H9 Other Roadside Features

H9.1 Introduction

This section identifies the appropriate roadside safety treatment for roadside features that are not covered under previous sections.

H9.2 Pedestrian/Cyclist Pathways on Bridges

The provision for pedestrian movements across bridge structures are typically limited to a sidewalk on one or both sides of the structure. Traffic barriers are often used to separate pedestrians from vehicular traffic.

To accommodate cyclists across bridges, it may be necessary to provide a widened right lane often referred to as a combined use lane, dedicated bicycle lane(s), or a dedicated combined use trail separated by a traffic barrier.

Off road accommodation of cyclists may be appropriate when there is a need to provide continuity for a bike or combined use trail system, when there are high volumes of cyclist traffic, when the adjacent roadway has high traffic speeds or high traffic volumes, and/or where there is insufficient room to accommodate cyclists on the roadway.

Guidelines for on-roadway bicycle lanes and shared roadway lane widths are provided in Table 3.4.6.2 of Transportation Association of Canada's (TAC) *1999 Geometric Design Guide for Canadian Roads*. The design domain dimensions for bike path and shared use paths are provided in Table 3.4.6.1 of TAC's *1999 Geometric Design Guide for Canadian Roads*.

In general, there are no specific criteria or warrants to determine the type of services that needs to be provided across bridge structures. The decision is based primarily on good engineering judgement, taking into consideration factors such as continuity of sidewalks and trails, traffic speed, traffic volume, percentage of truck traffic, shoulder width, length of bridge, sight lines, transitions to and from the bridge, volume of cyclists/pedestrians, and travel patterns of pedestrians and cyclists.

In some situations, the safety of providing for pedestrian and/or cyclist access across a structure may be compromised due to the configuration of the road alignment/interchange, high traffic speed, or high traffic volumes. In these cases consider a safety audit to determine whether the pedestrian and/or cyclist movement should be accommodated on the bridge structure. A more appropriate solution may be to provide a separate dedicated crossing facility to direct pedestrian/cyclist movements away from this location.

In general, the following guidelines should be used to facilitate pedestrian and cyclist movements across bridge structures:

- In rural areas, the design roadway shoulder is typically sufficient to accommodate pedestrians and cyclists. No additional enhancement is required.
- Combined use trails should not be constructed on the roadway bridge at system interchanges. This also applies to non-system interchanges designated for high traffic speed (greater than 80 km/h on the minor road) and high traffic volume, in general.
- Where a roadway with combined use trail (cyclist/pedestrians) is required across a bridge structure, provide the following:
    - A 4.2 m wide facility with a traffic barrier separating the trail from the roadway. This width includes the allowance of a 0.60 m shy distance clearance to both traffic barrier and railing.
    - The exterior railing should conform to the cyclist rail height of 1.37 m measured

above the combined use trail as provided in the *Canadian Highway Bridge Design Code (CSA-S6-06)*. No additional height is added to the traffic barrier.
    - Approaches to the combined use trail on the bridge, as well as to the barrier system, should be designed with safe transitions to the road cross section, which satisfies sight distance requirements. The *TAC Geometric Design Guide for Canadian Roads (Chapter 3.4)* identifies the design parameters for cyclists and should be considered in the design of the trail system across the structure, including transitions.
    - Standard curbs should not be considered as a barrier to protect pedestrians or trail users as vehicles can mount over the curb at relatively small approach angles at speeds as low as 40 km/h.
- Where the approach roadway cross section accommodates cyclists using a wider right side lane (generally 4.3 m wide) for urban bridges, provide the following:
    - An appropriate shy distance beyond the designated lane width or designated bike lane. See Table 3.1.64 of the *TAC Geometric Design Guide for Canadian Roads* for suggested shyline offset values. Lane markings are not necessary to distinguish the outer edge of the wider lane or bike lane from the shy distance requirement, unless lane markings are required as part of the approaches.
    - If a sidewalk is provided, designate it for foot traffic only, including wheelchair use. A sidewalk width of 2.5 m is generally considered acceptable across bridges where there are barriers/railings or curbs on both sides of the sidewalk. Provide appropriate signage advising cyclists to dismount at both ends of the structure. Even though the sidewalk is exclusively for pedestrian use, minor age cyclists may still ride on the sidewalk and therefore, a 1.37 m high rail may be used on the outside edge of the structure. Provide a traffic barrier to prevent vehicles from encroaching onto the sidewalk. No additional height increase is needed for the traffic barrier.
    - Where cyclists are accommodated by providing a wider right side lane on the roadway and no sidewalk/trail is provided, design the right side lane barrier as a 1.37 m high combination barrier as required by the *Canadian Highway Bridge Design Code (CSA-S6-06)*.

All barrier systems, transitions and terminals should meet the appropriate *NCHRP Report 350* test levels.

H9.3 Fire Hydrants

Fire hydrants should be placed away from the roadway as far as possible. They must, however, still be accessible to emergency personnel.

Generally, fire hydrants should not be provided near the travel lanes on freeways, expressways or divided arterials.

H9.4 Trees

Trees that are greater than 100 mm in diameter, or a group of trees that may pose as a safety concern when struck by an errant vehicle, are considered to be hazards.

For each hazard identified within the Desirable Clear Zone width, use the following strategies, listed in order of preference, to determine the appropriate mitigation:

- remove the tree from the Desirable Clear Zone
- shield the tree with an appropriate barrier system.

Tree removals within the Desirable Clear Zone may not be the appropriate strategy if the group of trees extends beyond the Desirable Clear Zone width. If possible, the entire group of trees should be removed beyond the Desirable Clear Zone, and/or beyond the Right-of-Way.

The complete removal of stumps is preferred for tree stumps located within the Clear Zone. In some cases, the smaller stumps should be removed and the larger ones cut flush to the ground. Minor grading work should be performed to mitigate the effect of those stumps that are left.

H9.5 Mailboxes

Mailboxes should be constructed from sheet metal, plastic or similar weight materials. No concrete, masonry or other heavy or rigid mailbox support structures are allowed within the highway right-of-way.

A mailbox support should yield or collapse if struck, and should bend or fall away from the vehicle that strikes it. Colliding with a mailbox should not create severe deceleration for the errant vehicle.

A single 100 mm X 100 mm square or 100 mm diameter wooden post, or a metal post with diameter not exceeding 50 mm, and embedded no more than 600 mm into the ground will be acceptable as a mailbox support.

Installation types which do not yield easily when hit by a vehicle are not permitted.

The possibility of removing or consolidating mailboxes along the highways should also be investigated in consultation with Canada Post.

The mailbox post should be placed behind the barrier system, if practical, when barrier systems are required in the vicinity of mailbox location.

Refer to the department's website for the current practice and drawings in regard to rural mailboxes.

H9.6 References

The following documents were used during the development of this section:

Alberta Infrastructure and Transportation's *Highway Geometric Design Guide*, Edmonton, AB, 1999

Alberta Infrastructure and Transportation's *Highway Geometric Design Guide – Urban Supplement (Draft)*, Edmonton, AB, 2003

American Association of State Highway and Transportation Officials, *Roadside Design Guide 2002*, Washington, DC, 2002.

Canadian Highway Bridge Design Code (CSA-S6-06)

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