



## Grade Two Teacher's *Show off the Plows* Curriculum Guide



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Alberta



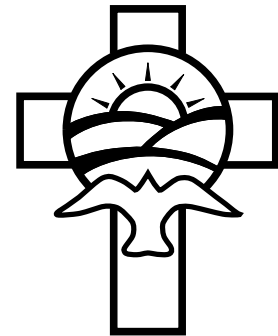
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**Greater St. Albert  
Catholic Schools**





Subject, Area and General Outcomes	Specific Outcomes	Classroom Activities
<p>General Outcome 2.2 - A Community in the Past: Students will demonstrate an understanding and appreciation of how a community emerged, and of how the various interactions and cooperation among peoples ensure the continued growth and vitality of the community.</p>	<p><i>Students will:</i></p> <p><b>2.2.3 appreciate the importance of collaboration and living in harmony (C, PADM)</b></p> <p><b>2.2.4 appreciate how connections to a community contribute to one’s identity (I)</b></p> <p><b>2.2.7 examine how the community being studied has changed, by exploring and reflecting upon the following questions for inquiry:</b></p> <ul style="list-style-type: none"> <li>○ In what ways has our community changed over time (e.g., changes in transportation, land use)? (CC, TCC)</li> </ul>	<ul style="list-style-type: none"> <li>○ Pre-teaching: compare and contrast</li> <li>○ Read <i>Katy and the Big Snow</i> or another book about snowplows (see <i>Other Resources</i> on page 16 for a list of books)</li> <li>○ Host a <i>Show Off the Plows!</i> event (see page 5)</li> </ul>
<p><b>Social Studies – Social Participation as a Democratic Process</b></p>	<p><i>Students will:</i></p> <p><b>2.S.5 demonstrate skills of cooperation, conflict resolution and consensus building:</b></p> <ul style="list-style-type: none"> <li>○ work and play in harmony with others to create a safe and caring environment</li> </ul> <p><b>2.S.6 develop age-appropriate behaviour for social involvement as responsible citizens contributing to their community, such as:</b></p> <ul style="list-style-type: none"> <li>○ participate in activities that enhance their sense of belonging within their school and community</li> </ul>	<ul style="list-style-type: none"> <li>○ Host a <i>Show Off the Plows!</i> event (see page 5)</li> </ul>
<p><b>Social Studies – Research for Deliberative Inquiry</b></p>	<p><i>Students will:</i></p> <p><b>2.S.7 apply the research process:</b></p> <ul style="list-style-type: none"> <li>○ participate in formulating research questions</li> <li>○ develop questions that reflect a personal information need</li> <li>○ follow a plan to complete an inquiry</li> </ul>	<ul style="list-style-type: none"> <li>○ Pre-teaching for <i>Show Off the Plows!</i> event</li> <li>○ Give Me Five!</li> <li>○ Safety Poster</li> </ul>



Subject, Area and General Outcomes	Specific Outcomes	Classroom Activities
<b>Social Studies - Communication</b>	<i>Students will:</i> <b>2.S.8 demonstrate skills of oral, written and visual literacy:</b> <ul style="list-style-type: none"> <li>○ prepare and present information in their own words, using respectful language</li> <li>○ respond appropriately to comments and questions, using respectful language</li> <li>○ interact with others in a socially appropriate manner</li> </ul>	<ul style="list-style-type: none"> <li>○ Pre-teaching for <i>Show Off the Plows!</i></li> <li>○ Host a <i>Show Off the Plows!</i> event (see page 5)</li> <li>○ Safety Poster</li> <li>○ Give Me Five!</li> </ul>
<b>Social Studies – Communication</b>	<b>2.S.9 develop skills of media literacy:</b> identify key words from gathered information on a topic or issue	<ul style="list-style-type: none"> <li>○ Parts of a Snowplow</li> <li>○ True or False</li> <li>○ Missing Words</li> </ul>
<b>Health and Life Skills - Wellness Choices</b> <ul style="list-style-type: none"> <li>○ <i>Students will</i> make responsible and informed choices to maintain health and to promote safety for self and others.</li> </ul>	<b>Grade 3:</b> <b>W–3.8 employ practices that provide safety for self and others;</b> e.g., describe strategies for safely preparing and storing food <b>W–3.9 describe, apply and analyze appropriate safety behaviours in the local community;</b> e.g., street, railway crossings, dugouts, farm equipment, waterfront <b>Grade 1:</b> <b>W–1.9 describe and apply appropriate street safety behaviours in the community;</b> e.g., as a pedestrian, passenger, cyclist	<ul style="list-style-type: none"> <li>○ There are no clear links to the Grade Two Wellness Choices general outcome</li> <li>○ Emergency Road Kit</li> <li>○ Safety Hints: True or False?</li> </ul>
<b>Health and Life Skills - Relationship Choices</b> <i>Students will</i> develop effective interpersonal skills that demonstrate responsibility, respect and caring in order to establish and maintain healthy interactions.	Group Roles and Processes: <b>R – 2.5 demonstrate ways to show appreciation to friends and others</b> <b>R–2.8 recognize and value strengths and talents that members bring to a group;</b> e.g., identify skills each member can offer <b>R–2.9 explain how groups can contribute to a safe and caring environment</b>	<ul style="list-style-type: none"> <li>○ Host a <i>Show Off the Plows!</i> event (see page 5)</li> <li>○ Design Your Own Snowplow Safety Poster</li> <li>○ Safety Hints: True or False?</li> <li>○ Thank You Letter</li> </ul>



Subject, Area and General Outcomes	Specific Outcomes	Classroom Activities
<p><b>English Language Arts</b></p>	<p><b>4.2 Attend to Conventions</b>            Attend to grammar and usage            Attend to spelling            Attend to capitalization and punctuation</p>	<ul style="list-style-type: none"> <li>○ Thank You Letter</li> </ul>
<p><b>Mathematics</b>            Apply a variety of addition and subtraction strategies on whole numbers to 100, and use these operations in solving problems.</p> <p>Use an appropriate calculation strategy or technology to solve problems.</p>	<p>Strand: Number (Number Operations)  <i>Students will:</i></p> <ul style="list-style-type: none"> <li>○ <b>demonstrate an understanding of and proficiency with calculations</b></li> <li>○ <b>decide which arithmetic operation or operations can be used to solve a problem and then solve the problem</b></li> </ul> <p>15. Apply a variety of estimation and mental mathematics strategies to addition and subtraction problems. [E, PS, T]            16. Recall addition and subtraction facts to 10. [E]</p> <p>Strand: Number (Number Concepts)  <i>Students will:</i></p> <ul style="list-style-type: none"> <li>○ <b>use numbers to describe quantities</b></li> <li>○ <b>represent numbers in multiple ways</b></li> </ul> <p>10. Explore the representation of numerals (0 to 100), using a calculator or a computer to display numerals. [PS, R, T]</p>	<ul style="list-style-type: none"> <li>○ Math Code</li> </ul>
<p><b>Fine Art</b></p>	<p>Component 10 (iii) MEDIA AND TECHNIQUES:            Students will use media and techniques, with an emphasis on exploration and direct methods in drawing, painting, print making, sculpture, fabric arts, photography and technographic arts.            Concepts: A-drawing , D- sculpture</p>	<ul style="list-style-type: none"> <li>○ Build Your Own Snowplow</li> <li>○ Design Your Own Snowplow Safety Poster</li> </ul>



## Suggested Classroom Activities

### *Pre-teaching Activities*

- Work with students to begin a KWL chart (what they already know, what they want to learn, what they actually learned)
- Read and discuss one of the books from the resource list
- Compare and contrast the weather and transportation systems in your community, an Acadian community, a prairie community and an Inuit community
- Review these safety hints for children:
  - Build snow forts well away from the road.
  - Don't slide, climb or walk on snowbanks close to the road.
  - Stay well back from snowplows – rocks, wood and other hard objects can fly off a snowplow.
  - Wear bright, reflective clothing when playing outdoors so snowplow operators and other motorists can see you.
  - Toboggan in a safe place well away from the road.
  - Don't walk up behind a snowplow, or climb on one, even when it is parked.
  - Do not throw snowballs at snowplows or other vehicles.
- Based on the KWL chart, have students prepare questions to ask the snowplow operator and provincial government representative who will visit your school.

### **Outcomes:**

- Social Studies 2.1.1 appreciate the physical and human geography of the communities studied
- Social Studies 2.1.2 investigate the physical geography of an Inuit, an Acadian, and a prairie community in Canada by exploring and reflecting the following questions for inquiry: What is daily life like for children in Inuit, Acadian and prairie communities?
- Social Studies 2.S.7 apply the research process: participate in formulating research questions (develop questions that reflect a personal information need, follow a plan to complete an inquiry)
- Social Studies 2.S.8 demonstrate skills of oral, written and visual literacy (prepare and present information in their own words, using respectful language; respond appropriately to comments and questions, using respectful language; interact with others in a socially appropriate manner)



## **Show Off the Plows!**

*Show Off the Plows!* events are organized as part of the annual Safer Winter Highways awareness campaign, co-sponsored by the Government of Alberta and the Alberta Roadbuilders and Heavy Construction Association. *Show Off the Plows!* events have well received at schools and have been featured in the campaign since its inaugural year during the 2005-2006 winter season.

*Show Off the Plows!* events are designed to:

- put a human face on the hundreds of Albertans who work to keep our highways safe in the winter
- provide elementary school students, media and elected officials with an opportunity to see the inside of a plow including the technology snowplow operators use to help keep our highways safe, and
- hand out fact sheets and other-related items as appropriate on safer winter tips and highway maintenance in Alberta.

Elementary schools are ideal locations for *Show Off the Plows!* events for a number of reasons. The Grade Two curriculum includes a number of general and specific outcomes related to safer winter highways. For example, the Grade Two social studies curriculum economic characteristics of communities in Canada (occupations and services available), as well as current events. This event offers the school the opportunity to have a no-cost field trip right in their own parking lot or playground area.

School administrators are asked to arrange for Grade Two teacher(s) and class(es) to participate. In addition to providing a unique learning opportunity, participation by students also provides print media and television with the opportunities for photos they need to complement their stories, which will convey safer winter highways messages to other Albertans. Likewise, participation by elected officials will enhance the learning opportunity, support the media draw and present photo opportunities.

*Show Off the Plows!* events will last up to 45 minutes to one hour\* and will include these features:

- Opening remarks/introductions
- Comments from the snowplow operator – to focus on a typical day on the job and a guided tour of the snowplow's features.
- Opportunities for all participants to sit in the driver's seat of the plow, beginning with the elected official(s) in attendance.
- Additional opportunities for questions and answers or one-on-one interviews during and after the guided tour. (\*The event runs 45-60 minutes depending on weather conditions, number of participants and their interest levels)





### **Outcomes:**

- Social Studies 2.1.4 investigate the economic characteristics of communities in Canada by exploring and reflecting upon the following questions for inquiry: What are the occupations in each of the communities? (ER) What kinds of goods and services are available in the communities? (ER)
- Social Studies 2.2.3 appreciate the importance of collaboration and living in harmony (C, PADM)
- Social Studies 2.S.5 demonstrate skills of cooperation, conflict resolution and consensus building: work and play in harmony with others to create a safe and caring environment
- Social Studies 2.S.6 develop age-appropriate behaviour for social involvement as responsible citizens contributing to their community, such as: participate in activities that enhance their sense of belonging within their school and community
- Social Studies 2.S.8 demonstrate skills of oral, written and visual literacy: prepare and present information in their own words, using respectful language; respond appropriately to comments and questions, using respectful language; interact with others in a socially appropriate manner
- Health and Life Skills: R – 2.5 demonstrate ways to show appreciation to friends and others
- Health and Life Skills: R–2.8 recognize and value strengths and talents that members bring to a group; e.g., identify skills each member can offer
- Health and Life Skills: R–2.9 explain how groups can contribute to a safe and caring environment

### ***Parts of a Snowplow Activity Page***

Have students identify and label the parts of the snowplow by printing the correct word from the word bank on each line. Students who complete the labeling should be encouraged to work on the challenge activity (colour the snowplow and add more details to the drawing).

#### **Outcome:**

- Social Studies: 2.S.9 develop skills of media literacy identify key words from gathered information on a topic or issue



## ***Emergency Road Kit Activity Page***

You may want to prepare an emergency road kit to show students (Hint: there is a list of items that should be included in your kit in the *Interesting Facts*).

Have students choose and draw the best items to put in an emergency road kit. Students who complete their emergency road kit should be encouraged to work on the challenge activity (With your family, look at your emergency road kit and see if any important parts are missing. If you don't have an emergency road kit, make one.).

For the challenge activity: have blank paper available for students to list items that should be included in their emergency road kit to take home and discuss with their families.

### **Outcome:**

- **Health and Life Skills - Wellness Choices**

*Students will:*

- make responsible and informed choices to maintain health and to promote safety for self and others.



## **Missing Words Activity Page**

Review the words in the word bank with your students prior to this activity. (Hint: the glossary may be helpful for this.)

Explain that each sentence is missing an important word. Have students choose the correct word from the word bank to complete each sentence.

### **Outcomes:**

- Social Studies 2.1.4 investigate the economic characteristics of communities in Canada by exploring and reflecting upon the following questions for inquiry: What are the occupations in each of the communities? (ER) What kinds of goods and services are available in the communities? (ER)
- Social Studies 2.S.9 develop skills of media literacy: identify key words from gathered information on a topic or issue

### **Answer Key:**

We see snowplows on our Alberta provincial highways.

The person who drives a snowplow is called a snowplow operator.

Snowplows keep our highways clear of snow and ice.

During the winter, snowplows provide an important service.

Snowplow operators put sand and salt in the hopper and it comes out onto the highway through the spinner.

Many Albertans cooperate to keep our winter highways safe.

Keep a safe distance when you see a snowplow's flashing amber and red lights.

Challenge Answer: 1 highways 2 lights 3 operator 4 safe 5 salt 6 service 7 snow



## Math Code – addition Activity Page

Have students solve the addition problems then use the code to discover the important message.

### Answer Key:

$\begin{array}{r} 6 \\ +5 \\ \hline 11 \end{array}$	$\begin{array}{r} 9 \\ +9 \\ \hline 18 \end{array}$	$\begin{array}{r} 6 \\ +6 \\ \hline 12 \end{array}$	$\begin{array}{r} 3 \\ +7 \\ \hline 10 \end{array}$	$\begin{array}{r} 11 \\ +7 \\ \hline 18 \end{array}$	$\begin{array}{r} 9 \\ +7 \\ \hline 16 \end{array}$	$\begin{array}{r} 6 \\ +7 \\ \hline 13 \end{array}$	$\begin{array}{r} 9 \\ +4 \\ \hline 13 \end{array}$	$\begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array}$	$\begin{array}{r} 9 \\ +9 \\ \hline 18 \end{array}$	$\begin{array}{r} 7 \\ +3 \\ \hline 10 \end{array}$	$\begin{array}{r} 6 \\ +3 \\ \hline 9 \end{array}$	$\begin{array}{r} 9 \\ +5 \\ \hline 14 \end{array}$	$\begin{array}{r} 12 \\ +6 \\ \hline 18 \end{array}$	$\begin{array}{r} 9 \\ +2 \\ \hline 11 \end{array}$	$\begin{array}{r} 5 \\ +4 \\ \hline 9 \end{array}$	$\begin{array}{r} 2 \\ +2 \\ \hline 4 \end{array}$
R	E	S	P	E	C	T	T	H	E	P	O	W	E	R	O	F
$\begin{array}{r} 8 \\ +4 \\ \hline 12 \end{array}$	$\begin{array}{r} 5 \\ +3 \\ \hline 8 \end{array}$	$\begin{array}{r} 8 \\ +1 \\ \hline 9 \end{array}$	$\begin{array}{r} 7 \\ +7 \\ \hline 14 \end{array}$	$\begin{array}{r} 5 \\ +5 \\ \hline 10 \end{array}$	$\begin{array}{r} 4 \\ +3 \\ \hline 7 \end{array}$	$\begin{array}{r} 8 \\ +1 \\ \hline 9 \end{array}$	$\begin{array}{r} 8 \\ +6 \\ \hline 14 \end{array}$	$\begin{array}{r} 4 \\ +8 \\ \hline 12 \end{array}$	$\begin{array}{r} 8 \\ +7 \\ \hline 15 \end{array}$	$\begin{array}{r} 6 \\ +2 \\ \hline 8 \end{array}$	$\begin{array}{r} 9 \\ +8 \\ \hline 17 \end{array}$					
S	N	O	W	P	L	O	W	S	A	N	D					
$\begin{array}{r} 10 \\ +3 \\ \hline 13 \end{array}$	$\begin{array}{r} 5 \\ +0 \\ \hline 5 \end{array}$	$\begin{array}{r} 12 \\ +6 \\ \hline 18 \end{array}$	$\begin{array}{r} 5 \\ +1 \\ \hline 6 \end{array}$	$\begin{array}{r} 9 \\ +2 \\ \hline 11 \end{array}$	$\begin{array}{r} 7 \\ +2 \\ \hline 9 \end{array}$	$\begin{array}{r} 8 \\ +2 \\ \hline 10 \end{array}$	$\begin{array}{r} 17 \\ +1 \\ \hline 18 \end{array}$	$\begin{array}{r} 7 \\ +4 \\ \hline 11 \end{array}$	$\begin{array}{r} 9 \\ +6 \\ \hline 15 \end{array}$	$\begin{array}{r} 10 \\ +3 \\ \hline 13 \end{array}$	$\begin{array}{r} 9 \\ +0 \\ \hline 9 \end{array}$	$\begin{array}{r} 8 \\ +3 \\ \hline 11 \end{array}$	$\begin{array}{r} 3 \\ +9 \\ \hline 12 \end{array}$			
T	H	E	I	R	O	P	E	R	A	T	O	R	S			

Challenge Answer: 505

### Outcome:

Strand: Number (Number Operations)

*Students will:*

- demonstrate an understanding of and proficiency with calculations
- decide which arithmetic operation or operations can be used to solve a problem and then solve the problem

15. Apply a variety of estimation and mental mathematics strategies to addition and subtraction problems. [E, PS, T]

16. Recall addition and subtraction facts to 10. [E]

Strand: Number (Number Concepts)

*Students will:*

- use numbers to describe quantities
- represent numbers in multiple ways

10. Explore the representation of numerals (0 to 100), using a calculator or a computer to display numerals. [PS, R, T]



## Safety Hints True or False Activity Page

Have your students read the safety facts and decide if each one is true or false. If the sentence is true, students should circle the happy snowplow. If the sentence is false, students should circle the sad snowplow.

Students who complete the True or False activity should be encouraged to work on the challenge activity (Change the false statements to make them true.)

### Outcomes:

- Health and Life Skills - Wellness Choices  
*Students will:*
  - make responsible and informed choices to maintain health and to promote safety for self and others.
- R-2.9 explain how groups can contribute to a safe and caring environment

### Answer Key:

It is difficult for a snowplow operator to see you from the cab.	True
Toboggan and build snow forts right beside the highway.	False
Don't walk up behind a snowplow, or climb on one, even when it's parked.	True
Check the weather forecast and pack your emergency road kit before traveling in the winter.	True
You should throw snowballs at snowplows and other vehicles.	False

### Challenge Answers:

Toboggan and build snow forts in a safe place away from the highway OR Do not toboggan and build snow forts right beside the highway.

You should never throw snowballs at snowplows and other vehicles.



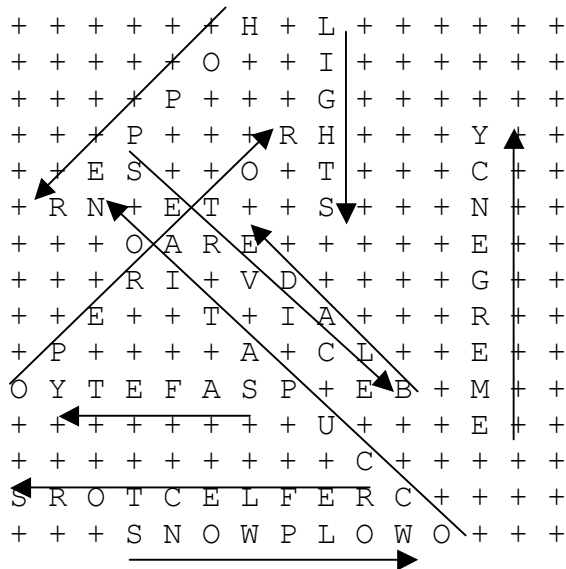
## Word Find Activity Page

Have the students find the 10 snowplow words hidden in the puzzle. Remind them that the words may be across (horizontal), down or up (vertical) or corner-to-corner (diagonal)

### Outcome:

- Social Studies 2.S.9 develop skills of media literacy: identify key words from gathered information on a topic or issue

### Answer Key:



(Over, Down, Direction)

BLADE (11,11,NW)

EMERGENCY

(13,12,N)

HOPPER (7,1,SW)

LIGHTS (9,1,S)

OCCUPATION

(12,15,NW)

OPERATOR (1,11,NE)

REFLECTORS

(10,14,W)

SAFETY (7,11,W)

SERVICE (4,5,SE)

SNOWPLOW (4,15,E)

## Give me five! Activity Page

Have each student identify five important facts they have learned about snowplows and snowplow safety and write those facts on the drawing of an operator's hand.

Complete the KWL chart: have students brainstorm and record the students' responses.

### Outcomes:

- Social Studies 2.S.7 apply the research process
- 2.S.8 demonstrate skills of oral, written and visual literacy



## ***Design Your Own Snowplow Safety Poster Activity Page***

Either together as a class or in small groups, have your students brainstorm the snowplow safety facts they've learned. Remind students that snowplows are a key component of safer winter highways. Then have them work individually or with partners to design a poster showing one safety fact. Remind students to include a catchy caption and put as much detail as possible in their drawing. You may want to create a bulletin board display of all the posters or have your class present their posters to another class in the school.

### **Outcome:**

Fine Arts - Component 10 (iii) MEDIA AND TECHNIQUES:

Students will use media and techniques, with an emphasis on exploration and direct methods in drawing, painting, print making, sculpture, fabric arts, photography and technographic arts.

## ***Build Your Own Snowplow***

This additional activity, not found in the activity booklet, can complement your unit of study on safer winter highways. Invite your students to plan and build a model of a snowplow using materials found in the classroom such as clay, foam, modeling clay, blocks, etc.

### **Outcome:**

Fine Arts - Component 10 (iii) MEDIA AND TECHNIQUES:

Students will use media and techniques, with an emphasis on exploration and direct methods in drawing, painting, print making, sculpture, fabric arts, photography and technographic arts.

## ***Thank You Letter Activity Page***

If your class participated in a *Show Off the Plows!* event, you might want to take the opportunity to cover off some Health and Life Skills and English Language Arts outcomes by having your students write a thank you letter to the snowplow operator or someone else who participated in your event. If your school is not hosting a *Show Off the Plows!* event this year, you could have students write to the highway maintenance company responsible for the highways in your region. Click <http://www.transportation.alberta.ca/Content/docType34/Production/contractors.pdf> for a list of these companies and the areas of the province for which each is responsible.

After handing out the template, remind students that a Thank You letter includes: the date, greeting, body and closing. Advise students that when they've finished their letter, they should check it for "COPPS":

- Do all my sentences and names start with **capital** letters?
- Are all my sentences written **on the line**?
- Have I used correct **punctuation**?
- Are all my words **spelled** correctly?
- Do all my sentences make **sense**?

Outcomes:

- English Language Arts 4.2 Attend to Conventions: Attend to grammar and usage, Attend to spelling, Attend to capitalization and punctuation
- Health and Life Skills R – 2.5 demonstrate ways to show appreciation to friends and others



## Background Information

### *Interesting Facts*

#### **Hundreds of Albertans work together to keep our highways safe in the winter.**

- We have 32,000 kilometers of **highways** here in **Alberta**. If all our Alberta highways were laid out in a straight line, that would be enough highway to take us from Edmonton, Alberta all the way to Metaghan, Nova Scotia on the east coast of Canada and back more than three times! (Yes, the distance from Edmonton to Halifax is just over 5,000 kilometres. So going to Halifax and back would be a distance of just over 10,000 kilometres, and we have enough highway here in our province to cover that return trip more than three times!)
- Looking after 32,000 kilometers of highways is a big job! It takes hundreds of people working together to keep our **highways clear** and open to traffic during the winter, particularly when the weather is bad.
- The hundreds of people who are **responsible** for keeping our highways safe during the winter have very important and very interesting jobs.
- Our provincial government is responsible for planning, designing, building and then maintaining all of the highways in **Alberta**.
- The provincial government set standards for how our highways should be looked after and hires private companies to do the maintenance work like **plowing** and **sanding** and **salt**ing. Then, government inspectors make sure that the work is done properly.
- **Alberta's** highway maintenance system is one of the best anywhere. Most Canadian provinces and territories and even other countries such Finland, Norway and New Zealand, have studied Alberta's system and applied best practices in their countries.
- There are more than 600 **snowplows** ready to go into action on Alberta highways when they're needed.
- Whenever there is three centimeters of snow on the ground or our highways get icy, day or night, men and women in **communities** throughout Alberta are ready to jump to their snowplows to help keep our highways safe.
- Highway maintenance companies schedule patrols **every day** during the winter to continually check highway conditions.
- They are paid only for the work they do – they're paid for each hour of snowplowing and ice control they do and they're paid by the tonne for the **sand and salt** they use. They're not paid at all unless they're out working. That ensures they provide us all with a high level of **service**.
- Snowplow operators need help from other drivers to prevent collisions and other incidents. Especially during the winter it's important for drivers to look after their cars and trucks, plan ahead, drive carefully and carry an **emergency road kit**.





- A complete **emergency road kit** would include a blanket, extra clothing and footwear, emergency non-perishable food, a candle in a deep tin, waterproof matches, a first aid kit, a flashlight with extra batteries, a fire extinguisher, booster cables, an ice scraper, a snowbrush, paper towels or rags, a road map, a compass, sand, road salt or **kitty litter**, and a shovel.

### **Technology helps to keep our winter highways safe**

The **Government of Alberta** and Alberta's highway maintenance contractors are using the latest technology to improve winter safety on our highways. For example:

- Many of our newer snowplows now have **side wings** and larger **hoppers** for additional plowing and **sanding** capacity. This means highway maintenance can be done more quickly to improve safety.
- About 25 per cent of the fleet has been equipped with pre-wetting devices to assist in the sanding operation to make highway conditions **safer**.
- Alberta's highway maintenance contractors distribute road condition information to help motorists plan their routes. This includes supplying information to 511 Alberta. 511 Alberta is the Alberta's official provincial road reports service. 511 provides information on highway conditions, roadwork, major incidents like detours and closures, weather alerts, availability of ferry services and wait times at border crossings. Contact 511 at [511.Alberta.ca](http://511.Alberta.ca), by phone by calling toll free to 5-1-1, on Twitter [@511Alberta](https://twitter.com/511Alberta) or/and downloading the 511 Alberta app (Android or IOS).
- More than 200 of our snowplows are equipped with Automatic Vehicle Location Systems (AVLS). AVLS use GPS technology to track snowplow movements and help Alberta Transportation monitor work and audit payments. AVLS also allows automated billing by contractors, which is more efficient and accurate. The systems feed the Snowplow Locator view available to the public found on [511.Alberta.ca](http://511.Alberta.ca).
- The Government of Alberta has installed Road Weather Information System stations on major Alberta highways. The stations have special sensors embedded in and below the road and on nearby towers. The sensors collect detailed data on weather conditions at and near the road surface, which can help highway maintenance personnel to predict icing conditions and respond to conditions more proactively. From this real-time information, maintenance crews can decide if road treatment is necessary or which treatment to apply. In addition to enhancing winter driving safety, this may help reduce the overall amount of **road salt** used, which helps the environment. There are more than 120 stations in operation and are viewable to the public via 511 Alberta.
- The Government of Alberta and its partners are using emerging and evolving technologies known as Intelligent Transportation System (ITS) to meet the many challenges and demands placed on transportation systems. ITS are a broad range of technologies designed to make transportation systems **safer**, more efficient, more reliable and more environmentally friendly without necessarily having to physically alter existing infrastructure. For more information, visit [www.transportation.alberta.ca/606.htm](http://www.transportation.alberta.ca/606.htm).



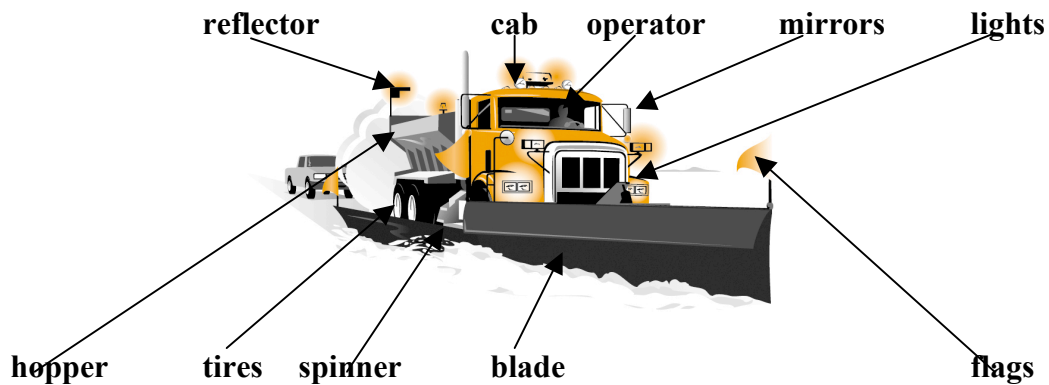
## Glossary

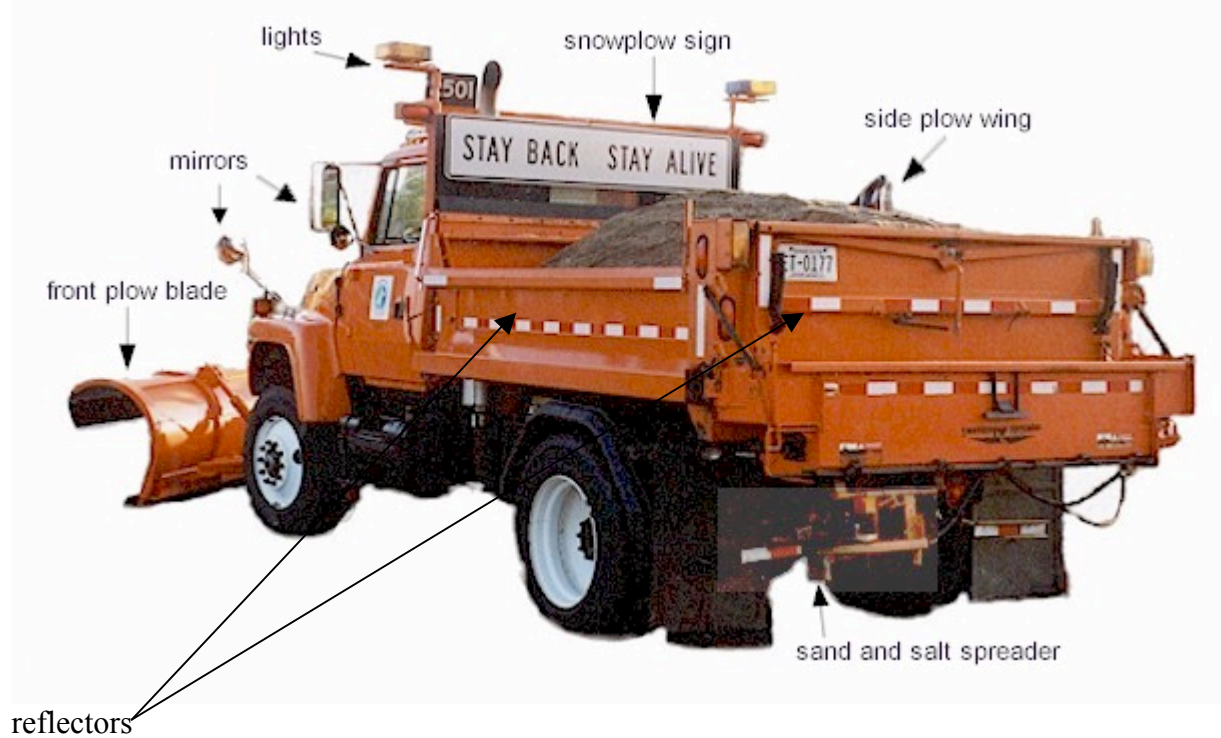
Most definitions were drawn from the Illustrated Oxford Dictionary. Those marked with an asterisk (\*) were found in the Alberta Program of Studies.

<b>blade</b>	The part of a snowplow, generally made of steel, that comes in contact with the ground to scrape and push away snow or ice. (see labeled pictures on the next page) Some snowplows have both front plow blades and side wings.
<b>cab</b>	The part of the snowplow in which the snowplow operator sits. The snowplow operator's compartment. (see labeled pictures on the next page)
<b>community</b>	All the people living in a specific locality.
<b>flags</b>	Special pieces of safety equipment at the top end of a snowplow blade. These flags are bright orange and help the operator and other drivers see when the end of the snowplow blade is in snowy or dark conditions. (see labeled pictures on the next page)
<b>government</b>	The system by which a state or community is governed.
<b>highway</b>	A public road, a main route.
<b>hopper</b>	A container tapering downwards to an opening for discharging its contents. In the case of snowplows used on Alberta highways, the hoppers contain a mixture of sand and salt. (see labeled pictures on the next page)
<b>lights</b>	A source of illumination. In the case of snowplows used on Alberta highways, amber (yellow) and red lights are used to tell motorists that the vehicle is a snowplow. The safety saying is: Amber and red, snowplow ahead. (see labeled pictures on the next page)
<b>occupation</b>	A person's temporary or regular employment. Being a snowplow operator is one occupation in Alberta communities during the fall, winter and spring seasons.
<b>operator</b>	A person operating a machine. The person who drives a snowplow is called a snowplow operator. (see labeled pictures on the next page)
<b>physical geography</b>	The study of the physical characteristics of the environment, for example, landforms, climate and bodies of water.
<b>province</b>	A principal administrative division of a country. Canada is divided into ten provinces and three territories. Alberta is one of Canada's ten provinces.
<b>reflectors</b>	A piece of glass, metal, etc. for reflecting light in a required direction, e.g. on the back of a bicycle. There are many reflectors on the sides and backs of the snowplows used on Alberta highways. These are special safety features that help other motorists see the snowplows at night and in bad weather. (see labeled pictures on the next page)
<b>sand and salt</b>	A mixture of sand and salt is put in the hoppers of the snowplows used on Alberta highways and then spread on the highways through the spinner. The sand and salt helps to provide traction and to melt snow and



	ice so that our highways stay safe.
<b>services</b>	Physical or intellectual labour.* The acts of helping or doing work for another or for a community.
<b>snowplow</b>	A device, or a vehicle equipped with one, for clearing roads of thick snow. These vehicles operate during winter months and are designed to push snow off the roads. While working, they may create a snow cloud that makes it difficult for drivers of other vehicles to see them. Snowplows are equipped with flashing amber lights to make them more visible.
<b>spinner</b>	Also called a sand and salt spreader, this part of the snowplow distributes sand and salt from the hopper onto the surface of the highway to provide traction and melt snow and ice.
<b>tires</b>	A rubber covering, usually inflated, placed round a wheel to form a soft contact with the road. There are more tires on the back of snowplows to support the extra weight of a hopper full of sand and salt.





## Other Resources

### Books:

- *Snowplows* (ISBN: 9781567667561) \$ 21.36 Published by: The Childs World Inc., Format: hardcover, Synopsis: describes the parts of a snowplow, how it works, and the work it does to clear the roads of ice and snow.
- *Snowplows* (ISBN: 073685357X) \$25.95 Author: Terri Degezelle Published by: Capstone Press, Format: hardcover, Synopsis: Simple text and photographs present snowplows, their parts, and their jobs
- *Snowplows* (ISBN: 0822558971) \$6.95 Author: Lisa Bullard, Published by Lerner Publishing Group, Format: mass market paperbound, Synopsis: supports NCSS Standards - Science, Technology, and Society Diagrams - Further Reading List - Fun Facts
- *Katy and The Big Snow* (ISBN: 0395185629) \$8.95 Author: Virginia Lee Burton, Published by: Horn Book, Format: trade paperback, Synopsis: Katy, a brave and untiring tractor, who pushes a bulldozer in the summer and a snowplow in the winter, makes it possible for the townspeople to do their jobs. "Bright, vigorous pictures with plenty of action and endless detail portray Katy at work for the Highway Department of the city of Geopolos."
- *If I Had A Snowplow* (ISBN: 156397746X) \$18.50 Author: Jean L.S. Patrick, Illustrated by Karen Dugan, Published By Boyds Mills Press, Format: hardcover, Synopsis: So many men find it hard to put into words, their feelings for their loved ones. Not the little boy in this story however, he not only puts it into words but actions as well. *If I Had a Snowplow* is the story of a little boy who shows his love for his mother through imaginative play with his toys. If he had a snowplow he would crash through the deep snow to clear a road for her . . . recommended for ages four to eight years



### **Video:**

- *A Snowplow – Cool!* This colourful nine-minute video, designed for grades 2, 3 and 4, features a snowplow driver named Wendy who explains snowplow safety tips to children and was produced by the Minnesota Department of Transportation. Viewable online via YouTube. Search for A Snowplow – Cool! Video by StearnsCountyMN
- [www.sammysnowplow.ca](http://www.sammysnowplow.ca) - This website is geared towards elementary students to help them learn about being safe in the winter. Several videos with live action and cartoon animation are featured.

### **Websites:**

- Government of Alberta: [www.transportation.alberta.ca](http://www.transportation.alberta.ca) (search for Safer Winter Highways) or click <http://www.transportation.alberta.ca/3223.htm> for a direct link to the Safer Winter Highways section.
- Alberta Roadbuilders and Heavy Construction Association: [www.arhca.ab.ca](http://www.arhca.ab.ca)
- Nova Scotia Transportation and Public Works: [www.sammysnowplow.ca](http://www.sammysnowplow.ca) for Sammy Snowplow Safety Games and videos