NOTES:
1. FOR LEGEND, TABLES, AND ADDITIONAL NOTES SEE TC04, SHEET 1.
2. ACTUAL NUMBER OF LANES MAY VARY
3. FOR RIGHT EXIT-RAMP AND RIGHT ON-RAMP DETAILS FOR A SINGLE LEFT LANE CLOSURE SEE TC03, SHEET 2.
NOTES:
1. FOR LEGEND TABLES AND ADDITIONAL NOTES: SEE TC104, 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 LEFT LANE CLOSURE: SEE TC103, SHEET 3.

MINIMUM RAMP SHIFT TAPER LENGTH = L/2

<table>
<thead>
<tr>
<th>TIME</th>
<th>SPEED (MPH)</th>
<th>L/2 (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>25(0.5)</td>
<td>480</td>
</tr>
</tbody>
</table>

MINIMUM RAMP ACCELERATION & MERGE LENGTH = L/2

<table>
<thead>
<tr>
<th>TIME</th>
<th>SPEED (MPH)</th>
<th>L/2 (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>L2 (1/4)</td>
<td>300</td>
</tr>
</tbody>
</table>

LEFT EXIT-RAMP DETAIL

FREEWAY (3+ LANES): DOUBLE LEFT LANE CLOSURE WITH NO LANE SHIFTS (EXISTING SPEED LIMIT MAINTAINED)

LOCATION NO. 104Fwy2LtLanes

DATE 3/18/2019 10:22:25 AM

PLOTTER BY: LINTZ
DESIGNED BY: HAAPALA & LINTZ
CHECKED BY: S. HAAPALA
PROJ. ENGR.:
REGIONAL ADM.

WASHINGTON STATE
DEPARTMENT OF TRANSPORTATION

TYPICAL TRAFFIC CONTROL PLANS

FILE NAME: C:\Users\LintzF\Desktop\Work Zone TCPs\104Fwy2LtLanes.dgn

FILE PATH: C:\Users\LintzF\Desktop\Work Zone TCPs\104Fwy2LtLanes.dgn

DATE: 3/18/2019

PROJECT NO.: TC104

FED.AID PROJ.NO.: 10

WASHINGTON STATE
DEPARTMENT OF TRANSPORTATION

TYPICAL TRAFFIC CONTROL PLANS
**Designer Notes:**

A. These traffic control plans are typical and may be modified for site specific situations and/or WSDOT region traffic practices.

B. The sign sizes shown are typical and meet minimum sizes required for MUTCD on freeways for temporary traffic control.

C. 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 100' +/- is acceptable. A minimum spacing of 500' +/- should be used on freeway mainlines only whenever. Advisory signs and radar speed displays signs can be spaced at 300' +/-.

D. Per WAC 468-95-300, all sign spacing may be adjusted to accommodate interchange ramps.

E. When positioned behind channelization devices, temporary signs should be mounted at 5' minimum.

F. 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 beyond the work zone sign for additional information on signaling active queue detection technology, contact Steve Haapala, 9a5s@w.dot.wa.gov or Fred Lintz, lintzf@w.dot.wa.gov. PCMs 3 is recommended; freeway lane closures do not require a PCM. PCMs 3 is optional to highlight exit- ramp closures.

G. When maintaining the existing speed limit (no work zone speed limit reductions), the work zone design speed is the posted speed limit for sign spacing, attenuators, channelization device spacing, buffer, and roll ahead distances.

H. Warning lights on channelization devices are optional; contact region traffic offices for their policy.

I. Channelization devices may be modified from those shown on these typical plans. PER MUTCD, the minimum required device on high-speed roadways is a 2' reflective cone.

J. Vertical panel channelization devices shall not be used.

K. Channelization device spacing table is based on WAC 468-95-301; however, device spacing may be reduced.

L. 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.

M. PER MUTCD FIGURE 6H-33, sequential arrow boards shall be used for all freeway lane closure ramps. Each lane closure shall have a separate sequential arrow board. Sequential arrow boards shall not be used for lane shifts, ramp shifts, or on on-ramp merges.

N. The "L" tangent between lane closure ramps may be reduced to "L" in tight geometric situations, but "L" should be obtained when possible.

O. 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).

P. The transverse buffer (lateral between travel lane and work area) is recommended as 2-foot but may be increased as desired.

Q. 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 existing operational temporary exit-ramps and open temporary on-ramps. Either protective vehicles or transportable attenuators can be placed in the adjacent closed lanes except the closed lane adjacent to traffic.

R. 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.

S. PER MUTCD FIGURE 6H-33, the reopening taper is optional.

T. A tapered temporary exit-ramp is typically used with a typical 20:1 taper rate.

U. The on-ramp shift can occur through the paved gore instead of the gore being closed for the cross-slope is traversible. Pavement thickness is adequate, catch basins with boxes are traffic bearing types.

V. A parallel temporary on-ramp is typically used. The parallel temporary on-ramp is based on WSDOT design manual, exhibit 106-8.13. 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 Module 6H-44 typical application is guidance per MUTCD Section 6H.01.

W. 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.

X. Actual work area limits can be modified.

Y. Ramp detour signage is recommended by MUTCD 6C.09. It is recommended to use route specific detour signage for significant ramp closures.

Z. 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 work route, include its direction. Maximize the shields, text size, and arrows to fit the 48"x48" sign.

AA. 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.

BB. This traffic control plan is not applicable when express toll lane(s) present for freeways with express toll lanes(s), contact region traffic office when developing plans.

**Freeway (3+ Lanes): Double Left Lane Closure with No Lane Shifts**

(existing speed limit maintained)

**NOT TO SCALE**