	<b>PLACEMENT OF SIGNS</b>		<i>Issued: MAY 2005</i>
			<i>Revised: AUG 2017</i>
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<b>RECOMMENDED PRACTICES</b>	PART	HIGHWAY SIGNS	
	SECTION	GENERAL	
	SUB-SECTION		

## General

Proper positioning of signs is an important element in the overall control of traffic within a roadway network. When carefully planned and applied, it significantly improves the driver's ability to navigate through the network. Conversely, when neglected it may contribute to operational and safety problems.

For example, a Stop sign placed too far from an intersection may cause a driver to enter the intersection without stopping, or a guide sign placed too far from the road may affect the driver's ability to read the navigational message.

Drivers are very limited in how many places they can look as they drive along the roadway at speeds of 10 metres to 30 metres every second (about 40 km/h to 110 km/h). At higher speeds, reacting to a sign or a device that appears unexpectedly takes longer than to a sign that is placed in a standard manner.

Consequently, it is important to standardize the position of signs so drivers can quickly locate them and spend more time reading the signs.

Standardization of sign position is not always attainable, however, due to the changing roadway geometric conditions and environment. As a general rule, signs should be adapted to the road alignment and placed in the most advantageous position.

The following guidelines describe best practices for placing ground-mounted and overhead signs along a highway and should

be used in conjunction with engineering judgement in consideration of the site specific conditions.

## Location of Signs

### *Ground Mounted Signs*

In Canada, motorists drive on the right-hand side of the road and consequently signs are installed on the right-hand side of the road to meet drivers' expectations.

In complex roadway environments, signs may be placed overhead or on channelized islands so they appear conspicuous. Other situations (e.g., sharp horizontal curves) may require signs to be placed on the left side of a roadway (e.g., chevron or checkerboard signs). When applied along a curve, signs are usually placed in the line of sight of the approaching vehicles.

In a multi-lane roadway environment, it is sometimes advisable to place a second sign on the left-hand side of the road to supplement the primary sign placed on the right-hand side of the road.

Examples of such environments include multi-lane one-way roadways and streets, and all divided multi-lane highways. In these instances, supplementary regulatory or warning signs are usually placed on the left-hand side of the roadway.

### *Overhead Signs*

Overhead signs are not normally installed along two-lane highways.

Exceptions are made at complex at-grade intersections where the placement of overhead signs may help control traffic movements (i.e., Lane Designation and Turn signs) and special pedestrian crosswalks (i.e., Pedestrian Crosswalk sign).

Overhead signs are often considered along multi-lane divided highways where they are needed to provide motorists with navigational information related to a given traffic lane.

Examples of overhead sign applications are directional guide signs installed in advance of interchanges. Overhead warning signs may also be installed in advance of signalized urban or semi-urban intersections.

### Lateral Sign Placement

#### *Rural Areas*

In rural areas, signs with an area less than 5 m<sup>2</sup> should be placed a distance of 6 metres from the painted shoulder line to the near sign edge. Typical sign horizontal positions are illustrated in the drawings TCS-A-110, TCS-A-111 and TCS-A-112.

The 6 metre horizontal sign offset may be reduced if the roadside width is restricted by physical features, such as: bridge supports, cliffs or other structural features. Even when offset adjustments are needed, signs should be placed as far from the edge of the road as allowed by the roadside restriction.

Large ground mounted signs with an area equal to or greater than 5 m<sup>2</sup> should be placed far enough from the white painted line to provide a roadside recovery area for

out-of-control vehicles. The sign's supports should be placed outside the clear zone, as defined for each highway class.

Guidelines summarizing clear zone requirements can be found in Section H3 of Alberta Transportation's *Roadside Design Guide*.

Where the placement of signs outside a clear zone is not possible, sign supports should be of either a break-away or yielding design or protected with an appropriate traffic barrier system.

Details on the design and application of break-away support structures can be found in the Alberta Highway Guide and Information Sign Manual. Various traffic barrier systems are illustrated in Appendix B of the *Roadside Design Guide*.

#### *Urban Areas*

In urban areas with raised curbs, signs should normally be placed adjacent to the road with their nearest edge not less than 0.3 metres and not more than 2.0 metres from the curb face.

Where practical, signs should be installed between the curb and the sidewalk or beyond the sidewalk if the sidewalk abuts the street.

Such practice protects a sign and post, and eliminates the costly process of breaking the concrete sidewalk.

#### *Factors Influencing Sign Location*

Signs should be placed in such a manner to ensure good visibility of the sign, the legibility of the message and safety of the roadside. One should always weigh the benefits of locating signs at a smaller offset

(i.e., to provide improved legibility of the message) versus larger offset (i.e., to provide protection for an errant vehicle).

A smaller horizontal offset is always preferred, provided that a minimum clearance between the roadway and sign is maintained.

At smaller offsets, the sign entrance angle is reduced, which in turn increases the coefficient of retroreflectivity and improves the night legibility of the sign. Drivers can also keep a sign within their peripheral vision for a longer time, which increases the time available for reading the sign message.

The main benefit of locating a sign at a larger offset is that it provides a larger recovery area for an errant vehicle.

When locating a sign along a highway, one should always ensure that the sign is not obstructed by trees, vegetation, fences, poles, etc.

Signs may also obstruct the driver's view when he is waiting to cross a street at an intersection, so it is important that signs are located outside the intersection sight triangle, if possible.

### **Vertical Placement of Ground Mount Signs**

#### *Rural Areas*

In rural areas, the sign mounting height should be between 1.5 metres and 2.5 metres from the road surface to the bottom of the sign. When a supplementary tab sign is mounted beneath the principal sign, the height should be measured to the bottom of the tab sign.

#### *Urban Areas With No Pedestrians*

In urban areas with raised curbs and no pedestrian traffic, the sign mounting height should be between 1.5 metres and 2.5 metres from the road surface to the bottom of the sign. When a supplementary tab sign is mounted beneath the principal sign, the height should be measured to the bottom of the tab sign.

#### *Urban Areas With Pedestrians*

In urban areas with raised curbs, where pedestrians are present, signs should be mounted no less than 2 metres and no more than 3 metres from ground elevation, measured from the base of the sign post to the bottom of the sign, including the tab if present.

### **Overhead Signs**

For small overhead signs (such as a special pedestrian crossing sign), the minimum vertical clearance is 5.8 m, measured from the road surface to the bottom of the sign, including the tabs if present.

For large overhead signs mounted on dedicated overhead sign supports, such as aluminium trusses, the vertical clearance must be at least 6.0 metres. Such vertical offset is needed to protect the sign structure from being struck by a truck, as the safety consequences of such a collision may be severe.

For overhead signs mounted on traffic signal mast arms, the vertical clearance must be at least 6.0 metres.

Overhead signs should be centred over the traffic lanes to which they apply.

## Spacing of Signs

### *Rural Areas*

When placing signs along the highway, one must take into account driver limitations in detecting signs in the roadway environment, processing sign information, and selecting the appropriate response. Usually, small sign spacing will affect the legibility distance requirements and the driver's ability to read the sign message.

Speeds along highways in rural areas are typically higher than in urban areas and consequently, signs require greater legibility distances and larger spacing.

The spacing of signs in rural areas is usually established based on site specific conditions and the operational needs.

For example, spacing between the Maximum Speed Ahead sign and the Maximum Speed sign will depend on the deceleration distance requirement. Spacing between two guide signs will need to consider time required to read each individual sign and the legibility distance requirements.

For large guide signs containing long messages, this distance may be increased to reflect greater legibility distance requirements.

### *Urban Areas*

Sign spacing in urban environments with intense vehicular and pedestrian activities usually depends on many factors and requires careful assessment of the site specific conditions.

Factors which influence the sign's position and spacing include: presence of

intersections and street poles, presence of other signs, landscaping and existing street lighting. One general rule is to place signs sufficiently far apart to give drivers enough time to read and comprehend the sign message.

In extreme situations, one sign may block the view of another sign resulting in drivers ignoring or missing the sign. Such poor sign arrangement may affect the control of traffic and undermine safety at a given location.

It is good practice to maintain a minimum spacing of 50 metres between signs in a low speed urban environment. Spacing of signs along higher speed urban roadways will need to be established based on the site specific conditions and the operational needs.

## Horizontal and Vertical Angling of Sign Face

As a general rule, signs should be mounted at approximately right angles to the direction of traffic, facing the traffic to which they apply.

Exceptions to this rule are parking signs, which should be placed at an angle of 30 to 45 degrees to the flow of traffic. Parking signs should be placed so they are always visible to the approaching traffic.

Ground mounted signs should be angled horizontally away from traffic (by about 1 degree) to reduce the effect of glare.



Figure 1 - Horizontal Angling of Sign Face

Glare is a bright reflection off the sign's smooth surface, which makes the sign legend unreadable while the driver's eye is within a certain angle of the sign.

Horizontal angling of ground mounted signs impacts the entrance angle for night reflectivity, thus reducing sign glare.

With overhead signs, the glare problem is not as severe as with ground mounted signs since the height difference between the overhead sign and the driver's eye is much greater.

It is good practice to tilt overhead signs slightly towards traffic, off the vertical by about 1 to 2 degrees.

Tilting the sign in this direction slightly reduces the entrance angle, and therefore increases sign legibility at night.

### **Guidelines for Sign Installation**

Normally, signs should be installed on separate posts except where a second sign is needed to supplement the primary sign or where route or directional signs must be grouped. Sign posts and their foundations should be able to hold signs rigidly in their proper and permanent position.

When determining appropriate sign installation locations, an investigation should be undertaken to ensure there are no existing buried utilities in the area before digging holes to install sign posts.

### *Rural Areas*

In rural areas, signs are usually installed on wood posts. In some cases, they may be installed on steel posts. Section H8 of the *Roadside Design Guide* should be used to determine the post's material type and size. For larger installations, the following post requirements also apply:

- two posts are needed if the sign width exceeds 150 cm
- breakaway ground mounts are needed if the sign area exceeds 3 square metres (signs located outside the clear zone or protected by a guardrail do not need breakaway supporting structures)
- signs greater than 5.5 m in width require 3 post mounting.

### *Urban Areas*

In urban areas, signs should preferably be installed on existing roadway appurtenances (such as street light and power poles) to minimize the number of poles along the road.

Separate sign supports, if needed, should be installed as not to create a hazard to cyclists, motorcyclists, pedestrians and drivers.

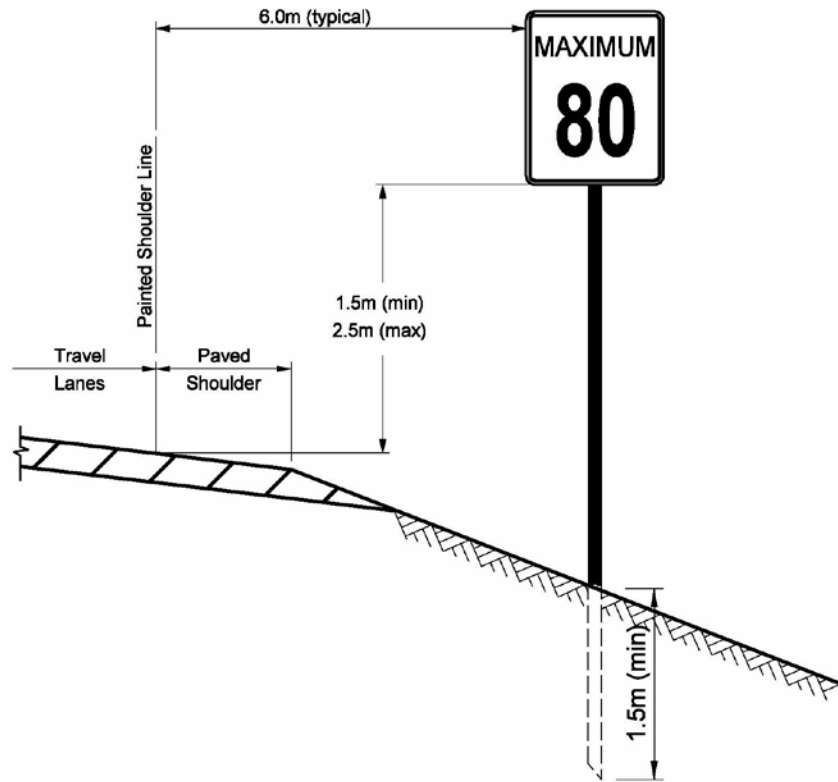
If used, rigid metal posts are more appropriate than wood posts because they can better withstand the impact when struck by an errant vehicle. They are also easier to

replace, if needed.

In urban areas the use of posts may be minimized by co-mounting two or more signs on one post (where logical and practical). The criteria for mounting large ground mounted and overhead signs are the same as the criteria for mounting signs along rural highways.

### References to Standards

<i>Alberta Roadside Design Guide</i>	Section H3 Appendix B Section H8
<i>Alberta Highway Guide and Information Sign Manual</i>	

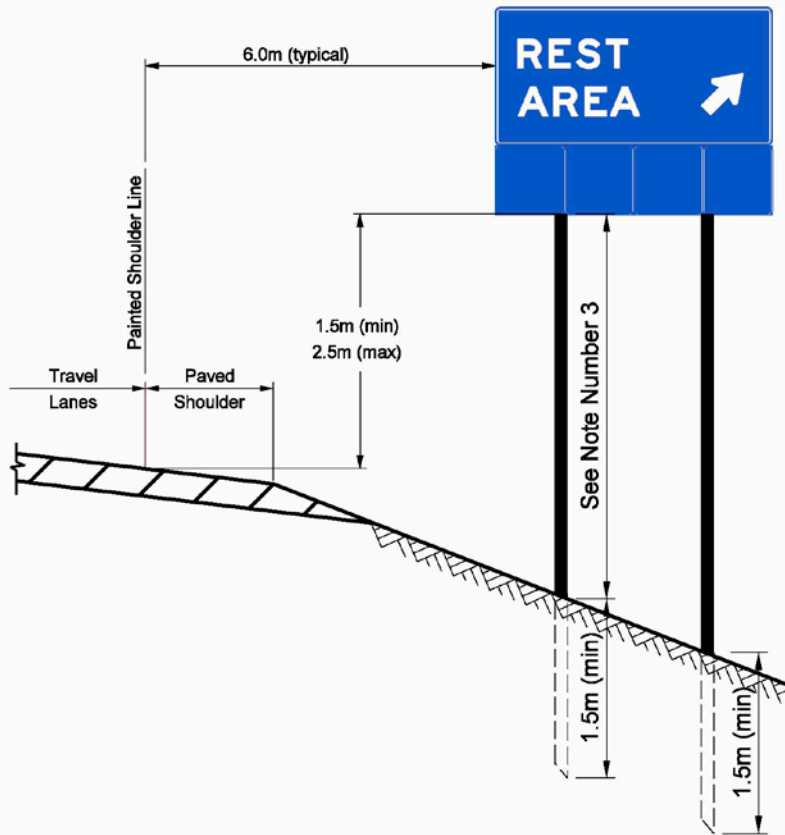


**NOTES:**

1. All signs should be mounted at approximately right angles to the direction of traffic.
2. When a supplementary tab sign is mounted beneath the principal sign, the height should be measured to the bottom of the tab sign.
3. The 6 metre horizontal offset may be reduced in the areas restricted by physical features such as cliffs or bridge supports or other structural features.
4. The minimum mounting depth is 1.5 metres below the ground.

NO.	DESCRIPTION	BY	DATE
		<b>DRAWING</b> TCS-A-110	
		Date: May, 2005	
<b>Lateral Sign Placement (single post)</b>			
Prepared by: S.L.	Checked by: B.B.	Scale: N.T.S.	<b>SECTION A1</b>



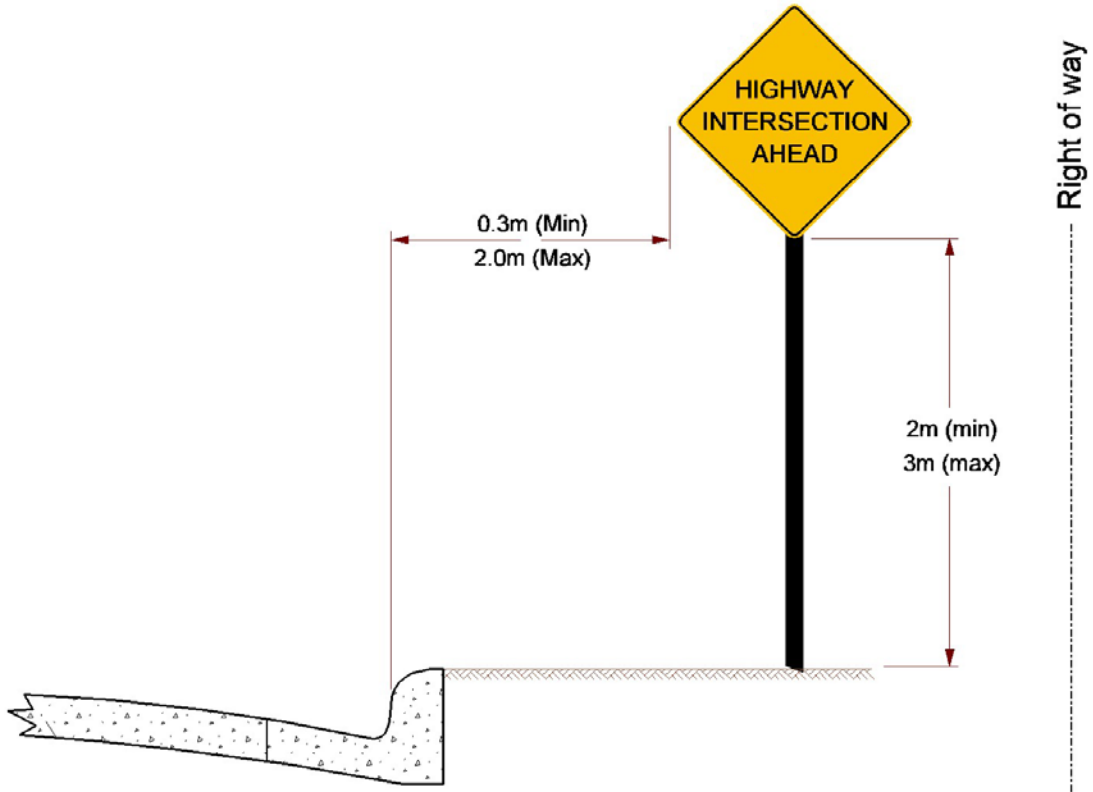


**NOTES:**

1. Breakaway ground mounts are needed for any sign greater than 3 square metres unless the sign is protected by a guardrail or it is located outside a clear zone.
2. Three posts are needed when a sign width exceeds 5.5 metres.
3. The minimum height is 2.2 metres for steel breakaway ground mount posts.

NO.	DESCRIPTION	BY	DATE
<b>Government of Alberta</b> Transportation		<b>DRAWING</b> TCS-A-111	
		Date: May 2005	
<b>Lateral Sign Placement (double post)</b>			
Prepared by: S.L.	Checked by: B.B.	Scale: N.T.S.	SECTION A1





**NOTES:**

1. All signs should be mounted at approximately right angles to the direction of traffic.
2. When a supplementary tab sign is mounted beneath the principal sign, the height should be measured to the bottom of the tab sign.
3. The vertical offset may be reduced to 1.5 metres in areas with no pedestrian traffic.

NO.	DESCRIPTION	BY	DATE
<b>Government of Alberta</b> Transportation		DRAWING TCS-A-112 Date: May 2005	
<b>Lateral Sign Placement            with Curb and Gutter</b>			
Prepared by: S.L.	Checked by: B.B.	Scale: N.T.S.	SECTION A1