



Driving the School Bus in Inclement Weather: RAIN



Reference Guide and Test

INTRODUCTION

I) Driving on wet slippery surfaces can be dangerous for school bus drivers, their passengers and everyone else on the road. School bus drivers are responsible for getting their passengers to school or home safely in all types of weather conditions. Operating the bus in heavy rainstorms and high winds presents many driving challenges. Visibility, road conditions and preparation all play a significant part in the safe operation of the school bus.

II) The video covers many of the most important safety issues and techniques that can be applied when driving in rainy and windy weather conditions. The video also covers the importance of being prepared and offers driving techniques that can be used to safely operate the school bus in rainy wet and slippery conditions.

Preparation and Road Conditions

1) Every school day poses a new challenge for bus drivers. These challenges are dramatically increased when weather creates major obstacles. Visibility, slippery road surfaces, flooded roadways present challenges when operating a bus in these kinds of conditions. The first thing that the driver must understand is that weather can play a significant role in the way the driver operates the school bus.

PREPARATION

2) For starters, the driver should check their local weather forecast. This will help the driver to understand the type of weather that may be present. It will also alert the driver to weather systems that are approaching their area. Technology has made it easier to do this. Another thing the driver must take into consideration is that a 'forecast' is a prediction that gives a general idea of weather patterns that may exist. Predictions are not a certainty, they are an estimate. This means that you should be prepared even if the news or weather says they are expecting a CHANCE of showers. Weather can be unpredictable and can change at any time.

3) In addition to getting weather forecasts, the driver can also receive alerts for traffic congestion or traffic accidents. Accidents happen more often in stormy weather. By having an idea of where accidents or road closures occur, the driver may be able to adjust to the situation, by changing their route. Also, a driver that is alerted by severe weather forecasts, has the option to alter their route to avoid problem conditions.

ROAD CONDITIONS

4) Something else to be mindful of is the condition of roadway surfaces. **When it rains, the water on the road causes a loss of friction. As a result, the normal heat and friction is decreased, leading to a surface that is more slippery.** When you add additional hazards such as leaked oil or mud to the wet road, it would only make it that much more slippery. Even a patch of wet leaves on the ground can have the potential to cause a vehicle to slide. Driver needs to be mindful of this every time they drive the school bus. It is not like driving on a clear dry roadway. And remember, that the first rain of the year will cause many slippery spots from leaked fluids that have occurred over the dry season.

PRE TRIP INSPECTION

5) Although skilled driving is important in wet weather conditions, it's equally important to insure that the bus is in sound working condition. That is why the pre trip inspection is such a vital part of school bus safety. The pre trip becomes even more critical when you are about to drive in stormy weather.

6) The importance of the lights on the school bus is critical. ALL of the lights on the bus need to be checked, not only to increase your visibility, but also to make it easy for other drivers to see you in low visibility weather. Be sure to check:

- a) headlights
- b) tail lights
- c) fog lights
- d) turn signal lights

- e) clearance lights
- f) interior lights

7) The importance of lights in low visibility weather is critical. You must make sure that every light is in proper working condition and there is no damage to them.

8) The tires are extremely important to check, when you are about to drive on wet roadway surfaces. Be sure to check the tire pressure on all tires. Make sure to check the tread depth of the tires as well.

- a) Tread depth on the front tires should be at a minimum depth of 4/32nds.
- b) The rear tires should have a tread depth at no less than 2/32nds.

9) All tires must be checked for cracks, abrasions or bulges. Check the lug nuts and make sure they are all properly tightened. Remember, tires on the school bus must always be in optimal condition. This becomes even more important, when driving on wet and slippery surfaces. And don't forget this important point: bald or damaged tires have the potential to lose traction.

10) The buses windshield wipers must be thoroughly checked and inspected.

Physically feel that the rubber on the wipers are in good shape and that they are not jagged or have roughness to them. They should be smooth to the touch and sit firmly against the windshield.

11) When checking the wipers from the bus's interior, check them at all speeds to make sure that they will work in an event that a downfall takes place.

12) You will also need to check the defrosters, fans and other safety switches to make sure they are all working properly. The defroster is extremely important to check because condensation causes buildup on windows. The last thing the driver wants is for condensation to build up on the windshield, making it nearly impossible to see clearly

though the windshield.

13) Here are a couple of handy tips to make sure the windshield is clear:

a) Use additional fans to assist the regular fans during defrosting periods. When positioned correctly, the fans will help keep the windshield and door windows clear for longer periods of time.

b) The driver can open the driver's window just a couple of inches. Then open the last window at the rear of the bus. This keeps the air circulating through the bus from the front to the rear. For optimal fog free results, you should open one rear window on EACH SIDE of the bus at 2 - 3 inches.

14) And it goes without saying to perform all brake tests. Whether it is air brakes or hydraulic brakes. All brake tests must be administered and they must pass the tests, before placing the bus into motion.

PROTECT YOURSELF FROM INJURY

15) It is also important to keep yourself safe from injury during the pre trip inspection and operating the bus. When exiting and entering the bus during rain storms, the steps and the area directly next to the drivers seat may become wet. This has the potential to cause a slip. Safety tip: Be careful and watch for water that you may have brought onto the bus with your shoes or wet clothing.

Driving Techniques for Wet, Windy conditions

16) Driving in stormy conditions presents many challenges for school bus drivers. What can start out as a light sprinkle, can rapidly increase into a heavy rain storm in a matter of minutes. There are several techniques that should be applied, when operating the school bus in these conditions.

HEADLIGHTS

17) Be sure to ALWAYS use your low beam headlights when driving in heavy rain.

This is to reduce the the reflection of rain water which inevitably will help you to see better in low visibility weather. Secondly, ANYTIME your windshield wipers are engaged, the headlights should be engaged as well.

FOLLOWING DISTANCES

18) It is extremely important to maintain proper following distances and be aware of other motorists when driving in stormy conditions. You need to be sure to keep a safe following distance between your bus and other vehicles. This will allow the driver time to react to any situation that may take place. Following distances on wet roadways should be 3 to 9 times greater than the distance on a dry roadway.

Driving safety will be greatly improved by slowing down in such conditions and by increasing the following distance. Increasing following distances will also minimize back spray of water being displaced by vehicles you are following.

WET AND WINDY CONDITIONS

19) When it comes to inclement weather - don't take anything for granted. Remember this: After or before heavy downfalls of rain, Powerful winds are often present and can be dangerous for school buses. Wind is a powerful weather component that can literally push vehicles off of roadways. A school bus is virtually a moving billboard with a lot of surface area for heavy gusts to collide against. When traveling on highways with multiple lanes, you must be aware of vehicles in near proximity to the bus. Wind gusts can push the bus out of its lane and the driver has to be mindful of the rear end of the bus shifting. When conditions are windy, you will have to be constantly making slight corrections. To prevent any potential problem, the driver needs to monitor the rear of the bus to make sure the bus doesn't veer out of it's lane.

20) TIP: If you watch the back-spray of the vehicles you are following, you can see the direction in which the wind is blowing, as shown here. By understanding the direction of wind gusts, drivers can be ready if sudden gusts of wind are prevalent and can adjust their steering accordingly.

MERGING AND LANE CHANGES

21) Whenever you are driving on wet, slippery surfaces make sure that you engage your turns signals ahead of time to give other motorists increased warning. You should avoid changing lanes in heavy rain and only do so if necessary. However, when you do need to change lanes, you should give yourself enough time and space to move into the next lane safely. This also includes merging onto the freeway.

STEERING AND BRAKING

22) Be sure to brake early when you are slowing down behind another vehicle or when you are approaching an intersection. Here is another important safety tip - Slow down early and never slam on your brakes when approaching intersections, downgrades or curves. When you start to pull away from a stopped position, be sure to do so smoothly. This will help prevent the tires on the bus from spinning out. When going around curves, be sure not to go too fast or make sudden movements with the steering wheel. This could cause a bus to skid.

23) Make gradual and smooth motions when steering and braking in rainy weather. When going around curves, be sure not to go too fast or make sudden movements with the steering wheel. This could cause a bus to skid. When steering, make sure to have a firm grip on the steering wheel at all times.

24) Here is something else to keep in mind. In the video, we talked about water being brought onto the bus by wet shoes and clothing. You must be careful of wet shoes while driving the bus. **Wet shoes have the potential to slip off of the gas or brake pedal.** You may want to keep a small towel on the bus to wipe the bottom of your feet and be sure to

dry wet areas before starting your route.

25) When driving in rain, **safe speed and following distances are the most important issues** to keep in mind. Drive slowly. You must stay focused and be aware of everything around the bus to safely get students to their destinations. If it starts to rain so heavily that you feel it may be a safety concern, don't take any risks. Find a safe place far enough away from the roadway to stop the bus, alert dispatch and wait it out.

26) The bottom line is that anything you do in dry weather has to be slightly modified to be able to drive safely in rainy and windy conditions. EARLY anticipation, gradual motions, and overall awareness are important considerations.

Special Situations and Additional Safety Issues

HYDROPLANING (AQUAPLANING)

27) It is important to understand that when it is raining heavily, and there is vast amounts of water falling on the road way, your vehicles tires may begin to actually ride on the water that is lying on top of the road pavement. This is called "hydroplaning" or "aquaplaning".

28) As tires enter these areas of standing water, they will try to cut through it. The tire will disperse as much water as possible, but some water will always build up in front of the tire, as shown here. If the tires are unable to disperse enough water, it will cause the water to lift the tires from the road. When this occurs, it can lead to complete loss of traction, as well as, steering control.

29) "Hydroplaning" usually occurs at higher speeds such as highways or freeways. It can also occur if your vehicles tire treads are worn or improperly inflated. And remember this important safety point: In heavy downpours you can reduce the chance of "hydroplaning" by reducing your speed.

30) If you do experience Hydroplaning while driving the bus:

- a) ease off the gas to slow down until you feel the tires make contact with the pavement again.
- b) NEVER attempt to hit the brakes during a hydroplane. If you panic and slam on the brakes while the bus is hydroplaning, the chance of losing ALL traction and steering control will be dramatically increased.

31) Remember, the importance of having good tires with proper tread depth can help prevent hydroplaning. And it is always important to stay cautious and scan the road way so you can be prepared to take action.

FLOODED ROADWAYS

32) There may be times where the driver is faced with driving through standing water. this condition occurs, normally, right after heavy rain periods. Driving through standing water increases risk and should only be done if absolutely necessary. There have been instances where drivers have put students at risk by making poor decisions when faced with such hazards. Just a couple of inches of standing water can lift a vehicle off the road way. This takes us back to stressing the importance of being prepared and understanding where possible road closures or flooded roadways may be present.

33) If you are faced with driving through SMALL amounts of standing water, there are steps and techniques that can be taken to increase safety. As mentioned, ONLY drive through standing water if absolutely necessary.

34) If you have to drive through any standing water, make sure to:

- a) slow down on approach and place the transmission in a low gear.
- b) When entering the water you should gently apply the brakes while slightly increasing the engines RPM's. Remember to keep the brake AND gas pedal slightly pressed at the same time. By doing this, it presses the

brake linings against brake drums or discs. This keeps mud, silt and water from getting between the brakes and drums or discs.

c) When you get out of the water, maintain light pressure on brake and gas pedals for a short distance to dry them out. You must be careful when drying out the brakes. If you do it for TOO long, it can cause the brakes to overheat.

d) make a test stop when it is safe to do so. If the brakes still feel wet, you can dry them out further by repeating the procedures we just mentioned.

35) Whenever you are faced with crossing standing water, stay as close to the middle of the roadway as possible. This allows the bus ample space on both sides and the middle of the road is typically the highest point of the roadway. Of course, only do so if it is safe from oncoming traffic.

SIGNS

36) Make sure you pay attention to all road signs. They will give you suggestions that will make driving the school bus safer. Electronic highway signs will also give you timely information that you can use to help understand road conditions on your traveled route and much more.

VEHICLE HAZARDS

37) Whenever you are driving in inclement weather conditions, there are going to be more accidents and more emergency vehicles on or near roadways. Be cautious of vehicles on the shoulder who may have been in an accident or simply are waiting out the heavy downfalls. Also, make sure you watch for emergency vehicles and make sure to give them plenty of space if necessary.

PEDESTRIANS

38) When heavy downfalls take place, you have to be cautious and even more alert than when driving in dry, clear weather. Watching for pedestrians becomes even more difficult in such low visibility. Sometimes it is hard to even spot them. Be extremely cautious at

crosswalks and other areas where pedestrians may be present.

CLOSING

Throughout the video, we covered many issues pertaining to operating the school bus in heavy rain and on slick surfaces. The video went over the importance of being prepared as well as driving techniques that should be implemented when driving in heavy rain. We have also offered several tips that you can use when preparing or driving in such conditions. Now, take what we have shown you and apply these safety measures to better ensure a safe ride for students.

TEST QUESTIONS

1) Weather forecasts are 100% accurate.

TRUE or FALSE

2) The most important part of the pre trip when about to drive in rain, is the tires.

TRUE or FALSE

3) Whenever you are driving in rain, it is best to use your low beam headlights.

TRUE or FALSE

4) Following distances on wet roadways should be _____ than on a dry roadway.

- a) 1-3 times greater
- b) 3-9 times greater
- c) 9-12 times greater

5) Wind does not affect the school bus and how it is being operated.

TRUE or FALSE

6) When driving in rain, safe speed and following distances are the most important issues.

TRUE or FALSE

7) If the bus starts to hydroplane (aquaplane), you should slam on the brakes immediately.

TRUE or FALSE

8) Only drive through standing water if absolutely necessary.

TRUE or FALSE

9) You can dry out your brakes by increasing RPM while still lightly applying brakes.

TRUE or FALSE

10) If there is a road closure, you don't have to notify dispatch about a route change.

TRUE or FALSE

ANSWER KEY

1) FALSE

2) FALSE

3) TRUE

4) b

5) FALSE

6) TRUE

7) FALSE

8) TRUE

9) TRUE

10) FALSE