notes for applicable notes to this drawing



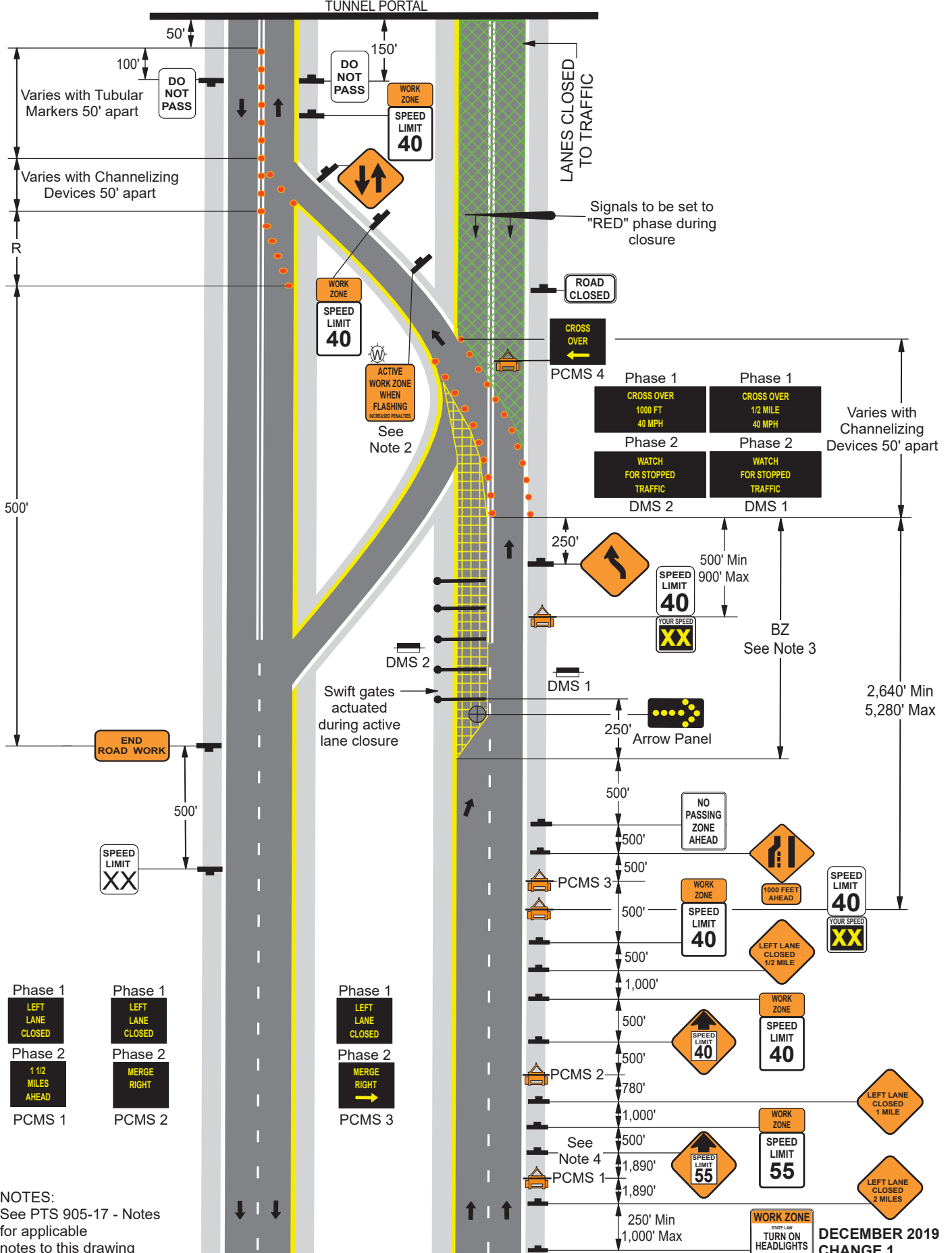
**PTS 905-17  
Tuscarora Tunnel Crossover Pattern  
Tuscarora Tunnel - Eastbound (Drawing 2 of 2)**



NOTES:  
See PTS 905-17 - Notes for applicable notes to this drawing

**DECEMBER 2019  
CHANGE 1**

**PTS 905-17  
Tuscarora Tunnel Crossover Pattern  
Tuscarora Tunnel - Westbound (Drawing 1 of 2)**



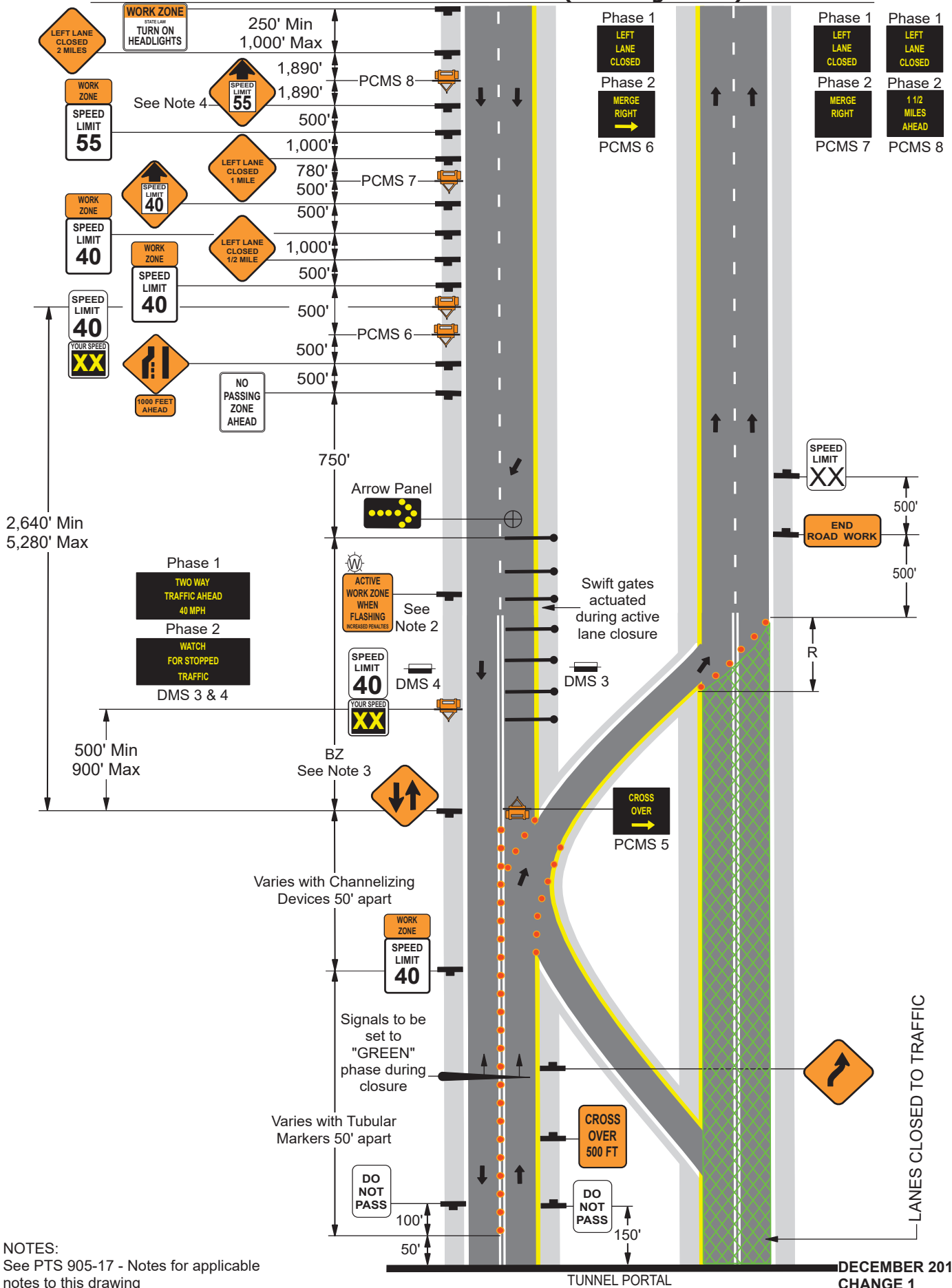
- |                              |                             |
|------------------------------|-----------------------------|
| Phase 1<br>LEFT LANE CLOSED  | Phase 1<br>LEFT LANE CLOSED |
| Phase 2<br>1 1/2 MILES AHEAD | Phase 2<br>MERGE RIGHT      |
| PCMS 1                       | PCMS 2                      |

- |                             |
|-----------------------------|
| Phase 1<br>LEFT LANE CLOSED |
| Phase 2<br>MERGE RIGHT      |
| PCMS 3                      |

NOTES:  
See PTS 905-17 - Notes for applicable notes to this drawing

**DECEMBER 2019  
CHANGE 1**

**PTS 905-17  
Tuscarora Tunnel Crossover Pattern  
Tuscarora Tunnel - Westbound (Drawing 2 of 2)**



NOTES:  
See PTS 905-17 - Notes for applicable notes to this drawing

## PTS 905-18 - Notes

### Right Lane Closure within Transition from 2 to 3 Lanes

1. For interchange and service plaza ramp signing within the work zone, see PTS 905-6.
2. Establish traffic pattern only during active work periods. Shorten length of pattern to only the length needed for the construction operation. Work Zone should not exceed four (4) miles in length.
3. Install W3-5 sign only in areas where the normal speed limit is 70 mph.
4. Cover the Active Work Zone When Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.
5. Speed Display Sign shall only be used if the length of the physical work zone is greater than or equal to 500 feet.
6. Right Lane Closure within Transition from 2 to 3 Lanes only permitted during allowable working hours.
7. All arrow panels are to be truck mounted.
8. Have all shadow vehicles meet PennDOT and Pennsylvania Turnpike Commission requirements.
9. Compute the minimum desirable taper length for reduction in lanes using the following formula:  

$$L = S \times W$$
 Where L = Minimum desirable taper length in feet  
 W = Width of offset in feet  
 S = Normal speed limit in miles per hour

#### Signs



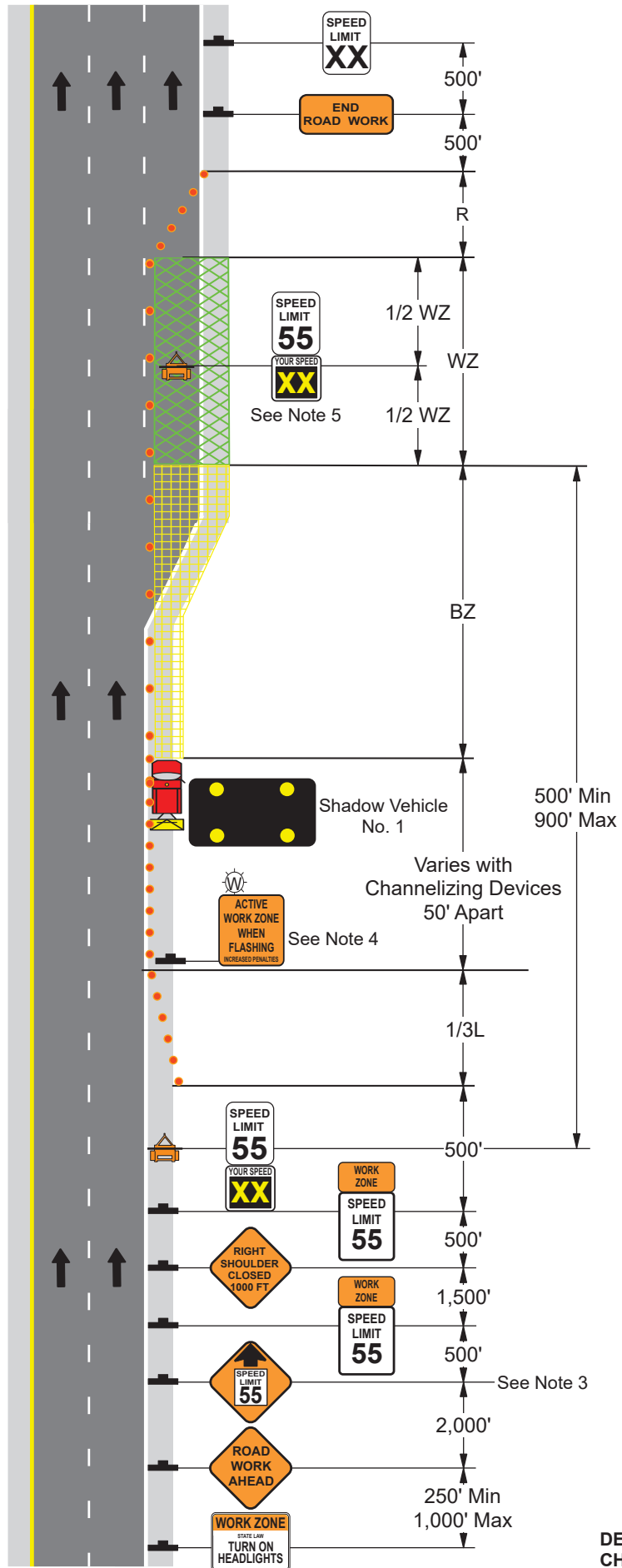
NOTE: See Appendix A for sign descriptions and dimensions.

#### Distance and Spacing Quick Reference Chart

SPEED	1/3 L	BZ	WZ	R	Maximum Channelizing Device Spacing (Feet)			
					1/3 L	BZ	WZ	R
MPH	Feet	Feet	Mile(s)	Feet	1/3 L	BZ	WZ	R
55	220	500 (Min)	4 (Max)	100	50	100	100	20
70	280	750 (Min)	4 (Max)	100	50	100	100	20

1/3L = Shoulder Transition  
 BZ = Buffer Zone  
 WZ = Work Zone  
 R = Runout

**PTS 905-18**  
**Right Lane Closure within Transition from 2 to 3 Lanes**



Notes:  
 See PTS 905-18 Notes  
 for applicable notes to  
 this drawing

## PTS 905-19 - Notes

### Center/Right Lane Closure within Transition from 2 to 3 Lanes

1. For interchange and service plaza ramp signing within the work zone, see PTS 905-6.
2. Use channelizing devices with PennDOT approved sequential warning lights in the transition area for patterns used during hours of darkness.
3. Establish single traffic pattern only during active work periods. Shorten length of pattern to only the length needed for the construction operation. Work Zone should not exceed four (4) miles in length.
4. Single lane should be established a minimum of 1,000 feet in advance of deceleration ramp or beyond acceleration ramp at interchanges or service plazas, or as directed by the Representative.
5. Install W3-5 sign only in areas where the normal speed limit is 70 mph.
6. Cover the Active Work Zone When Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.
7. Speed Display Sign shall only be used if the length of the physical work zone is greater than or equal to 500 feet.
8. Compute the minimum taper length for reduction in lanes using the following formula:  

$$L = S \times W$$
 Where L = Minimum desirable taper length in feet  
 W = Width of offset in feet  
 S = Normal speed limit in miles per hour

#### Signs



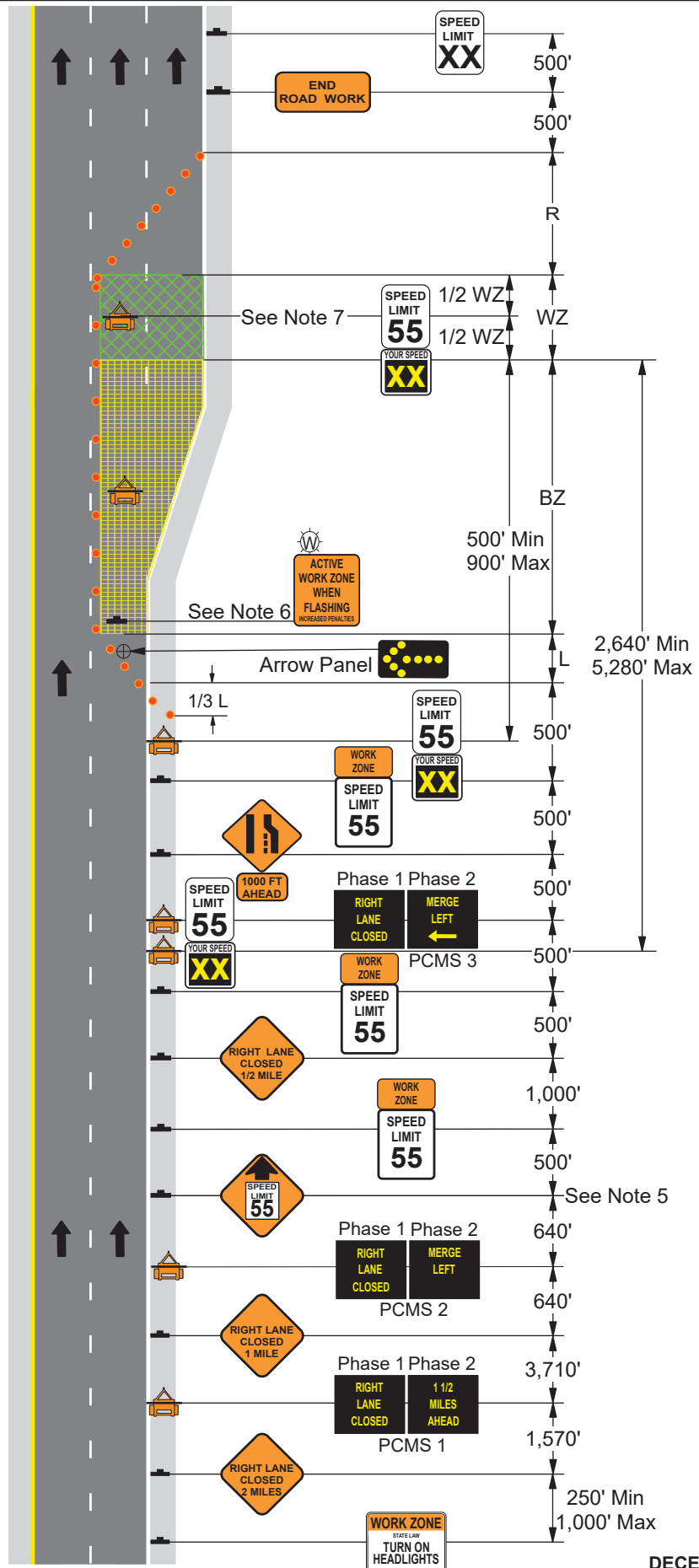
NOTE: See Appendix A for sign descriptions and dimensions.

#### Distance and Spacing Quick Reference Chart

SPEED MPH	L Feet	1/3 L Feet	BZ Feet	WZ Mile(s)	R Feet	Maximum Channelizing Device Spacing (Feet)				
						L	1/3 L	BZ	WZ	R
<b>55</b>	660	220	500 (Min)	4 (Max)	100	50	50	100	100	20
<b>70</b>	840	280	750 (Min)	4 (Max)	100	50	50	100	100	20

L = Transition  
 1/3L = Shoulder Transition  
 BZ = Buffer Zone  
 WZ = Work Zone  
 R = Runout

**PTS 905-19**  
**Center/Right Lane Closure within Transition from 2 to 3 Lanes**



Notes:  
 See PTS 905-19 Notes  
 for applicable notes to  
 this drawing

# **Standards for Short-Term**

(PTS 915 Series)



## PTS 915-1 - Notes General Notes

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1. Remove all traffic control signs and devices immediately upon the completion of the work unless otherwise specified in the special provisions.
2. Place all traffic control devices and have them inspected by the Representative before work begins.
3. Cover or remove from the site all signs not in use. Remove from the Turnpike right-of-way construction signs not needed or used for a period of two (2) or more weeks.
4. Maintain a minimum spacing of 200 feet between all regulatory, warning and destination signs.
5. Provide at minimum a 40 feet width beyond the edge of the travel lane free of obstacles and drop-offs greater than 2 inches in depth in work zone(s) during non-working hours or separate work zone(s) from motorists with temporary concrete barrier. Separation of work zone(s) is incidental to the MPT.
6. Details for the signs and devices can be found in these drawings, PennDOT Publication 236, PennDOT Publication 212 and are to be manufactured by a Department of Transportation approved manufacturer as listed in PennDOT Publication 35.
7. Use PennDOT approved Type XI reflectorized material for signs.
8. These plans are not intended to relieve the contractor of the responsibility for the protection of the public and the construction personnel. The standards prescribed are minimum and additional protection may be needed if problems are encountered during the term of the contract. The contractor will be expected to constantly review this plan for adequacy and to recommend changes for the Representative's approval when inadequacies are discovered.
9. Signs and devices may be adjusted to fit field conditions.
10. Concrete barrier details are to be according to PennDOT Standards for Roadway Construction, RC-57M, RC-59M, and PTC Standards for Roadway Construction.
11. Establish work zone speed limit of 55 MPH in all construction zones except when using tunnel crossover traffic pattern establish work zone speed limit of 40 MPH.  
  
Establish work zone speed limit of 55 MPH when a pavement differential exists between any of the lanes.  
  
Normal posted speed limit signs within advanced signing area prior to any W3-5 sign are to remain uncovered.  
  
Cover or remove work zone speed limit signs when all normal lanes and all normal median and shoulder are available for the affected direction(s).
12. Only traffic control devices are permitted within the buffer zone. Do not locate vehicles, equipment, material, or workers in this area.
13. Post the G20-2 (END ROAD WORK) sign at the end of the work zone. If the physical work zone is followed by another physical work zone within 2 miles, then the G20-2 sign is not to be used at the end of the first work zone.
14. Type B light is to be mounted on the side closest to traffic as shown on PTS 980 (Sheet 36 of 40).
15. Existing R2-2-2, "WORK ZONE SPEED LIMIT 55 MPH", signs may only be used for the remainder of their serviceable life.
16. Type B yellow flashing lights may be used in conjunction with warning signs, unless otherwise indicated on the drawing.
17. Channelizing devices may be temporarily relocated to the minimum offset to allow for work to be performed, as directed by the Representative. The channelizing devices must remain between traffic and the work zone. Relocate channelizing devices to original position as work progresses.
18. Install, reset, relocate, and remove any permanent and / or temporary concrete barrier so that no blunt end of the barrier is exposed to oncoming traffic.
19. Except for MPT-09, MPT-10, and MPT-11, all other signs may be mounted on PennDOT approved portable supports, x-frame, with a minimum height of 1 foot from the pavement surface to the bottom of the signs. Portable supports and signs must be removed from the roadway during non-working hours.
20. Use only for short-term operations which occupy a location for less than 12 hours for three (3) or less consecutive days.

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## **PTS 915-2 - Notes**

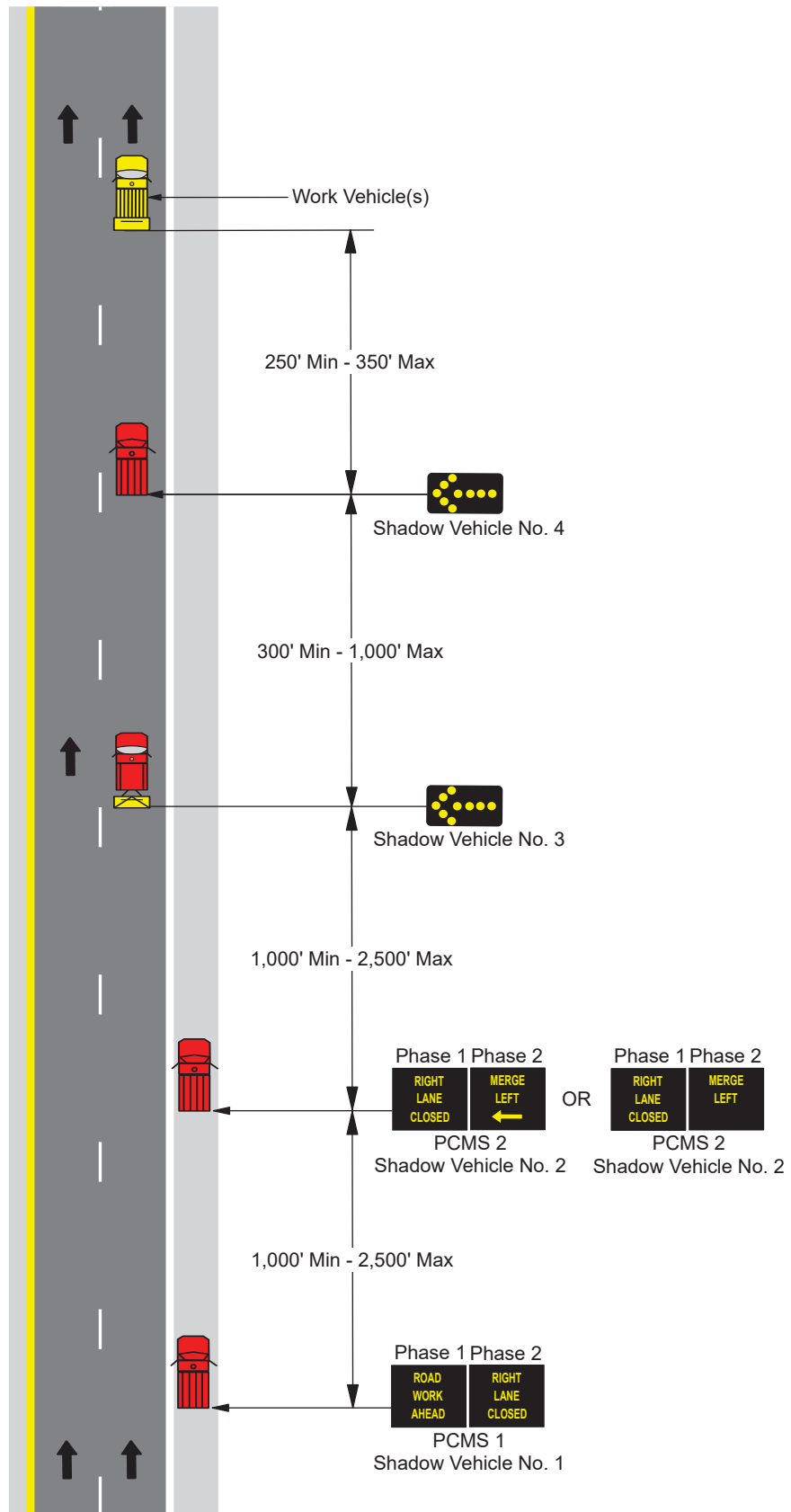
### **Mobile Operation For 2 Lanes**

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1. This figure applies where the operation moves intermittently or continuously at an average speed of more than 1 MPH (88 FT./MIN.). The operator is to be the only occupant of Shadow Vehicle No. 3. When the operation moves intermittently, the maximum time of stationary work is 15 minutes. If these conditions cannot be met, use a Single Lane Traffic Pattern as shown on PTS 915-4.
2. A 7,000 lb GVW (Gross Vehicle Weight) or larger pickup truck loaded to weigh a minimum of 5,500 lbs may be used as Shadow Vehicles No. 1 and 2.
3. Position Shadow Vehicle No. 1 so that it is visible from behind for a minimum distance of 700 feet.
4. Have all shadow vehicles meet PennDOT and PTC requirements.
5. All arrow panels and PCMS are to be truck-mounted or trailer-mounted and attached to the truck and shall move with the associated shadow vehicle.
6. The spacing between the work vehicles and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between, based on field conditions.
7. Shadow Vehicles No. 1 and 2 may be located on the median shoulder where the median width is a minimum of 12 feet.

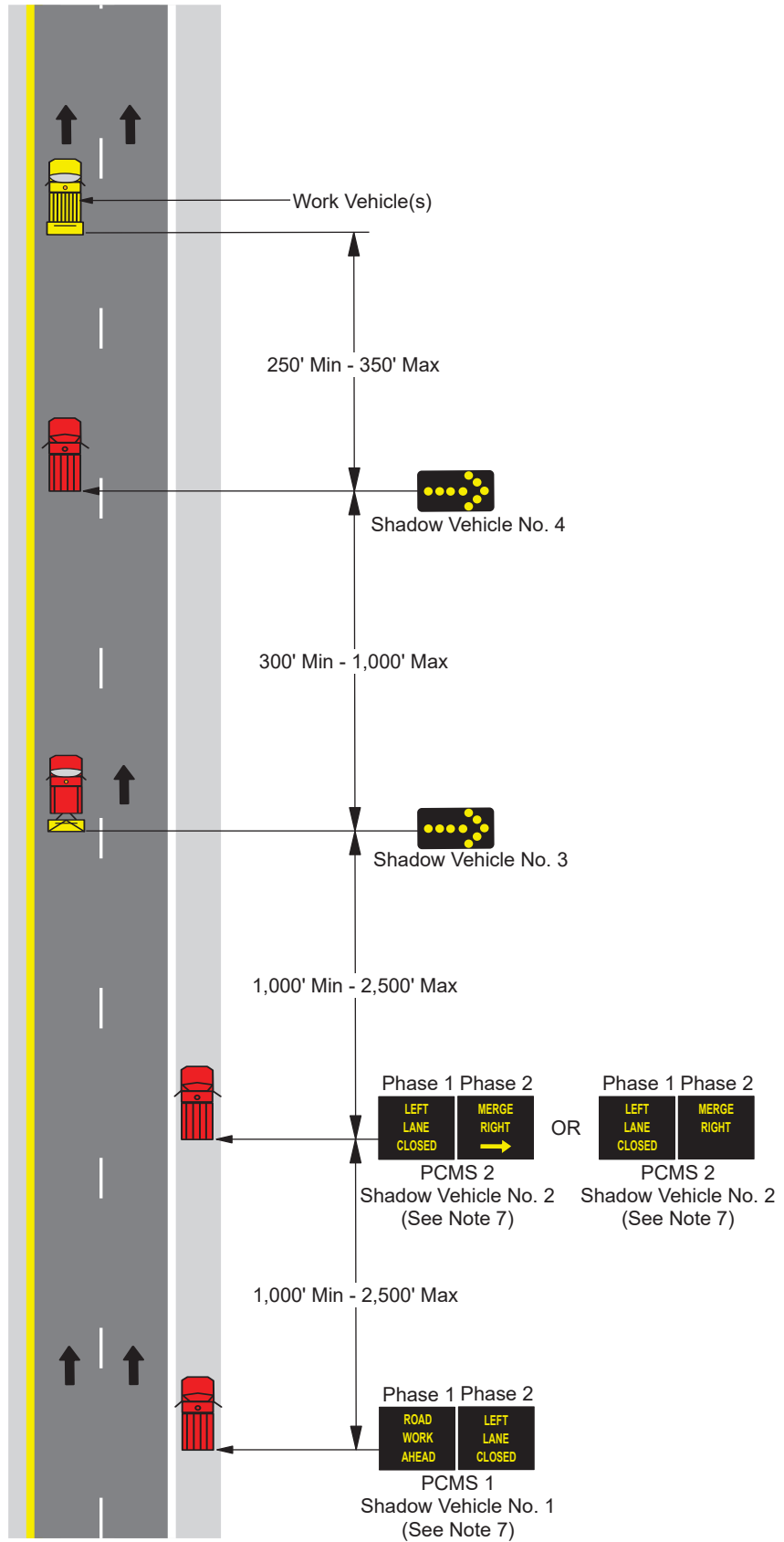
# PTS 915-2A

## Mobile Operation for 2 Lanes - Right Lane and Shoulder Work Zone



NOTES:  
See PTS 915-2 - Notes for applicable notes to this drawing

# PTS 915-2B Mobile Operation for 2 Lanes - Left Lane and Median Work Zone



NOTES:  
See PTS 915-2 - Notes for applicable notes to this drawing

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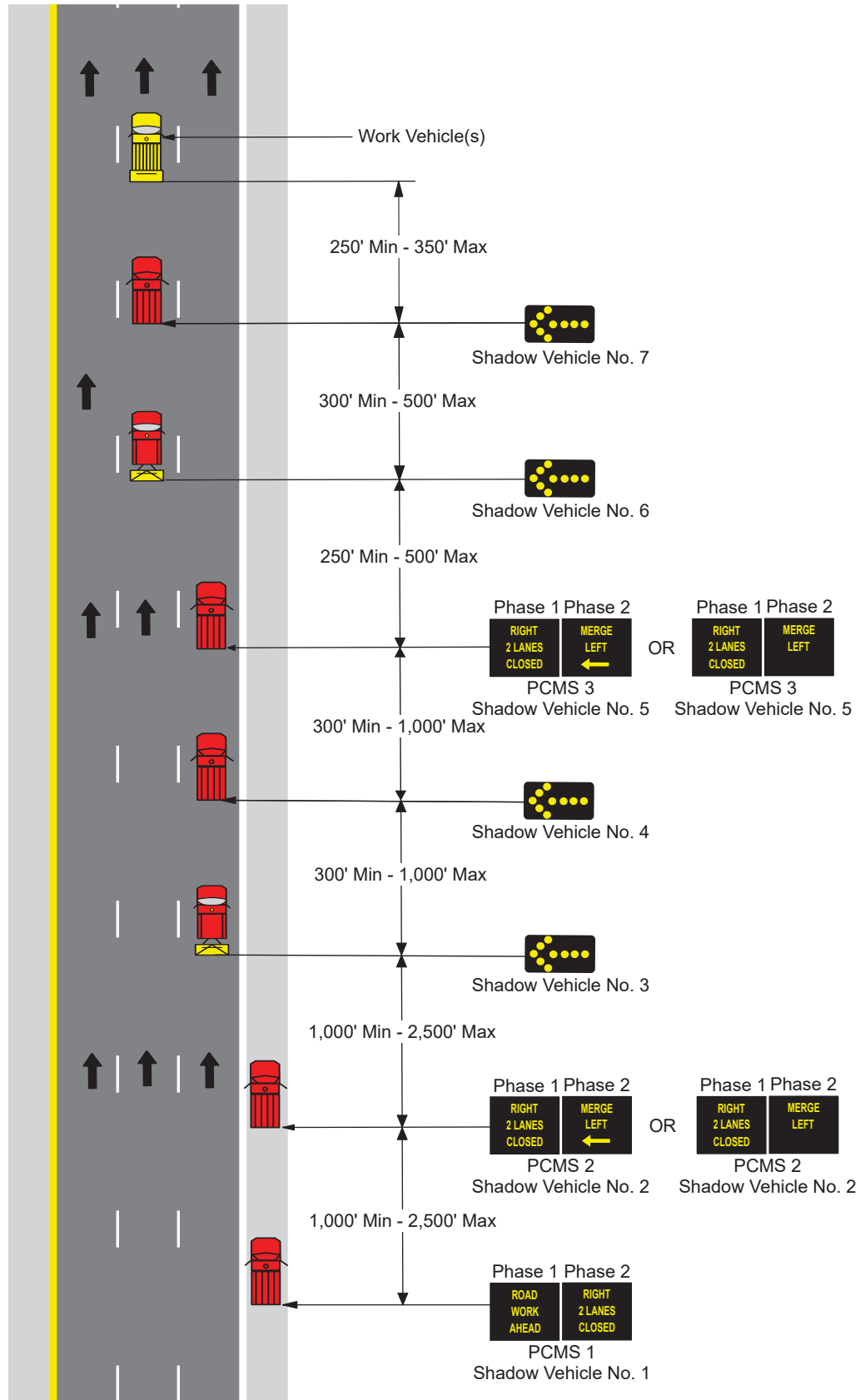
## **PTS 915-3 - Notes**

### **Mobile Operation for 3 Lanes**

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1. This figure applies where the operation moves intermittently or continuously at an average speed of more than 1 MPH (88 FT./MIN.). The operator is to be the only occupant of Shadow Vehicles No. 3 and 6. When the operation moves intermittently, the maximum time of stationary work is 15 minutes. If these conditions cannot be met, use a Single Lane Traffic Pattern as shown on PTS 915-5.
2. A 7,000 lb GVW (Gross Vehicle Weight) or larger pickup truck loaded to weigh a minimum of 5,500 lbs may be used as Shadow Vehicles No. 1 and 2.
3. Position Shadow Vehicle No. 1 so that it is visible from behind for a minimum distance of 700 feet.
4. Have all shadow vehicles meet PennDOT and PTC requirements.
5. All arrow panels and PCMS are to be truck-mounted or trailer-mounted and attached to the truck and shall move with the associated shadow vehicle.
6. The spacing between the work vehicles and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between, based on field conditions.
7. Shadow Vehicles No. 1 and 2 may be located on the median shoulder where the median shoulder width is a minimum of 12 feet.

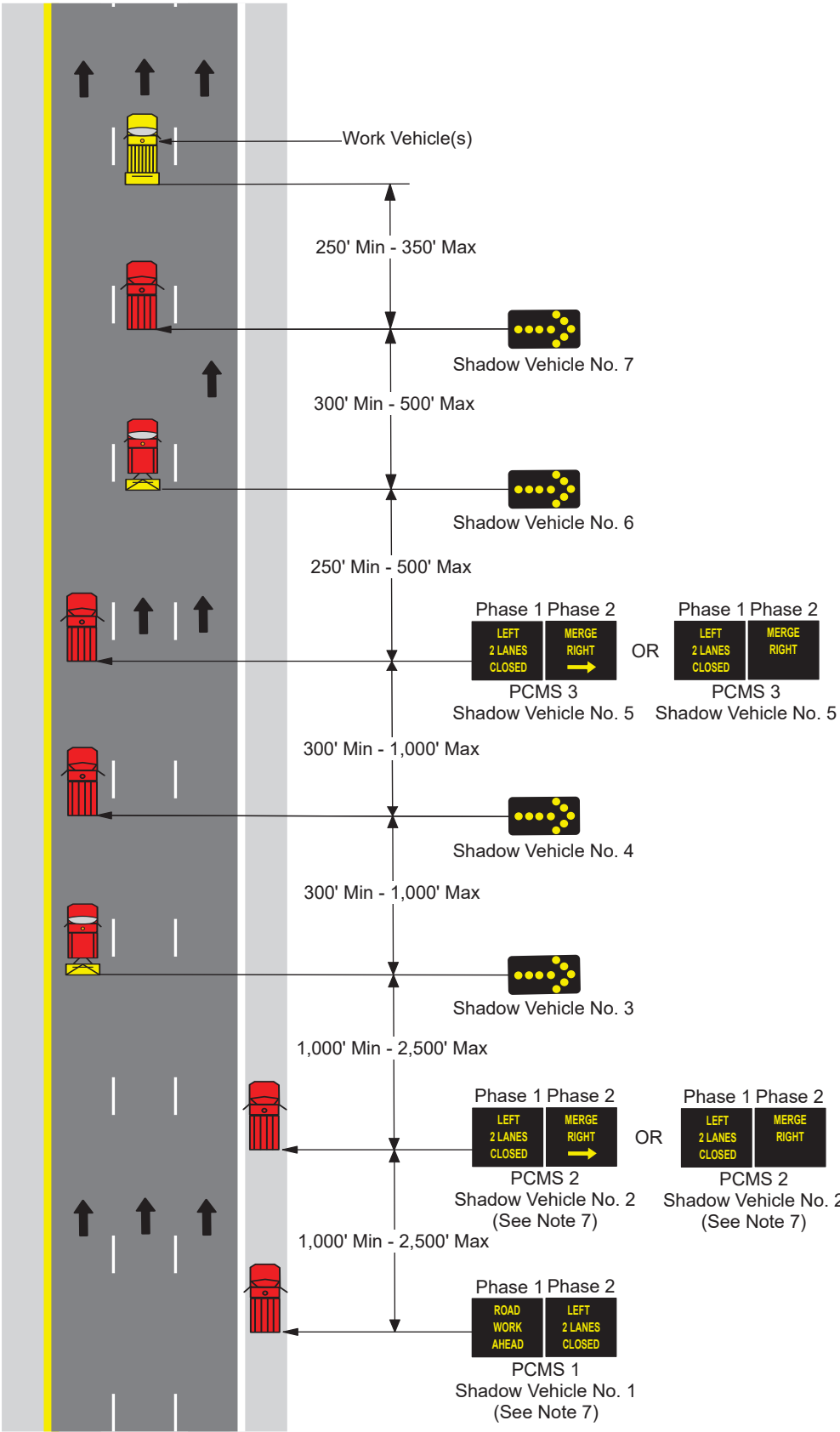
# PTS 915-3A Mobile Operation For 3 Lanes - Right and Center Lane Work Zone



NOTES:  
See PTS 915-3 - Notes for applicable notes to this drawing



**PTS 915-3B**  
**Mobile Operation for 3 Lanes - Left and Center Lane Work Zone**



NOTES:  
 See PTS 915-3 - Notes for applicable notes to this drawing

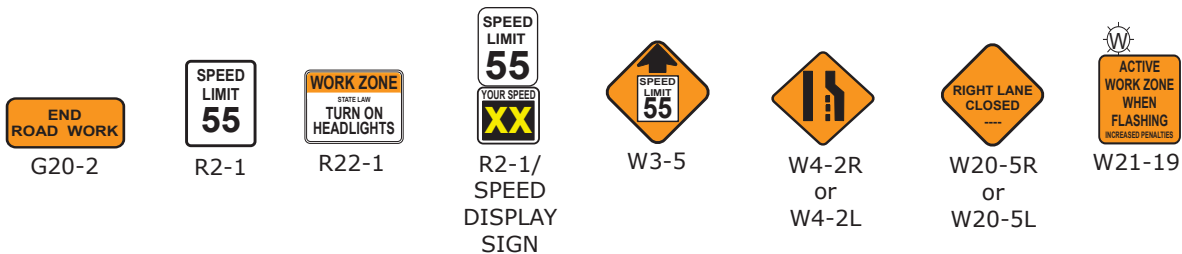
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## PTS 915-4 - Notes Single Lane Traffic Pattern

1. For interchange and service plaza ramp signing within the work zone, see PTS 915-6.
2. For left lane work zone use the same sign spacing, location, and pattern but with the signs and PCMS indicating a left lane closure.
3. Use channelizing devices with PennDOT approved sequential warning lights in the transition areas for patterns used during hours of darkness.
4. Establish single lane traffic pattern only during active work periods. Shorten length of single lane pattern to only the length needed for the construction operation. Work zone should not exceed four (4) miles in length, unless approved by the Representative.
5. Single lane should be established a minimum of 1,000 feet in advance of deceleration ramp or beyond acceleration ramp at interchanges and service plazas, or as directed by the Representative.
6. Install W3-5 sign only in areas where the normal speed limit is 70 MPH.
7. Cover the Active Work Zone When Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.
8. Act 229 signs are not required for PTC Maintenance Department Operations.
9. This pattern is to be used for short-term operations which occupy a location for less than 12 hours for three (3) or less consecutive days.
10. Speed Display Sign shall only be used if the length of the physical work zone is greater than or equal to 500 feet.
11. Speed Display Sign not required for PTC Maintenance Department Operations.
12. During high traffic volume periods and as directed by the Representative, change the message on the PCMS to read: PCMS 1 - Phase 1 "USE / BOTH / LANES", Phase 2 "TO / MERGE / POINT"; PCMS 2 - Phase 1 "RIGHT/ LANE / CLOSED", Phase 2 "USE / BOTH/ LANES"; PCMS 3 - Phase 1 "RIGHT / LANE / CLOSED", Phase 2 "MERGE / LEFT / 1500 FT".
13. Existing W20-5R / W20-5L signs may only be used for remainder of their serviceable life.
14. Compute the minimum desirable taper length for reduction in lanes using the following formula:  

$$L = S \times W$$
 Where L = Minimum desirable taper length in feet  
 W = Width of offset in feet  
 S = Normal speed limit in miles per hour

### Signs



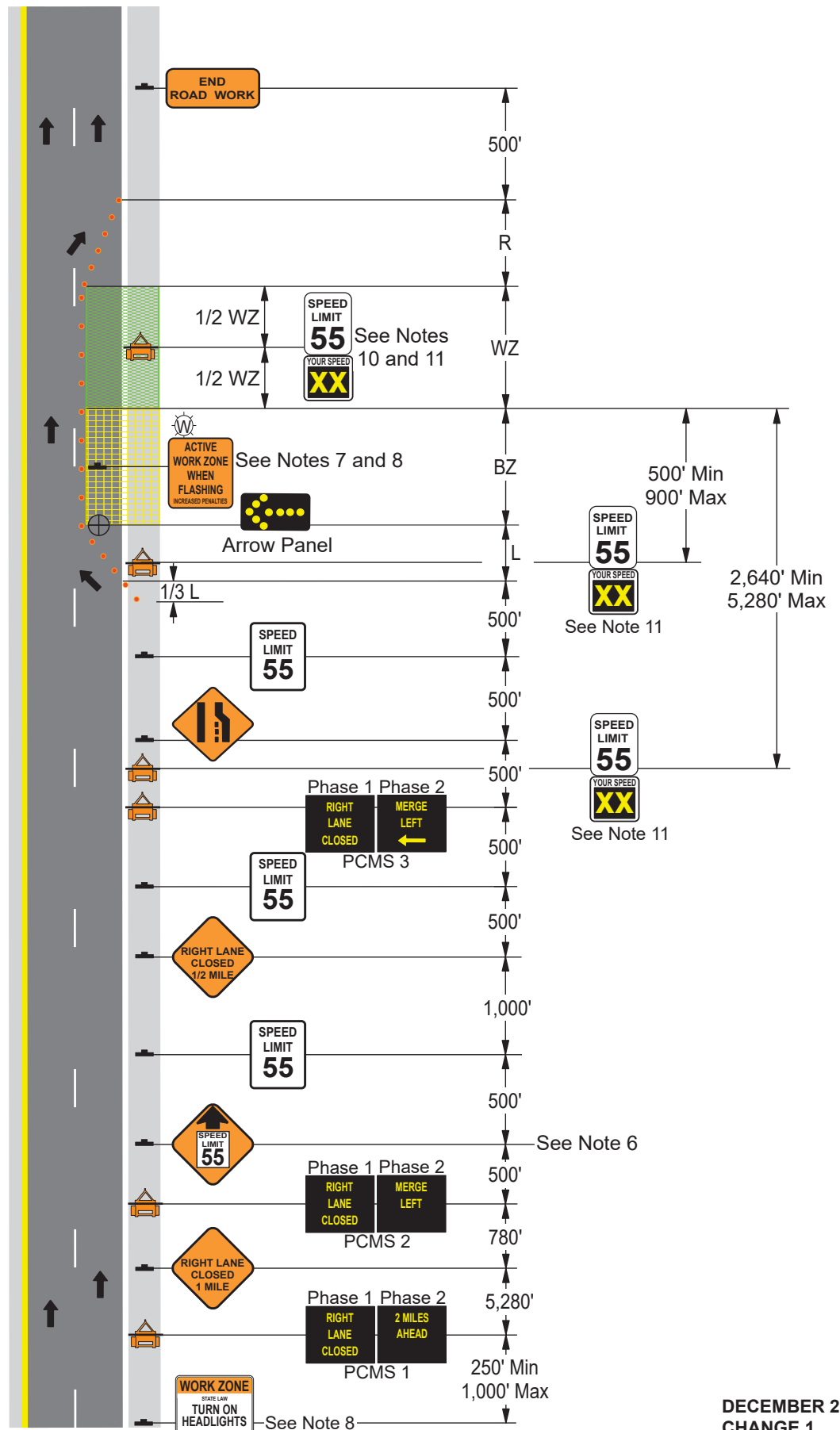
NOTE: See Appendix A for sign descriptions and dimensions.

### Distance and Spacing Quick Reference Chart

SPEED	L	1/3 L	BZ	WZ	R	Maximum Channelizing Device Spacing (Feet)				
						L	1/3 L	BZ	WZ	R
MPH	Feet	Feet	Feet	Mile(s)	Feet	L	1/3 L	BZ	WZ	R
<b>55</b>	660	220	500 (Min)	4 (Max)	100	50	50	100	100	20
<b>70</b>	840	280	750 (Min)	4 (Max)	100	50	50	100	100	20

L = Transition  
 1/3L = Shoulder Transition  
 BZ = Buffer Zone  
 WZ = Work Zone  
 R = Runout

# PTS 915-4 Single Lane Traffic Pattern



NOTES:  
See PTS 915-4 - Notes for applicable notes to this drawing

## PTS 915-5 - Notes Single Lane Traffic Pattern for 3 Lane Section

1. For interchange and service plaza ramp signing within the work zone, see PTS 915-6.
2. For left and center lane work zone, use the same spacing, location, and pattern but with the signs and PCMS indicating a left and center lane closure.
3. Use channelizing devices with PennDOT approved sequential warning lights in the transition areas for patterns used during hours of darkness.
4. Establish single lane pattern only during active work periods. Shorten length of single lane pattern to only the length needed for the construction operation. Work zone should not exceed four (4) miles in length, unless approved by the Representative.
5. Single lane should be established a minimum of 1,000 feet in advance of deceleration ramp or beyond acceleration ramp at interchanges and service plazas, or as directed by the Representative.
6. Install W3-5 sign only in areas where the normal speed limit is 70 MPH.
7. Cover the Active Work Zone When Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.
8. Act 229 signs are not required for PTC Maintenance Department Operations.
9. This pattern is to be used for short term operations which occupy a location for less than 12 hours for three (3) or less consecutive days.
10. Speed Display Sign shall only be used if the length of the physical work zone is greater than or equal to 500 feet.
11. Speed Display Sign not required for PTC Maintenance Department Operations.
12. During high traffic volume periods and as directed by the Representative, change the message on the PCMS to read: PCMS 1 - Phase 1 "USE / ALL / LANES", Phase 2 "TO / MERGE / POINT"; PCMS 2 - Phase 1 "RIGHT / 2 LANES / CLOSED", Phase 2 "USE / ALL / LANES"; PCMS 3 - Phase 1 "RIGHT / 2 LANES / CLOSED", Phase 2 "MERGE / LEFT / 1500 FT".
13. Existing W20-5AR / W20-5AL signs may only be used for remainder of their serviceable life.

### Signs



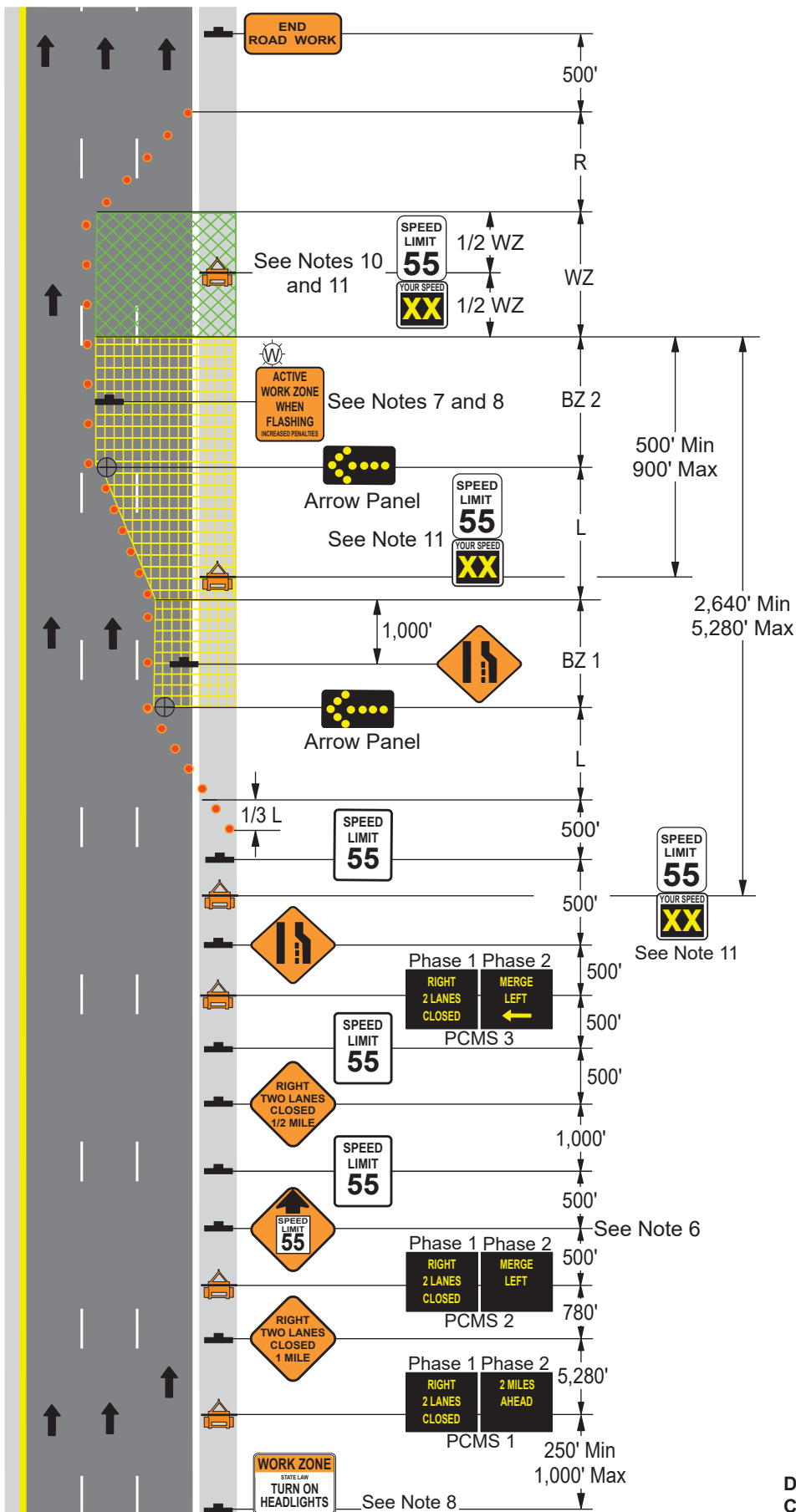
NOTE: See Appendix A for sign descriptions and dimensions.

### Distance and Spacing Quick Reference Chart

SPEED	L	1/3 L	BZ 1	BZ 2	WZ	R	Maximum Channelizing Device Spacing (Feet)					
							L	1/3 L	BZ 1	BZ 2	WZ	R
<b>MPH</b>	<b>Feet</b>	<b>Feet</b>	<b>Feet</b>	<b>Feet</b>	<b>Mile(s)</b>	<b>Feet</b>	<b>L</b>	<b>1/3 L</b>	<b>BZ 1</b>	<b>BZ 2</b>	<b>WZ</b>	<b>R</b>
<b>55</b>	660	220	1,320 (Min)	500 (Min)	4 (Max)	100	50	50	100	100	100	20
<b>70</b>	840	280	1,680 (Min)	750 (Min)	4 (Max)	100	50	50	100	100	100	20

- L = Transition
- 1/3 L = Shoulder Transition
- BZ 1 = Buffer Zone 1
- BZ 2 = Buffer Zone 2
- WZ = Work Zone
- R = Runout

# PTS 915-5 Single Lane Traffic Pattern for 3 Lane Section



NOTES:  
See PTS 915-5 - Notes for applicable notes to this drawing

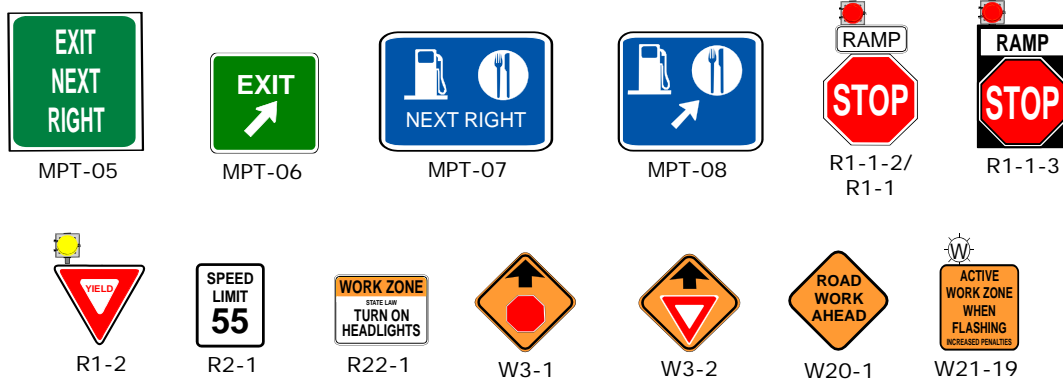
## PTS 915-6 - Notes

### Lane Closure Traffic Pattern for Interchange and Service Plaza Areas

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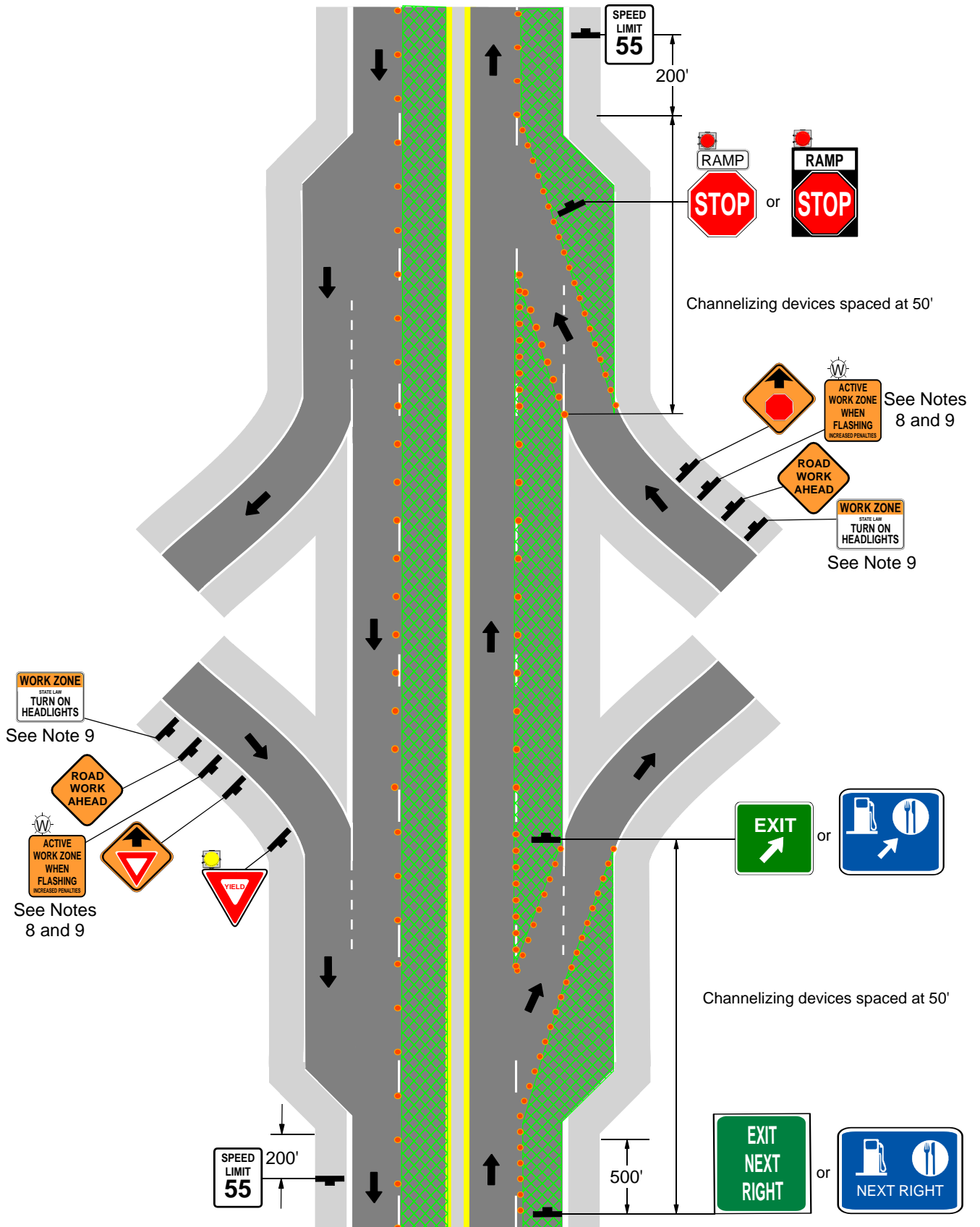
1. Single lane should be established a minimum of 1,000 feet in advance of deceleration ramp or beyond acceleration ramp, or as directed by the Representative.
2. MPT-05 and MPT-06 signs:
  - A. Use for interchange ramp only.
  - B. Cover or remove from the site when not in use.
3. MPT-07 and MPT-08 signs:
  - A. Use for service plaza ramp only.
  - B. Cover or remove from the site when not in use.
4. Existing MPT-07 and MPT-08 signs may only be used for remainder of their serviceable life.
5. Red and yellow Type B lights to be used during hours of darkness.
6. Channelizing devices spaced at 100 feet except where noted.
7. Space signs evenly at 200 feet minimum spacing, or as conditions warrant.
8. Cover the Active Work Zone When Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.
9. Act 229 signs are not required for PTC Maintenance Department Operations.

#### Signs



NOTE: See Appendix A for sign descriptions and dimensions.

**PTS 915-6**  
**Lane Closure Traffic Pattern for Interchange and Service Plaza Areas**



NOTES:  
 See PTS 915-6 - Notes for applicable notes to this drawing



## PTS 915-7 - Notes Mobile Shoulder Operations

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1. This figure applies where the operation moves intermittently or continuously at an average speed of more than 1 MPH (88 FT./MIN.). The operator is to be the only occupant of Shadow Vehicle No. 1. When the operation moves intermittently, the maximum time of stationary work is 15 minutes. If these conditions cannot be met, either use a Stationary Shoulder Closure with Channelizing Devices as shown on PTS 915-8 or use a Single Lane Traffic Pattern, as shown on PTS 915-4.
2. All arrow panels and PCMS are to be truck mounted.
3. Have all shadow vehicles meet PennDOT and PTC requirements.
4. This pattern is to be used for short-term operations which occupy a location for less than 12 hours for three (3) or less consecutive days.

### *Signs*

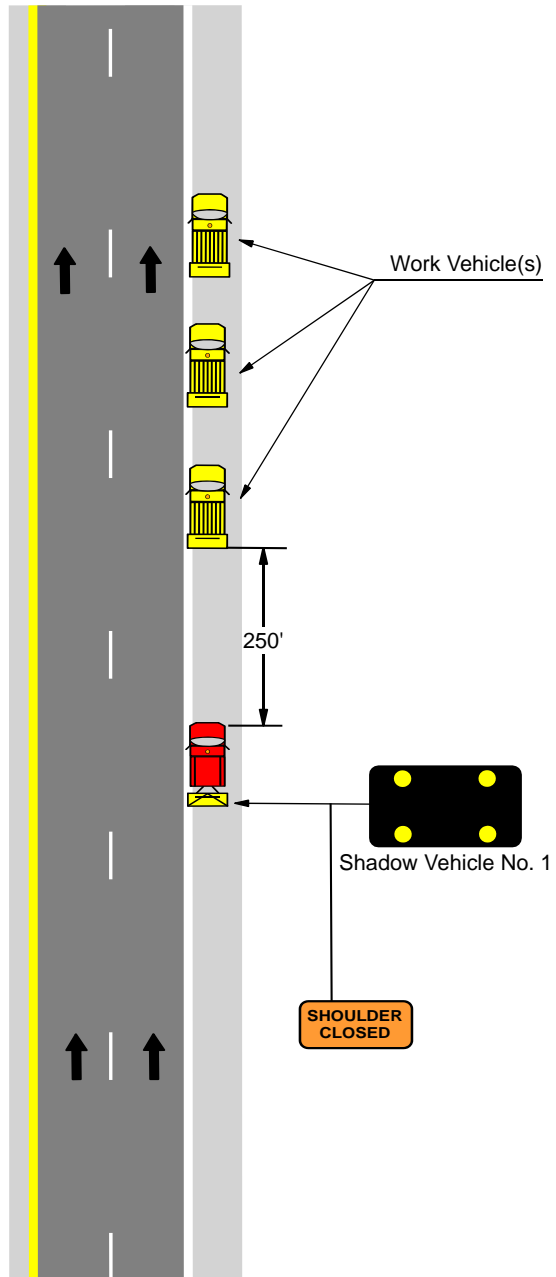


MPT-34

NOTE: See Appendix A for sign descriptions and dimensions.

# PTS 915-7 Mobile Shoulder Operations

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NOTES:  
See PTS 915-7 - Notes for applicable  
notes to this drawing

## PTS 915-8 - Notes

### Stationary Shoulder Closure with Channelizing Devices

1. Arrow panel in caution mode to be used when workers, vehicles, equipment, and materials are working on the paved shoulder. Channelizing devices to remain in place until work is completed. Maintain normal lane traffic. Stationary shoulder closure with channelizing devices only permitted during allowable working hours.
2. For median operations where the median shoulder is less than 12 feet wide use Single Lane Traffic Pattern, per PTS 915-4, left lane closed. Single lane traffic pattern to remain in place until work is completed.
3. This pattern is to be used for short-term operations which occupy a location for less than 12 hours for three (3) or less consecutive days.
4. Install W3-5 sign only in areas where the normal speed limit is 70 MPH.
5. Cover the Active Work Zone When Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.
6. Act 229 signs are not required for PTC Maintenance Department Operations.
7. All arrow panels are to be truck mounted.
8. Have all shadow vehicles meet PennDOT and Pennsylvania Turnpike Commission requirements.

#### Signs



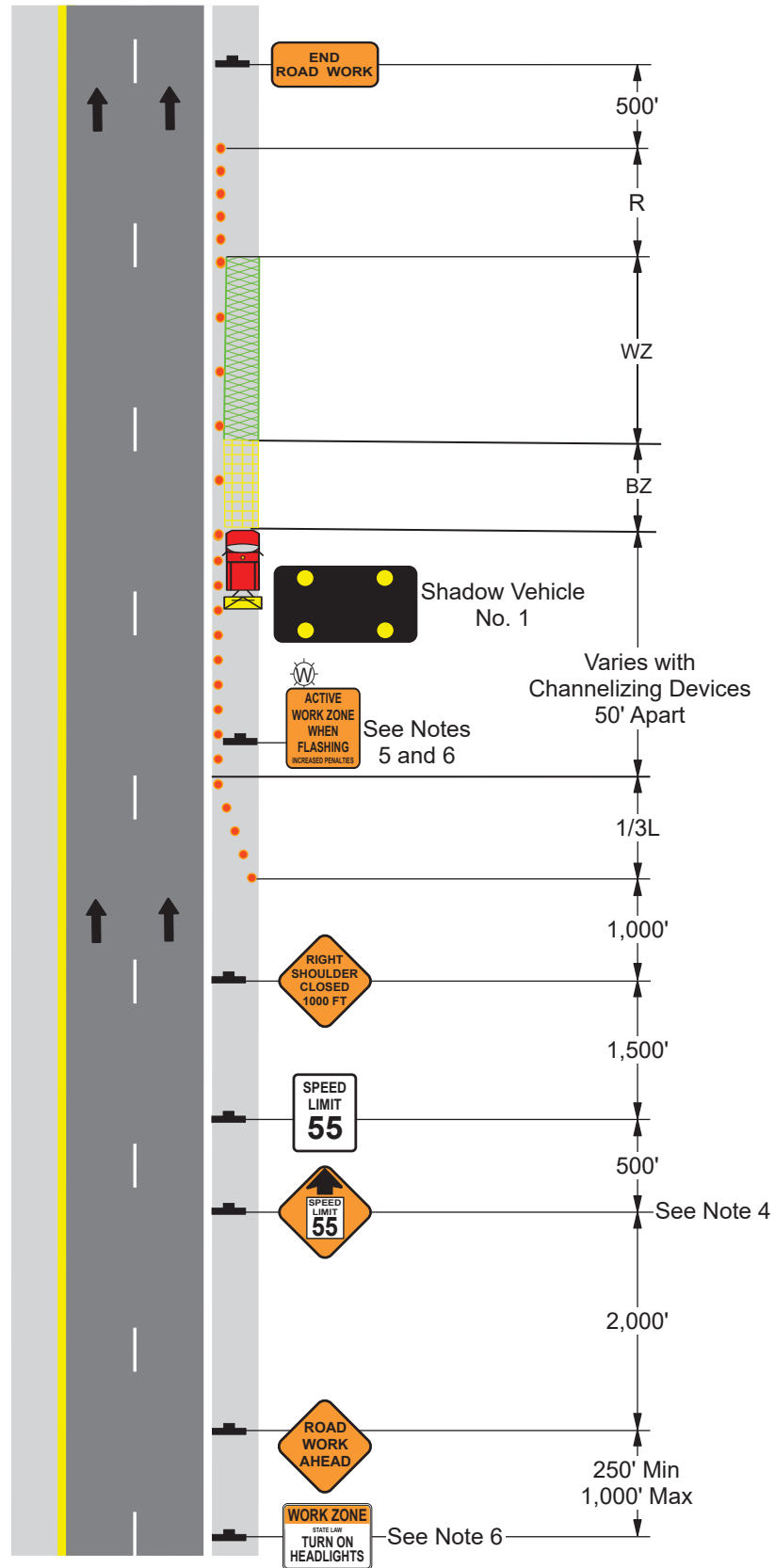
NOTE: See Appendix A for sign descriptions and dimensions.

#### Distance and Spacing Quick Reference Chart

SPEED	Maximum Channelizing Device Spacing (Feet)							
	1/3 L	BZ	WZ	R	1/3 L	BZ	WZ	R
MPH	Feet	Feet	Mile(s)	Feet	1/3 L	BZ	WZ	R
<b>55</b>	220	250	4 (Max)	100	50	100	100	20
<b>70</b>	280	250	4 (Max)	100	50	100	100	20

1/3L = Shoulder Transition  
 BZ = Buffer Zone  
 WZ = Work Zone  
 R = Runout

# PTS 915-8 Stationary Shoulder Closure with Channelizing Devices



NOTES:  
See PTS 915-8 - Notes for applicable notes to this drawing

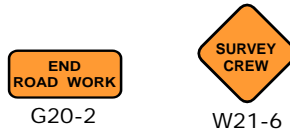
## PTS 915-9 - Notes

### Survey Work Along Shoulder

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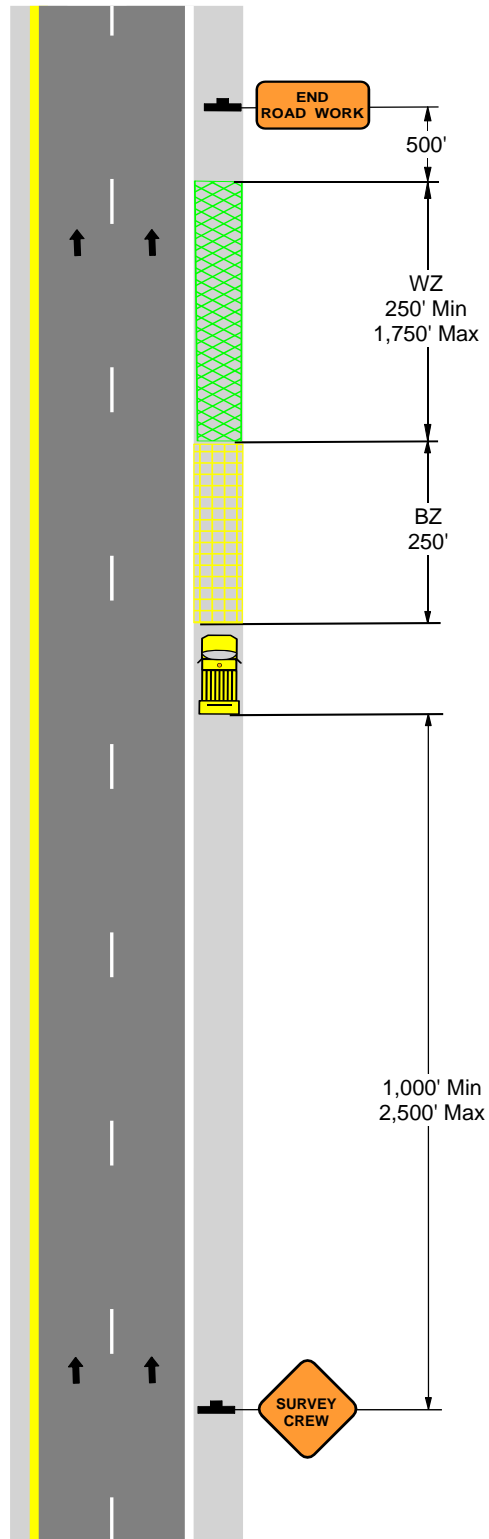
1. Vehicles, equipment, material and workers are not to be located in the buffer zone.
2. The figure applies when the survey work is a minimum of 15 minutes.
3. The survey work on shoulder operation may be used on the median shoulder where the median shoulder width is a minimum of 12 feet.
4. For any survey operation where workers are within two (2) feet of any travel lane, use Single Lane Traffic Pattern per PTS 915-4. Single lane traffic pattern only permitted during provided allowable working hours.
5. Signs shall be mounted on PennDOT approved portable sign supports, X-frame, with a minimum height of 1 foot from the pavement surface to the bottom of the signs. Portable supports and signs must be removed from the roadway during non-working hours.

#### *Signs*



NOTE: See Appendix A for sign descriptions and dimensions.

# PTS 915-9 Survey Work Along Shoulder

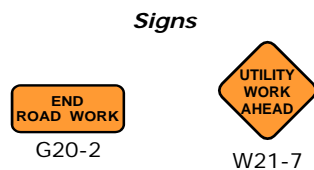


NOTES:  
See PTS 915-9 - Notes for applicable  
notes to this drawing

## PTS 915-10 - Notes Utility Work Along Shoulder

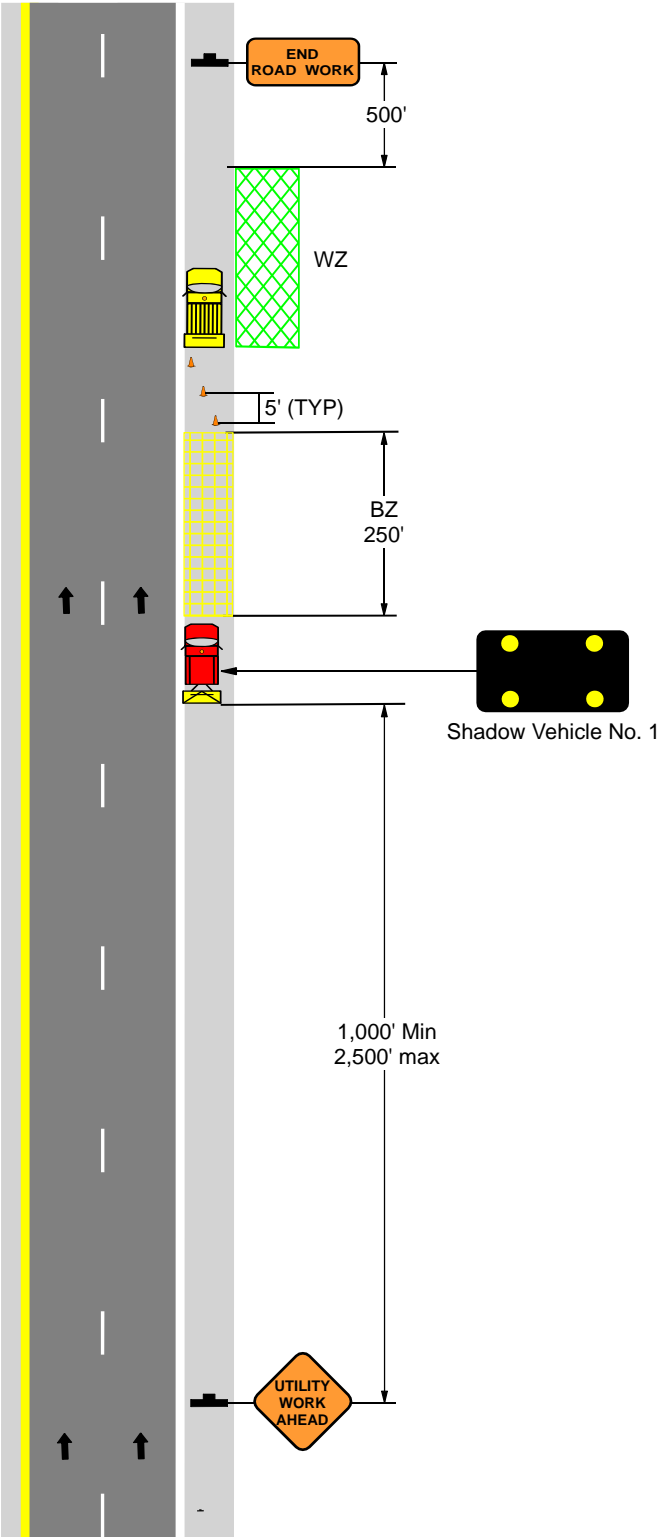
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1. Vehicles, equipment, material and workers are not to be located in the buffer zone.
2. The utility work on shoulder operation may be used on the median shoulder where the median shoulder width is a minimum of 12 feet.
3. Arrow panel in caution mode to be used when vehicles, equipment, material or workers are working on the paved shoulder. PennDOT approved 28" traffic cones to remain in place until work is complete. Maintain normal traffic.
4. For any utility operation where the physical work zone is on the paved shoulder, use Stationary Shoulder Closure with Channelizing Devices per PTS 915-8. Stationary Shoulder Closure with Channelizing Devices to remain in place until physical work on the paved shoulder is complete. Stationary shoulder closure with channelizing devices only permitted during provided allowable working hours.
5. This pattern to be used for short-term operations which occupy a location for less than 12 hours for three (3) or less consecutive days.
6. All arrow panels are to be truck mounted.
7. Have all shadow vehicles meet PennDOT and PTC requirements.
8. Signs shall be mounted on PennDOT approved portable sign supports, X-frame, with a minimum height of 1 foot from the pavement surface to the bottom of the signs. Portable supports and signs must be removed from the roadway during non-working hours.



NOTE: See Appendix A for sign descriptions and dimensions.

PTS 915-10  
Utility Work Along Shoulder



NOTES:  
See PTS 915-10 - Notes for applicable  
notes to this drawing



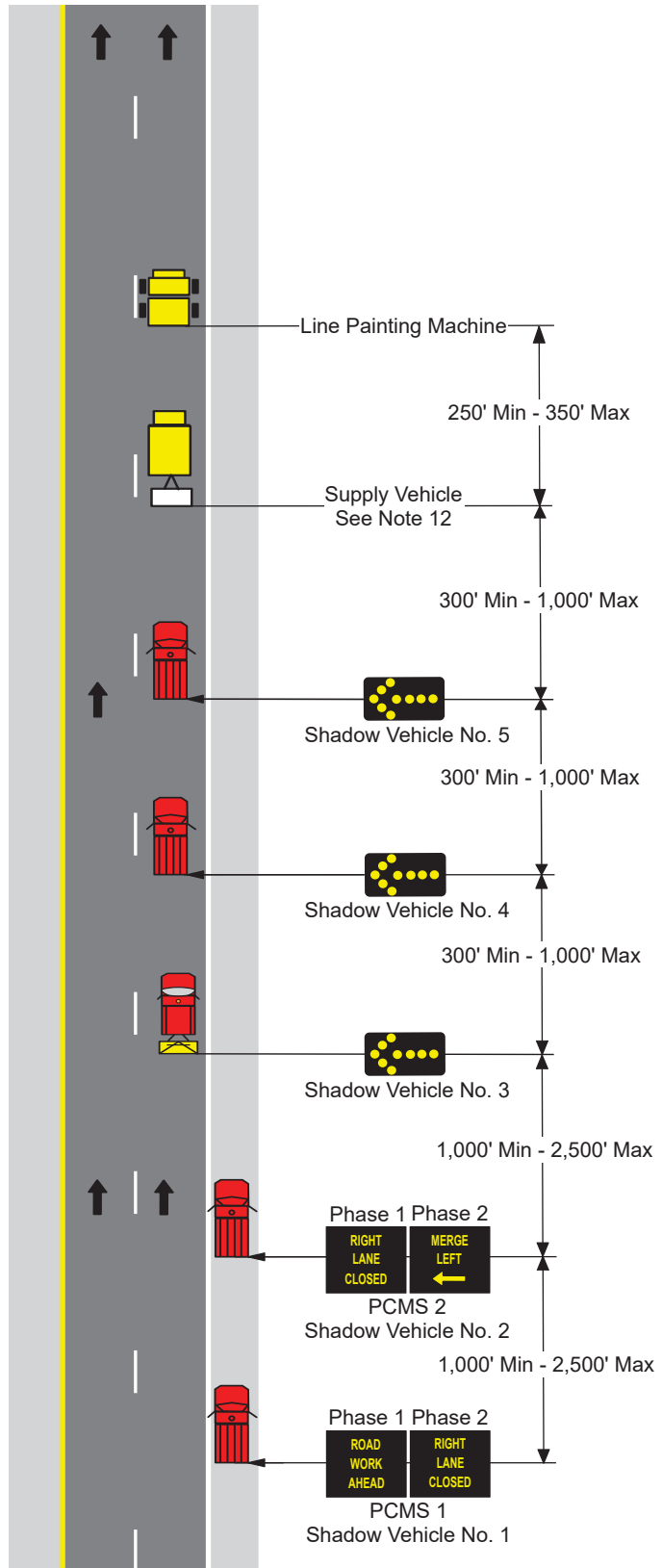
## **PTS 915-11 - Notes**

### **Traffic Line Painting Operation**

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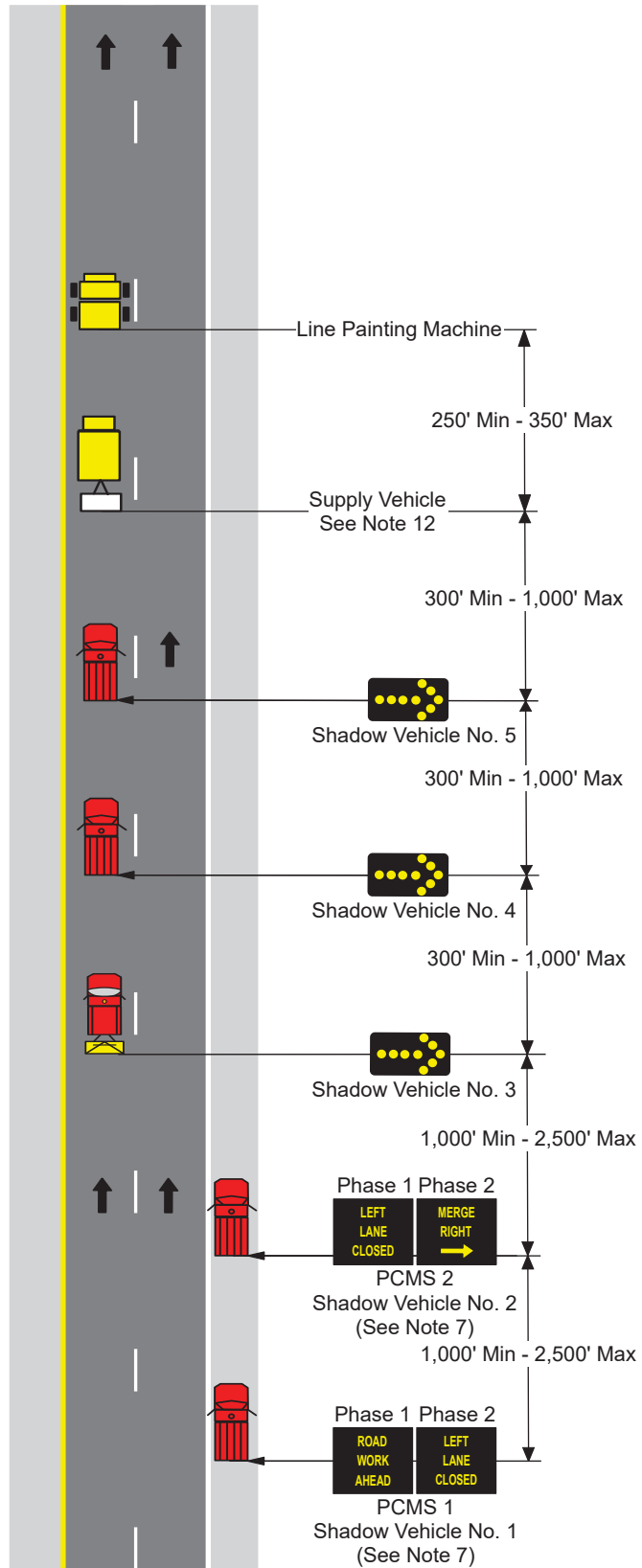
1. This figure applies where the operation moves intermittently or continuously at an average speed of more than 1 MPH (88 FT./MIN.). The operator is to be the only occupant of Shadow Vehicle No. 3. When the operation moves intermittently, the maximum time of stationary work is 15 minutes. If these conditions cannot be met, use a single lane traffic pattern as shown on PTS 915-4.
2. A 7,000 lb GVW (Gross Vehicle Weight) or larger pickup truck and loaded to weigh a minimum of 5,500 lbs may be used as Shadow Vehicle No. 1 and 2.
3. Position Shadow Vehicle No. 1 so that it is visible from behind for a minimum distance of 700 feet.
4. Have all shadow vehicles meet PennDOT and PTC requirements.
5. All arrow panels and PCMS are to be truck mounted.
6. The spacing between the work vehicles and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between, based on field conditions.
7. Shadow Vehicles No. 1 and 2 may be located on the median shoulder where the median shoulder width is a minimum of 12 feet.
8. Shadow Vehicles No. 3, No. 4 and No. 5 must be a single axle or tandem axle dump truck or a stake body truck. Light duty dump and light duty stake bodies are not permitted to be used as Shadow Vehicles No. 3, No. 4, and No. 5.
9. Paint Foreman's vehicle may be located:
  - A. In front of the supply vehicle, or
  - B. Behind the supply vehicle, or
  - C. As a temporary replacement for Shadow Vehicle No. 2.
10. State Police vehicle may be located:
  - A. In front of Shadow Vehicle No. 4, or
  - B. Behind Shadow Vehicle No. 4.
11. All vehicles, with exception of State Police vehicle, are to have an activated amber warning light.
12. If supply vehicle is not used, the distance from Shadow Vehicle No. 5 to Line Painting Machine should be 300 feet minimum to 1,000 feet maximum.

# PTS 915-11A Traffic Line Painting Operation - Right Lane



NOTES:  
See PTS 915-11 - Notes for applicable notes to this drawing

# PTS 915-11B Traffic Line Painting Operation - Left Lane



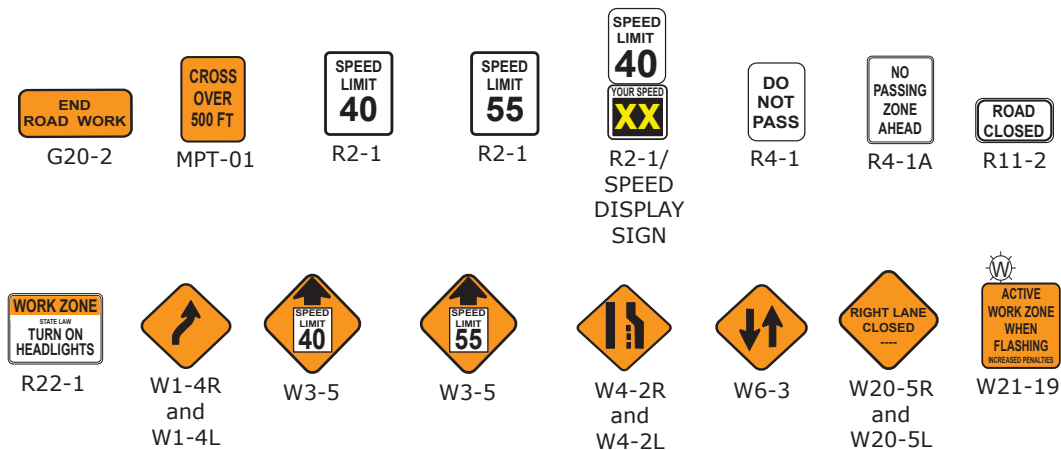
NOTES:  
See PTS 915-11 - Notes for applicable notes to this drawing

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## PTS 915-12 - Notes Tunnel Crossover Pattern

1. Use existing "DO NOT CROSS CENTER LINE" sign and existing traffic control signal at portal.
2. Westbound approach to Allegheny Tunnel requires left or right and center lane closure as indicated on PTS 915-5.
3. Use channelizing devices with PennDOT approved sequential warning lights in the transition areas for patterns used during hours of darkness.
4. Speed Display Sign not required for PTC Maintenance Department Operations.
5. During high traffic volume periods and as directed by the Representative, change the message on the PCMS to read: PCMS 1 and 8 - Phase 1 "USE / BOTH / LANES", Phase 2 "TO / MERGE / POINT"; PCMS 2 - Phase 1 "RIGHT / LANE / CLOSED", Phase 2 "USE / BOTH / LANES"; PCMS 3 - Phase 1 "RIGHT / LANE / CLOSED", Phase 2 "MERGE / LEFT / 1500 FT"; PCMS 7 - Phase 1 "LEFT / LANE / CLOSED", Phase 2 "USE / BOTH / LANES"; PCMS 6 - Phase 1 "LEFT / LANE / CLOSED", Phase 2 "MERGE / RIGHT / 1500 FT".
6. Existing W20-5R / W20-5L signs may only be used for remainder of their serviceable life.
7. Install W3-5 sign only in areas where the normal speed limit is 70 MPH.
8. Cover the Active Work Zone When Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.
9. Act 229 signs are not required for PTC Maintenance Department Operations.

### Signs



NOTE: See Appendix A for sign descriptions and dimensions.

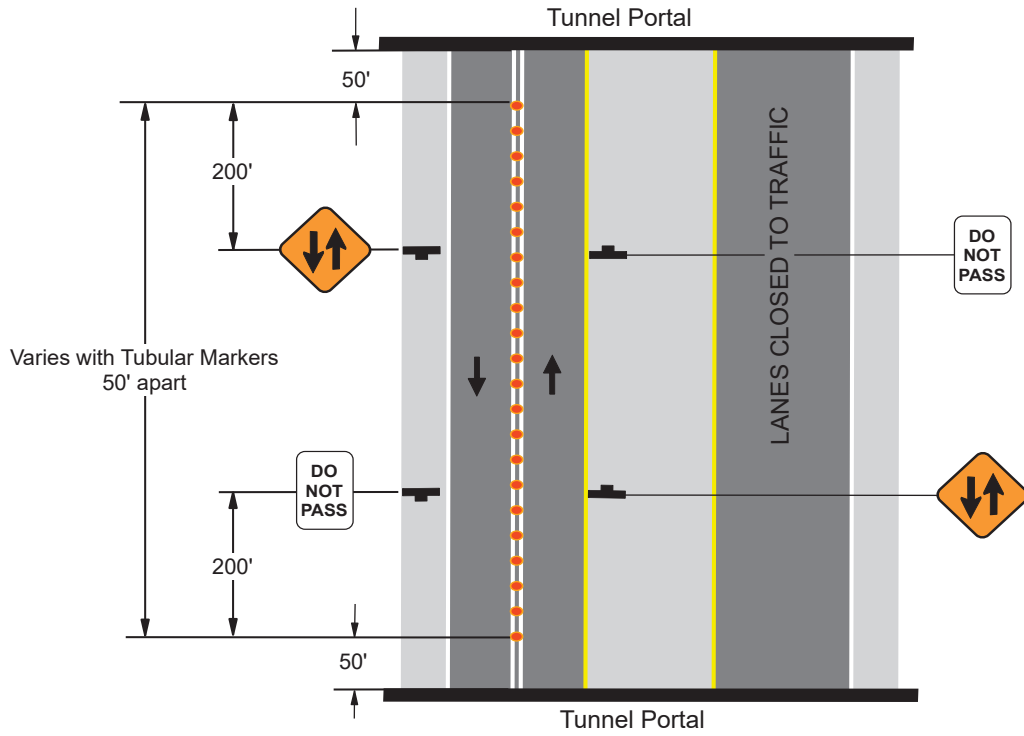
### Distance and Spacing Quick Reference Chart

SPEED	L	1/3 L	BZ	R	Maximum Channelizing Device Spacing (Feet)			
					L	1/3 L	BZ	R
<b>55</b>	660	220	1,320 (Min)	100	50	50	100	20

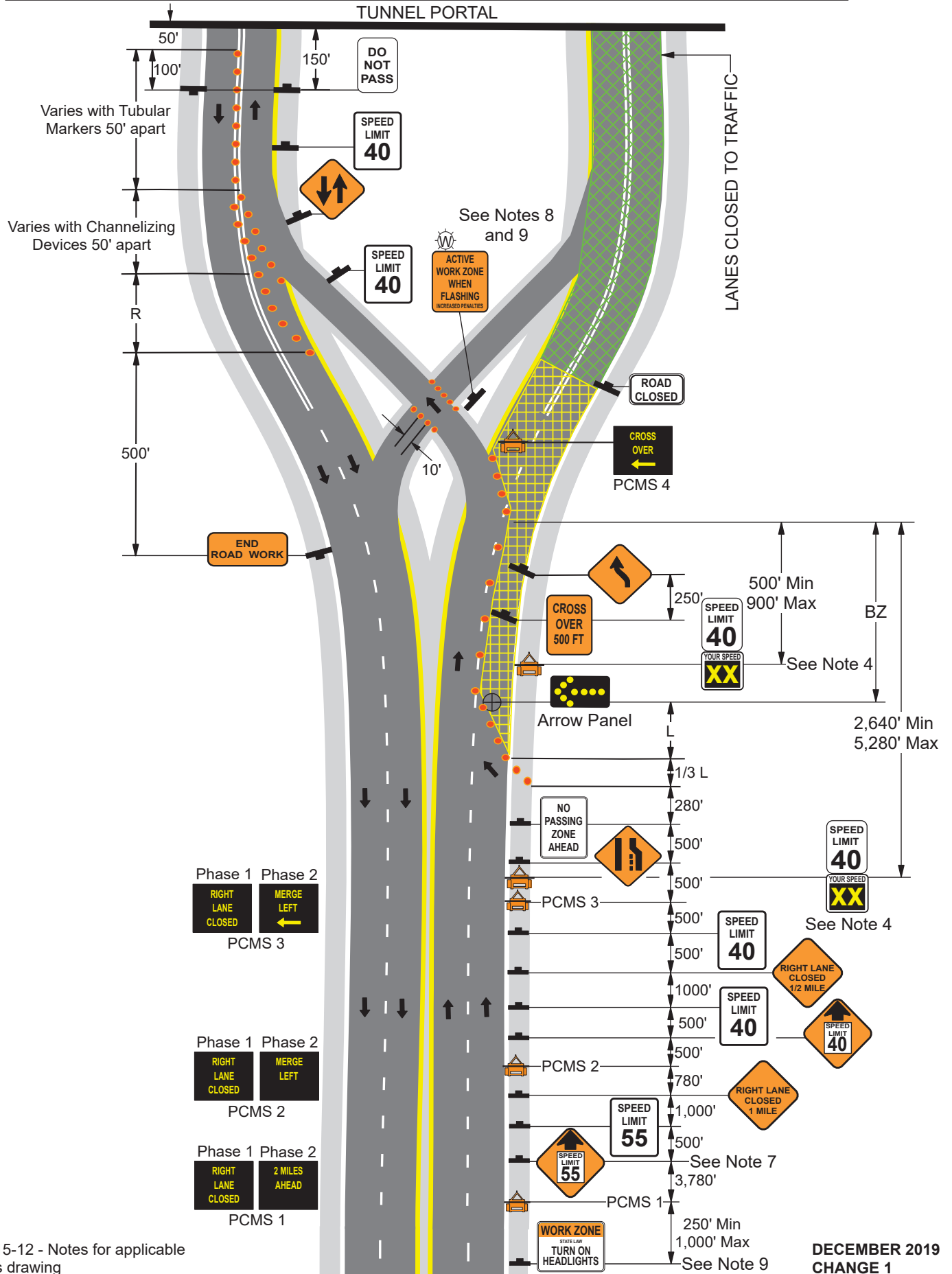
L = Transition  
 1/3L = Shoulder Transition  
 BZ = Buffer Zone  
 R = Runout

# PTS 915-12 Tunnel Crossover Pattern

## TRAFFIC CONTROL BETWEEN BLUE MOUNTAIN AND KITTATINNY TUNNELS



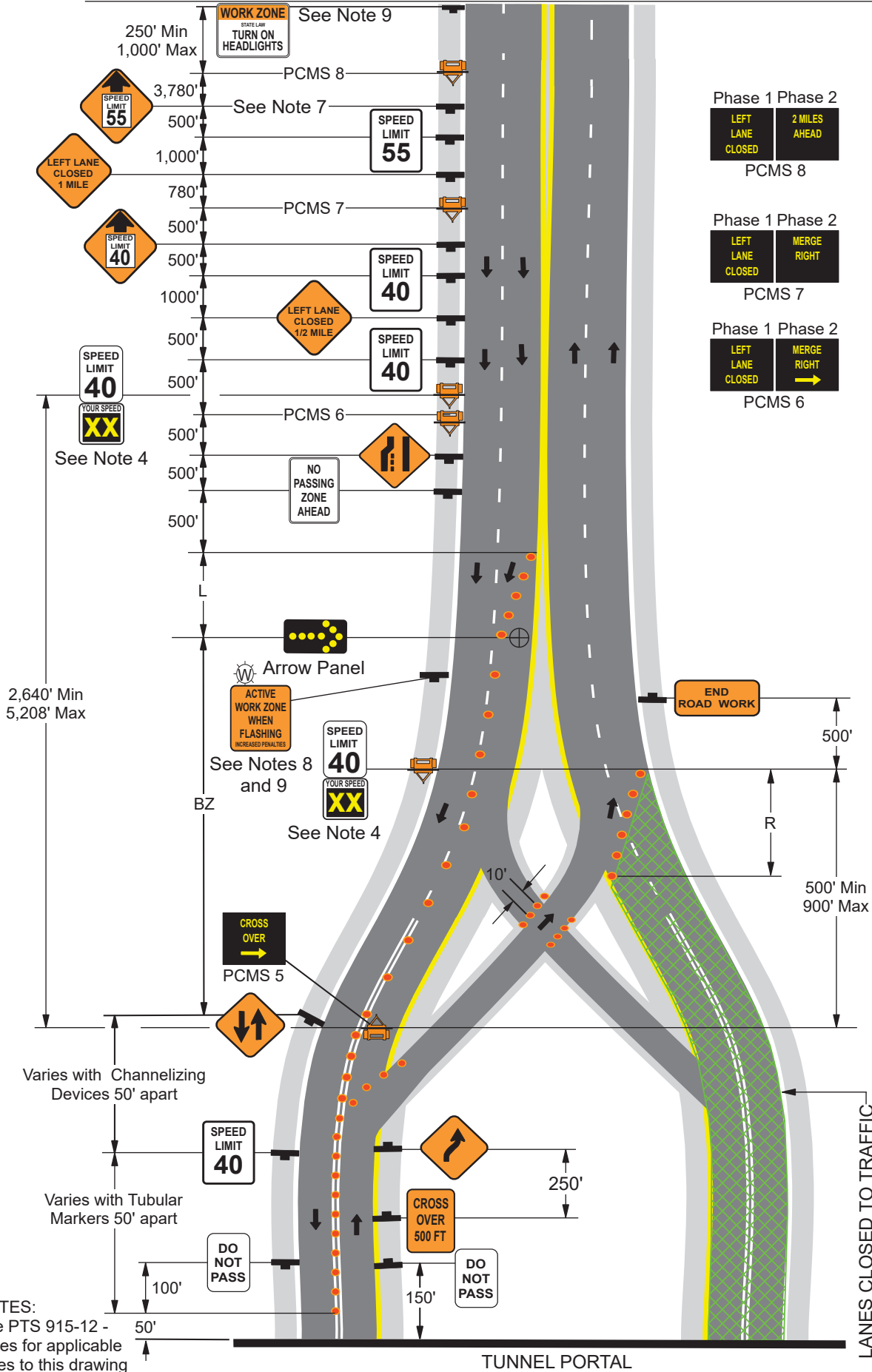
**PTS 915-12  
Tunnel Crossover Pattern (Drawing 1 of 2)**



NOTES:  
See PTS 915-12 - Notes for applicable notes to this drawing

DECEMBER 2019  
CHANGE 1

# PTS 915-12 Tunnel Crossover Pattern (Drawing 2 of 2)



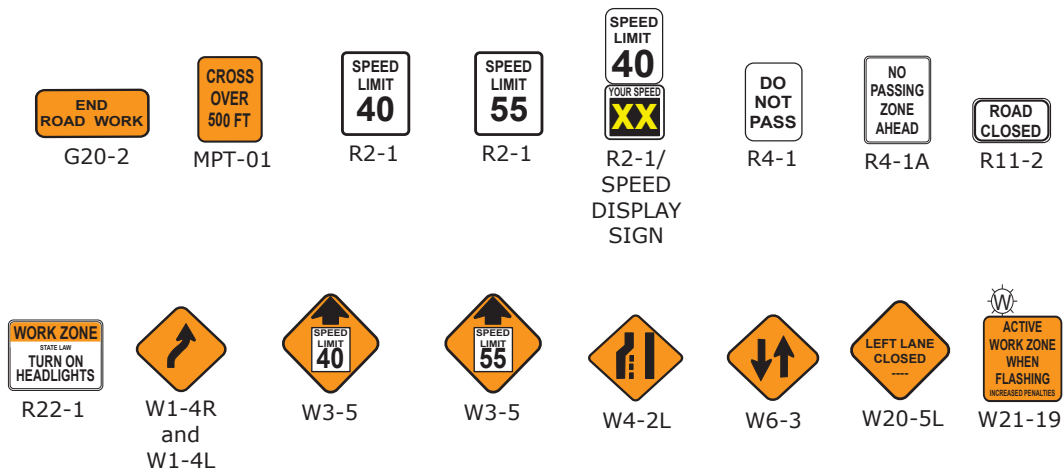
NOTES:  
See PTS 915-12 -  
Notes for applicable  
notes to this drawing



## PTS 915-13 - Notes Tuscarora Tunnel Crossover Pattern

1. Use existing "DO NOT CROSS CENTER LINE" sign and existing traffic control signal at portal.
2. Use channelizing devices with PennDOT approved sequential warning lights in the transition areas for patterns used during hours of darkness.
3. Speed Display Sign not required for PTC Maintenance Department Operations.
4. During high traffic volume periods and as directed by the Representative, change the message on the PCMS to read: PCMS 1 and 8 - Phase 1 "USE / BOTH / LANES", Phase 2 "TO / MERGE / POINT"; PCMS 2 - Phase 1 "LEFT / LANE / CLOSED", Phase 2 "USE / BOTH / LANES"; PCMS 3 - Phase 1 "LEFT / LANE / CLOSED", Phase 2 "MERGE / RIGHT / 1500 FT"; PCMS 7 - Phase 1 "LEFT / LANE / CLOSED", Phase 2 "USE / BOTH / LANES"; PCMS 6 - Phase 1 "LEFT / LANE / CLOSED", Phase 2 "MERGE / RIGHT / 1500 FT".
5. Existing W20-5R / W20-5L signs may only be used for remainder of their serviceable life.
6. Buffer zone begins 250 feet in advance of the first swift gate and ends at the cross over.
7. Install W3-5 sign only in areas where the normal speed limit is 70 MPH.
8. Cover the Active Work Zone When Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.
9. Act 229 signs are not required for PTC Maintenance Department Operations.

### Signs



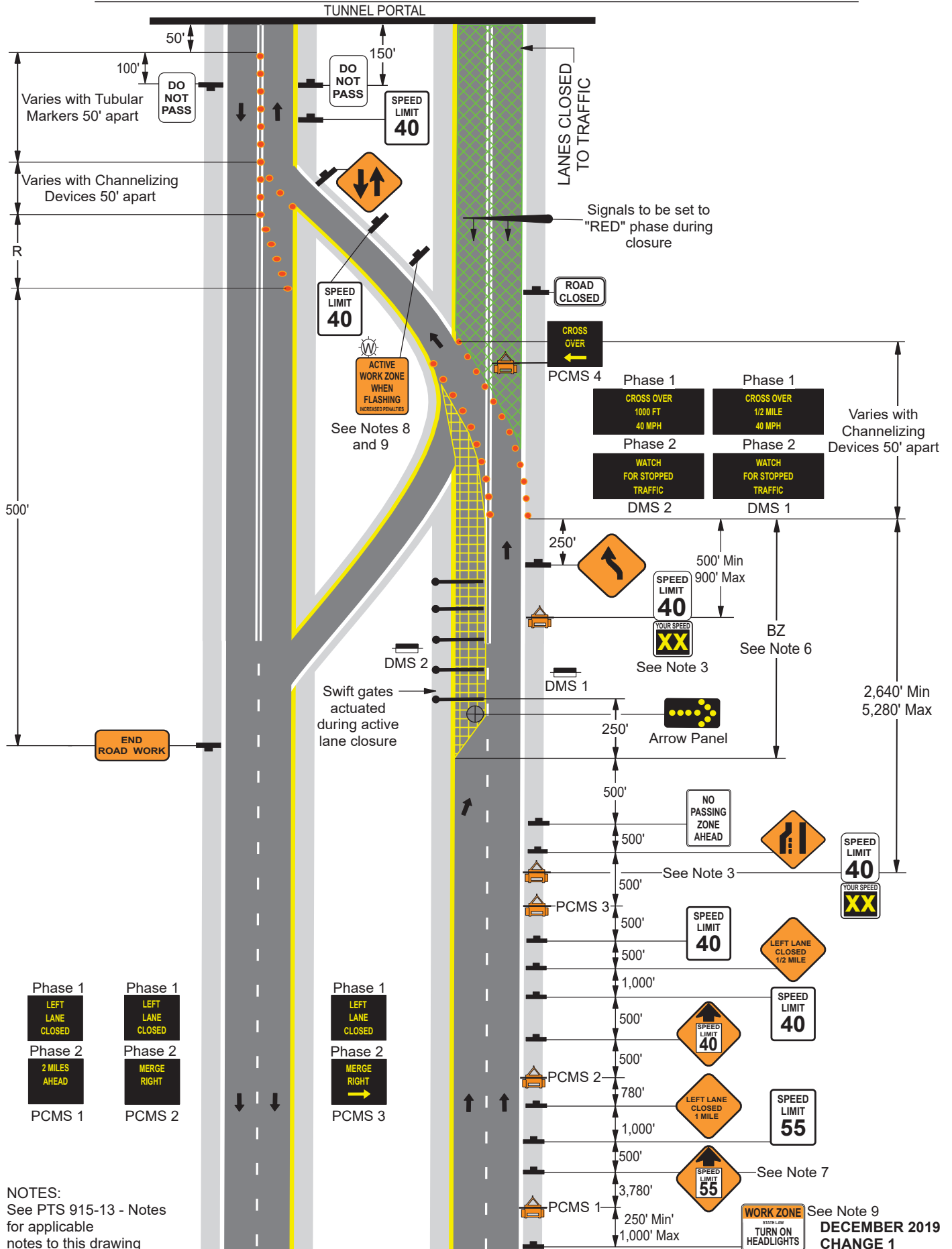
NOTE: See Appendix A for sign descriptions and dimensions.

### Distance and Spacing Quick Reference Chart

SPEED MPH	BZ	R	Maximum Channelizing Device Spacing (Feet)	
	Feet	Feet	BZ	R
55	See Note 6	100	100	20

BZ = Buffer Zone  
R = Runout

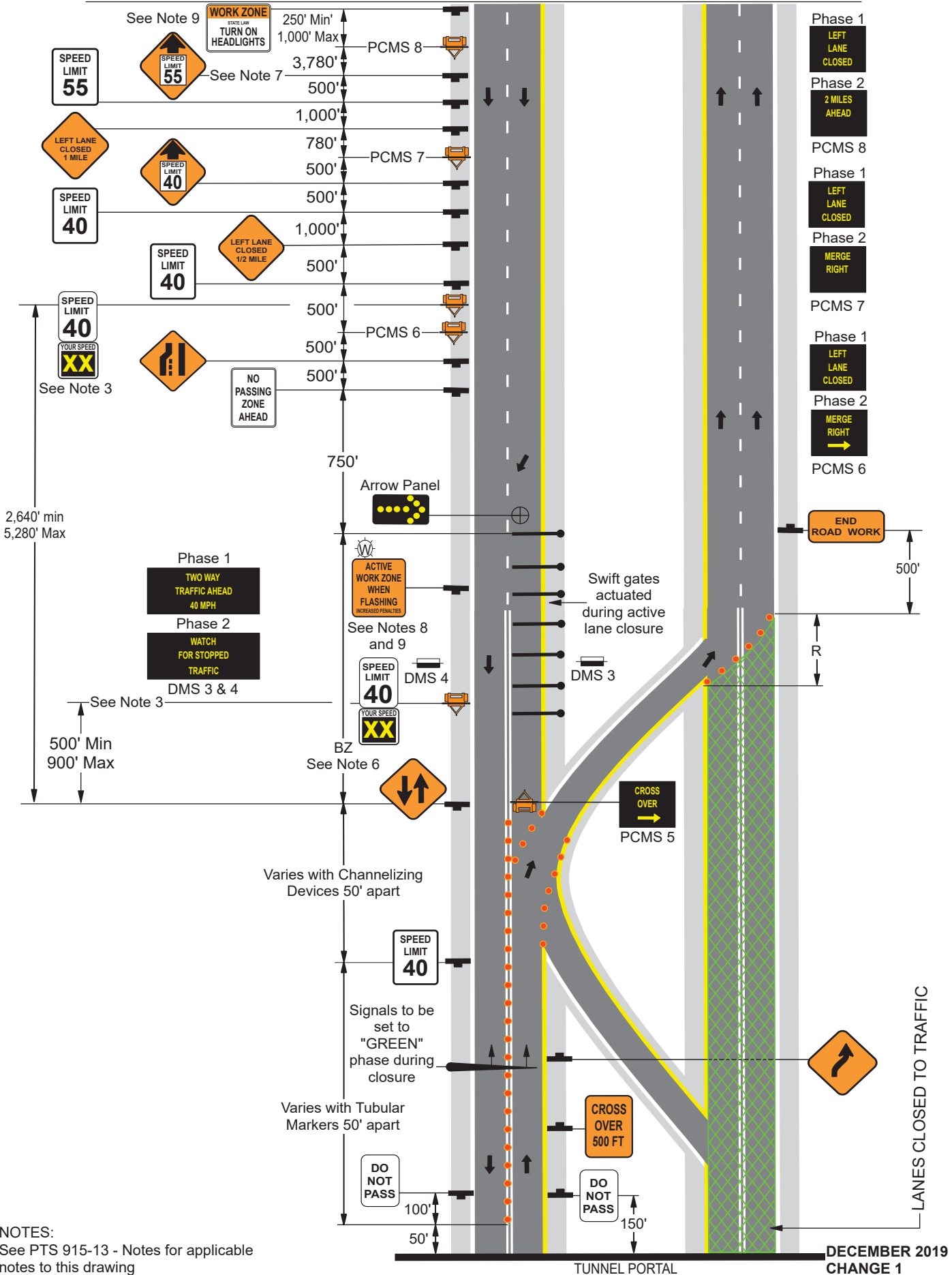
**PTS 915-13  
Tuscarora Tunnel Crossover Pattern  
Tuscarora Tunnel - Eastbound (Drawing 1 of 2)**



**NOTES:**  
See PTS 915-13 - Notes  
for applicable  
notes to this drawing

See Note 9  
**DECEMBER 2019  
CHANGE 1**

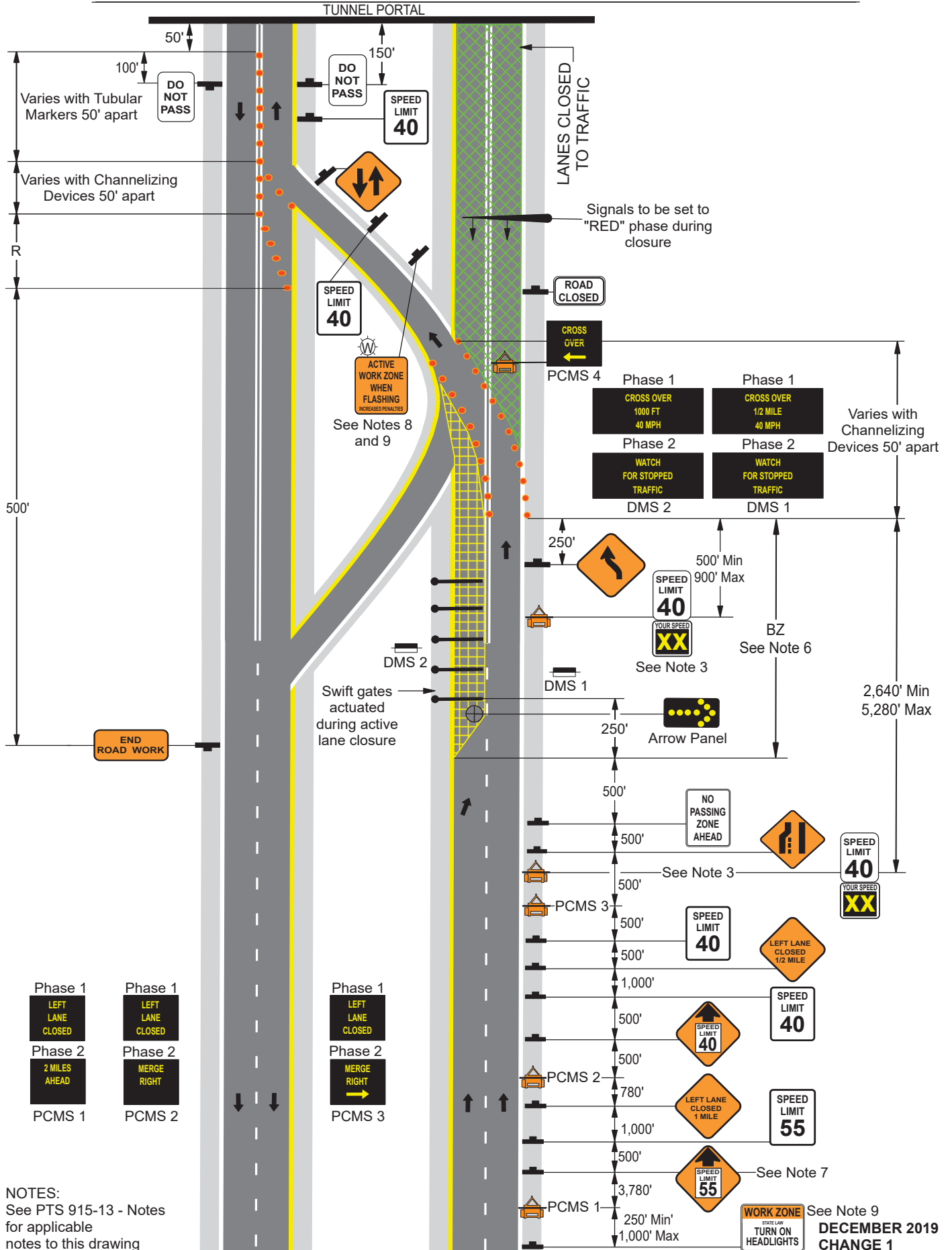
**PTS 915-13  
Tuscarora Tunnel Crossover Pattern  
Tuscarora Tunnel - Eastbound (Drawing 2 of 2)**



**NOTES:**  
See PTS 915-13 - Notes for applicable notes to this drawing

**DECEMBER 2019  
CHANGE 1**

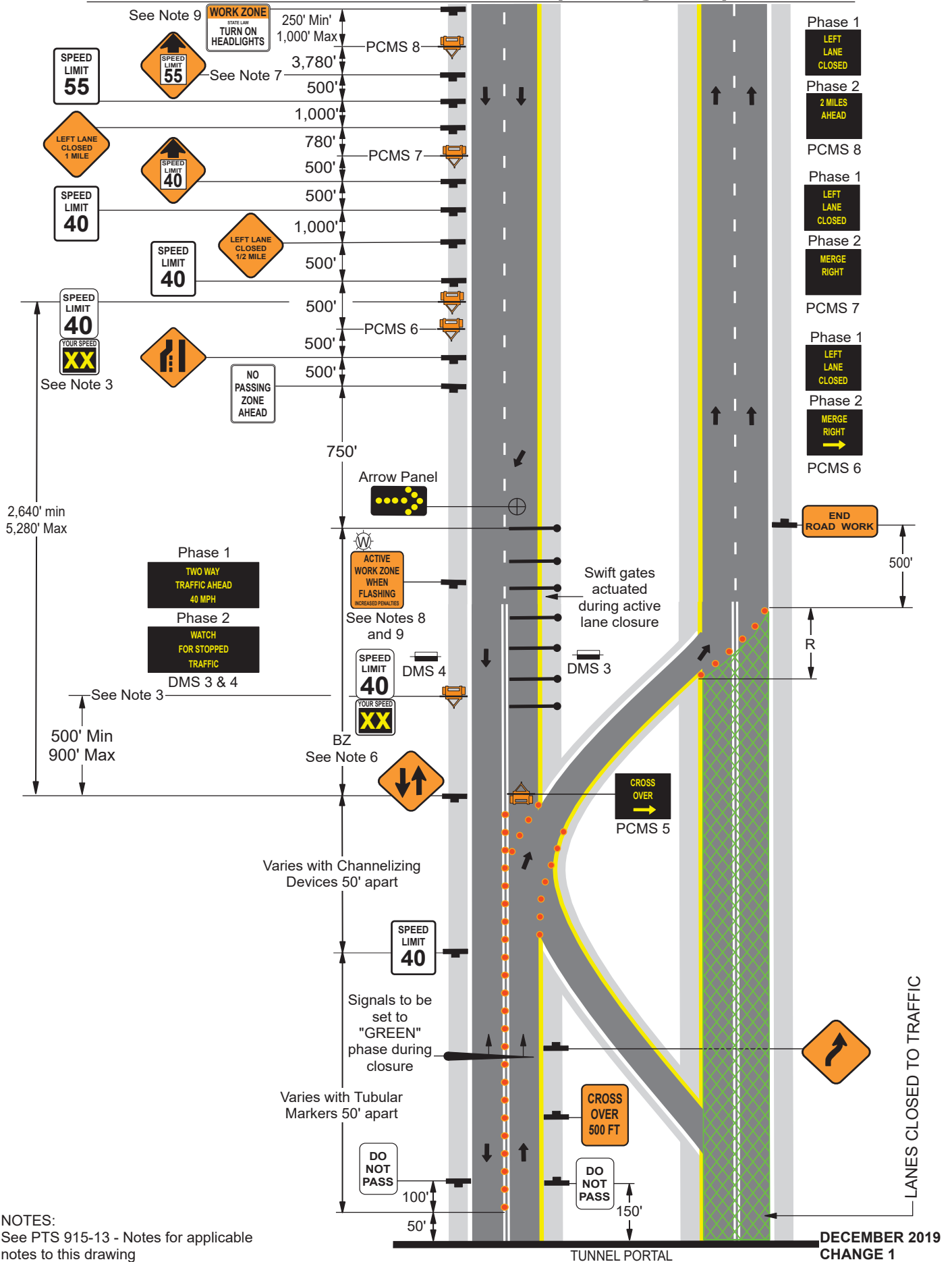
**PTS 915-13  
Tuscarora Tunnel Crossover Pattern  
Tuscarora Tunnel - Westbound (Drawing 1 of 2)**



NOTES:  
See PTS 915-13 - Notes  
for applicable  
notes to this drawing

See Note 9  
**DECEMBER 2019  
CHANGE 1**

**PTS 915-13  
Tuscarora Tunnel Crossover Pattern  
Tuscarora Tunnel - Westbound (Drawing 2 of 2)**



**DECEMBER 2019  
CHANGE 1**

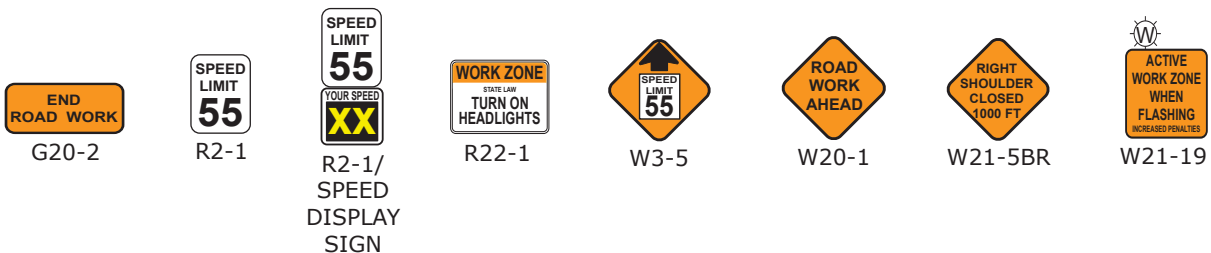
## PTS 915-14 - Notes

### Right Lane Closure within Transition from 2 to 3 Lanes

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1. For interchange and service plaza ramp signing within the work zone, see PTS 915-6.
2. Establish traffic pattern only during active work periods. Shorten length of pattern to only the length needed for the construction operation. Work Zone should not exceed four (4) miles in length, unless approved by the Representative.
3. Install W3-5 sign only in areas where the normal speed limit is 70 mph.
4. Cover the Active Work Zone When Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.
5. Speed Display Sign shall only be used if the length of the physical work zone is greater than or equal to 500 feet.
6. Speed Display Sign not required for PTC Maintenance Department Operations.
7. Act 229 signs are not required for PTC Maintenance Department Operations.
8. This pattern is to be used for short-term operations which occupy a location for less than 12 hours for three (3) or less consecutive days.
9. Right Lane Closure within Transition from 2 to 3 Lanes only permitted during allowable working hours.
10. All arrow panels are to be truck mounted.
11. Have all shadow vehicles meet PennDOT and Pennsylvania Turnpike Commission requirements.

#### Signs



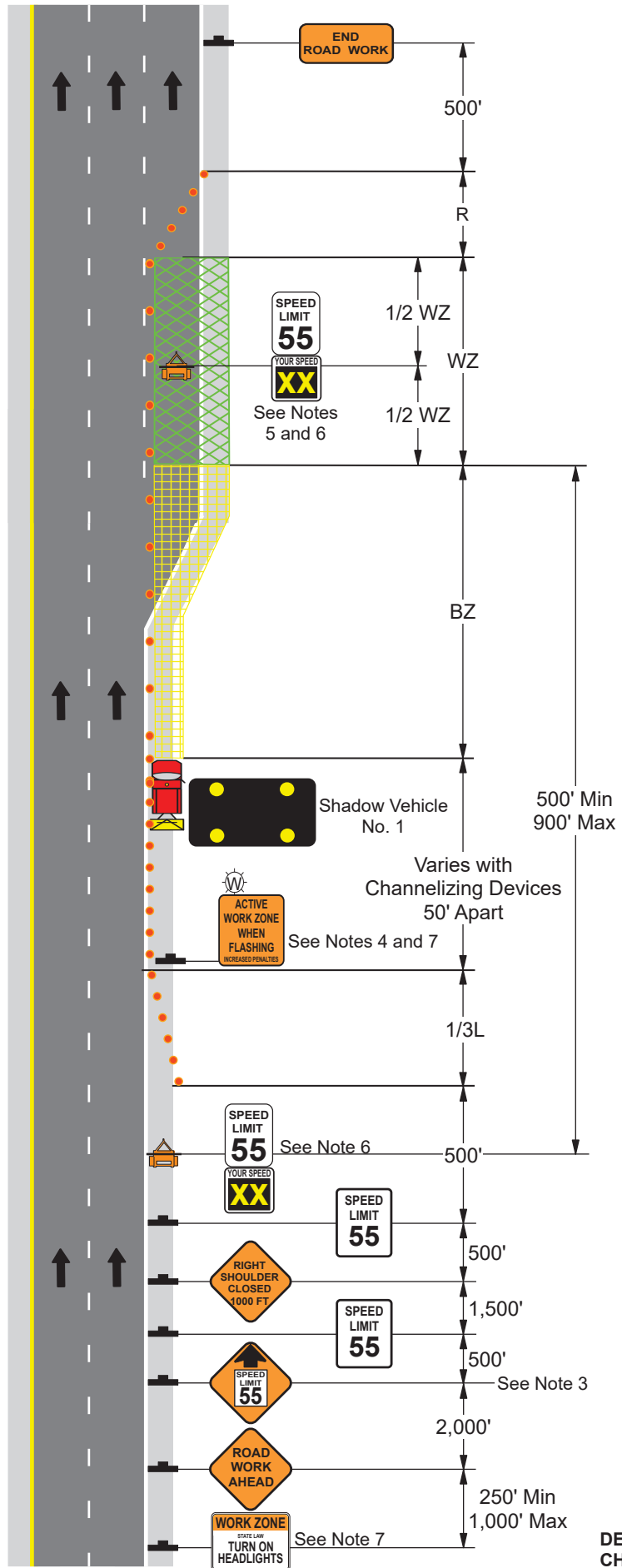
NOTE: See Appendix A for sign descriptions and dimensions.

#### ***Distance and Spacing Quick Reference Chart***

SPEED	Maximum Channelizing Device Spacing (Feet)							
	1/3 L	BZ	WZ	R	1/3 L	BZ	WZ	R
MPH	Feet	Feet	Mile(s)	Feet	1/3 L	BZ	WZ	R
<b>55</b>	220	500 (Min)	4 (Max)	100	50	100	100	20
<b>70</b>	280	750 (Min)	4 (Max)	100	50	100	100	20

1/3L = Shoulder Transition  
 BZ = Buffer Zone  
 WZ = Work Zone  
 R = Runout

**PTS 915-14  
Right Lane Closure within Transition from 2 to 3 Lanes**



Notes:  
See PTS 915-14 Notes  
for applicable notes to  
this drawing

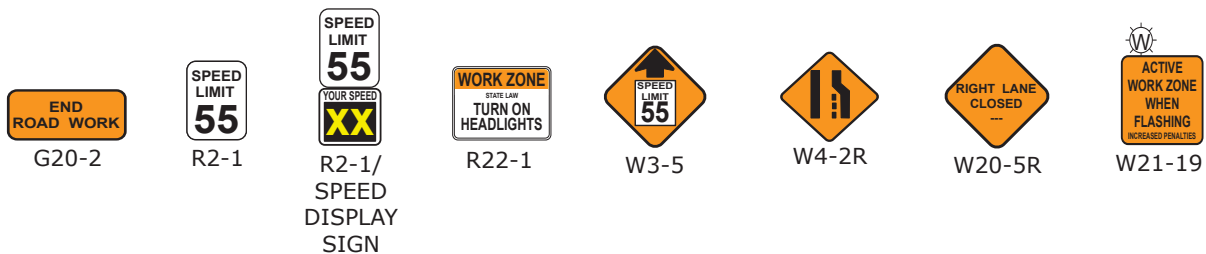
## PTS 915-15 - Notes

### Center/Right Lane Closure within Transition from 2 to 3 Lanes

1. For interchange and service plaza ramp signing within the work zone, see PTS 915-6.
2. Use channelizing devices with PennDOT approved sequential warning lights in the transition area for patterns used during hours of darkness.
3. Establish single traffic pattern only during active work periods. Shorten length of pattern to only the length needed for the construction operation. Work Zone should not exceed four (4) miles in length, unless approved by the Representative.
4. Single lane should be established a minimum of 1,000 feet in advance of deceleration ramp or beyond acceleration ramp at interchanges or service plazas, or as directed by the Representative.
5. Install W3-5 sign only in areas where the normal speed limit is 70 mph.
6. Cover the Active Work Zone When Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.
7. Act 229 signs are not required for PTC Maintenance Department Operations.
8. Speed Display Sign shall only be used if the length of the physical work zone is greater than or equal to 500 feet.
9. Speed Display Sign not required for PTC Maintenance Department Operations.
10. This pattern is to be used for short-term operations which occupy a location for less than 12 hours for three (3) or less consecutive days.
11. During high traffic volume periods and as directed by the Representative, change the message on the PCMS to read: PCMS 1 - Phase 1 "USE / BOTH / LANES", Phase 2 "TO / MERGE / POINT"; PCMS 2 - Phase 1 "RIGHT / LANE / CLOSED", Phase 2 "USE / BOTH / LANES"; PCMS 3 - Phase 1 "RIGHT / LANE / CLOSED", Phase 2 "MERGE / LEFT / 1500 FT".
12. Existing W20-5R signs may only be used for remainder of their serviceable life.
13. Compute the minimum taper length for reduction in lanes using the following formula:  

$$L = S \times W$$
 Where L = Minimum desirable taper length in feet  
 W = Width of offset in feet  
 S = Normal speed limit in miles per hour

#### Signs



NOTE: See Appendix A for sign descriptions and dimensions.

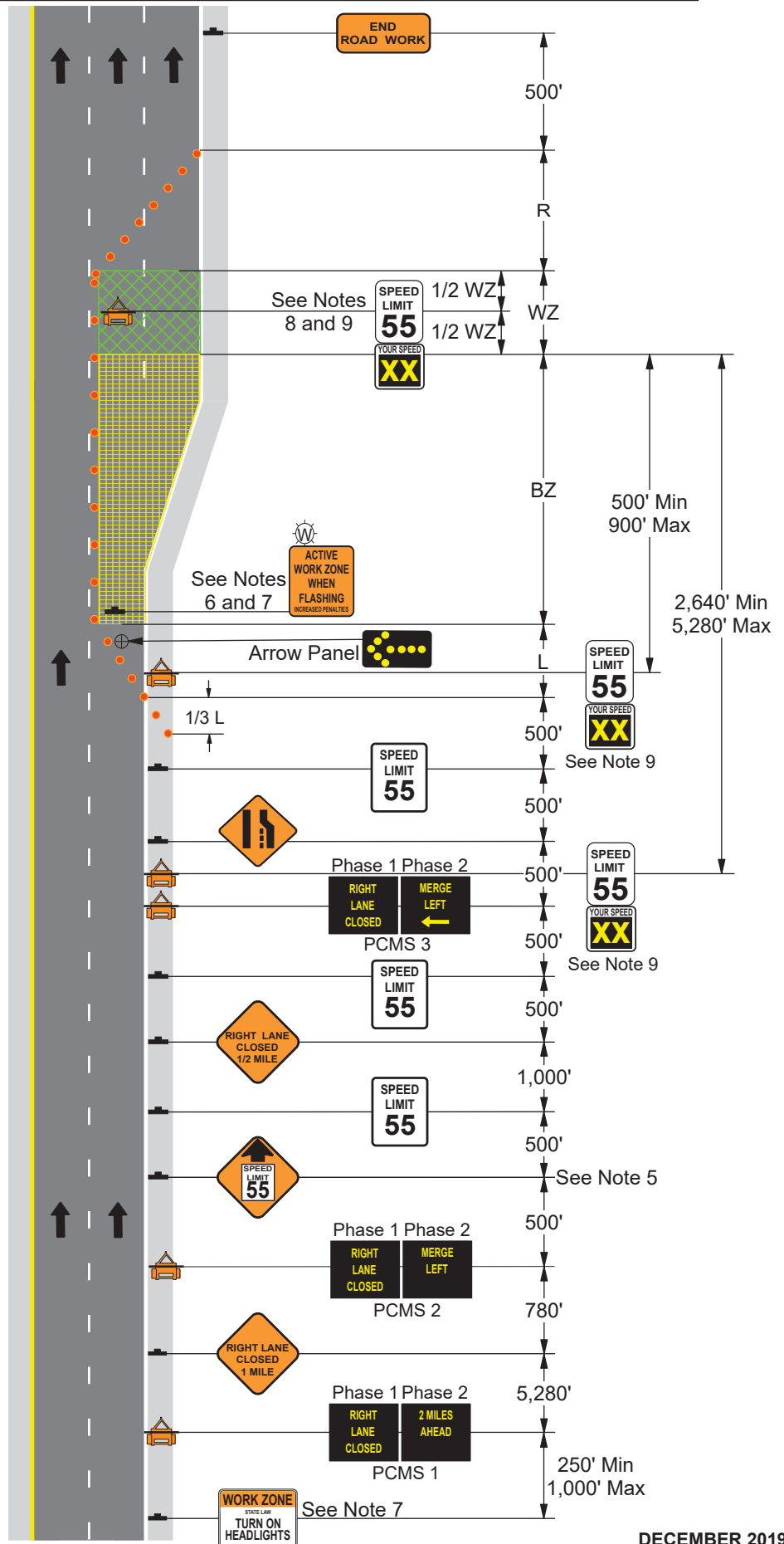
#### Distance and Spacing Quick Reference Chart

SPEED	L	1/3 L	BZ	WZ	R	Maximum Channelizing Device Spacing (Feet)				
						L	1/3 L	BZ	WZ	R
MPH	Feet	Feet	Feet	Mile(s)	Feet	L	1/3 L	BZ	WZ	R
55	660	220	500 (Min)	4 (Max)	100	50	50	100	100	20
70	840	280	750 (Min)	4 (Max)	100	50	50	100	100	20

L = Transition  
 1/3L = Shoulder Transition  
 BZ = Buffer Zone  
 WZ = Work Zone  
 R = Runout



**PTS 915-15**  
**Center/Right Lane Closure within Transition from 2 to 3 Lanes**



Notes:  
 See PTS 915-15 Notes  
 for applicable notes to  
 this drawing

# **Standards for Interchange Operations**

(PTS 940 Series)

## PTS 940-1 - Notes

### Interchange Operations - General Notes

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1. Remove all traffic control signs and devices immediately upon the completion of the work unless otherwise specified in the special provisions.
2. Place all traffic control devices and have them inspected by the Representative before work begins.
3. Cover or remove from the site all signs not in use. Remove from the Turnpike right-of-way construction signs not needed or used for a period of two (2) or more weeks.
4. Maintain a minimum spacing of 200 feet between all regulatory, warning and destination signs.
5. Provide at minimum a 40 feet width beyond the edge of the travel lane free of obstacles and drop-offs greater than 2 inches in depth in work zone(s) during non-working hours or separate work zone(s) from motorists with temporary concrete barrier. Separation of work zone(s) is incidental to the MPT.
6. Details for the signs and devices can be found in these plans, PennDOT Publication 236, PennDOT Publication 212 and are to be manufactured by a Department of Transportation approved manufacturer as listed in PennDOT Publication 35.
7. Use PennDOT approved Type XI reflectorized material for signs. Do not use metal or wood signs in median.
8. These plans are not intended to relieve the contractor of the responsibility for the protection of the public and the construction personnel. The standards prescribed are minimum and additional protection may be needed if problems are encountered during the term of the contract. The contractor will be expected to constantly review this plan for adequacy and to recommend changes for the Representative's approval when inadequacies are discovered.
9. Compute the minimum desirable taper length for reduction in lanes on ramps using the following formula:

$$L = \frac{W \times S^2}{60}$$

Where L = Minimum desirable taper length in feet  
W = Width of offset in feet  
S = Normal speed in miles per hour

10. Signs and devices may be adjusted to fit field conditions.
11. Concrete barrier details are to be according to PennDOT Standards for Roadway Construction, RC-57M, RC-59M, and PTC Standards for Roadway Construction.
12. Vehicles, equipment, material and workers are not to be located in the buffer zone.
13. Type B light is to be mounted on the side closest to traffic as shown on PTS 980 (Sheet 36 of 40).
14. Type B Yellow flashing warning lights maybe used in conjunction with warning signs unless otherwise indicated on the drawings.
15. Channelizing devices may be temporarily relocated to the minimum offset to allow for work to be performed, as directed by the Representative. The channelizing devices must remain between traffic and the work zone. Relocate channelizing devices to original position as work progresses.
16. Install, reset, relocate, remove any permanent and / or temporary concrete barrier so that no blunt end of the barrier is exposed to oncoming traffic.
17. Except for MPT-09, MPT-10, MPT-11, and R22-1 signs, all other signs may be mounted on PennDOT approved portable supports, x-frame, with a minimum height of 1 foot from the pavement surface to the bottom of the signs. Portable supports and signs must be removed from the roadway during non-working hours.

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## PTS 940-2 - Notes Toll Plaza Right Lane Closure Operations Less Than 8 Hours

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1. This pattern to be used for short-term operations which occupy a location for less than 8 hours.
2. Overhead lane control to display red signal and "Lane Closed" white on red background, if available.
3. Place channelizing devices at 10 feet apart across parking access.
4. Sign locations may be adjusted to fit field conditions.
5. Channelizing devices spaced at 10 feet except where noted.
6. Increase taper length at toll plaza based on number of lanes closed.

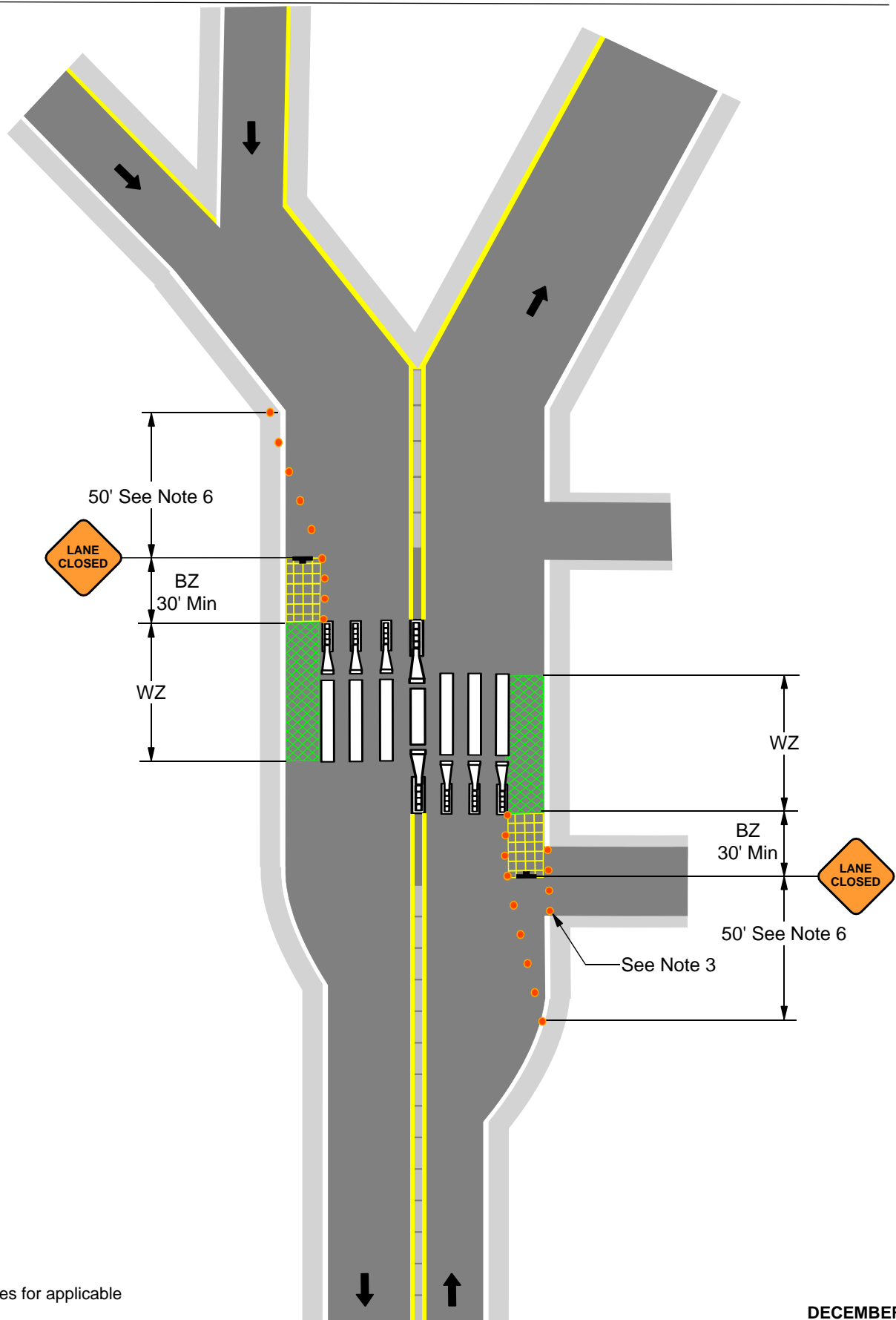
### *Signs*



PTC-LC

NOTE: See Appendix A for sign descriptions and dimensions.

**PTS 940-2  
Toll Plaza Right Lane Closure  
Operations Less Than 8 Hours**



NOTES:  
See PTS 940-2 - Notes for applicable  
notes to this drawing

## PTS 940-3 - Notes Toll Plaza Right Lane Closure Operations Between 8 and 72 Hours

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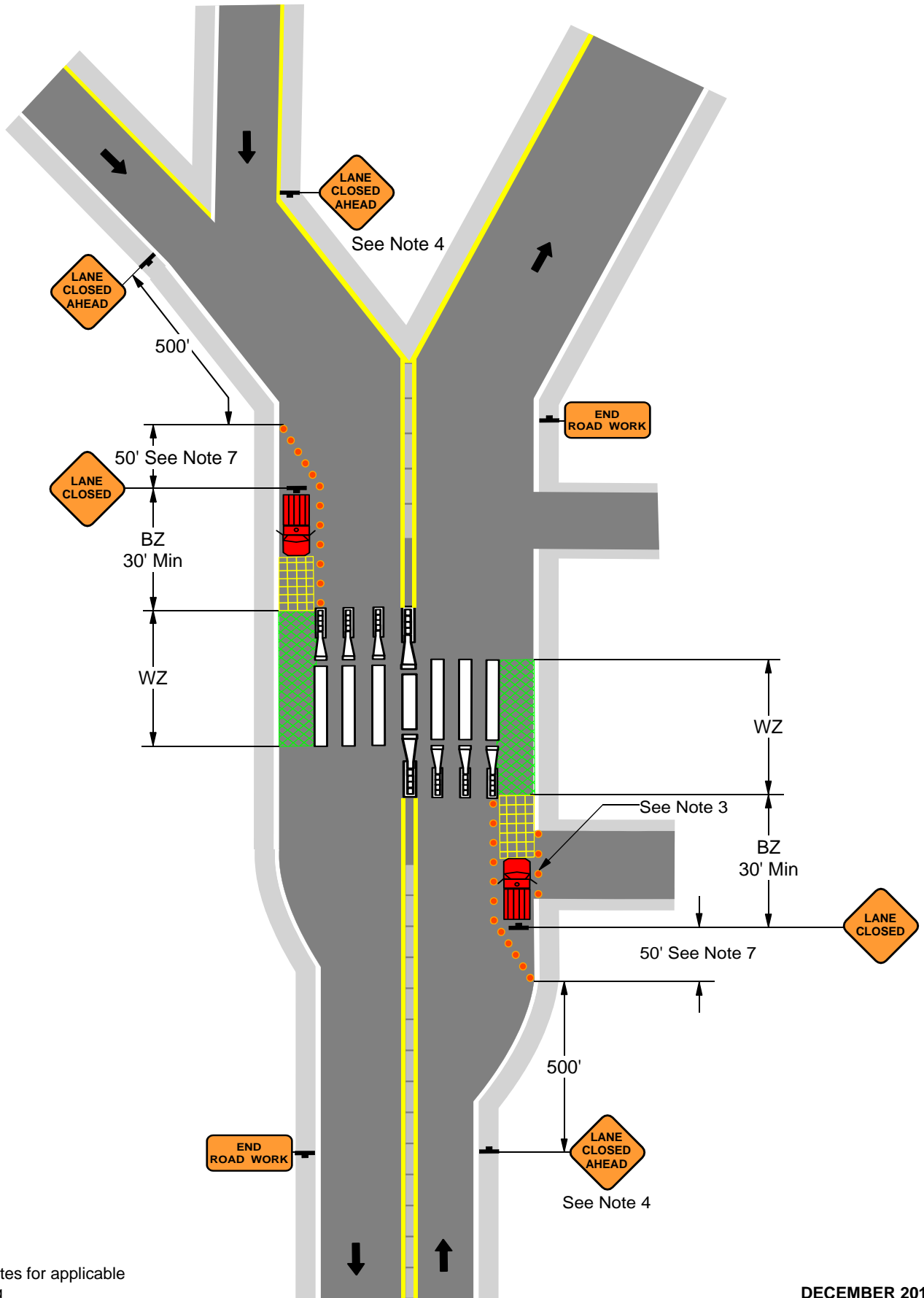
1. This pattern to be used for short-term operations which occupy a location for 8 to 72 hours.
2. Overhead lane control to display red signal and "Lane Closed" white on red background, if available.
3. Place channelizing devices at 10 feet apart across parking access.
4. If multiple ramps provide entrance to toll plaza, place PTC-LCA signs on each ramp as necessary.
5. Sign locations may be adjusted to fit field conditions.
6. Channelizing devices spaced at 10 feet except where noted.
7. Increase taper length at toll plaza based on number of lanes closed.

### *Signs*



NOTE: See Appendix A for sign descriptions and dimensions.

**PTS 940-3  
Toll Plaza Right Lane Closure  
Operations Between 8 and 72 Hours**



NOTES:  
See PTS 940-3 - Notes for applicable notes to this drawing

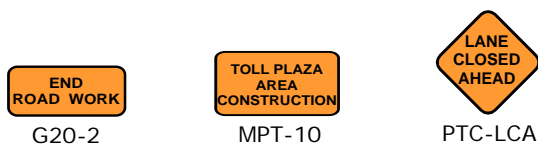


## PTS 940-4 - Notes Toll Plaza Right Lane Closure Operations More Than 72 Hours

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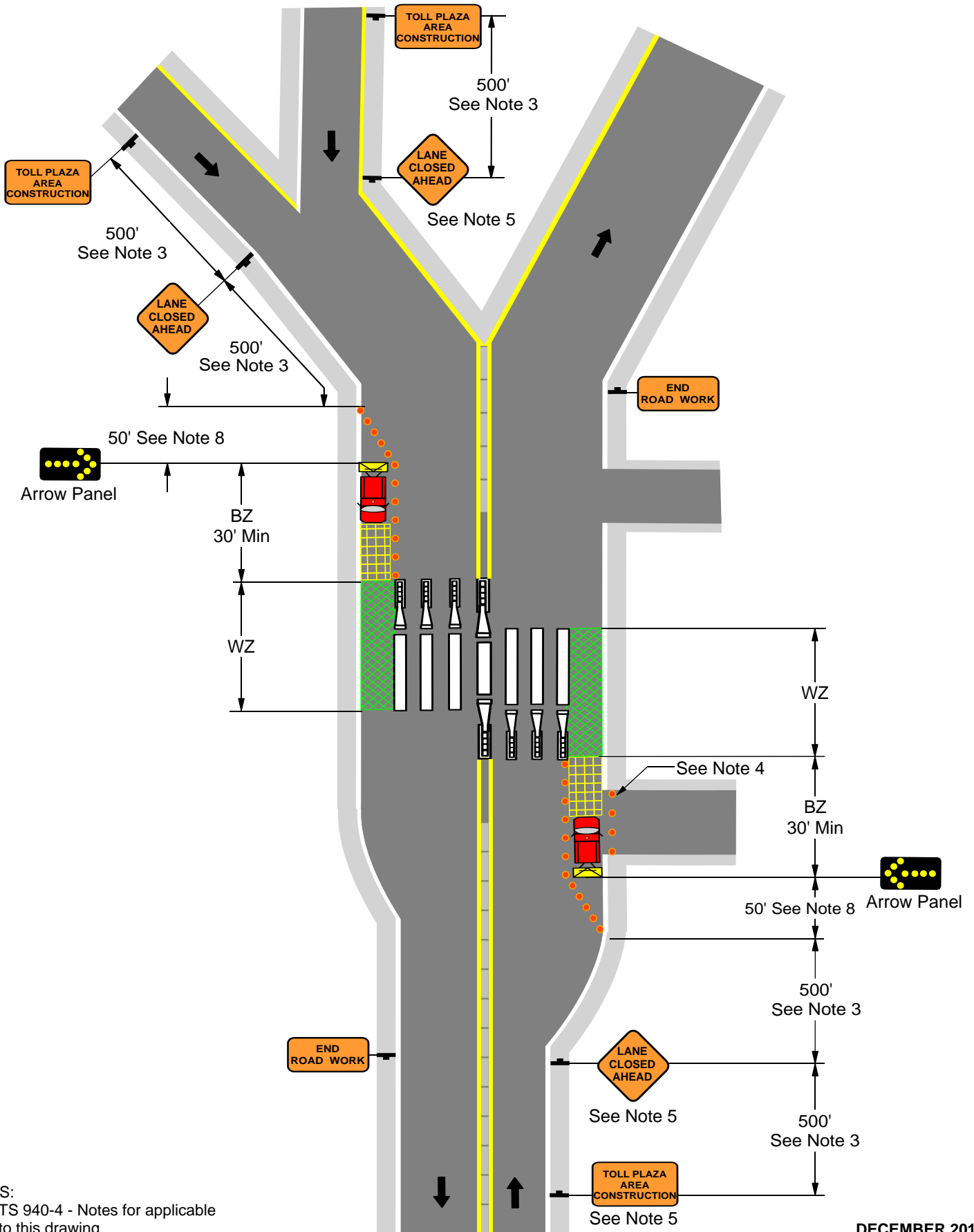
1. This pattern to be used for operations which occupy a location more than 72 hours.
2. Overhead lane control to display red signal and "LANE CLOSED" white on red background, if available.
3. If distance to intersecting roadway does not allow sign placement as shown, place MPT-10 sign 50' min from intersection to roadway and space PTC-LCA sign equally between MPT-10 and beginning of transition.
4. Place channelizing devices at 10' apart across parking access.
5. If multiple ramps provide entrance to toll plaza, place MPT-10 and PTC-LCA signs on each ramp as necessary.
6. Sign locations may be adjusted to fit field conditions.
7. Channelizing devices spaced at 10 feet except where noted.
8. Increase taper length at toll plaza based on number of lanes closed.

### *Signs*



NOTE: See Appendix A for sign descriptions and dimensions.

# PTS 940-4 Toll Plaza Right Lane Closure Operations More Than 72 Hours



NOTES:  
See PTS 940-4 - Notes for applicable notes to this drawing

## PTS 940-5 - Notes Toll Plaza Center Lane Closure Operations Less Than 8 Hours

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1. This pattern to be used for short-term operations which occupy a location for less than 8 hours
2. Overhead lane control to display red signal and "LANE CLOSED" white on red background, if available.
3. Sign locations may be adjusted to fit field conditions.
4. Channelizing devices spaced at 10 feet except where noted.
5. Increase taper length at toll plaza based on number of lanes closed.

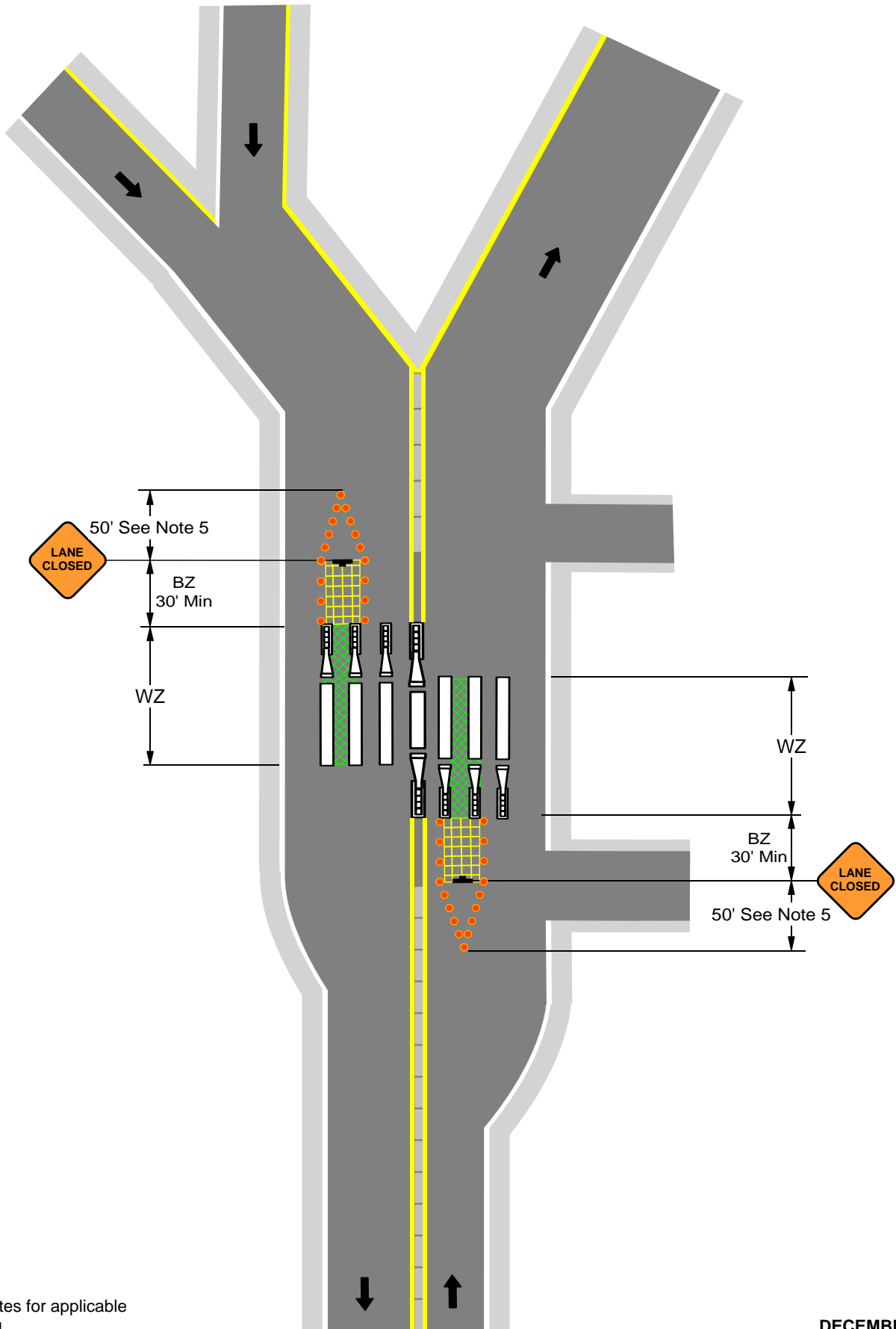
### *Signs*



PTC-LC

NOTE: See Appendix A for sign descriptions and dimensions.

PTS 940-5  
Toll Plaza Center Lane Closure  
Operations Less Than 8 hours



NOTES:  
See PTS 940-5 - Notes for applicable  
notes to this drawing

## PTS 940-6 - Notes Toll Plaza Center Lane Closure Operations Between 8 and 72 Hours

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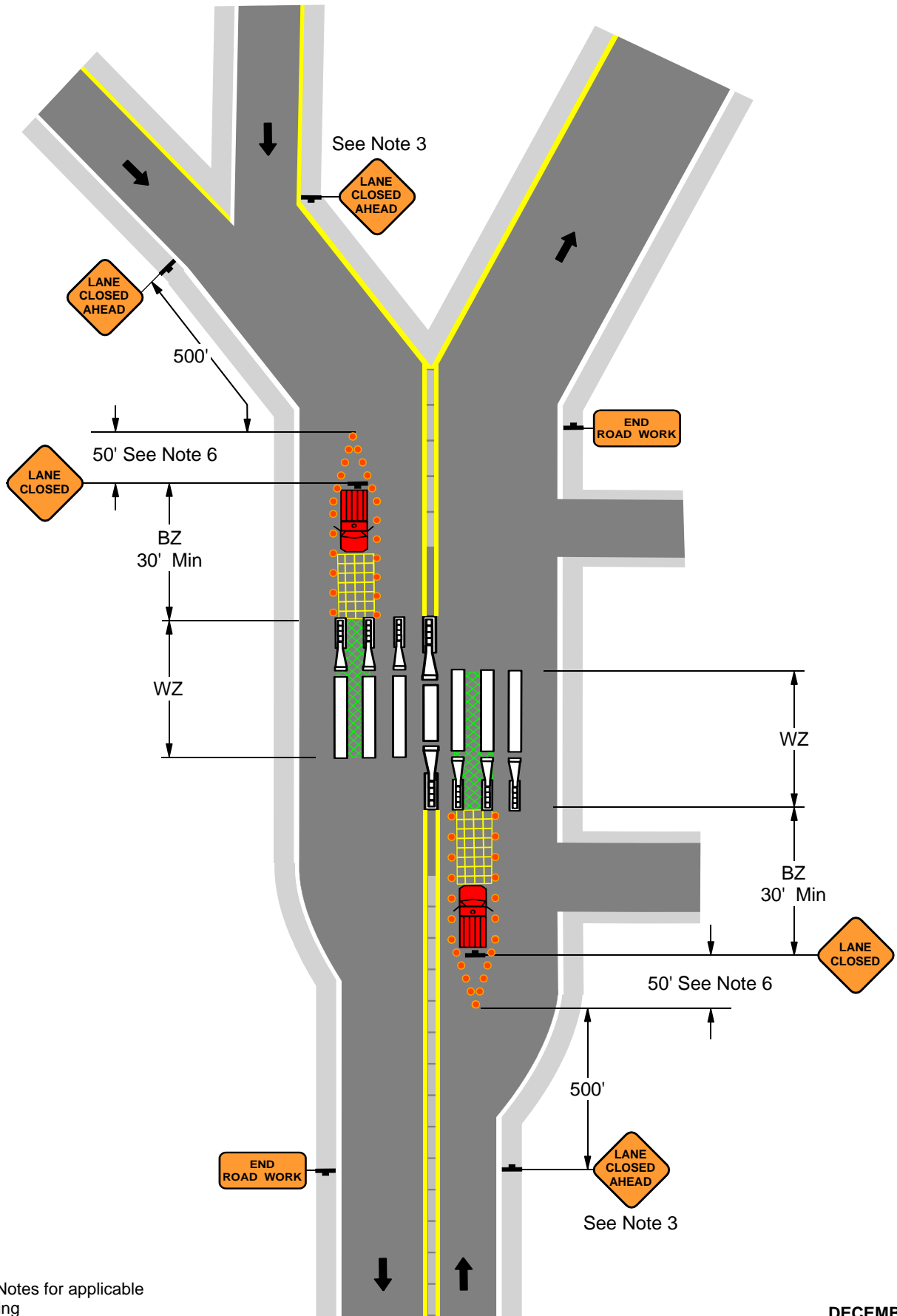
1. This pattern to be used for short-term operations which occupy a location for 8 to 72 hours.
2. Overhead lane control to display red signal and "LANE CLOSED" white on red background, if available.
3. If multiple ramps provide entrance to toll plaza, place PTC-LCA signs on each ramp as necessary.
4. Sign locations may be adjusted to fit field conditions.
5. Channelizing devices spaced at 10 feet except where noted.
6. Increase taper length at toll plaza based on number of lanes closed.

### *Signs*



NOTE: See Appendix A for sign descriptions and dimensions.

**PTS 940-6  
Toll Plaza Center Lane Closure  
Operations Between 8 and 72 Hours**



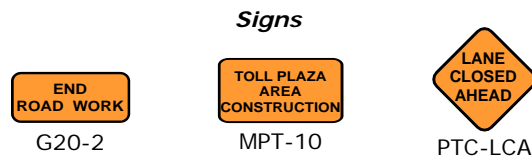
NOTES:  
See PTS 940-6 - Notes for applicable notes to this drawing

## PTS 940-7 - Notes

### Toll Plaza Center Lane Closure Operations More than 72 Hours

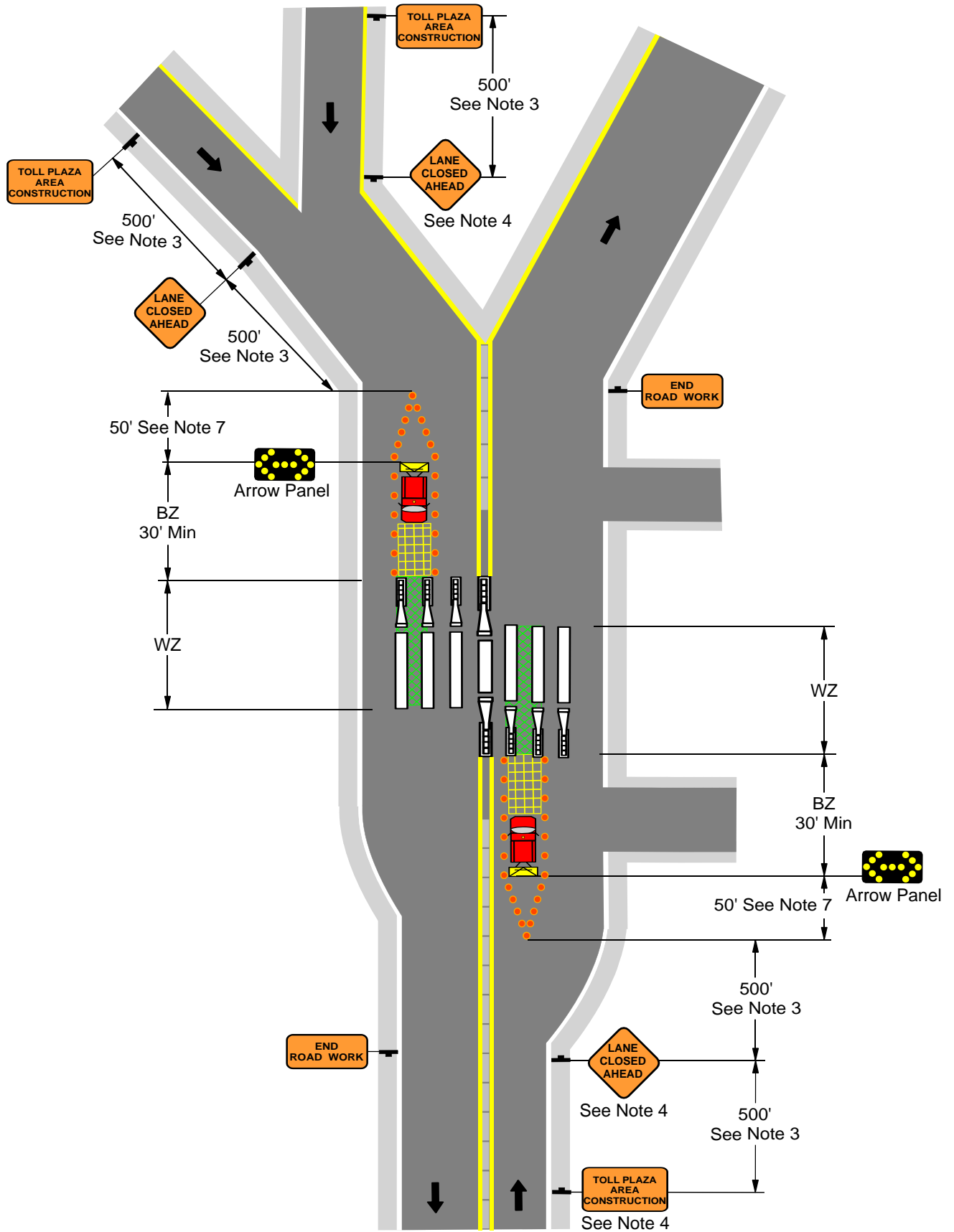
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1. This pattern to be used for operations which occupy a location for more than 72 hours.
2. Overhead lane control to display red signal and "LANE CLOSED" white on red background, if available.
3. If distance to intersecting roadway does not allow sign placement as shown, place MPT-10 sign 50' min from intersection to roadway and space PTC-LCA sign equally between MPT-10 and beginning of transition.
4. If multiple ramps provide entrance to toll plaza, place MPT-10 and PTC-LCA signs on each ramp as necessary.
5. Sign location may be adjusted to fit field conditions.
6. Channelizing devices spaced at 10 feet except where noted.
7. Increase taper length at toll plaza based on number of lanes closed.



NOTE: See Appendix A for sign descriptions and dimensions.

**PTS 940-7  
Toll Plaza Center Lane Closure  
Operations More than 72 Hours**



NOTES:  
See PTS 940-7 - Notes for applicable notes to this drawing



## PTS 940-8 - Notes

### Advance Warning Signs for Work on Ramps

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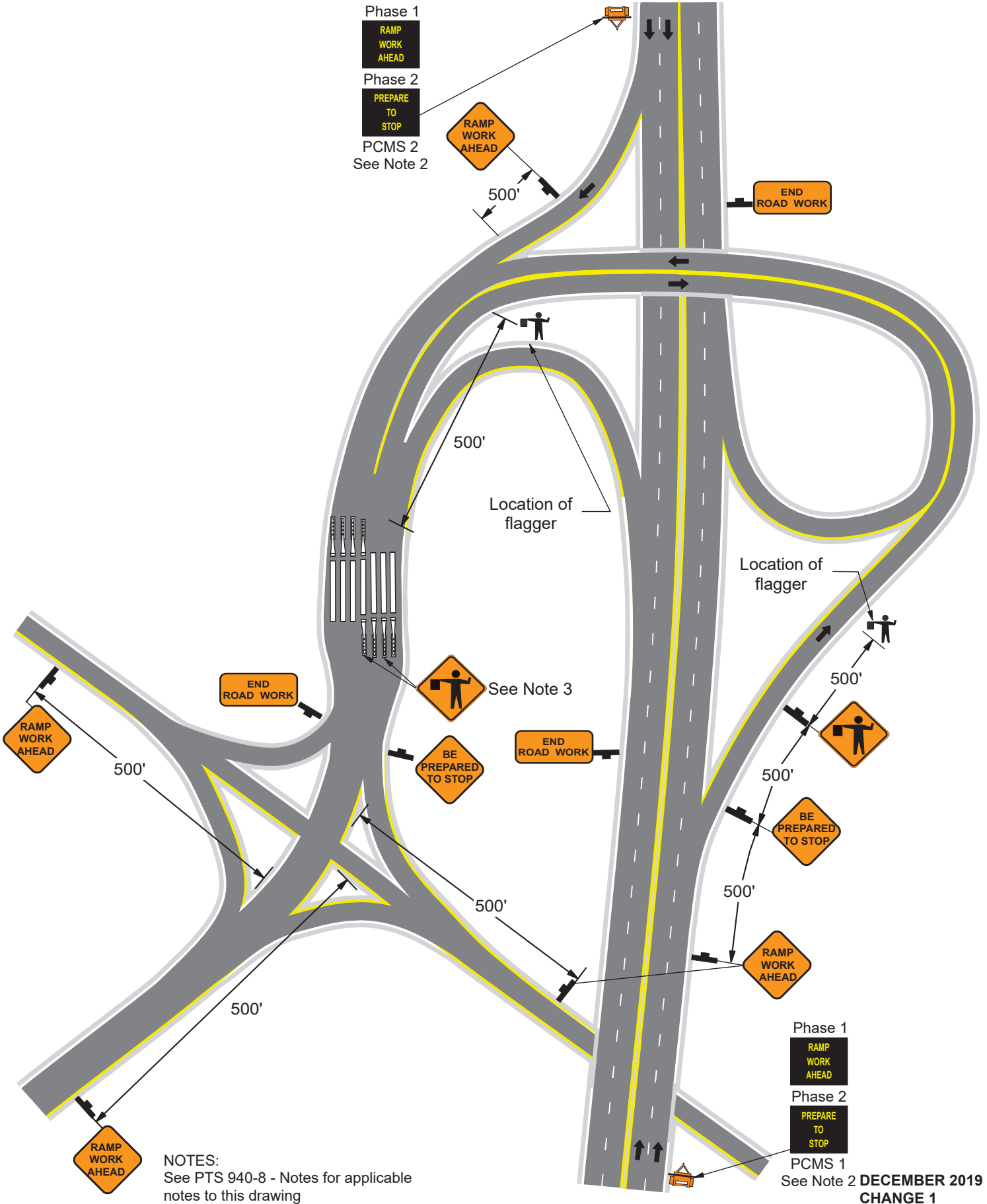
1. Sign locations may be adjusted to fit field conditions.
2. Place PCMS 500' (min.) in advance of ramp or 500' (min.) in advance of W21-101 sign, whichever is greater.
3. Place W20-7 signs on every other toll island, if applicable.

#### *Signs*



NOTE: See Appendix A for sign descriptions and dimensions.

# PTS 940-8 Advance Warning Signs for Work on Ramps



NOTES:  
See PTS 940-8 - Notes for applicable notes to this drawing

Phase 1  
RAMP WORK AHEAD  
Phase 2  
PREPARE TO STOP  
PCMS 1  
See Note 2  
**DECEMBER 2019  
CHANGE 1**

## PTS 940-9 - Notes

### Service Plaza Area Construction

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1. This pattern to be used for work within Service Plaza parking areas. For any work on Service Plaza ramps, use PTS 940-10, PTS 940-11A or PTS 940-11B, as applicable.
2. Locate PCMS 500 feet from beginning of the Service Plaza Ramp.

#### *Signs*



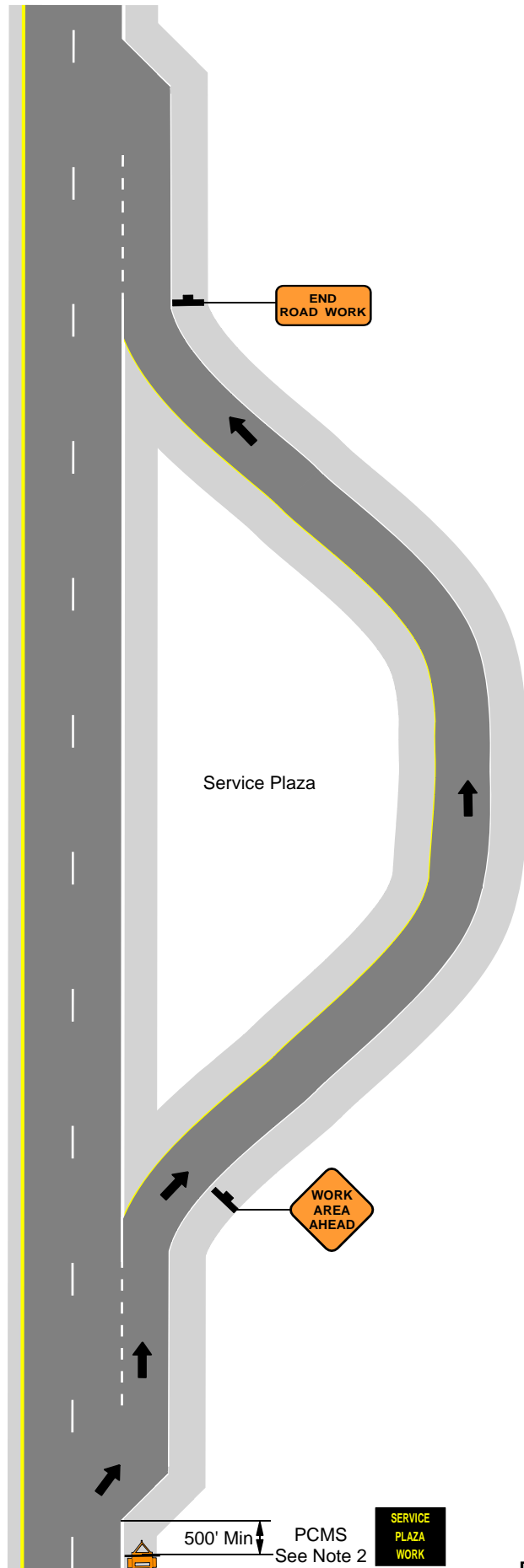
G20-2



W21-102

NOTE: See Appendix A for sign descriptions and dimensions.

PTS 940-9  
Service Plaza Area Construction



NOTES:  
See PTS 940-9 - Notes for applicable notes to this drawing

## PTS 940-10 - Notes

### Ramp Bridge Crossover

---

1. Place channelizing devices at 10 feet apart to close off barrier opening during non-working hours.
2. Use channelizing devices with PennDOT approved sequential warning lights in the transition areas for patterns used during hours of darkness.
3. Compute the minimum desirable taper length for reduction in lanes on ramps using the following formula:

$$L = \frac{W \times S^2}{60}$$

Where L = Minimum desirable taper length in feet  
W = Width of offset in feet  
S = Normal speed in miles per hour

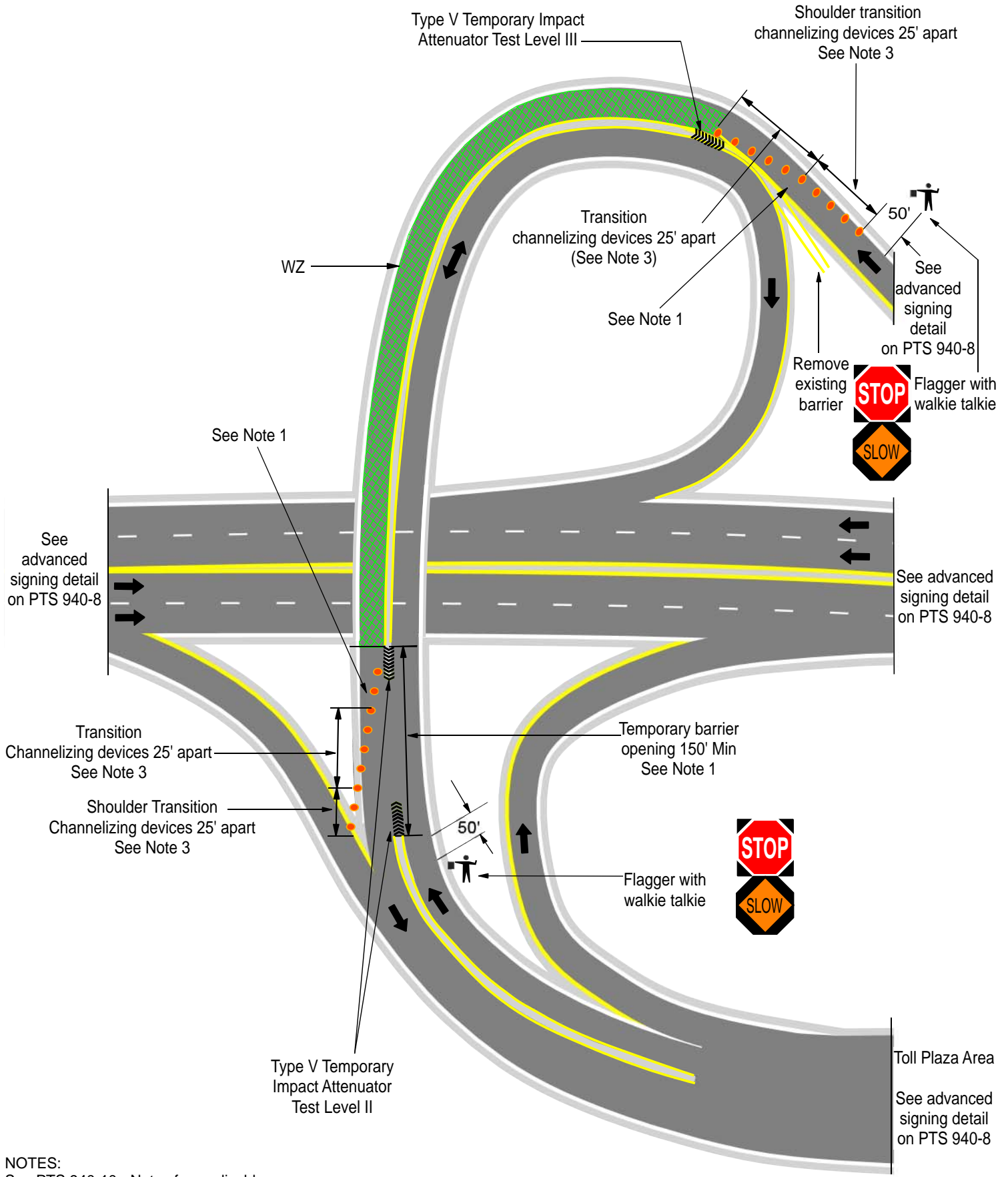
#### *Signs*



W21-10

NOTE: See Appendix A for sign descriptions and dimensions.

# PTS 940-10 Ramp Bridge Crossover



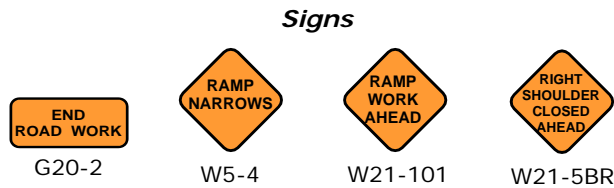
NOTES:  
See PTS 940-10 - Notes for applicable notes to this drawing

## PTS 940-11 - Notes Work Zone on Ramp

1. Use channelizing devices with PennDOT approved sequential warning lights in the transition areas for patterns used during hours of darkness.
2. Compute the minimum desirable taper length for reduction in lanes on ramps using the following formula:

$$L = \frac{W \times S^2}{60}$$

Where L = Minimum desirable taper length in feet  
 W = Width of offset in feet  
 S = Normal speed in miles per hour



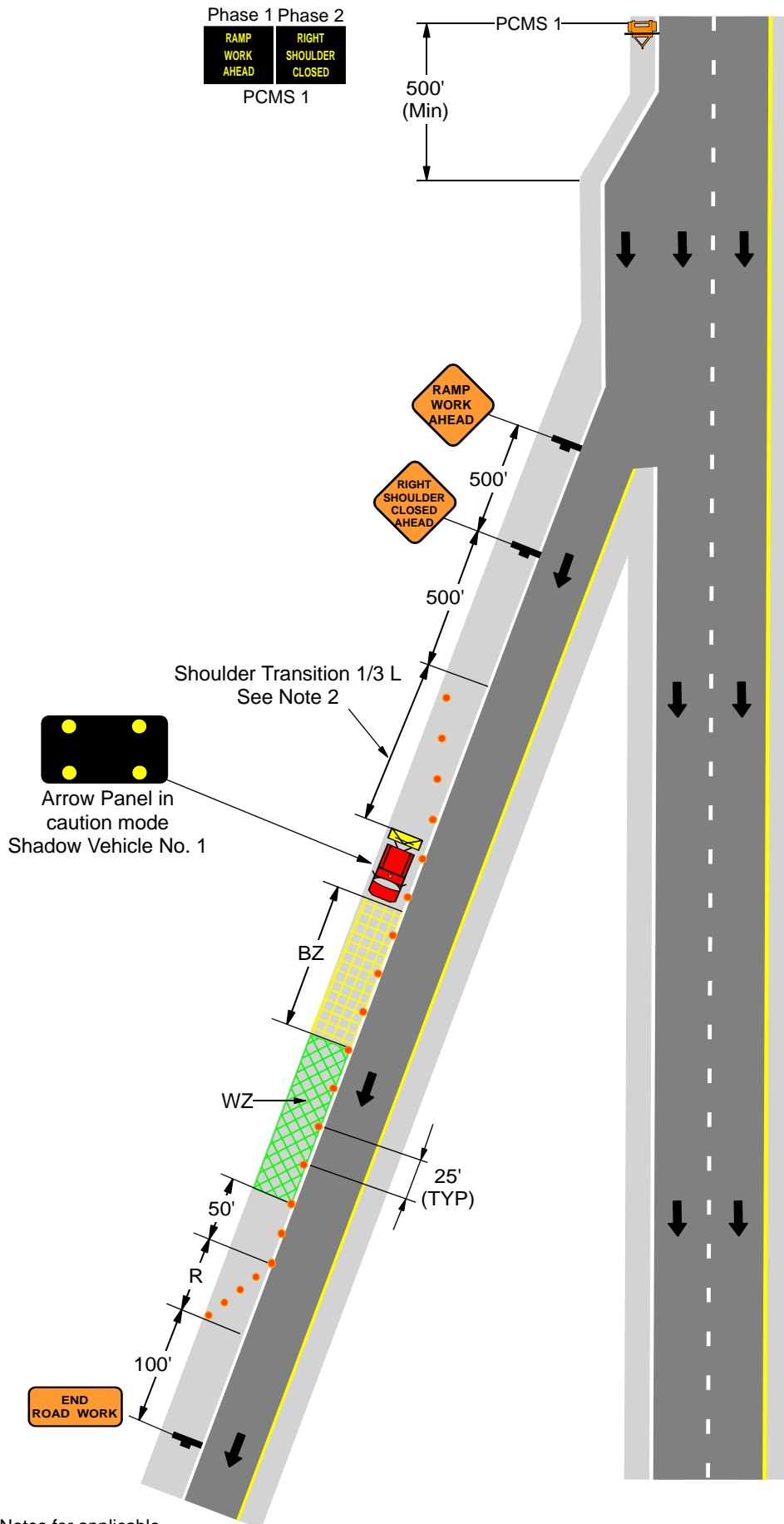
NOTE: See Appendix A for sign descriptions and dimensions.

***Distance and Spacing Quick Reference Chart***

SPEED	1/3 L	BZ	WZ	R	Maximum Channelizing Device Spacing (Feet)			
					1/3 L	BZ	WZ	R
MPH	Feet	Feet	Feet	Feet	1/3 L	BZ	WZ	R
55	220	100	Varies	100	25	25	25	25

L = Transition  
 1/3L = Shoulder Transition  
 BZ = Buffer Zone  
 WZ = Work Zone  
 R = Runout

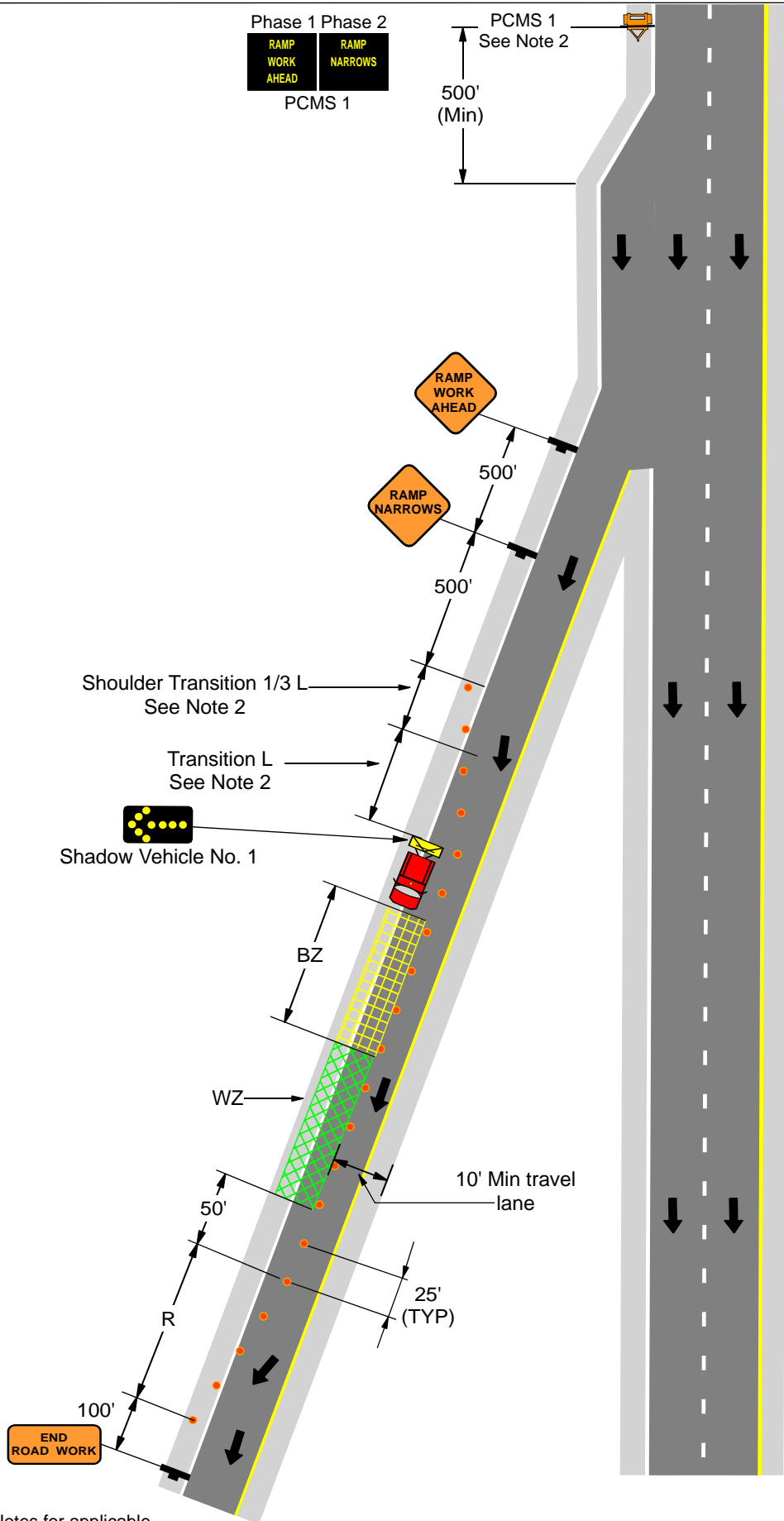
# PTS 940-11A Work Zone on Ramp - Shoulder Closure



NOTES:  
See PTS 940-11 - Notes for applicable notes to this drawing



**PTS 940-11B**  
**Work Zone on Ramp - Lane Narrows**



NOTES:  
 See PTS 940-11 - Notes for applicable notes to this drawing

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## PTS 940-12 - Notes

### Two-Lane Ramp, One Lane Closure

---

1. For right lane work zone, use the same sign spacing, location, and pattern but with the signs and PCMS indicating a right lane closure.
2. Use channelizing devices with PennDOT approved sequential warning lights in the transition area for patterns used during hours of darkness.
3. Establish single lane traffic pattern only during active work periods. Shorten length of single lane pattern to only the length needed for construction operation.
4. Compute the minimum desirable taper length for reduction in lanes on ramps using the following formula:

$$L = \frac{W \times S^2}{60}$$

Where L = Minimum desirable taper length in feet  
W = Width of offset in feet  
S = Normal speed in miles per hour

#### Signs



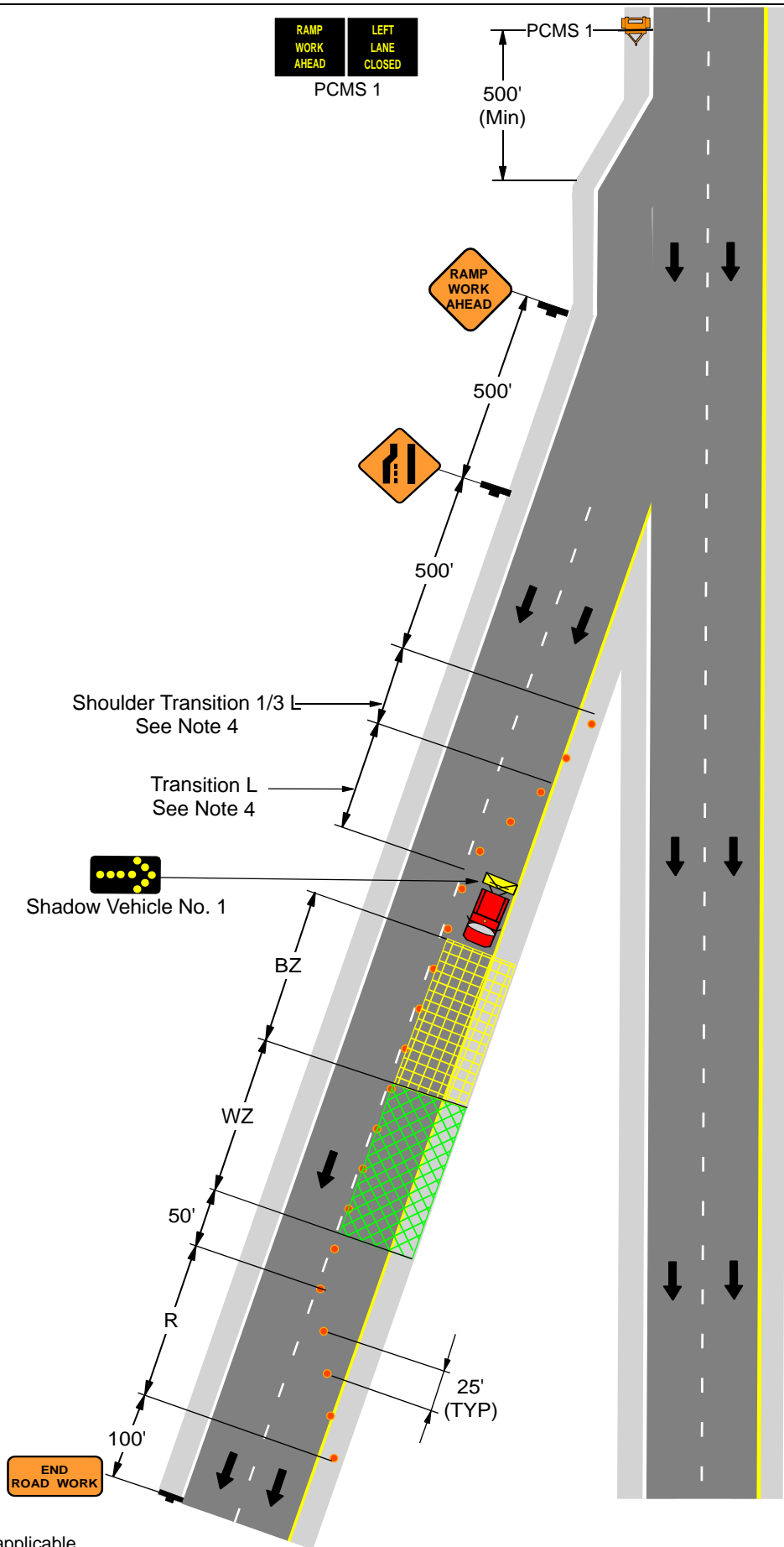
NOTE: See Appendix A for sign descriptions and dimensions.

#### Distance and Spacing Quick Reference Chart

SPEED	1/3 L	BZ	WZ	R	Maximum Channelizing Device Spacing (Feet)			
					1/3 L	BZ	WZ	R
MPH	Feet	Feet	Feet	Feet	1/3 L	BZ	WZ	R
55	220	100	Varies	100	25	25	25	25

L = Transition  
1/3L = Shoulder Transition  
BZ = Buffer Zone  
WZ = Work Zone  
R = Runout

# PTS 940-12 Two-Lane Ramp, One Lane Closure



NOTES:  
See PTS 940-12 - Notes for applicable notes to this drawing

## PTS 940-13- Notes E-ZPass Only Slip Ramp

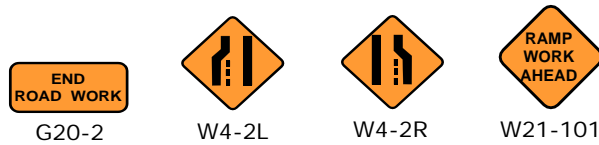
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1. Tie into shoulder at lane diverge.
2. Place PCMS 500' (min.) in advance of ramp or 500' (min.) in advance of W21-101 sign, whichever is greater.
3. Use channelizing devices with PennDOT approved sequential warning lights in the transition areas for patterns used during hours of darkness.
4. Compute the minimum desirable taper length for reduction in lanes on ramps using the following formula:

$$L = \frac{W \times S^2}{60}$$

Where L = Minimum desirable taper length in feet  
 W = Width of offset in feet  
 S = Normal speed in miles per hour

### Signs



NOTE: See Appendix A for sign descriptions and dimensions.

### Distance and Spacing Quick Reference Chart

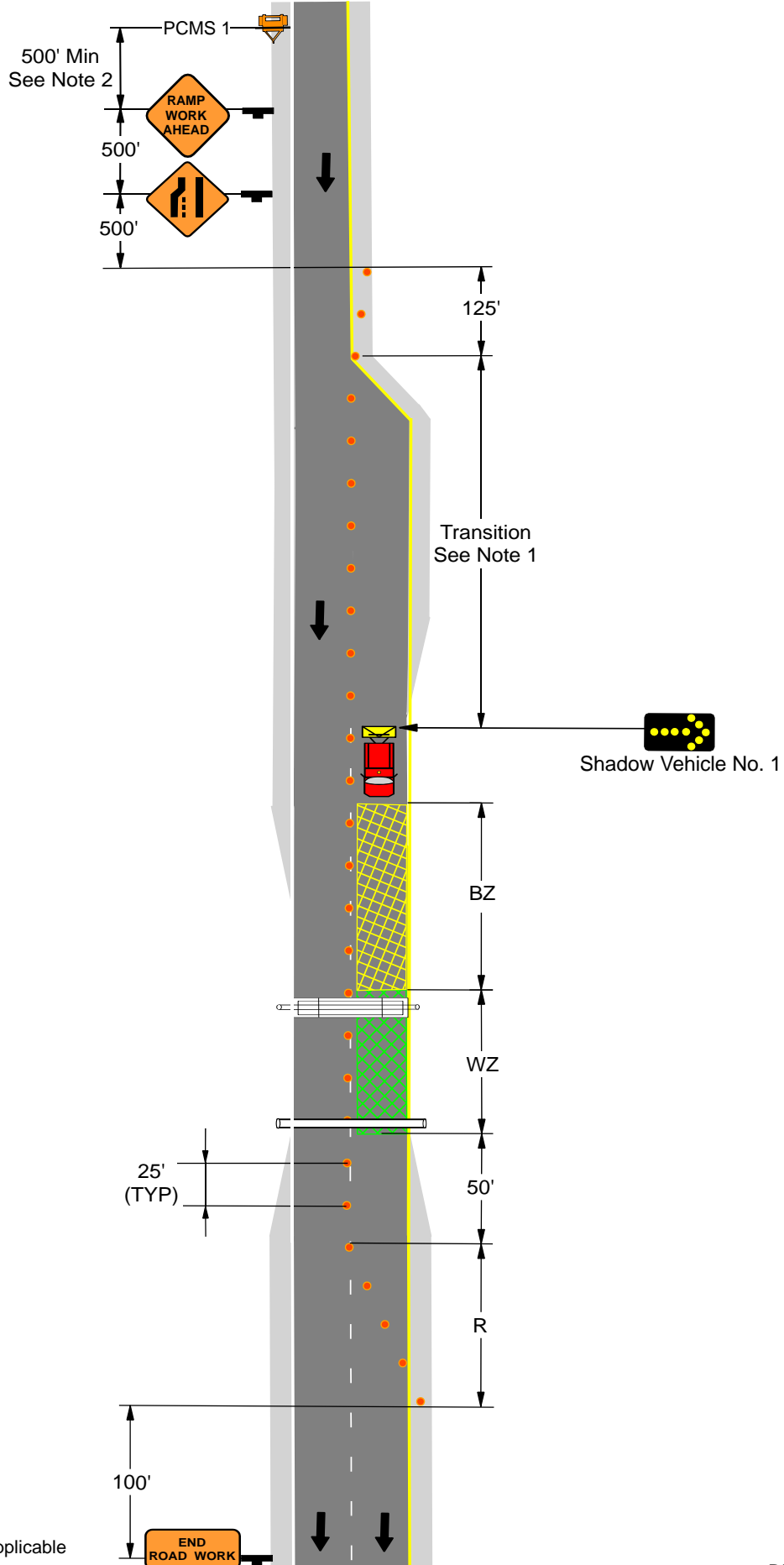
SPEED	1/3 L	BZ	WZ	R	Maximum Channelizing Device Spacing (Feet)			
					1/3 L	BZ	WZ	R
MPH	Feet	Feet	Feet	Feet	1/3 L	BZ	WZ	R
55	220	100	Varies	100	25	25	25	25

L = Transition  
 1/3L = Shoulder Transition  
 BZ = Buffer Zone  
 WZ = Work Zone  
 R = Runout

**PTS 940-13A**  
**E-ZPass Only Slip Ramp - Lane Addition Closure**

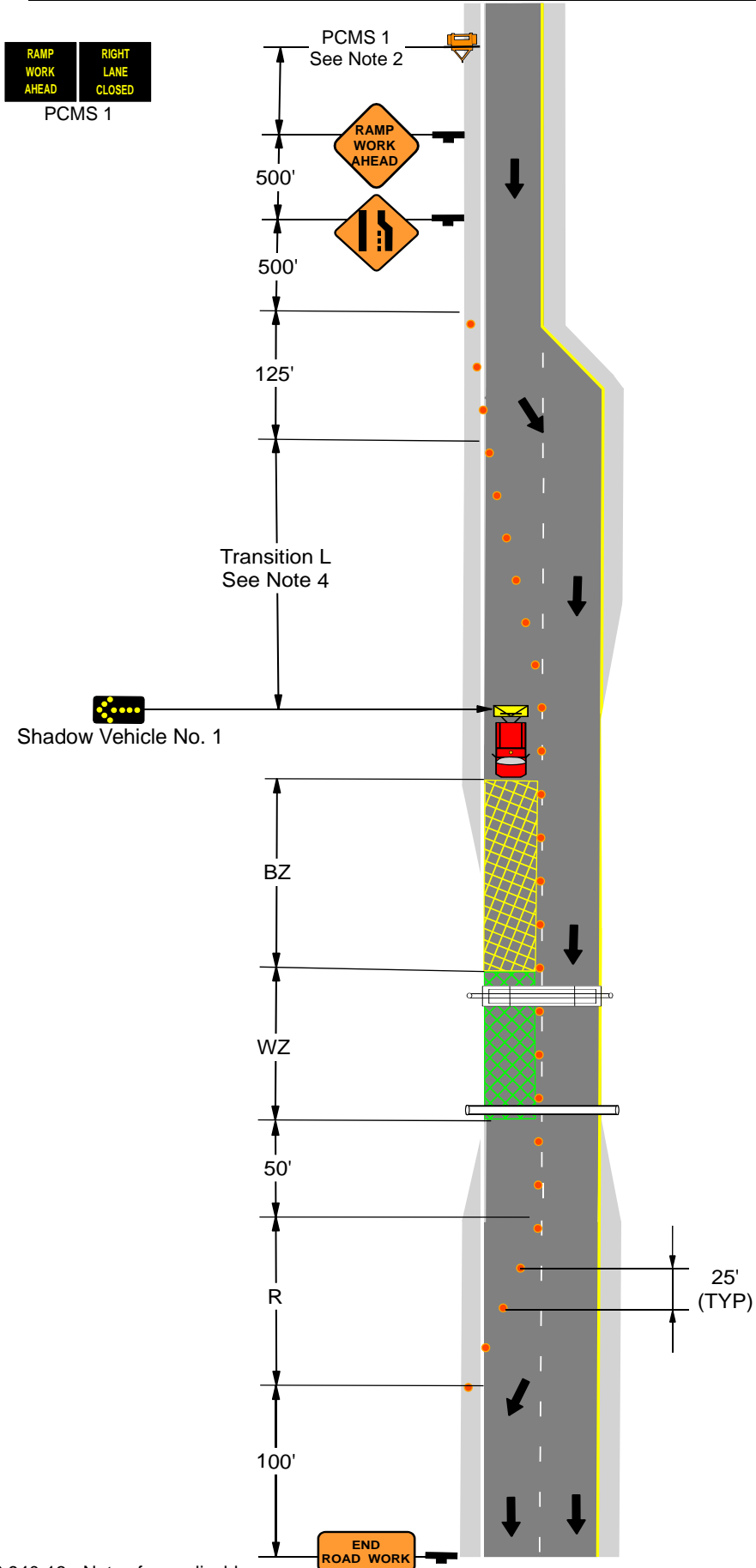
<b>RAMP WORK AHEAD</b>	<b>LEFT LANE CLOSED</b>
--------------------------------	---------------------------------

PCMS 1



NOTES:  
 See PTS 940-13 - Notes for applicable notes to this drawing

**PTS 940-13B**  
**E-ZPass Only Slip Ramp - Lane Closure**



RAMP WORK AHEAD	RIGHT LANE CLOSED
-----------------------	-------------------------

PCMS 1

NOTES:  
 See PTS 940-13 - Notes for applicable notes to this drawing

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## PTS 940-14 - Notes Express E-ZPass Lane Closure

1. If distances for first shoulder transition, merge transition and buffer zone exceed development of additional express lane, extend buffer zone to express lane diverge taper. Provide arrow board only at transition area.

2. Place additional PCMS at existing Express E-ZPass locations with the following message:

Express E-ZPass Closed	Keep Right
------------------------------	---------------

3. In locations where permanent DMS are available, display message as shown in Note 2.

4. Use channelizing devices with PennDOT approved sequential warning lights in the transition area for patterns used during hours of darkness.

5. Compute the minimum desirable taper length for reduction in lanes on mainline using the following formula:

$$L = S \times W$$

Where L = Minimum desirable taper length in feet  
 W = Width of offset in feet  
 S = Normal speed limit in miles per hour

6. Single lane should be established a minimum of 1,000 feet in advance or beyond ramps at interchanges and service plazas.

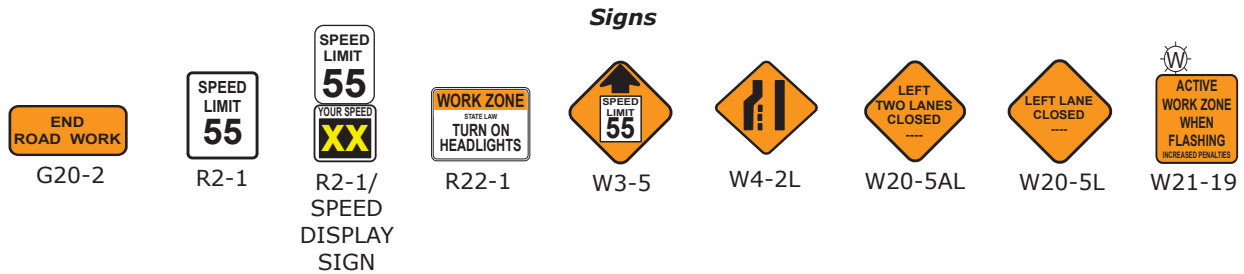
7. Install W3-5 sign only in areas where the normal speed limit is 70 MPH.

8. Speed Display Sign not required for PTC Maintenance Department Operations.

9. Post G20-2 sign 500 feet from the end of the work zone

10. Cover the Active Work Zone When Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.

11. Act 229 signs are not required for PTC Maintenance Department Operations.



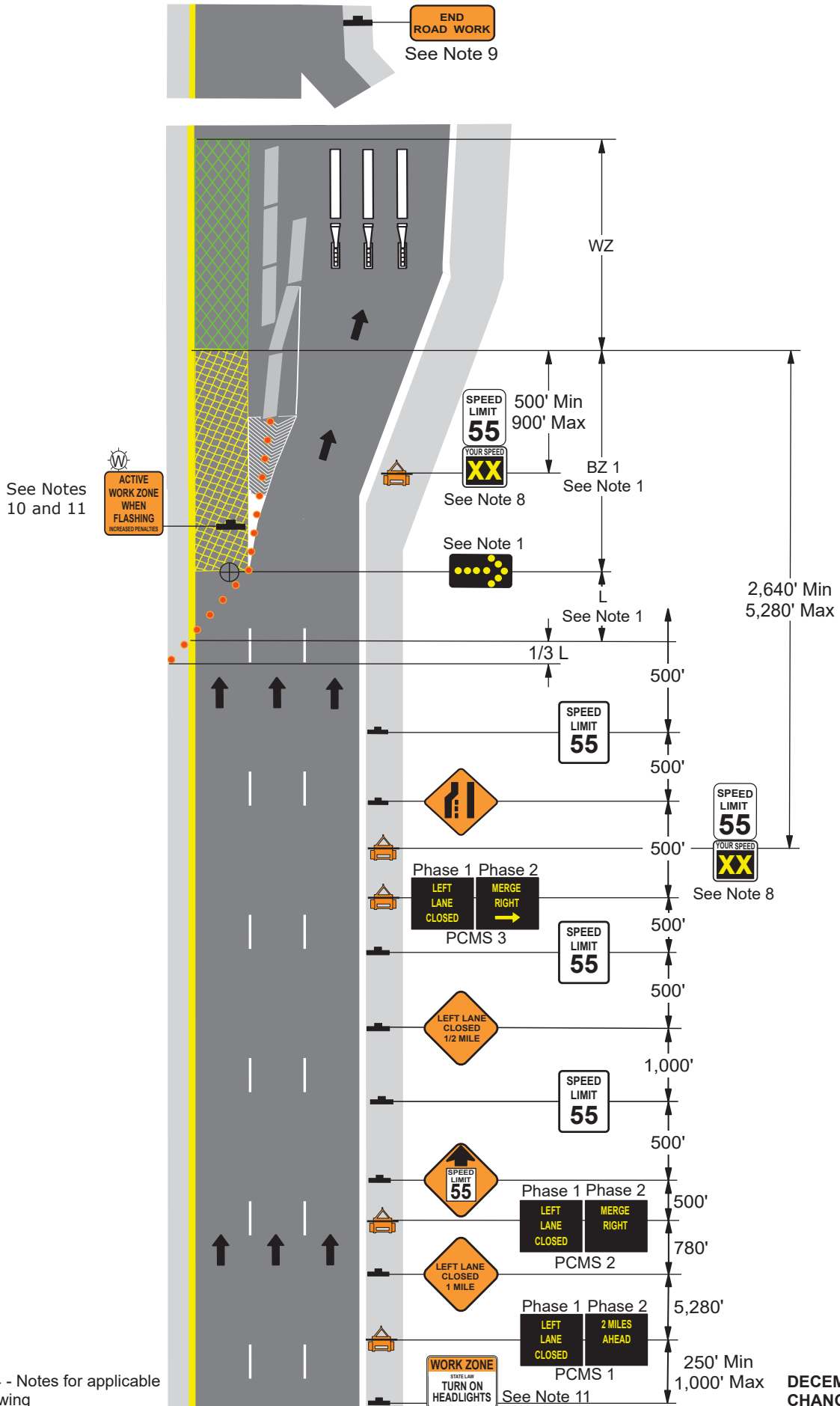
NOTE: See Appendix A for sign descriptions and dimensions.

**Distance and Spacing Quick Reference Chart**

SPEED	L	1/3 L	BZ 1	BZ 2	WZ	Maximum Channelizing Device Spacing (Feet)				
						L	1/3 L	BZ 1	BZ 2	WZ
MPH	Feet	Feet	Feet	Feet	Mile (s)					
<b>55</b>	660	220	1,320 (Min)	660 (Min)	3 (Max)	50	50	100	100	100

L = Transition  
 1/3 L = Shoulder Transition  
 BZ 1 = Buffer Zone 1  
 BZ 2 = Buffer Zone 2  
 WZ = Work Zone

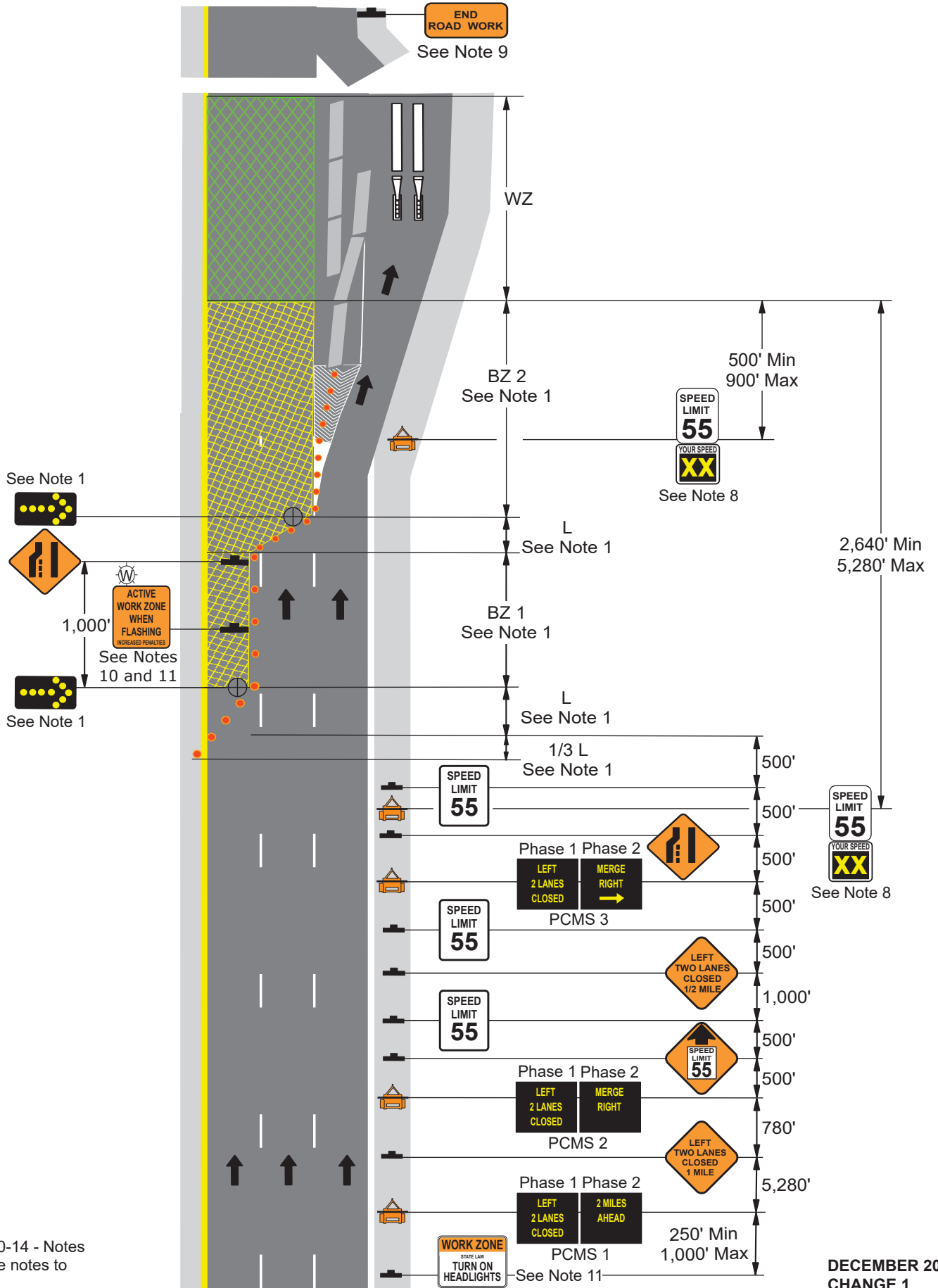
# PTS 940-14A Express E-ZPass Single Lane Closure



NOTES:  
See PTS 940-14 - Notes for applicable notes to this drawing

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# PTS 940-14B Express E-ZPass Double Lane Closure



NOTES:  
See PTS 940-14 - Notes  
for applicable notes to  
this drawing

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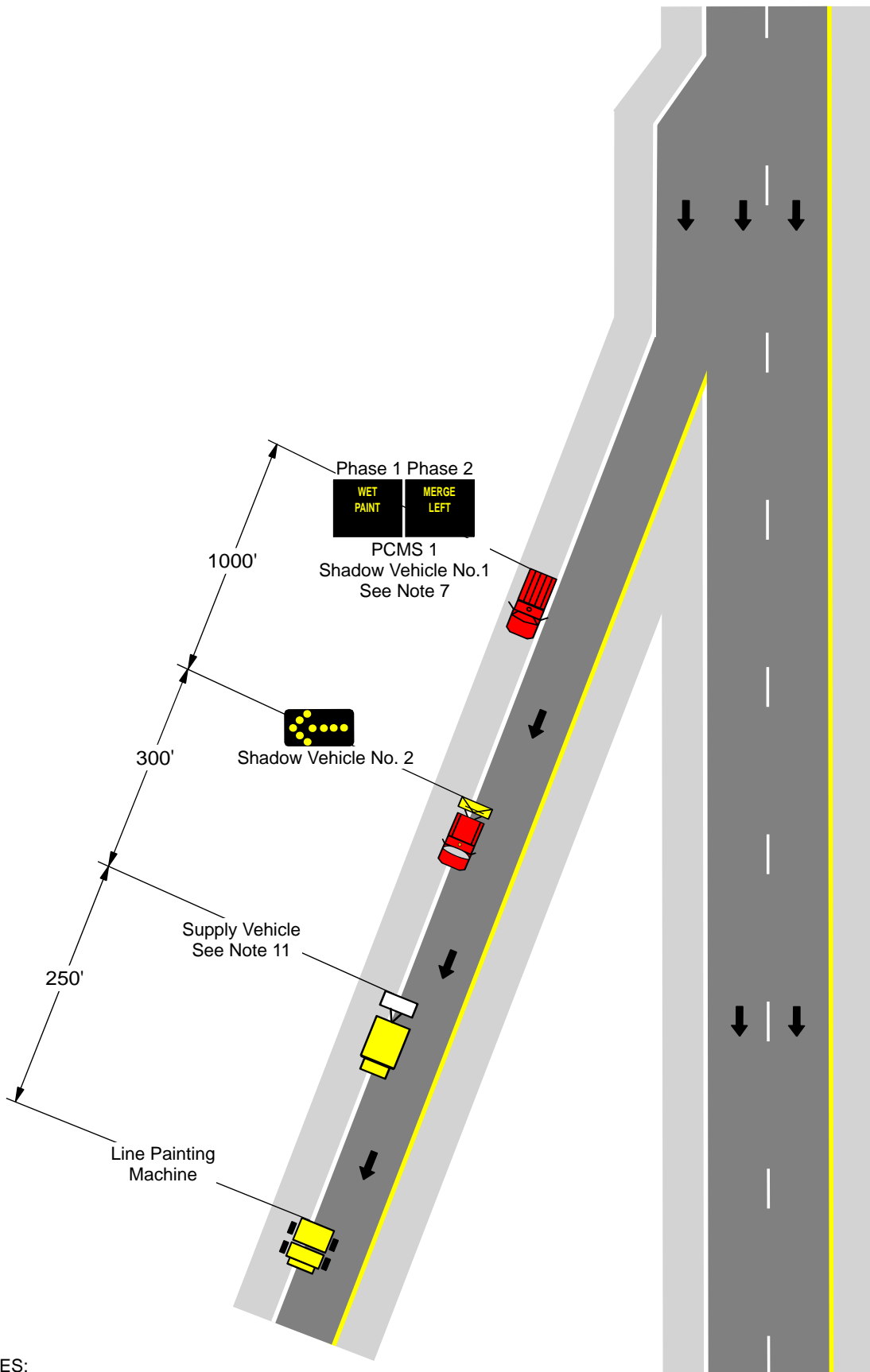
## **PTS 940-15 - Notes**

### **Traffic Line Painting Operation for Interchange Ramps**

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1. This figure applies to single lane ramps where the distances between vehicles required on PTS 915-11 are not available. For traffic line painting operations at interchanges with dual lane ramps, refer to PTS 915-11.
2. A 7,000 lb GVW (Gross Vehicle Weight) or larger pickup truck and loaded to weigh a minimum of 5,500 lb may be used as Shadow Vehicle No. 1.
3. Position Shadow Vehicle No. 1 so that it is visible from behind for a minimum distance of 700 feet.
4. All shadow vehicles are to have an arrow board or a PCMS.
5. For work on the left side side of the ramp, use same vehicles and spacing, but with the PCMS indicating Merge Right.
6. The spacing between the work vehicles and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between, based on field conditions.
7. Shadow Vehicle No. 1 may be located on the left shoulder where the left shoulder width is a minimum of 12 feet.
8. Paint Foreman's vehicle may be located:
  - A. In front of the supply vehicle, or
  - B. Behind the supply vehicle.
9. State Police vehicle may be located:
  - A. In front of Shadow Vehicle No. 2, or
  - B. Behind Shadow Vehicle No. 2.
10. All vehicles, with exception of State Police vehicle, are to have an activated amber warning light.
11. If supply vehicle is not used, the distance from Shadow Vehicle No. 5 to Line Painting machine should be 300 feet minimum to 1,000 feet maximum.

PTS 940-15  
Traffic Line Painting Operation for Interchange Ramps



NOTES:  
See PTS 940-15 - Notes for applicable  
notes to this drawing

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## PTS 940-16 - Notes

### Express E-ZPass Lane Closure - Mid County Interchange

1. If distances for first shoulder transition, merge transition and buffer zone exceed development of additional express lane, extend buffer zone to express lane diverge taper. Provide arrow board only at transition area.

2. Place additional PCMS at existing Express E-ZPass locations with the following message:

Express	Keep
E-ZPass	Right
Closed	

3. In locations where permanent DMS are available, display message as shown in Note 2.

4. Use channelizing devices with PennDOT approved sequential warning lights in the transition area for patterns used during hours of darkness.

5. Compute the minimum desirable taper length for reduction in lanes on mainline using the following formula:

$$L = S \times W$$

Where L = Minimum desirable taper length in feet

W = Width of offset in feet

S = Normal speed limit in miles per hour

6. Single lane should be established a minimum of 1,000 feet in advance or beyond ramps at interchanges and service plazas.

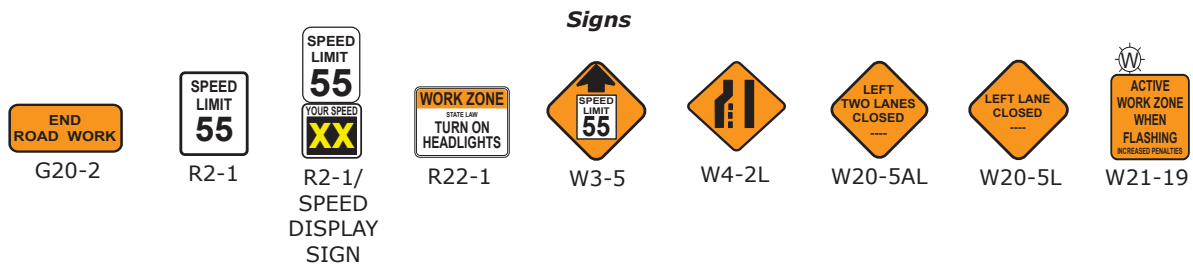
7. Install W3-5 sign only in areas where the normal speed limit is 70 MPH.

8. Speed Display Sign not required for PTC Maintenance Department Operations.

9. Post G20-2 sign 500 feet from the end of the work zone

10. Cover the Active Work Zone When Flashing (W21-19) sign and deactivate white Type B light when workers are not present on the roadway, berm, or shoulder for 60 minutes.

11. Act 229 signs are not required for PTC Maintenance Department Operations.



NOTE: See Appendix A for sign descriptions and dimensions.

**Distance and Spacing Quick Reference Chart**

SPEED	L	1/3 L	BZ 1	BZ 2	WZ	Maximum Channelizing Device Spacing (Feet)				
						L	1/3 L	BZ 1	BZ 2	WZ
MPH	Feet	Feet	Feet	Feet	Mile (s)					
<b>55</b>	660	220	1,320 (Min)	660 (Min)	3 (Max)	50	50	100	100	100

L = Transition

1/3 L = Shoulder Transition

BZ 1 = Buffer Zone 1

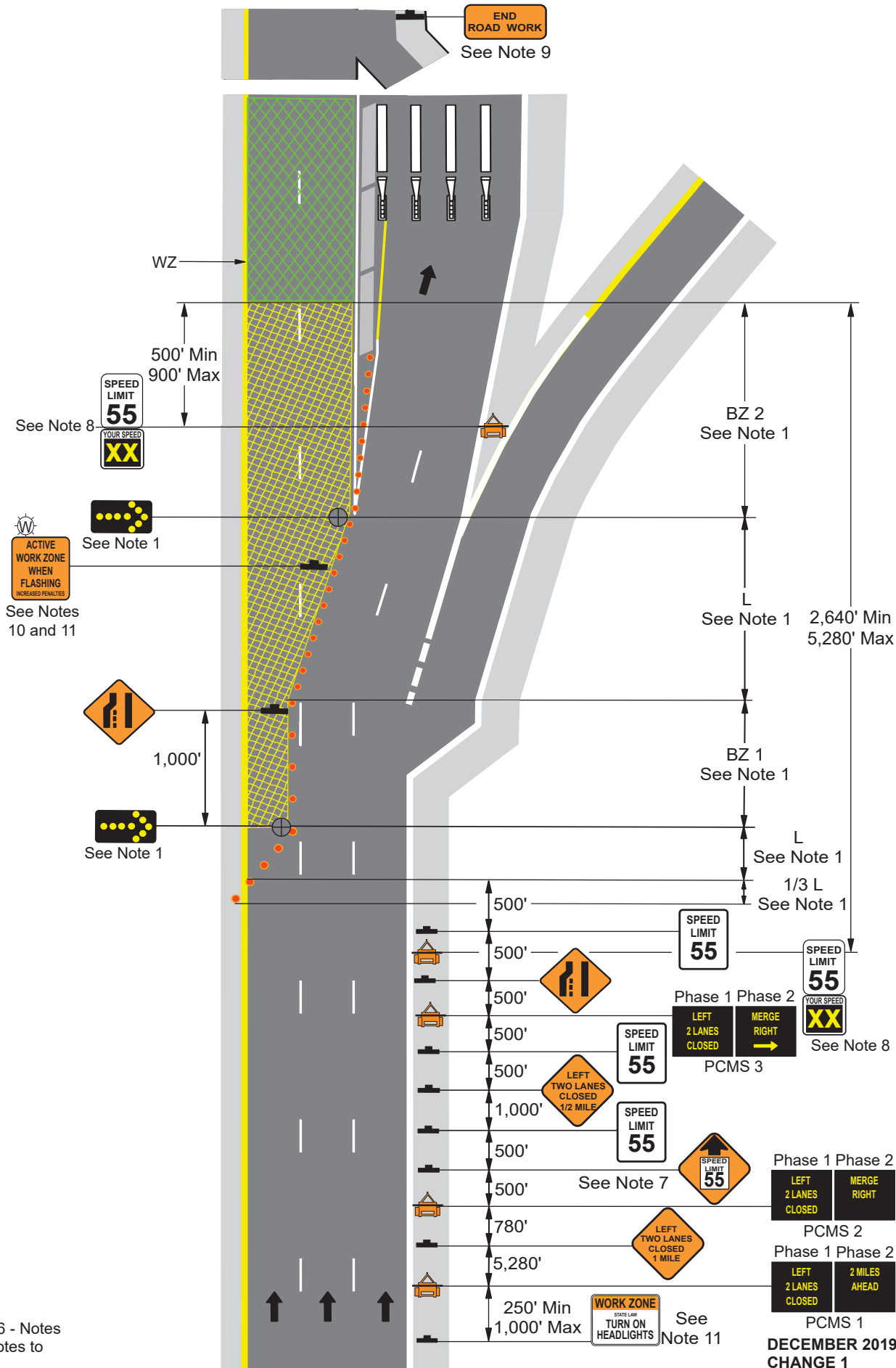
BZ 2 = Buffer Zone 2

WZ = Work Zone



PTS 940-16

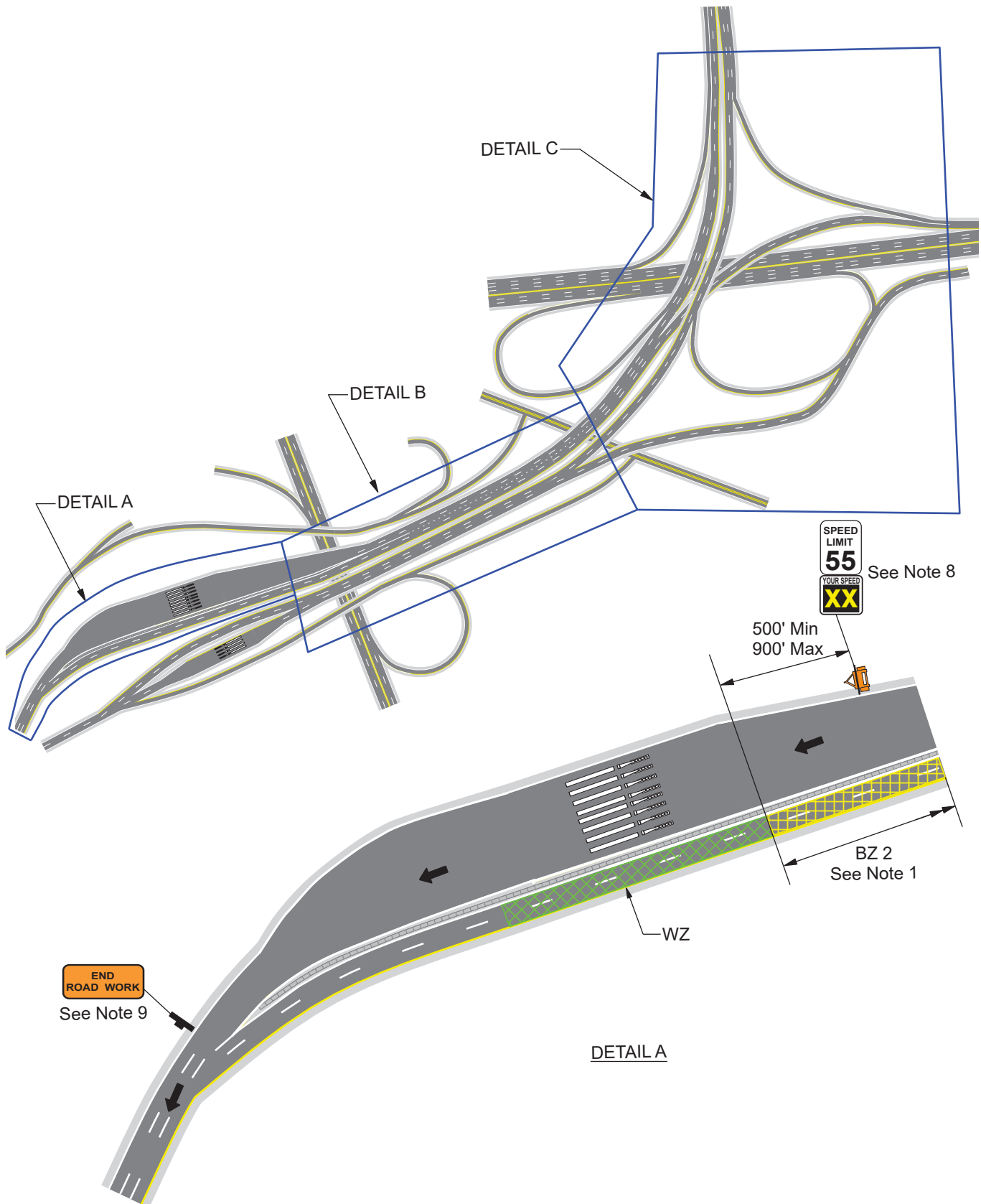
Express E-ZPass Lane Closure - Mid County Interchange - Northbound I-476 Detail



NOTES:  
See PTS 940-16 - Notes  
for applicable notes to  
this drawing

PCMS 3  
PCMS 2  
PCMS 1  
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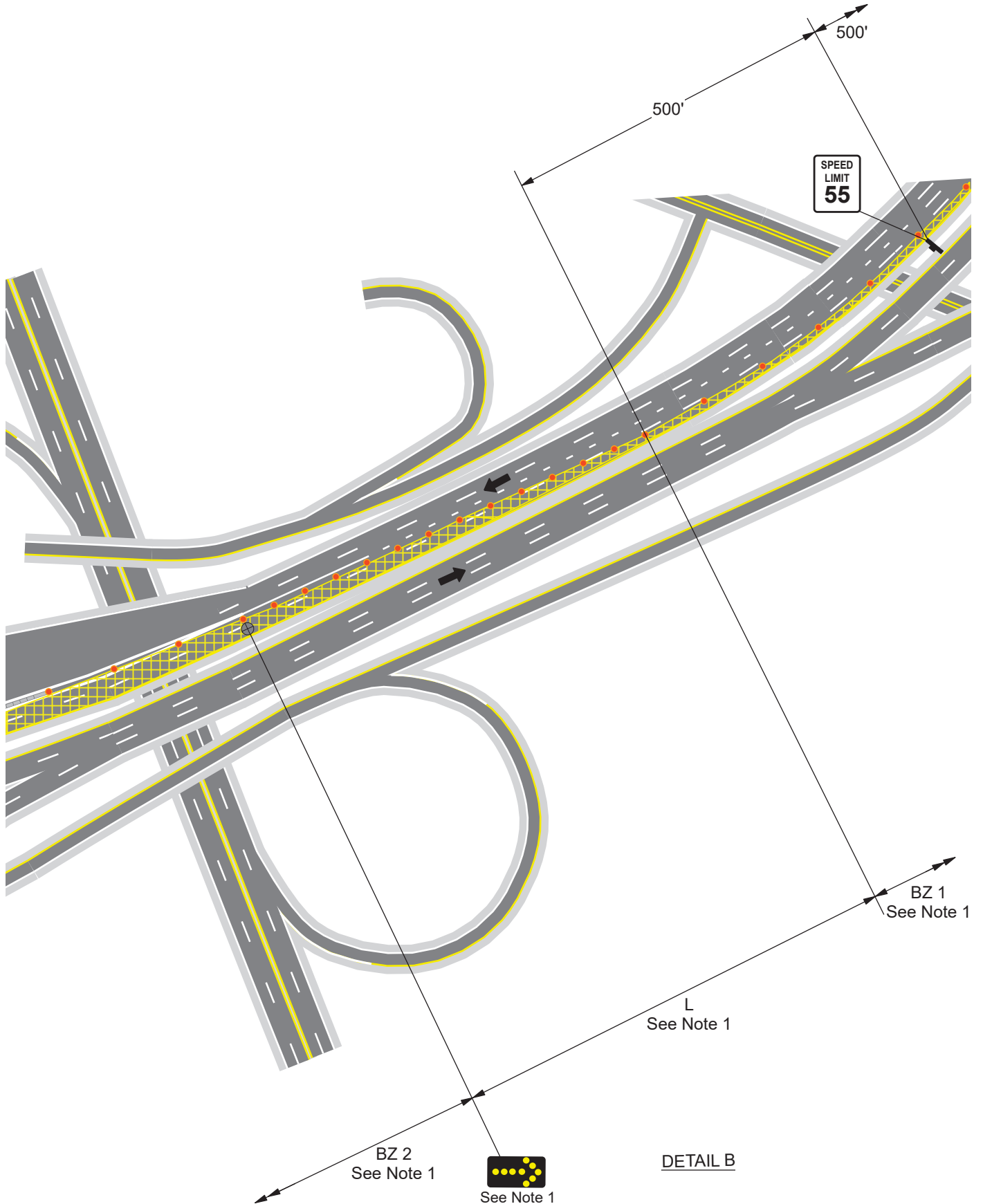
**PTS 940-16**  
**Express E-ZPass Lane Closure - Mid County Interchange**  
**Southbound I-476 Detail (Drawing 1 of 3)**



NOTES:  
 See PTS 940-16 - Notes  
 for applicable notes to  
 this drawing

**DECEMBER 2019**  
**CHANGE 1**

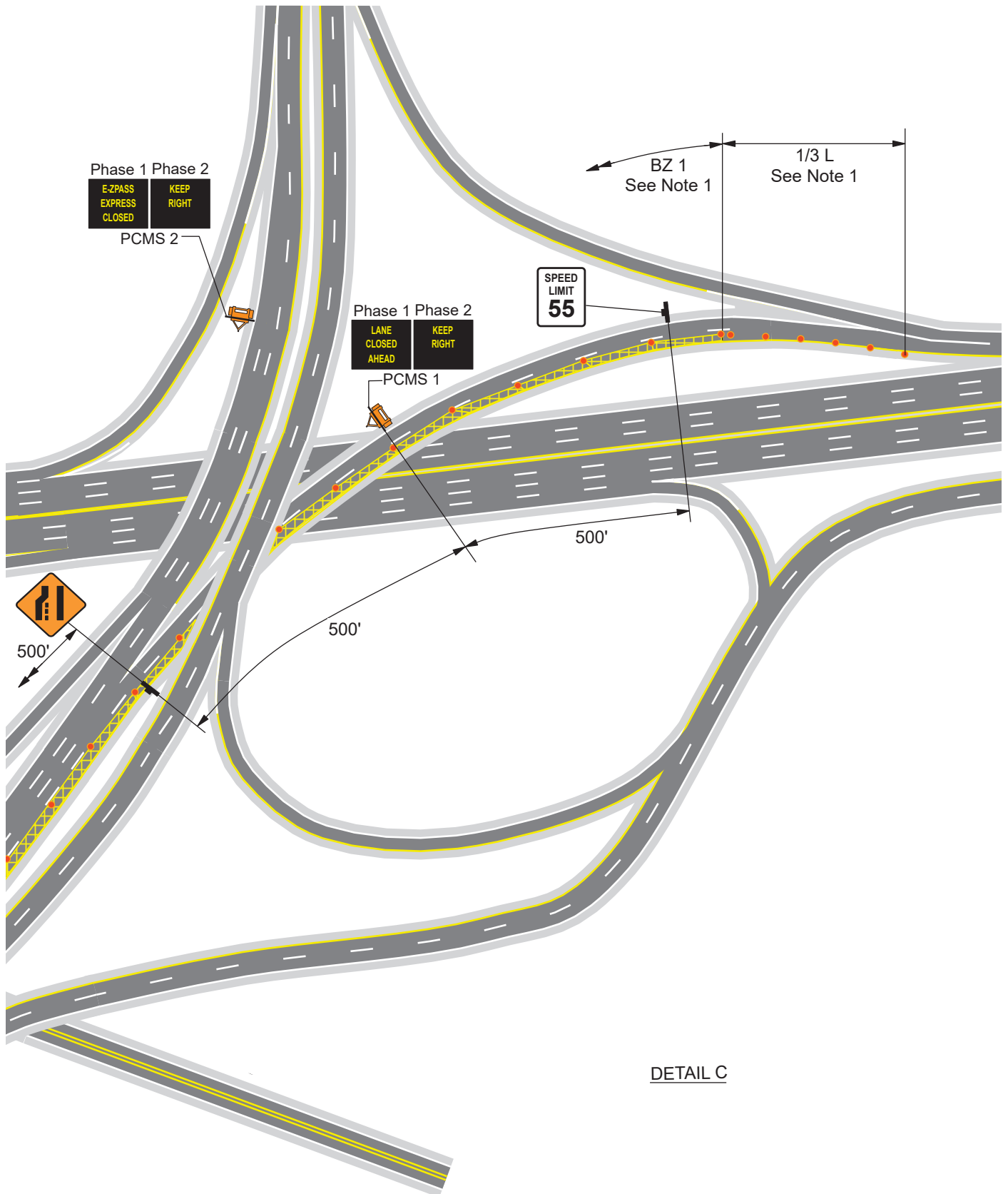
**PTS 940-16**  
**Express E-ZPass Lane Closure - Mid County Interchange**  
**Southbound I-476 Detail (Drawing 2 of 3)**



NOTES:  
See PTS 940-16 - Notes  
for applicable notes to  
this drawing

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**CHANGE 1**

**PTS 940-16**  
**Express E-ZPass Lane Closure - Mid County Interchange**  
**Southbound I-476 Detail (Drawing 3 of 3)**



DETAIL C

NOTES:  
 See PTS 940-16 - Notes  
 for applicable notes to  
 this drawing

**DECEMBER 2019**  
**CHANGE 1**

## Appendix A

### Sign Index in Nomenclature Order

Appendix A  
Sign Index In Nomenclature Order

NOMENCLATURE	DESCRIPTION	SIZE
D12-14A	EMERGENCY CELLULAR *11	30"x36"
G20-2	END ROAD WORK	60"x24"
G20-5AP	WORK ZONE PLAQUE	48"x36"
G30-1	EMERGENCY PULL-OFF	96"x60"
G30-2	EMERGENCY PULL-OFF ENTRANCE	96"x60"
MPT-01	CROSS OVER 500 FT	36"x48"
MPT-03	CROSS OVER 1500 FT	36"x48"
MPT-05	EXIT NEXT RIGHT	60"x60"
MPT-06	EXIT (45 DEGREE ARROW)	60"x60"
MPT-07	GAS AND FOOD NEXT RIGHT	60"x48"
MPT-08	GAS AND FOOD (45 DEGREE ARROW)	60"x60"
MPT-10	TOLL PLAZA AREA CONSTRUCTION	96"x48"
MPT-31	NO SHOULDER __ MILES	96"x48"
MPT-34	SHOULDER CLOSED	48"x36"
MPT-36	HEAVY EQUIPMENT CROSSING	48"x48"
MPT-38	LEFT SHOULDER LOW	48"x48"
PTC-LC	LANE CLOSED	48"x48"
PTC-LCA	LANE CLOSED AHEAD	48"x48"
R1-1	STOP	48"x48"
R1-1-2	RAMP	48"x24"
R1-1-3	RAMP STOP	48"x60"
R1-2	YIELD	60"x60"
R2-1	SPEED LIMIT	48"x60"
R4-1	DO NOT PASS	48"x60"
R4-1A	NO PASSING ZONE AHEAD	36"x48"
R11-2	ROAD CLOSED	48"x30"
R22-1	WORK ZONE - TURN ON HEADLIGHTS	72"x48"
R23-101	SPEED LIMIT PHOTO ENFORCED	48"x48"
W1-4L	LEFT REVERSE CURVE	48"x48"

Appendix A  
Sign Index In Nomenclature Order

NOMENCLATURE	DESCRIPTION	SIZE
W1-4R	RIGHT REVERSE CURVE	48"x48"
W1-4BL	TWO-LANE LEFT REVERSE CURVE	48"x48"
W1-4BR	TWO-LANE RIGHT REVERSE CURVE	48"x48"
W1-4CL	THREE-LANE LEFT REVERSE CURVE	48"x48"
W1-4CR	THREE-LANE RIGHT REVERSE CURVE	48"x48"
W3-1	STOP AHEAD	48"x48"
W3-2	YIELD AHEAD	48"x48"
W3-4	BE PREPARED TO STOP	48"x48"
W3-5	SPEED REDUCTION SIGN	48"x48"
W4-2L	PAVEMENT WIDTH TRANSITION - LEFT LANE ENDS	48"x48"
W4-2R	PAVEMENT WIDTH TRANSITION - RIGHT LANE ENDS	48"x48"
W5-4	RAMP NARROWS	48"x48"
W5-4-1	LANES NARROW	48"x48"
W6-3	TWO-WAY TRAFFIC	48"x48"
W8-9	LOW SHOULDER	48"x48"
W8-11	UNEVEN LANES	48"x48"
W16-103P	DISTANCE AHEAD PLAQUE	36"x24"
W20-1	ROAD WORK	48"x48"
W20-5AL	LEFT TWO LANES CLOSED	48"x48"
W20-5AR	RIGHT TWO LANES CLOSED	48"x48"
W20-5L	LEFT LANE CLOSED	48"x48"
W20-5R	RIGHT LANE CLOSED	48"x48"
W20-7	FLAGGER SYMBOL	48"x48"
W21-5BL	LEFT SHOULDER CLOSED	48"x48"
W21-5BR	RIGHT SHOULDER CLOSED	48"x48"
W21-6	SURVEY CREW	48"x48"
W21-7	UTILITY WORK AHEAD	48"x48"
W21-10	STOP AND SLOW PADDLE	24"x24"
W21-19	ACTIVE WORK ZONE WHEN FLASHING	48"x48"

Appendix A  
Sign Index In Nomenclature Order

NOMENCLATURE	DESCRIPTION	SIZE
W21-20	END ACTIVE WORK ZONE	48"x48"
W21-101	RAMP WORK AHEAD	48"x48"
W21-102	WORK AREA AHEAD	48"x48"
W24-1AL	TWO-LANE DOUBLE REVERSE CURVE LEFT	48"x48"
W24-1AR	TWO-LANE DOUBLE REVERSE CURVE RIGHT	48"x48"
W24-1BL	THREE-LANE DOUBLE REVERSE CURVE LEFT	48"x48"
W24-1BR	THREE-LANE DOUBLE REVERSE CURVE RIGHT	48"x48"
W25-5	CONSTRUCTION ENTRANCE AHEAD	48"x48"