


<b>Government of Alberta</b>  Transportation	<b>ELECTRONIC MESSAGE SIGNS</b>		<i>Issued: JUN 2011</i>
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<b>RECOMMENDED PRACTICES</b>	PART	HIGHWAY SIGNS	
	SECTION	MISCELLANEOUS	
	SUB-SECTION	BUSINESS	

## General

The question of whether or not electronic message signs, especially the graphic display and video advertising types, contribute to unsafe driving and increase the potential for collisions is under-researched. However, there is evidence that complicated visual fields can distract drivers and that existing legislation and guidelines inadequately address electronic message sign applications.

Available research suggests that:

- Sign placement and length of time the sign takes the driver's attention off the roadway are influential factors. A study commissioned by the City of Toronto, on the safety and effects of video advertising placed at downtown intersections, found that video advertising can distract drivers, lead to collisions, and have an overall impact on traffic safety (Smiley, Persaud, Bahar, Mollett, Lyon, Smahel, et al., 2005).
- Impact on traffic safety varies according to particular video display signs and environments. Video display signs on curves, that were also close to the line of sight and visible for an extensive periods of time, were found to be particularly distracting (Smiley, Smahel & Eizenman, 2004).
- Drivers are more distracted by street-level advertising than raised signs (Crundall, Van Loon & Underwood, 2006).

The number of sign permit applications being received by the department for electronic message signs has drastically increased in recent years with the progression of electronic technology. Guidelines are required to ensure departmental consistency in the treatment of these sign permit applications across the province.

The majority of electronic message signs can be grouped into one of the following three categories:

- Electronic changeable copy signs;
- Electronic graphic display signs; and
- Video display signs.

### Electronic Changeable Copy Signs





An electronic changeable copy sign is defined as a sign or portion thereof that displays electronic, non-pictorial, text information in which each alphanumeric character, graphic or symbol is defined by a small number of matrix elements using different combinations of light-emitting diodes (LEDs), fibre optics, lightbulbs or other illumination devices within the display area.

An electronic graphic display sign is defined as a sign or portion thereof that displays electronic, static images, static graphics or static pictures, with or without information, defined by a small number of matrix elements using different combinations of light-emitting diodes (LEDs), fibre optics, light bulbs or other illumination devices within the display area where the message change sequence is accomplished immediately or by means of fade, repixelization or dissolve modes.

Electronic Graphic Display Signs

Video Display Signs





Video display signs are defined as those signs or portions thereof which change their message or background in a manner or method of display characterized by motion or pictorial imagery, which may or may not include text and depicts action or a special effect to imitate movement, the presentation of pictorials or graphics displayed in a progression of frames which give the illusion of motion, including but not limited to the illusion of moving objects, moving patterns or bands of light, or expanding or contracting shapes, not including changeable copy signs.

### Standard

#### Highways Development and Protection Regulation

Pursuant to Section 15 of the Highways Development and Protection Regulation AR 326/2009, Alberta Transportation does not permit signs exhibiting any of the following characteristics:

- Any sign that displays an intermittent flashing, rotating or moving light;
- Any sign which is flood-lighted in such a manner as to cause a visual distraction to the motoring public;
- Any yard lights, area lighting or other lights that, in the opinion of the Operations Manager, are excessively distracting to the public or create a traffic hazard;
- Any sign that has moving or rotating parts; or
- Any sign that bears a legend giving a command to stop, stop ahead, look or exercise caution, etc., or any legend that in any way imitates a standard or commonly used traffic control device or highway traffic sign.

With the advancement of electronic technology, electronic message signs are capable of creating intermittent flashing/changing messages or rotating images (animated backgrounds) or where the background can be changed or light intensified. Such signs can be a substantial distraction to motorists and a source of glare, which creates a traffic safety issue. The brightness from electronic message signs can also overwhelm driver's perception of critical regulatory, warning and guide signage or other traffic control devices.

#### Electronic Message Signs Not Permitted in Most Situations

For the above reasons, Alberta Transportation **does not permit** the use of electronic message signs within the development control zone of rural provincial highways.

The development control zone is defined under the *Highways Development and Protection Regulation* for provincial highways. The classes of provincial highways are shown in the Roadside Management Classification Map as amended from time to time and published on Alberta Transportation's website.

Within the corporate limits of urban municipalities (cities, towns, villages), the municipality is responsible for development approval outside the highway right-of-way for all classes of provincial highways. Along ring roads within urban municipality corporate limits, the municipality is responsible for development approval beyond the Transportation Utilities Corridor (TUC). As such, Electronic Message Signs located within corporate limits (outside the provincial highway right-of-way and beyond the TUC boundaries) are subject to municipal approval.

Electronic message signs featuring a continuous loop or animated images are strictly prohibited along provincial highways except in urban areas (within corporate limits) where the speed limit is less than 80 km/h.

Electronic message signs are also strictly prohibited within 800 m of the centrepoint of an interchange, where the information load on drivers is already high (due to other traffic control devices), and where drivers frequently perform lane changing maneuvers (i.e., merging and weaving conditions).

*Situations Where Electronic Message Signs May Be Permitted*

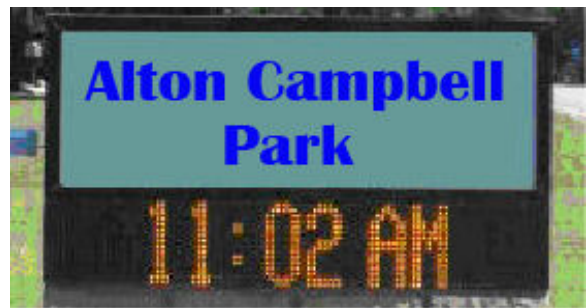
An electronic message sign that **operates only as a changeable copy sign (usually LED) may be permitted** as a part of a larger sign outside the highway right-of-way, such as to convey the price of fuel on gas station on-premise signs. An electronic changeable copy sign would be permitted if the operation of the message panel is only changed occasionally (a motorist driving at the posted speed limit could only see one static message during the drive by). An electronic changeable copy sign panel forming a component of an on-premise sign cannot exceed 25% of the overall size of the sign.

An electronic changeable copy sign may be permitted as part of a community Welcome sign (inside or outside the highway right-of-way) provided it does not exceed 15% of the overall sign size.

Conditions under which an electronic message sign panel is allowed (as a part of a larger sign) are:

- The sign panel does not contain or display flashing, intermittent, or moving lights, including animated or scrolling text.
- A sign panel provided as a public service showing the time and temperature shall not be considered a flashing or moving sign.
- The sign content remains fixed/static for a minimum message display duration, where:
  - Min. Display Duration (sec) = Sight distance to sign (m) / Speed limit (m/sec).*
    - In lower speed areas, the formula above should be used with a minimum sight distance to sign of 350 m.

- In areas with speed limit  $\geq 80$  km/h, the minimum message display duration is 60 seconds, unless the sight distance to the sign is less than 1 kilometre.
- When a message is changed electronically, it must be accomplished within an interval of 0.1 seconds or less so that an approaching driver cannot perceive any blanking of the display screen.
- There shall be no visual effects between successive displays.
- The sign panel must contain a default design that will freeze the sign panel message in one position if a malfunction occurs.
- The sign panel shall be equipped with a control system that automatically adjusts light emission level to ambient light conditions so as not to cause glare or excessive brightness.
- In no case shall the light level of any sign panel exceed 300 nits (candelas per square metre) between the time of sunset and sunrise, nor 5,000 nits at other times.
- Must not diminish the conspicuity of nearby traffic control devices.
- Alberta Transportation's Highway Operations Manager shall have the ongoing discretion to require the brightness, frequency, colours or other qualities of the sign panel be adjusted in order to address safety concerns.



Shown below are some examples of signs that may be permitted:

*Policy Recommendations for Rural and Urban Municipalities*

Rural municipalities authorize developments within the development control zones of minor highways and urban municipalities authorize developments within the development control zones of highways within urban boundaries of cities, towns, and villages. Alberta Transportation encourages both rural and urban municipalities **not to permit** electronic message signs adjacent to provincial highway right-of-way, especially those that function as graphic and/or video display signs. If electronic message signs are permitted, it is encouraged that the conditions outlined in this recommended practice be considered. Care should be taken to ensure electronic signs do not diminish the conspicuity of nearby traffic control devices, and to maintain appropriate spacing between electronic message signs (so that only one can be seen at a time).

If, in the opinion of the Highway Operations Manager, an electronic message sign permitted by a municipality constitutes a distraction to highway traffic and would compromise traffic safety, the Highway Operations Manager will work with the municipality to have the sign adjusted, removed or relocated.

*Special Situations for Traffic Management Purposes*

Alberta Transportation's electronic dynamic message signs for communicating pertinent safety messages and for traffic management functions are permitted within highway right-of-way. Information displayed on these electronic dynamic message signs are governed by strict departmental operating guidelines.

**References to Standards**

<i>Highways Development and Protection Regulation</i>	
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