

CHAPTER 12

DRIVING IN ADVERSE CONDITIONS

12.1 Reduced Visibility

12.2 Reduced Traction

12.3 Other Adverse Weather Conditions

Whenver visibility is reduced drivers need more time to use the IPDE Process. You can maintain a safe intended path of travel by

- slowing down to give yourself more time
- scanning in and around your path of travel to the target area to identify hazards early
- predicting others will make maneuvers into your intended path of travel
- deciding to position your vehicle ahead of time with an extra space cushion around it
- executing driving actions gently to maintain control so others know what you are doing

Your Vehicle Windows

The most important rule for your vehicle's glass is "keep it clean!" If dirty windows become a line-of-

sight restriction, you will have a much harder time using the IPDE Process effectively.

A simple thing like moisture forming on the inside of your windshield can make the difference between safe, low-risk driving and colliding with another vehicle. Take these steps when the slightest amount of moisture builds up:

- Turn on your front-window defroster.
- Switch on your rear defogger.
- Use air conditioning and/or heater if it will help.
- Open windows as needed.

Clean all windows and lights ahead of time in bad weather. Keep a close check on any ice, snow, or dirt buildup, especially on headlights and taillights. Stop to clear them by hand.

Remember in chapter 3 when we talked about using the fresh air mode of your car's heating system in winter?

Even in good weather, clean windows can be a problem. The plastics used in many vehicle interiors can give off vapors that coat the inside of windows over time. Cigarette smoke also can create a dirty-window problem. By keeping windows clear, you improve your ability to identify, especially at night.

Sun Glare

At times the sun can create severe and blinding glare conditions. Sun glasses and a sun visor can help, but try to avoid looking toward the sun.

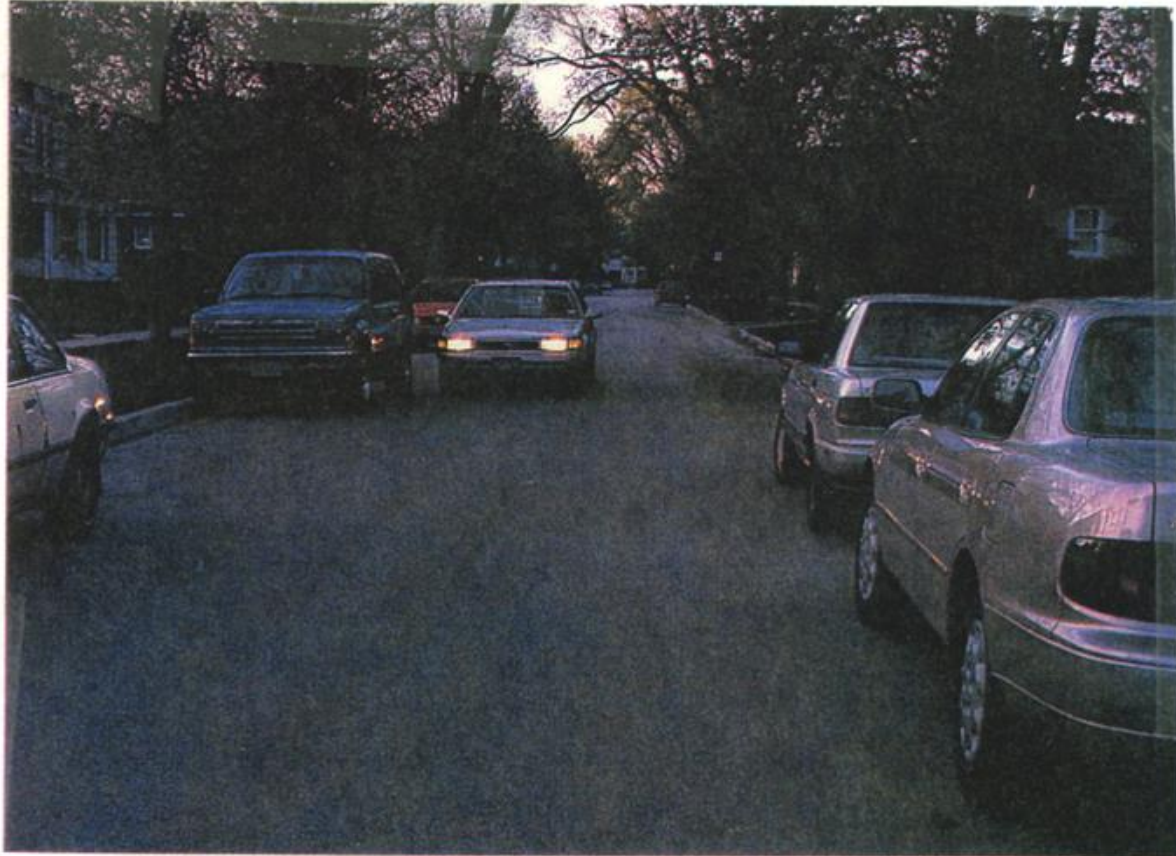
By driving with low-beam headlights on all the time, you help other drivers see you. The brightest day will create the darkest shadows. With severe-glare situations and the sun behind you, be prepared for other drivers to miss seeing your signal or even seeing your vehicle.

Dawn and Dusk

Dawn and dusk driving situations can be very dangerous. The low visual contrast between moving vehicles and the driving scene can be deceiving. Again, by always driving with your headlights on low beam, you can help others to see you. How would you defend yourself if the oncoming driver in the top picture did not have headlights on?

Night

Low levels of light at night severely limit your ability to use the IPDE Process. Look at the picture on the right. Even with street lights, how do these nighttime conditions make driving more difficult? Would daylight make it easier? What things might you see during day-time driving that you would miss while driving at night?



Dawn driving without headlights on can set many traps.

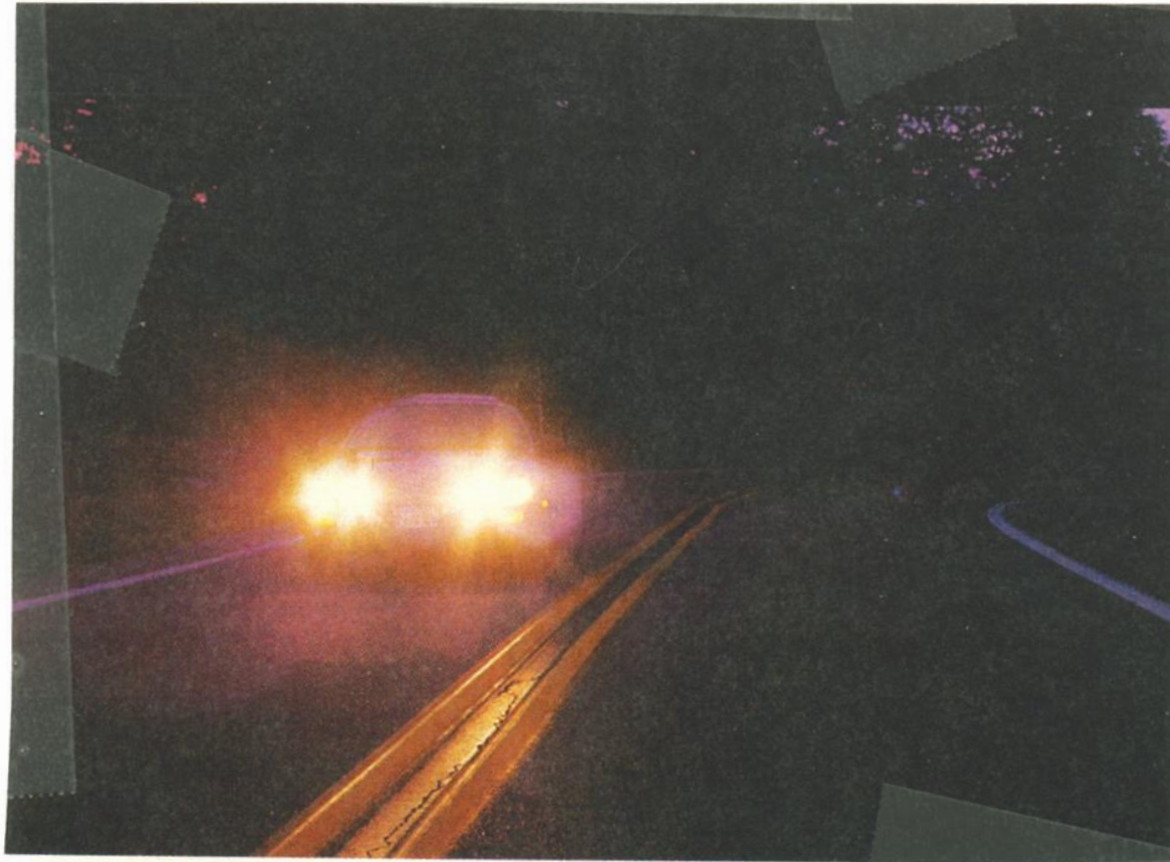
DAWN AND DUSK ARE THE MOST DIFFICULT TIMES FOR A DRIVER TO SEE. BE SURE YOUR HEADLIGHTS ARE ON LOW BEAMS BEFORE DAWN AND BEFORE DARKNESS.

Headlights Keep these points in mind when driving with your headlights on at night:

- Use high-beam headlights to see further down the road. Also, look beyond your headlights for important information. Only use your high-beam headlights when vehicles are more than one-half mile in front of you. Switch to low-beam headlights the instant you see the headlights of an oncoming vehicle, the taillights of a vehicle you are approaching, or the taillights of a vehicle that has just passed you. This prevents you from blinding the other driver with your headlights.
- Use low-beam lights in bad weather. In snow, heavy rain, or fog, high-beam headlights will reflect more light back into your eyes; as a result, you will see less.

Meeting Other Vehicles Take these actions if an oncoming driver fails to use low-beam headlights after you switch to low-beam headlights:

1. Is the oncoming driver far enough away to respond to you? Briefly flick your headlights from low to high to low to remind the oncoming driver to switch to low-beam headlights. Most new vehicles make this easy by having a flash-to-pass position on their high-beam control switch.
2. Is the oncoming driver still using high-beam headlights? Slow, move to lane position 3, and glance at the right edge of the road as shown here.
3. Could you be blinded by bright oncoming headlights? Look ahead with frequent quick glances to check oncoming traffic. *Do not stare directly into oncoming high-beam headlights.*
4. Is it possible you will encounter a hazard to the right after the oncoming vehicle? Be ready to adjust to a new situation beyond the oncoming headlights.



Be ready to adjust to a new situation beyond the headlights.

YOU, AS A DRIVER, ARE VERY VULNERABLE AS YOU PASS THE CAR IN THE PICTURE. YOUR EYES ARE ADJUSTED TO THE CAR'S HEADLIGHTS AND WHEN YOU PASS THE CAR, IT WILL TAKE SEVERAL SECONDS FOR YOUR EYES TO ADJUST BACK TO THE DARKNESS. YOU ARE, IN EFFECT, BLIND FOR A MOMENT OR TWO. IF A DEER WERE JUMP ONTO THE ROADWAY BEHIND THE CAR, YOU WOULD NOT BE ABLE TO SEE IT NOR WOULD YOU BE ABLE TO SEE A MOTORCYCLE FOLLOWING TOO CLOSE, A PEDESTRIAN, DEBRIS OR A POT HOLE IN YOUR LANE, ETC.

Glare

Glare occurs in the daytime when bright sunlight is reflected off shiny surfaces. Sunroofs and convertibles let in additional sunlight that can produce glare. At night, glare occurs when bright lights reflect off shiny surfaces. The term **glare resistance** describes the ability to continue seeing when looking at bright lights. Glare resistance varies from person to person. Some people are more sensitive to light than others.

Sudden glare can blind a person temporarily, especially at night. Headlights turn toward you at intersections. Bright lights appear from over hills and around curves. A vehicle using high-beam headlights approaches from behind. Your pupils open wide at night to let in all available light. When your eyes are suddenly exposed to bright lights, your pupils contract. You might be temporarily blinded before your pupils can adjust to the bright lights.

The term **glare recovery time** describes the time your eyes need to regain clear vision after being affected by glare. Your pupils can take 5–10 seconds to readjust. At 40 mph, you can travel more than the length of a football field while partially blinded.

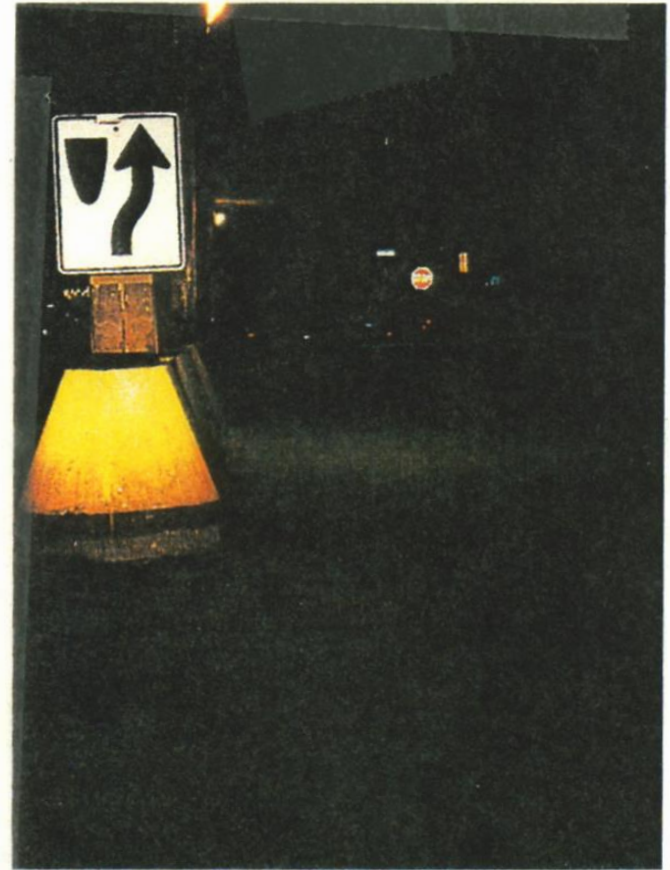
Take these steps to avoid or recover from glare:

- Avoid looking directly at bright lights. Use the right edge of the roadway as a guide.
- Anticipate glare situations and glance away or squint.
- Use side fringe vision rather than central vision to check your lane position and the location of oncoming vehicles.
- If you are impaired by glare, slow until your vision clears.
- Wear sunglasses and use your vehicle's sun visor in bright sunlight.
- Adjust your rearview mirror for night use.

Overdriving Headlights The term **overdriving headlights** means driving at a speed that makes your stopping distance longer than the distance lighted by your headlights. Make sure you do not overdrive your headlights, especially in bad weather or on a slick road.

In normal driving conditions, use this 4-second stopping distance rule to see if you are driving within the range of your headlights.

1. Pick a fixed-checkpoint ahead the instant the checkpoint appears in the area lit by your headlights as shown here.
2. Count off four seconds: "one-thousand-one, one-thousand-two, one-thousand-three, one-thousand-four."
3. Check your vehicle's position. When you have just reached your fixed checkpoint, you can assume your stopping distance on dry pavement is within the range of your headlights.



The stop sign is five seconds away. Are you overdriving your headlights?

Fog

When your headlights shine into fog, light is reflected back by water particles in the fog. This makes it harder for you to see. If you use high-beam headlights, your ability to see is reduced even further. Always use low-beam headlights in fog as shown below.

Fog also can reduce your ability to judge distances. Oncoming vehicles may be closer than you think. Avoid trouble by slowing and increasing the space cushion around your vehicle.

Thick fog, and in some situations heavy industrial smoke, can be very dangerous. Before entering fog, be prepared to slow or even park safely off the side of the road. Better yet, park in a rest area or parking lot.

If you stop at the side of the roadway, use your hazard lights to warn others that you are stopped.



In fog, oncoming traffic will seem closer than usual.

USE LOW BEAM HEADLAMPS TO SEE AND BE SEEN. DO NOT USE PARKING LIGHTS. OTHERS CANNOT SEE YOU WELL ENOUGH BECAUSE PARKING LIGHTS ARE NOT DESIGNED TO PENETRATE FOG, RAIN OR SNOW. IF YOUR VEHICLE HAS DAYTIME RUNNING LIGHTS, TURN THEM OFF AND TURN ON YOUR LOW BEAM HEADLAMPS. DAYTIME RUNNING LAMPS RUN AT ABOUT 40 TO 60 PERCENT POWER AND DO NOT ACTIVATE THE TAIL LAMPS MAKING IT HARDER FOR YOUR VEHICLE TO BE SEEN BY THE DRIVERS BEHIND YOU

DO NOT USE CRUISE CONTROL IN
ANY KIND OF INCLEMENT
WEATHER SUCH AS RAIN, SNOW,
FOG, FROSTY ROADS.

Subject: NEVER DRIVE IN THE RAIN WITH YOUR CRUISE CONTROL ON

>

>I wonder how many people know about this? A 36 year old female had an
>accident several weeks ago and Totaled her car. A resident of Kilgore ,
>Texas she was traveling between Gladewater & Kilgore. It was raining,
>though not excessively, when her car suddenly began to hydro-plane and
>literally flew through the air. She was not seriously injured but very
>stunned at the sudden occurrence!

>

>When she explained to the highway patrolman what had happened he told
>her something that every driver should know - NEVER DRIVE IN THE
RAIN

>WITH YOUR CRUISE CONTROL ON. She thought she was being
cautious by

>setting the cruise control and maintaining a safe consistent speed in
>the rain.

>

>But the highway patrolman told her that if the cruise control is on
>when your car begins to hydro -plane and your tires lose contact with
>the pavement, your car will accelerate to a higher rate of speed making
>you take off like an airplane. She told the patrolman that was exactly
>what had occurred.

Rain

Heavy rain reduces your ability to see and be seen. Keep your windshield clear by using your wipers and defroster on high. Make sure your low-beam headlights are already on as shown in the picture. Many states require low-beam headlights to be on when wipers are on. Reduce your speed. As with fog, if the rain is so heavy that you cannot see well, be prepared to pull off the road and sit out the storm in a safe location. Don't forget to use your hazard flashers.

USE LOW BEAM HEADLIGHTS WHILE DRIVING IN THE RAIN. DO NOT USE YOUR PARKING LIGHTS. THEY DO NOT PENETRATE FAR ENOUGH FOR YOU TO BE SEEN BY OTHER DRIVERS



By using headlights all the time, you won't have to remember to turn them on in the rain.

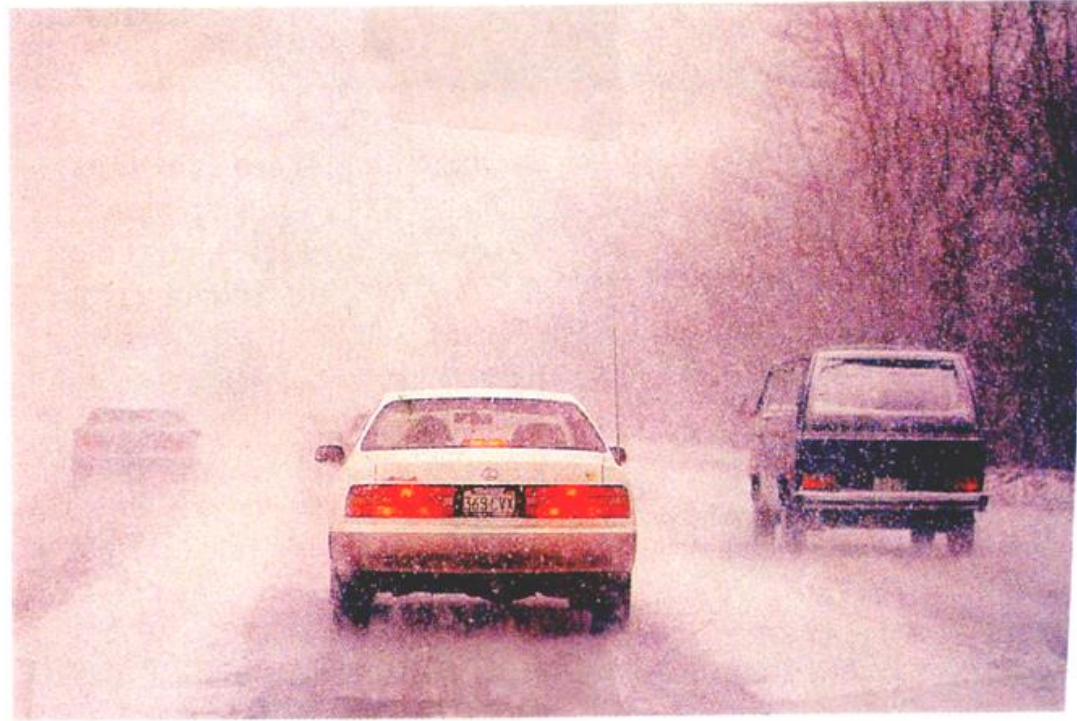
BE A SMART DRIVER. WHEN YOU CAN SEE THE REFLECTION OF LIGHT POLES ON THE PAVEMENT AS IN THIS PICTURE, THAT SHOULD BE YOUR SIGNAL THERE IS ENOUGH WATER STANDING ON THE ROADWAY FOR HYDROPLANING TO TAKE PLACE. LOOK ALSO FOR THE REFLECTION OF HEADLIGHTS OR ROAD SIGNS IN THE WATER

Snow

Wind-driven snow can reduce your vision, cover roadway markings, and make steering more difficult. Be prepared to slow and steer carefully. Heavy snow can block your rear window, reducing visibility. Slush or ice also can build up on your windshield wipers. If snow, slush, or ice builds up, pull off the roadway and clean it off. Also clear your headlights, taillights, and other parts of your vehicle that need it.

In blizzard conditions, the last thing you want is to be stranded in the middle of nowhere. If the weather is that bad, try to delay travel until roads and weather improve.

Use low-beam headlights when it snows, day or night. Reduce your speed to maintain control and to give others time to respond to you. If snow covers the road, closing your right-front zone, do not crowd the center of the road by moving to lane position 2. This action has the effect of narrowing the road and could lead to a head-on collision.



What special actions should you be prepared to take in this heavy snow situation?

USE LOW BEAM HEADLAMPS IN SNOW TO SEE AND BE SEEN. **NO PARKING LIGHTS**, USE LOW BEAM HEADLIGHTS. THIS IS IMPORTANT IF YOUR CAR HAS "AUTOMATIC" HEADLIGHTS AS THE TAIL LIGHTS DO NOT COME ON WHEN THE LIGHTS ARE ON "AUTO"

→ Have you noticed the gates at the entrances to the Interstate in the northern part of the state?

Wet Roadways

Rain-slick roads can create a problem for any driver. You can avoid trouble by knowing the right actions to take ahead of time.

When Rain Starts When rain starts to fall, it mixes with dust and oil on the road. This mix can make the road very slippery, until more rain washes it away.

Reduce speed to make better use of your limited traction on wet roads. You can get a little better traction by following the tire tracks left by the driver ahead.

Hydroplaning When a tire loses road contact by rising up on top of water and no longer has contact with the road, **hydroplaning** occurs. Hydroplaning is caused by a combination of standing water, speed, and tire condition. The deep tread of new, properly inflated tires will cut through the water and grip the road. But even with good tires, hydroplaning can occur at speeds of 35 mph, in water as little as 1/12-inch deep. Tires that are bald or underinflated can start to lose their grip and hydroplane at less than 35 mph. Slushy snow in standing water also increases the risk of hydroplaning.

If you must drive through standing water, take these steps to avoid hydroplaning:

- Reduce speed—especially if the water is deep enough to have raindrops “splash” on the water’s surface.
- Use properly inflated tires with good tread.

BE A SMART DRIVER. KNOW YOUR WINDSHIELD AND YOUR WIPER BLADES WILL HAVE THE SAME ROAD GRIME ON THEM THAT IS ON THE ROAD SURFACE MAKING YOUR VISIBILITY POOR UNTIL IT RAINS LONG ENOUGH TO WASH IT OFF. OTHER CARS WILL ALSO THROW RAINWATER WITH ROAD GRIME, SUCH AS OIL, ONTO YOUR WINDSHIELD WHEN IT FIRST STARTS TO RAIN. SLOW DOWN WHEN IT RAINS. MATCH YOUR SPEED TO YOUR VISIBILITY



What action should be taken to avoid hydroplaning before driving through the water?

In addition to the possibility of hydroplaning, what other hazards might you encounter in this picture? Hint: two of them are not visible hazards you can see in the picture but are the result of the water.



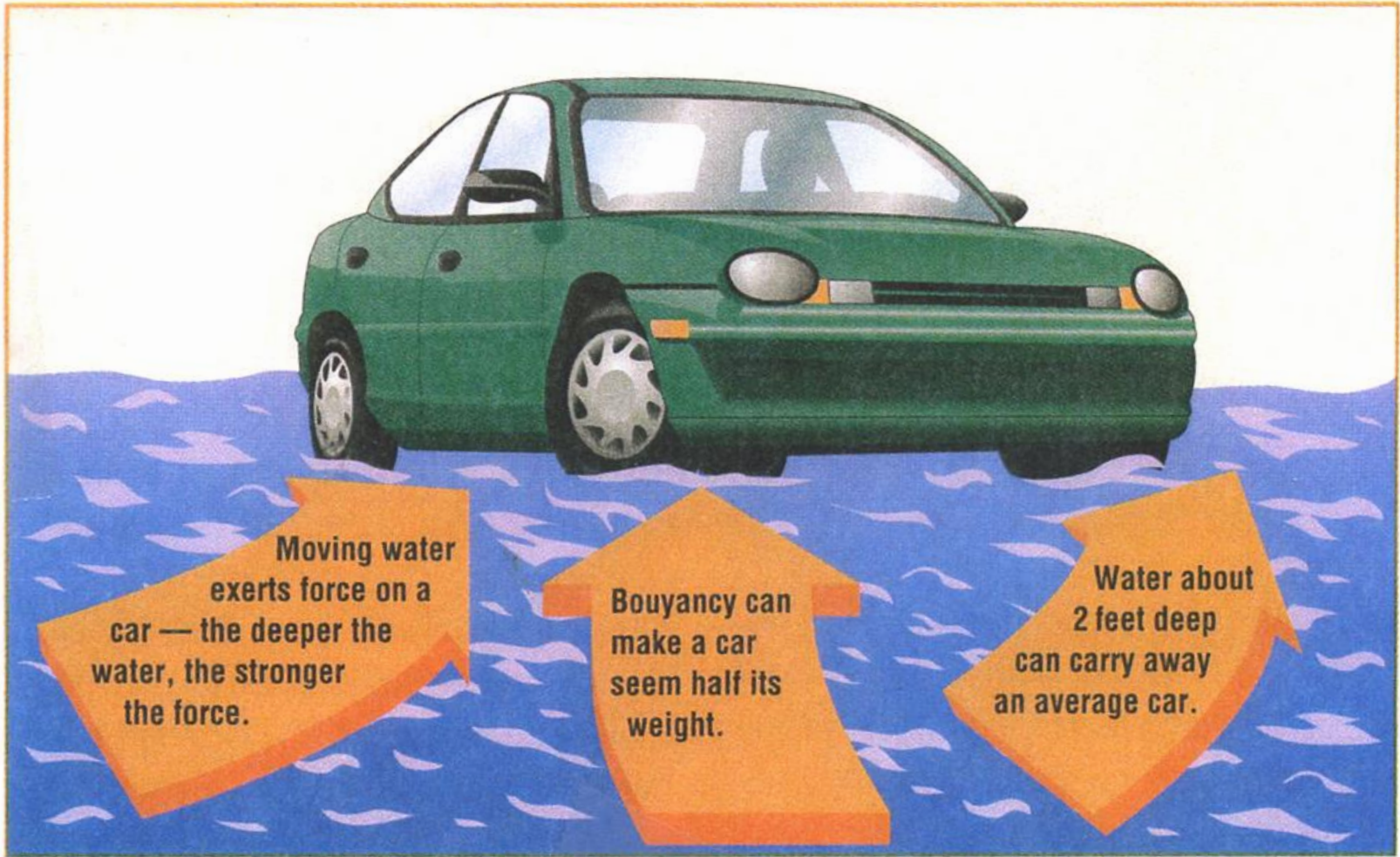
What action should be taken to avoid hydroplaning before driving through the water?

THE CAR IN THE PICTURE GOING THROUGH THE WATER IS IN A DANGEROUS SITUATION. THE DRIVER HAS NOWHERE TO GO, HAS THE POSSIBILITY OF HYDROPLANING AND WILL HAVE THE STEERING WHEEL PULLED HARD TO THE RIGHT AS HE/SHE GOES THROUGH THE PUDDLE. PLUS THE RIGHT FRONT BRAKE WILL BE WET SO IF HE/SHE HITS THE BRAKE FOR A PROBLEM AFTER THE PUDDLE, THE CAR WILL PULL TO THE RIGHT. THIS DRIVER NEEDS TO SLOW DOWN, HANG ON TO THE STEERING WHEEL TIGHTLY AND WHEN HE/SHE IS PAST THE PUDDLE, LIGHTLY APPLY THE BRAKES FOR A FEW SECONDS TO DRY OUT THE BRAKE LININGS BE A SMART DRIVER. KNOW WHAT TO EXPECT ABOUT HOW YOUR CAR WILL BE AFFECTED **BEFORE** YOU DRIVE THROUGH WATER.

Deep Water When you don't know how deep the water ahead is, do not drive through it. Floods cause more deaths than any other weather condition, and 60 percent are vehicle related. If you must drive through deep water, use the following steps:

1. Estimate water depth by watching other vehicles and looking at objects such as fire hydrants, fence posts, and parked vehicles. *If there is even a possibility of the water coming up to the bottom of your vehicle—do not enter the water.*
2. If the water is just over the rims of your tires, drive slowly in low gear. Avoid driving on a soft shoulder. Try to drive on the higher, center of the road.

3. When driving at a low speed through water, apply a light brake pressure with your left foot to build friction and create heat on your brake pads. This heat will help dry your brakes and keep them working.
4. After leaving the water, squeeze your brake pedal lightly to see if your brakes are working normally. If your vehicle pulls to one side or does not slow, drive for a short distance while applying a light brake-pedal pressure with your left foot to help dry your brakes.



**Moving water
exerts force on a
car — the deeper the
water, the stronger
the force.**

**Bouyancy can
make a car
seem half its
weight.**

**Water about
2 feet deep
can carry away
an average car.**

Deep water can be dangerous.

Snow

Different types of snow can produce different levels of traction. When fresh snow falls at low temperatures, traction can be fairly good. When traffic packs the snow at places like intersections, traction can be reduced. In subzero weather, even the moisture from vehicle exhaust can freeze into dangerous ice on the pavement.

Temperatures just at or below the freezing point (32°F or 0°C) can create dangerous traction situations. The combination of snow, slushy water, and ice can make for extremely slippery surfaces.

Driving Techniques for Snow

Gentle acceleration, steering, and braking are the keys to vehicle control in snow. Put your vehicle in motion by gently squeezing the accelerator. If your drive wheels slip, release your accelerator and start again.

To improve traction on snow, use all-season tires. To improve traction even more, many states allow the use of tire chains at certain times. Chains are placed over the tread on the tires to increase traction.

Rocking a Vehicle Often you can move your vehicle out of deep snow, mud, or sand by driving forward a little and then back a little. By repeating this sequence, you can work your way out. This technique is called **rocking a vehicle**. Check your owner's manual to make sure this procedure will not hurt your transmission. If it is okay, follow these steps:

1. Straighten front wheels as the driver in the picture below has done.
2. Gently accelerate forward. **Do not spin your wheels.**
3. Let up on your accelerator. Pause just long enough to let the engine slow. Shift to REVERSE and gently move backwards. Let up on your accelerator and shift to DRIVE to move forward.
4. Continue this backward-and-forward movement until your vehicle has cleared tracks that are long enough to drive out.



Use gentle control actions to rock your vehicle.

EXCESSIVE HIGH RPM SPINNING CAN CAUSE THE SIDE GEARS IN THE DIFFERENTIAL TO FAIL BUT NOT IMMEDIATELY. IT SHOWS UP WEEKS LATER BY TEARING A HOLE IN THE TRANSMISSION CASE.

ROCKING A VEHICLE CAN BE EXTREMELY HARD ON AN AUTOMATIC TRANSMISSION. ROCKING CAN CAUSE A TRANSMISSION TO OVERHEAT AND FAIL. A TOW BILL IS MUCH CHEAPER THAN A TRANSMISSION

Ice

Be especially alert if temperatures drop below freezing and it is raining. These conditions are just right for snow, ice, and sleet. Predict the worst when ice begins to form.

Temperatures will change the amount of traction you will have on ice. If the temperature of ice warms from 0 degrees to 32 degrees Fahrenheit, your traction will be cut in half.

Squeeze your brakes lightly to check your traction in icy areas. Only do this at low speeds away from traffic. Slow gradually if your vehicle starts to slide.

Windows and windshield wipers can also ice up in severe weather. If your defroster cannot keep your windshield clear, pull out of traffic and clear it manually. It might be best not to drive at all.

If you must drive, be extra alert for these icy situations:

- **Ice on Bridges** Bridge roadways tend to freeze before other roadway surfaces. Cold air circulates above and below the roadway on bridges and overpasses as shown in the picture.
 - **Black Ice** Be alert for “black ice” that forms in thin sheets. This can be extremely hard to see. Be extra careful for this type of ice in winter mountain situations.
 - **Ice in Tire Tracks** Snow can pack down into ice in the normal driving tracks. Avoid these slippery tracks by moving a little to the right in lane position 3 to use the unpacked, less-slick portion of your lane.
-



**WHEN
FROSTY**



Milo girl critical after crash



Three teenagers hurt as icy road cause collision with bus Friday a.m. near Milo

By **SARA SLEYSER**
Record-Herald Staff Writer

Sisters Rosie and Donna Petry of Milo remained hospitalized Monday after the car they were riding in collided with a school bus Friday. Emanuel Tucker, who was driving the car, was back at school Monday coping with the help of support from her classmates and teachers.



Donna Petry

The girls were on their way to Southeast Warren Junior-Senior High School Friday morning when Tucker's vehicle slid on frost west of Milo on Highway and went into the path of the school bus headed toward the Primary School.



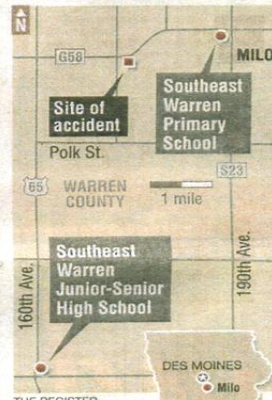
Rosie Petry

Donna Petry was thrown from the back seat of the car during the accident and is still in critical condition at Blank Children's Hospital in Des Moines. She is in a medically induced coma as she heals from a brain injury and lacerations to her face, Principal Terry Gladelter said.

Rosie Petry was upgraded to fair condition Monday at Mercy Medical Center in Des Moines. She sustained internal injuries in the crash and her spleen

A Life Flight helicopter lifts off from the back of a tow truck Friday morning, Jan. 26, after crashing into the rear of an accident on Warren County's G58 Highway west of Milo.

Three Milo teenagers were in this car when it slid out of control into the path of a southeast Warren school bus. The passenger in the back seat, Donna Petry, who is not wearing her seatbelt, was ejected through the rear window. It took rescue workers 15 minutes to find her. She's listed in serious condition at a Des Moines hospital.



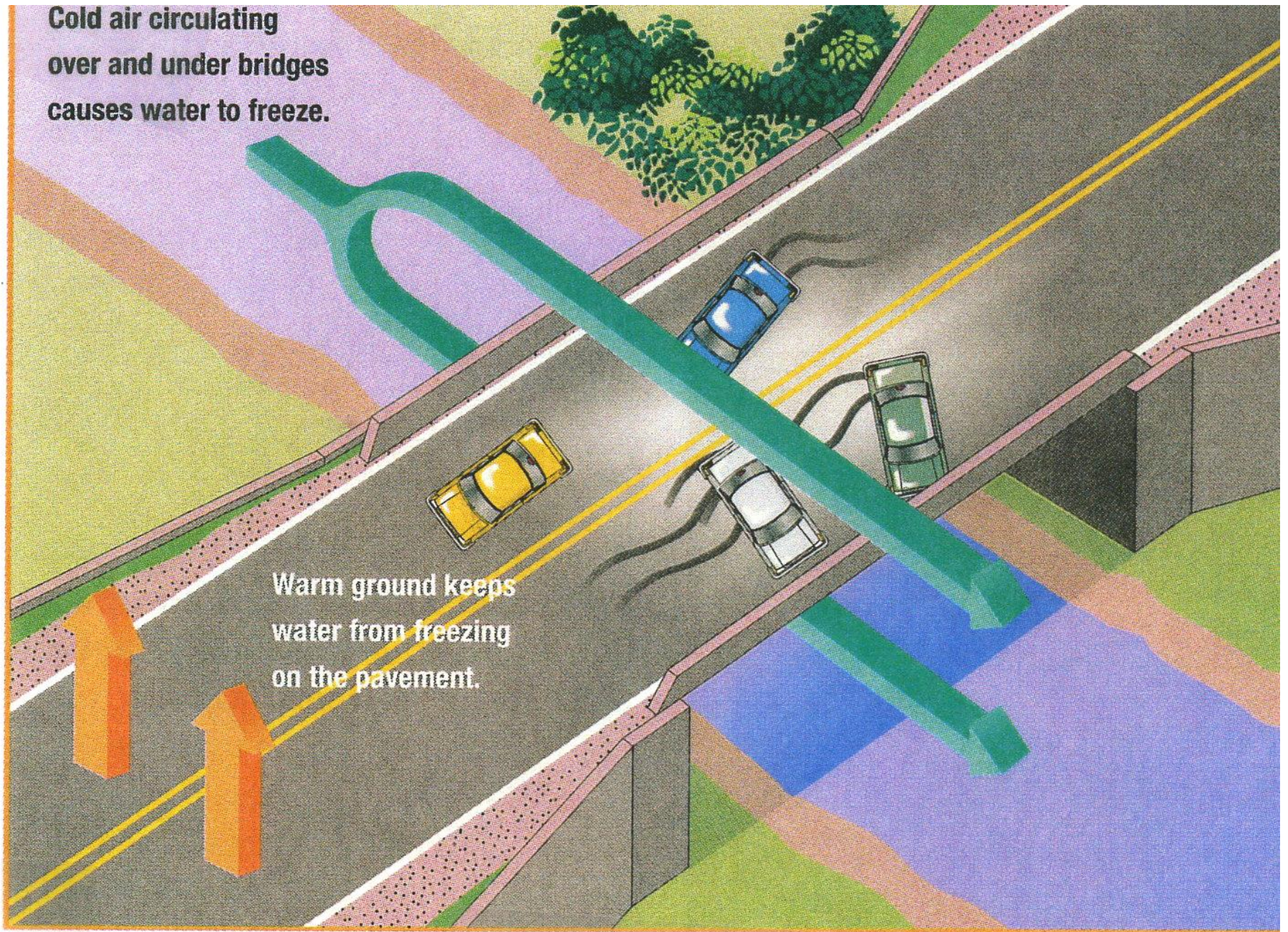
Young, inexperienced drivers are especially at risk



crash near Milo earlier this month was blamed on icy roads. Southeast Warren school officials want to talk with Warren County engineers about road clearing policies to see if future tragedies can be averted.

Three Milo teenagers were in this car when it slid out of control into the path of a Southeast Warren school bus. The passenger in the back seat, Donna Petry, who was not wearing her seatbelt, was ejected through the rear window. It took rescue workers 15 minutes to find her. She's listed in serious condition at a Des Moines hospital.

**Cold air circulating
over and under bridges
causes water to freeze.**



**Warm ground keeps
water from freezing
on the pavement.**

Ice forms on bridges first.

WHAT CAN YOU DO TO MAINTAIN CONTROL WHEN YOU DRIVE OVER BRIDGES IN COLD WEATHER?

- BE A SMART DRIVER. BE AWARE THAT BRIDGE DECKS CAN BE SLIPPERY IN COLD WEATHER AND WILL FREEZE BEFORE OTHER ROAD SURFACES.
- DO NOT USE OVERDRIVE WHEN THE ROAD SURFACE COULD BE ICY OR SLIPPERY. DEACTIVATE OVERDRIVE BY MOVING THE SHIFT LEVER TO “D” OR PRESSING THE O/D BUTTON
- DO NOT USE CRUISE CONTROL WHEN THE POSSIBILITY OF A SLIPPERY ROAD SURFACE EXISTS
- BE A SMART DRIVER. LOOK PAST THE BRIDGE IF YOU CAN. DO YOU SEE VEHICLES IN THE MEDIAN OR DITCH ON THE OTHER SIDE OF THE BRIDGE?
- NEVER ACCELERATE WHILE DRIVING ON A BRIDGE DECK THAT YOU THINK MAY HAVE ICE OR FROST ON IT. MAINTAIN A STEADY SPEED

Other Reduced-Traction Situations

Braking distance will always increase in low-traction situations. Slow early and then be ready to slow even more.

Gravel Roads Loose gravel on roads can act like marbles under your tires and cause skids. Well-packed wheel paths usually form on heavily traveled gravel roads. Drive in these paths for better traction and control. If you need to move out of the wheel paths, slow and hold your steering wheel firmly.

Construction Areas Construction trucks and other equipment can leave mud, dirt, or sand on the road. Slow, steer gently, and obey workers' directions. Be especially careful for workers and construction drivers who do not see you. Use an extra space cushion to protect them. In many states, traffic fines double in construction zones.

Leaves Wet leaves on the road can decrease traction and reduce your stopping and steering control. Slow ahead of time if you see wet leaves on the pavement.



Respect the dangers around a construction site by lowering your speed and being ready to stop.



Gravel on the road will affect your control.



If your vehicle skids off target to the left, you might see this...



and you should steer like this.



If your vehicle skids off target to the right, you might see this...

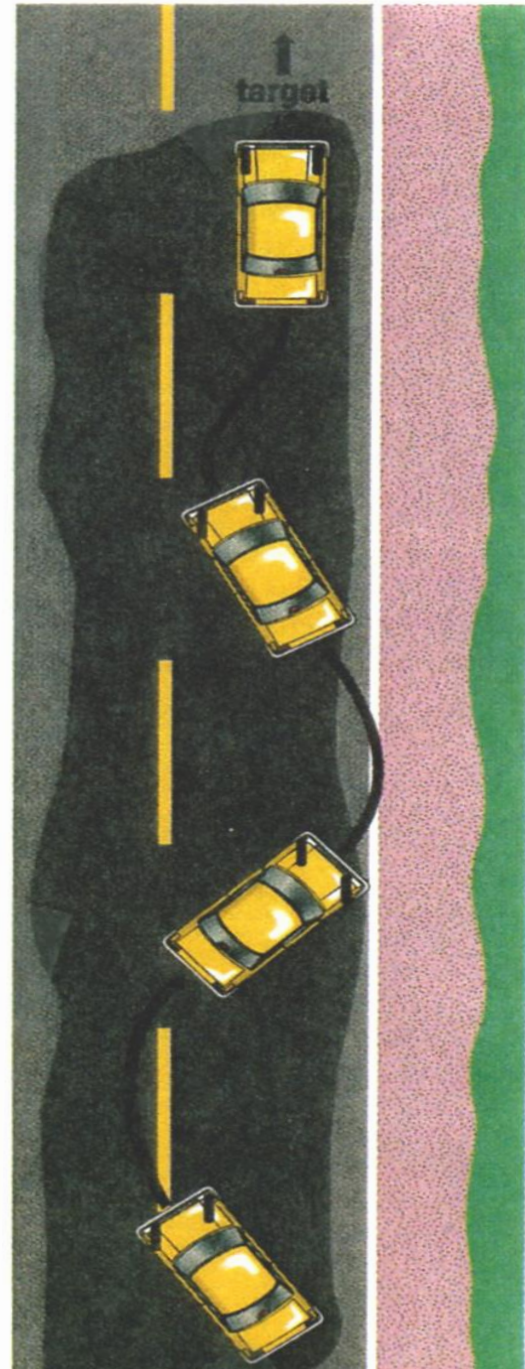


and you should steer like this.

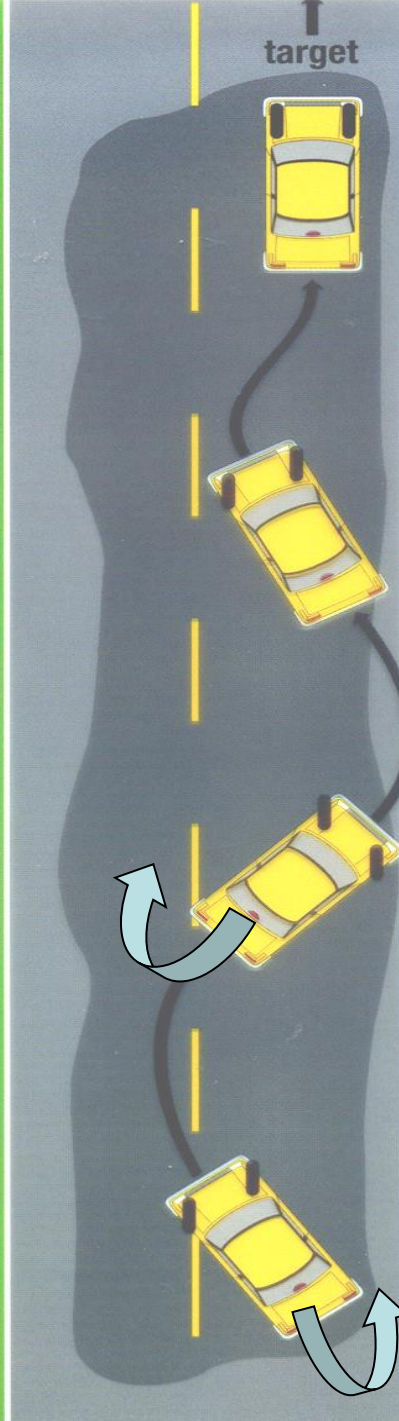
Skidding

In Chapter 5 you learned how traction allows your vehicle to grip the road. You also learned what factors can reduce traction. In extreme reduced-traction situations, your tires may lose all or part of their grip on the road and **skid**. Skidding can happen on any surface while you are braking, accelerating, or steering.

In addition to slowing ahead of time, early detection is one of your best defenses to control skidding. What is the best way to detect a skid? Aim high to see your target well down the road. The instant you see your vehicle is not traveling in your intended path of travel toward your target, you need to start correcting the skid, as the pictures show. If you wait until you feel your vehicle skidding, you may not be able to correct the skid in time to avoid trouble.



When you counter steer to correct a skid as shown in the diagram, it is very likely that, due to the slippery conditions, your car could over react to your efforts. You may have to correct the skid several times before the car settles back straight. **NEVER GIVE UP ATTEMPTING TO CORRECT A SKID**



ONCE YOUR CAR BEGINS TO SKID YOU MUST ACT QUICKLY. TURN THE WHEELS IN THE DIRECTION OF THE SKID. NEVER GIVE UP. KEEP AT IT UNTIL YOUR CAR IS BACK STRAIGHT.

In all these situations, remember:

1. A locked or spinning wheel provides no steering control.
2. Never give up trying to correct a skid.

Over-Power Skid If you apply too much power to your drive wheels, they may spin, thus causing a skid. To correct this, simply let off your accelerator.

Over-Braking Skid If your vehicle does not have an antilock braking system (ABS) and you over-brake, the wheels may stop while you are still moving. To correct this, release your brake pedal enough to get your wheels rolling.

Front-Wheel Skid You are in a front-wheel skid if you turn the steering wheel and your vehicle wants to slide straight ahead. Your vehicle responds less than you want it to. To correct this skid, you need to regain traction for steering. To do this, you need to

1. Release accelerator or brake pedal pressure.
 2. Quickly apply and release the brake pedal to slow if your vehicle does not have ABS.
 3. Continue to look and steer at the path of travel you want to follow.
-

Rear-Wheel Skid If you are steering straight and your vehicle starts to move off target to the left or right, you probably are just starting a rear wheel skid. This skid can be caused by using too much power or braking on slick surfaces. The instant this skid starts, do the following:

1. Release your accelerator or brake. Shift to NEUTRAL or depress your clutch pedal.
 2. Steer quickly and precisely in the direction your vehicle needs to go, as shown on page 257. On a straight road, steer for your target and intended path of travel. Be careful not to overcorrect for the skid by steering too much.
-

3. The rear end of your vehicle probably will continue to slide a little from side to side, or **fishtail** after you have corrected the initial skid. Steer and countersteer in the direction your vehicle needs to go. As your speed drops, your control will increase. Look at the illustration to the left to see how you can provide precise, smooth, continuous steering action to correct a fishtail skid sequence.

Skidding in a Curve Slow ahead of time to avoid skidding in a curve. If you do skid in a curve, you probably are going to go off the road. If so, use the steps to correct a front-wheel or rear-wheel skid and steer for an off-road path of travel that is as safe as possible.

Controlled Braking

A panic stop can lock your wheels, causing a skid and loss of steering control.

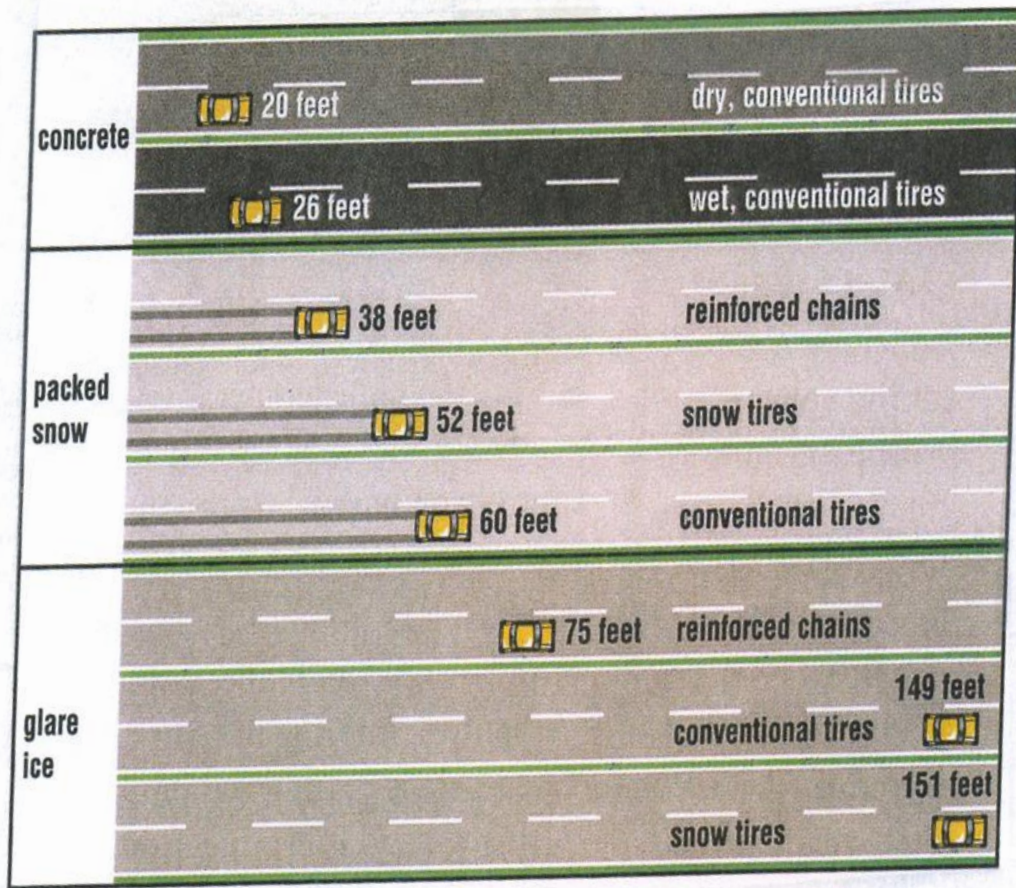
Use **controlled braking** to reduce your speed as quickly as possible while maintaining steering control of your vehicle. Controlled braking is a technique of applying your brakes to slow or stop quickly without locking your wheels. Follow these steps to use controlled braking:

1. With the heel of your foot on the floor, let the ball of your foot press your brake pedal. You must press hard enough to slow your vehicle rapidly without locking your wheels.
2. If your wheels lock and your vehicle skids, ease up on your brake pedal just enough to let your wheels start rolling.
3. Keep using this squeeze-relax a little-squeeze process until you stop.

Using just the right amount of pressure is the hardest part in controlled braking situations. To overcome this problem, most new vehicles are equipped with an anti-lock braking system (ABS).

An ABS-equipped vehicle uses a computer to prevent its wheels from locking—even in an emergency stop. If your vehicle has an ABS, just press the brake pedal as hard as you can in an emergency. You may feel little pulses through the brake pedal or hear the ABS at work. Don't let up on the brake pedal; maintain firm pressure until you stop. Also remember, **ABS vehicles will allow you to steer and brake at the same time** as shown in the picture *They will not enable you to stop in a shorter distance.*

The chart shows how long it takes to stop from 20 mph. Notice the difference that different tires and road surfaces can make.



Braking Distances at 20 mph



ABS enables you to steer and stop at the same time.

concrete


 20 feet

dry, conventional tires


 26 feet

wet, conventional tires

packed snow

 38 feet

reinforced chains

 52 feet


snow tires

 60 feet

conventional tires

glare ice

 75 feet **reinforced chains**

conventional tires  149 feet

snow tires  151 feet

12.3

Other Adverse Weather Conditions

Extrême weather conditions can make routine driving very difficult. Other adverse conditions such as wind, extreme temperatures, and winter weather may also affect the control you have while driving.

Wind

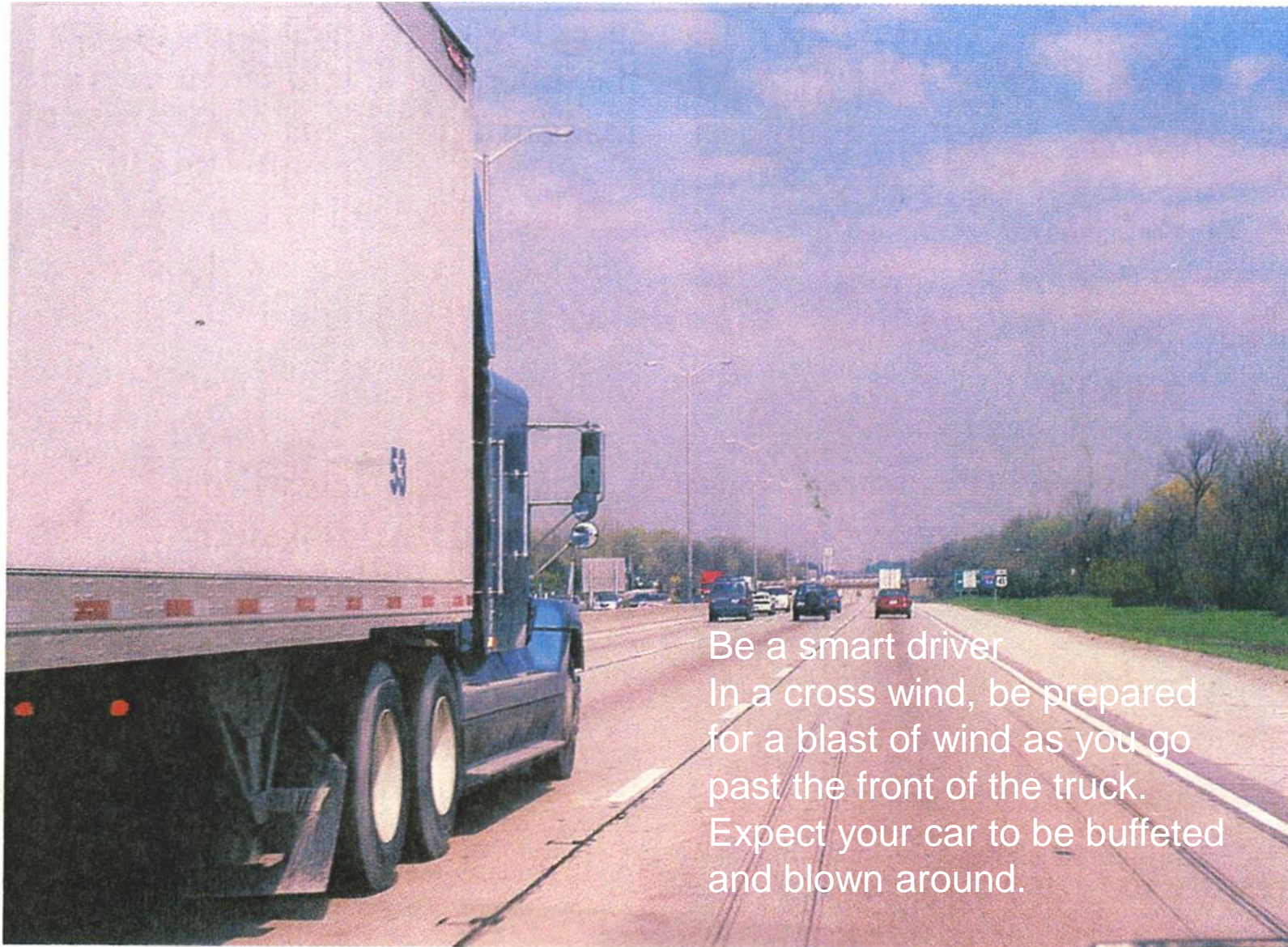
Strong winds can reduce your vehicle control. Imagine the truck pictured here is passing you on the left. A strong wind is blowing from the left. What should you expect? How can you maintain control?

Anticipate a strong blast of wind from the left after the truck passes. To maintain control, be ready to slow a little, move to lane position 3,

and apply extra steering to the left just to keep moving in your intended path of travel.

You may experience this type of situation when driving out from under a bridge or from a tunnel. Just remember to keep a balanced grip on the steering wheel and be ready to make steering corrections for cross winds.

In the unlikely event you are in an area where tornadoes are spotted, be ready to act. The last place you want to be in a tornado is in a car. If you see a tornado and there is no place to take cover, stop, get out of your vehicle, and lay down in a ditch or under a bridge.



Be a smart driver
In a cross wind, be prepared
for a blast of wind as you go
past the front of the truck.
Expect your car to be buffeted
and blown around.

Expect the combination of a high cross wind and truck traffic to make driving tough.

Hot Weather

Your vehicle is designed to operate in a wide range of temperatures. It has a cooling system to help it warm up in winter and stay cool in the summer. But in extreme conditions, problems can develop.

Your temperature light or gauge indicates when your engine is too hot. When this happens, turn off your air conditioner. You may be uncomfortable, but you might also be able to cool your engine enough by turning on your heater. If the engine temperature warning light stays on, stop and park in a safe place to let the engine cool. Once cool, check your coolant level in your cooling-system surge tank. Never remove the radiator cap on a hot engine because the hot liquid inside can scald you. If needed, refill and repair your cooling system.

BE AWARE THAT YOUR TEMPERATURE LIGHT WILL COME ON ONLY AFTER THE ENGINE IS HOT. THERE IS NO ADVANCE WARNING WITH A LIGHT

HOW CAN TURNING ON YOUR HEATER HELP?

Cold Weather

Very cold weather creates problems. Be prepared by taking the following steps:

- **Be Alert for Exhaust Leaks**

Carbon monoxide gas is created when your engine runs. This gas is colorless, odorless, and deadly. Even a small exhaust leak can be trouble. When driving, always have a source of fresh air coming into your vehicle—even if you have to open a window a little. If you are stuck in snow with your engine running, make sure your exhaust pipe is not blocked as this driver is doing.

- **Do Not Race a Cold Engine**

Racing a cold engine will increase wear on it. Do not run a cold engine at high speeds.

- **Do Not Set Your Parking Brake**

Ice or slush stuck to the underside of your vehicle can freeze your parking brake when you park your vehicle. In these conditions, use your automatic transmission park gear or reverse with a standard transmission.



In deep snow, make sure exhaust can get away from your vehicle.

BE SURE THE AIR INTAKE LEVER OR BUTTON OF YOUR CAR'S HEATER SYSTEM IS NOT SET TO RECIRCULATION MODE.

IN COLD WEATHER YOU NEED A CONSTANT SUPPLY OF OUTSIDE AIR ENTERING YOUR CAR THROUGH THE HEATING SYSTEM TO KEEP WINDOWS FROM FOGGING OVER. BE SURE THE AIR INTAKE BELOW THE WINDSHIELD IS FREE OF SNOW SO FRESH AIR CAN ENTER THE HEATING SYSTEM

Tips for Smooth Winter Driving

Winter driving will test the best of your IPDE driving skills. The extra effort you make to maintain an adequate line of sight and open zones is worth it. You can help smooth the way by following these tips:

- **Look and Listen for Traffic Reports** Be alert to television and radio reports about accidents, road repairs, and bad weather. You also can take advantage of Internet information sources.
- **Keep Windows Clear** Remove snow and ice before driving as this driver is doing. Don't forget your headlights and taillights. You want to see and be seen.
- **Respect Lower Speeds** Travel with the flow of traffic, but always maintain control of your vehicle.

- **Keep a Safe Following Distance** Allow six, seven, or more seconds of following distance just to make sure you have room.
- **Try to Keep Moving in Snow** If you must be out in a blizzard, be alert for drivers who are stalled, disabled, or moving extremely slowly. Try to avoid getting stuck behind them. Slow down and maneuver to avoid others and to keep moving. The energy of motion created by your moving vehicle can help carry you through snowy situations.
- **Use a Lower Gear on Slippery Roads** Use a lower gear to maintain control on ice or snow. Remember, keep moving to avoid getting stuck.
- **Avoid Cruise Control** Do not use cruise control on slippery roads. The system could cause you to lose control.



Clear snow off your roof, hood, and trunk so it will not blow off and block your vision.

BE A SMART DRIVER BE SURE TO KEEP YOUR HEADLAMPS, TURN SIGNAL LAMPS AND TAIL LIGHTS CLEAR OF SNOW. AS YOU DRIVE, A VACUUM IS CREATED BEHIND YOUR CAR THAT WILL PULL SNOW ONTO THE BACK PART OF YOUR CAR AND COULD COVER YOUR TAIL LIGHTS EVEN IF YOU CLEANED THEM OF SNOW WHEN YOU STARTED OUT. STOP AND CHECK PERIODICALLY SO OTHER DRIVERS CAN SEE YOUR BRAKE, TAIL LIGHTS AND TURN SIGNALS. ALSO, BE SURE YOU REMOVE SNOW FROM THE HOOD AND ROOF OF YOUR CAR BEFORE YOU START DRIVING.

Decision Making



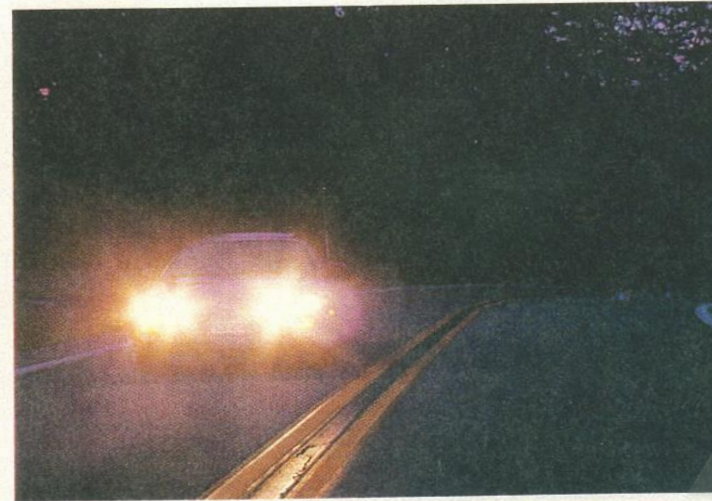
1. What actions should you take in this skidding situation?



2. In this winter situation, what precautions should you take when approaching the bridge?



3. As you approach this situation and see that the blue van has stopped, how would you use controlled braking?



4. What visual habit should you use to avoid being blinded by these oncoming high-beam headlights?