

APPENDIX B

WORK ZONE BULLETINS

TRAFFIC ACCOMMODATION IN URBAN WORK ZONES

WORK ZONE BULLETINS	
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WORK ZONE BULLETIN #1/2017

“Speed Fines Double” Signage

Summary

This Bulletin is issued to inform consultants, contractors, and department staff of the department’s practice for the use of “Speed Fines Double” signs.

The sign was first introduced in “Design Bulletin #41/2006” to remind motorists of legislated penalties for speeding in active work zones. The Design Bulletin was superseded in 2008 when Alberta Transportation’s *Traffic Accommodation in Work Zones* was released. While the manual describes how to use and place “Speed Fines Double” signs, it does not identify the situations where the signs should be applied. This bulletin provides a criteria as well as a revised signing sequence.

Key Changes

The existing Section 10. Double Fines in Work Zones of *Traffic Accommodation in Work Zones* is rescinded and replaced with the following:

Section 10. Double Fines in Work Zones

“Double Fine Begins” and “Double Fine Ends” signs are used to define the active work areas where the workers are actually present. Where there are no active work areas, these signs must be covered and/or removed. If the work zone uses transition speed zones, the “Double Fine” signs are placed in conjunction with the lowest work zone speed limit. Drawing TCS-B-4.4 shall be used as a reference when incorporating “Double Fine Begins” and “Double Fine Ends” signs into the project signage strategy.

The signs must be used for all stationary projects that are five days or more, where the highway speed limit is greater than 70 km/h when not under construction. The signs can be used for shorter duration projects, mobile work, or lower speed situations where practical.

In situations where the signs are not used but workers are present, motorists can still be issued double fines. The purpose of the signs is only to reinforce and remind drivers of existing legislation.

Effective Date

May 9, 2017

Contact

Elena Yin at (780) 415-4827

Operations, Programming and Planning Branch, Alberta Transportation

References

“Design Bulletin #41/2006” (superseded)

[Traffic Accommodation in Work Zones \(2008 edition\)](#)

Approved

*Original signed
by Tom Loo*

Tom Loo
Assistant Deputy Minister, Delivery Services Division

WORK ZONE BULLETIN #2/2017**Late Merge (Zipper Merge) Traffic Accommodation Strategy****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

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References

“Design Bulletin #85/2015” (superseded)

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WORK ZONE BULLETIN #3/2017

Transition Speed Zones

Summary

This Bulletin is issued to inform consultants, contractors, and department staff of the department's revised practice for the use of transition speeds in work zones. Transition speed zones give motorists the opportunity to gradually reduce their speed as they approach a work zone.

Key Changes

The existing Section 4.5 Transitional Speed Reductions in Alberta Transportation's *Traffic Accommodation in Work Zones* is rescinded and replaced with the following:

Section 4.5 Transitional Speed Reductions

Transition speeds are used on all long duration projects where the gazetted highway speed in advance of the Work Zone is greater than 30 km/h above the posted speed in the Work Zone. The transition speed can be either 70 or 80 km/h and shall be a minimum of 300 m in length. Drawings TCS-B-4.6A and TCS-B-4.6B shall be used as references when incorporating transition speed limit signs into a work zone signage strategy.

In most cases, transition speed zones will be applied only to the approach of the work zone and not to the exit. Motorist compliance to an exit transition speed zone is likely to be low if there are no longer any apparent hazards or risks. However, this method creates an area of differential speeds between the two directions of traffic. When considering whether to include a transition speed zone for motorists leaving the work zone, the roadway shall be evaluated based on the criteria outlined in Recommended Practices for Differential Speed Zones.

Effective Date

May 9, 2017

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Operations, Programming and Planning Branch, Alberta Transportation

References

[Traffic Accommodation in Work Zones \(2008 edition\)](#)

["Recommended Practices for Differential Speed Zones"](#)

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WORK ZONE BULLETIN #4/2017

Driver (Speed) Feedback Signs

Summary

This Bulletin is issued to inform consultants, contractors and department staff of the department's practice for the use of Driver (Speed) Feedback signs in work zones. The department's "Recommended Practices Driver (Speed) Feedback Signs" provide extensive operation and standard information about the signs as well as general recommendations for use. However, a need was identified to provide more specific guidance on the use of these signs for work zones.

Key Changes

Type of Project

Driver Feedback signs should be applied for work zone situations that have a potential to have speed-related issues based on the past history of similar projects. Examples of behaviors that may have existed in those projects include:

- Collisions or near misses on the approach to or in the work zone
- Aggressive braking by motorists (for example, at stop conditions or near queues)
- Low compliance to the work zone speed limit
- Worker or public complaints about safety

Sign Standard, Operation, and Placement

The sign standard, operation and general placement requirements are outlined in "Recommended Practices Driver (Speed) Feedback Signs". One Driver Feedback sign shall be placed on each approach to the work zone. When a work zone covers a large distance, placing more than one Driver Feedback sign for each approach can be considered.

When a transition speed limit is posted, the Driver Feedback sign shall be placed at least 150 metres downstream of the RB-1 sign that is associated with the speed transition zone. In such a case, it shall be placed prior to the lowest work zone speed limit. For projects without a transition speed limit, the Driver Feedback sign shall be placed at least 150 metres downstream of the RB-1 sign that displays the work zone speed limit. Where there is a flagperson present, the Driver Feedback sign shall be placed between the WD-A-45 sign and the RB-1 sign.

When the work zone speed limit is not in place, the RB-1 sign on the Driver Feedback sign shall be covered, and the electronic display shall be blank.

Effective Date

May 9, 2017

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References

["Recommended Practices Driver \(Speed\) Feedback Signs"](#)

Approved

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WORK ZONE BULLETIN #5/2017**Portable Rumble Strips****Summary**

This Bulletin is issued to inform consultants, contractors and department staff of the department's practice for the use of portable rumble strips in work zones. Portable rumble strips can be installed and removed from the roadway easily without any anchoring such as adhesives or nails. They provide additional warning cues to motorists through their sound and vibration. Portable rumble strips remind motorists of the need for full attention and caution through the work zone due to the potential for hazards and risks.

Key Changes*Type of Project*

Portable rumble strips should be applied for short or long duration projects where motorists are approaching a stop condition, such as one controlled by a flagperson, or where "stop and go" conditions are expected due to vehicle queues. Their use should be limited to stationary projects in rural locations where the highway gazetted speed is 100 or 110 km/h when not under construction. Examples of projects where they might be used include roadway grading, widening or bridge repair.

Rumble strips may not be used on a project if there is concern about noise due to the proximity of residences. Factors to be considered in such a case include distance to the residences, project duration, expected set-up and takedown of the rumble strips and the work zone noise level. Often, rumble strips will not be a significant noise concern compared to the noise generated by construction work activities.

Standard and Placement

Portable rumble strips are applied perpendicular to the roadway, from the centerline to the near side of the painted shoulder line, on each approach to the work zone. One set of three rumble strips is placed for each approach. A WD-A-106B sign is installed to warn motorists of the rumble strips. Portable rumble strips shall not be applied on sharp horizontal or vertical curves or within intersections.

Drawings TCS-B-4.7A, TCS-B-4.7B, TCS-B-4.7C, and TCS-B-4.7D shall be used as references when incorporating portable rumble strips into a project's traffic control strategy. When a flagperson or portable traffic signal is used to control and direct traffic, rumble strips shall be placed in advance of them to alert drivers that may not have noticed the approaching traffic control. When rumble strips are applied in high volume or other situations where queue formation and "stop and go" conditions are expected, rumble strips shall be placed well in advance of the work zone, in conjunction with the WD-A-41 sign.

Rumble strip spacing should be varied based on vehicle speed. The spacing between each rumble strip should be 3.0 m for speed limits of 60 km/h or lower, 4.5 m for speed limits between 61 and 90 km/h, and 6.0 m for speed limits higher than 90 km/h. This will ensure that the rumble strips maintain the desirable noise and vibration level.

In some cases, motorists may attempt to bypass the rumble strips by going around on the shoulder. One method to mitigate this issue would be to place delineators on the shoulder to limit the available width. Depending on shoulder width and rumble strip size, another method would be to apply an additional rumble strip across the shoulder.

Use

Portable rumble strips shall be removed when the work zone is no longer active, and there are no hazards present in the travelled way or shoulder.

Effective Date

May 9, 2017

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Operations, Programming and Planning Branch, Alberta Transportation

References

N/A

Approved

*Original signed
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WORK ZONE BULLETIN #6/2017

Gateway Assemblies

Summary

This Bulletin is issued to inform consultants, contractors and department staff of the department's practice for the use of gateway assemblies in work zones. These signs are a new addition to the department's sign catalogue and are intended to enhance motorist awareness by providing a visual cue that indicates they are entering a work zone.

Key Changes

Type of Project

Gateway assemblies should be placed at rural work zone locations that require a speed reduction and have operating speeds of 110 or 100 km/h on the approach. Their use is limited to long duration projects of fourteen days or more on highways within the Level 1 and Level 2 service classifications. Examples of projects where they might be used include roadway grading, widening, or bridge repair.

If used on a carryover project that goes from one construction season to the next, gateway assemblies shall be removed during winter shutdown to allow for snow removal.

Sign Standard and Placement

Gateway assemblies are composed of three 240 mm x 3600 mm rectangular boards that are mounted to wood posts as shown in Drawing TCS-B-4.8A. One side of the boards has black and orange diagonal stripes and the other has black and white diagonal stripes. The size of the wood posts and any breakaway modifications, if needed, shall follow Chapter H-8 of Alberta Transportation's *Roadside Design Guide*.

Gateway assemblies are applied in pairs, with one assembly placed on each side of the roadway starting at the outer edge of the shoulder. For some highways, there may be a need to increase the distance between the edge of pavement and the assembly to accommodate wide loads. This distance should be determined using site-specific judgment but shall not exceed 2 m from the outer edge of the shoulder.

One pair of gateway assemblies is placed at each entrance to the work zone. The orange and black stripes face entering traffic while the black and white stripes face exiting traffic. The WD-101 sign is mounted to the entrance gateway assembly as shown in Drawing TCS-B-4.8B for undivided highways and Drawing TCS-B-4.8C for divided highways. For divided highways, exiting vehicles will not be faced with a gateway assembly. Gateway assemblies are placed only on the work zone thoroughfare and not on any ramps or intersecting roads.

Gateway assemblies are an enhancement to existing traffic control devices for work zones. Drawing TCS-B-4.8D shall be used as a reference when incorporating gateway assemblies into a project signage strategy.

Effective Date

May 9, 2017

Contact

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Operations, Programming and Planning Branch, Alberta Transportation

References

[“Chapter H-8 Signs, Supports, and Poles”](#) in Alberta Transportation’s [Roadside Design Guide](#)

Approved

*Original signed
by Tom Loo*

Tom Loo
Assistant Deputy Minister, Delivery Services Division

WORK ZONE BULLETIN #7/2017**“Workers Present When Flashing” Signs****Summary**

This Bulletin is issued to inform consultants, contractors and department staff of the department’s practice for the use of “Workers Present When Flashing” signs.

These signs are a new addition to the department’s sign catalogue and are intended to provide real-time information to motorists about the presence of workers in a construction zone. The signs are equipped with two amber beacons that will flash continuously when workers are present to warn motorists of the increased risk and the higher penalties for speed limit violations.

Key Changes*Type of Project*

“Workers Present When Flashing” signs should be applied for stationary long duration projects that are five days or more, where workers are present on the road surface including the shoulders, and there is a speed limit reduction. Examples of projects where they might be used include roadway grading, widening, or bridge repair.

Sign Standard and Placement

“Workers Present When Flashing” signs are 1200 x 600 mm orange warning signs. Two 200 mm amber LED beacons are attached to the top of the sign as shown in Drawing WD-156. These lights are warning beacons that flash continuously. Flash rate and other operational considerations shall follow “Recommended Practices for Beacons”. The LED specifications shall be in accordance with “Design Bulletin #32/2006”.

“Workers Present When Flashing” signs are placed between the “Maximum Speed Limit Ahead” (RB-5) sign and the “Speed Limit” (RB-1) sign. Drawing TCS-B-4.9 shall be used as a reference when incorporating the “Workers Present When Flashing” sign into the project signage strategy. The sign is placed near the start of the lowest speed limit zone. It is not placed in advance of a transition speed zone.

Use

The amber beacons must be turned off when workers are no longer present in order to maintain sign effectiveness. “Speed Fines Double” signs, if applied, shall be covered when the amber beacons are turned off. Use of “Speed Fines Double” signs shall be in accordance with “Work Zone Bulletin #3/2017”. When these signs are applied in conjunction with the “Workers Present When Flashing” sign, the signs will reinforce the

effect that the workers' presence has on speed limit violations.

Effective Date

May 9, 2017

Contact

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Operations, Programming and Planning Branch, Alberta Transportation

References

["Recommended Practices for Beacons"](#)

["Design Bulletin #32/2006"](#)

"Work Zone Bulletin #3/2017"

Approved

*Original signed
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WORKERS PRESENT WHEN FLASHING

WD-156



LETTERING: 102mm SERIES C

SECTION REFERENCE			
DIMENSIONS (mm)		1200 X 600	
ENLARGEMENT FACTOR		8 X	
COLOUR			
BACKGROUND	BORDER	MESSAGE / SYMBOL	
ORANGE	BLACK	BLACK	

WORK ZONE BULLETIN #8/2017

Alternatives to Manual Flagging

Summary

This Bulletin is issued to inform consultants, contractors and department staff of the department's standards for Automated Flagger Assistance Devices (AFADs) and Portable Traffic Signals. Products that meet these specifications can be used on provincial highways as an alternative to manual flagging, where appropriate for roadway and traffic characteristics. AFADs must also go through the Product Evaluation Process and should not be used until they have been added to Alberta Transportation's Products List.

AFADs mimic the manual flagging process by indicating to motorists to stop or slow down in a work zone. Alberta Transportation allows both "STOP/SLOW" AFADs, which switch between signage to provide traffic control, and Red/Yellow Signal AFADs. They reduce flagger exposure to traffic, as the flagger can shift between the device's two modes from a protected area of the work zone including outside the travelled way.

Portable Traffic Signals control traffic flow using standard traffic signal heads attached to a moveable trailer. These devices do not require a flagger but operate using either fixed time or actuated design.

Key Changes

Use

The use of AFADs and Portable Traffic Signals shall only occur in work zones where traffic is being limited to a single lane.

Standard for AFADs

The following requirements apply to both STOP/SLOW AFADs and Red/Yellow Signal AFADs:

- They shall meet the MASH TL-3 standards for crashworthiness.
- They shall be illuminated by overhead lighting if used in hours of darkness.
- They shall be operated by flaggers that have received training for the AFAD. These flaggers shall also be certified in manual flagging in case of device failure.
- Flaggers must remain on the worksite and have complete sightlines to the AFAD(s) that they are operating at all times.

STOP/SLOW AFADs

STOP/SLOW AFADs use either digital signage or mechanical flipping to display the sign modes of “stop” and “slow”. The sign must be octagonal in shape, with minimum dimensions of 600 mm by 600 mm. The “stop” mode shall display a standard RB-1 sign, with a red background and white lettering. In the “slow” mode, a diamond shaped warning sign with an orange background and the black text “SLOW” shall be displayed. If the AFAD uses a physical sign with mechanical flipping, it shall have a Type IX retro-reflectivity as well as a locking mechanism to ensure it stays in place.

Warning beacon(s) that can display red and yellow lights shall be attached to the top of the sign to further attract motorist attention. The red warning beacon shall face traffic and flash continuously during the “stop” mode. The yellow beacon shall face traffic and flash continuously during the “slow” mode. The beacons must meet the LED specifications outlined in Design Bulletin #32/2006. Flash rate and other operational considerations shall follow “Recommended Practices for Beacons”.

The sign shall be mounted on a support such as a trailer, with the bottom of the sign being at least 1.8 metres from the pavement. STOP/SLOW AFADs shall include a gate arm that descends on the stop mode, with a length that is sufficient to extend at least two-thirds across the closed lane. The gate arm shall have full retro-reflectivity, with alternating red and white stripes that are each 400 mm in length. The gate arm shall have a vertical profile of at least 100 mm.

A “WAIT ON STOP” sign and a “GO ON SLOW” sign may be included with the AFAD to provide motorists with further direction on the expected behavior. These signs are regulatory, with a white background and black lettering.

Red/Yellow Signal AFADs

Red/Yellow Signal AFADs are composed of a signal head, support structure, and gate. The signal head has two circular lenses with a 300 mm diameter. In the “stop” mode, the top lens will illuminate with a steady red. In the “slow” mode, the other lens shall display flashing yellow. A change interval, displaying steady yellow, shall be provided for at least 3 seconds between the “stop” and “slow” modes. The lenses must meet the LED specifications outlined in “Design Bulletin #32/2006”.

The signal head shall be mounted on a support such as a trailer, with the bottom of the sign being at least 2.1 metres from the pavement. Red/Yellow Signal AFADs shall include a gate arm that descends on the stop mode, with a length that is sufficient to extend at least two-thirds across the closed lane. The gate arm shall have full retro-reflectivity, with alternating red and white stripes that are each 400 mm in length. The gates shall have a vertical profile of at least 100 mm.

A regulatory sign with black lettering and a white background that indicates “STOP HERE ON RED” with an arrow pointing where motorists should stop should be provided in front of or on the AFAD.

Standard for Portable Traffic Signals

Portable traffic signals use conventional traffic signal heads, with three 300 mm diameter lenses for displaying red, yellow, and green lights. They use at least two traffic signal heads, with one mounted overhead and the other mounted to the side of a moveable structure. The battery source must be operable within a temperature range of -40 to 40 degrees Celsius and shall be able to provide sufficient light intensity.

Portable traffic signals have the operational characteristics of regular traffic signals systems. This includes but is not limited to:

- Presence of a conflict monitor to detect system failure, including the activation of simultaneous green on both approaches.
- Programming to switch to flashing red in the event of device malfunction
- Ability to provide notification of low power

Effective Date

Dec. 4, 2017

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References

["Design Bulletin #32/2006"](#)

["Recommended Practices for Beacons"](#)

[Products List](#)

Approved

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WORK ZONE BULLETIN #9/2017

Police Enforcement

Summary

When a work zone speed limit is lower than the highway gazetted speed, dangerous situations can be created by motorists who do not comply. The reduced motorist reaction time and the speed differential increase the risk to both workers and other drivers. Enforcement of the work zone speed limit and other traffic laws can significantly improve compliance and safety through the construction zone.

The Alberta government has a contract with the Royal Canadian Mounted Police (RCMP) to complete traffic enforcement on provincial highways. As photo radar is currently prohibited on provincial highways, traffic enforcement is limited by the availability of police officers. Extensive and continuous enforcement at all highway work zone locations is typically not possible. As well, in some cases, enforcement may not have a significant benefit. Due to these factors, police officer use should be reserved for work zones that have obvious operational problems. The purpose of this Bulletin is to describe the situations where enforcement should be considered as well as to provide information on the procedure to request and implement work zone enforcement.

Key Changes

Type of Project

Typically, traffic enforcement in provincial highway work zones takes a reactive approach because of budget and labour constraints. Proper work zone design including appropriate speed limits, barrier protection, and enhanced traffic control devices are the first resource for addressing safety issues. More extensive speed management techniques shall be considered when at least one of the following behaviors is observed:

- Collisions or near misses on the approach to or in the work zone
- Aggressive braking by motorists (for example, at stop conditions or near queues)
- Low compliance to the work zone speed limit
- Worker or public complaints about safety

Procedure for Requesting Traffic Enforcement

1. Once safety issues have been identified and enforcement determined to be the best option, the Department should contact the RCMP. The Department should provide the RCMP with information about the work zone including the location, work zone design, desired level of enforcement and current safety hazards.

2. The RCMP will advise the extent and duration of enforcement that can be provided based on the availability of their officers.
3. The Department and RCMP will work together to finalize the enforcement type and hours/days of enforcement throughout the project.

An ideal enforcement strategy will address the hazards and issues in the specific work zone. Proper communication between all parties is important to ensure that the best use of available resources is made.

Enforcement Type and Duration

Examples of work zone enforcement types include stationary enforcement, active enforcement, circulating enforcement, and enforcement packs. When choosing the enforcement type to be used in a work zone, police availability, work zone design, and the effect on compliance should be considered. Work zones are physically constrained and by their nature, may prohibit the safe use of some forms of enforcement. When planning an enforcement strategy, the approximate locations where RCMP will be stationed should be established beforehand.

Duration of enforcement is similarly limited by police availability. Enforcement may be planned to target specific time periods where workers are exposed to greater risk, such as when completing a particular activity, during peak hour traffic, or during nighttime hours. The RCMP will be ultimately responsible for choosing the enforcement type and duration.

Effective Date

May 9, 2017

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References

N/A

Approved

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WORK ZONE BULLETIN #10/2017

Lane Rental and Speed Reduction Charges

Summary

Lane rental and speed reduction charges may be included in the Special Provisions of a construction or maintenance contract. Lane rental is the practice of charging the contractor for closing a lane to traffic. Speed reduction charges follow the same principle by placing a price on lowering the speed limits in a work zone.

The purpose of these charges is to encourage the contractor to complete a project in a way that limits highway user costs. By introducing a price on lane closures and speed reductions, contractors will place a greater consideration on the delay and inconvenience to highway users when designing their work plan.

Key Changes

Type of Project

Lane rental or speed reduction charges should be considered for projects on high volume highways or other projects that are likely to result in substantial highway user costs. The Project Administrator and Regional Safety Officer should be consulted when determining whether a project falls within these categories.

Lane Rental Charges

Contractors are typically charged for using a lane by duration and/or distance. The lane rental scheme should be developed based on a project's individual characteristics and its effect on highway users. Time-of-day is a significant consideration as lane closures will have the most negative impact when the highest traffic volume is on the road, such as during peak commuting hours. When statutory holidays are expected to fall during a project, the holiday and its associated weekend may also receive special consideration.

The units of time and distance can vary between projects. When lane rental is included in a project, the contract should identify how rounding will take place when the time/distance falls between increments.

Table 1 below provides an example of how lane rental charges may be applied. **It is provided as a sample only** as lane rental charges should be tailored to specific projects.

TABLE 1-EXAMPLE OF LANE RENTAL CHARGES BASED ON TIME-OF-DAY

Time Period	Shoulder Only	1 Lane	2+ Lanes
Monday – Friday 6:00 AM to 9:00 AM & 3:00 PM to 6:00 PM	\$500/km/hour	No Closures Permitted	
Monday – Friday 9:00 AM to 3:00 PM	\$500/km/hour	\$3,000/km/hour	\$5,000/km/hour
Weekend 6:00 PM Friday – 6:00 AM Monday	\$500/km/hour	\$1,000/km/hour	\$1,000/km/hour
Long Weekend *applies and takes precedence over the above time periods only when Monday is a statutory holiday 3:00 PM Friday to 6:00 AM Tuesday	No Closures Permitted		

Speed Reduction Charges

A speed reduction charge introduces a fee when the speed limit is lowered past a specified threshold. Speed reduction charges can be implemented in several ways, either individually or in conjunction with each other. These methods include but are not limited to the ones below:

- Define a straight charge of \$/km/day
- Identify the maximum cumulative kilometres a speed reduction can be in place at any given time over the entire project length. Charge the contractor for every kilometre over the maximum.
- Establish a maximum length that any single reduced speed zone can be in the project. Charge the contractor by kilometre for any reduced speed zone that exceeds the maximum length.
- Identify that a project must be staged in such a way that a stage cannot be started until the prior stage has been completed to a point that the gazetted speed can be re-established.

When both lane rental and speed reduction charges are used on a project, the same pricing scheme may be applied.

Effective Date

May 9, 2017

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Operations, Programming and Planning Branch, Alberta Transportation

References

N/A

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WORK ZONE BULLETIN #11/2017

Smart Work Zones

Summary

Smart Work Zones apply Intelligent Transportation Systems (ITS) to provide real-time information and warnings to motorists prior to or within the work zone. Through the integrated use of sensors, computers and communication channels, Smart Work Zones can reduce delays and improve safety on provincial highways.

Alberta Transportation already regularly uses several forms of ITS technology for work zones. Driver (Speed) Feedback signs, as addressed in Work Zone Bulletin #4, encourage drivers to self-correct by informing them of their speed in relation to the posted speed limit. On the communication side, 511Alberta is a web-based application that assists drivers with their route planning by identifying work zone locations and characteristics.

The purpose of this bulletin is to recommend additional technologies and identify the scenarios where they are best applied. The Key Changes below apply only to these new technologies that are being introduced in this bulletin. The integration of these Smart Work Zone technologies is expected to have several benefits for work zones including:

- Improved traffic flow through the work zone
- Enhanced safety for motorists and workers
- Better motorist response to hazards
- Reduced driver frustration

Key Changes

Type of Project

The use of Smart Work Zone technologies shall be limited to high volume provincial highways that are located in urban and urban fringe areas. At these locations, Smart Work Zones will have the most benefit due to the higher likelihood of congestion and the availability of alternate routes. Generally, high volume can be defined as equal to or greater than 20,000 vehicles per day. The benefits of Smart Work Zones will start to be substantial when the traffic volume reaches or exceeds 50,000 vehicles per day.

The Project Sponsor shall be ultimately responsible for determining whether a work zone should utilize Smart Work Zone applications. The Project Sponsor shall consider which type(s) of ITS technologies are most beneficial based on the recommendations below.

Where the work zone falls near or within a municipality, the municipality must be consulted in case of impacts on local roads. If Smart Work Zone technologies will be included on a project, they must be incorporated within the Special Provisions.

Smart Work Zone Applications

Table 1 provides Smart Work Zone applications that are recommended for use on provincial highways. The Project Sponsor may choose to apply one or multiple technologies. By providing information that reflects current conditions, motorists can make decisions that can enhance the safety, travel time or capacity of the highway. The primary method for communicating the information is through Variable Message Signs (VMS) that are posted at the highway work zone location. However, the Project Sponsor may also want to consider having a communication strategy that relays the real-time information through Traveler Advisory (TA) methods. TA methods include any existing communication channels that are not at the worksite such as 511 Alberta, commercial radio stations and other online media.

Table 1: Recommended Smart Work Zone Applications

<i>Application</i>	<i>Display</i>	<i>Definition</i>	<i>Conditions for Use</i>
Travel Time and delay estimation	VMS TA	Provides motorists with an estimate of the travel time and delays along the highway.	<ul style="list-style-type: none"> • Congestion is an issue • Delays/travel times are variable
Alternate route advisory	VMS TA	Suggests an alternate route for motorists. May provide motorists with an estimate of the travel time through the work zone compared to the travel time through the alternate route	<ul style="list-style-type: none"> • Congestion is an issue • An alternate route is available
Dynamic Merging Strategies	VMS	Displays messages indicating whether a zipper or early merge should be used depending on current traffic volumes.	<ul style="list-style-type: none"> • The highway traffic volume fluctuates significantly throughout the day, such that the zipper merge is only beneficial in a few hours of the work period. • Refer to Work Zone Bulletin #2 for the use of the zipper merge strategy.
Queue Warning	VMS	Warns motorists of the need to slow down due to an approaching queue	<ul style="list-style-type: none"> • Congestion is an issue. • There is a high speed on the approach.

Adapted from MassDOT Smart Work Zone Design Standards

Other considerations

Smart Work Zone applications are not limited to the ones outlined in Table 1. There are many emerging technologies that may be applicable to work zones. The use of such technologies may be considered if it is likely to provide significant benefit to the project.

One example of an ITS solution that may be considered for work zones in the future is Variable Speed Limit (VSL) signs. These signs can be used to deal with congestion by displaying regulatory or advisory speeds that can be changed depending on current traffic conditions.

Effective Date

September 11th, 2017

Contact

Elena Yin at (780) 415-4827

Operations, Programming and Planning Branch, Alberta Transportation

References

Work Zone Bulletin #4

[511Alberta](#)

Approved

Original signed

by Tom Loo

Tom Loo
Assistant Deputy Minister, Delivery Services Division

WORK ZONE BULLETIN #12/2018**Digital Speed Limit Signs****Summary**

Construction activities on provincial highways pose a challenge to worker and motorist safety due to the high travelling speeds on the facility. Temporary speed reductions are considered warranted when the work activities create significant hazards in the roadway environment or put workers into high-risk situations. When neither condition exists, motorist compliance will be low unless there is extensive police enforcement. For this reason, it is critical to only maintain speed reductions during time periods and along roadway segments where the hazards and/or risks to workers exist.

Currently, contractors are required to cover or remove speed limit signs when the reduced speed limit is no longer warranted. This makes driver compliance more likely and allows the roadway to operate at a higher capacity. However, when a work zone sees frequent speed limit changes, covering or removing the signs may become an onerous task. In some cases, speed limit signs that are inappropriate for roadway conditions have been left up on provincial highways.

Digital Speed Limit signs use an electronic message board to display the regulatory speed limit within the work zone. The speed limits displayed on the board can be changed remotely when the work activity or work zone design changes. This is expected to result in several benefits:

- Increased flexibility in work zone speed limit changes
- Improved contractor compliance in displaying the appropriate speed limit
- Reduced worker exposure during work zone set-up and take-down
- Fewer public complaints about unsuitable speed limits

Digital Speed Limit signs should not be confused with Variable Speed Limit signs, which are an ITS application that is discussed in Work Zone Bulletin #11. Digital Speed Limit signs do not change the existing practice of setting work zone speed limits. They simply provide an alternative method of displaying these speed limits.

Key Changes*Type of Project*

Digital Speed Limit signs should be considered for projects where the work zone will frequently warrant changes in the posted speed limits based on Section 9.1.3 in Alberta Transportation's *Traffic Accommodation in Work Zones*. Their use should be limited to

stationary, long duration projects where the gazetted highway speed is 100 or 110 km/h. The project duration must be long enough to offset the greater expense and work required to set up the Digital Speed Limit signs. This is likely to be a project that is two months or greater. The Project Sponsor is responsible to determine whether a project would benefit from Digital Speed Limit signs.

Sign Standard and Placement

Digital Speed Limit signs shall resemble the static sign that they are replacing as shown in Drawing TCS-B-4.10. They are regulatory signs with digital and static components that have a black message on a white background. For two-lane highways, the sign is 750 mm by 900 mm, and for multi-lane highways, the sign is 900 mm by 1200 mm. All static sections of the sign shall have a retroreflectivity of ASTM Type III or Type IV. The digital component of the sign shall have sufficient brightness to be visible during hours of daylight and darkness. Digital Speed Limit signs must have the capability to be changed remotely.

When Digital Speed Limit signs are incorporated into a signage strategy, both “Maximum Speed (RB-1) signs and “Maximum Speed Ahead” (RB-5) signs shall be digital. This includes the signs used for the work zone speed zone and the transition speed zone. Placement of Digital Speed Limit signs shall follow the same scheme as their corresponding static sign.

Use

Prior to the start of a construction project, the Project Manager (usually, the consultant) shall fill out an “Order Fixing Maximum Speed Limits”, indicating the expected speed limits that will be used in the construction project. The Project Manager shall also note that Digital Speed Limit signs are being used in place of static signs. Throughout the project, the contractor is responsible for maintaining a daily log of speed changes that includes the time, posted speed limit and physical locations of the signs. Record-keeping is critical for upholding speed enforcement as well as providing information if a collision occurs.

Effective Date

April 26, 2018

Contact

Elena Yin at (780) 415-4827

Operations, Programming and Planning Branch, Alberta Transportation

References

Work Zone Bulletin #11

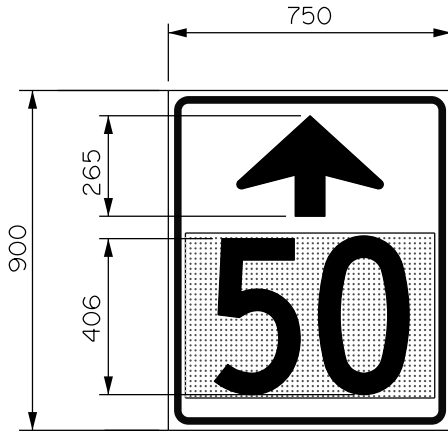
[Traffic Accommodation in Work Zones](#)

Approved

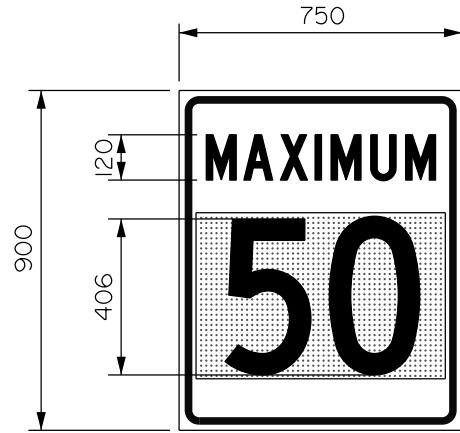
*Original signed
by Tom Loo*

Tom Loo
Assistant Deputy Minister, Delivery Services Division

TWO-LANE HIGHWAY

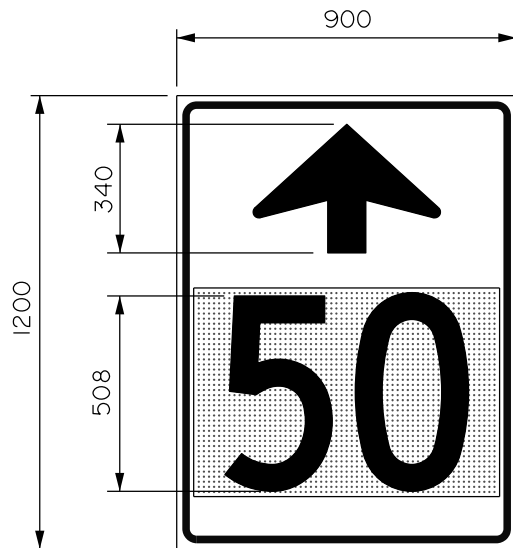


RB-5

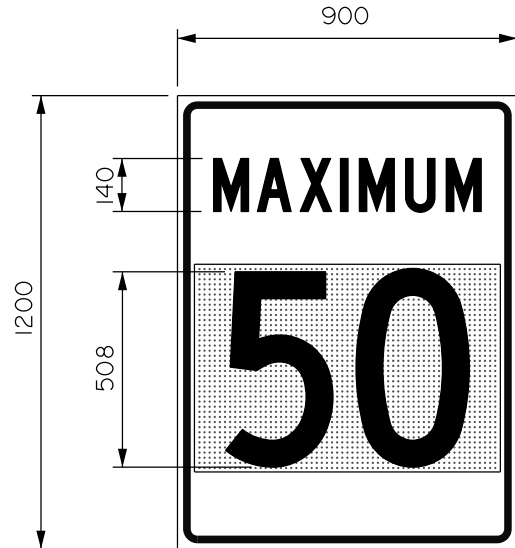


RB-1

MULTI-LANE HIGHWAY



RB-5



RB-1

LETTERING: SERIES C

BORDER: 20mm with 38mm corner radius.

MARGINS: 15mm

STATIC SIGN COLOUR:
Message-white, Border-black, Background-white

DIGITAL BOARD COLOUR:
Number-black, Background-white

STATIC SIGN FACE:
ASTM Type III or IV High intensity retro-reflective sheeting

Note: All dimensions are in mm unless otherwise specified.

No.	REVISIONS	BY	DATE
Approved:			
Assistant Deputy Minister, Delivery Services Division			
Date:	JULY 2017		
DIGITAL SPEED LIMITS			
Prepared By: S.L.	Checked By: N.C.	Scale: N.T.S.	Dwg No.: TCS-B-4.10