

Winter Bus Driving Safety

Reference Guide and Test

Introduction:

Driving a school bus on snow and ice requires a specific set of skills. It's our goal that the information in the video will add to the knowledge drivers will need when driving in winter conditions. Drivers should remember that whenever there is a difference between the skills that we are teaching and the policies of your school district, please defer to your district. Each school district has the responsibility to set the rules bus drivers must follow.

The safety of any school bus begins before the driver leaves the bus yard. A good starting place is to check on the weather. The chances are your transportation department will give you a head up on the existing weather conditions.

But, just because you leave the bus yard on a bright, sunny day doesn't guarantee there won't be rain, snow or ice. Always be prepared for changing weather conditions. Because weather conditions can go from mild to severe on any given day, it's important to always bring along additional winter weather gear.

A checklist of this additional winter weather gear might include:

- | | | |
|-------------------|--------------------|-----------------|
| 1) A Winter Parka | 2) Thermals | 3) Rain Slicker |
| 4) Winter Boots | 5) Hat or Knit Cap | 6) Sunglasses |
| 7) Sunblock | 8) Gloves | 9) Extra Socks |
| 10) Ice Scraper | 11) Flashlight | 12) Trash Bags |
| 13) Rags | 14) Wire | 15) Pliers |

Another important part of preparation is the winter pre trip inspection. A good thing to keep in mind is the tires on the bus. In normal conditions most tires are perfectly safe. However, when driving on roads covered with ice or snow, they will not be able to provide the traction that is needed. That is why you must always have chains available. Chains can grip either ice or snow much better than just tires. Be sure to check the condition of the chains before every use. Also be sure that you're carrying a shovel, a broom, tire stretchers and a cam-lock wrench.

Make certain the lug-nuts on the tires are tight and secure, air pressure is good and the tread is not worn down to unsafe levels. Next, check the wiper blades to make certain they aren't cracked and are in good working condition. Also check lights and reflectors to make certain they aren't covered by debris. Check mirrors and windows to make sure they are clear and visible, and the strobe light is functioning properly. Make sure there is a safe level of coolant in the engine compartment, and the battery is free of corrosion. Test the heater and fans to be certain their working properly. Check the fuel gauge, and the radio with dispatch.

If you are going on a field trip make sure you have an itinerary and a charged cell phone. Another good idea is to have a contact name if you are traveling to a district in another area.

This way you have someone to call if you run into any problems in unfamiliar territory.

Winter Driving Conditions

Anyone who has ever driven on snow, black ice or slick and slippery roads can attest to the fact that it makes driving any vehicle more difficult. In this section we're going to address this issue, and offer common sense suggestions about how to avoid losing control of your bus when facing these kinds of winter driving conditions.

Under normal driving conditions, stopping, turning, maintaining the legal speed limit and dealing with traffic can be controlled by using good driving techniques. But when you are faced with roads covered in snow or black ice the whole dynamic changes. Once summer comes to an end and your area experiences it's first rain or snow storm, the roads will become slippery and more dangerous to drive. This is because oil that has become embedded in the road during the long dry spell will combine with water or snow, and the result is an extremely slippery surface. The bottom line is that at the beginning of every winter driving season, school bus drivers must exercise great caution.

Despite the incredible dangers presented by the slick surface created when rain or snow mixes with oil on the road, there is another even more dangerous condition to consider. **Hydroplaning.** Hydroplaning can occur with any type of vehicle. It's caused when a thin layer of water pushes itself underneath the tires of the school bus. It slightly raises the tires up off of the road. If this happens a drivers temporarily loses the ability to steer or safely stop the bus. When this occurs a driver needs to remember these important steps:

- a) First, slowly take your foot off of the accelerator. This will slow the bus down and eventually lead to the tires regaining contact with the road.
- b) DO NOT apply your brakes OR turn the steering wheel!

The best way to avoid hydroplaning is to **slow down when driving in heavy wet weather!** Driving slowly will most likely prevent water from building up underneath the tires of the school bus.

Additional winter driving conditions a bus driver should always be aware of include whenever a bus drives through a ditch or deep puddles of water. The brakes may become wet. When this happens the bus may pull to one side of the road or the other, or the brakes won't apply evenly. The best way to dry the brakes is to gently touch the brake pedal while driving at a moderate speed. DO NOT pump the brakes! And never park the bus at night when you know the brakes are wet. This could cause the brakes to freeze to the brake drums. Dry off the brakes before parking the bus.

Sometimes it's hard to know when ice is forming on the road. When you notice temperature gauges drop below 32 degrees Fahrenheit (0 degrees Celsius), ice is probably forming on the road. Also, pay strict attention to the road. You can see and feel when your bus is running over newly formed ice on the road. With lower temperatures and water on the road, it's

only a matter of time before it turns into black ice. Remember, when the road looks wet it may be hiding the fact that it's really covered in a veneer of ice. Shaded areas are also another good place for ice to form. It may be warm in places where the sun is out, in shady areas the temperature is dramatically different. When looking for ice on the road always assume the worst.

Another important consideration is to make sure you select the proper gear. When driving on icy or snow covered roads, you will not use the same gear as driving on dry roads. When driving on an icy or snowy road, go slow. The condition of the road, not the suggested speed limit, is the determining factor in maintaining the safety of your bus and your students.

Keep the following points in mind when driving in winter conditions:

- 1) DRIVE SLOW. Be very cautious and patient of other motorists.
- 2) Be aware of the temperature.
- 3) Watch for icy road conditions.
- 4) Make sure to chain up when necessary.

Chaining up the School Bus

There are some issues school bus drivers should be aware of before chaining up their bus. Chains provide a vital function for winter driving. They prevent buses from sliding on icy surfaces. They also give buses traction when driving in snow. Be aware, however, that snow tires are not a substitute for chains. You must use chains when required. Often, roads are posted, making it mandatory for chain control. Know your states regulations. These regulations will clearly explain when chain controls are needed. As bus drivers you are responsible for when and how to chain up.

Practice chaining up before winter conditions set in. You should be familiar with the chaining up procedures by the time it becomes necessary to do so. Be sure to take the time to read the chain manufacturer's owner's manual. Each manufacturer will have slight differences in how to correctly use their chains.

If it becomes necessary to chain up on a slope, **work on the uphill side of the bus.** Whenever possible, work on a flat surface. It's important to select a safe spot away from traffic when chaining up. Chains are always placed on the rear outside wheels of the bus.

When chaining up begin by laying the chains out, checking for twists. The chains won't fit properly if they're twisted. It's small details like this that often cause serious problems. The next step is to determine which side of the chain belongs on the outside, and which side of the chain belongs on the inside. The **outside** part of the chain should have the **cam-locks** and the **master link**. The **hooks** will be on the **inside** part of the chain. This is important for several reasons. First of all, if the hooks are on the wrong side of the wheel they will eventually tear

through the tire. And secondly, if the master link and cam-locks are on the wrong side you can't secure and tighten the chains.

When the chains are ready to be placed on the tires, drape them over the top. Make certain you are placing the smooth side of the hooks on the inside of the tire. Now the bus must be moved forward slightly so the chains can be locked into place.

In the final step of chaining up, you will tighten and secure the chain. Starting at the bottom, turn and lock the cams to begin shortening the chain. As you shorten the chain it will secure itself tightly to the tire. Then take your bungie's and hook one end through the extra links of chain at the master link, hooking the bungie onto the shortened and secure length of chain running around the wheel. Pull the bungie straight across the center of the tire and secure the other hook to the chains. Take your second bungie and repeat this process, making an **X** with both bungie's. The bus is now chained up and ready for winter roads.

Braking - Stopping the Bus in Winter Conditions

Knowing how to brake on an icy road will allow bus drivers to maintain better control of their bus. There are several important points to keep in mind:

- 1) A 30 ton school bus requires 12 times longer to stop on a road covered in ice or snow. Keep this in mind, especially when picking up students.
- 2) Don't use retarders on slippery or wet roads.
- 3) When applying the brakes, a driver must be aware of the traffic directly behind the bus. This means apply the brakes slowly. Be sure to use gentle, firm pressure.
- 4) Don't slam on the brakes, this will lock them up and may cause the bus to skid.
- 5) A school bus in winter conditions needs a lot of room to stop.

There are two different types of braking systems your bus will use. It will use either the ABS (Anti-Lock Braking) system, or the non-ABS braking system. On a non-ABS systems the wheels of the bus will lock up when the driver firmly applies pressure to the brakes. On an ABS braking system, the wheels are managed by computer controlled sensors. This means when firm pressure is applied to the brakes they don't lock up. They self-adjust to the conditions of the road.

In the first demonstration from the video, the driver in the first bus, the one not equipped with an ABS system, sped onto a patch of ice. When he felt the bus starting to lose traction he slammed on the brakes, causing them to lock up and sending the bus into a skid. This was definitely not the correct way to stop this kind of bus in winter conditions, though it did look like

fun. What the driver should have done when he felt the tires locking up and losing traction was to immediately take his foot off the brake. **The bus will not respond to steering if the brakes are locked up.** Next, gently but firmly apply the brakes. **Do not pump the brakes!** Also, downshift the bus to help slow it down. The bus will slowly come to a stop, avoiding an uncontrolled skid.

The second demonstration from the video involved a bus equipped with an ABS system. The school bus approached the same stretch of pavement covered in a layer of ice. To stop the bus, the driver firmly pressed the brake pedal. With the ABS system equipped school bus, the driver only felt a slight vibration as the Anti-Lock Brakes engaged to stop the bus. The computer controlled brakes in an ABS system automatically compensated for the skid. It's critically important that school bus drivers understand what type of braking system is equipped on their bus.

Safe Winter Riding for Students

In the final example we demonstrated how students should load and unload onto the school bus in winter conditions. Young students are often impulsive, energetic and lack patience. Bus drivers should keep this in mind when loading or unloading students. In the video loading the students began as a routine procedure, however, one student was late in getting to the bus stop. In his rush to catch the bus before it left, he slipped on the snow and slid under the bus.

Thankfully, the bus driver was alert and saw the student fall. It goes without saying that students have to be reminded that running to get on the bus in any conditions, but especially in winter conditions, is dangerous. Make sure your students understand this. Also, make sure when students are entering or exiting the bus that they are aware of the hazards of winter conditions. Listed below are a few subtle ways to remind students to be cautious.

- 1) Spread a compound on the steps so that when students get on and off the bus they won't slip.
- 2) Tell them to hold the hand rail as they enter or exit.
- 3) Remind them that when waiting for the bus to arrive to stand as far back from the roadside as possible and to wait until the bus has come to complete stop before approaching to board.

Winter bus driving requires a unique set of skills. Apply the skills learned from the video and make certain to follow the standards that are in place for your school district. Remember to stay calm, focused and in charge of your bus. Your students, their parents and your district are depending on you.

WINTER DRIVING SAFETY TEST QUESTIONS:

- 1) When the weather report forecasts a bright, sunny day there is little need to pack excessive equipment like a shovel or broom.

TRUE or FALSE

- 2) After the first rain or snow of the winter season, the roads become very slippery and much more dangerous to drive on.

TRUE or FALSE

- 3) Hydroplaning is a very dangerous situation that can lead to a serious accident. It can happen to any vehicle and is caused when:
- a) The bus drives over rough roads and the tires momentarily lose contact with the pavement.
 - b) Snow and ice build up on the brake shoes, causing the pads to slip when the brakes are applied.
 - c) A thin layer of water comes between the buses tires and the road causing it to lose contact with the pavement.
 - d) Freezing conditions make the braking systems to slip and catch, causing the driver to lose the ability to steer.
- 4) If your school bus begins to hydroplane, the best way to regain control is to immediately lift your foot off of the gas pedal.

TRUE or FALSE

- 5) It is safe to pump the brake when driving on wet or icy roads.

TRUE or FALSE

- 6) Sometimes it's difficult to know when ice is forming on the road. The best sign there might be ice is:
- a) The temperature gauge drops below 32 degrees Fahrenheit (0 degrees Celsius).
 - b) You can see and feel when your bus is running over newly formed ice.
 - c) The road looks wet
 - d) a & b
 - e) a & c
 - f) All the above

- 7) When it becomes necessary to chain up on a slope, work on the downhill side of the bus or the chains won't fit properly.

TRUE or FALSE

- 8) When chaining up, the cam-locks and master link go on the outside part of the wheel. The hooks go on the inside.

TRUE or FALSE

- 9) In the final step of chaining, you will tighten and secure the chains starting at:

- a) The bottom by turning and locking the cam-locks.
- b) The top by turning and locking the cam-locks.
- c) The master link by locking the ends of the chain together.
- d) The bungie's by securing the extra links before turning the cam-locks.

- 10) It's critically important to know if the bus you drive is equipped with ABS system, or a non-ABS system.

TRUE or FALSE

WINTER DRIVING SAFETY - ANSWER KEY:

- 1) FALSE
- 2) TRUE
- 3) C
- 4) TRUE
- 5) FALSE
- 6) F
- 7) FALSE
- 8) TRUE
- 9) A
- 10) TRUE