



Unit 5

Vision and Space Management

ADTSEA 3.0 Curriculum



Unit 5 Overview

- Vision and perception requirements
- Vehicle operating space
- Stopping distance
- Space management system (SEE)
- Lane positions and making safe lane position choices
- Divided attention / multi-tasking

The Importance of Vision

- Effective use of vision is critical to safe driving
- Most important human sense to the driving task
- 60% of the human brain is devoted to vision

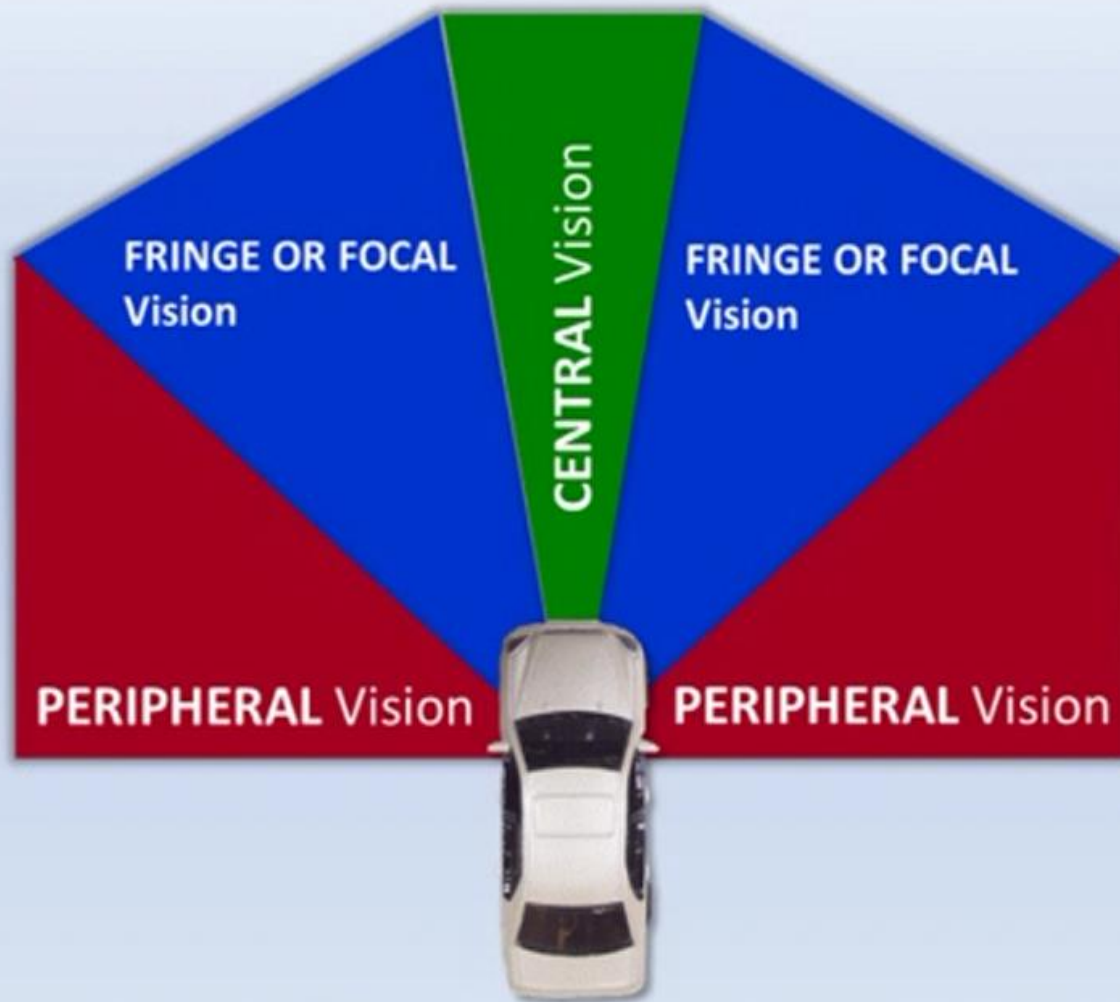




Three Types of Vision

- 1. Central vision** – Provides detail of objects
- 2. Fringe or focal vision** – Judges depth and position
- 3. Peripheral vision** – Detects changes in color and object movement

Three Types of Vision



Visual Lead

Distance the driver looks ahead
(20-30 seconds from the front of the vehicle)



Search Process

An organized searching process will need to start from the visual lead area, search for traffic flow information and potential risk situations



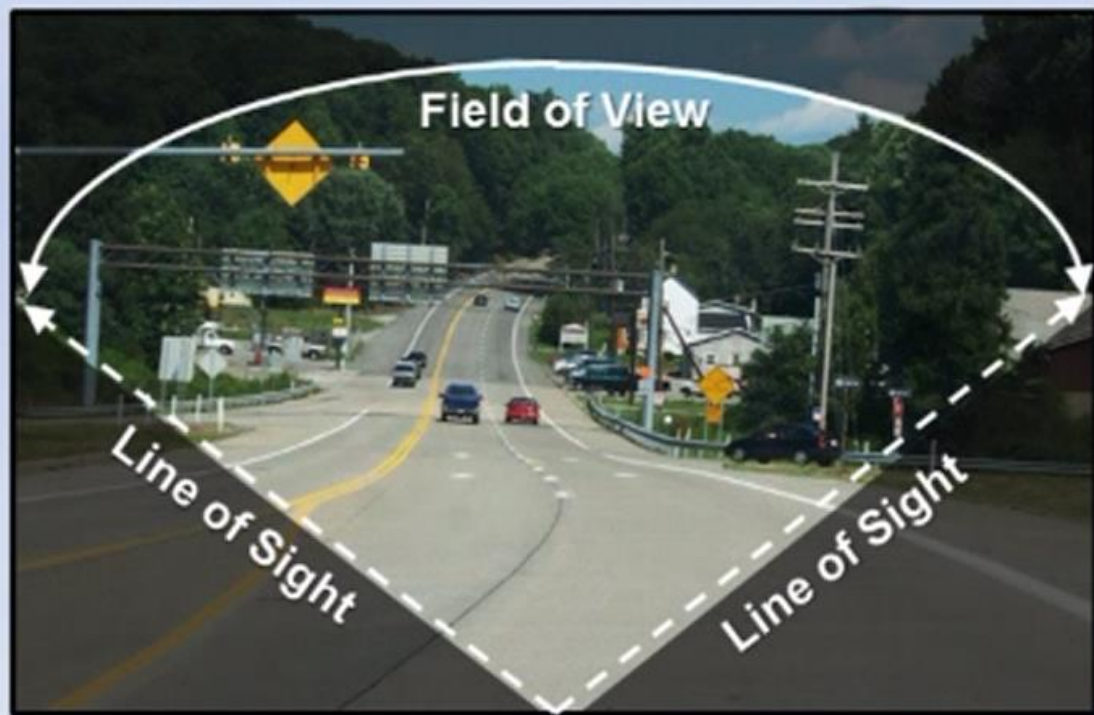
Line of Sight

Imaginary line that extends from the eyes to the point of focus, can be blocked by a curve, hill, tree branches, buildings, large vehicles



Field of View

The entire area of the highway and surroundings that the driver can see at any given moment



Path of Travel

Space into which the driver can safely direct the vehicle with the lowest possible risk



Managing Space

A small icon of a computer monitor with a blue screen. The screen displays the text "Video 5.2" in white. The monitor has a silver bezel and a black base.

Video 5.2

- The topics covered in this video include:
 - Managing space ahead by maintaining a safe following distance.
 - Managing space to the sides by allowing more space when passing parked cars and taking one hazard at a time.
 - Managing space behind when being followed closely or before pulling off to the side of the road or parallel parking.

View Managing Space Video

Managing Space



Video Review

1. During what types of situations is a greater distance in front of your vehicle needed?
2. What should you do when two potential hazards occur at the same time?
3. How can you protect yourself from a tailgater?

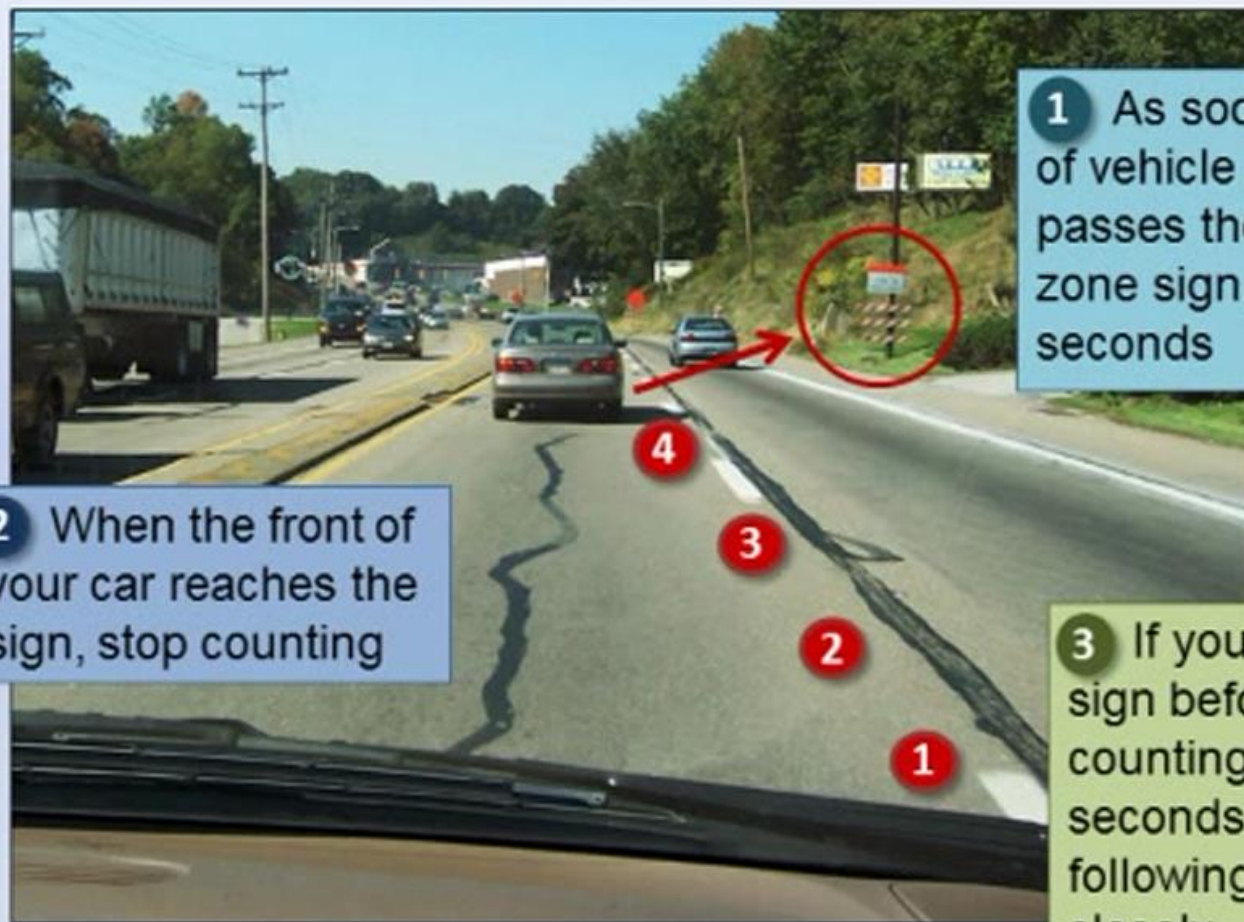


Following Distance

The distance between your vehicle and the vehicle ahead, which gives you more space between vehicles in case of an emergency



Determining Following Distance



1 As soon as rear of vehicle ahead passes the work zone sign, count the seconds

2 When the front of your car reaches the sign, stop counting

3 If you reach the sign before counting 3 – 4 seconds you are following too closely

Increase Following Distance

- Roadways are slippery
- Visibility is poor
- Driving at night
- Following large vehicles
- Anticipate in-car distraction



Space to the Sides

- One car width of space to one side of car at all times
- Avoid driving next to other vehicles on multi-lane roads



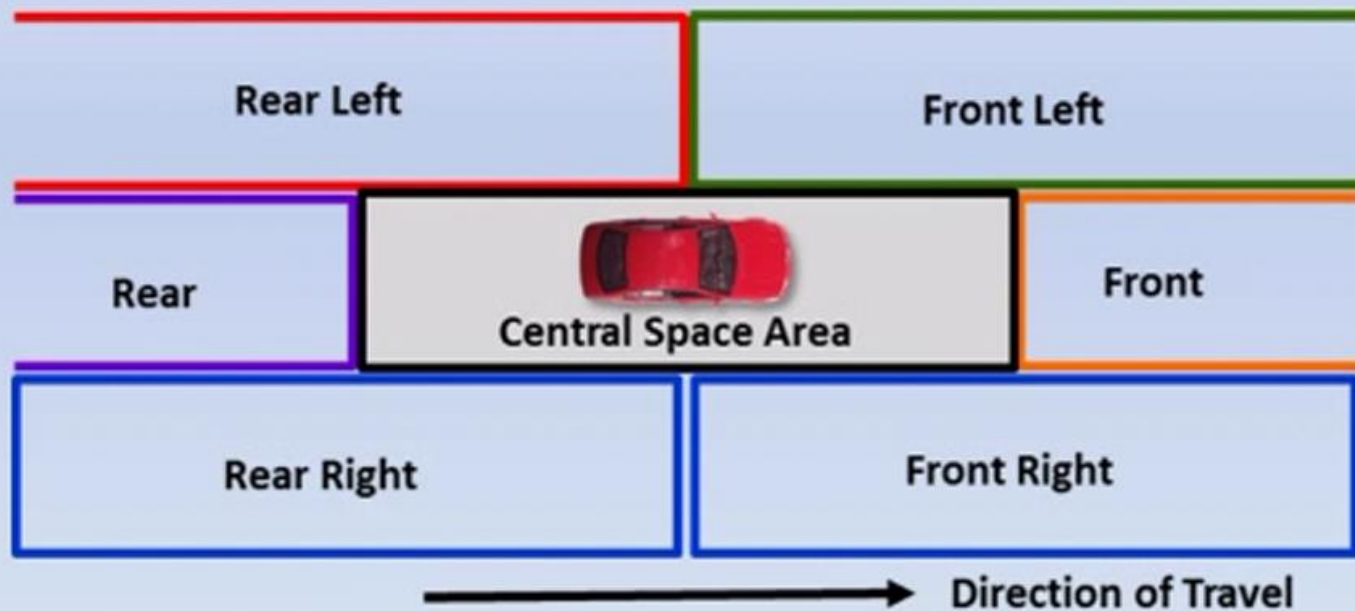
Space Behind

- Keep a steady speed
- Signal in advance
- More space to front before reducing speed or changing position

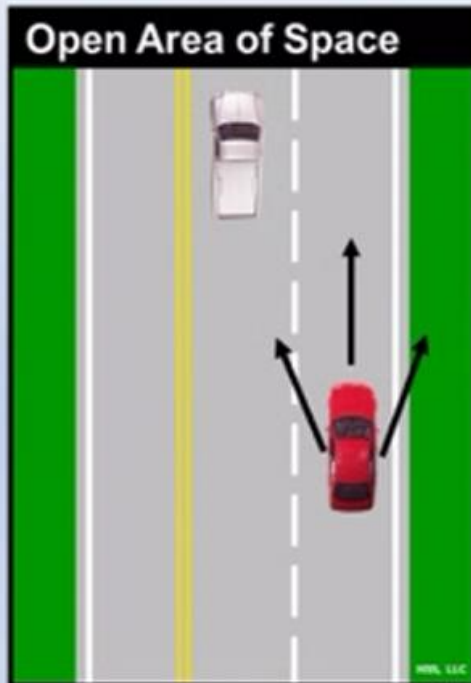


Vehicle Operating Space

Six areas of space that surround a vehicle and visible to the driver



Open, Closed and Changing Areas of Space



Space without restrictions to line of sight or path of travel



Space not available for car's path of travel or restriction to line of sight



Space in which level of risk is increasing, open area changing to a closed area

Vehicle Operating Space

- Increase in speed
- Miscalculating space
- Seeing what you expect to see



Stopping Distance

Video 5.3

- The topics covered in this video include:
 - How to determine stopping distance.
 - What you can do as a driver to compensate for the distance needed to stop a vehicle.

View Stopping Distance Video

Stopping Distance

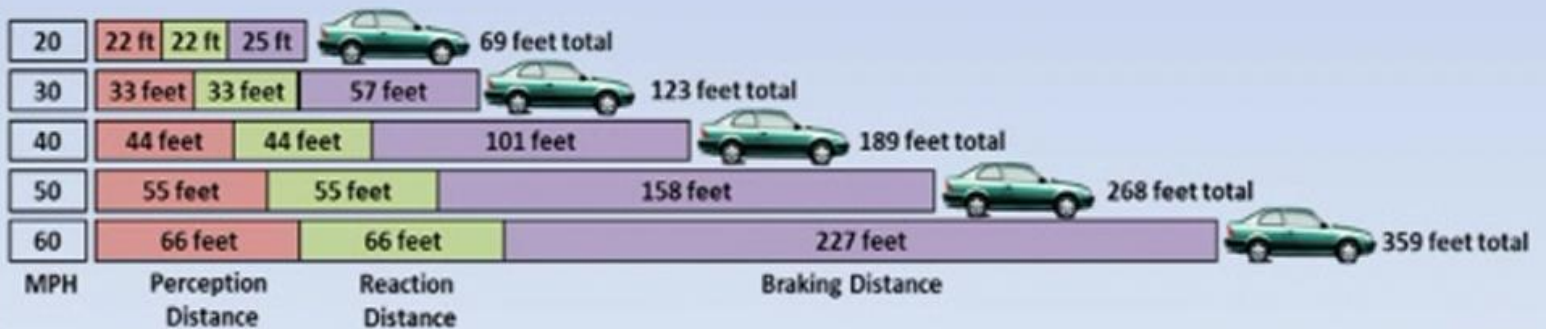
Video 5.3

Video Review

1. Why does speed increase our chances of a crash?
2. About how long does it take for a driver to react to a hazard and put their foot on the brake?

Stopping Distance

- Perception distance
- Reaction distance
- Braking distance
- Total stopping distance



Space Management System

- **SEARCH** for objects or conditions – other roadway users or conditions.
- **EVALUATE** the projected path ahead for alternate paths of travel – check to sides or rear for speed and lane position options.
- **EXECUTE** appropriate adjustment(s) – change speed, position and/or communicate.

Searching Ahead



Video 5.4.1

- The topics covered in this video include:
 - Introduction to the importance of visual search skills in crash reduction
 - Searching ahead

[View Searching Ahead Video](#)

Searching Ahead

Video 5.4.1



Video Review

1. What is the single biggest cause of crashes out on the road?
2. What is the process of looking and what does it mean?
3. What does keeping our eyes focused well down the road help with?

Searching

- Look ahead, to the sides and behind the vehicle
- Intended travel path main area of focus, searching the roadside gives you additional traffic clues
- Keep eyes active



Develop a Visual Lead

- Pick out fixed object well ahead, count until you reach object
- Number of seconds counted is the number of seconds you were looking



Searching to the Sides

- Make sure roadway users will not cross your travel path
- Before entering an intersection, look to the front, left and right



Looking Behind

- Help avoid collisions when conditions change suddenly
- Check mirrors and look over shoulders to check blind spots



Searching

- Where to look
- When to look
- How to evaluate if a potential problem could be a good or poor situation
- What to look for



Where to Search

Mirrors



Instrument panel



20 to 30 seconds ahead



When to Search

- Involves timing and direction of the search pattern
- Requires consciously looking to determine conditions all around the vehicle before initiating any maneuver

How to Search

20 – 30 seconds



Can identify potential problems.

12 - 15 seconds



Can identify objects that could require a change in speed or direction.

How to Search

8 – 12 seconds



Can identify alternate paths of travel and stopping zone in advance.

4 – 8 seconds



The 4 seconds ahead represents following distance and 8 seconds provides a safe stopping zone.

What to Search For

- Signs, signals and markings
- Roadway characteristics
- Motorized vehicles
- Non-motorized highway users



Eye Habits for Vehicle Control

- Picture intended path of travel
- Look down middle of path
- Look far ahead



Searching to the Sides and Looking Behind



- The topics covered in this video include:
 - Searching to the sides
 - Looking behind

View Searching to the Sides And Looking Behind Video

Searching to the Sides and Looking Behind



Video Review

1. What is one of the two biggest causes of car crashes?
2. What should you do before crossing an intersection?
3. When is it important to check our mirrors to see what is happening behind us?

Searching Habits for Identification

- Search the scene ahead and to the sides
- Search the road surface
- Scan the mirrors and dash





Flash Slide Activity

- For the following slides search only for **traffic controls**
- Use searching habits introduced earlier
- Search from side to side and work out as far as you can see

C-1



C-1 Questions

- There is a railroad crossing ahead?
T/F
- You are on a one-way street? T/F
- There is a pedestrian crossing ahead? T/F

C-1



C-2



C-2 Questions

- You are permitted to make a right on red at this intersection? T/F
- The traffic light ahead is green? T/F
- There is a white stop line ahead?
T/F

C-2



C-3



C-3 Questions

- You are approaching a sharp right turn? T/F
- There is a traffic control signal ahead? T/F
- The advisory warning speed is 35 mph? T/F

C-3



C-4



C-4 Questions

- There are two pedestrian crosswalks ahead? T/F
- This is a four-lane street? T/F
- There is a pedestrian entering the crosswalk ahead? T/F

C-4



Flash Slide Activity

- For the following slides search only for **highway conditions**.
- Use searching habits introduced earlier.
- Search from side to side and work out as far as you can see.

HC-1



HC-1 Questions

- The shoulder to the left is level with the roadway? T/F
- You are in an area of limited space? T/F
- You have a good sighting distance ahead? T/F

HC-1



HC-2



HC-2 Questions

- You are in an area of less traction?
T/F
- You have a good sighting distance?
T/F
- You are in an area of less space?
T/F

HC-2



HC-3



HC-3 Questions

- The shoulder is level with the roadway? T/F
- You are approaching a blind curve? T/F
- You have a limited sight distance? T/F

HC-3



HC-4



HC-4 Questions

- Your sight distance is poor? T/F
- You have limited visibility to the sides? T/F
- The shoulder is gravel? T/F

HC-4



Flash Slide Activity

- For the following slides search only for **other user clues**.
- Use searching habits introduced earlier.
- Search from side to side and work out as far as you can see.

OU-1



OU-1 Questions

- There are two construction workers ahead? T/F
- The vehicle ahead is braking? T/F
- There is a construction vehicle ahead? T/F

OU-1



OU-2



OU-2 Questions

- There is a pedestrian walking along the side street ahead? T/F
- There is a bicyclist coming towards you? T/F
- There is motorcyclist ahead? T/F

OU-2



OU-3



OU-3 Questions

- The vehicle coming towards you is getting ready to turn left? T/F
- The vehicle ahead of you is in the middle of your lane? T/F
- There is a pedestrian on the right side of the roadway? T/F

OU-3



OU-4



OU-4 Questions

- The parked vehicle on the right has its brake lights on? T/F
- There is a pedestrian standing along the right side of the roadway? T/F
- The vehicle coming towards you is continuing straight across the intersection? T/F

OU-4



Flash Slide Activity

- For the following slides search you are searching for **all groups**.
- Use searching habits introduced earlier.
- Search from side to side and work out as far as you can see.

AG-1



AG-1 Questions

- The traffic light is turning to green?
T/F
- There is a pedestrian crosswalk ahead? T/F
- There is a motorcyclist in your lane? T/F

AG-1



AG-2



AG-2 Questions

- You have a good sighting distance?
T/F
- There is a car pulling out of a driveway ahead? T/F
- The roadway is level with the shoulder? T/F

AG-2



AG-3



AG-3 Questions

- The truck is making a left turn?
T/F
- The traffic light is green? T/F
- You have a good sighting distance ahead and to the sides?
T/F



AG-3



AG-4



AG-4 Questions

- You are on a divided highway?
T/F
- The truck is moving into your lane? T/F
- You have a limited sight distance? T/F

AG-4



Hazard Recognition



- The topics covered in this video include:
 - How to recognize hazards and react to them.

[View Hazard Recognition Video](#)

Hazard Recognition

Video 5.4.3



Video Review

1. How are people able to react so quickly to hazardous situations?
2. Name the types of hazards discussed in the video.

Evaluating

- Determine if hazard(s) could affect you. Ask yourself, “what if?”
- What actions will make situation more manageable?
- Change speed, position, increase visibility, sound a warning.



Evaluating continued

- Potential and critical risks
 - How to manage available time and space to minimize risk
- Selecting the best path of travel

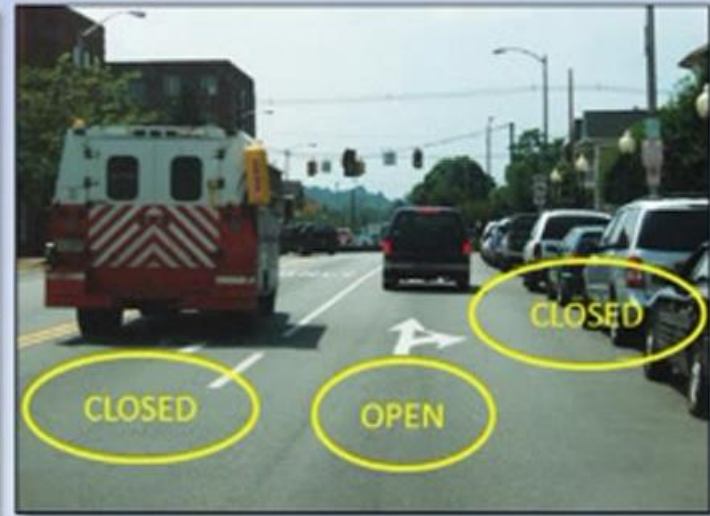


Evaluating continued

- After searching evaluate conditions before making a decision
- Drivers must constantly question the present conditions
- Watch for changes in space areas around the vehicle



Using the Basics



Using the Basics

- After searching and seeing a changing or closed space area, evaluate the conditions of the opposite space areas before making a decision.
- Drivers must constantly question the present conditions.

Executing

- Carrying out your decision
- What are you going to do and how are you going to do it
- Adjust your speed, adjust your position, communicate your presence



Adjusting Your Speed in Response to Risk or Danger

Decelerate



Accelerate



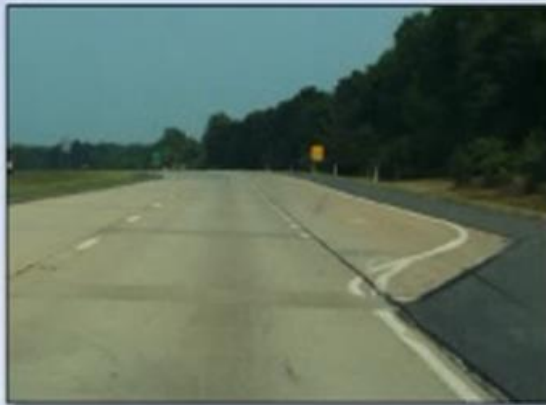
Adjusting Your Speed in Response to Traffic Conditions



Reduce speed and keep pace with traffic flow



When merging, enter at same speed as traffic



When using deceleration lane, do not slow down until you have moved into lane

Adjusting Your Speed in Response to Roadway Conditions

Curves



Water on the roadway



Slippery roads



Adjusting Your Speed in Response to Vehicle Balance

Accelerating



Weight shifts to rear

Braking



Weight shifts to front

Avoid sudden inputs, perform smooth inputs one at a time to maintain maximum traction

Adjusting Your Speed in Response to Vehicle Balance

Accelerating



Weight shifts to rear

Braking



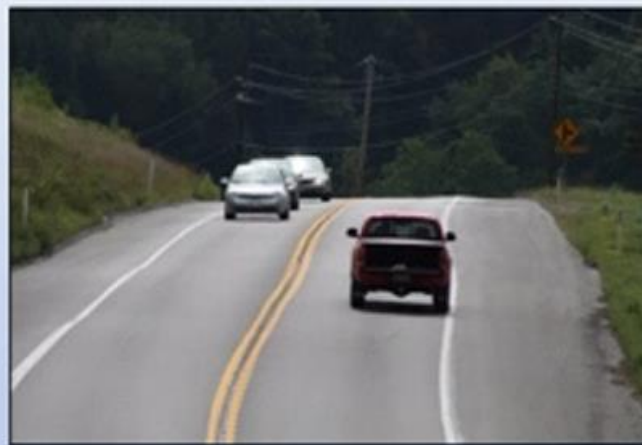
Weight shifts to front

Avoid sudden inputs, perform smooth inputs one at a time to maintain maximum traction

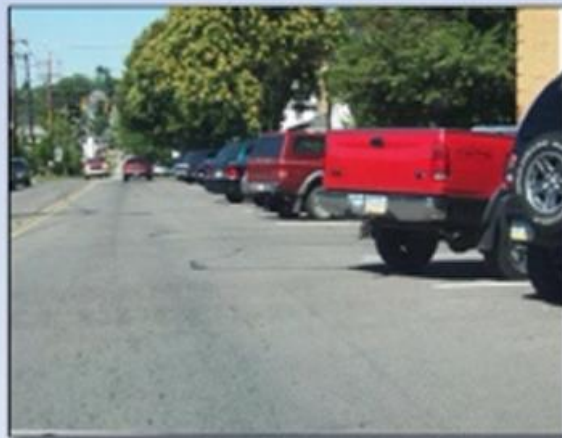
Adjusting Your Position and/or Direction in Response to Traffic Conditions



Avoid driving next to other vehicles on multi-lane roads



Keep space between your vehicle and oncoming vehicles



Keep extra space between your vehicle and parked cars

Adjusting Your Position and/or Direction in Response to Roadway Conditions

Curves



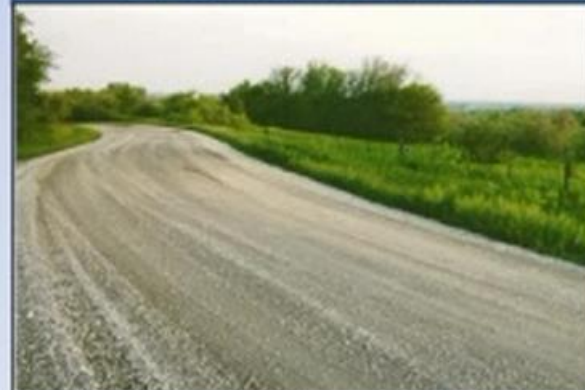
Water on the roadway



Slippery roads



Gravel roads



Adjusting Your Position and/or Direction in Response to Vehicle Control



Weight shifts in direction opposite the turn

Brake smoothly and avoid sudden inputs
when steering, execute one input at a time

Communicating

Video 5.4.4

- The topics covered in this video include:
 - How to communicate with other roadway users.
 - Headlights
 - Hazard flashers
 - Horn
 - Turn signals
 - Brake lights

Communicating

Video 5.4.4

Video Review

1. When should you use your headlights?
2. If you need to pull over because of an emergency, what is the best way to do so?
3. How can you signal speed changes in advance?

Communicating Your Intentions

Headlights



Brake lights
and taillights



Turn signals



Hazard
flasher



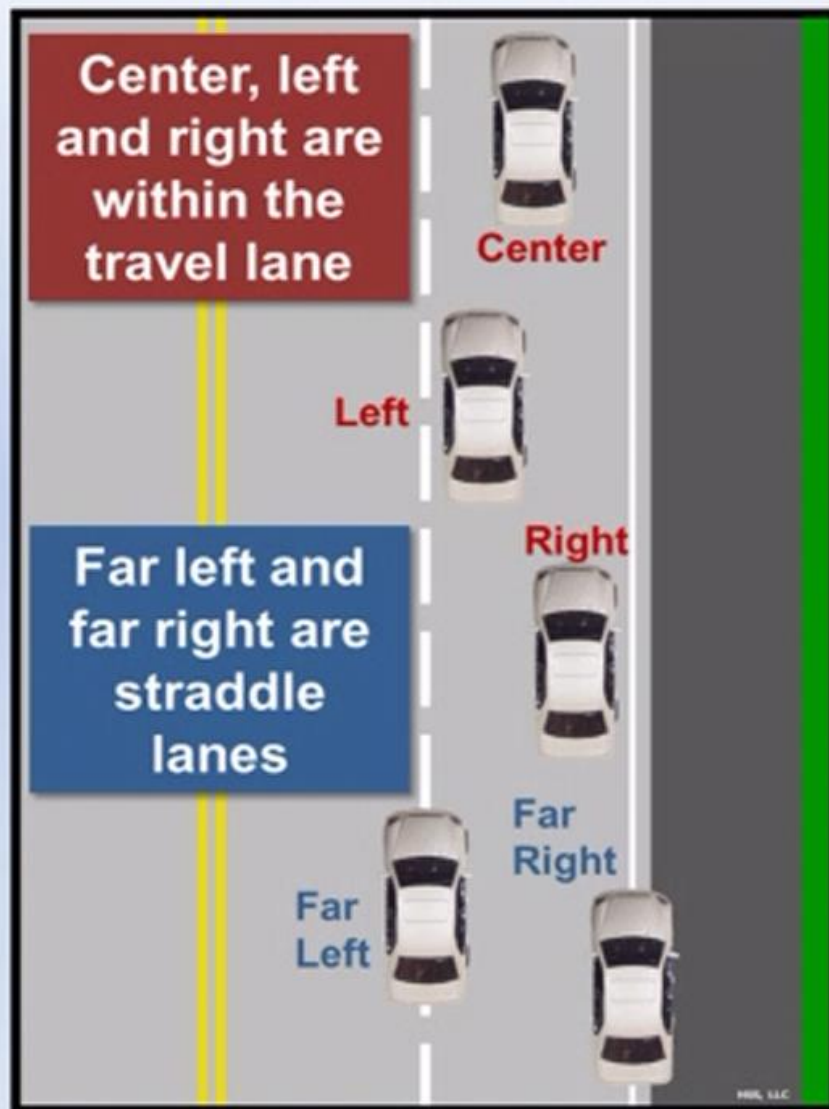
Reverse lights



Horn

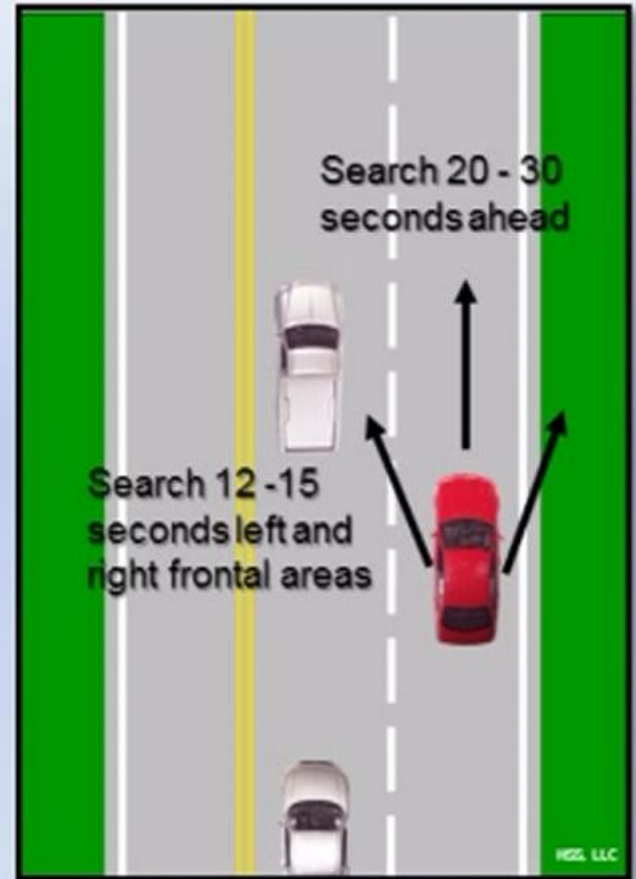


Lane Positions



When Space to the Front is Clear

- If object or condition reduces space, move to the left or right lane position



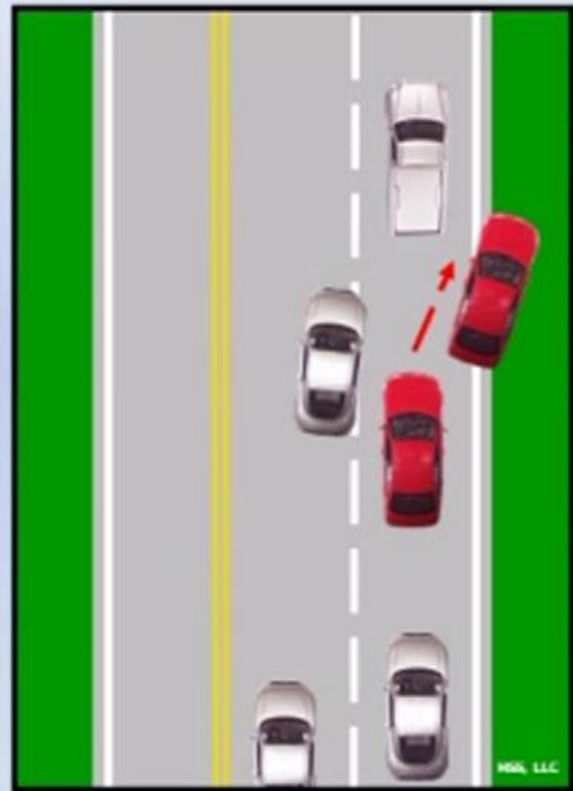
When More than One Object Adjacent to Path of Travel Poses a Possible Threat

- Determine which poses the greater risk
- Take one threat at a time
- Decide on change of speed and/or position



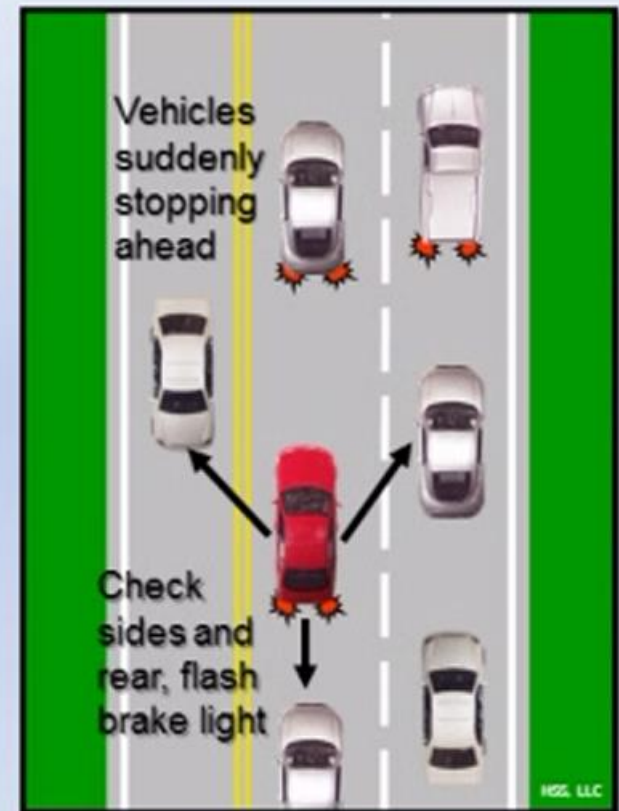
When the Planned Path of Travel is Closed, but Alternate Paths are Open

- Identify alternate paths of travel
- Maintain area into which steering is possible on at least one side



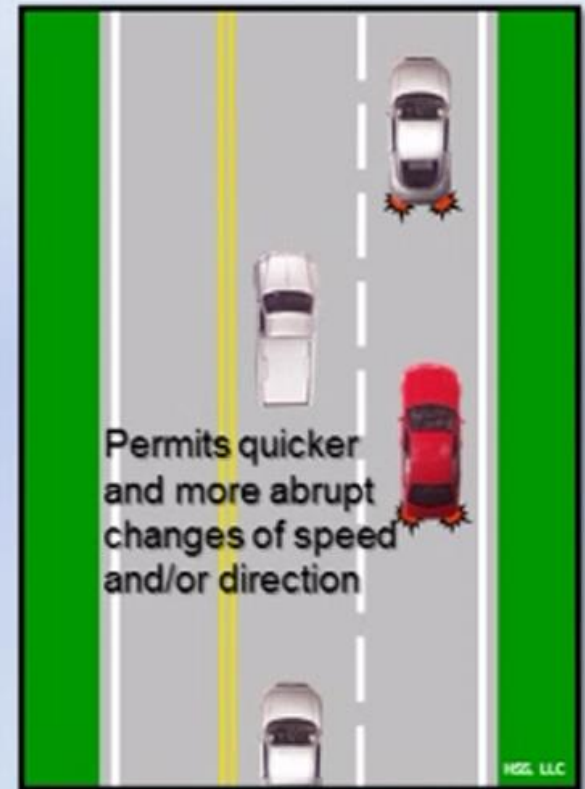
When the Planned Path of Travel is Closed and There is No Alternate Path

- Check to sides and rear
- Flash brake lights and apply the brakes
- Attempt to open up space ahead



When There is No Following Traffic

- Provides maximum level of control to the rear
- Permits quicker and more abrupt changes of speed and/or direction



Divided Attention / Multi-tasking

Being able to operate a motor vehicle while using operator controls and devices and scanning the roadway, mirrors and dashboard all at the same time



Become familiar with devices



Important to keep your eyes active

Unit Review

In this unit, you learned:

- Vision and perception requirements
- Vehicle operating space
- Stopping distance
- Space management system (SEE)
- Lane positions and making safe lane position choices
- Divided attention / multi-tasking

