

LESSON PLAN
2007–08 School Bus Driver's Inservice

TITLE OF LESSON: WINTER WEATHER DRIVING

Objectives of Lesson: The student will be able to:

1. Identify three (3) ways to prepare for driving in adverse weather conditions.
2. Recite three (3) examples of school bus maintenance for winter months.
3. List three (3) common winter weather conditions.
4. Identify the most common mistake drivers make when driving in winter weather conditions.
5. Give three (3) examples of safe loading and unloading practices in adverse weather conditions.

Equipment for Lesson:

- LCD projector and external speakers
- Laptop, DVD player or VCR
- Transparencies
- Flip chart or white board
- *Driving in Winter Weather* DVD or video

Introduction:

A school bus's most vital safety feature is its driver. Driving a school bus in winter months brings the added challenge of adverse weather, which can occur or change at any time on a driver's route. In the winter, vehicle equipment such as sanders, tire chains and ABS braking systems can't always compensate for adverse conditions, or quick changing weather. Additionally, the daily pretrip inspection takes on added importance. Everyone tends to believe that bigger means safer and this belief may give drivers a false sense of security.

The most common mistake made by drivers is the failure to reduce their speed. It is important to remember that the bigger the vehicle, with its greater weight, requires a longer stopping distance. The most important thing to remember when driving in winter weather conditions is to anticipate problems, respond to them early, and avoid panicking.

RCW 46.61.400 states: No person shall drive a vehicle on a highway at a speed greater than is reasonable and prudent under the conditions and having regard to the actual and potential hazards then existing. In every event speed shall be so controlled as may be necessary to avoid colliding with any person, vehicle or other conveyance on or entering the highway in compliance with legal requirements and the duty of all persons to use due care.

A little preparation and education can lessen the probability of winter weather mishaps and provide the safest possible transportation for all passengers.

Presentation:

- **Winter weather conditions: 15 minutes**

Use this time for discussion of common winter weather conditions and list them on a flip chart or white board with a heading for each category listed in the lesson plan. Follow up with discussions that cover the following topics—flooding, fog, sleet/snow, rain, and wind.

- **Preparing for winter weather conditions:**

Each school district should review their winter weather policies and procedures.

- School district policies and procedures
- Alternate routes/snow routes
- Time changes/ late starts
- Weather announcement systems

- **Driver Preparation:**

A few common-sense considerations can allow drivers to arrive at work safely, and prepared to provide safe transportation to students.

- Winterize your personal vehicle and prepare it for winter weather prior to the start of the season.
- Check weather forecasts and allow yourself more travel time to work.
 - √ Local radio stations.
 - √ Local television stations.
 - √ Web sites:
 - ◆ www.noaa.gov
 - ◆ www.wsdot.wa.gov
 - ◆ www.weather.com
 - √ Web sites (continued):
 - ◆ www.accuweather.com

- Dress appropriately for winter weather, with gloves, boots and layered clothing.
 - When necessary, wear good sunglasses, preferably with a glare-reducing lens coating.
 - Carry properly secured supplies, including ice scraper, flashlights and non-perishable food and water.
- **School bus maintenance in the winter months:**

The school bus pretrip inspection is always important, but it can be critical in winter weather.

- During the daily pretrip process, special attention should be paid to all lights, mirrors, gauges, exhaust, suspension, and emergency accessories. A driver should not start a route if a bus problem is detected.
- Windows, headlights, brake lights, turn signals and the eight (8) light system should be cleaned and checked frequently for snow or dirt buildup.
- Check wiper blades and washer fluid levels.
- Check the heater and defroster units for efficient operation.
- Pay special attention to water hoses, belts and radiator hoses.
- Tires should be carefully inspected and properly inflated.
- Fuel level should be kept as close to full as possible and following district procedures.
- Defects should be reported promptly and in writing.

WINTER WEATHER CONDITIONS

Basic seasonal driving tips:

- Slow down.
- Accelerate gently and steer smoothly.
- Carefully test your brakes and steering at a very low speed.
- Utilize controlled braking.
- Allow extra time and distance margins.
- Slow down before curves and corners.
- Go down hills in a lower gear (discuss ice, ruts, etc.).
- Avoid passing unless necessary and then proceed with caution.
- Turn off your cruise control.

Flooding

During extended times of heavy rain, storm drains in cities and towns may not be able to effectively handle overflow, causing local flooding of streets.

- **Slow down** when you approach high water.
- Depth of water, strength of current and conditions of roadway are not always obvious so be cautious about driving through water over the roadway (what kind of gauges can be used to measure depth of water).
- If your bus becomes stranded in an area prone to flash flooding, evacuate as quickly and safely as possible, and move your passengers and yourself to higher ground.
- Be especially cautious driving in flood-prone areas at night.
- Be aware that debris that may be floating in high water.
- Follow district procedures.

Fog

Fog can greatly reduce visibility of the lead vehicle and other vehicles, pedestrians, and traffic signals.

- **Slow down.** If you see headlights or taillights, slow down even more. A driver may be driving in the center of the roadway or may be barely moving.
- Drive with your headlights set on dim and do not overdrive your headlights. Stay within the limits of your vision.
- Use your turn signal long before you turn, and brake early when you approach a stop.
- If visibility is reduced to near zero, find a safe area that is completely off the roadway and stop. Leave your headlights on and make sure you turn on your hazard signals.
- Use strobe lights only according to Washington Administrative Code (WAC) 204-74A-060(1)–(4).

Sleet/Snow

Winter is the most difficult driving season due to ice, snow, lower temperatures and fewer daylight hours.

- Clear all windows.
- Be sure that your headlights and taillights and the eight (8) light system are visible.
- Clear stairs of snow.
- Knock snow off mud flaps.
- **Slow down.**

- Accelerate gently and smoothly. Braking in slow, steady strokes helps you determine how much traction you have. Begin braking early when you come to an intersection or a stop.
- Go down hills in a lower gear (ruts, ice, etc.).
- Be aware of tree limbs that may break under the weight of heavy snow.
- Sudden turns, lane changes or hard braking can throw a vehicle into a skid. If your vehicle begins to lose traction and the rear wheels begin sliding sideways, ease off the gas pedal. Do not make a fast turn away from the direction of the skid and do not over steer. Release the brake and accelerator and steer in the direction you want the vehicle to go.
- Beware of shaded spots, bridges, overpasses and intersections. These are areas where ice is likely to form first.
- Conventional brakes—turn the steering wheel, in a controlled manner; look in the direction you want the vehicle to go.
- Anti-lock brakes—keep your foot on the brake pedal, maintaining firm and continuous pressure while steering the direction you want to go. With ABS brakes you will feel pulsations in the brake peddle; **DO NOT PUMP THE BRAKES** let the ABS do its job. Stomp, stay and steer.
- Give yourself plenty of time before entering the roadway, especially when starting from a complete stop.
- Beware of phantom shoulders that may be created when roads have been plowed.
- Because of possible snow buildup on the top of your bus, don't accelerate quickly.

Controlled Braking

If you don't have anti-lock brakes, the most efficient technique for braking under adverse conditions is to use controlled braking.

- Use the heel-and-toe method.
- Keep the heel of your foot on the floor and use your toes to apply firm, steady pressure on the brake pedal, just short of lockup, to the point at which the wheels stop turning.

Chains

Driving with chains on a school bus can be like taking a ride down a washboard. You need to be aware of every action you take. Your stopping power and overall control is significantly diminished. It is important to think and look ahead, pre plan all turns and stops, and increase your following distance.

Unless otherwise posted, from November 1st to April 1st, vehicles over 10,000 pounds gross vehicle weight (GVW) shall carry a minimum of two (2) extra chains for use in the event that road conditions require the use of more chains or in the event that chains in use are broken or otherwise made useless, WAC 204-24-050(2)(f).

Approved chains for vehicles over 10,000 pounds GVW shall have at least two side chains to which are attached sufficient cross chains of hardened metal so that at least one cross chain is in contact with the road surface at all times. Plastic chains shall not be allowed. The Washington State Patrol may approve other devices as chains if the devices are equivalent to regular chains in performance (cable chains allowable). Pre fit and familiarize yourself with installing your chains before they are needed. Consider holding a class for drivers to practice chaining prior to the start of winter weather months. For additional information, access the following web site. http://www.wsdot.wa.gov/commercialvehicle/chain_req.htm.

- **Link Chains**

When using link/iron chains, always inspect each chain before installation to remove any tangles or twists, the flat side of the chain needs to be placed to the inside of the tire. If a cross link breaks during use, slowly come to a stop as soon as possible. Driving with a broken link can severely damage your vehicle. Carry an extra bungee cord or zip tie to hook the broken cross link up. If the break in the chain is severe, drop the chain and have it repaired. Reducing your speed is recommended. (Discuss district policy regarding speed.)

- **Cable Chains**

Cable chains will allow you a smoother ride. Use manufacturers recommended methods of application.

- **“Cable-Link” Chains**

“Cable-link” is a hybrid design which uses normal metal twist-links for cross bars, but wires for side chains. Packs smaller, is easier to put on and has more grip than cable chains.

- **Automatic Chains**

Use manufacturers recommended methods of application. Automatic chains are only effective in the forward motion and will not help you in a slide or backing situation.

- **Sanders**
You will want to check your sanders before they are needed; the tubs can easily clog especially during inclement weather. The proper way to test sanders is to flick the sanders on for a few seconds, turn off, go out, and check. If the sanders are functioning properly, you should visibly see a small pile of sand in front of all four of your duals.

To activate your sanders before coming to a bus stop, rapidly flick the switch several times before you actually stop. The primary objective is to have your duals sitting on the sand while you are stopped so you won't slide and to provide traction when starting forward. Once you are ready to proceed, flick the sanders several times again to get you started while you gradually accelerate. Please note; if your tires are sliding sideways your sanders will be ineffective, they only cover the forward motion.

Rain

When rain begins to fall lightly, water, dust, oil and leaves cause the roadway to become slippery.

- **Slow down.** The first few drops of rain are danger signals.
- Increase your following distance.
- Take special care on curves and turns.
- Straight line braking is recommended, brake before you enter the curve and release while in the curve.

Hydroplaning

Hydroplaning occurs when your tires are riding on top of a layer of oil, dirt and water and not on the roadway. Hydroplaning can be especially dangerous while a school bus is in cruise control, as it tries to maintain the speed of the drive train. If the vehicle hydroplanes at that speed, then the cruise control will be trying to maintain the hydroplaning. Additionally, the lack of pedal feel increases the reaction time, allowing the time for the vehicle to advance the hydroplaning to all wheels so quickly that it may spin out of control before the driver can react.

- **Slow down** whenever it starts to rain.
- Turn off your cruise control.
- Don't slam on the brakes.
- The recommended method of braking is controlled braking, just short of lock up.
- Try to regain control of the vehicle by releasing the accelerator and steer the direction you want to go. Once you have regained control, gradually re-accelerate. This will transfer the weight to the rear of the vehicle and re-establish traction.

Wind

Strong winds can affect the handling of the school bus. The side of a school bus acts like a sail on a sailboat so winds can push the bus sideways. If you are caught in strong winds:

- **Slow down.**
- Keep a strong grip on the steering wheel. Try to anticipate gusts.
- Be alert to wet or slippery areas whenever it is windy, and particularly when accompanied by heavy rain or moisture.
- Be aware of potential dangers at school bus stops and keep students on the bus if there is a lot of blowing debris.

Loading and unloading passengers in adverse weather conditions

Extreme caution should always be used when loading and unloading school bus passengers. Winter weather makes these additional safety precautions advisable:

- Stop the bus six (6) to ten (10) feet prior to the school bus stop.
- Keep school bus steps clear of ice and snow.
- Tell students not to stand next to or in front of plowed areas.
- To avoid snagging issues, pay special attention to oversize coats, tags or strings on students clothing.
- Establish safe stops for snow/alternate routes/stops and discuss them with students.

Summary:

A few common-sense precautions can allow a driver to arrive at work safely, prepared to provide safe transportation to students. The school bus pretrip inspection is always important, but it can be critical in winter weather.

Additionally, the following items should be regularly practiced when driving in inclement weather.

- **Slow down.**
- Accelerate gently and steer smoothly.
- Carefully test your brakes and steering at a very low speed.
- Utilize controlled braking.
- **Slow down.**
- Allow extra space margins.
- Slow down before curves and corners.
- Go down icy hills in a lower gear.
- Avoid passing.
- Turn off your cruise control.

- **Slow down.**

The most critical process in winter weather is the safe loading and unloading of passengers. Remember these safety precautions:

- Stop the bus six (6) to ten (10) feet prior to the school bus stop.
- Keep school bus steps clear of ice and snow.
- Tell students not to stand next to or in front of plowed areas.
- Establish safe stops for snow/alternate routes/stops and discuss them with students.
- To avoid snagging issues, pay special attention to oversize coats, tags or strings on students clothing.

Driving in winter weather can be challenging and difficult. Remember that excessive speed is the most common mistake drivers make.

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Being prepared can help insure a safe ride for all passengers and drivers, allowing students to arrive at school ready to learn.

Evaluation:

Questions

- 1) Identify three (3) ways to prepare for driving in adverse weather conditions.
- 2) Recite three (3) examples of school bus maintenance for winter months.
- 3) List three (3) common winter weather conditions.
- 4) Identify the most common mistake drivers make when driving in winter weather conditions.
- 5) Give three (3) examples of safe loading and unloading practices in adverse weather situations.

Answers

- 1) Identify three (3) ways to prepare for driving in adverse weather conditions.
 - Dress appropriately for winter weather, with gloves, boots and layered clothing.
 - When necessary, wear good sunglasses, preferably with a glare-reducing lens coating.
 - Carry properly secured supplies, including ice scraper, flashlights and non-perishable food and water.

- 2) Recite three (3) examples of school bus maintenance for winter months.
 - Windows, headlights, brake lights, turn signals and the eight (8) light system should be cleaned and checked frequently for snow or dirt buildup.
 - Check wiper blades and washer fluid levels.
 - Check the heater and defroster units for efficient operation.

- 3) List three (3) common winter weather conditions.
 - Flooding.
 - Fog.
 - Snow/Sleet.

- 4) Identify the most common mistake drivers make when driving in winter weather conditions.
 - Failure to reduce speed.

- 5) Give three (3) examples of safe loading and unloading practices in adverse weather situations.
 - Stop the bus six (6) to ten (10) feet prior to the school bus stop.
 - Keep school bus steps clear of ice and snow.
 - Tell students not to stand next to or in front of plowed areas.
 - Establish safe stops for snow/alternate routes/stops and discuss them with students.