

Table of Contents

1.0	INTRODUCTION	1
2.0	PURPOSE OF THIS GUIDE	3
3.0	ROAD CONDITIONS	5
3.1	Principle #1	5
3.1.1	Longitudinal section	5
3.1.2	Cross-section	5
3.1.3	Application to all lanes	5
3.2	Principle # 2	5
3.3	Principle # 3	6
3.4	Principle #4	6
3.5	Description of roadway conditions	6
3.5.1	Bare	7
3.5.1.1	Bare and Wet	
3.5.1.2	Bare and Dry	
3.5.2	Partly Covered	8
3.5.2.1	Partly Ice Covered	
3.5.2.2	Partly Snow Packed	
3.5.2.3	Partly Snow Covered	
3.5.3	Covered	9
3.5.3.1	Ice Covered	
3.5.3.2	Snow Packed	
3.5.3.3	Snow Covered	
3.5.4	Snow Drifts	10
4.0	VISIBILITY CONDITIONS	11
5.0	COLOUR SYSTEM FOR VISUAL REPORTING	13



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Project Steering Committee

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Anne Baril, Chair
Ministère des Transports du Québec

Leanna Belluz
Transport Canada

Kenneth Boyd
City of Winnipeg

Bob Dunford
City of Edmonton

Sharla Griffiths
Alberta Transportation

Olga Kidson
Nova Scotia Department of Transportation and Infrastructure

Dave MacFarlane
New Brunswick Department of Transportation

Michael McArthur
Yukon Department of Highways and Public Works

Dean Osmond
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Martin Rochon
TAC Project Manager

Sandra Majkic
TAC Program Manager

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WINTER ROAD CONDITION
TERMINOLOGY USER GUIDE

1.0 INTRODUCTION

Drivers make trip decisions using weather and driving condition information from a variety of sources. If provided with reliable and consistent information, drivers will make trip decisions that suit their risk tolerance, driving ability and schedule. It is expected that drivers, when presented with winter condition information, will make one of the following three decisions:

- Keep the trip plan without changing key travel parameters (e.g. departure time, estimated arrival time, travel speed);
- Keep the trip plan but change key travel parameters (e.g. change departure and/or estimated arrival time, significantly reduce speed, accept travel delays along the way, take a longer route); or
- Change the travel plan (e.g. cancel, delay or interrupt the trip along the way, choose an alternative mode of transportation).

Many provinces have road condition information available on their website or such information is provided by media outlets that help with local trip planning. Planning long trips has been challenging, particularly when crossing provincial/territorial boundaries due to inconsistency in definitions and reporting of driving conditions across Canada.

Recognizing this need, Canadian road authorities have worked together to develop a new and consistent vocabulary for use as part of 511 systems being implemented by provinces and territories across Canada. This system is designed to provide the travelling public with information on road conditions that is reported consistently in every province and territory. An important step in developing this system is having a common vocabulary that describes winter road and visibility conditions.

The vast majority of drivers surveyed as part of the process to develop the national winter road condition terminology stated that a consistent reporting system across Canada was important. The goal is to have a consistent reporting system across Canada so that anyone can easily access road condition information and be assured that the same terminology and definitions are being used and reported.



This Guide presents the vocabulary and definitions that were tested with the driving public and intended for use by road authorities. It will assist road operations staff to assess and report on road and visibility conditions in a consistent manner. It will also enable departmental communications personnel and media to consistently report driving conditions across Canada.

2.0 PURPOSE OF THIS GUIDE

This Guide has the following purposes:

- To provide guidance regarding concise and consistent terminology for describing road and visibility conditions to the public.
- To explain the logic behind the recording and reporting system.
- To provide a framework for gathering road condition and visibility information in a consistent manner.
- To provide definitions of “road conditions” that can be used by media.
- To assist road users in making trip decisions based on consistent information.



3.0 ROAD CONDITIONS

The road condition descriptions presented in this Guide are founded on four basic principles. These principles are described below.

3.1 Principle #1

Clearly differentiate between a variation in the longitudinal condition from a variation in the cross-section condition.

3.1.1 Longitudinal section

The longitudinal condition describes how much of the length of the road segment being described is wet, snow covered, snow packed or ice covered.

3.1.2 Cross-section

The cross-section condition describes how much of the driving surface is clear of snow and ice thus informing drivers of whether or not all or some of their wheels will be on pavement.

3.1.3 Application to all lanes

On roads with more than one lane in each direction the road condition reported for all lanes will be the condition of the lane in the worst condition.

3.2 Principle # 2

Describe the condition of the road in terms of pavement condition encountered by the user, rather than the progress of roadway clearing operations.

Drivers want to know what pavement conditions they will encounter so they can judge how difficult the trip could be and make travel plans accordingly. Three basic conditions will be reported: **bare, partly covered and covered**. The condition is described to the public based on the amount of bare pavement they can expect to be driving on. In the case of **bare** condition they can expect all wheels of the vehicle to be on pavement and the majority of the road to be clear of ice and snow. With **partly covered** conditions they can expect one clear wheel path and therefore the wheels on one side of their vehicle will be on pavement. With **covered** conditions, they can expect all wheels to be on snow or ice.

3.3 Principle # 3

Use four obstacles (wet, snow, snow packed, ice), and be able to choose between them.

All three conditions described under Principle #1 can have moisture, snow, snow packed or ice present to some degree. The extent of the road surface covered by one of these wet/snow/ice conditions will further define the road condition.

If the snow is not bonded to the road surface then the road will be described as **partly snow covered** or **snow covered**.

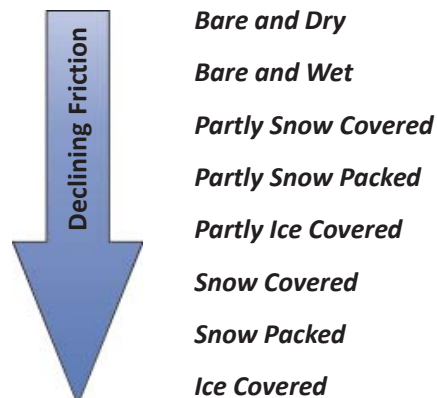
If the snow is bonded to the road surface then the road will be described as **partly snow packed** or **snow packed**.

If there is sufficient ice present then the road will be described as **partly ice covered** or **ice covered**.

3.4 Principle #4

Do not combine conditions, but rather focus on the condition that is most important to the drivers. Use the 80/20 rule to determine the highest priority condition if a combination of conditions exists.

The order of road conditions is from the most preferred condition to the least preferred condition as follows:



In cases where more than one condition exists on a road section the 80/20 rule should apply. The 80/20 rule suggests that if more than 20 percent of the least preferred condition exists then the least preferred condition is the condition reported for that road section.

Example: a road section is reported as ice covered if more than 20 percent of its longitudinal length is ice covered and the rest of the road is snow packed, snow covered, partly ice covered, etc.

3.5 Description of roadway conditions

The following sub-sections define different road conditions in terms to be used by the field personnel (technical definition) and the public (general public definition). An illustration of each described condition is provided.

A decision tree has been provided (Figure 1) to help make the road condition determination. **It is very important that this decision tree be used to ensure that the same corresponding definition is used, given the same road conditions.**

3.5.1 Bare

Technical Description: Bare describes a road where at least 3 metres of the pavement cross-section in all lanes is clear of ice or snow. This does not mean that the entire road is clear. There may be some patches of ice and snow present but it can only be affecting less than 10% of the longitudinal road surface.



General Public Description: All wheels of a passenger vehicle are on a bare surface, and some patches of snow and ice may be present.

A **bare** road is further described as **wet** or **dry** based on the amount of the longitudinal road surface that is covered with moisture. The technical and general public descriptions are provided below.

3.5.1.1 Bare and Wet

Technical Description: Greater than 20% of the longitudinal road surface has moisture covering it.

General Public Description: Most of the road surface is moist.

3.5.1.2 Bare and Dry

Technical Description: Less than 20% of the longitudinal road surface has moisture covering it.

General Public Description: Most of the road surface is dry.

3.5.2 Partly Covered

Technical Description: One wheel path is clear over at least 50% of the longitudinal road surface. Therefore, two wheels of a passenger vehicle are on a bare surface.



General Public Description: Two wheels of a passenger vehicle are on a bare surface.

A **partly covered** road is covered with snow, hard pack or ice or some combination of all three. More than 20% of the longitudinal road surface must be affected by one of these conditions for the definition to apply. In situations where more than 20 % of the longitudinal road surface is covered by a combination of these conditions the least preferred condition will be used to describe conditions of the entire road. The least preferred condition is usually ice, followed by packed snow, followed by snow. These conditions are described below:

3.5.2.1 Partly Ice Covered

Technical Description: More than 20% of the covered portion of the road is covered by ice.

General Public Description: Two wheels of a passenger vehicle are on a bare surface and the other wheels are likely to be on ice.

3.5.2.2 *Partly Snow Packed*

Technical Description: More than 20% of the covered portion of the road is covered by snow that is bonded to the road and the road surface is not partly ice covered.

General Public Description: Two wheels of a passenger vehicle are on a bare surface and the other wheels are likely to be on snow bonded to the road.

3.5.2.3 *Partly Snow Covered*

Technical Description: More than 20% of the covered portion of the road is covered by loose snow and the road is not partly ice covered or partly snow packed.

General Public Description: Two wheels of a passenger vehicle are on a bare surface and the other wheels are likely to be on loose snow.

3.5.3 **Covered**

Technical Description: No wheel path is clear over more than 50% of the longitudinal road surface. Therefore all wheels of a passenger vehicle are on snow or ice.

General Public Description: All wheels of a passenger vehicle are on snow or ice.



A **covered** road is covered with snow, hard pack or ice or some combination of all three. More than 20% of the longitudinal road surface must be affected by one of these conditions for the definition to apply. In situations where more than 20 % of the longitudinal road surface is covered by a combination of these conditions the least preferred condition will be used to describe condition of the entire road. The least preferred condition is usually ice, followed by packed snow, followed by snow. These conditions are described below:

3.5.3.1 Ice Covered

Technical Description: More than 20% of the covered portion of the road is covered by ice.

General Public Description: All wheels of a passenger vehicle are on ice.

3.5.3.2 Snow Packed

Technical Description: More than 20% of the covered portion of the road is covered by snow bonded to the road surface and the road is not ice covered.

General Public Description: All wheels of a passenger vehicle are on snow bonded to the road.

3.5.3.3 Snow Covered

Technical Description: More than 20% of the covered portion of the road is covered by loose snow and the road is not ice covered or snow packed.

General Public Description: All wheels of a passenger vehicle are on loose snow.

3.5.4 Snow Drifts

With any road condition, snow drifts may be present. When snow drifts accumulate to a depth greater than 20 cm across part or all of the lanes, then snow drift conditions should be reported.

Technical description: Snow drifts have accumulated to greater than 20 cm depth across part or all of the lane(s).

General public description: Snow drifts may extend into the driving lanes.

4.0 VISIBILITY CONDITIONS

Regardless of the road condition, driving conditions are affected by visibility. Three visibility conditions are used.

- Good
- Fair
- Poor

Visibility can be reduced for a number of reasons including: falling snow, mist from a watercourse, fog or blowing snow. These causes (blowing snow, mist or fog) can be communicated to the public through the 511 system so that the user can be informed of the reason for reduced visibility.

GOOD VISIBILITY

Technical description

Visibility is more than 500 metres over the entire section.

General public description

Visibility is more than 500 metres over your entire route.



FAIR VISIBILITY

Technical description

Visibility is between 250 and 500 metres at specific locations.

General public description

Visibility is between 250 and 500 metres at specific locations.



POOR VISIBILITY

Technical description

Visibility is quickly reduced to less than 250 metres at specific locations.

General public description

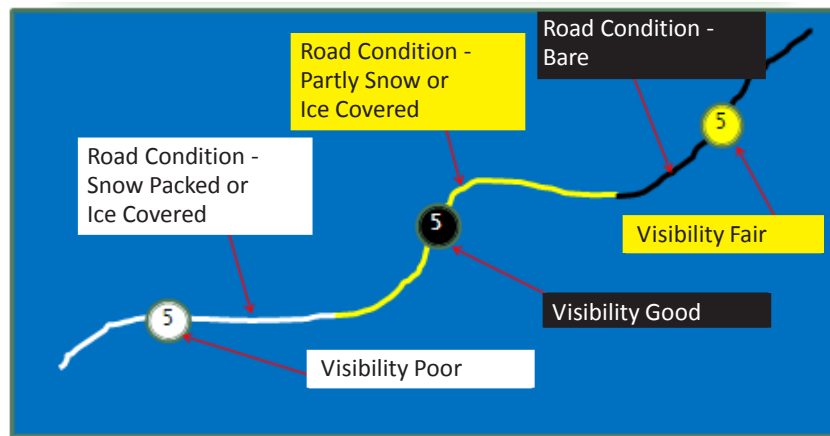
At certain locations, conditions may suddenly reduce visibility to less than 250 metres.



5.0 COLOUR SYSTEM FOR VISUAL REPORTING

The road and visibility conditions will be reported on road condition maps displayed by the media and on websites, using the colour scheme to describe the road condition for each particular road segment. The colour scheme for the visibility condition on those segments will appear in the symbol or marker for the road (usually a highway number).

Sample Internet Display

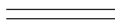



Three colours – black, yellow and white – have been adopted for reporting purposes. Recognition by people suffering from colour blindness was the main consideration in selecting the colours. Two of the colours (black and white) are based on colours the public normally sees on the road surface during winter driving condition. In winter a bare road appears black so black was suggested for the **bare** conditions. White was selected to represent the **covered** conditions, since a snow/ice covered road would appear white.

Based on research of colours that are recognizable by colour blind people, yellow was selected to represent **partly covered** road condition.

In addition, red lines with black bars will be used to identify road segments that are **closed** for any reason.

Therefore the road conditions will be shown as follows:

- Bare = 
- Partly covered = 
- Covered = 
- Closed = 

Visibility conditions will be shown using black, yellow and white circles.

Therefore the road conditions will be shown as follows:




- Good visibility = 
- Fair visibility = 
- Poor visibility = 

Figure 1

