**9-MILE SMART WORK ZONE SYSTEM**

**FREEWAY (3 LANES): SINGLE RIGHT LANE CLOSURE**

**NOT TO SCALE**

<table>
<thead>
<tr>
<th>LOCATION (miles)</th>
<th>FF</th>
<th>PCMS 9</th>
<th>PCMS 8</th>
<th>PCMS 7</th>
<th>PCMS 6</th>
<th>PCMS 5</th>
<th>PCMS 4</th>
<th>PCMS 3</th>
<th>PCMS 2</th>
<th>PCMS 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 TO 1.4</td>
<td>FF</td>
<td>FF</td>
<td>FF</td>
<td>FF</td>
<td>FF</td>
<td>FF</td>
<td>(Blank)</td>
<td>(Blank)</td>
<td>(Blank)</td>
<td>(Blank)</td>
</tr>
<tr>
<td>1.41 TO 2.4</td>
<td>FF</td>
<td>FF</td>
<td>FF</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>(Blank)</td>
</tr>
<tr>
<td>2.41 TO 4.9</td>
<td>FF</td>
<td>FF</td>
<td>FF</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>(Blank)</td>
</tr>
<tr>
<td>3.41 TO 4.9</td>
<td>FF</td>
<td>FF</td>
<td>FF</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>(Blank)</td>
</tr>
<tr>
<td>4.91 TO 6.4</td>
<td>FF</td>
<td>FF</td>
<td>FF</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>(Blank)</td>
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<tr>
<td>6.41 TO 7.8</td>
<td>FF</td>
<td>FF</td>
<td>FF</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
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<tr>
<td>7.51+</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
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<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>SL</td>
<td>(Blank)</td>
</tr>
</tbody>
</table>

**SYMBOLS:**
- FF: Free Flow
- SL: Slow or Stopped Traffic

**TRAFFIC SENSORS:**
- Traffic Sensors
- Traffic Sensors
- Traffic Sensors
- Traffic Sensors
- Traffic Sensors
- Traffic Sensors
- Traffic Sensors
- Traffic Sensors
- Traffic Sensors
- Traffic Sensors

**LEGEND:**
- Traffic Safety Drum
- Portable Travel Time Reader
- Portable Changeable Message Sign
- Pan-tilt-zoom Camera

**NOTES:**
1. This Plan is used in conjunction with applicable 3-lane pregnancy single right lane closure traffic control plan.
2. See Smart Work Zone System special permission or RFP for details.
3. Modifications to signs/messages shall be accepted by the engineer.
4. Adjust signs/components to avoid conflicts with sequential arrow signs or other traffic control devices/narrow shoulders and ramps.
5. Locate signs per standard specification 10-037. PCMs may be placed on opposite shoulders at any ramp closure with PCMs being located behind barreirers/guardrail, or within closure.
6. Minimal PCMs (FF - 12 inch characters) allowed for PCMs 1 to 2.
7. Use of blank time reader/alternative methods (such as using traffic sensor speed data) is acceptable when accurate within 5 +/- minutes.
8. Locate side fire traffic sensor prior to any open ramps.
9. If system fails see Smart Work Zone System failure protocol provision.
10. Use of portable cameras/pan-tilt-zoom camera helps for all delays.

**PLAN REF NO:** TC176

**REGIONAL ADM:** K. Haapala

**DATE:** 1/10/2022

**TIME:** 8:16:00 AM

**FED.AID PROJ.NO.:**

**PLT:** Lynam

**DESIGNED BY:** Hainan & Lintz

**CHECKED BY:** K. Haapala

**ENTERED BY:** Y. Lintz

**TYPICAL TRAFFIC CONTROL PLAN**

** Washington State Department of Transportation**

**Not to scale**
PCMS 9
1.5+/- MILE
PCMS 8
6.5 MILES
PCMS 7
6.41 TO 7.9
PCMS 6
2.41 TO 3.4
PCMS 5
1.41 TO 2.4
PCMS 4
0.5 MILE
PCMS 3
0.5 MILE
PCMS 2
0.5 MILE
PCMS 1
0.5 MILE

NOTE:
1. THIS PLAN IS USED IN CONJUNCTION WITH APPLICABLE 1-LANE FREQUENT DOUBLE RIGHT LANE CLOSURE TRAFFIC CONTROL PLAN (WITH PCMSs IN ADVANCE OF LANE CLOSURE TAPER REMOVED).
2. SEE SMART WORK ZONE SYSTEM (SWZS) SPECIAL PROVISION OR RFP FOR DETAILS.
3. TRAFFIC BACKUPS PRESENT / WATCH FOR SLOW TRAFFIC
4. IF TRAFFIC QUEUES REACH 8 MILES, PLACE ADDITIONAL PCMS AT 7 MILES.
5. LOCATE PCMSs PER STANDARD SPECIFICATION 1-10.3(3)C. PCMS MAY BE PLACED IN LIEU OF TRAVEL TIME READERS, ALTERNATIVE METHODS (SUCH AS USING TRAFFIC MINIATURE PCMS (~6’ WIDE, 12+ INCH CHARACTERS) ALLOWED FOR PCMS1 & 2.
6. SEE SMART WORK ZONE SYSTEM (SWZS) SPECIAL PROVISION OR RFP FOR DETAILS.
7. IN LIEU OF TRAVEL TIME READERS, ALTERNATIVE METHODS (SUCH AS USING TRAFFIC MINIATURE PCMS (~6’ WIDE, 12+ INCH CHARACTERS) ALLOWED FOR PCMS1 & 2.
8. TRAFFIC BACKUPS PRESENT / WATCH FOR SLOW TRAFFIC
9. TRAFFIC BACKUPS PRESENT / WATCH FOR SLOW TRAFFIC
10. IF TRAFFIC QUEUES REACH 8 MILES, PLACE ADDITIONAL PCMS AT 7 MILES.

LEGEND
# TRAFFIC SAFETY DRUM
# TRAFFIC SENSOR
SFI FIRE TRAFFIC SENSOR
SFTS SIDE FIRE TRAFFIC SENSOR
PCMS PORTABLE TRAFFIC SENSOR
PCMS PORTABLE TRAVEL TIME READER
PCMS PORTABLE CHANGEMESSAGE SIGN
PAN/TILT/ZOOM CAMERA

FREEWAY (3 LANES): DOUBLE RIGHT LANE CLOSURE
NOT TO SCALE
1. This plan is used in conjunction with applicable 3-lane regional adm. proj. engr. proj. num. contract no. and applicable 3-lane regional adm. proj. engr. proj. num. contract no.

2. If traffic queues reach 6 miles place additional PCMS at 9 miles. If system fails see “smart work zone system failure protocol” provision.

3. If travel time reader is unable to automatically read traffic sensor speed data as acceptably accurate within 3 minutes.

4. Locate side fire traffic sensor prior to any open ramps.

5. Locate PCMSs per standard specification 1-10.3(3)c. PCMS may be placed barrier/guardrail or within closure, transverse traffic drums optional.

6. Locate PCMSs per standard specification 1-10.3(3)c. PCMS may be placed barrier/guardrail or within closure, transverse traffic drums optional.

7. In lieu of travel time readers, alternative methods such as using traffic sensors or other traffic control devices, narrow shoulders, and ramps.

8. Locate side fire traffic sensor prior to any open ramps.

9. If traffic queues reach 8 miles placed additional PCMS at 9 miles. If system fails see “smart work zone system failure protocol” provision.

10. If traffic queues reach 8 miles placed additional PCMS at 9 miles. If system fails see “smart work zone system failure protocol” provision.

Legends:
- Traffic safety drum
- Traffic sensor
- Portable travel time reader
- Sequential arrow sign
- Portable changeable message sign
- Pan-tilt-zoom camera

Typical traffic control plan:

9-mile smart work zone system
Freeway (3 lanes): Double right lane closure

NOT TO SCALE
REGION TRAFFIC OFFICES WILL DETERMINE IF SMART WORK ZONE SYSTEMS ARE NEEDED FOR EACH PROJECT USING WORK ZONE TRAFFIC ANALYSIS FOR MORE INFORMATION SEE TRAFFIC MANUAL SECTION 5-17A "WORK ZONE QUEUEING MITIGATION" AND SECTION 5-9 "WORK ZONE TRAFFIC ANALYSIS".

A. FOR DESIGN-BID-BUILD PROJECTS, INCLUDE 3 OF THE "SMART WORK ZONE SYSTEM" GENERAL SPECIAL PROVISIONS LISTED BELOW:

1-10.3(3).OPT3.FR1 Specifications
1-10.4(2).OPT5.GR1 Measurement (Traffic Control as Bid Items)
1-10.4(3).OPT2.GR1 Measurement (Traffic Control as Lump Sum)
1-10.5(2).OPT3.GR1 Payment

B. FOR DESIGN-BUILD PROJECTS: EMAIL STATE WORK ZONE ENGINEERS (HQWORKZONE@WSDOT.WA.GOV) FOR RFP SPECIFICATIONS UNTIL THEY ARE INCLUDED IN THE STATE-WIDE RFP TEMPLATE (ESTIMATED 2023).

C. IF ACTUAL QUEUES REGULARLY EXCEED 9 MILES, THIS SMART WORK ZONE SYSTEM SHOULD BE MODIFIED. CONTACT STATE WORK ZONE ENGINEERS (HQWORKZONE@WSDOT.WA.GOV) FOR GUIDANCE.

D. TO MATCH THE GENERAL SPECIAL PROVISIONS, TRAFFIC SAFETY DRUMS SHOULD BE USED AS SHOWN IN THE TRAFFIC CONTROL PLAN. HOWEVER, THE GPS AND TYPICAL TRAFFIC CONTROL PLAN CAN BE MODIFIED TO REFLECT REGION'S STANDARD PRACTICE REGARDING CHANNELIZATION DEVICES.

E. EXCEPT FOR DESIGN-BUILD PROJECTS WHEN THE RFP REQUIRES THEM, PAN-TILT-ZOOM CAMERAS (PTZ CAMERAS) ARE OPTIONAL AND MAY BE DELETED OR RELOCATED TO DIFFERENT PCMs AS DESIRED. THE PTZ CAMERAS ARE INTENDED TO BE USED REMOTELY BY THE REGION TRAFFIC MANAGEMENT CENTER TO MONITOR INCIDENTS AND QUEUING IN REAL TIME.

F. THE SIDE-FIRE RADAR IS USED TO OBTAIN VOLUME AND SPEED DATA PER GPS/RFP REQUIREMENTS. THE TRAFFIC SENSORS ARE TYPICALLY DOPPLER RADAR AND USED TO CONTROL THE PCSM MESSAGE DISPLAYS.

MODIFYING SMART WORK ZONE SYSTEM TRAFFIC CONTROL PLANS

THESE TRAFFIC CONTROL PLANS ARE TYPICAL AND MAY BE MODIFIED FOR SITE SPECIFIC SITUATIONS AND/OR WSDOT REGION TRAFFIC PRACTICES. CONTACT STATE WORK ZONE ENGINEERS (HQWORKZONE@WSDOT.WA.GOV) FOR ADDITIONAL GUIDANCE IF NEEDED.

THESE SMART WORK ZONE SYSTEMS ARE VERY ADAPTABLE TO A VARIETY OF SITUATIONS, INCLUDING BEING USED ON MULTIPLE ROADWAYS CONCURRENTLY LEADING INTO A QUEUED WORK ZONE.

9-MILE SMART WORK ZONE SYSTEM

FREEWAY (3 LANES): SINGLE & DOUBLE RIGHT LANE CLOSURE

NOT TO SCALE

DESIGNER GUIDANCE