Federal Motor Carrier Safety Administration
Office of Analysis, Research and Technology

# Skid Pad Project

## Lewis-Clark State College

## Workforce Training

Lewis-Clark STATE COLLEGE

*Connecting Learning to Life*

# Workforce Training Facility

Federal Motor Carrier Safety Administration
Office of Analysis, Research and Technology

# Excavation and Paving

# Skid Pad Project

## Lewis-Clark State College

## Workforce Training

# Phase 1: Excavate and Pave Existing Gravel Area

# The following slides depict the area prior to paving

# Location for staging area and garage

# Perspective of the area from southwest corner of property

# Engineers observing the test pass

The project used local contractors and provided jobs for the valley.

# Excavation and paving took less than one month

# Skid Pad paving completed

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# Phase 2: Skid Pad Garage and Security Fence

## Skid Pad Project

Lewis-Clark State College

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# Pole Building design with electrical conduits

# Local contractor was awarded the bid contract

# Materials purchased from local suppliers

# Project provided labor jobs

# Completed Garage is 54x32 feet

# Perspective from front gate to Skid Pad

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# Phase 3: Skid Truck

# Skid Pad Project

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# Skid Truck was manufactured by International Co.

# Installation of flat-bed

# Skid Truck

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# Phase 4: Technology

# Skid Pad Project

Lewis-Clark State College

Workforce Training

# Technology installed to the Truck

# Skid Truck

Federal Motor Carrier Safety Administration
Office of Analysis, Research and Technology

Lewis-Clark State College invested funds to expand the program

Skid Pad Project

Lewis-Clark State College

Workforce Training

# Skid SUV

# The Lewis-Clark State College Skid Fleet

Federal Motor Carrier Safety Administration
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# Use Of A Skid Pad For Training Truck Drivers:

## The Lewis-Clark State College Project

# Driver Development Course
## *Achieving Accountability Through Advanced Understanding and Techniques*

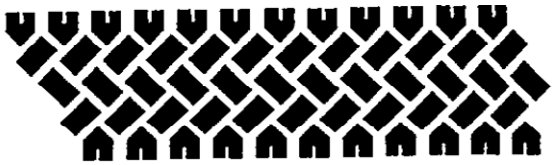
# OUR GOAL:

- To help you become a more proactive driver
- To develop advanced insight as a driver

A proactive driver is defined as one who uses superior knowledge to avoid situations that require superior skill.

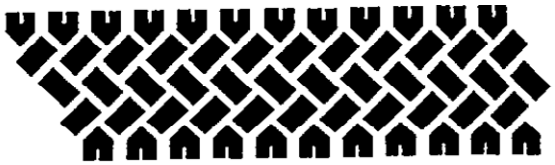
"Think more, do less."





- The driver is accountable for the assumed risk of a decision
- Driving Decisions start with the driver's eyes
- Information from the eyes is combined with insight gained from previous experiences and/ or training and a resulting motor skill is used by the driver
- These decisions cause weight to shift, grip to change, and affect the vehicle stability
- *Eyesight is diminished* during stressful situations

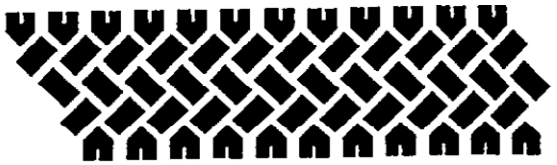




- Our model is…
  - "The Stable Platform Concept of Driving"

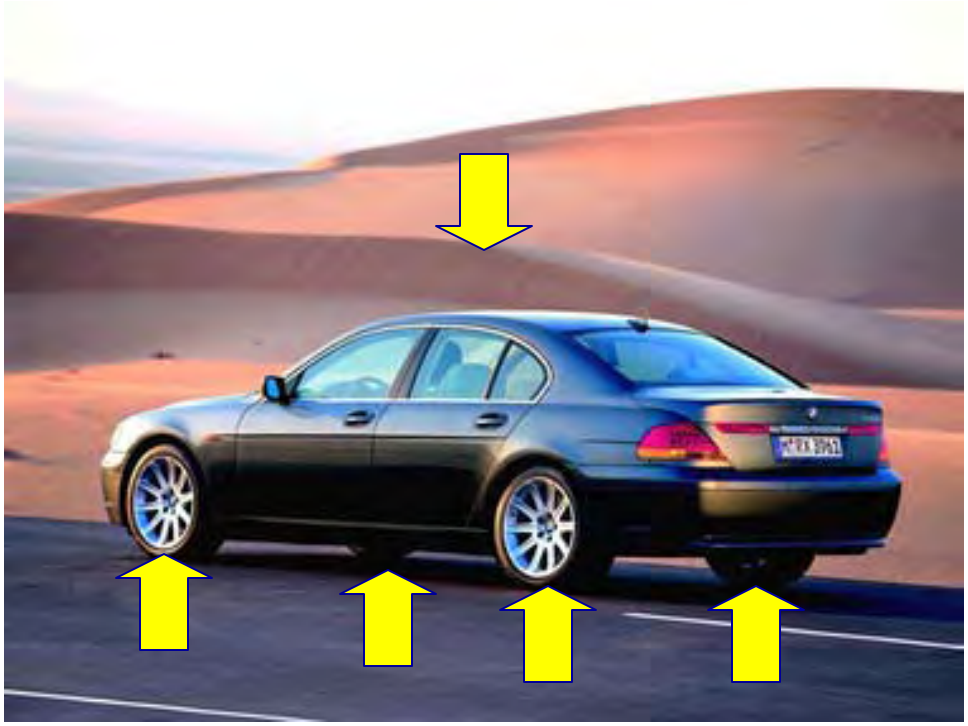
- It has two parts:
  - The most important part is mental – how your decision will effect or change grip.
  - The other part is physical – vehicle dynamics – and how you manage them...





# Vehicle Dynamics

## *How Weight Transfer Effects Grip*



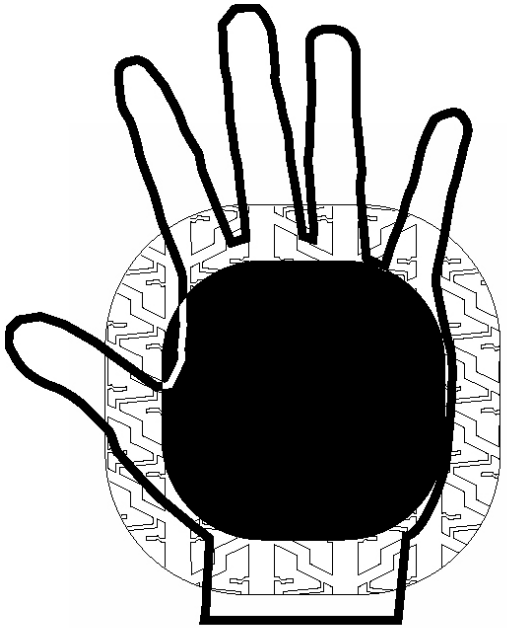
- View the vehicle as a <u>stable platform</u> supported by the four tires.
- The physical starting point for grip is literally where the rubber meets the road.

*Grip = Traction = Stability = Control = Safety*

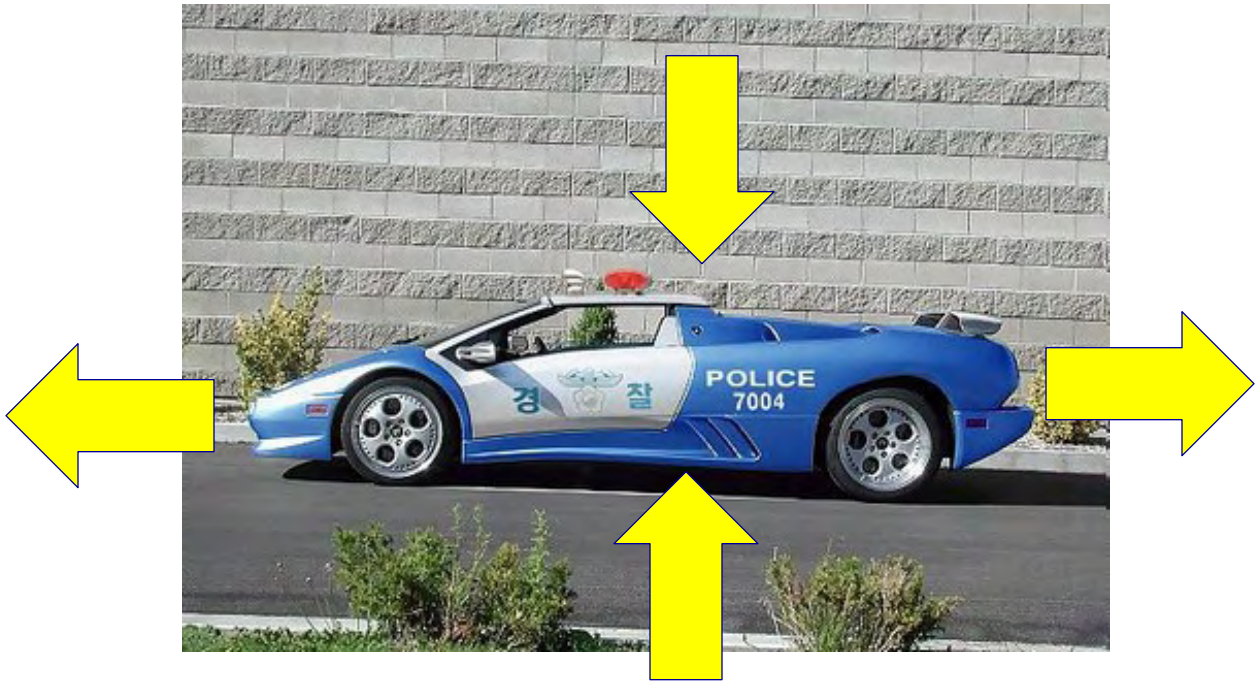
# Where the tire meets the road is called the “Contact Patch”

- It is the size of the palm of your hand.

- FACT: Two people standing toe-to-toe have more surface area in contact with the ground than a 4000 lb. car.

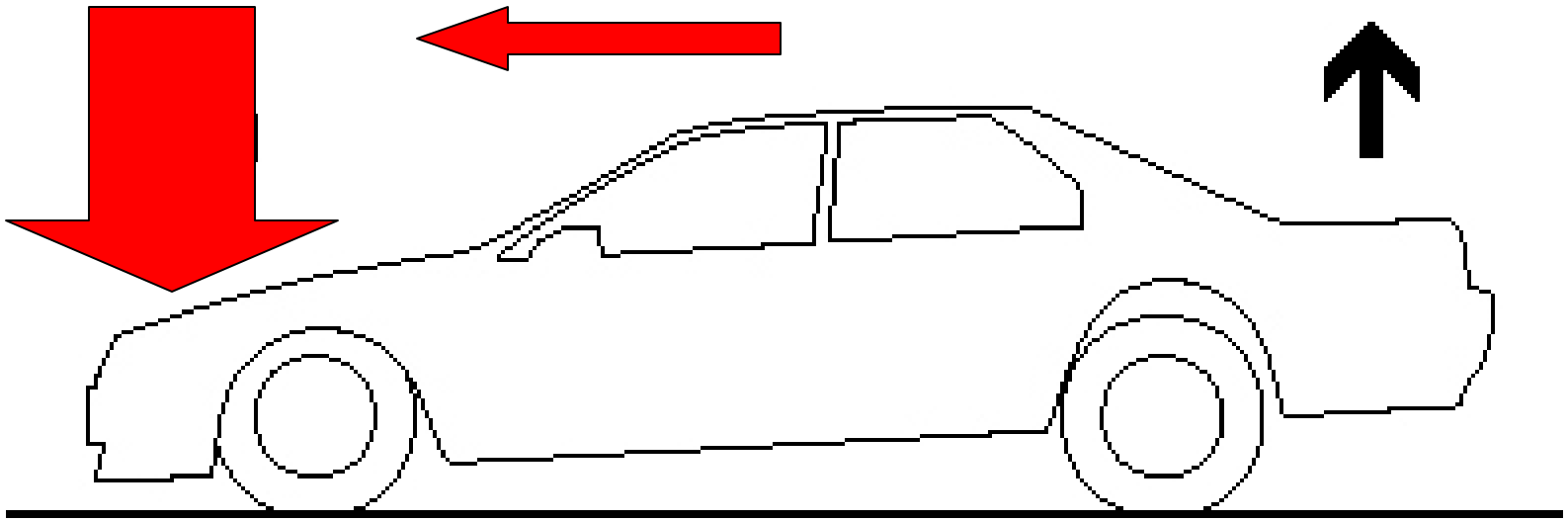


Using the vehicle's controls not only changes speed and direction, they also *control the amount of weight on each contact patch*.



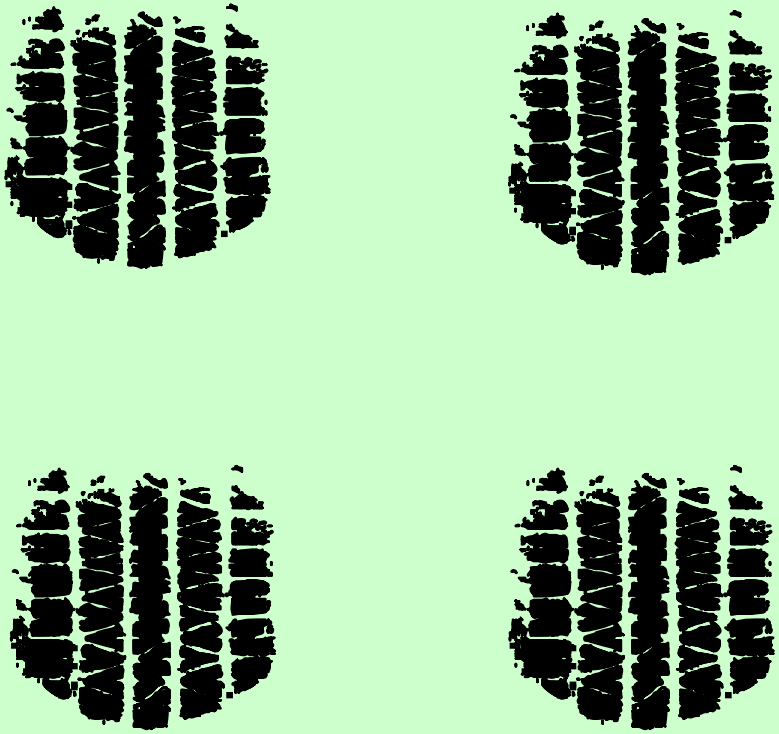

When the vehicle is at rest, the vehicle's weight is most evenly distributed and it is most stable. This is also true of a vehicle moving at a constant speed in a straight line.

# Letting off of the gas or applying the brakes moves weight to the front of the vehicle.

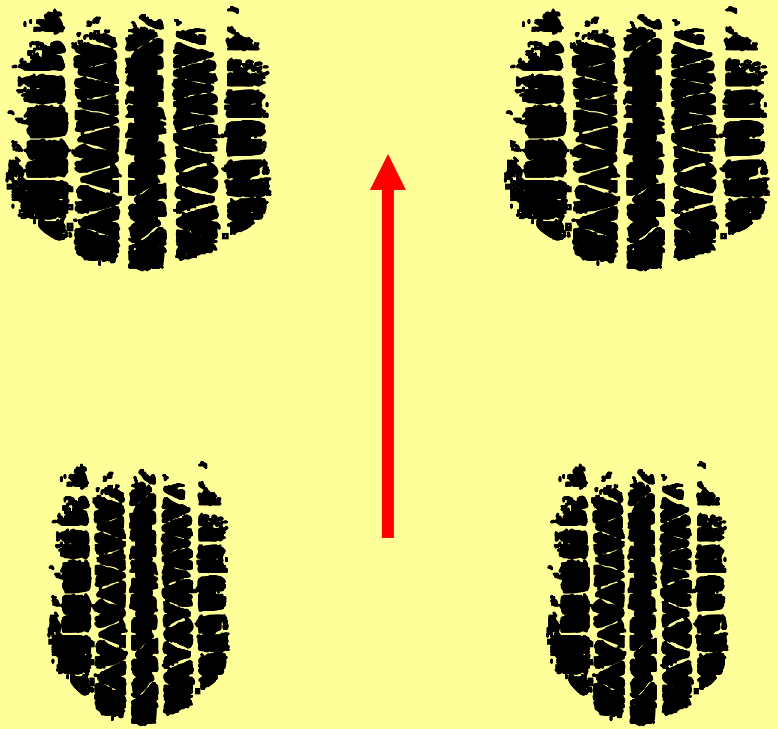


# Effect on the Contact Patch

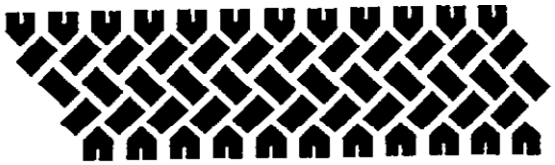
## Normal Grip



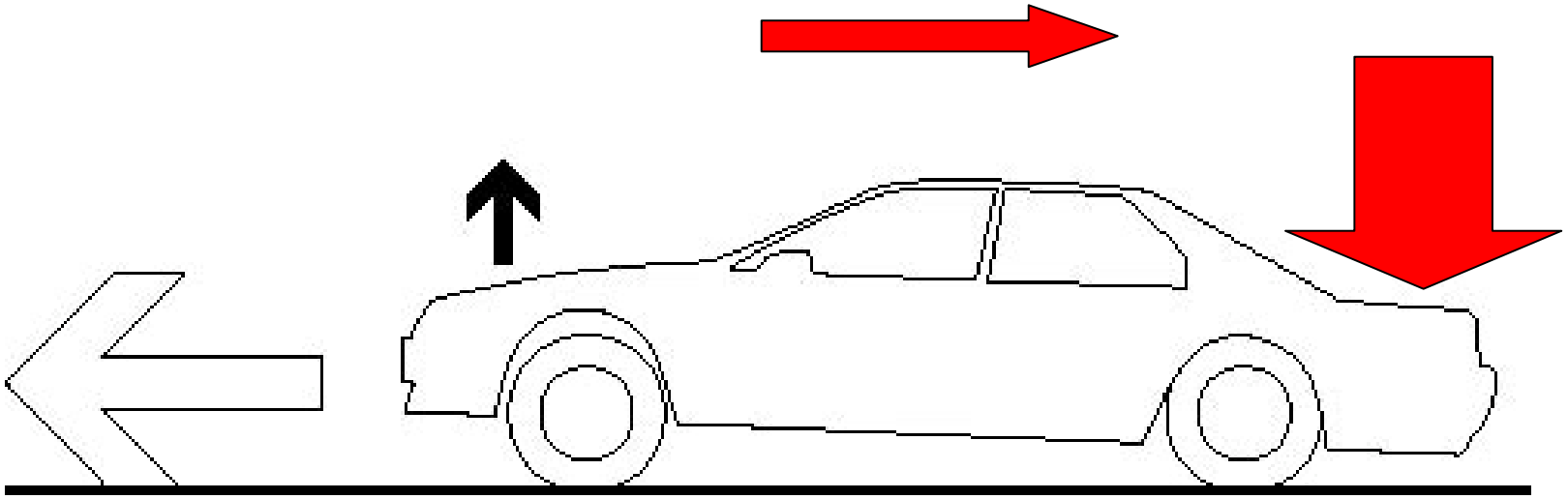
## Grip under Braking



*Driver Accountability*
*Keepin' it between the lines*

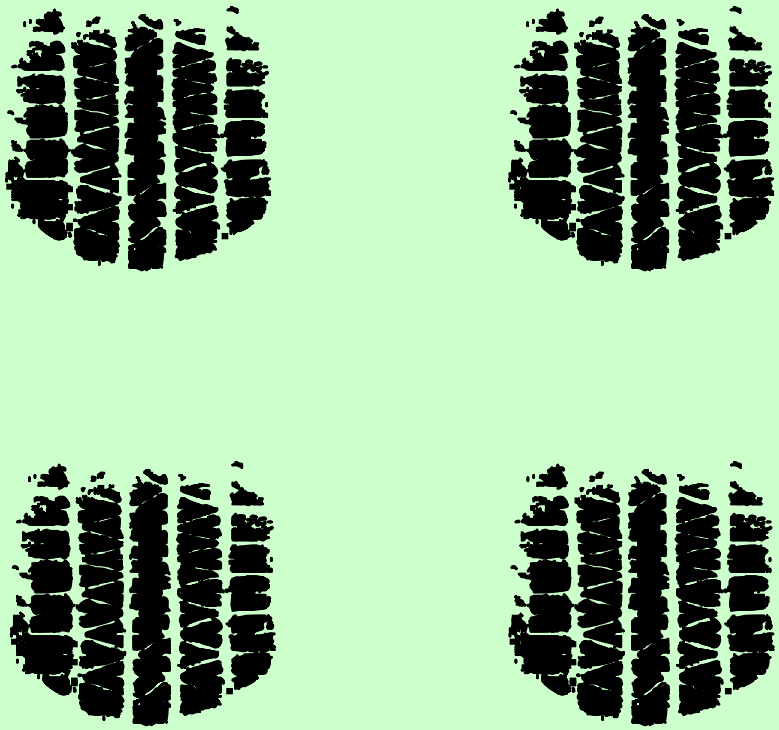


# Releasing the brakes or applying the gas moves weight to the rear of the vehicle.

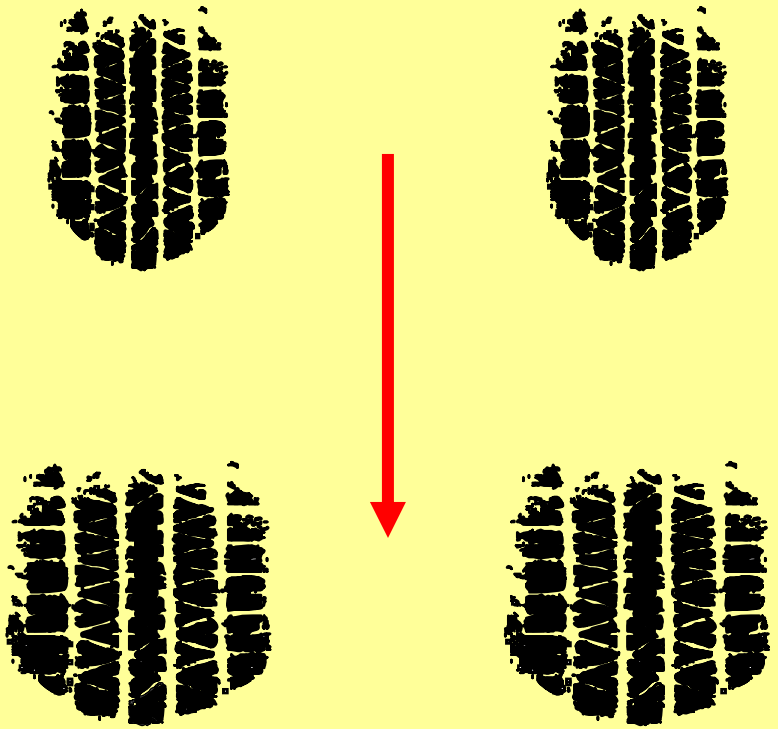


# Effect on the Contact Patch

## Normal Grip



## Grip under Acceleration



*Driver Accountability*
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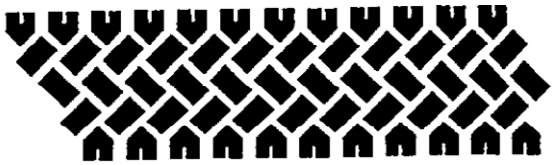
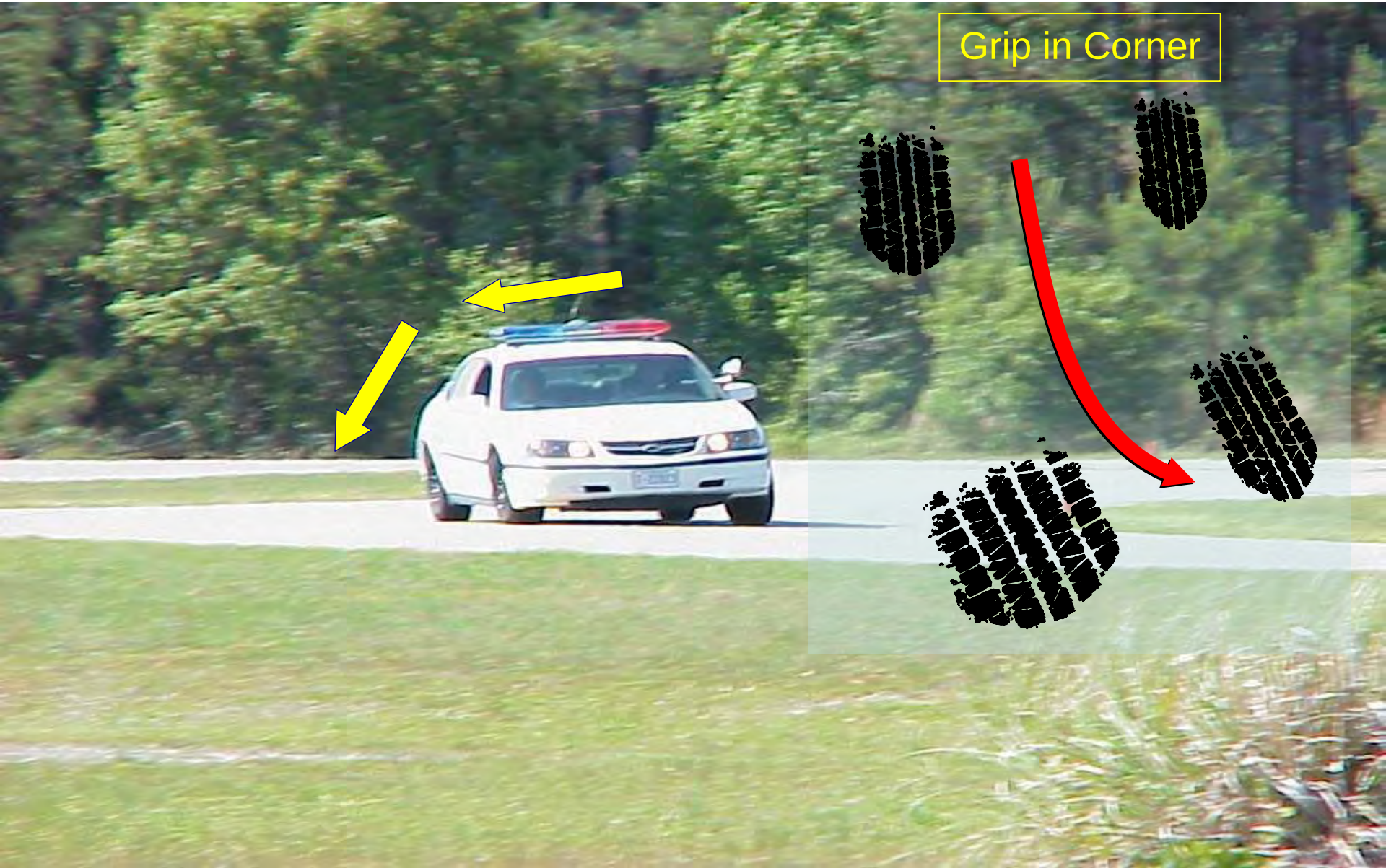
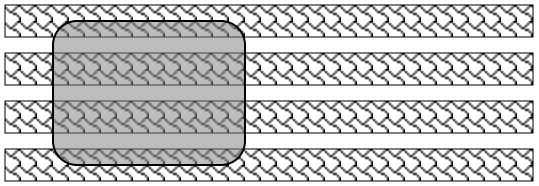
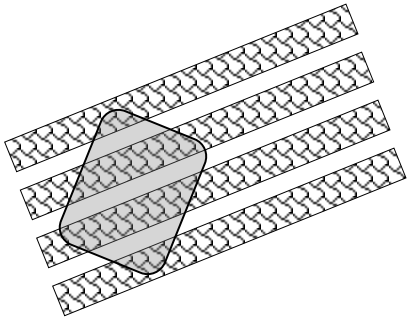


# Changing direction shifts weight from side to side and slightly forward.





More Grip

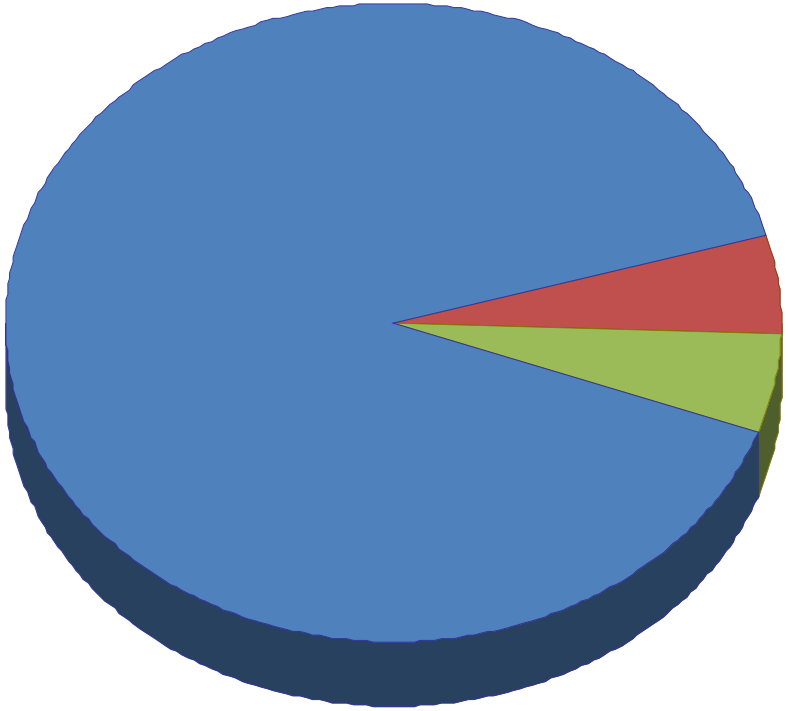


Reduced Grip

Anytime the contact patch is turned, *you have less grip*.

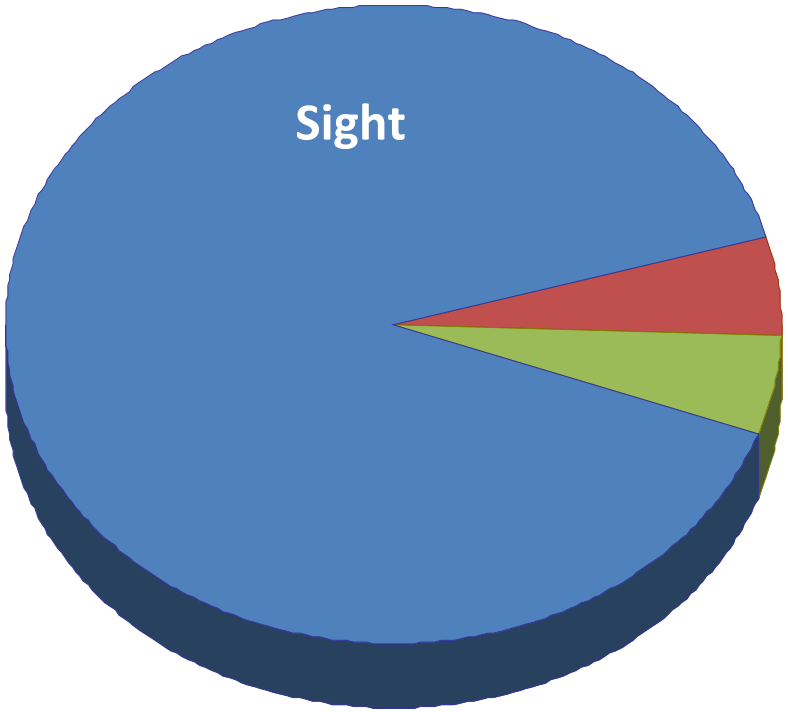
# Decisions Affect Grip

# Good Information is essential to making Good Decisions.



- The only information you can trust comes from the three most important senses for driving:
  - Sight
  - Touch
  - Sound

# The Largest Percentage of your Good Information is from Sight




- Drivers' decisions are based upon information obtained with their eyes
- Eyesight is diminished during stressful situations
- Sight lines (or line of sight) should be established as far as the environment will allow
- Sight lines include activity in your peripheral vision

**THE SPEED ISSUE IS SIMPLE:**

*You should always be able to stop within your line of sight.*

# Your life expectancy (future) is based on what you see.

Let us ask you these questions…

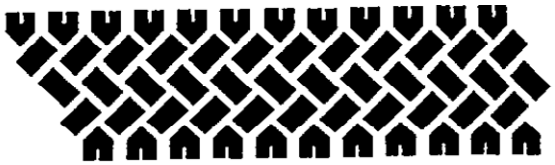
Do you tailgate?

# Your life expectancy (future) is based on what you see.

Let us ask you these questions…

## Do you pass in areas of reduced visibility?



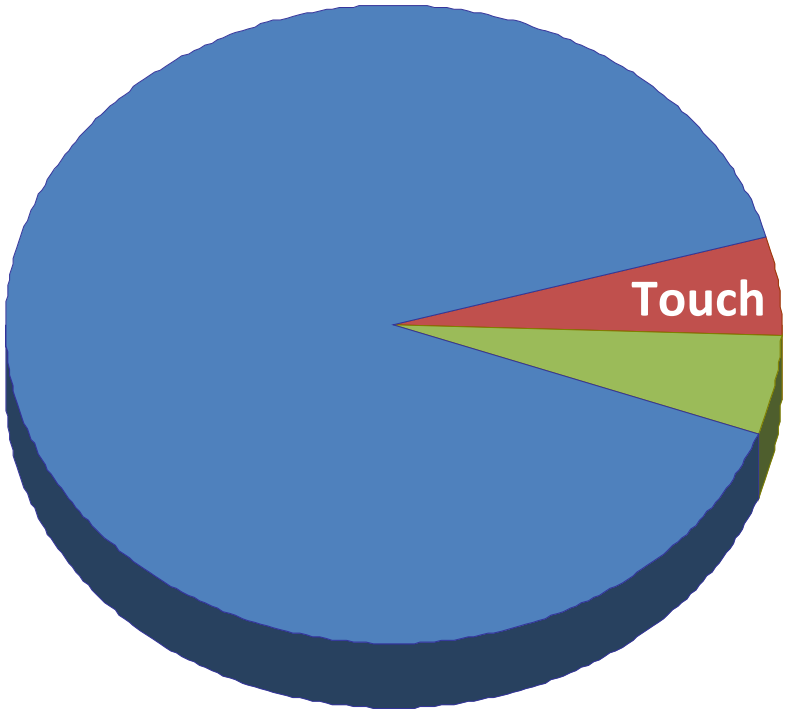


# Your life expectancy (future) is based on what you see.

Let us ask you these questions…

## Do you overdrive your headlights?

# Touch is essential to making Good Decisions

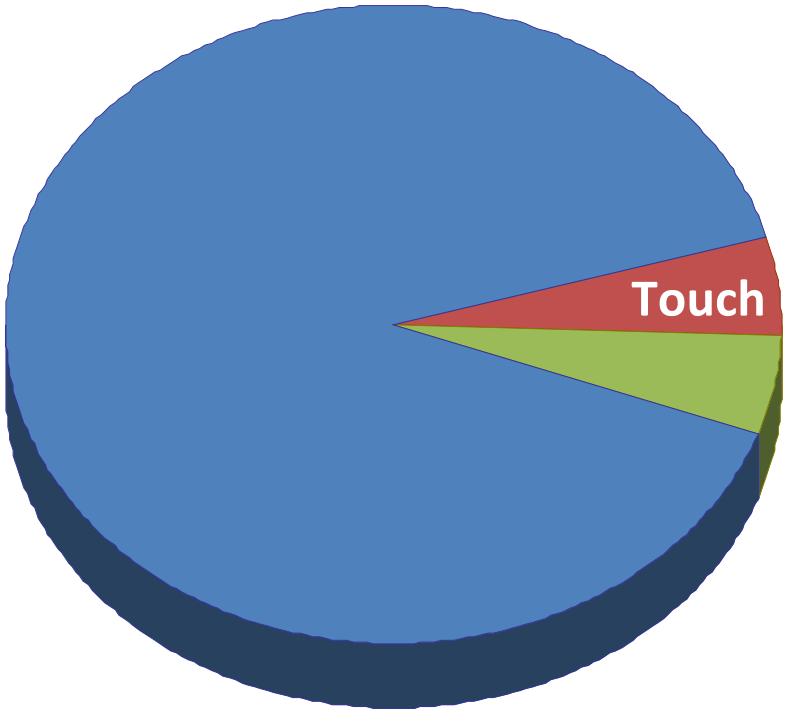



- Touch accounts for a smaller percent of driver input than eyesight
- Touch validates information expected in the brain

**CAUTION!**

- *What the driver feels has already occurred*
- *Increased G-forces increase risk of losing grip*

# Sound (hearing) is essential to making Good Decisions




- Listen to the sound between the driving surface and the tires
- Be aware of changes in road surface noise

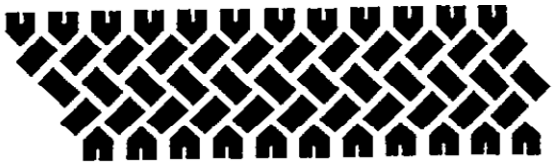
**CAUTION!**

- *As the frequency (or pitch) increases, your grip decreases*

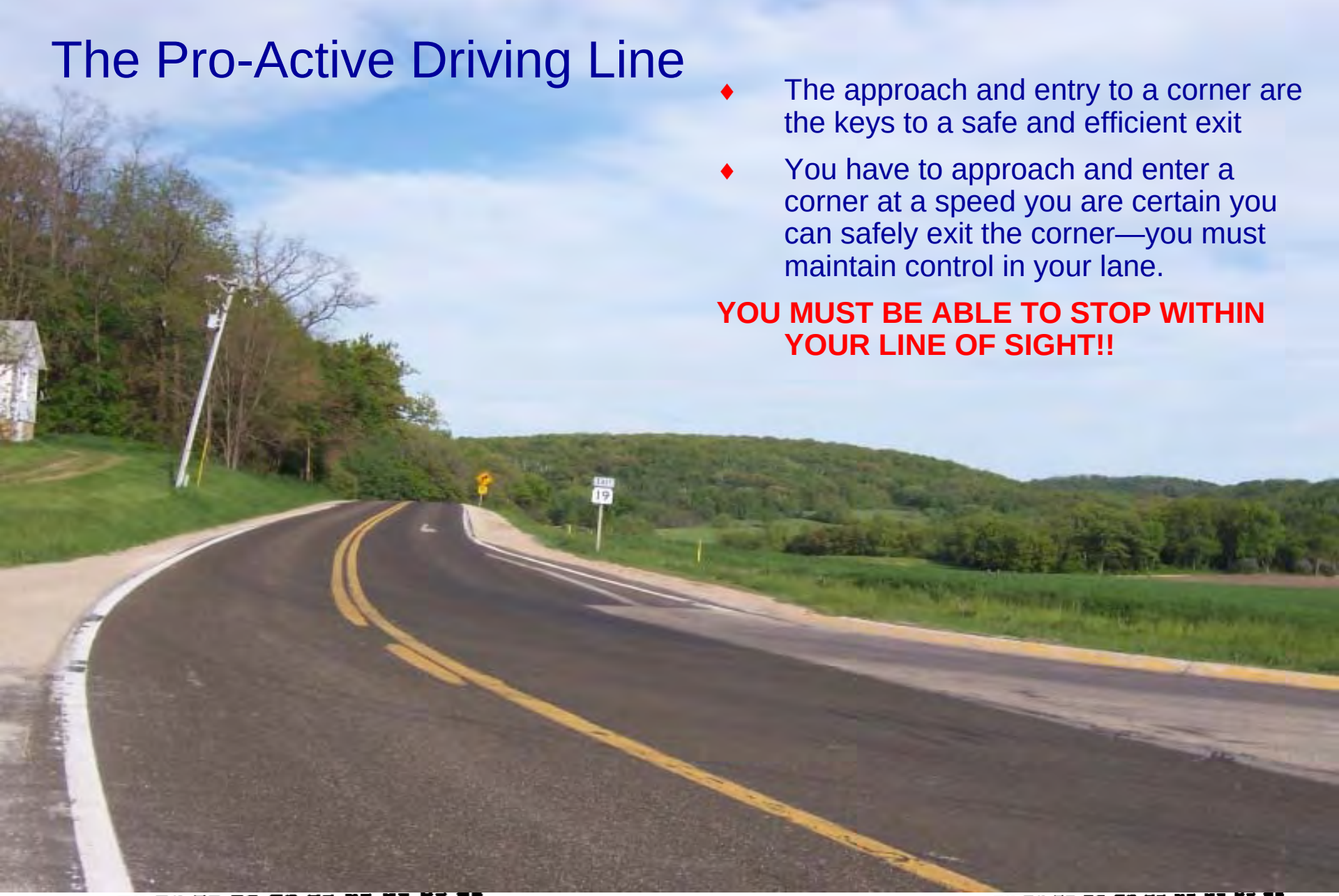
# Braking Decisions

- Long Braking *(sooner with less pressure)* helps maintain stability
  - Apply the brakes sooner and longer, with less overall pressure. The chassis will stay more squarely loaded, and is therefore more stable.
  - Panic braking to slow or stop occurs when the driver is surprised.
  - Anti-Lock or ABS braking (if vehicle is equipped) assists in maintaining directional control under emergency braking conditions.





# The Pro-Active Driving Line



- The approach and entry to a corner are the keys to a safe and efficient exit
- You have to approach and enter a corner at a speed you are certain you can safely exit the corner—you must maintain control in your lane.

**YOU MUST BE ABLE TO STOP WITHIN YOUR LINE OF SIGHT!!**

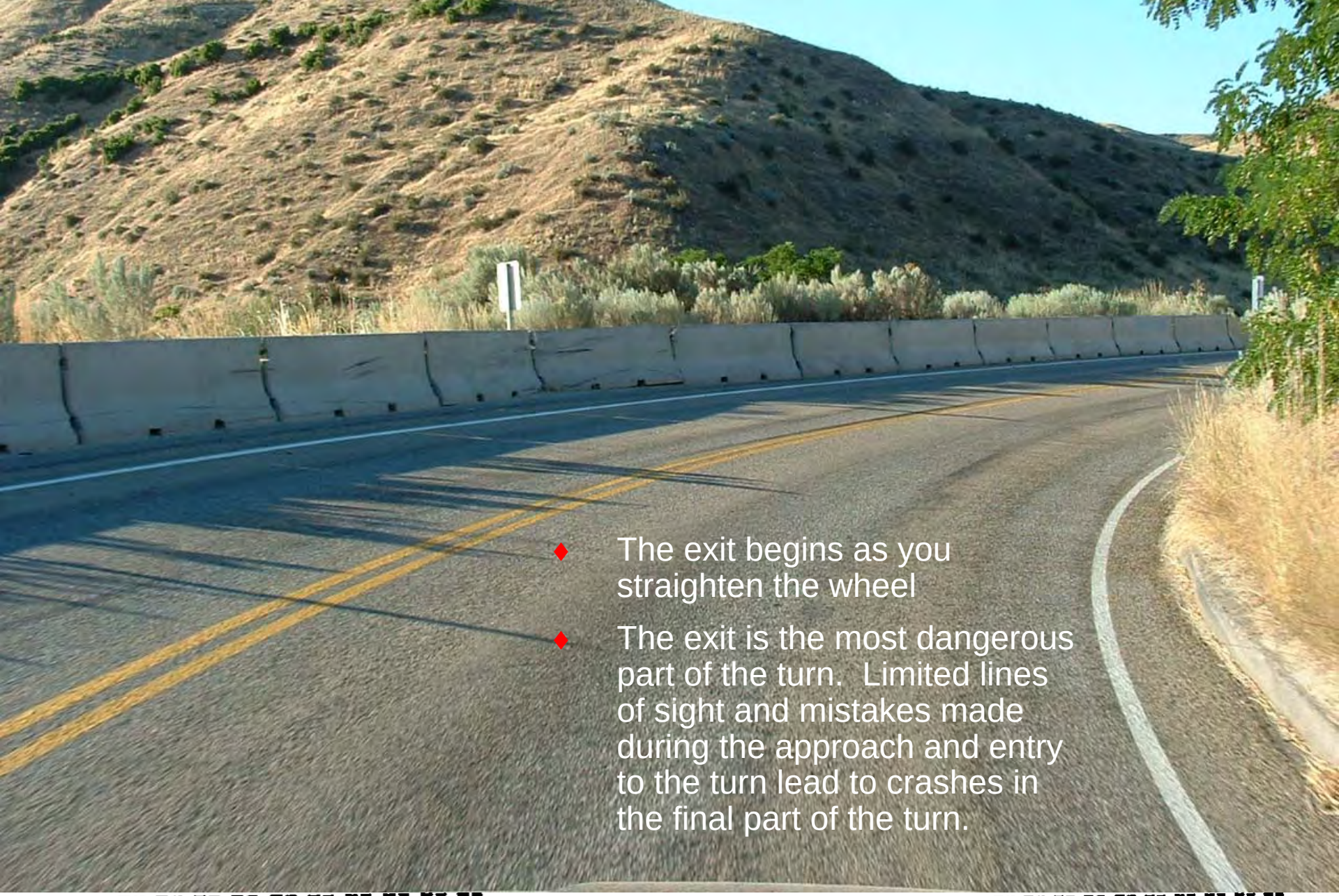

*The Pro-Active Driving Line* ® is the widest, most consistent path to a straight line exit

Your vision allows you to consider the variables.

Your training and experience help you to select the best path.

## Factors to Consider:

- Quality and Length of Line of Sight
- Condition of Road Surface



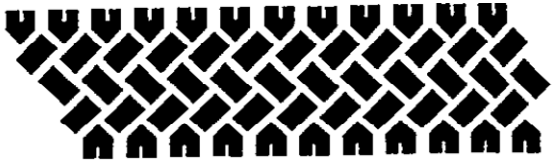
- The exit begins as you straighten the wheel
- The exit is the most dangerous part of the turn. Limited lines of sight and mistakes made during the approach and entry to the turn lead to crashes in the final part of the turn.

Success or failure in a corner is predicated upon the information available to the driver and a driver develops critical information based on what their eyes can see.

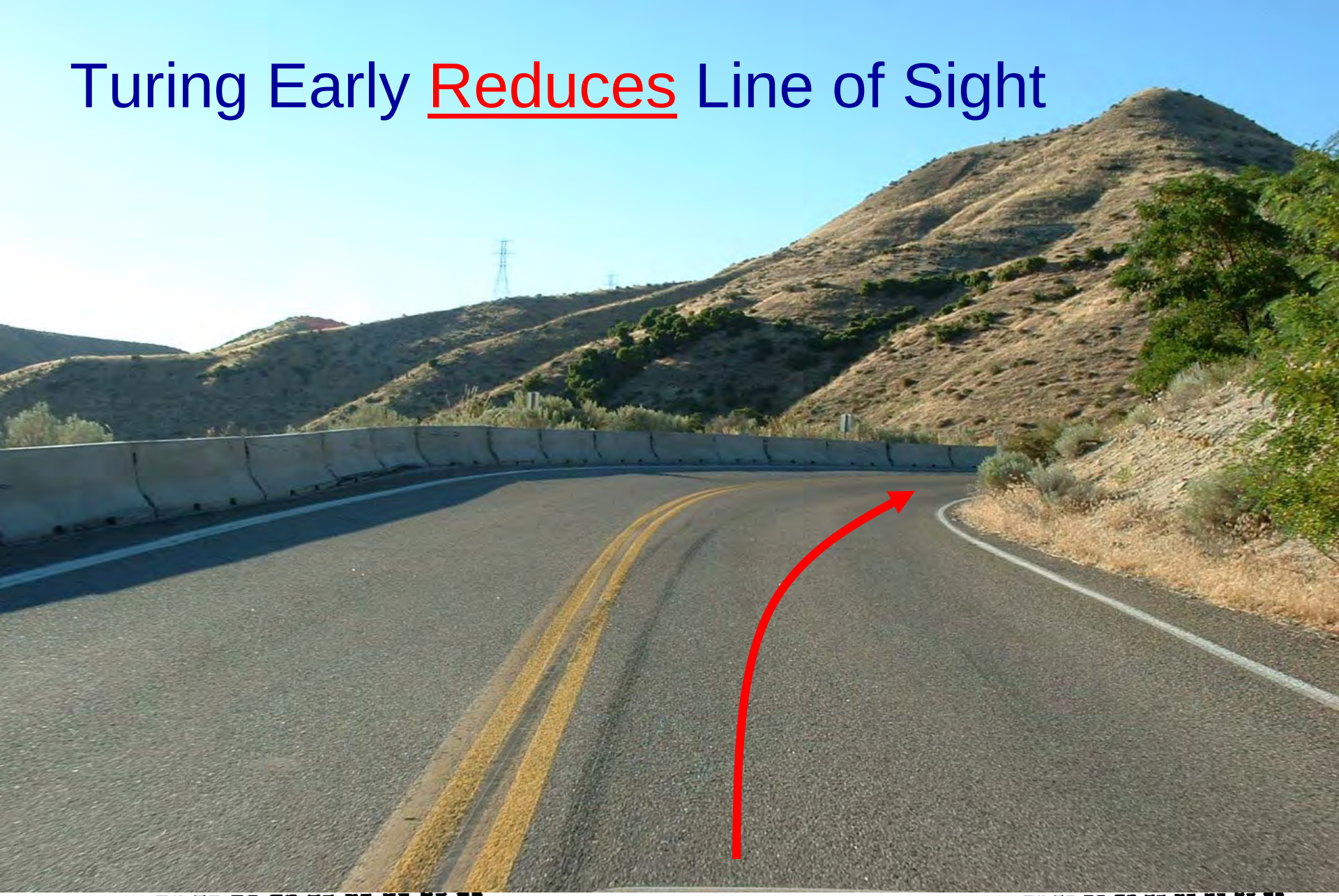
Note the blind corners and lack of shoulders

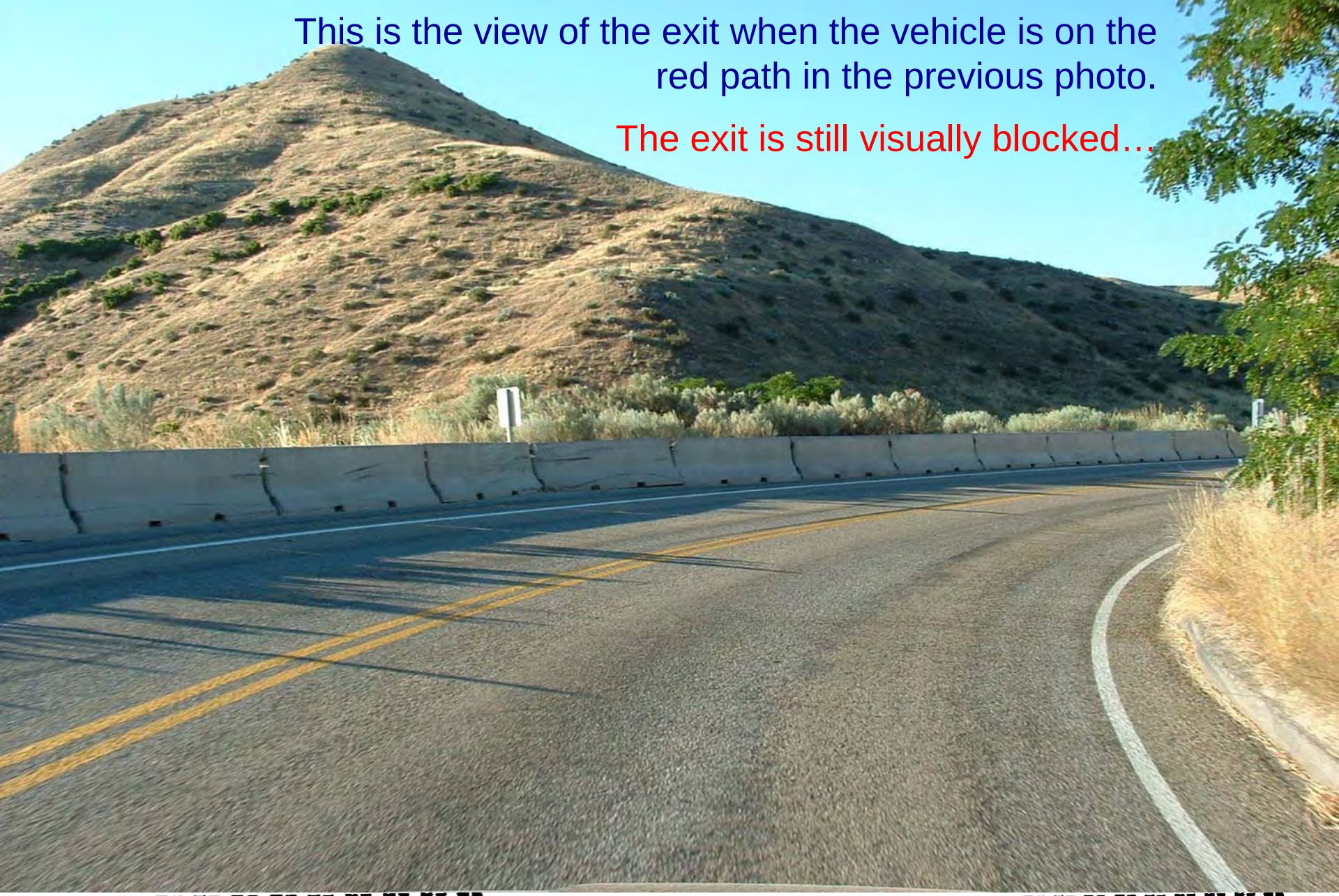
The Pro-Active Driving Line works because the driver continually maximizes the line of sight and thinks about grip.

***Driver Accountability***
***Keepin' it between the lines***

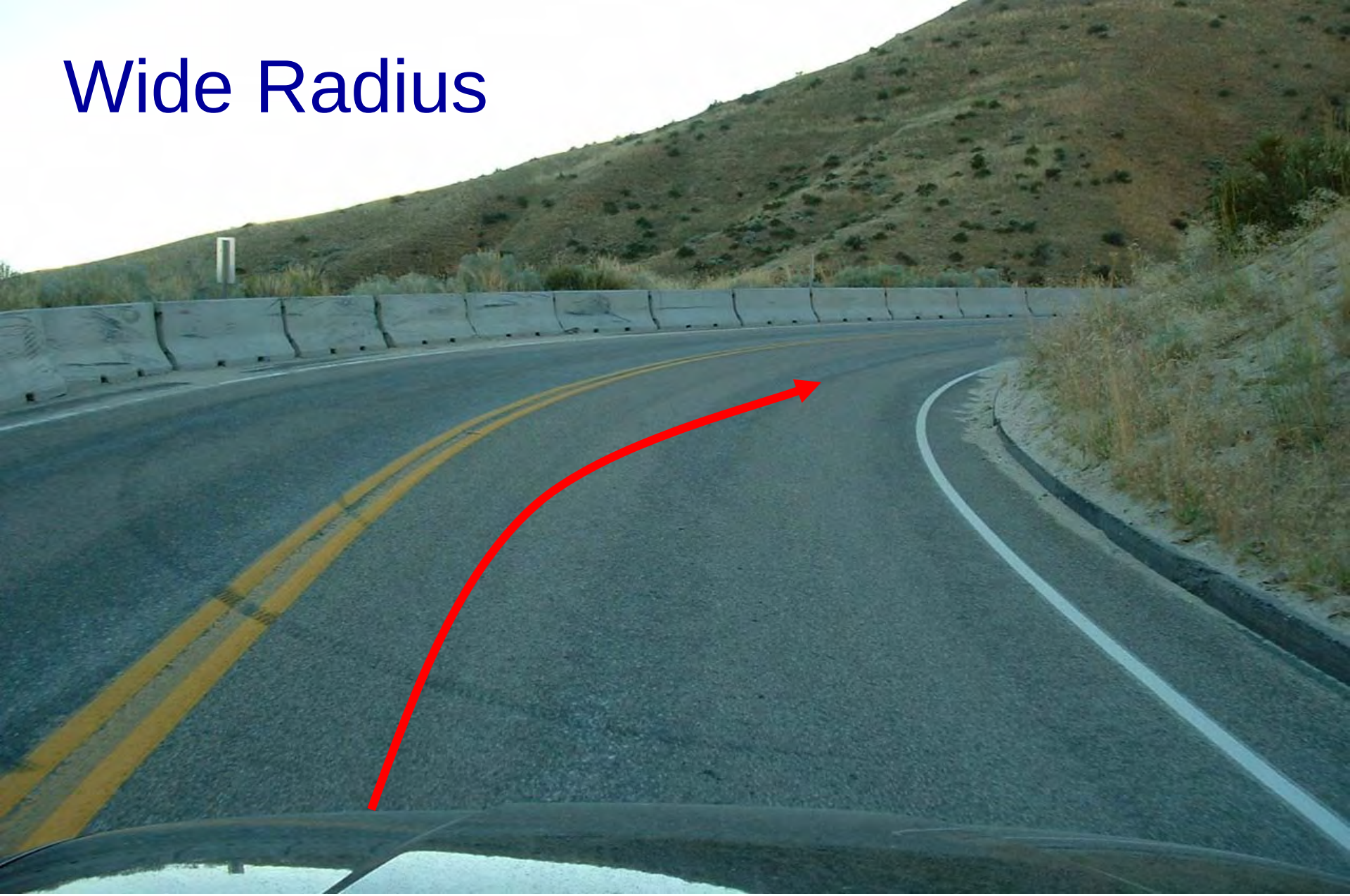


# Turing Early Reduces Line of Sight



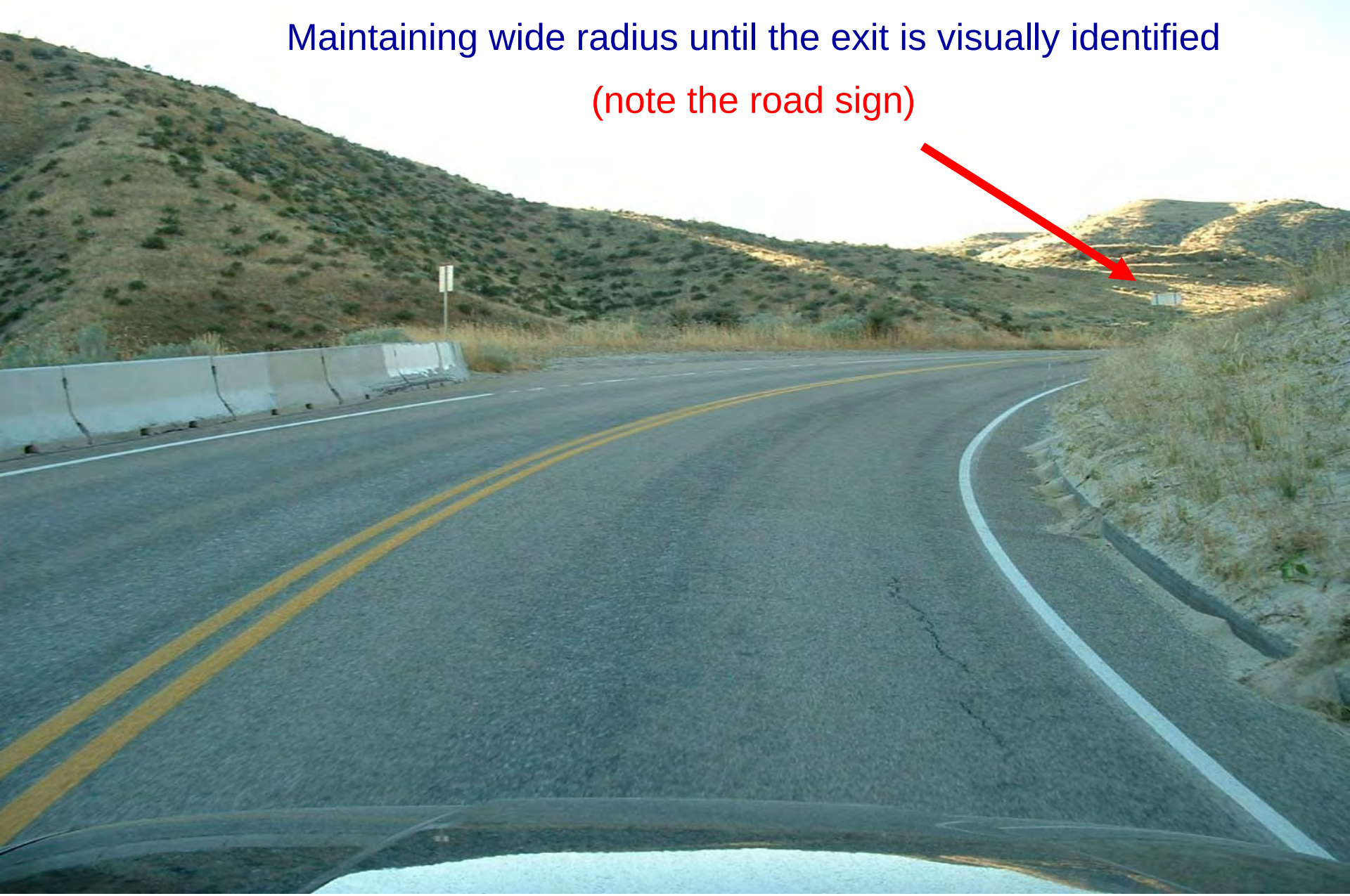

This is the view of the exit when the vehicle is on the red path in the previous photo.
The exit is still visually blocked…

# Wide Radius



Maintaining wide radius until the exit is visually identified

(note the road sign)



The continuous wide radius allowed the driver to identify the bicyclist early and exit in a straight line with no conflicts.


"The Pro-Active Driving Line" ®
"Training for Excellence"
No matter what path you drive
or
how great of a driver you are,
if you go too fast for the conditions, you will crash!!
The bottom line…

# SKIDS


*Driver Accountability*
*Keepin' it between the lines*

# FRONT WHEEL SKIDS

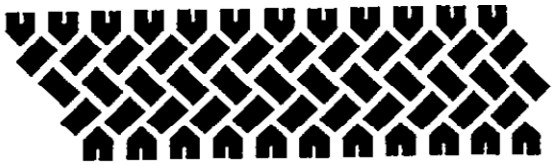

*Definition*:

When the vehicle doesn't steer as sharp as you would like. Terms such as "plowing", "pushing", or "tight" also describe this loss of front wheel grip.

# FRONT WHEEL SKIDS

- Causes:
  - Improper weight on the front wheels—could be too much or too little.
  - Brakes released too quickly.
  - Steering wheel turned too quickly or too far, causing diminished grip.
  - Driving too fast—too much weight being carried for the grip levels and speed of the vehicle.





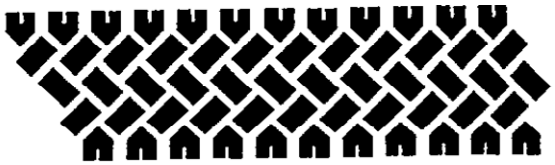
# FRONT WHEEL SKIDS

- Cures:
  - Straighten the wheels for maximum efficiency of grip.
  - Move weight using vehicle controls.
  - *Look in the direction you want to go* and steer in that direction.

    OR

  - Repeat if necessary.





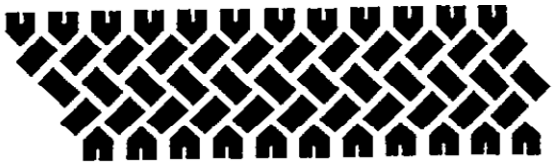
# STOP!

Before you leave the road.

NOTE: If you brake to slow down or stop, the steering wheel must be pointed straight.

***THIS IS CRASH MANAGEMENT!***





# REAR WHEEL SKIDS


*Definition*:

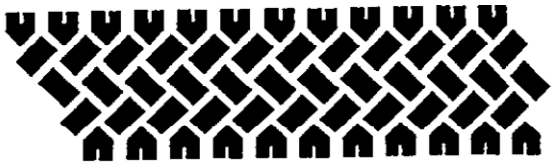
When the vehicle steers sharper than you would like. Terms such as “loose” or “fishtail” and “power-slide” also describe this loss of rear-wheel grip.

# REAR WHEEL SKIDS

- Causes:
  - Too much brake
  - Too much gas

    or most often,
  - *Too much steering*



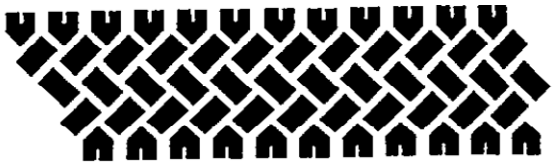


# REAR WHEEL SKIDS

- Cures:
  - Straighten the steering wheel first, look in the direction you want to go, and steer in that direction.
  - For a braking rear wheel skid, move weight to the rear using the vehicle controls to enhance rear-wheel grip.
  - For an over-acceleration skid, ease off of the throttle to gain grip.

NOTE: *If you use the gas to accelerate, the steering wheel must be pointed straight.*





# REMEMBER: ONE SKID AT A TIME!

Correct one skid before moving on to another.

The second skid is always the driver's fault!

# WHAT WE WILL BE DOING . . .

- You will be behind the controls of the car.
- I will adjust the SkidCar mechanism to duplicate stressful situations where it will be possible for you to lose control. I will not adjust the grip without warning you beforehand, so you will not be surprised.

Emergency Button

- When I say BRAKE, I mean BRAKE!!!!!!!!!
- I will be holding the control box only in case it becomes necessary to return full grip back to the vehicle for safety.

# WHAT WE WILL BE DOING . . .


- As you drive, we will analyze how you got into a skid.
- This will help you develop insight to avoid the skid in the first place and to manage skids that do occur.

Remember:

"Think more—Do less"

# Driver Development Course
## *Achieving Accountability Through Advanced Understanding and Techniques*