

PCMS 1	
1	2
SLOW TRAFFIC AHEAD	NEXT # MILES
2.0 SEC	2.0 SEC

FIELD LOCATE AT LEAST 1/2 +/- MILE IN ADVANCE OF PCMS 2.

RELOCATE AS NEEDED TO REMAIN 1 +/- MILE IN ADVANCE OF QUEUE.

PCMS MAY BE TRUCK MOUNTED; IF SO, THE THREE TRANSVERSE DRUMS ARE OPTIONAL.

REMOVE WHEN QUEUE NO LONGER PRESENT.

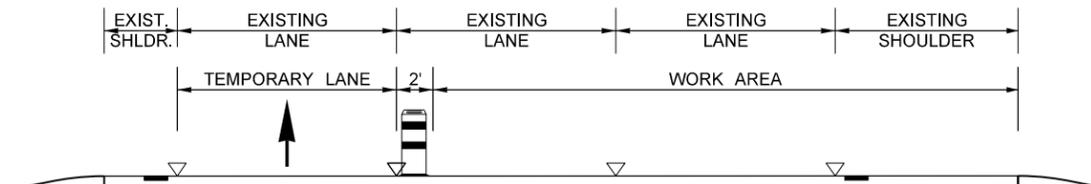
= APPROXIMATE QUEUE LENGTH ROUNDED UP TO NEAREST MILE

LOCATE PCMS PER WSDOT STANDARD SPECIFICATION 1-10.3(3)C.

PCMS 2	
1	2
RIGHT 2 LANES CLOSED	REDUCED SPEED AHEAD
2.0 SEC	2.0 SEC

FIELD LOCATE 1/4 +/- MILE IN ADVANCE OF W20-1 SIGN.

LOCATE PCMS PER WSDOT STANDARD SPECIFICATION 1-10.3(3)C.

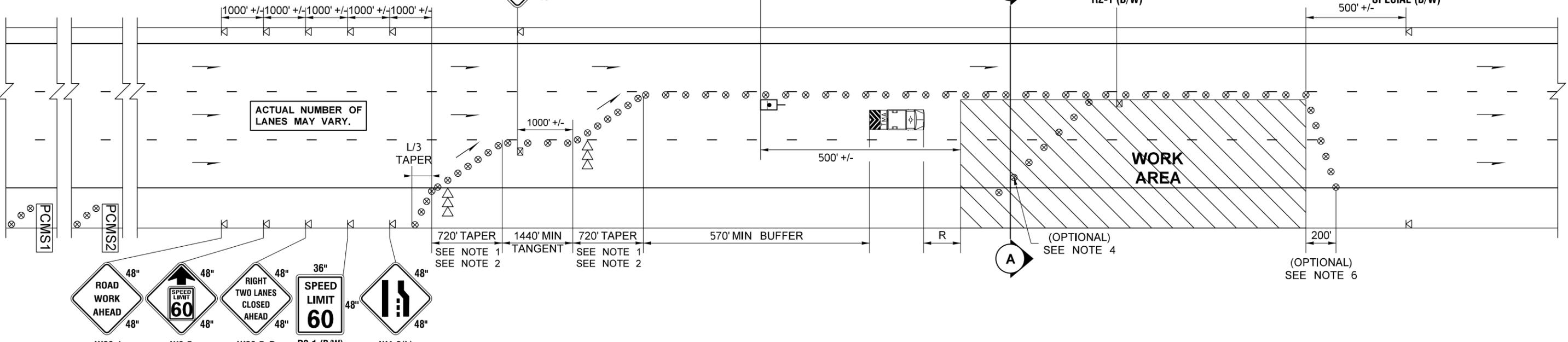


MAXIMUM DEVICE SPACING (feet)	CHANNELIZATION (feet)	
	TAPER	TANGENT
60	40	80

STATIONARY TRANSPORTABLE ATTENUATOR ROLL AHEAD DISTANCE = R		
HOST VEHICLE WEIGHT 9,900 TO 22,000 lbs.		HOST VEHICLE WEIGHT > 22,000 lbs.
	60 MPH	60 MPH
	172'	150'

MINIMUM SHOULDER CLOSURE TAPER LENGTH = L/3	
SHOULDER WIDTH (feet)	60 MPH
6	120'
10	200'

USE A MINIMUM 3 DEVICES FOR SHOULDER LESS THAN 6'.



LEGEND

- TEMPORARY SIGN LOCATION
- TEMPORARY SIGN LOCATION (5' MIN HEIGHT)
- 28" REFLECTIVE TRAFFIC CONE
- 42" TALL CHANNELIZATION DEVICE
- TRAFFIC SAFETY DRUM
- RADAR SPEED DISPLAY SIGN
- SEQUENTIAL ARROW SIGN
- TRANSPORTABLE ATTENUATOR
- PCMS PORTABLE CHANGEABLE MESSAGE SIGN

- NOTES:**
- DISTANCE BETWEEN LANE CLOSURE TAPER AND ALL OPEN RAMPS SHALL BE 500' MINIMUM.
 - IF FEASIBLE, AVOID PLACING LANE CLOSURE TAPER WITHIN LIMITS OF HORIZONTAL CURVES.
 - AS ORDERED BY THE ENGINEER, ADDITIONAL SPEED RADAR DISPLAY SIGN MAY BE USED 500' +/- PRIOR TO EACH WORK CREW WITHIN WORK AREA.
 - PLACE TRANSVERSELY ACROSS CLOSURE AT A 45° ANGLE WITH 5' SPACING AT STRATEGIC LOCATIONS OR EVERY 1000' +/-.
 - ALL SPEED LIMIT SIGNS CONFLICTING WITH WORK ZONE SPEED LIMIT SHALL BE COVERED PER STANDARD SPECIFICATIONS 8-21.3(3).
 - REOPENING TAPER OPTIONAL TO ALLOW FOR CONSTRUCTION VEHICLES TO ACCELERATE STRAIGHT OUT OF WORK AREA INTO THE RIGHT LANE.
 - OPTIONAL IF PERMANENT SPEED LIMIT SIGNS ARE WITHIN 1500' +/- OF THE REOPENING TAPER.
 - SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE INDICATED.
 - THIS TRAFFIC CONTROL PLAN IS APPLICABLE TO SHORT-TERM AND INTERMEDIATE-TERM DURATION LANE CLOSURES OF 3 DAYS OR LESS.

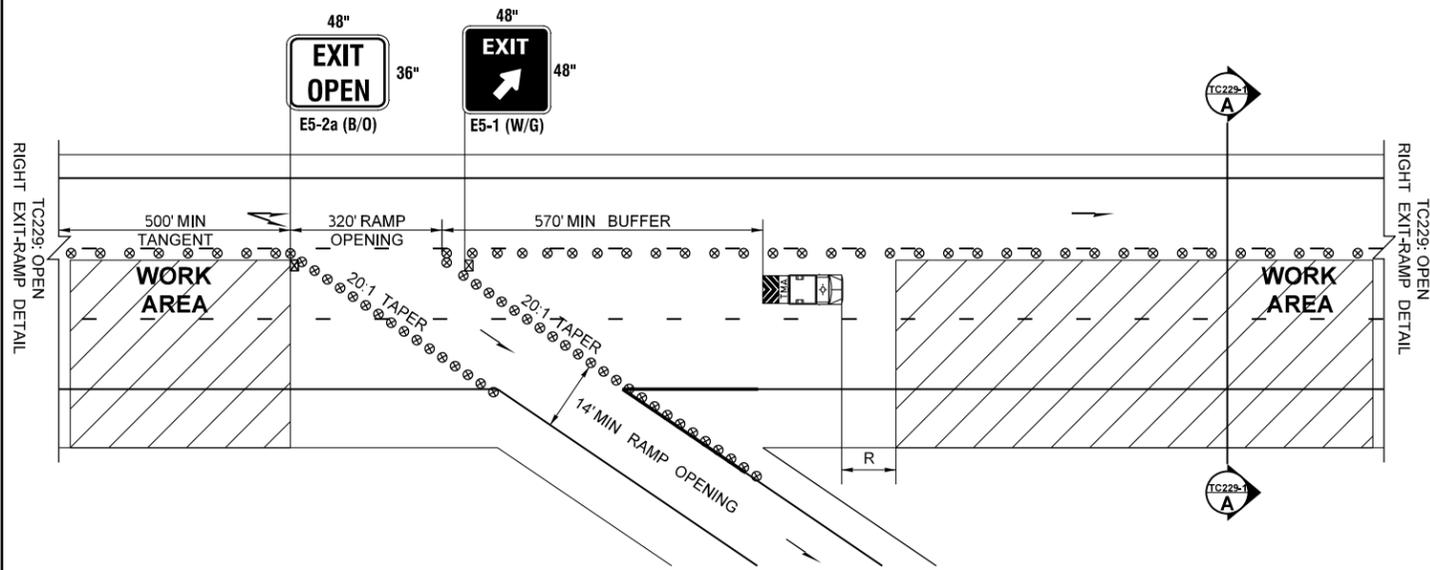
**FREEWAY (3+ LANES): DOUBLE RIGHT LANE CLOSURE WITH NO LANE SHIFTS
(70 MPH TO 60 MPH VARIABLE WORK ZONE SPEED LIMIT REDUCTION)
NOT TO SCALE**

FILE NAME: C:\Users\LintzF\Desktop\Work Zone TCPs\229Fwy2RtLanes70to60WZSL.dgn	REGION NO. 10	STATE WASH	FED.AID PROJ.NO.	Plot 1
TIME: 10:16:46 AM	JOB NUMBER	CONTRACT NO.	LOCATION NO.	PLAN REF NO. TC229
DATE: 3/19/2019				SHEET 1 OF 3 SHEETS
PLOTTED BY: LintzF				TYPICAL TRAFFIC CONTROL PLANS
DESIGNED BY: HAAPALA & LINTZ				
ENTERED BY: F. LINTZ				
CHECKED BY: S. HAAPALA				
PROJ. ENGR.				
REGIONAL ADM.	REVISION	DATE	BY	



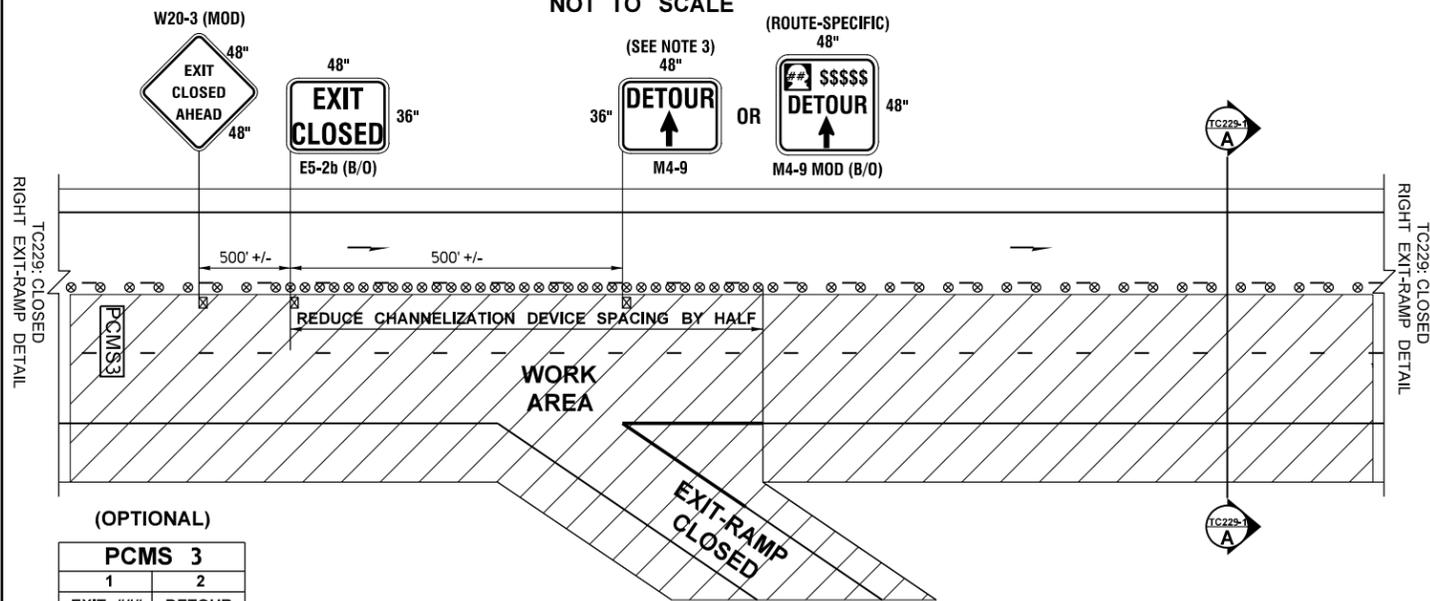
NOTES:

1. FOR LEGEND, TABLES, AND ADDITIONAL NOTES: SEE TC229, SHEET 1.
2. ACTUAL NUMBER OF LANES MAY VARY.
3. SEE DETOUR PLAN FOR ADDITIONAL RAMP CLOSURE DETOUR SIGNAGE.
4. FOR RIGHT EXIT-RAMP AND RIGHT ON-RAMP DETAILS FOR A SINGLE RIGHT LANE CLOSURE SEE TC228, SHEET 2.



OPEN RIGHT EXIT-RAMP DETAIL

NOT TO SCALE



CLOSED RIGHT EXIT-RAMP DETAIL

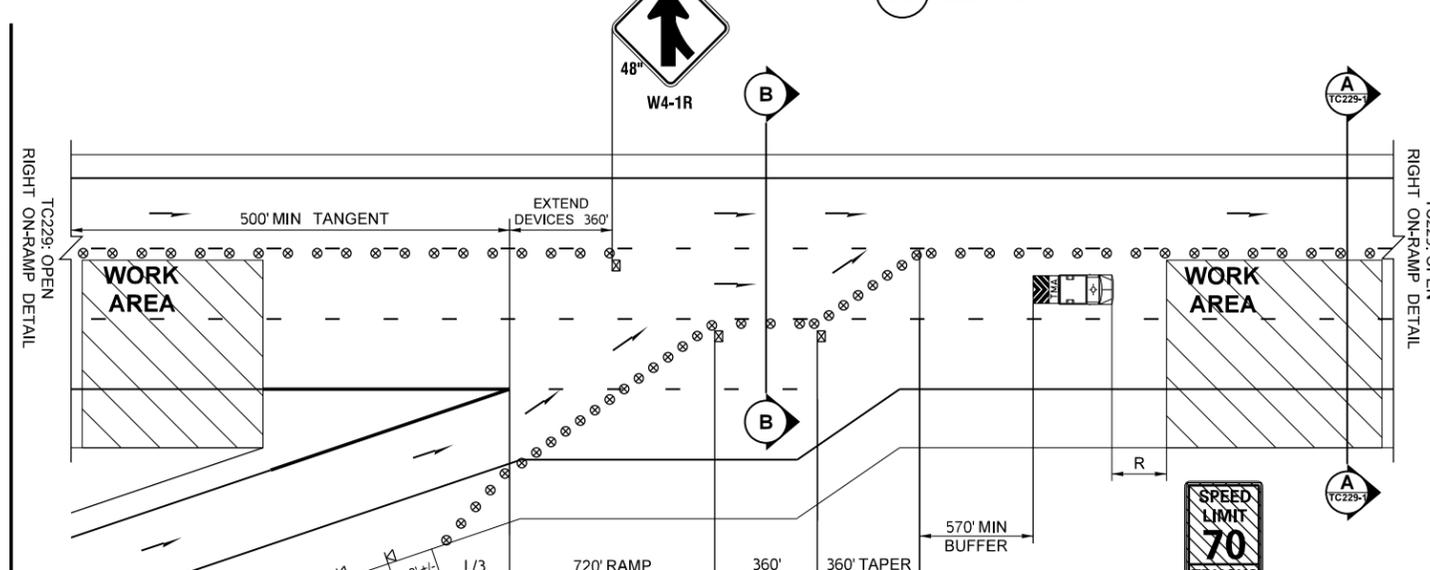
NOT TO SCALE

(OPTIONAL)

PCMS 3	
1	2
EXIT ### CLOSED AHEAD	DETOUR TO EXIT ###
2.0 SEC	2.0 SEC

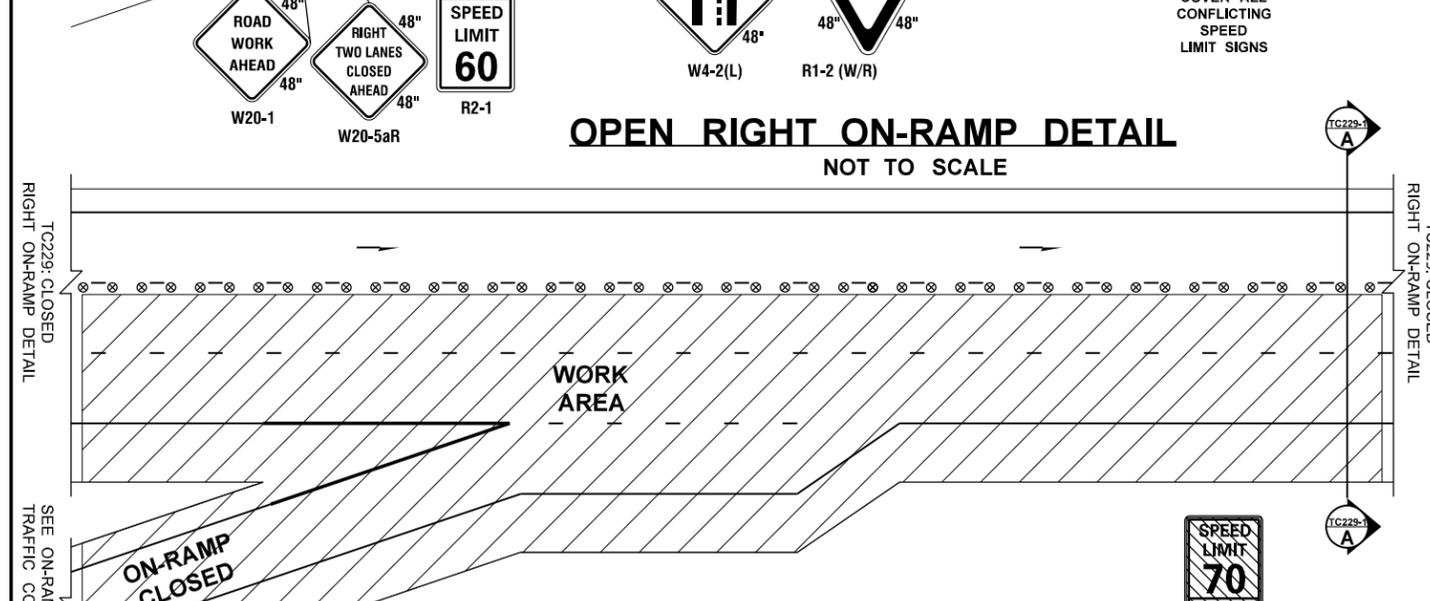
FIELD LOCATE 1/4 +/- MILE IN ADVANCE OF W20-3 (MOD) SIGN.

LOCATE PCMS PER WSDOT STANDARD SPECIFICATION 1-10.3(3)C.



OPEN RIGHT ON-RAMP DETAIL

NOT TO SCALE



CLOSED RIGHT ON-RAMP DETAIL

NOT TO SCALE

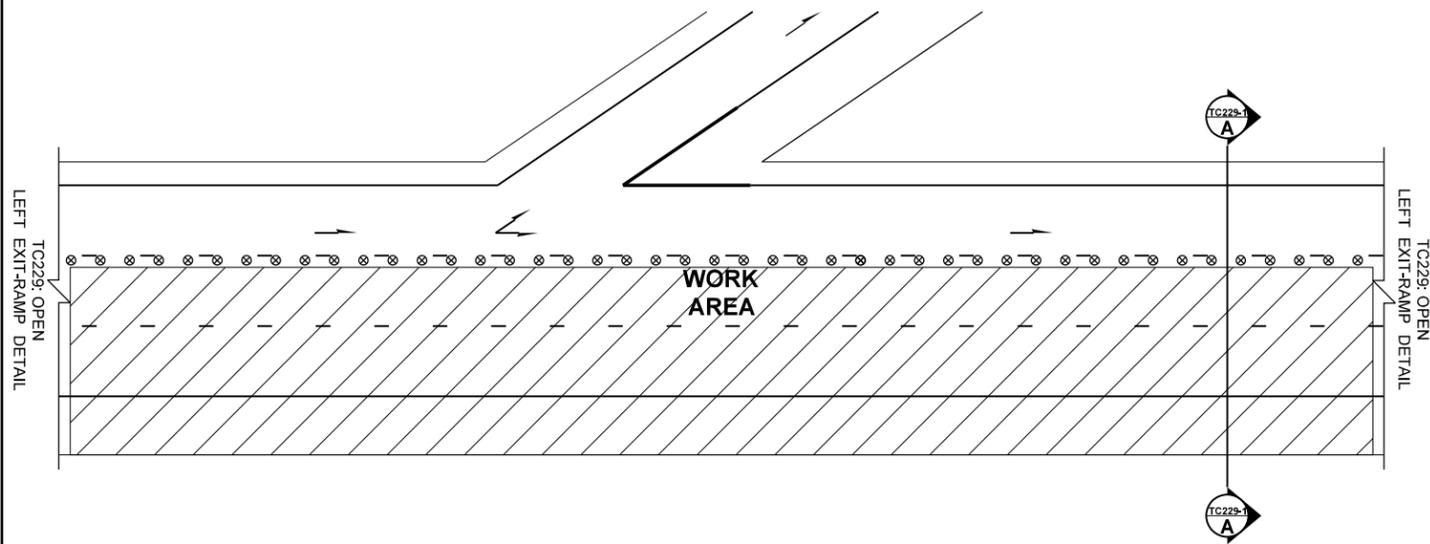
**FREEWAY (3+ LANES): DOUBLE RIGHT LANE CLOSURE WITH NO LANE SHIFTS
(70 MPH TO 60 MPH VARIABLE WORK ZONE SPEED LIMIT REDUCTION)**

NOT TO SCALE

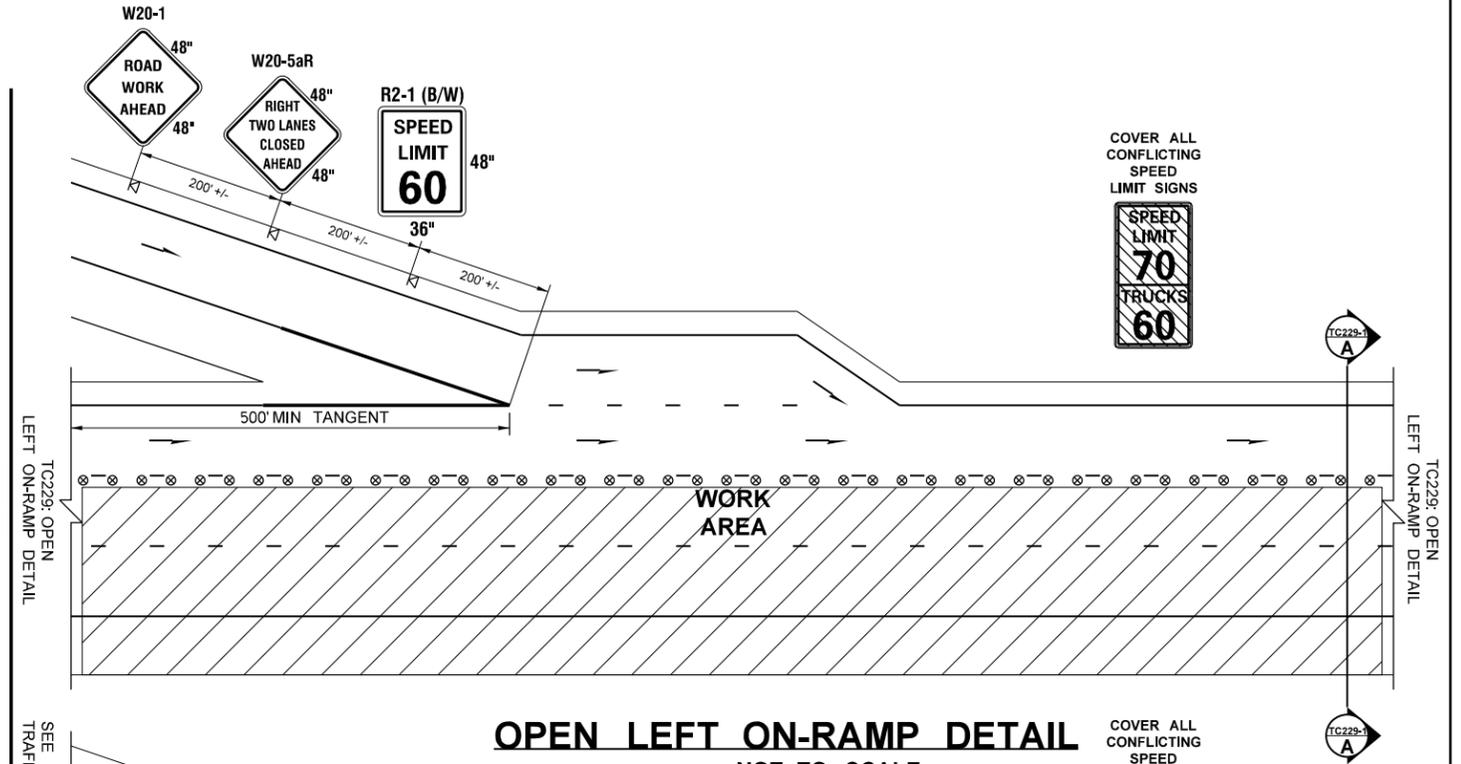
FILE NAME	C:\Users\LintzF\Desktop\Work Zone TCPs\229Fwy2RtLanes70to60WZSL.dgn			REGION NO.	STATE	FED.AID PROJ.NO.	Washington State Department of Transportation	Plot 2
TIME	10:16:46 AM			10	WASH			PLAN REF NO TC229
DATE	3/19/2019			JOB NUMBER				SHEET 2
PLOTTED BY	LintzF			CONTRACT NO.	LOCATION NO.			OF 3
DESIGNED BY	HAAPALA & LINTZ							SHEETS
ENTERED BY	F. LINTZ							
CHECKED BY	S. HAAPALA							
PROJ. ENGR.								
REGIONAL ADM.	REVISION	DATE	BY	P.E. STAMP BOX	DATE	P.E. STAMP BOX	TYPICAL TRAFFIC CONTROL PLANS	

NOTES:

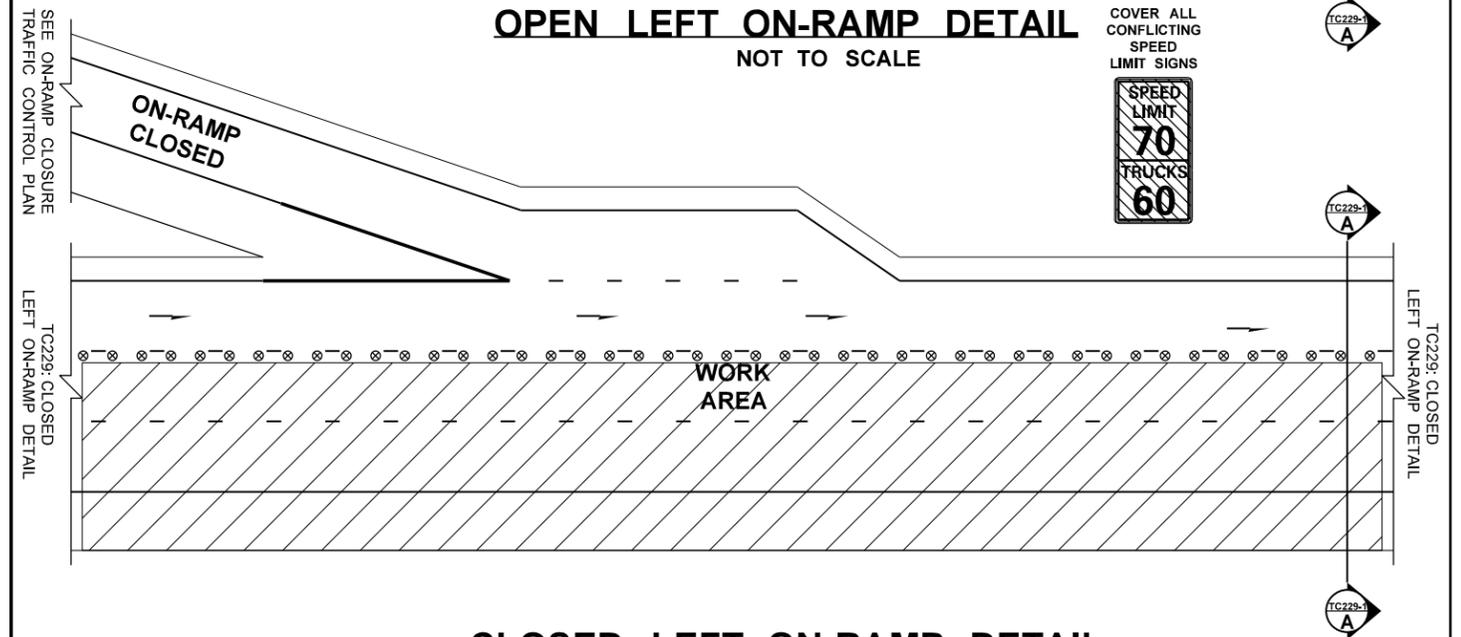
1. FOR LEGEND, TABLES, AND ADDITIONAL NOTES: SEE TC229, SHEET 1.
2. ACTUAL NUMBER OF LANES MAY VARY.
3. SEE DETOUR PLAN FOR ADDITIONAL RAMP CLOSURE DETOUR SIGNAGE.
4. FOR LEFT EXIT-RAMP AND LEFT ON-RAMP DETAILS FOR A SINGLE RIGHT LANE CLOSURE SEE TC228, SHEET 3.



OPEN LEFT EXIT-RAMP DETAIL
NOT TO SCALE



OPEN LEFT ON-RAMP DETAIL
NOT TO SCALE



CLOSED LEFT ON-RAMP DETAIL
NOT TO SCALE

CLOSED LEFT EXIT-RAMP DETAIL
LEFT EXIT-RAMPS ARE TO REMAIN OPEN WITH THIS
DOUBLE RIGHT LANE CLOSURE CONFIGURATION

**FREEWAY (3+ LANES): DOUBLE RIGHT LANE CLOSURE WITH NO LANE SHIFTS
(70 MPH TO 60 MPH VARIABLE WORK ZONE SPEED LIMIT REDUCTION)**
NOT TO SCALE

FILE NAME	C:\Users\LintzF\Desktop\Work Zone TCPS1229Fwy2RtLanes70to60WZSL.dgn			REGION NO.	STATE	FED.AID PROJ.NO.	Washington State Department of Transportation	Plot 3
TIME	10:16:47 AM			10	WASH			PLAN REF NO TC229
DATE	3/19/2019			JOB NUMBER				SHEET 3
PLOTTED BY	LintzF			CONTRACT NO.	LOCATION NO.			OF 3
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CHECKED BY	S. HAAPALA							
PROJ. ENGR.								
REGIONAL ADM.	REVISION	DATE	BY					

DESIGNER NOTES:

- A. SEE WSDOT PROJECT DELIVERY MEMO 19-01 IN REGARDS TO FREEWAY WORK ZONE VARIABLE REGULATORY SPEED LIMIT AND ADVISORY SPEED IMPLEMENTATION. IN ADDITION, SEE WSDOT EXECUTIVE ORDER E1060.02 IN REGARDS TO APPROVAL AUTHORITY INFORMATION FOR VARIABLE REGULATORY AND ADVISORY SPEEDS IN WORK ZONES. CONTACT WSDOT REGION TRAFFIC OFFICES FOR ADDITIONAL INFORMATION.
- B. THESE TRAFFIC CONTROL PLANS ARE TYPICAL AND MAY BE MODIFIED FOR SITE SPECIFIC SITUATIONS AND/OR WSDOT REGION TRAFFIC PRACTICES. CONTACT WSDOT REGION TRAFFIC OFFICES FOR ANY MODIFICATIONS OF THE WORK ZONE VARIABLE REGULATORY SPEED LIMIT OR ADVISORY SPEED.
- C. THE SIGN SIZES SHOWN ARE TYPICAL AND MEET MINIMUM SIZES REQUIRED PER MUTCD ON FREEWAYS FOR TEMPORARY TRAFFIC CONTROL.
- D. IN REGARDS TO ADVANCED WARNING SIGN SPACING: PER MUTCD SECTION 6C.04 PARAGRAPH 06, TABLE 6-1 (TABLE 6-1 HAS BEEN MODIFIED PER WAC 468-95-300) ARE RECOMMENDED DISTANCES AND INTENDED FOR GUIDANCE PURPOSES ONLY AND SHOULD BE ADJUSTED FOR FIELD CONDITIONS. REDUCING FREEWAY SIGN SPACING TO 1000' +/- IS ACCEPTABLE. A MINIMUM SPACING OF 500' +/- SHOULD BE USED ON FREEWAY MAINLINES ONLY WHEN NECESSARY. ADVISORY SIGNS AND RADAR SPEED DISPLAY SIGNS CAN BE SPACED AT 300' +/-.
- E. PER WAC 468-95-300, ALL SIGN SPACING MAY BE ADJUSTED TO ACCOMMODATE INTERCHANGE RAMPS. ON-RAMP SPACING IS TYPICALLY 200' +/-, EVEN IN SUBURBAN AND RURAL AREAS, BUT CAN BE REDUCED AS NEEDED TO FIT.
- F. WHEN POSITIONED BEHIND CHANNELIZATION DEVICES, TEMPORARY SIGNS SHOULD BE MOUNTED AT 5' MINIMUM.
- G. PER MUTCD 6H-33, USING PCMS FOR FREEWAY LANE CLOSURES IS NOT REQUIRED. PCMS 1 IS OPTIONAL AND INTENDED ONLY TO BE USED WHEN WORK ZONE TRAFFIC QUEUES ARE EXPECTED TO EXTEND BEHIND THE W20-1 SIGN. FOR ADDITIONAL INFORMATION REGARDING ACTIVE QUEUE DETECTION TECHNOLOGY, CONTACT STEVE HAAPALA (HAAPALA@WSDOT.WA.GOV) OR FRED LINTZ (LINTZF@WSDOT.WA.GOV). PCMS 2 IS RECOMMENDED; FREEWAY LANE CLOSURES DO NOT REQUIRE A PCMS. PCMS 3 IS OPTIONAL TO HIGHLIGHT EXIT-RAMP CLOSURES.
- H. THE RADAR SPEED DISPLAY SIGN (RSDS) IS OPTIONAL FOR FREEWAY LANE CLOSURES NOT SHIFTED ONTO THE SHOULDER. RSDS PERFORM BEST WHEN TRAFFIC REDUCED TO A SINGLE OPEN LANE. CONTACT REGION TRAFFIC OFFICES FOR THEIR POLICY.
- I. WHEN WITHIN THE REDUCED WORK ZONE SPEED LIMIT ZONE, THE DESIGN SPEED IS THE WORK ZONE SPEED LIMIT (NOT THE EXISTING SPEED LIMIT) FOR SIGN SPACING, TAPERS, CHANNELIZATION DEVICE SPACING, BUFFER, AND ROLL AHEAD DISTANCES.
- J. WARNING LIGHTS ON CHANNELIZATION DEVICES ARE OPTIONAL; CONTACT REGION TRAFFIC OFFICES FOR THEIR POLICY.
- K. CHANNELIZATION DEVICES MAY BE MODIFIED FROM THOSE SHOWN ON THESE TYPICAL PLANS. PER MUTCD, THE MINIMUM REQUIRED DEVICE ON HIGH-SPEED ROADWAYS IS A 28" REFLECTIVE CONE.
- L. VERTICAL PANEL CHANNELIZATION DEVICES SHALL NOT BE USED.
- M. CHANNELIZATION DEVICE SPACING TABLE IS BASED ON WAC 468-95-301; HOWEVER, DEVICE SPACING MAY BE REDUCED.
- N. TAPER LENGTHS ARE BASED ON MUTCD TABLES 6C-3 AND 6C-4. TAPER LENGTHS SHALL MEET OR EXCEED THIS SPECIFIED RATE WITHOUT EXCEPTION. THE TAPER DISTANCES PROVIDED ON THIS TYPICAL TRAFFIC CONTROL PLAN WERE BASED ON THE ASSUMPTION OF 12' LANES. BECAUSE SHOULDER WIDTHS VARY, A SHOULDER CLOSURE TAPER TABLE IS INCLUDED TO ADDRESS VARIOUS WIDTHS.
- O. PER MUTCD FIGURE 6H-33, SEQUENTIAL ARROW BOARDS SHALL BE USED FOR ALL FREEWAY LANE CLOSURE TAPERS. EACH LANE CLOSURE SHALL HAVE A SEPARATE SEQUENTIAL ARROW BOARD. SEQUENTIAL ARROW BOARDS SHALL NOT BE USED FOR LANE SHIFTS, RAMP SHIFTS, OR AT ON-RAMP MERGES.
- P. THE "2L" TANGENT BETWEEN LANE CLOSURE TAPERS MAY BE REDUCED TO "L" IN TIGHT GEOMETRIC SITUATIONS, BUT "2L" SHOULD BE OBTAINED WHEN POSSIBLE.

- Q. PER MUTCD FIGURE 6H-33, LONGITUDINAL BUFFER SPACES ARE OPTIONAL. THEIR USE IS RECOMMENDED WHEN FEASIBLE. IF THE DESIGN BUFFER IS NOT AVAILABLE, THE BUFFER SHOULD BE MAXIMIZED. THE BUFFER CAN EXCEED THE DESIGN BUFFER DISTANCE (THUS "MIN" IS USED).
- R. THE TRANSVERSE BUFFER (LATERALLY BETWEEN TRAVEL LANE AND WORK AREA) IS RECOMMENDED AS 2-FOOT BUT MAY BE INCREASED AS DESIRED.
- S. PER MUTCD FIGURE 6H-33, TRANSPORTABLE ATTENUATORS ARE OPTIONAL BUT THEIR USE IS STRONGLY RECOMMENDED FOR FREEWAY LANE CLOSURES. TRANSPORTABLE ATTENUATOR SHOULD BE PLACED IN CLOSED LANE ADJACENT TO TRAFFIC PRIOR TO SEPARATE WORK AREAS, PARTICULARLY AFTER OPEN TEMPORARY EXIT-RAMPS AND OPEN TEMPORARY ON-RAMPS. EITHER PROTECTIVE VEHICLES OR TRANSPORTABLE ATTENUATORS CAN BE PLACED IN THE ADDITIONAL CLOSED LANES EXCEPT THE CLOSED LANE ADJACENT TO TRAFFIC.
- T. PLACING CHANNELIZATION DEVICES TRANSVERSELY (AT 45° AND 5-FOOT SPACING) IS AN EFFECTIVE TECHNIQUE TO MOVE ERRANT DRIVERS BACK OUT OF CLOSED LANES AND SHOULDERS.
- U. PER MUTCD FIGURE 6H-33, THE REOPENING TAPER IS OPTIONAL.
- V. A TAPERED TEMPORARY EXIT-RAMP IS TYPICALLY USED WITH A TYPICAL 20:1 TAPER RATE.
- W. THE ON-RAMP SHIFT CAN OCCUR THROUGH THE PAVED GORE INSTEAD AT THE END OF THE GORE PAVEMENT MARKINGS BUT VERIFY CROSS-SLOPE IS TRAVERSIBLE, PAVEMENT THICKNESS IS ADEQUATE, CATCH BASINS/ITS BOXES ARE TRAFFIC BEARING TYPES.
- X. A PARALLEL TEMPORARY ON-RAMP IS TYPICALLY USED. THE PARALLEL TEMPORARY ON-RAMP IS BASED ON WSDOT DESIGN MANUAL EXHIBIT 1360-13b. THE ON-RAMP IS SHIFTED ACROSS EACH CLOSED LANES AT L/2 PER CLOSED LANE SHIFT RATE THEN AN ACCELERATION TANGENT OF L/2 IS FOLLOWED BY AN L/2 ON-RAMP MERGE TAPER. IT IS IMPORTANT TO UNDERSTAND MUTCD FIGURE 6H-44 TYPICAL APPLICATION IS GUIDANCE PER MUTCD SECTION 6H.01.
- Y. TO DISCOURAGE WORK ZONE INTRUSIONS, DEVICE SPACING IS REDUCED BY HALF ACROSS CLOSED EXIT-RAMPS BETWEEN THE "EXIT CLOSED" SIGN AND THE END OF THE EXIT-RAMP'S PAVED GORE.
- Z. ACTUAL WORK AREA LIMITS CAN BE MODIFIED.
- AA. RAMP DETOUR SIGNAGE IS RECOMMENDED BY MUTCD 6C.09. IT IS RECOMMENDED TO USE ROUTE SPECIFIC DETOUR SIGNAGE FOR SIGNIFICANT RAMP CLOSURES.
- BB. THE ROUTE SPECIFIC DETOUR ROUTE SIGN INCLUDES EITHER AN INTERSTATE SHIELD (FOR FREEWAY RAMPS), HIGHWAY SHIELDS (FOR STATE HIGHWAY RAMPS), OR ROADWAY DESCRIPTION. IF THE RAMP IS TO A SPECIFIC ROUTE DIRECTION, INCLUDE ITS DIRECTION. MAXIMIZE THE SHIELDS, TEXT SIZE, AND ARROWS TO FIT ON THE 48"x48" SIGN.
- CC. THIS TRAFFIC CONTROL PLAN IS NOT APPLICABLE WHEN HOV-RESTRICTED LANES ARE PRESENT. FOR FREEWAYS WITH LEFT LANE HOV RESTRICTIONS, SEPARATE TYPICAL TRAFFIC CONTROL PLANS ARE PROVIDED IN THE WORK ZONE LIBRARY. FOR UNIQUE HOV LANE CONFIGURATIONS (SUCH AS HOV LANE-CHANGE RESTRICTIONS INCLUDING A BUFFER SEPARATION, DIRECT-ACCESS HOV RAMPS, OR RIGHT LANES THAT ARE HOV-RESTRICTED) CONTACT REGION TRAFFIC OFFICE WHEN DEVELOPING PLANS.
- DD. THIS TRAFFIC CONTROL PLAN IS NOT APPLICABLE WHEN EXPRESS TOLL LANE(S) PRESENT. FOR FREEWAYS WITH EXPRESS TOLL LANE(S), CONTACT REGION TRAFFIC OFFICE WHEN DEVELOPING PLANS.

**FREEWAY (3+ LANES): DOUBLE RIGHT LANE CLOSURE WITH NO LANE SHIFTS
(70 MPH TO 60 MPH VARIABLE WORK ZONE SPEED LIMIT REDUCTION)
NOT TO SCALE**

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TIME	10:16:47 AM				10	WASH			PLAN REF NO TC229
DATE	3/19/2019				JOB NUMBER			SHEET	
PLOTTED BY	LintzF				CONTRACT NO.	LOCATION NO.		OF	
DESIGNED BY	HAAPALA & LINTZ							DESIGNER GUIDANCE	
ENTERED BY	F. LINTZ							SHEETS	
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PROJ. ENGR.									
REGIONAL ADM.	REVISION	DATE	BY						