

## WORK ZONE BULLETIN #2/2017

### Late Merge (Zipper Merge) Traffic Accommodation Strategy

**\*\*The late merge is currently a trial strategy. Project Sponsors may choose to use this practice on projects that meet the criteria below. Details outlined in this bulletin may be modified in the future based on the results of the trials.\*\***

#### Summary

“Design Bulletin #85/2015”, now superseded, recognized the late merge (zipper merge) as an effective traffic accommodation strategy for work zones when applied under certain conditions. This Bulletin is being issued to present minor modifications to guidance for using the zipper merge strategy on provincial highways. It also serves to consolidate the strategy under Alberta Transportation’s work zone practices.

#### Background

The nature of work zones and lane closures are such that some level of delay is inevitable. However, when used appropriately, certain lane closure and merging strategies are able to improve traffic flow, reduce delays, and increase safety.

Merge situations tend to generate speed differentials between the open and closed lanes. This may lead to aggressive driving maneuvers, including drivers using a nearly empty closed lane to pass queued vehicles, before darting back into the open lane just before the merge point. Aggressive driving can increase the probability of work zone collisions and road rage.

Generally, most drivers have learned that when they see the first lane closure signs in a work zone, they slow down and move to the lane that will continue through the construction area. This is not always the most efficient and safe way for traffic to merge. The best traffic merging strategy is based on the prevailing traffic conditions.

#### Early Merge Strategy

The early merge strategy is most effective when there are low traffic volumes on the road combined with high average speeds.

The early merge strategy instructs drivers to move out of the closed lane well before the forced merge point, and before traffic starts to backup.

## **Late Merge (Zipper Merge) Strategy**

The late merge strategy is most effective when there are high traffic volumes on the road combined with low average speeds due to congestion.

The late merge strategy instructs drivers in the closed lane(s) to remain in their respective lane(s) until they reach the designated merge point, at which time they enter the open lane in alternate turns with the traffic already travelling in this lane.

Potential benefits of the implementation of a late merge strategy include the following:

- Reduced travel times
- Decreased number of work zone related incidents
- Reduced aggressive driving
- Increased traffic capacity through the work zone
- Shortened queue lengths before the work zones

## **Key Changes**

### *Merging Strategies for Multi-lane Highways*

The late merge strategy should be used on all lane closures (long duration and short duration) for multi-lane highway work zones, where the traffic volume is over the following threshold:

- Rural highways: 1000 vph in each direction for at least 2 hours per day
- Urban highways: 1500 vph in each direction for at least 2 hours a day

When traffic volumes are lower than the threshold, the early merge strategy shall be used.

### *Standard*

The layout shown on Drawing TCS-B-4.5 shall be used as a reference when developing the zipper merge signage strategy for the project.

When appropriate, the following alternate messages may be displayed on the portable changeable message signs in place of the one shown in Note 6 of the attached drawing.

- USE BOTH LANES / TO MERGE POINT
- STAY IN YOUR LANE / MERGE AHEAD
- USE BOTH LANES / SLOW TRAFFIC AHEAD

**Effective Date**

May 9, 2017

**Contact**

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Operations, Programming and Planning Branch, Alberta Transportation

**References**

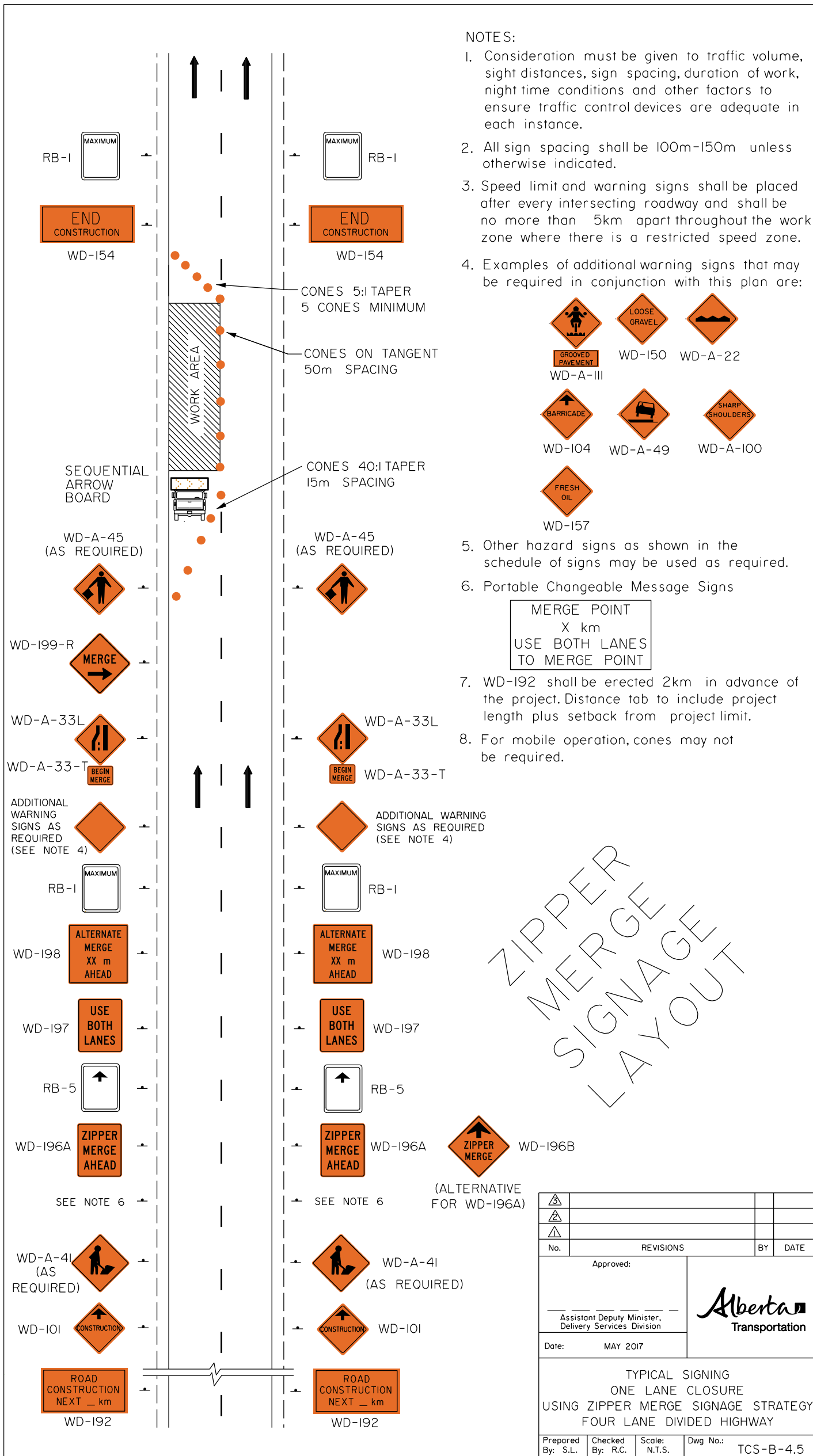
“Design Bulletin #85/2015” (superseded)

**Approved**

*Original signed  
by Tom Loo*

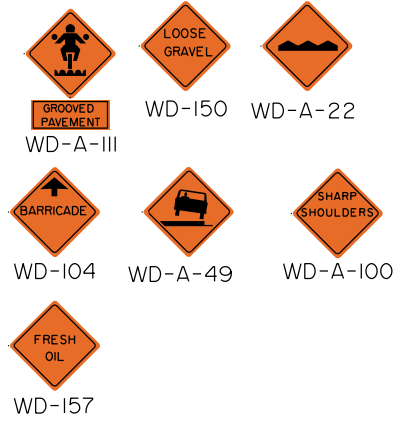
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Tom Loo  
Assistant Deputy Minister, Delivery Services Division



NOTES:


1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Speed limit and warning signs shall be placed after every intersecting roadway and shall be no more than 5km apart throughout the work zone where there is a restricted speed zone.
4. Examples of additional warning signs that may be required in conjunction with this plan are:



5. Other hazard signs as shown in the schedule of signs may be used as required.
6. Portable Changeable Message Signs  

MERGE POINT
X km
USE BOTH LANES TO MERGE POINT
7. WD-I92 shall be erected 2km in advance of the project. Distance tab to include project length plus setback from project limit.
8. For mobile operation, cones may not be required.

ZIPPER MERGE SIGNAGE LAYOUT

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▲				
▲				
No.	REVISIONS	BY	DATE	
Approved:				
Assistant Deputy Minister, Delivery Services Division				
Date: MAY 2017				
TYPICAL SIGNING ONE LANE CLOSURE USING ZIPPER MERGE SIGNAGE STRATEGY FOUR LANE DIVIDED HIGHWAY				
Prepared By: S.L.	Checked By: R.C.	Scale: N.T.S.	Dwg No.: TCS-B-4.5	