

# WSDOT Transportation Management Plan

## I-5/SB Cowlitz River Bridge - Repair Bridge MP 59.04 to MP 59.22

WIN: D00516T

Work Order: XL5267

PIN: 400516T

This *Transportation Management Plan*, under my direct supervision, has been prepared in accordance with appropriate Washington State Department of Transportation manuals and current design guidelines and procedures.

By:  \_\_\_\_\_, P.E.  
SWR Area Engineer

Southwest Region Concurrence

By:  \_\_\_\_\_, P.E.  
SWR Traffic Engineer

Date: 9-21-16

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## **Executive Summary**

The I-5/SB Cowlitz River Bridge No. 5/203W was identified as a P2 Structure Preservation project by the Washington State Department of Transportation. This project is a result of third party vehicular damage to the bridge.

A Traffic Management Plan (TMP) documents a set of strategies for managing the corridor work zone impacts of a project. A TMP is required on all projects, and is the key element in addressing work zone safety and mobility impacts. The two major components of a TMP are the temporary traffic control and public information plans.

This Transportation Management Plan (TMP) was prepared using the guidance in Chapter 1010 of the Washington State Department of Transportation Design Manual M 22-01.12 November 2015.

## **Project Description**

This P2 Structure Repair project will improve Interstate 5 from MP 59.04 to 59.22 by preserving the structural integrity of the Cowlitz River Bridge No. 5/203W, spanning the Cowlitz River. This structure preservation project will remove lead based paint from the damaged areas to allow for heat straightening of the damaged steel members. The exposed steel will be prepared and repainted after the steel members have been repaired.

The Cowlitz River Bridge No. 5/203W was damaged as a result of a known third party vehicle on July 16, 2015. Specifically, vertical truss member U4L4 of the West Truss in Span 5 received the damage. This project will require heat straightening and repainting of the vertical member. During inspection of the damaged structure damage at two other locations were identified as a result of unknown third party damage. Specifically, a vertical member of the west truss Span 4 and a sway brace on the east truss Span 5. WSDOT HQ Bridge Design Office has recommended the repair be completed as soon as possible. Project advertisement is currently scheduled for Advertisement Dec. 12, 2016.

Interstate 5 is classified with an NHS status. The terrain for location is classified as rolling and its functional classification is Rural Interstate. The posted speed limit is 70 mph and the design speed is 80 mph. There are two lanes in each direction. The Average Daily Traffic Volume, per the 2015 WSDOT Annual Traffic Report, is 43,000 units in the project limits with 36% truck traffic. This project is a P2 Structures Preservation project and does not require a Basis of Design. There are no design variances, evaluate upgrades, or design deviations to consider. Contract working days are estimated at 25 days.

## **TMP Roles and Responsibilities**

### *Area Engineer*

The Area Engineer (AE) will work with the Contractor to minimize traffic impacts during construction. All traffic control will be evaluated continuously; adjustments will be made

as needed, to minimize traffic impacts to the extent possible. The AE will ensure that the Communications Office is up to date and informed of current construction and traffic control operations. The AE will work to maintain a positive relationship with the public and will review traffic control measures to ensure that the messages are timely and clear.

#### *Communications Office*

The Communications Office will provide accurate, timely and consistent information to both the public and the media as necessary. The Communications Office will maintain the project web page, updating it on a regular basis.

### **TMP Monitoring**

As construction proceeds, traffic control and its impact on traffic will be monitored and problems addressed. This process of monitoring and addressing traffic control issues will be ongoing throughout the project. The Contract will allow the AE to make the necessary adjustments to the lane closure and hours of work in order to reduce the impacts to the public.

### **Existing and Future Conditions**

#### *Traffic Counts*

Interstate 5 MP 59.04 to 59.22  
Estimated Average Daily Traffic (ADT) and Design Hourly Volume (DHV)

Year	2015	2035
AADT	43,000	62,700
DHV	4,945	7,250

Daily Truck Percentage: 36%

### **Work Zone Impacts Assessment Report**

The I-5/SB Cowlitz River Bridge – Repair Bridge project is expected to impact through traffic on Interstate 5. Work zone impacts will include single lane closures, ramp closures and other temporary traffic control impacts.

The repair of Bridge No. 5/203W requires a single lane closure southbound on Interstate 5. This section of the freeway currently only has two lanes through the project area. All lane closures will be restricted to night time hours to minimize traffic impacts.

The southbound on-ramp at Exit 59 will be closed at night to allow the Contractor to access the west side of the bridge. The ramp will be utilized to stage equipment and supplies for the necessary bridge repair. All southbound ramp traffic will be detoured one mile north to Exit 60 when the ramp closure is in place. Project activities include needed repairs on the east side of the structure. The southbound on-ramp at exit 59 will be closed during the single lane closure to eliminate merging conflicts with ramp traffic. The placement of Class A Signs on the ramp will be in place five days prior to the ramp closure to inform the public of dates and times that the ramp will not be accessible. Signage will be in place during the nightly ramp closures to help direct the public to an alternate freeway access at Exit 60. The ramp closure will be opened and usable for daytime access to the freeway when single lane freeway closures on I-5 have been removed.

## **Work Zone Impact Management Strategies**

Large highway projects have an impact on businesses and the traveling public. The design team has worked to minimize and mitigate these impacts as much as possible. The mitigation strategies used on this project are described below:

### **Temporary Traffic Control (TTC) Strategies**

Multiple traffic control strategies will be implemented based on the type of work being performed. Typical traffic control plans (TCP) will be used for most of the work. Project-specific TCPs will be used providing a higher level of detail where typical plans do not provide sufficient detail to safely perform work. All TCPs and devices will conform to MUTCD and WSDOT Standards. The traffic control methods planned for use during the project are located in *Appendix A, B and C*.

Lane closures will be performed during permitted times to allow for truck access and work activities to occur in the work zone. The closures can be found under Lane Closure Restrictions that are located in the Contract Special Provisions.

During necessary preparation work and painting, signs and temporary traffic control devices will be used to direct traffic through the work area on the existing I-5 alignment. A single lane closure will be implemented by Traffic Control Labor under the direction of a Traffic Control Supervisor (TCS). The TCS will remain onsite during the closure to ensure that the Traffic Control Plan is functioning as intended. The TCS will also be available in cases of emergency or heavy traffic volume events.

The work-zone will be delineated with traffic control devices that do not provide positive protection of the work force. The placement of concrete barrier is not a viable option due to this section of I-5 only having two lanes. All traffic control established during the nightly

closure will need to be removed by morning. Multiple traffic management strategies will be implemented to help protect the laborers and the traveling public. Traffic management strategies include a posted reduction from 70 mph to 60 mph during the night time closure. Traffic will be evaluated during the closure on the effectiveness of the variable regulatory speed reduction. If necessary, WSDOT will notify Washington State Patrol (WSP) and request for trooper presence during working hours to help slow speeding drivers and improve safety within the work-zone area.

### *Lane Closures*

Single Lane Closures will be used on Interstate 5 to provide a suitable work-zone.

### *Short Duration or Mobile Operation on a Shoulder*

This method will be used for installing and maintaining Class A Signs.

### *Lane Closure on a Two-Lane Road Using Flaggers*

This method will be used for various work activities on the adjacent side and frontage roads for installing and maintaining Class A Signs.

### *Rolling Slow-downs*

This method will be utilized for specific operations requiring a gap in traffic flows necessary for deliveries and/or operations that require no traffic for a short duration.

## **Transportation Operations**

### *Work Hour Restrictions:*

To minimize the impact to traffic, the Contract imposes restrictions on closures. Closures are subject to restrictions and are outlined in *Appendix D*.

### *Enforcement:*

WSP will be contacted if drivers do not adhere to the temporary speed reduction posted speed limit.

### *Liquidated Damages:*

Liquidated Damages will be applied to working days and lane closure durations.

### *Public Information:*

No public involvement planned at this time.

## Lane Restrictions

Lane closures are subject to the following restrictions:

MP 59.20 to MP 69.44 - One lane each direction shall remain open at all times.

### Single Lane Closure

The closure of one lane each direction will be allowed during the following times:

From 8:00 PM to 6:00 AM daily, Monday night through Thursday morning

From 9:00 PM Thursday night to 6:00 AM Friday morning

The closure of one lane on weekends will be allowed during the following time periods:

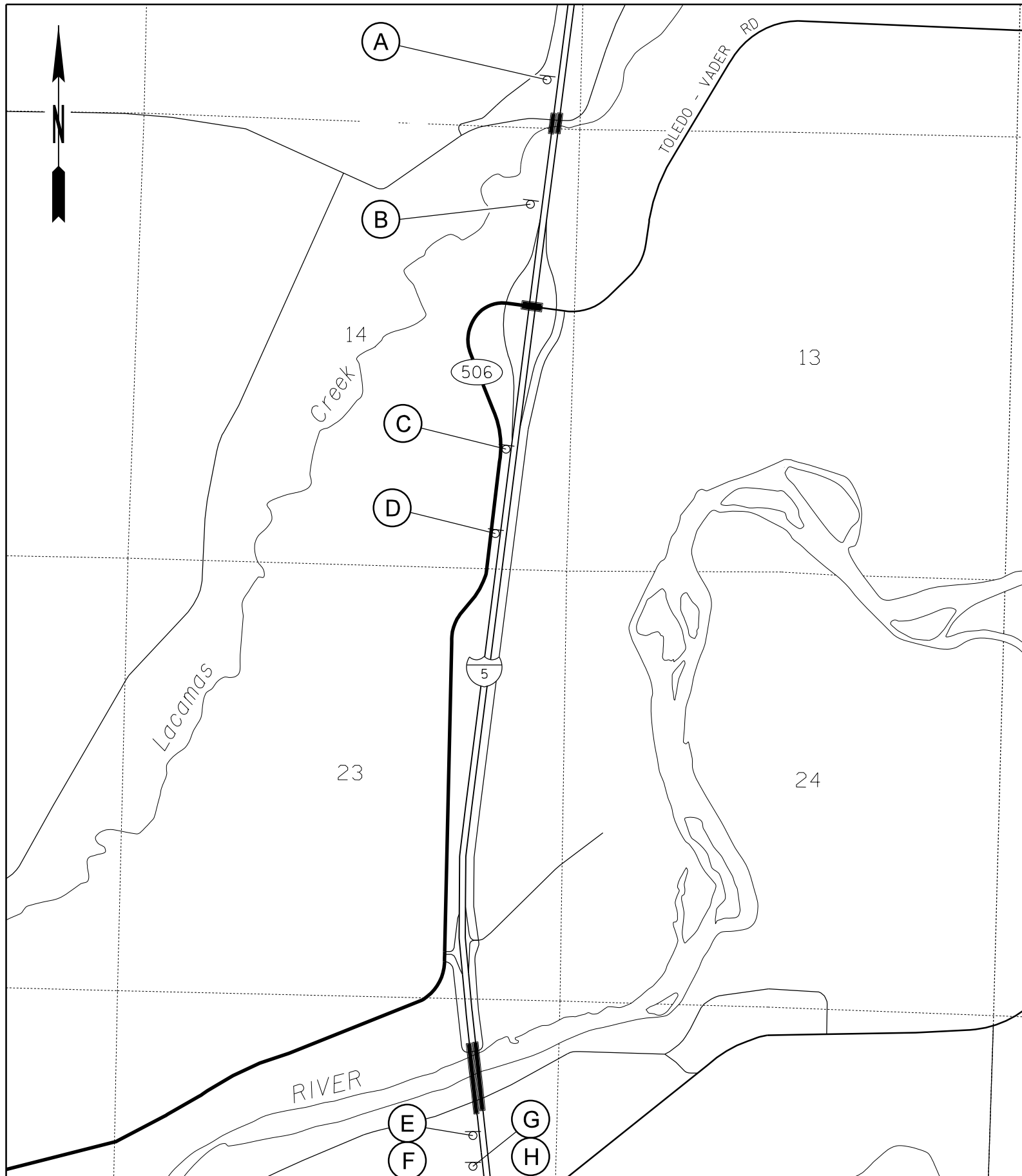
From 10:00 PM Friday night to 7:00 AM Saturday morning

From 10:00 PM Saturday night to 8:00 AM Sunday morning

From 10:00 PM Sunday night to 6:00 AM Monday morning

## TMP Implementation Costs

Bid Item	Unit	Unit Cost	Quantity	Total Cost
<b>Class A Signs</b>	S.F.	10	124	1,240.00
<b>PCMS</b>	HR	20	225	4,500.00
<b>TCS</b>	L.S.			20,250.00
<b>OTTC</b>	L.S.			10,000.00
<b>OTCL</b>	HR	54	675	36,450.00
<b>Transportable Attenuator</b>	Each	8000	1	8,000.00
<b>Operation of Transportable Attenuator</b>	HR	48	225	10,800.00
<b>Repair Transportable Attenuator</b>	Est.			5,000.00
<b>Sequential Arrow Sign</b>	HR	10	225	2,250.00
Sub Total				98,490.00
Mob 9%				8,864.10
Sales Tax 7.00%				6,894.30
Engineering 15%				14,773.50
Contingencies 4%				3,939.60
<b>Final Costs</b>				<b>\$132,961.50</b>



**APPENDIX A**

<p><b>A</b> WORK ZONE AHEAD 84" MP 61.40 WORK ZONE AHEAD Give 'em a BRAKE 48" G28-101</p>	<p><b>B</b> TRAFFIC FINES DOUBLE 48" MP 61.30 NOTICE TRAFFIC FINES DOUBLE IN WORK ZONES 60" I20-301</p>
<p><b>C</b> SPEED REDUCTION 48" MP 60.40 SPEED LIMIT 60 48" W3-5</p>	<p><b>D</b> POSTED SPEED 48" MP 60.26 SPEED LIMIT 60 60" R2-1</p>
<p><b>E</b> END ROAD WORK 48" MP 58.90 END ROAD WORK 24" G20-2A</p>	<p><b>F</b> PROJECT INFORMATION 48" MP 58.90 FOR PROJECT INFORMATION 1-866-713-2412 36" G24-501 Mount under E</p>
<p><b>G</b> POSTED SPEED 48" MP 58.80 SPEED LIMIT 70 60" R2-1</p>	<p><b>H</b> POSTED SPEED 48" MP 58.80 TRUCKS 60 48" R2-2 Mount under G</p>

**LEGEND**

⊐ CLASS A SIGN

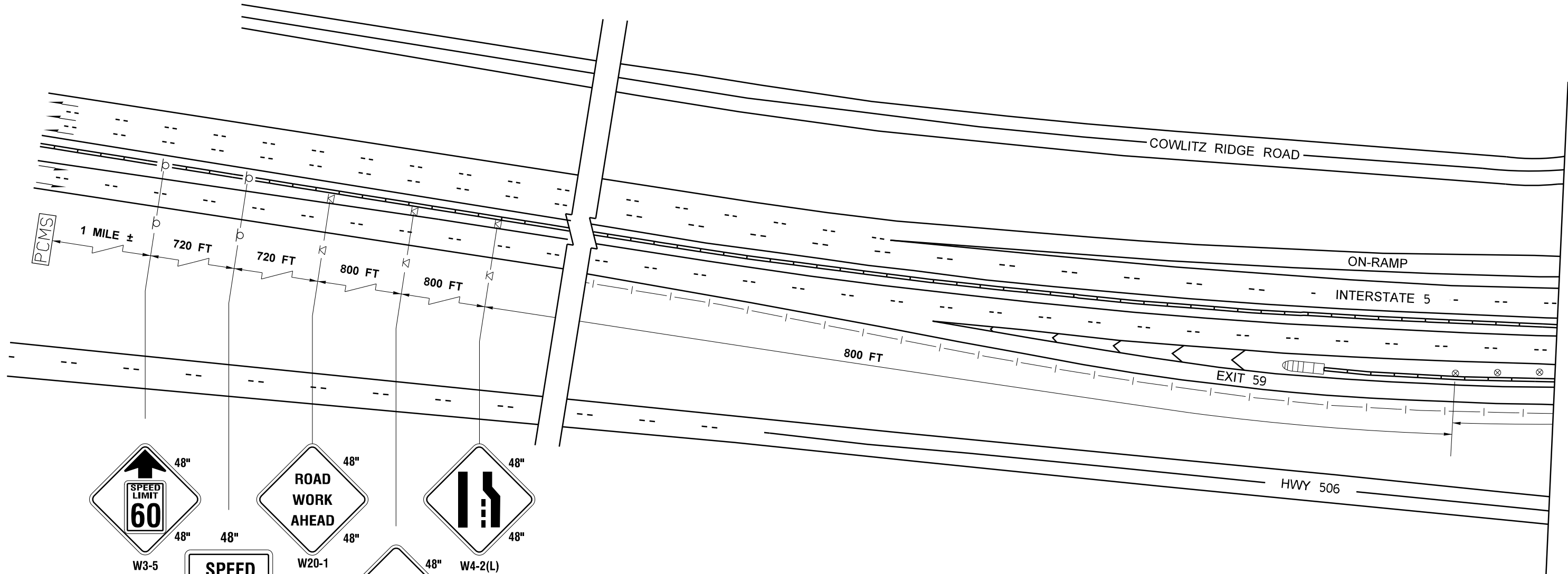
FILE NAME G:\444307\03-Design\Design\I-5\I-5 SB Cowlitz River Bridge_Known Thrd Party Repair Bridge\18 CAD\18-2 Completed CAD Work - Status of Completed CAD Work - Any CAD Problems_PS&ESheets\XL5267-5_PS.TC.dgn				REGION NO. 10	STATE WASH	FED.AID PROJ.NO. STPF-0052(214)	DATE
TIME 8:10:11 AM	DATE 9/22/2016	PLOTTED BY wassond	DESIGNED BY D. WASSON	ENTERED BY D. WASSON	CHECKED BY CHEHALIS AEO	PROJ. ENGR. D. RECK	REGIONAL ADM. K. STRICKLER
REVISION	DATE	BY	JOB NUMBER 17X300	CONTRACT NO.	LOCATION NO.	P.E. STAMP BOX	DATE



I-5  
SB COWLITZ RIVER BRIDGE  
REPAIR BRIDGE  
CLASS A SIGNS

Plot 1  
PLAN REF NO CS1  
SHEET 1 OF 1 SHEETS





**LEGEND**

- ⊔ CLASS A SIGN
- ⊗ CLASS B SIGN
- ⊗ TRAFFIC SAFETY DRUM
- ⇨⇨⇨ SEQUENTIAL ARROW SIGN
- ▬ TRANSPORTABLE ATTENUATOR
- PCMS PORTABLE CHANGEABLE MESSAGE SIGN
- ▬ EXISTING IMPACT ATTENUATOR
- |— EXISTING GUARDRAIL
- /// TYPE III BARRICADE

CHANNELIZATION DEVICE SPACING (feet)		
MPH	TAPER	TANGENT
50/70	40	80
35/45	30	60

PCMS	
1	2
RIGHT LANE CLOSURE	1 MILE AHEAD
2.0 SEC	2.0 SEC


FIELD LOCATE 1 MILE ± IN ADVANCE OF LANE CLOSURE SIGNING.

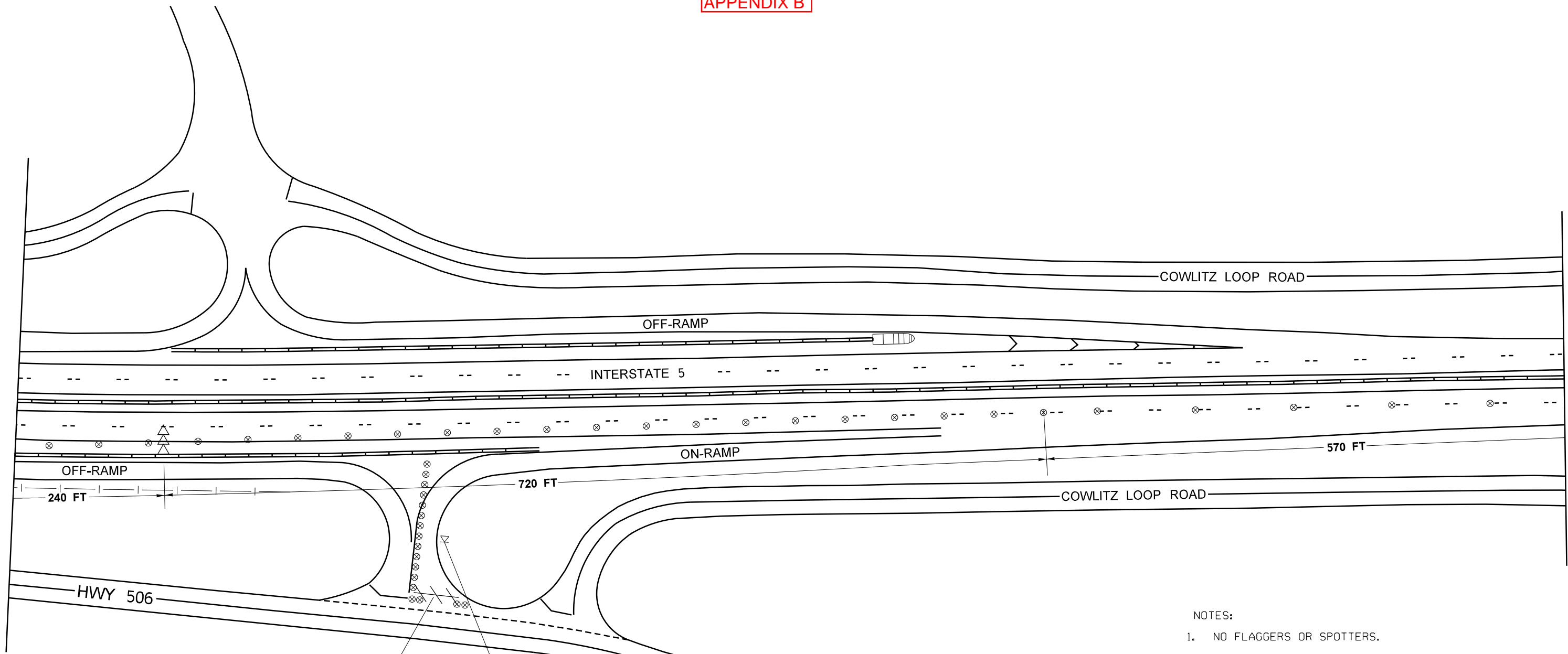
NOTES:

1. NO FLAGGERS OR SPOTTERS.
2. EXTEND DEVICE TAPER AT L/3 (240') ACROSS SHOULDER.
3. DEVICES SHALL NOT ENCROACH INTO THE ADJACENT LANE.
4. USE TRANSVERSE DEVICES IN CLOSED LANE EVERY 1000' (RECOMMENDED).
5. DEVICE SPACING FOR THE DOWNSTREAM TAPER SHALL BE 20' (TAPER IS OPTIONAL)
6. ALL SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE DESIGNATED.
7. SEE SPECIAL PROVISIONS FOR WORK HOUR RESTRICTIONS.
8. MIRROR PLAN FOR EASTERLY LANE CLOSURE.
9. SPEED REDUCTION CLASS A SIGNS SHALL BE COVERED DURING NON-WORKING HOURS.
10. SIGN SPACING LESS THAN STANDARD DUE TO EXIT 60 ON-RAMP CONSTRAINTS.

**SINGLE LANE CLOSURE FOR MULTI-LANE ROADWAYS**

NOT TO SCALE

FILE NAME G:\444307\03-Design\Design\I-5\I-5 SB Cowlitz River Bridge_Known Thrd Party Repair Bridge\18 CAD\18-2 Completed CAD Work - Status of Completed CAD Work - Any CAD Problems_PS&ESheets\XL5267-5_PS.TC.dgn										Plot 2					
TIME 8:10:38 AM		DATE 9/22/2016		REGION NO. 10		STATE WASH		FED.AID PROJ.NO. STPF-0052(214)		 <p>Washington State Department of Transportation</p>		I-5 SB COWLITZ RIVER BRIDGE REPAIR BRIDGE		PLAN REF NO TCP1	
PLOTTED BY wassond		DESIGNED BY D. WASSON		JOB NUMBER 17X300		CONTRACT NO.		LOCATION NO.				<p>TRAFFIC CONTROL PLAN</p>		SHEET 1 OF 7 SHEETS	
ENTERED BY D. WASSON		CHECKED BY CHEHALIS AEO		PROJ. ENGR. D. RECK		REGIONAL ADM. K. STRICKLER		REVISION		DATE				BY	
P.E. STAMP BOX		DATE		P.E. STAMP BOX		DATE									



**LEGEND**

- CLASS A SIGN
- CLASS B SIGN
- TRAFFIC SAFETY DRUM
- SEQUENTIAL ARROW SIGN
- TRANSPORTABLE ATTENUATOR
- PORTABLE CHANGEABLE MESSAGE SIGN
- EXISTING IMPACT ATTENUATOR
- EXISTING GUARDRAIL
- TYPE III BARRICADE

**NOTICE**  
RAMP  
CLOSED  
USE  
EXIT 60

R11-1501  
48" x 60"  
B/W

**RAMP  
WILL BE  
CLOSED**  
MON DA-MON DA  
XPM - XAM

R11-1501  
48" x 60"  
B/W

INSTALL 5 DAYS MIN.  
PRIOR TO CLOSURE

CHANNELIZATION DEVICE SPACING (feet)		
MPH	TAPER	TANGENT
50/70	40	80
35/45	30	60

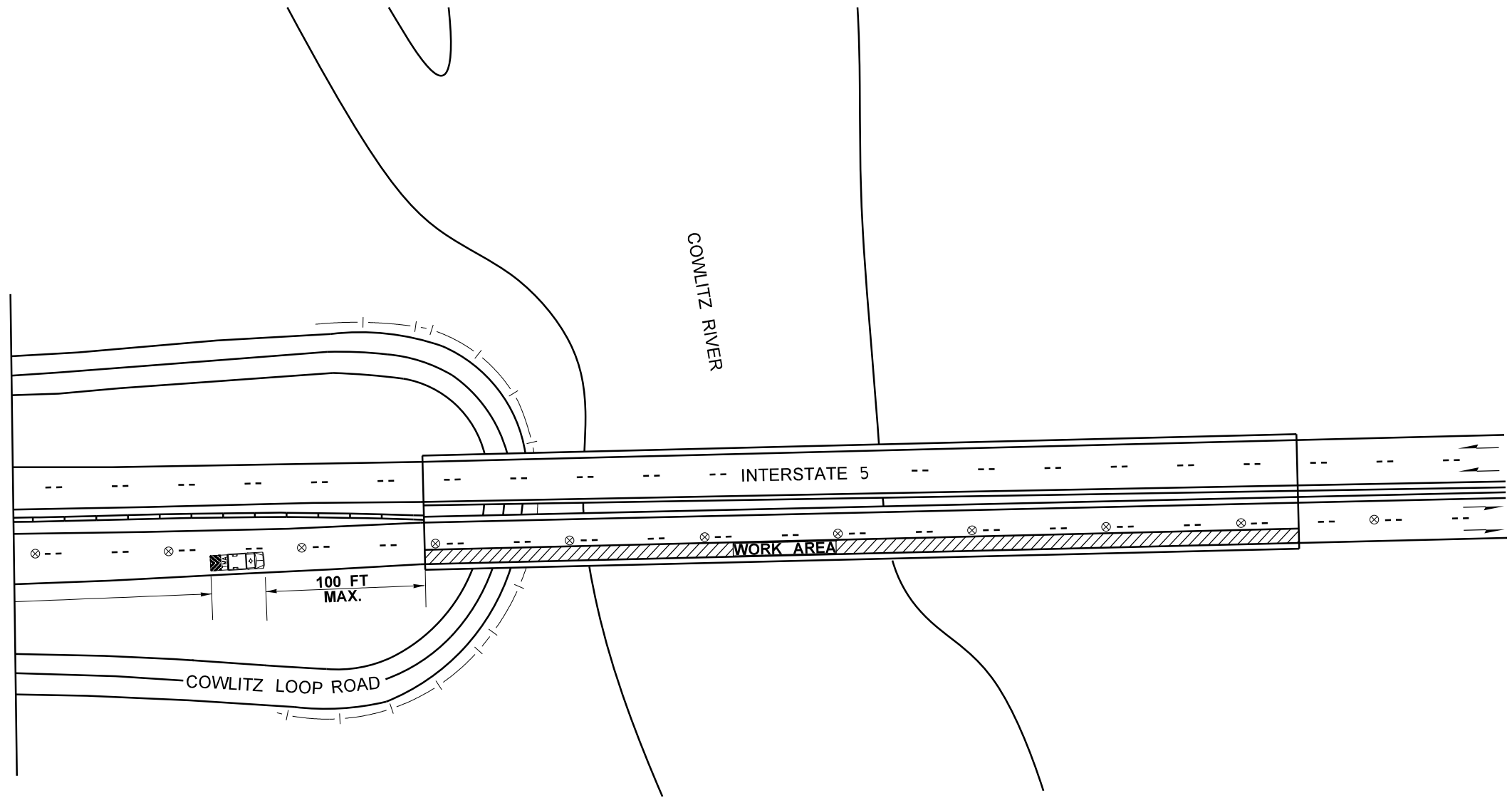
**NOTES:**

1. NO FLAGGERS OR SPOTTERS.
2. EXTEND DEVICE TAPER AT L/3 (240') ACROSS SHOULDER.
3. DEVICES SHALL NOT ENCROACH INTO THE ADJACENT LANE.
4. USE TRANSVERSE DEVICES IN CLOSED LANE EVERY 1000' (RECOMMENDED).
5. DEVICE SPACING FOR THE DOWNSTREAM TAPER SHALL BE 20' (TAPER IS OPTIONAL)
6. ALL SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE DESIGNATED.
7. SEE SPECIAL PROVISIONS FOR WORK HOUR RESTRICTIONS.
8. MIRROR PLAN FOR EASTERLY LANE CLOSURE.
9. SPEED REDUCTION CLASS A SIGNS SHALL BE COVERED DURING NON-WORKING HOURS.
10. SIGN SPACING LESS THAN STANDARD DUE TO EXIT 60 ON-RAMP CONSTRAINTS.

**SINGLE LANE CLOSURE FOR MULTI-LANE ROADWAYS**

NOT TO SCALE

FILE NAME: G:\444307\03-Design\Design\I-5\I-5 SB Cowlitz River Bridge_Known Thrd Party Repair Bridge\18 CAD\18-2 Completed CAD Work - Status of Completed CAD Work - Any CAD Problems_PS&ESheets\XL5267-5_PS.TC.dgn				<p style="text-align: center;"><b>Washington State Department of Transportation</b></p>		<p><b>I-5 SB COWLITZ RIVER BRIDGE REPAIR BRIDGE</b></p>		Plot 3
TIME: 10:26:38 AM	DATE: 9/22/2016	REGION NO.: 10	STATE: WASH					FED.AID PROJ.NO.: STPF-0052(214)
PLOTTED BY: wassond	DESIGNED BY: D. WASSON	JOB NUMBER: 17X300	CONTRACT NO.:	LOCATION NO.:	DATE:	<p><b>TRAFFIC CONTROL PLAN</b></p>		SHEET 2 OF 7 SHEETS
ENTERED BY: D. WASSON	CHECKED BY: CHEHALIS AEO	PROJ. ENGR.: D. RECK	REGIONAL ADM.: K. STRICKLER	REVISION:	DATE:			BY:



**LEGEND**

- ⊐ CLASS A SIGN
- ⊗ CLASS B SIGN
- ⊗ TRAFFIC SAFETY DRUM
- ⇨⇨⇨ SEQUENTIAL ARROW SIGN
- ⊠ TRANSPORTABLE ATTENUATOR
- PCMS PORTABLE CHANGEABLE MESSAGE SIGN
- ▭ EXISTING IMPACT ATTENUATOR
- |— EXISTING GUARDRAIL
- /// TYPE III BARRICADE


CHANNELIZATION DEVICE SPACING (feet)		
MPH	TAPER	TANGENT
50/70	40	80
35/45	30	60

NOTES:

1. NO FLAGGERS OR SPOTTERS.
2. EXTEND DEVICE TAPER AT L/3 (240') ACROSS SHOULDER.
3. DEVICES SHALL NOT ENCROACH INTO THE ADJACENT LANE.
4. USE TRANSVERSE DEVICES IN CLOSED LANE EVERY 1000' (RECOMMENDED).
5. DEVICE SPACING FOR THE DOWNSTREAM TAPER SHALL BE 20' (TAPER IS OPTIONAL)
6. ALL SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE DESIGNATED.
7. SEE SPECIAL PROVISIONS FOR WORK HOUR RESTRICTIONS.
8. MIRROR PLAN FOR EASTERLY LANE CLOSURE.
9. SPEED REDUCTION CLASS A SIGNS SHALL BE COVERED DURING NON-WORKING HOURS.
10. SIGN SPACING LESS THAN STANDARD DUE TO EXIT 60 ON-RAMP CONSTRAINTS.

**SINGLE LANE CLOSURE FOR MULTI-LANE ROADWAYS**

NOT TO SCALE

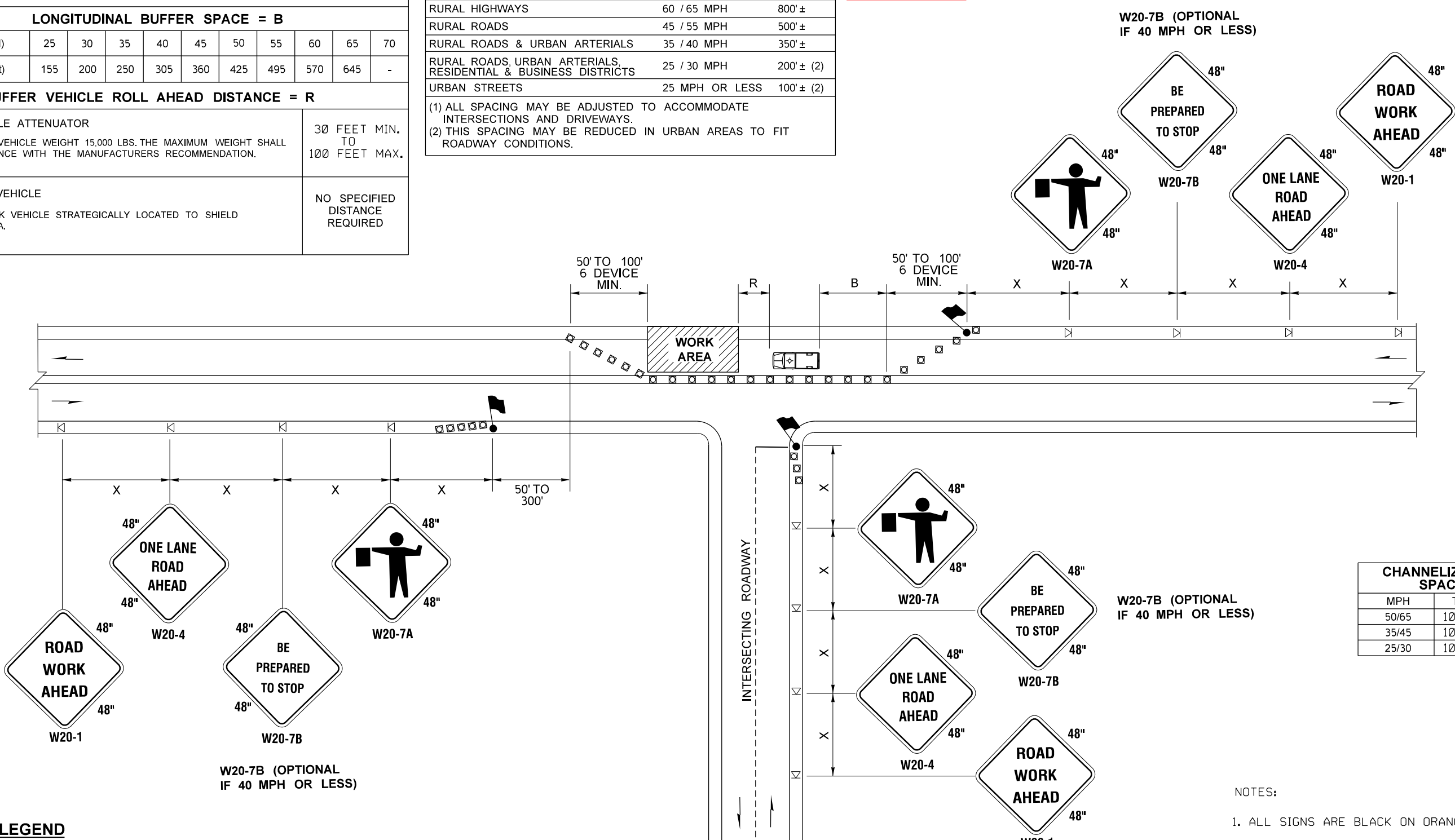
FILE NAME G:\444307\03-Design\Design\I-5\I-5 SB Cowlitz River Bridge_Known Thrd Party_Repair Bridge\18 CAD\18-2 Completed CAD Work - Status of Completed CAD Work - Any CAD Problems_PS&ESheets\XL5267-5_PS.TC.dgn										 Washington State Department of Transportation	I-5 SB COWLITZ RIVER BRIDGE REPAIR BRIDGE	Plot 4
TIME 8:12:00 AM	DATE 9/22/2016	DESIGNED BY D. WASSON	ENTERED BY D. WASSON	CHECKED BY CHEHALIS AEO	PROJ. ENGR. D. RECK	REGIONAL ADM. K. STRICKLER	REVISION	DATE	BY			REGION NO. 10 STATE WASH FED.AID PROJ.NO. STPF-0052(214) JOB NUMBER 17X300 CONTRACT NO. LOCATION NO.
										TRAFFIC CONTROL PLAN		

BUFFER DATA										
LONGITUDINAL BUFFER SPACE = B										
SPEED (MPH)	25	30	35	40	45	50	55	60	65	70
LENGTH (feet)	155	200	250	305	360	425	495	570	645	-
BUFFER VEHICLE ROLL AHEAD DISTANCE = R										
TRANSPORTABLE ATTENUATOR MINIMUM HOST VEHICLE WEIGHT 15,000 LBS. THE MAXIMUM WEIGHT SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATION.							30 FEET MIN. TO 100 FEET MAX.			
PROTECTIVE VEHICLE MAY BE A WORK VEHICLE STRATEGICALLY LOCATED TO SHIELD THE WORK AREA.							NO SPECIFIED DISTANCE REQUIRED			

SIGN SPACING = X (1)		
RURAL HIGHWAYS	60 / 65 MPH	800'±
RURAL ROADS	45 / 55 MPH	500'±
RURAL ROADS & URBAN ARTERIALS	35 / 40 MPH	350'±
RURAL ROADS, URBAN ARTERIALS, RESIDENTIAL & BUSINESS DISTRICTS	25 / 30 MPH	200'± (2)
URBAN STREETS	25 MPH OR LESS	100'± (2)

(1) ALL SPACING MAY BE ADJUSTED TO ACCOMMODATE INTERSECTIONS AND DRIVEWAYS.  
(2) THIS SPACING MAY BE REDUCED IN URBAN AREAS TO FIT ROADWAY CONDITIONS.

**APPENDIX C**



CHANNELIZATION DEVICE SPACING (feet)		
MPH	TAPER	TANGENT
50/65	10 to 20	80
35/45	10 to 20	60
25/30	10 to 20	40

W20-7B (OPTIONAL IF 40 MPH OR LESS)

- NOTES:
- ALL SIGNS ARE BLACK ON ORANGE
  - EXTENDING THE CHANNELIZING DEVICE TAPER ACROSS SHOULDER IS RECOMMENDED.
  - NIGHT WORK REQUIRES ADDITIONAL ROADWAY LIGHTING AT FLAGGING STATIONS. SEE THE STANDARD SPECIFICATIONS FOR ADDITIONAL DETAILS.
  - SEE SPECIAL PROVISIONS FOR WORK HOUR RESTRICTIONS.

**ONE-LANE, TWO-WAY TRAFFIC CONTROL WITH FLAGGERS**

NOT TO SCALE

FILE NAME	G:\444307\03-Design\Design\I-5\I-5 SB Cowlitz River Bridge_Known Thrd Party Repair Bridge\18 CAD\18-2 Completed CAD Work - Status of Completed CAD Work - Any CAD Problems_PS&ESheets\XL5267-5_PS.TC.dgn										Plot 5
TIME	11:17:09 AM										PLAN REF NO
DATE	9/22/2016										TCP2
PLOTTED BY	wassond										SHEET 4 OF 7 SHEETS
DESIGNED BY	D. WASSON										
ENTERED BY	D. WASSON										Washington State Department of Transportation
CHECKED BY	CHEHALIS AEO										
PROJ. ENGR.	D. RECK										I-5 SB COWLITZ RIVER BRIDGE REPAIR BRIDGE
REGIONAL ADM.	K. STRICKLER										
REVISION	DATE	BY	REGION NO.	STATE	FED.AID PROJ.NO.	CONTRACT NO.	LOCATION NO.	DATE	DATE	TRAFFIC CONTROL PLAN	
			10	WASH	STPF-0052(214)	17X300					

SIGN SPACING = X (1)		
FREEWAYS & EXPRESSWAYS	55 / 70 MPH	1500' ±
RURAL HIGHWAYS	60 / 65 MPH	800' ±
RURAL ROADS	45 / 55 MPH	500' ±

(1) ALL SPACING MAY BE ADJUSTED TO ACCOMMODATE INTERCHANGE RAMPS, AT-GRADE INTERSECTIONS AND DRIVEWAYS.

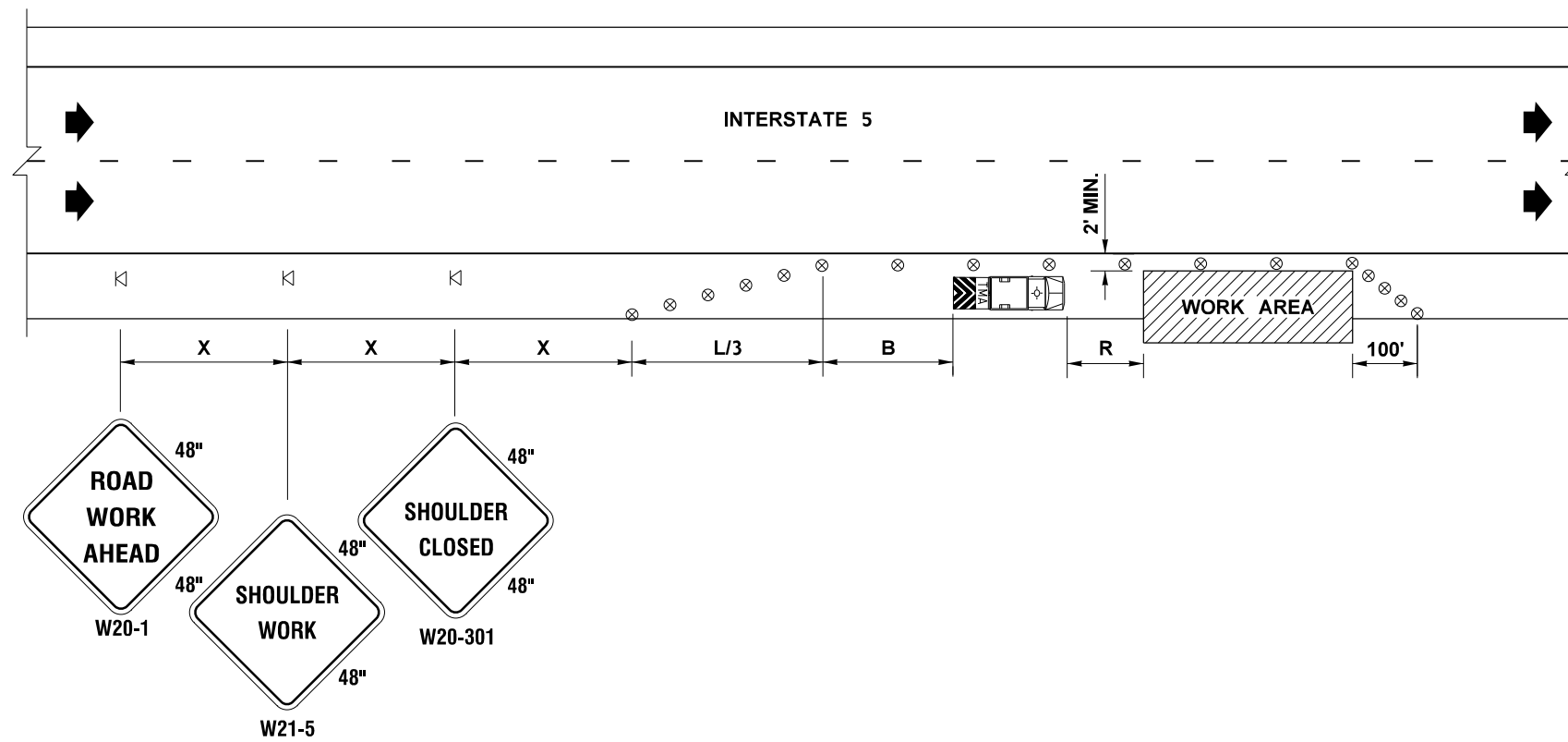
MINIMUM SHOULDER TAPER LENGTH = L/3 (feet)										
SHOULDER WIDTH (feet)	Posted Speed (mph)									
	25	30	35	40	45	50	55	60	65	70
8'	40	40	60	90	120	130	150	160	170	190
10'	40	60	90	90	150	170	190	200	220	240

USE A MINIMUM 3 DEVICES TAPER FOR SHOULDER LESS THEN 8'.

CHANNELIZATION DEVICE SPACING (feet)		
MPH	TAPER	TANGENT
50/70	40	80
35/45	30	60

BUFFER DATA										
LONGITUDINAL BUFFER SPACE = B										
SPEED (MPH)	25	30	35	40	45	50	55	60	65	70
LENGTH (feet)	-	-	-	-	360	425	495	570	645	730
BUFFER VEHICLE ROLL AHEAD DISTANCE = R										
TRANSPORTABLE ATTENUATOR MINIMUM HOST VEHICLE WEIGHT 15,000 LBS. THE MAXIMUM WEIGHT SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATION.										30 FEET MIN. TO 100 FEET MAX.

**APPENDIX D**



**LEGEND**

- Ⓢ SPOTTER
- K TEMPORARY SIGN LOCATION
- ⊗ TRAFFIC SAFETY DRUM
- TRANSPORTABLE ATTENUATOR

**SHOULDER CLOSURE - HIGH SPEED**

NOT TO SCALE

NOTES:

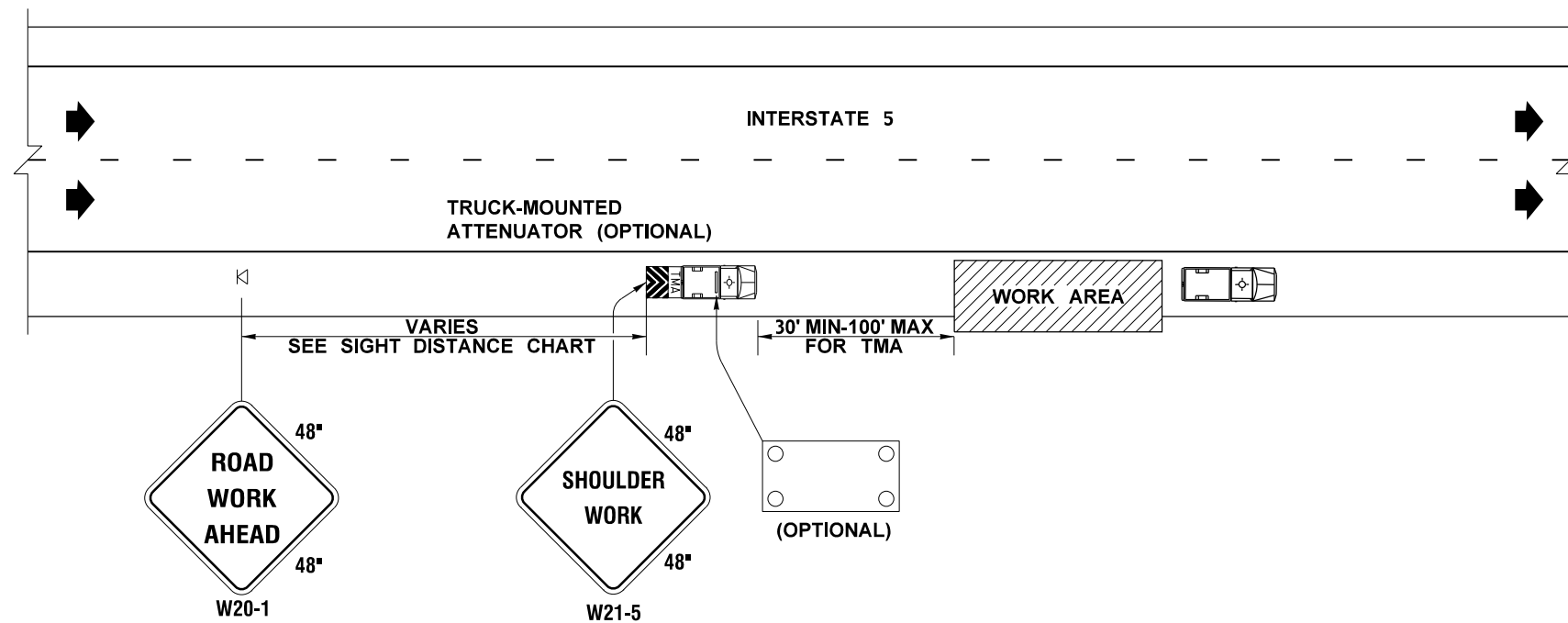
1. NO ENCROACHMENT IN TRAVELLED LANE. IF ENCROACHMENT IS NECESSARY, LANE SHALL BE CLOSED.
2. DEVICE SPACING FOR THE DOWNSTREAM TAPER SHALL BE 20' O. C.
3. ALL SIGNS ARE BLACK ON ORANGE.
4. NO FLAGGERS OR SPOTTERS.

FILE NAME	G:\444307\03-Design\Design\I-5\I-5 SB Cowlitz River Bridge_Known Thrd Party Repair Bridge\18 CAD\18-2 Completed CAD Work - Status of Completed CAD Work - Any CAD Problems_PS&ESheets\XL5267-5_PS.TC.dgn										Plot 6
TIME	11:13:28 AM										PLAN REF NO
DATE	9/22/2016										TCP3
PLOTTED BY	wassond										SHEET 5 OF 7 SHEETS
DESIGNED BY	D. WASSON										
ENTERED BY	D. WASSON										<p>Washington State Department of Transportation</p>
CHECKED BY	CHEHALIS AEO										
PROJ. ENGR.	D. RECK										
REGIONAL ADM.	K. STRICKLER										
REVISION	DATE	BY	REGION NO.	STATE	FED.AID PROJ.NO.						
			10	WASH	STPF-0052(214)						
					JOB NUMBER						
					17X300						
					CONTRACT NO.						
					LOCATION NO.						
					DATE						
					P.E. STAMP BOX						
					DATE						
					P.E. STAMP BOX						
										I-5 SB COWLITZ RIVER BRIDGE REPAIR BRIDGE	
										TRAFFIC CONTROL PLAN	

APPENDIX E

SIGHT DISTANCE DATE											
MINIMUM STOPPING SIGHT DISTANCE = S											
SPEED LIMIT (MPH)	25	30	35	40	45	50	55	60	65	70	
DISTANCE FEET	155	200	250	305	360	425	495	570	645	730	

DISTANCES SHOWN ARE MINIMUMS, USE ADDITIONAL DISTANCE WHEN POSSIBLE.



**LEGEND**

- WARNING BEACON
- WORK VEHICLE
- TRUCK-MOUNTED ATTENUATOR (OPTIONAL)

NOTES:

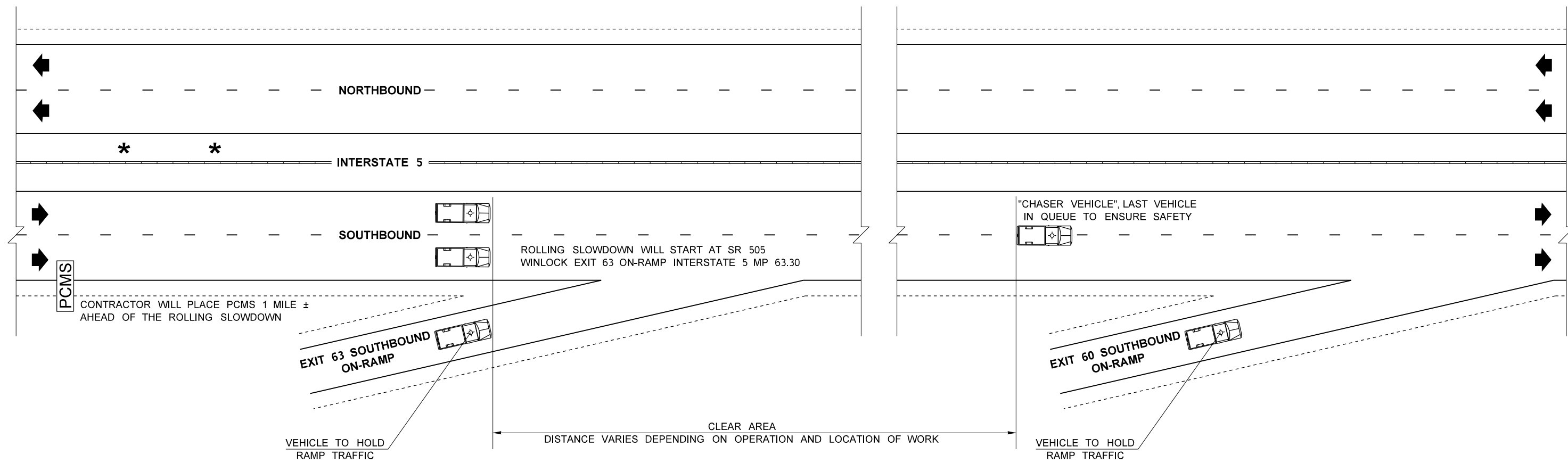
1. NO ENCROACHMENT IN TRAVELLED LANE. IF ENCROACHMENT IS NECESSARY, LANE SHALL BE CLOSED.
2. DEVICE SPACING FOR THE DOWNSTREAM TAPER SHALL BE 20' O. C.
3. ALL SIGNS ARE BLACK ON ORANGE.
4. NO FLAGGERS OR SPOTTERS.

**SHORT DURATION OR MOBILE OPERATION ON SHOULDER**

NOT TO SCALE

FILE NAME G:\444307\03-Design\Design\I-5\I-5 SB Cowlitz River Bridge_Known Thrd Party Repair Bridge\18 CAD\18-2 Completed CAD Work - Status of Completed CAD Work - Any CAD Problems_PS&ESheets\XL5267-5_PS.TC.dgn										Plot 7					
TIME 8:14:21 AM		DATE 9/22/2016		REGION NO. 10		STATE WASH		FED.AID PROJ.NO. STPF-0052(214)		 Washington State Department of Transportation		I-5 SB COWLITZ RIVER BRIDGE REPAIR BRIDGE		PLAN REF NO TCP4	
PLOTTED BY wassond		DESIGNED BY D. WASSON		JOB NUMBER 17X300		CONTRACT NO.		LOCATION NO.				SHEET 6 OF 7 SHEETS			
ENTERED BY D. WASSON		CHECKED BY CHEHALIS AEO		PROJ. ENGR. D. RECK		REGIONAL ADM. K. STRICKLER		REVISION		DATE				BY	
P.E. STAMP BOX		DATE		P.E. STAMP BOX		DATE									

**APPENDIX F**



PCMS	
1	2
CAUTION SLOWING TRAFFIC	OR STOPPED VEHICLES
2.0 SEC	2.0 SEC

FIELD LOCATE 1 MILE ± IN ADVANCE OF LANE CLOSURE SIGNING.

**NOTIFICATION REQUIREMENTS:**  
 CONTRACTOR SHALL NOTIFY ENGINEER IN ADVANCE OF ALL ROLLING SLOWDOWNS.  
 ROLLING SLOWDOWN PER STD. SPEC. 1-10.3(2)B ROLLING SLOWDOWN.

**LEGEND**

- ⊕ WARNING BEACON - REQUIRED
- WORK VEHICLE

**ROLLING SLOWDOWN**

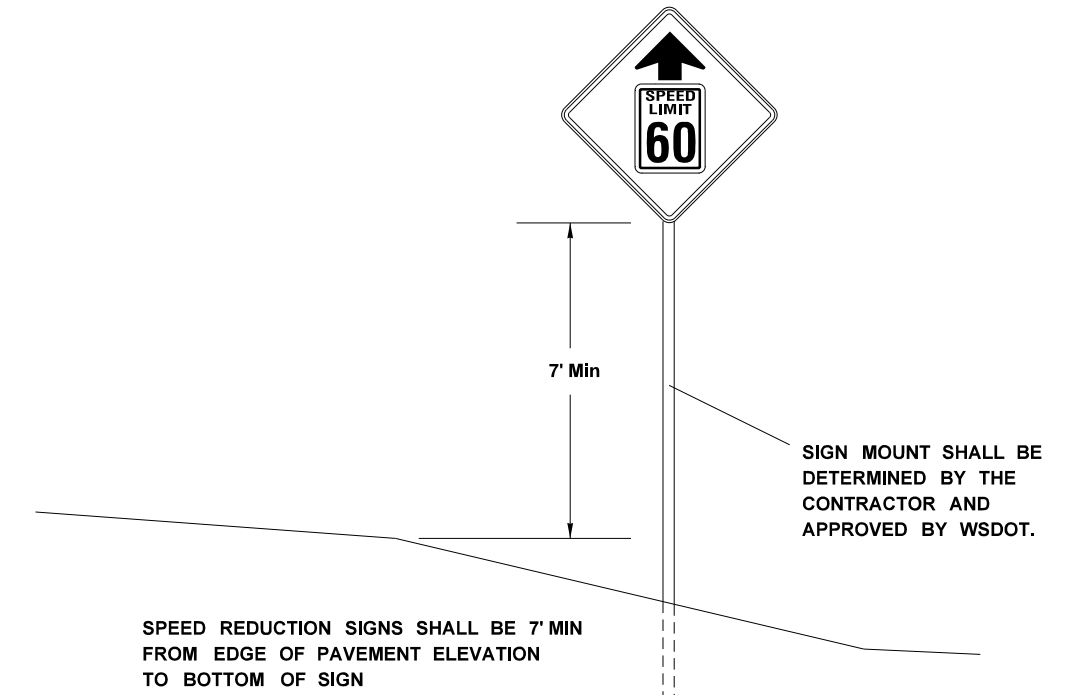
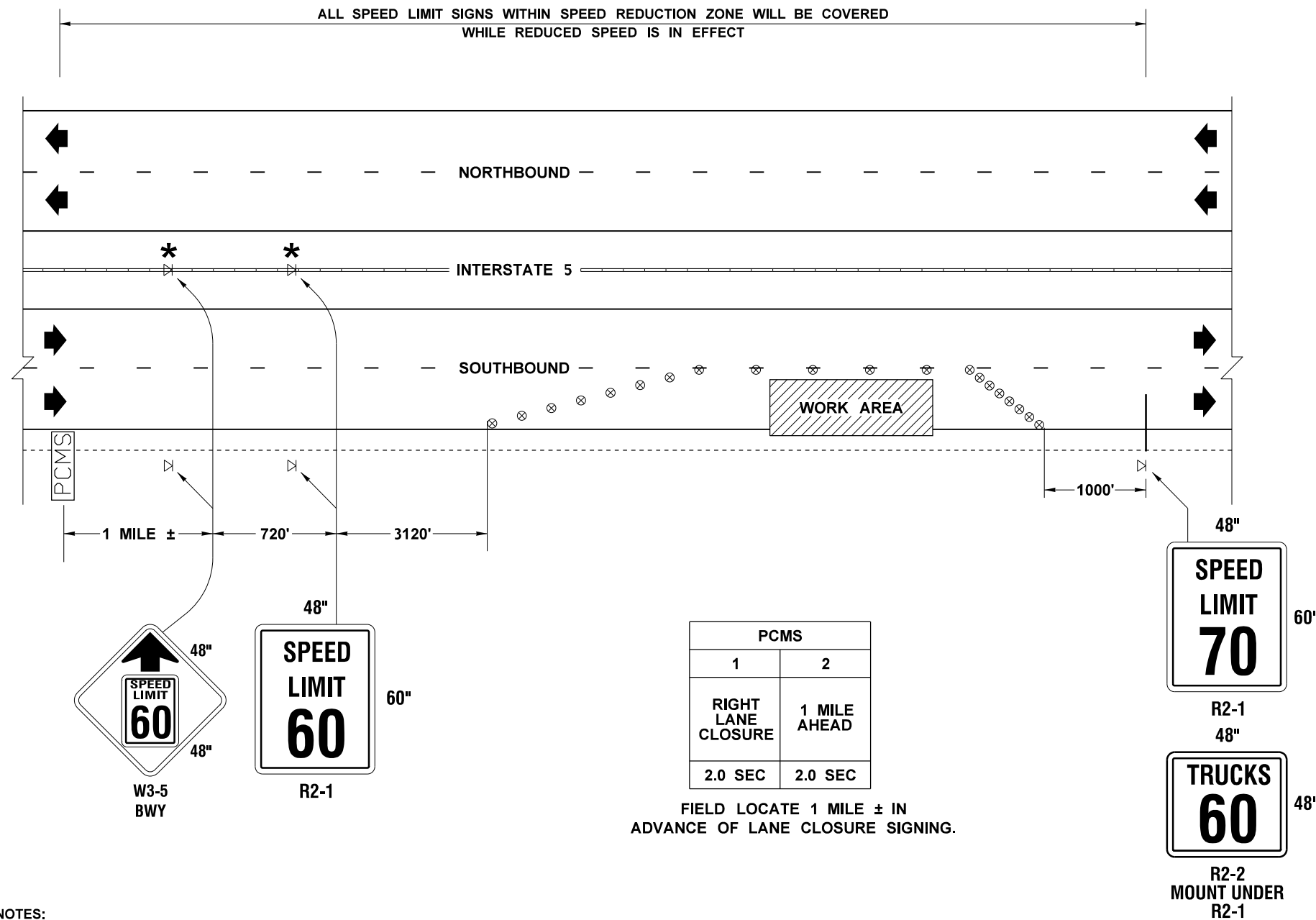
NOT TO SCALE

**NOTES:**

1. ROLLING SLOWDOWN VEHICLES WILL SLOW TRAFFIC DOWN TO 40 MPH.
2. TRAFFIC SWITCH SHOULD LAST NO MORE 5 MINUTES.
3. 4 MILES DISTANCE AHEAD OF WORK TO START THE ROLLING SLOWDOWN.
4. ALL WORK ACTIVITIES THAT REQUIRE 10,000- GVW OR GREATER TO ENTER OR EXIT THE WORK AREA AND NEED TO DECELERATE/ACCELERATE IN LANE(S) OF TRAFFIC SHALL BE REQUIRED TO USE LANE RESTRICTION AND ASSOCIATED WORK HOURS. TRAFFIC CONTROL VEHICLES ARE EXCLUDED FROM THE GROSS VEHICLE WEIGHT REQUIREMENTS.
5. SEE SPECIAL PROVISIONS; PUBLIC CONVENIENCE AND SAFETY, CONSTRUCTION UNDER TRAFFIC, FOR WORK HOUR RESTRICTIONS.
6. THIS PLAN SHALL OPERATE WITHOUT THE USE OF FLAGGERS OR SPOTTERS.
7. ALL WORK VEHICLES SHALL USE WARNING BEACONS.

FILE NAME G:\444307\03-Design\Design\I-5\I-5 SB Cowlitz River Bridge_Known Thrd Party_Repair Bridge\18 CAD\18-2 Completed CAD Work - Status of Completed CAD Work - Any CAD Problems_PS&ESheets\XL5267-5_PS.TC.dgn							<b>I-5                  SB COWLITZ RIVER BRIDGE                  REPAIR BRIDGE</b>	Plot 8
TIME 11:14:01 AM	DATE 9/22/2016	PLOTTED BY wassond	DESIGNED BY D. WASSON	ENTERED BY D. WASSON	CHECKED BY CHEHALIS AEO			PROJ. ENGR. D. RECK
REVISION	DATE	BY	REGION NO. 10	STATE WASH	FED.AID PROJ.NO. STPF-0052(214)	JOB NUMBER 17X300	CONTRACT NO.	SHEET 7 OF 7 SHEETS
					LOCATION NO.			<b>TRAFFIC CONTROL PLAN</b>
					P.E. STAMP BOX	DATE	P.E. STAMP BOX	

### VARIABLE REGULATORY SPEED REDUCTION - MAINLINE



**NOTES:**

1. SPEED REDUCTION SIGNS SHALL NOT BE VISIBLE TO TRAFFIC DURING NON-WORKING HOURS
2. EXISTING SPEED SIGNS SHALL BE COMPLETELY COVERED WHILE SPEED REDUCTION IS IN EFFECT.
3. SPEED REDUCTION TO BE UTILIZED SOUTHBOUND MP 58.90 TO MP 60.10 ONLY IN THE ACTIVE WORK ZONES.
3. ALL SIGNS ARE BLACK ON WHITE UNLESS DENOTED OTHERWISE.

\* BARRIER MOUNTED SIGN BASE.

**LEGEND**

- ⊠ SIGN LOCATION
- ⊗ CHANNELIZATION DEVICE
- PCMS PORTABLE CHANGEABLE MESSAGE SIGN

FILE NAME	G:\444307\03-Design\Design\I-5\I-5 SB Cowlitz River Bridge_Known Thrd Party Repair Bridge\04 TRAFFIC DESIGN DATA\4-8 Traffic Management Plan\Speed Reduction\XL5267-5_PS_TC.dgn				
TIME	11:30:44 AM	REGION NO.	10	STATE	WASH
DATE	9/22/2016	JOB NUMBER	17X300	FED.AID PROJ.NO.	STPF-0052(214)
PLOTTED BY	wassond	CONTRACT NO.		LOCATION NO.	
DESIGNED BY	D. WASSON	DATE		P.E. STAMP BOX	
ENTERED BY	D. WASSON	DATE		P.E. STAMP BOX	
CHECKED BY	CHEHALIS AEO	BY			
PROJ. ENGR.	D. RECK				
REGIONAL ADM.	K. STRICKLER	REVISION			

<p>Washington State Department of Transportation</p>	<p>I-5 SB COWLITZ RIVER BRIDGE REPAIR BRIDGE</p>	Plot 7
	<p>VAR. REGULATORY SPEED REDUCTION</p>	PLAN REF NO RSR1
		SHEET 1 OF 1 SHEETS