1. This plan is used in conjunction with 2-lane freeway single right lane closure traffic control plan (with PCMS in advance of lane closure taper removed).

2. See Queue Warning System (QWS) Special Provision or RFP for details.

3. Modifications to PCMS messages shall be accepted by the engineer.

4. Adjust QWS components to avoid conflicts with sequential arrow signs or other traffic control devices, narrow shoulders, and ramps.

5. Locate PCMS per Standard Specification 1-10:30C. PCMS may be placed on opposite shoulder but avoid ramp corners when located behind barrier/guardrail or within closure, transverse traffic drums, optimal.

6. If system fails, see 'Queue Warning System Failure Protocol' provision.

7. If traffic queues reach 5 miles, place additional PCMS at 6.5 miles. Relocate to remain 0.5+/- mile in advance of queue, truck-mounted PCMS with 10+ inch characters acceptable. Transverse traffic safety drums optional. Remove PCMS when dissipating queues are less than 5 miles. Added PCMS message traffic backups present/next use for slow traffic taper removed).

NOTES:

1. Optional. Remove PCMS when dissipating queues are less than 5 miles.

2. Slow or stopped traffic next mile.

3. Washington State Department of Transportation

4. Traffic Control Plans

5. Free Flow

6. 6-MILE QUEUE WARNING SYSTEM

7. Zipper merge 1 lane too.

8. Taper ahead.

9. Not to scale.

### Typical Traffic Control Plans

<table>
<thead>
<tr>
<th>Queue Location (miles)</th>
<th>TRAFFIC SENSORS</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>0.01 TO 0.9</td>
<td>FF FF FF FF FF FF</td>
<td>#</td>
<td>#</td>
<td>#</td>
<td>#</td>
<td>#</td>
</tr>
<tr>
<td>0.91 TO 1.9</td>
<td>FF FF FF SL SL SL</td>
<td>(Blank)</td>
<td>(Blank)</td>
<td>(Blank)</td>
<td>(Blank)</td>
<td>LANE CLOSURE 2 MILES</td>
</tr>
<tr>
<td>2.0 TO 2.9</td>
<td>FF FF SL SL SL SL</td>
<td>#</td>
<td>#</td>
<td>#</td>
<td>#</td>
<td>#</td>
</tr>
<tr>
<td>2 MILES TO MERGE POINT</td>
<td>USE ALL LANES</td>
<td>USE ALL LANES</td>
<td>USE ALL LANES</td>
<td>USE ALL LANES</td>
<td>USE ALL LANES</td>
<td></td>
</tr>
<tr>
<td>4.41+</td>
<td>SL SL SL SL SL SL</td>
<td>SLOW OR STOPPED TRAFFIC</td>
<td>NEXT 6 MILES</td>
<td>USE ALL LANES</td>
<td>USE ALL LANES</td>
<td>USE ALL LANES</td>
</tr>
</tbody>
</table>

### Legend

- **Traffic Safety Drum**
- **Traffic Sensor**
- **Sequential Arrow Sign**
- **PCMS** Portable Changeable Message Sign

---

**NOTES:**

1. This plan is used in conjunction with 2-lane freeway single right lane closure traffic control plan (with PCMS in advance of lane closure taper removed).

2. See Queue Warning System (QWS) Special Provision or RFP for details.

3. Modifications to PCMS messages shall be accepted by the engineer.

4. Adjust QWS components to avoid conflicts with sequential arrow signs or other traffic control devices, narrow shoulders, and ramps.

5. Locate PCMS per Standard Specification 1-10:30C. PCMS may be placed on opposite shoulder but avoid ramp corners when located behind barrier/guardrail or within closure, transverse traffic drums, optional.

6. If system fails, see 'Queue Warning System Failure Protocol' provision.

7. If traffic queues reach 5 miles, place additional PCMS at 6.5 miles. Relocate to remain 0.5+/- mile in advance of queue, truck-mounted PCMS with 10+ inch characters acceptable. Transverse traffic safety drums optional. Remove PCMS when dissipating queues are less than 5 miles. Added PCMS message traffic backups present/next use for slow traffic taper removed).

NOTES:

1. Optional. Remove PCMS when dissipating queues are less than 5 miles.

2. Slow or stopped traffic next mile.

3. Washington State Department of Transportation

4. Traffic Control Plans

5. Free Flow

6. 6-MILE QUEUE WARNING SYSTEM

7. Zipper merge 1 lane too.

8. Taper ahead.

9. Not to scale.

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### Legend

- **Traffic Safety Drum**
- **Traffic Sensor**
- **Sequential Arrow Sign**
- **PCMS** Portable Changeable Message Sign

---

**NOTES:**

1. This plan is used in conjunction with 2-lane freeway single right lane closure traffic control plan (with PCMS in advance of lane closure taper removed).

2. See Queue Warning System (QWS) Special Provision or RFP for details.

3. Modifications to PCMS messages shall be accepted by the engineer.

4. Adjust QWS components to avoid conflicts with sequential arrow signs or other traffic control devices, narrow shoulders, and ramps.

5. Locate PCMS per Standard Specification 1-10:30C. PCMS may be placed on opposite shoulder but avoid ramp corners when located behind barrier/guardrail or within closure, transverse traffic drums, optional.

6. If system fails, see 'Queue Warning System Failure Protocol' provision.

7. If traffic queues reach 5 miles, place additional PCMS at 6.5 miles. Relocate to remain 0.5+/- mile in advance of queue, truck-mounted PCMS with 10+ inch characters acceptable. Transverse traffic safety drums optional. Remove PCMS when dissipating queues are less than 5 miles. Added PCMS message traffic backups present/next use for slow traffic taper removed).

NOTES:

1. Optional. Remove PCMS when dissipating queues are less than 5 miles.

2. Slow or stopped traffic next mile.

3. Washington State Department of Transportation

4. Traffic Control Plans

5. Free Flow

6. 6-MILE QUEUE WARNING SYSTEM

7. Zipper merge 1 lane too.

8. Taper ahead.

9. Not to scale.

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</table>
**NOT TO SCALE**

**FREEWAY (2+ LANES): SINGLE RIGHT LANE CLOSURE**
(Maintain Existing Speed Limit)

1. **IF FEASIBLE AVOID** placing lane closure or lane shift tapers within or immediately following horizontal curves.
2. **DISTANCE INCREASES AS WORK AREA MOVES DOWNSTREAM.**
3. **IF USED, PLACE DEVICES TRANSVERSELY ACROSS CLOSED LANES** at 45° +/- and 5' spacing at strategic locations.
4. **DOWNSTREAM TAPER OPTIONAL ACROSS RIGHT LANE.**
5. **AID "TRUCKS LEAVING HIGHWAY" AND "TRUCKS ENTERING HIGHWAY" (W3-10, 48"x48", 5' HEIGHT) SIGNS 500’ PRIOR TO WHERE CONSTRUCTION VEHICLES FREQUENTLY EXIT AND ENTER INTO THE HIGHWAY" (W21-30, 48"x48", 5' HEIGHT) SIGNS 500’ +/- PRIOR TO WHERE CONSTRUCTION VEHICLES FREQUENTLY EXIT AND ENTER INTO THE HIGHWAY.
6. **SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE INDICATED.**
7. **PLAN IS APPLICABLE TO LANE CLOSURES OF 3 DAYS OR LESS.**
8. **BICYCLES PROHIBITED THROUGH WORK ZONE CONSIDER PROVIDING DETOUR ALTERNATIVE ROUTE OR SHUTTLE IN HIGH-USE LOCATIONS PERMITTING PERMANENT CYCLE ACCESS.**

**NOTES:**

- **TEMPORARY SIGN LOCATION**
- **TEMPORARY SIGN LOCATION (5 MIN HEIGHT)**
- **TRAFFIC SAFETY DRUM**
- **WBS TRAFFIC SENSOR**
- **RADAR SPEED DISPLAY SIGN (RSDS)**
- **SEQUENTIAL ARROW SIGN**
- **TRANSPORTABLE ATTENUATOR**
- **PORTABLE CHANGEABLE MESSAGE SIGN**

**LEGEND:**

- **NOTE 1**
- **NOTE 2**
- **NOTE 3**
- **NOTE 4**

**TC107**

Washington State Department of Transportation

**TYPICAL TRAFFIC CONTROL PLANS**
TRAFFIC SENSORS

"QUEUE WARNING SYSTEM FAILURE PROTOCOL".

IN THE EVENT OF A SYSTEM FAILURE, SEE SPECIAL PROVISIONS OR RFP.

MAINTAIN VISIBILITY OF SEQUENTIAL ARROW SIGN.

TRAFFIC CONTROL DEVICES, NARROW SHOULDERS, RAMPS, OR TO

ADJUST QWS COMPONENTS AS NEEDED TO AVOID CONFLICTS WITH

WITHIN CLOSED LANE, 3 TRANVERSE TRAFFIC DRUMS ARE NOT REQUIRED.

PCMSs OR TRAFFIC SENSORS PLACED BEHIND BARRIER/GUARDRAIL OR

OPPOSITE SHOULDER WHEN NEEDED, BUT AVOID RAMP GORES. WHEN

SEE QUEUE WARNING SYSTEM SPECIAL PROVISION OR RFP FOR DETAILS.

3-MILE QUEUE WARNING SYSTEM MESSAGES

MPH

LEGEND

PCMS

TRANSPORTABLE ATTENUATOR

SEQUENTIAL ARROW SIGN

RADAR SPEED DISPLAY SIGN (RSDS)

QWS TRAFFIC SENSOR

TRAFFIC SAFETY DRUM

TEMPORARY SIGN LOCATION (5 MILE)

TEMPORARY SIGN LOCATION

NOTE:

1. IF FEASIBLE, AVOID PLACING LANE CLOSURE OR LANE SHIFT TAPERS WITHIN OR IMMEDIATELY FOLLOWING HORIZONTAL CURVES.
2. DISTANCE INCREASES AS WORK AREA MOVES DOWNSTREAM.
3. IF USED, PLACE DEVICES TRANSVERSELY ACROSS CLOSED LANES.
4. ADD "TRUCKS LEAVING HIGHWAY" AND "TRUCKS ENTERING CONSTRUCTION VEHICLES FREQUENTLY EXIT AND ENTER INTO THE HIGHWAY" (W21-30, 48"x48", 5' HEIGHT) SIGNS 500' +/- PRIOR TO WHERE HOST VEHICLE WEIGHT 1500' +/-..
5. ADD "STATIONARY TRANSPORTABLE ATTENUATOR"
6. SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE INDICATED.
7. PLAN IS APPLICABLE TO LANE CLOSURES OF 3 DAYS OR LESS.
8. SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE INDICATED.
9. PLAN IS APPLICABLE TO LANE CLOSURES OF 3 DAYS OR LESS.
10. SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE INDICATED.

FREEWAY (2+ LANES): SINGLE RIGHT LANE CLOSURE
(MAINTAIN EXISTING SPEED LIMIT)

NOT TO SCALE

Washington State Department of Transportation

TYPICAL TRAFFIC CONTROL PLANS
1. If feasible, avoid placing lane closure or lane shift tapers within or immediately following horizontal curves.
2. Distance increases as work area moves downstream.
3. If used, place devices transversely across closed lanes at 45° +/- and 5' spacing at strategic locations.
4. Downstream taper optional across right lane. Downstream taper device spacing is 20'.
5. Add "TRUCKS LEAVING HIGHWAY" and "TRUCKS ENTERING HIGHWAY" (W21-30, 48"x48", 5' height) signs 500' +/- prior to where construction vehicles frequently exit and enter into the highway." (W21-30, 48"x48", 5' height) signs 500' +/- prior to where construction vehicles frequently exit and enter into the highway.
6. Queue location measured from here. Queue location is shown in actual number of lanes may vary.
7. Plan is applicable to lane closures of 3 days or less.
8. Bicycles prohibited through work zone. Consider providing detour, alternative route, or shuttle in high-use locations permitting permanent bicycle access.

FREEWAY (2+ LANES): SINGLE RIGHT LANE CLOSURE
(MAINTAIN EXISTING SPEED LIMIT)

NOT TO SCALE

NOTES:
1. If feasible, avoid placing lane closure or lane shift tapers within or immediately following horizontal curves.
2. Distance increases as work area moves downstream.
3. If used, place devices transversely across closed lanes at 45° +/- and 5' spacing at strategic locations.
4. Downstream taper optional across right lane. Downstream taper device spacing is 20'.
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TYPICAL TRAFFIC CONTROL PLANS

HAAPALA & LINTZ
F. LINTZ
S. HAAPALA

ON-RAMP LANE
14' MIN TEMP

NOT TO SCALE

OPEN RIGHT EXIT-RAMP DETAIL

CLOSED RIGHT EXIT-RAMP DETAIL

FREEWAY (2+ LANES): SINGLE RIGHT LANE CLOSURE (MAINTAIN EXISTING SPEED LIMIT)

NOT TO SCALE

CLOSED RIGHT ON-RAMP DETAIL

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

TYPICAL TRAFFIC CONTROL PLANS
NOTES:
1. FOR LEGEND, TABLES, AND ADDITIONAL NOTES, SEE TC107, SHEET 0B, 1A, OR 1B.
2. SEE DETOUR PLAN FOR ADDITIONAL RAMP CLOSURE DETOUR SIGNAGE.

FREEWAY (2+ LANES): SINGLE RIGHT LANE CLOSURE (MAINTAIN EXISTING SPEED LIMIT)

OPEN LEFT EXIT-RAMP DETAIL

CLOSED LEFT EXIT-RAMP DETAIL
LEFT EXIT-RAMPS ARE TO REMAIN OPEN

OPEN LEFT ON-RAMP DETAIL

CLOSED LEFT ON-RAMP DETAIL

AREA

WORK

AREA

WORK

NOT TO SCALE

1. SEE DETOUR PLAN FOR ADDITIONAL RAMP CLOSURE DETOUR SIGNAGE.

TYPICAL TRAFFIC CONTROL PLANS

Washington State
Department of Transportation
NOTES:

1. This plan is used in conjunction with 2-lane freeway single right lane closure traffic control plan (with PCMS in advance of lane closure taper removed).

2. See Queue Warning System (QWS) Special Provision or RFP for details.

3. Modifications to PCMS messages shall be accepted by the engineer.

4. Adjust QWS components to avoid conflicts with sequential arrow signs or other traffic control devices, narrow shoulders, and ramps.

5. Locate PCMSs per standard specification 1-10.3(3)C. PCMS may be placed on opposite shoulder but avoid ramp gores when located behind barrier/guardrail or within closure, transverse traffic drums optional.

6. If system fails, see 'Queue Warning System Failure Protocol' provision.

7. If traffic queues reach 5 miles, place additional PCMS at 6.5 miles. Relocate to remain 0.5+/- mile in advance of queue. Truck-mounted PCMS with 10+ inch characters acceptable. Transverse traffic safety drums optional. Remove PCMS when dissipating queues are less than 5 miles. Added PCMS message: Traffic Backups Present/Watch for Slow Traffic.

**Legend**

- Traffic safety drum
- Traffic sensor
- Sequential arrow sign
- PCMS: Portable Changeable Message Sign

6-MILE QUEUE WARNING SYSTEM

FREEWAY (2+ LANES): SINGLE RIGHT LANE CLOSURE

NOT TO SCALE

6-MILE QUEUE LOCATION

<table>
<thead>
<tr>
<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>1.0 TO 0.9</td>
<td>FF FF FF FF SL</td>
<td>FF FF FF FF SL</td>
<td>FF FF FF FF SL</td>
<td>FF FF FF FF SL</td>
</tr>
<tr>
<td>0.91 TO 1.9</td>
<td>FF FF FF SL</td>
<td>FF FF FF SL</td>
<td>FF FF FF SL</td>
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</tr>
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<td>1.91 TO 2.9</td>
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<td>2.91 TO 4.4</td>
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<td>FF FF FF SL</td>
<td>FF FF FF SL</td>
</tr>
<tr>
<td>4.41+</td>
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<td>FF FF FF SL</td>
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</tbody>
</table>

**Queue Location**

- **Traffic Sensors**
  - FF: Free Flow
  - FF: Free Flow
  - FF: Free Flow
  - FF: Free Flow

- **Traffic Condition**
  - FF: Free Flow
  - FF: Free Flow
  - FF: Free Flow
  - FF: Free Flow

- **Trigger Speed (mph)**
  - <35
  - 35+
  - FF
  - FF

- **Queue Location (miles)**
  - 4.5 MILES
  - 1.5+/- MILES
  - 1+/- MILE
  - 1+/- MILE

- **PCMS**
  - PORTABLE CHANGEABLE MESSAGE SIGN
  - SEQUENTIAL ARROW SIGN
  - TRAFFIC SENSOR
  - TRAFFIC SAFETY DRUM

**Typical Traffic Control Plans**

Washington State Department of Transportation

[Diagram of traffic control plan with PCMS locations and queue warning system provisions.]
NOTES:

1. IF FEASIBLE, AVOID PLACING LANE CLOSURE OR LANE SHIFT TAPERS WITHIN OR IMMEDIATELY FOLLOWING HORIZONTAL CURVES.
2. DISTANCE INCREASES AS WORK AREA MOVES DOWNSTREAM.
3. IF USED, PLACE DEVICES TRANSVERSELY ACROSS CLOSED LANES AT 45° +/- AND 5' SPACING AT STRATEGIC LOCATIONS.
4. DOWNSTREAM TAPER OPTIONAL ACROSS RIGHT LANE.
5. ADD "TRUCKS LEAVING HIGHWAY" AND "TRUCKS ENTERING HIGHWAY" (W21-30, 48"x48", 5' HEIGHT) SIGNS 500' +/- PRIOR TO WHERE CONSTRUCTION VEHICLES FREQUENTLY EXIT AND ENTER INTO THE HIGHWAY" (W21-30, 48"x48", 5' HEIGHT) SIGNS 500' +/- PRIOR TO WHERE
6. SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE INDICATED.
7. PLAN IS APPLICABLE TO LANE CLOSURES OF 3 DAYS OR LESS.
8. BICYCLES PROHIBITED THROUGH WORK ZONE CONSIDERING DETOUR ALTERNATIVE ROUTE OR SHUTLE IN HIGH-USE LOCATIONS PERMITTING PERMANENT BICYCLE ACCESS.

FREEWAY (2+ LANES): SINGLE RIGHT LANE CLOSURE (MAINTAIN EXISTING SPEED LIMIT)

NOT TO SCALE
3-MILE QUEUE WARNING SYSTEM MESSAGES

<table>
<thead>
<tr>
<th>TRAFFIC SPEEDS</th>
<th>PCMS 1</th>
<th>PCMS 2</th>
</tr>
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<tbody>
<tr>
<td>35+ MPH</td>
<td></td>
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</tr>
<tr>
<td>15' LANE CLOSURE MILES AHEAD</td>
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<td>35+ MPH &lt; 35 MPH</td>
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<tr>
<td>TRAFFIC BACKUPS PRESENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLOW OR STOPPED TRAFFIC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEXT 3 MILES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USE ALL LANES TURNS AT MERGE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION (AA)

FOR RAMP DETAILS:
SEE TC107, SHEET 2 AND 3.

LEGEND:

K = TEMPORARY SIGN LOCATION
H = TEMPORARY SIGN LOCATION (5 MIN HEIGHT)
S = TRAFFIC SAFETY DRUM
Q = QWS TRAFFIC SENSOR
R = RADAR SPEED DISPLAY SIGN (RSDS)
X = SEQUENTIAL ARROW SIGN
PCMS = PORTABLE CHANGEABLE MESSAGE SIGN

NOTES:

1. IF FEASIBLE AVOID PLACING LANE CLOSURE OR LANE SHIFT TAPERS WITHIN OR IMMEDIATELY FOLLOWING HORIZONTAL CURVES.
2. DISTANCE INCREASES AS WORK AREA MOVES DOWNSTREAM.
3. IF USED, PLACE DEVICES TRANSVERSELY ACROSS CLOSED LANES.
4. DOWNSTREAM TAPER OPTIONAL ACROSS RIGHT LANE.

FREEWAY (2+ LANES): SINGLE RIGHT LANE CLOSURE
(MAINTAIN EXISTING SPEED LIMIT)

NOT TO SCALE

Washington State Department of Transportation
TYPICAL TRAFFIC CONTROL PLANS

TC107

Plot 3

REGIONAL ADM.

REVISED DATE

FILE NAME: C:\Users\LintzF\OneDrive - Washington State Department of Transportation\Desktop\[Redacted], Date: [Redacted]. DGN
NOTES:

1. IF FEASIBLE, AVOID PLACING LANE CLOSURE OR LANE SHIFT TAPERS WITHIN OR IMMEDIATELY FOLLOWING HORIZONTAL CURVES.

2. DISTANCE INCREASES AS WORK AREA MOVES DOWNSTREAM.

3. IF USED, PLACE DEVICES TRANSVERSELY ACROSS CLOSED LANES AT 45° +/- AND 5' SPACING AT STRATEGIC LOCATIONS.

4. DOWNSTREAM TAPER OPTIONAL ACROSS RIGHT LANE AT 45° +/- AND 5' SPACING AT STRATEGIC LOCATIONS.

5. ADD "TRUCKS LEAVING HIGHWAY" AND "TRUCKS ENTERING HIGHWAY" (W21-30, 48"x48", 5' HEIGHT) SIGNS 500' +/- PRIOR TO WHERE HOST VEHICLE WEIGHT SIGN SPACING = X (1) VARIES; SEE NOTE 2.

6. SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE INDICATED.

7. PLAN IS APPLICABLE TO LANE CLOSURES OF 3 DAYS OR LESS.

8. BICYCLES PROHIBITED THROUGH WORK ZONE CONSIDERING PROVISIONS FOR ALTERNATIVE ROUTE OR SHUTTLE IN HIGH-USE LOCATIONS PERMITTING PERMANENT BICYCLE ACCESS.

FREEWAY (2+ LANES): SINGLE RIGHT LANE CLOSURE (MAINTAIN EXISTING SPEED LIMIT) NOT TO SCALE
FREEWAY (2+ LANES): SINGLE RIGHT LANE CLOSURE (MAINTAIN EXISTING SPEED LIMIT)

NOT TO SCALE

### OPEN RIGHT EXIT-RAMP DETAIL

- **Exit**
  - **Open**
  - **Closed**
- **Ramp Opening**
- **14'-1' Taper**
- **240' +/- Min. Tangent**
- **500' +/- Min. Tangent**

### CLOSED RIGHT EXIT-RAMP DETAIL

- **Closed**
- **Exit Ramp**
- **Reduce Traffic Safety Drums Spacing By Half**

### OPEN RIGHT PARALLEL ON-RAMP DETAIL

- **Open Right Parallel On-Ramp**
- **Close On-Ramp If Distance Is Not Available**

### CLOSED RIGHT ON-RAMP DETAIL

- **On-Ramp Closed**
- **See Detour Plan For Additional Ramp Closure Detour Signage.**

### NOTES:

1. For Legend, Tables, and Additional Notes see TC107, Sheet 0B, 0A, or 0B.
2. See Detour Plan For Additional Ramp Closure Detour Signage.
TYPICAL TRAFFIC CONTROL PLANS

1. For legend, tables, and additional notes, see TC107, sheet 0B, 1A, or 1B.
2. See detour plan for additional ramp closure detour signage.

NOTES:

- OPEN RIGHT EXIT-RAMP DETAIL
- CLOSED RIGHT EXIT-RAMP DETAIL
- OPEN RIGHT TAPERED ON-RAMP DETAIL
- CLOSED RIGHT ON-RAMP DETAIL

FREEWAY (2+ LANES): SINGLE RIGHT LANE CLOSURE (MAINTAIN EXISTING SPEED LIMIT)

NOT TO SCALE
NOTES:
1. FOR LEGEND, TABLES, AND ADDITIONAL NOTES; SEE TC107 SHEET 0B, 1A, OR 1B.
2. SEE DETOUR PLAN FOR ADDITIONAL RAMP CLOSURE DETOUR SIGNAGE.

CLOSED LEFT EXIT-RAMP DETAIL
LEFT EXIT-RAMPS ARE TO REMAIN OPEN

CLOSED LEFT ON-RAMP DETAIL

OPEN LEFT EXIT-RAMP DETAIL

OPEN LEFT ON-RAMP DETAIL

FREEWAY (2+ LANES): SINGLE RIGHT LANE CLOSURE (MAINTAIN EXISTING SPEED LIMIT)
NOT TO SCALE
**UPDATED WORK ZONE MICROSTATION CELLS:**

**IMPORTANT:** An extensive library of updated work zone cells is now available for work zone signs, detour signs (generic and route-specific), tables, locations, and symbols. Use these updated cells in all traffic control plans at minimum, replace all work zone tables in old traffic control plans. This Traffic Control Plan has been updated as of [July 2022] (already incorporated), but the freeway tables are modified to include 65 mph. Color and grayscale PDFs of work zone cells are available on the WSDOT Typical Traffic Control Plans webpage (https://wsdot.wa.gov/engineering-standards/all-manuals-and-standards/plane-library/wow-zcone-typical-traffic-control-templates.html).

**WSDOT STAFF:**

1. Cell libraries are automatically updated by CAE.
2. Manually update or replace Microstation cells at least annually. For technical support and guidance see [https://wsdot.wa.gov/engineering-standards/design-topics/engineering-applications/technical-support-guide](https://wsdot.wa.gov/engineering-standards/design-topics/engineering-applications/technical-support-guide). External links (e.g. Local Agencies, Design-Build Contractors, and Consultants):
4. Manually replace Microstation cells at least annually. For technical support and guidance see [https://wsdot.wa.gov/engineering-standards/design-topics/engineering-applications/technical-support-guide](https://wsdot.wa.gov/engineering-standards/design-topics/engineering-applications/technical-support-guide).

**PRINTING IN FULL COLOR OR GRAYSCALE (BLACK/WHITE):**

Even though the work zone cells are full color, CAE has programmed colors 224-236 (used for the work zone cells and the left edge line) to print in grayscale automatically when designers print in black/white. This is done for two reasons: (1) it will print out as a solid black/grey; DESIGNEER MUST FIRST UPDATE THEIR COLOR TABLE AND THEN REPLACE THE OLD WORK ZONE CELLS (or Update if the new work zone colors are already used).

#1. Update color table by selecting Settings -> Color Table. In the Color Table, select File -> Default and click Attach and Close.

#2. Use Plot 5 (if ramps on left side are present, at least annually). For technical support and guidance see [https://wsdot.wa.gov/engineering-standards/design-topics/engineering-applications/technical-support-guide](https://wsdot.wa.gov/engineering-standards/design-topics/engineering-applications/technical-support-guide).

**PLOT USAGE EXPLANATION:**

Which plots to use will be determined from work zone traffic analysis performed by the Regional Traffic Operations (see WSDOT Traffic Manual Sections 5-6 thru 5-9, [https://wsdot.wa.gov/publications/manuals/fulltext/M51-02/Chapter5.pdf](https://wsdot.wa.gov/publications/manuals/fulltext/M51-02/Chapter5.pdf)).

- **Minimal Traffic Quesing Expected:**
  - Use Plot 1 (6-Mile QWS)
  - Use Plot 5 and/or Plot 6 (if ramps on left side are present, at least annually)

- **Intermediate Quesing Expected up to 3 Miles:**
  - Use Plot 2 (if ramps on left side are present only)

- **Reoccuring/Multiple Quesing Expected up to 6 Miles (In Place Less Than 7 Days Typically):**
  - Use Plot 1 and/or Plot 2 (6-Mile QWS)
  - Use Plot 5 (if ramps on left side are present only)

- **Reoccuring/Multiple Quesing Expected up to 6 Miles (In Place More Than 7 Days Typically):**
  - Use Plot 1 (if ramps on left side are present only)

**DESIGNER NOTES:**

- A. Contact Regional Traffic Operations to determine if a queuing device is needed and which one is appropriate.

- B. Contact Regional Traffic Operations to determine rather Parallel (Sheet 2A) and/or Tapered (Sheet 2B) temporary on-ramps is used.

- C. Sheet 3 needed only when ramps are present on the left side of freeway.

**FREEWAY (2+ LANES): SINGLE RIGHT LANE CLOSURE (MAINTAIN EXISTING SPEED LIMIT)**

**FILE NAME:** I:\Engineering\OneDrive - Washington State Department of Transportation\Desktop\Work Zone TC\TC107F\TC107Fwy1RtLane.dgn

**DATE & TIME:** [3246 AM]

**4:00 PM**

**PLOTTED BY:** LINTZ

**DESIGNED BY:** HAAPALA & LINTZ

**ENTERED BY:** F. LINTZ

**CHECKED BY:** S. HAAPALA

**PROJECT FILE:** TC107F

**REGIONAL A.D.M.:** [2:30 PM]

**REVISION DATE:** 7/1/2022

**FILE REF NO.**

**OF:**

**CONTRACT NO.:**

**WASH STATE FED.AID PROJ.NO.:**

**WSDOT:** Washington State Department of Transportation

**DESIGNER NOTES:**

- D. These typical traffic control plans may be modified for site specific situations and/or WSDOT Region Traffic Operations standard practices.

- E. See MUTCD Table 6F-1 for additional temporary sign size information. Work zone signs are usually smaller than those used permanently.

- F. MUTCD 466-95-301 modifies MUTCD Table 6-1. "Recommended Advance Warning Sign Minimum Spacing." Sign spacing may be adjusted for field conditions based on engineering judgement. Default speed limits for freeway mainlines is 70 mph, for 3- and 4-lane segments is 60 mph, and for 2-lane segments is 50 mph. See MUTCD 6H-64 for guidance on freeway mainline sign spacing.

- G. Wherever position-based channelization devices, temporary signs should be mounted at 5' minimum. For MUTCD 6H-42 Note 4, a temporary "EXIT" sign shall be mounted 7 minimum when located in the temporary gore.

- H. The work zone design speed is typically the posted speed limit (work zone speed limit when in effect). For split speed limits (有限 SPEED LIMIT 70 TRUCKS 60), use the higher 70 mph for work zone design. For this Typical TCP, the work zone design speed is based on the existing posted speed limit for sign spacing, tapering, channelization device spacing, buffer, and roll ahead distances.

- I. Temporary channelization devices may be modified (vertical panel channelization devices prohibited). Traffic safety drums are recommended on freeway lane closure/lane shift ramps; however, on the freeway tangent sections 62" tall channelization devices, 36" traffic cones, or 28" traffic cones may be used. Warning lights on channelization devices is being phased out in Washington. Contact Region Traffic Operations for information regarding their standard practices.

- J. Maximum channelization device spacing table is based on MUTCD 466-95-301 and may ALWAYS be reduced.

- K. Taper lengths assume 12-foot lanes & rounded up based on channelization device spacing (to simplify setup for field crews). Acceptable to use calculated taper lengths per MUTCD TC6 3C & 4C, which is Guidance per MUTCD 6C-08, Paragraph 4. Reducing lane closure taper lengths farther is typically a last resort to make congestion delays last based on engineering judgement.

- L. Per MUTCD Section 6D.61, separate sequential arrow boards shall be used for each freeway lane closure taper. Sequential arrow boards shall NOT be used for lane shifts, ramp shifts, or on-ramp merges.

- M. Per MUTCD Section 6C.06, longitudinal buffer spaces are optional. Using longitudinal buffer spaces listed in MUTCD Table 6C-2 is recommended as best practice when feasible, but may be adjusted based on engineering judgement.

- N. The lateral buffer (transverse distance between open travel lanes and work area) is recommended as 2 feet on stationary freeway lane closures, but may be adjusted based on engineering judgement. Actual work area limits may be modified.

- O. The lateral buffer (transverse distance between open travel lanes and work area) is recommended as 2 feet on stationary freeway lane closures, but may be adjusted based on engineering judgement. Actual work area limits may be modified.

- P. WSDOT best practice is to place a portable attenuator (TA) in the closed lane adjacent to traffic in advance of the work area (well ahead distance provided) for lane closure. TAs may be added in all closed lanes. An additional TA of TAs may be added prior to each work crew entering a work area. Additional TA/set of TAs should be added prior to work areas following open temporary exit-ramps or on-ramps through the lane closure. Contact Region Traffic Operations for their standard practices.

- Q. Placing channelization devices transversely at (49°) and 5'-8' spacing is an effective strategy to move errant drivers back out of closed lanes.

- R. Per MUTCD Figure 6C-2, the downstream taper is optional across the reopened right lane. Eliminating the downstream taper allows construction vehicles (especially heavily loaded semi trucks) to accelerate straight out of the work area into the reopened RIGHT LANE with minimal traffic impacts. This maximizes work zone capacity and safety for all.

- S. A. 20'1 typical temporary exit-ramp is typical, but 15' is acceptable. The exit ramp travel way width may range from 12 to 16 feet.

- T. The on-ramp shift may occur across the speed on-ramp gore at "L/2", but verify the gore's cross-traverse is traversable, pavement thickness adequate, and catch basin & ITS boxes are traffic bearing tapers. This Typical TCP begins the ramp shift at the end of the marked gore for simplicity.

- U. Two types of temporary on-ramp configurations, parallel and tapered. Parallel on-ramp uses a L/2 per lane ramp shift, L/2 MIN acceleration pocket that may be extended when space allows, and L ramp merge taper based on MUTCD Guidance Figure 6H-44. However, a 1/2 ramp merge taper is allowable on engineering judgement, see WSDOT Design Manual Exhibit 1360-13b for guidance. Tapered on-ramps use a single 50:1 taper (for all speeds) from the end of the gore to the end of the merge, see WSDOT Design Manual Exhibit 1360-13a for guidance.

- V. To discourage work zone intrusion, device spacing is reduced by one-half approaching and at closed exit-ramps.

- W. Ramp detour signage is recommended for MUTCD 6C.09, but using alternative routes is acceptable. Contact Region Traffic Operations for their standard practices. Recommended to use route-specific detour signage for significant ramp closures. Work zone design "Detour",..." for generic and "Detour___..." for route-specific detour signs are available. USE ALTERNATIVE ROUTE sign is in the pink box above the applicable ramp plots.

- X. This typical TCP is not applicable when HOV-restricted or Express Toll Lane(s) are present. Contact Region Traffic Operations for additional guidance.