



*A Guide for the
Accommodation of Utilities
Within Freeway Rights-of-Way*

October 2011



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Note

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<p>Author(s) Public Utilities Management Standing Committee</p>		<p>Corporate Affiliation(s) and Address(es) Transportation Association of Canada</p>
<p>Abstract</p> <p>Utility firms provide essential services to the public. They often install their facilities within the right-of-way of public roads. If the utilities were not allowed to use the right-of-way, they could be required to purchase their own land, which would increase the overall costs to the utility firms and to the public.</p> <p>This guide provides assistance to various road authorities with establishing and administering reasonably uniform guidelines for the accommodation of utilities within freeway rights-of-way in order to maintain safety, traffic-carrying ability, and the physical integrity of freeways across Canada.</p> <p>The <i>Guide to the Accommodation of Utilities Within Freeway Rights-of-Way</i> is provided for consideration and use by provincial road authorities in regulating the use and occupancy of freeway rights-of-way by utilities. The Guide makes no reference to the legal right of utilities to use or occupy freeway rights-of-way, or to the financial responsibility involved in the adjustment or installation of utilities within such rights-of-way.</p>		<p>Keywords</p> <p>Planning of Transport Infrastructure Carriageway Motorway Cable Piping Services (Public) Vicinity Planning Safety</p>
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FOREWORD

Utility firms provide essential services to the public. They often install their facilities within the rights-of-way of public roads. If the utilities were not allowed to use the rights-of-way, they could be required to purchase their own land, which would drive up the overall cost to the utility organization. This could significantly increase the cost to the public.

However, the responsibility of road authorities includes operating the highway rights-of-way in a manner that ensures the safety, traffic-carrying ability, and physical integrity of their facilities. The presence of a utility within the right-of-way can affect these characteristics, so it is necessary for road authorities to reasonably regulate the presence of utilities.

OBJECTIVE OF THE GUIDE

The purpose of this Guide is to assist the various road authorities in establishing and administering reasonably uniform guidelines for the accommodation of utilities within freeway rights-of-way. Ideally, existing utility accommodation guidelines should be updated in light of this Guide, as appropriate.

This Guide does not constitute a policy, a standard, a specification, or a regulation. It simply proposes guidelines, and road authorities have the option of applying other criteria.

INTENDED AUDIENCE

This Guide has been written for both the road industry and the utility industry. Although it can be used by anyone in order to obtain an overview of the complex series of freeway/utility interactions, it is specifically aimed at the following types of audiences:

- Managers in both the public and private sectors;
- Consulting engineers practicing in the freeway/utility field; and
- Individuals just entering the freeway/utility field.



1.0 INTRODUCTION

Freeways are highways with full control of access. They are intended to provide for a high level of safety and efficiency in the movement of large volumes of traffic at high speeds. With full control of access, preference is given to through traffic by providing access only at selected locations.

Control of access can be significantly affected by the extent and manner in which utilities cross or otherwise occupy the highway right-of-way. Road authorities have various degrees of authority in terms of developing and maintaining control of access and regulating utilities, generally through their authority to designate and control the use of rights-of-way acquired for public roads, including those for all freeways. Their authority is granted through federal and provincial laws or regulations. These laws and regulations differ between provinces, and may also be different within a province for highways that use existing rights-of-way and highways constructed in new locations. A province may also have separate laws and regulations applicable only to highways rights-of-way that are subject to the jurisdiction of a local government, such as that of a large city.

A Guide is required in order to promote the establishment of uniform conditions under which public and private utilities may be accommodated within freeway rights-of-way. The intent of this Guide is to propose guidelines whereby individual road authorities can uniformly administer the accommodation of utilities on freeways in Canada. Although the primary purpose of the Guide is to improve and maintain the safety and operation of highways and to ensure uniformity in the treatment of utilities among the provinces, it also recognizes the public interest in avoiding unnecessary and costly operation and relocation of public utilities. Aside from the necessary differences imposed by provincial and local laws, regulations, codes, standards, climate, and geography, road authorities should employ reasonable uniformity in the engineering requirements in terms of regulating the use of freeway rights-of-way.

This Guide applies to all highways with full control of access, regardless of which system they belong to. In addition, it has value as a guide for all highways with partial control of access, especially if a highway corridor is a combination of segments with both full and partial control of access.

This Guide is provided for consideration and use by provincial road authorities in regulating the use and occupancy of freeway rights-of-way by utilities. However, policies, guidelines, standards, specifications and regulations may vary from one province to another. The Guide makes no reference to the legal right of utilities to use or occupy freeway rights-of-way, or to the financial responsibility involved in the adjustment or installation of utilities within such rights-of-way.

2.0 APPLICABILITY

This Guide applies to utilities that are located within freeway rights-of-way.

The principles set forth in this Guide apply to all public and private utilities, including but not limited to communications (e.g.: wireless communication towers and cable television), electric power, water, gas, petroleum products, steam, sewer, drainage, and similar facilities. Such utilities may involve construction and maintenance of underground, surface, or overhead facilities, either singularly or in combination.

Individual road authorities may choose to apply different rules to utilities for servicing facilities that are required for operating the freeway.

2.1 New Utility Installations along a Freeway

Installation of new utilities should not be permitted longitudinally within the right-of-way of any freeway. However, in exceptional cases, such longitudinal underground installations may be permitted under strictly controlled conditions.

Where such longitudinal underground installations are requested, the utility shall, in each case and to the satisfaction of the road authority, demonstrate that all the following conditions are met:

- The accommodation will not adversely affect the safety, design, construction, traffic operations, maintenance, or stability of the freeway.
- Alternate locations are not available, or are cost prohibitive from the standpoint of providing efficient utility services.
- The accommodation will not interfere with or hinder the present use or future expansion of the freeway.
- The location of the utility outside of the right-of-way would result in the loss of productive agricultural land or the loss of productivity of agricultural land, if any. In such a case, the utility must provide information concerning the direct and indirect environmental and economic effects, which will be evaluated and considered by the road authority.
- The accommodation satisfies the conditions described in Section 2.6.

All longitudinal utility accommodations that may be warranted herein shall only be installed in accordance with an approved permit issued by the road authority.

The installation of utilities shall not be allowed longitudinally within the median area.

Where longitudinal utility installations must traverse interchange areas, they shall be located and treated in the same manner as utility crossings within interchange areas, as described in Section 2.4.

Service connections to adjacent properties from longitudinal utility installations located within the freeway right-of-way shall not be permitted.

2.2 Existing Utilities along Proposed Freeways

Where a utility already exists within the proposed right-of-way of a freeway, and where it can be serviced, maintained, and operated without access from the through-traffic or ramp roadways, it may remain in place insofar as it does not adversely affect the safety, design, construction, traffic operations, maintenance, or stability of the freeway. Otherwise, it should be relocated, except as described in Section 2.1.

2.3 Major Valley or River Crossings

Where a freeway crosses a major valley or a river on an existing structure, any utility that is carried by the structure at the time when the highway route is improved may continue to be carried, upon approval by the road authority, if the relocation of the utility would be very costly and if the utility can be serviced without significant interference with road users.

Expansion of a utility carried by an existing structure across a major valley or river may be permitted, provided that the utility can be installed and serviced without significant interference with road users.

New utility installations will not be permitted on a structure across a major valley or river at or after the time when the highway route is improved, except as described in Section 2.1.

For security purposes, gas, petroleum products, sewage, or other hazardous utility facilities should not be permitted on structures that are identified as most critical by the road authority.

All utility accommodations on structures across a major valley or river that may be warranted herein shall only be installed in accordance with an approved permit issued by the road authority.

2.4 Utilities Crossing Freeways

New utility installations and adjustments to or relocations of existing utilities may be permitted to cross a freeway. To the extent feasible and practicable, with the exception of electrical power transmission lines (high structural capacity support and significant height of lines), they should cross on a line that is generally perpendicular to the freeway alignment, and should generally be located under the freeway, as described in Section 2.4.3.

All utilities crossing freeways shall only be installed in accordance with an approved permit issued by the road authority.

2.4.1 Utilities along Roads or Streets Crossing Freeways

Where a utility follows a crossroad or a street that is carried over or under a freeway, provisions should be made for the utility to cross the freeway at the location of the crossroad or street in such manner that the utility can be constructed and/or serviced without access from the through-traffic or ramp roadways. Generally, the utilities should be located within the right-of-way of the existing or relocated crossroad or street, and may cross under the freeway or be attached through the highway grade separation structure girders, provided that installation and servicing thereof can be accomplished without access from the through-traffic or ramp roadways. However, where distinct advantage and appreciable cost savings are effected by locating the utilities outside of the right-of-way of the crossroad or street, they may be so located, in which case they shall be located near the highway grade separation structure and treated in the same manner as utility lines crossing the freeway at points removed from grade separation structures, as described in Sections 2.4.2 and 2.4.3.

2.4.2 Utilities Crossing Freeways at Points Removed from Grade Separation Structures

Generally, only underground utility lines may be permitted to cross a freeway at points removed from grade separation structures. Overhead utility lines, excluding electrical power transmission lines, should not be

permitted to cross a freeway at points removed from grade separation structures, except in the following situations:

- a) if the proposed overhead crossing point is affected by the freezing rain phenomenon less than ten (10) days per year; or
- b) if there is an alternative freeway route that is free of overhead lines crossings near the proposed overhead crossing point; or
- c) if the crossed freeway carries traffic of less than 5000 AADT at the proposed overhead crossing point, the road authority may deliver a permit under the following installation conditions.

In those situations listed above, overhead utility lines should be adjusted so that supporting poles are located outside of the outer edges of through-traffic or ramp roadway side slopes, and preferably outside of the freeway right-of-way. In any case, supporting poles shall not be placed within the clear zone. Exceptionally, and where spanning limitations so require, intermediate supporting poles may be placed in medians of sufficient width to provide the above referenced clear zone from the edges of both traveled ways, provided that the conditions described in Section 2.6 are also satisfied. If additional lanes are planned, the clear zone shall be determined from the outer edges of the traveled way. Where the limits of the right-of-way and the control of access are not one and the same, as in the case where frontage roads are provided, supporting poles may be located in the area between them, with appropriate shielding. Where such spanning of the roadways is not feasible, conversion to underground facilities to cross the freeway must be considered.

In addition, overhead utility lines at interchange areas may be permitted only where all of the following conditions are met:

- the above-mentioned clear zone is provided with respect to the freeway through traffic lanes;
- the appropriate clear zone from the edge of the ramp is provided;
- essential sight distances are not impaired;
- intermediate supporting poles are not required in medians; and
- the conditions described in Section 2.6 are satisfied.

The vertical clearance to overhead utility lines crossing freeways shall be determined by the road authority, but shall not be less than the clearance required in any case.

2.4.3 Underground Utility Crossings

Underground utility crossings shall be of durable materials and installed in such a manner as to virtually preclude any necessity for disturbing the roadways in order to perform maintenance or expansion operations. The design and types of materials shall conform to appropriate governmental codes and specifications.

Utility access holes and other points of access for underground utilities may be permitted within the right-of-way of a freeway or a ramp only when they are located beyond the ditches of the freeway or ramp, as planned for later widening. This access may be permitted provided that the conditions described in Section 2.6 are satisfied.

2.4.4 Provisions for Expansion of Existing Utilities during Construction

Where existing utilities are relocated or adjusted in conjunction with construction of a freeway, provisions may be made for known and planned expansion of the utility facilities, particularly those that are located underground. They should be planned in such a manner as to avoid interference with traffic at some future date when additional or new overhead or underground lines are installed.

2.5 Utilities in Vehicular Tunnels

As a general rule, utilities should not be permitted to occupy vehicular tunnels on freeways at a new location, except as described in Section 2.1. Utilities that did not previously occupy an existing vehicular tunnel that is incorporated into a freeway shall not be permitted therein, except as described in Section 2.1. However, communication utilities may be permitted to occupy vehicular tunnels on freeways provided that the conditions described in Section 2.1 are satisfied.

Utilities that transport a hazardous material shall not be allowed in a vehicular tunnel under any circumstances.

Where a utility occupies space within an existing vehicular tunnel that is converted to a freeway, relocation of the utility may not be required.

All utility accommodations in vehicular tunnels that may be warranted herein shall only be installed in accordance with an approved permit issued by the road authority.

2.6 Access for Constructing and Servicing Utilities

In general, utilities shall be located and designed in such a manner that they can be constructed and/or serviced without direct access from the through-traffic or connecting ramp roadways. In rare instances, direct access may be permitted if alternate locations and means of access are unavailable or impractical due to terrain and environmental constraints, and insofar as such use will not adversely affect the safety and traffic operations or damage the road authority's facility. Where direct access is requested, permission must be obtained from the road authority.

Access for construction and/or servicing of a utility along or across a freeway should be limited to access via:

- a) frontage roads where provided; or
- b) nearby or adjacent public roads and streets; or
- c) trails along or near the limits of the highway right-of-way, connecting only to an intersecting road.

A locked gate along the freeway fence may be used in order to meet periodic service access needs. Where a locked gate is allowed, the access should be documented with an approved permit that includes adequate provisions for restricting unauthorized use.

In those special cases where utility supporting poles, utility access holes, or other appurtenances are located within medians, interchange areas, or otherwise inaccessible portions of freeway rights-of-way, access to them from through-traffic or ramp roadways may be permitted if other alternatives do not exist. Such access shall be granted by a permit that sets forth the conditions for policing and other controls aimed at protecting road users.

Wherever possible, entry to the median area should be restricted to nearby grade separation structures, stream channel crossings, or other suitable locations that do not involve direct access from through-traffic lanes or ramps.

Where utilities are located outside of the freeway right-of-way, and where access for maintenance purposes is only possible from within the right-of-way due to terrain and/or environmental constraints, a permit must be obtained from the road authority.

All permits should include a traffic control plan and adequate provisions for access to the utility work zone, and should provide for the protection of workers and the traveling public.

Advance arrangements should also be made between the utility and the road authority for emergency maintenance procedures.

2.7 Construction and Location Details

The road authority that constructs or maintains freeways has the right to review and approve or reject where reasonable and justifiable, plans for the location and design of all utility installations and adjustments that affect the highway, and to issue a permit for the work. Upon completion of construction, the utility shall provide accurate as-built plans, as requested by the road authority.

Road authorities should require plans that show the following details with respect to the proposed facility:

- Offset to the facility from the limits of the right-of-way, edge of traveled way, or both. If the offset does not remain at a constant distance from the point of measurement, the locations and distance changes at each point of intersection should be shown.
- Depth at various locations should be shown, or should be defined on typical sections.
- Depths and locations of other utilities in the immediate area.
- Location of directional bores, plowing, or trench operations.
- Treatment of roadside vegetation (bored, cut, pruned, avoidance, etc.) especially if it was planted by the road authority for the purposes of aesthetics or snow control.
- Replacement vegetation to be planted in order to replace items that are damaged or removed during installation of the utility.

- Location of sensitive environmental areas, such as wetlands, hazardous material sites, historical sites, endangered species habitats, etc.
- Type and location of erosion control measures.
- Access points from various side roads, farm fields, etc.
- Locations where permanent locked gates will be installed.
- Special orders pertaining to construction methods should be noted if they are mandated by another regulatory authority.
- Traffic Control Plan.

2.8 Manner of Carrying Out Utility Installations and Adjustments

In general, utility installations and adjustments must be carried out with due consideration to highway and utility costs, and in a manner that will provide maximum safety for road users, will cause the least possible interference with the highway facility and its operation, and will not increase the difficulty or cost of maintaining the highway.

2.9 Notification of Work

The utility must notify the road authority at least 48 hours prior to any planned work located in the freeway right-of-way, and must notify the road authority prior to any emergency maintenance work.

GLOSSARY

Arterial Highway – A general term denoting a highway that is primarily used for through traffic, usually on a continuous route.

Clear Zone – The total roadside border area available for safe use by errant vehicles, starting at the edge of the traveled way. This area may consist of a shoulder, a recoverable slope, a non-recoverable slope, and/or a clear run-out area. The desired width depends on the traffic volumes and speeds and on the roadside geometry.

Control of Access – The condition where the right of owners or occupants of abutting land or other persons to access, light, air, or a view in connection with a highway is fully or partially controlled by public authority.

Full Control of Access – The authority to control access is exercised in order to give preference to through traffic by providing access connections with selected public roads only, and by prohibiting crossings at grade and direct private driveway connections.

Partial Control of Access – The authority to control access is exercised in order to give preference to through traffic to a degree that, in addition to access connections with selected public roads, there may be some crossings at grade and some private driveway connections.

Freeway – A full controlled access arterial highway, usually including grade separation structures at intersections.

Frontage Road – A local street or road auxiliary to and located along the side of an arterial highway, used for service to abutting property and adjacent areas and for control of access.

Highway, Street, or Road – A general term denoting a public way for the transportation of people, materials, goods, and services, but primarily for vehicular travel, including the entire area within the right-of-way.

Interchange – A system of interconnecting roadways in conjunction with one or more grade separations that provides for the movement of traffic between two or more roadways or highways on different levels.

Median – The portion of a divided highway that separates the traveled ways for traffic in opposite directions.

Permit – The written agreement by which the road authority approves the use and occupancy of highway right-of-way by utility facilities or private lines. Also called Occupancy or Legal Agreement.

Private Lines – Privately owned facilities that convey or transmit the commodities outlined in the definition of utility facilities, but that are devoted exclusively for private use.

Ramp – A short roadway connecting two or more legs of an interchange, intersection, or frontage road with the main lane of a highway.

Rest Area – A roadside area with parking facilities, separated from the roadway, that is provided for motorists to stop and rest for short periods. It may include drinking water, toilets, tables and benches, telephones, information, and other facilities for travelers.

Right-of-Way – A general term denoting land, property, or interest therein, usually in a strip, that has been acquired for or devoted to transportation purposes.

Road Authority – The ministry, department, agency, commission, board, or official of any province or political subdivision thereof charged by its law with the responsibility for highway administration.

Roadside – A general term denoting the area adjoining the outer edge of the roadway. Extensive areas between the roadways of a divided highway may also be considered to be roadsides.

Roadway – The portion of a highway designated for vehicular use, including shoulders. A divided highway has two or more roadways.

Temporary Barrier – Temporary barriers are used to prevent vehicular access to construction or maintenance work zones and to redirect an impacting vehicle in order to minimize damage to the vehicle and injury to the occupants while providing protection for workers.

Traffic Barrier – A barrier used to prevent a vehicle from striking a more severe obstacle or feature located on the roadside or within the median, or to prevent crossover median accidents.

Traffic Control Plan – A plan for handling traffic traveling through a specific highway or street work zone or project.

Traveled Way – The portion of the roadway designated for the movement of through traffic.

Utility Access Hole (Manhole) – An opening in an underground system that workers may enter for the purpose of carrying out installations, removals, inspections, repairs, connections, and tests.

Utility Facility – A privately, publicly, or cooperatively owned line, facility, or system for producing, transmitting, or distributing communications, heat, gas, petroleum products, water, steam, waste, storm water not associated with highway drainage, or any other similar commodity that directly or indirectly serves the public, including any fire or police signal system or street lighting system.

