

# Piarc committee B2 Winter Service

Mendoza Argentina

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# Winter Service in High Elevations

**The Canadian Options on Form of Service**



# Provinces in Canada that have 100% outsourced highway service

British Columbia

Alberta

Ontario

## **WINTER ABRASIVE AND CHEMICAL SNOW AND ICE CONTROL**

### **1. OBJECTIVE**

To facilitate the safe and efficient movement of traffic on Highways in winter conditions through the use of Winter Abrasives and chemical snow and ice control applications, and to ensure that the Contractor utilizes and deploys, those resources that are required to comply with this Specification, in a manner which anticipates and responds in advance of a Weather Event as defined in the Maintenance Specification.

### **2. GENERAL PERFORMANCE SPECIFICATIONS**

#### **2.1. Routine Maintenance Services**

All services for this Maintenance Specification are Routine.



		Winter Highway Classification		
		Class A & B	all Class C and Class D paved only	all Class D gravel Highways
(i)	maximum particle size	12.5 mm	16 mm	19 mm
(ii)	metric screen size			
	19 mm	N/A	N/A	100
	16 mm	N/A	100	N/A
	12.5 mm	100	N/A	N/A
	9.5 mm	N/A	80-100	80-100
	4.75 mm	50-95	50-95	50-95
	2.36 mm	30-80	30-80	30-80
	0-0.600 mm	10-50	10-50	10-50
	0-0.300 mm	0-25	0-25	0-25
	0-0.075 mm	0-6	0-6	0-6

**Note:** The figures shown in the above table represent the percent of material which passes through that particular screen size.

#### 4. WARRANTY

### **3.1.1. Performance Time Frames**

The Contractor must:

- a) deploy resources to appropriate key locations (e.g.: mountain passes, higher elevation, known frequent snowfall and/or blowing snow, Black Ice areas) and at locations indicated by the road and weather condition forecast, at least 60 minutes in advance of a forecasted Weather Event or forecasted hazardous road conditions such as snowfall, Black Ice and freezing rain;
- b) restore traction within the response times, from the time the deficiency was detected by or reported to the Contractor, as specified in the following table:

Condition	Location	Winter Highway Classification			
		A	B	C	D
(i) from beginning and or during snowfall event	hills over 5% gradient (one lane each direction)	60 min	90 min	2 h	4 h
	curves under 60 kilometres per hour	60 min	90 min	2 h	4 h
	school zones & intersections	90 min	2 h	3 h	6 h
	other locations	2 h	3 h	4 h	8 h
(ii) Freezing rain	all locations	2 h	3 h	5 h	6 h
(iii) Black Ice	all locations	2 h	3 h	5 h	6 h
(iv) after snowfall	all hills (all lanes)	5 h	8 h	24 h	48 h
	all curves	5 h	8 h	24 h	48 h
	all other locations	24 h	36 h	3 d	as required
(v) when Slippery surfaces are encountered during patrol	all locations	immediate application	immediate application	immediate application	immediate application

**Legend**

min - minutes

h – hours

d – days

- c) prioritize locations within the Highway Classifications, such as mountain passes, higher elevation areas, areas known for the formation of Black Ice, accident sites, Bridge Decks and locations known to be unsafe;



## **HIGHWAY SNOW REMOVAL**

### **1. OBJECTIVE**

To remove loose snow, slush and compact snow; to protect Highway Users from situations that are unsafe; to ensure the safe and efficient movement of traffic and to ensure that the Contractor utilizes and deploys, those resources that are required to comply with this Specification, in a manner which anticipates and responds in advance of a snowfall.

### **2. GENERAL PERFORMANCE SPECIFICATIONS 2.1 Routine Maintenance Services**

All services for this Maintenance Specification are Routine.

The following table establishes the time from the end of the last measurable snowfall within which the Contractor must push snow and ice beyond the Shoulder edge:

Winter Highway Classification			
A	B	C	D
4 days	6 days	10 days	24 days

MTO GOAL:

### **How They Measure Performance**

MTO has a Provincial performance target to meet the bare pavement standard 90 per cent of the time, each winter across the Province. [The standard timeframe to restore bare pavement](#) varies depending on winter traffic volume and highway type. Some highways with low traffic remain snow packed for most of the winter.

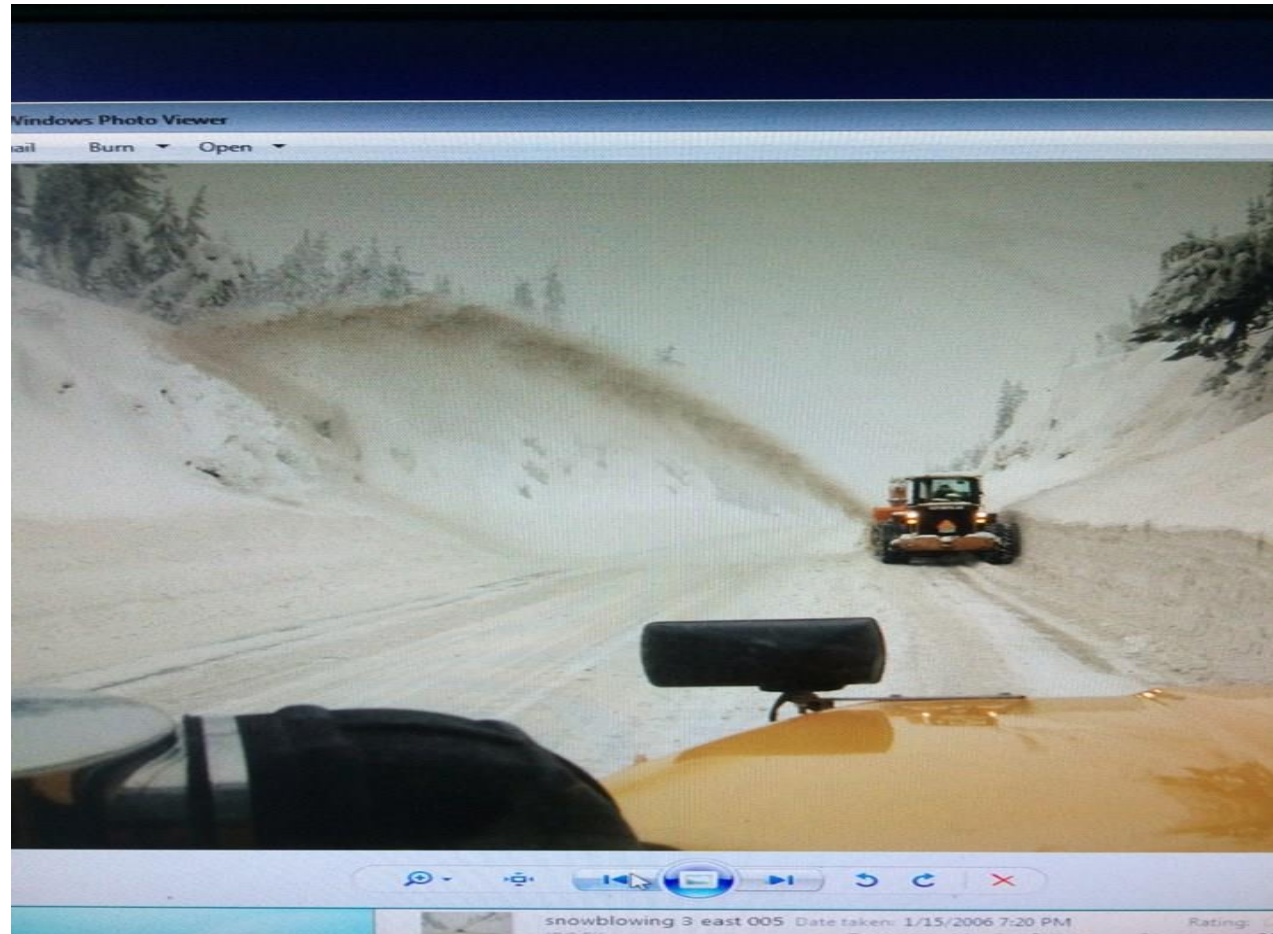








Snow Blowers often are having to blow snow in the opposite direction of travel due to Cut banks an lack of snow storage space





The Tow Plow operated with a Tri drive Plow

An Anti Ice Plow truck mixture with Ca Cl and Na Cl





Typical Tandem Axle Plow truck





A late season Avalanche





Clean up with conventional equipment







Truck Plows are the highest % of equipment used in Winter service in Canada



Avalanche across four lane highway



Reverseable Wing on a grader





Reverseable wing , ice blades , main blade and front Plow





Due to low temperatures we also need to thaw culverts and drains to ensure they can continue to flow as water starts to move



Maintaining sign systems is critical to safety even in winter !



New snow lion compact ice remover





Before and after





Close up of compact removal



Liquid deicer is used as part of surface treatment program



Traditional method of improving traction on a snow covered road





Traditional truck plow (three season box ) plow , underbody and mid mount wing





An expensive tool to do avalanche control



Equipment getting ready for spring winging back snow banks to improve drainage





Road design does not always deal with Snow Avalanche hazards appropriately , This results in very expensive equipment use





Traditional T/A plow truck with all season Box , underbody plow and front plow lift assembly



Echelon Plowing and application of deicing





Truck and tow plow





### 3.1.1 Performance Time Frames

#### a) Maximum Allowable Accumulations

- i) The Contractor must start removing snow on the full width of the Travelled Lanes, ensuring that accumulations remain below the Maximum Allowable Accumulations shown in the table below:

Winter Highway Classification	Maximum Allowable Accumulation		
	One Lane Each Direction	Second Lanes	All Other Lanes
A	4.0 cm	8.0 cm	12.0 cm
B	6.0 cm	10.0 cm	16.0 cm
C	10.0 cm	n/a	20.0 cm
D	15.0 cm	n/a	n/a
E	25.0 cm	n/a	n/a

- ii) Notwithstanding the foregoing Maximum Allowable Accumulation, plowing of slush and removal of broken compact snow from the Travelled Lanes that is unsafe must be completed within the following timeframes:

Winter Highway Classification			
A	B	C	D
90 min	2 hours	6 hours	n/a

#### **Legend**

min – minutes

h – hours



