Virginia Department of Education

Module Five Transparencies

Information Processing:

Moderate Risk Driving Environment

Topic 1 -- Processing Information

Topic 2 -- Intersections, Curves, and Hills

Topic 3 -- Passing

Provided in cooperation with the Virginia Department of Motor Vehicles

Processing Information

Basic Requirements for Driving

DRIVER REQUIREMENTS

VISIBILITY... SPACE... TIME... SPACE... TRACTION

VEHICLE REQUIREMENTS

TO MANEUVER SAFELY

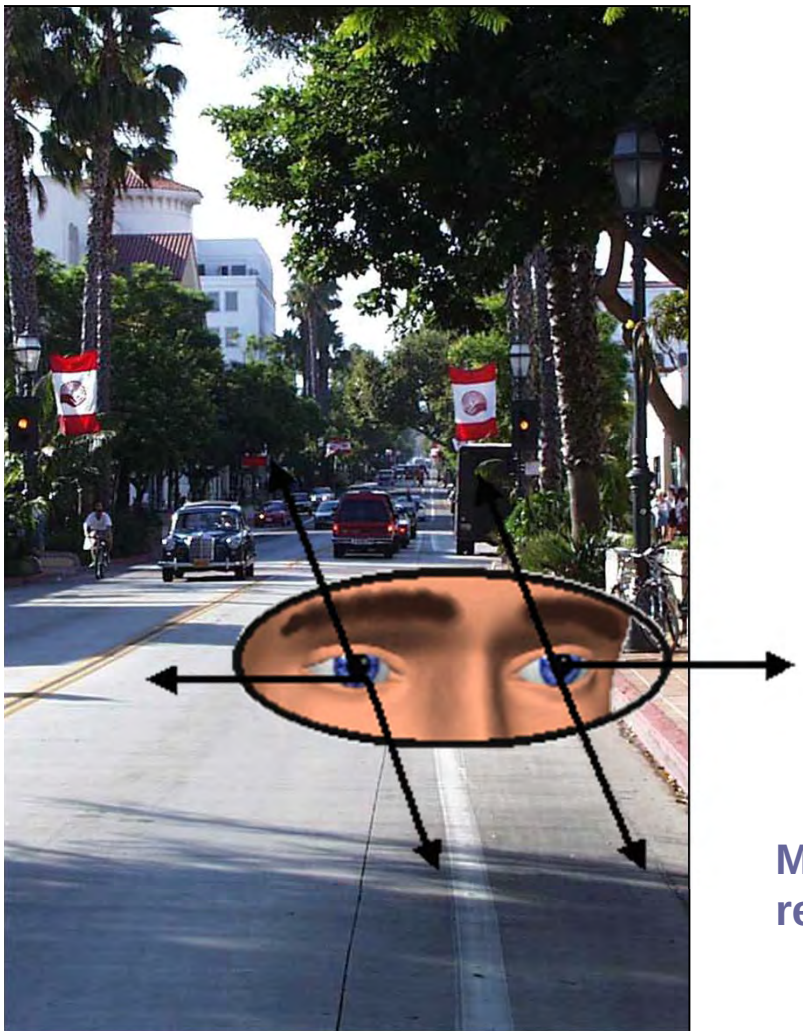
Drivers need visibility, space, and time

AND

Vehicles require time, space, and traction

Processing Information

Visibility is critical to the SEEiT Space Management System



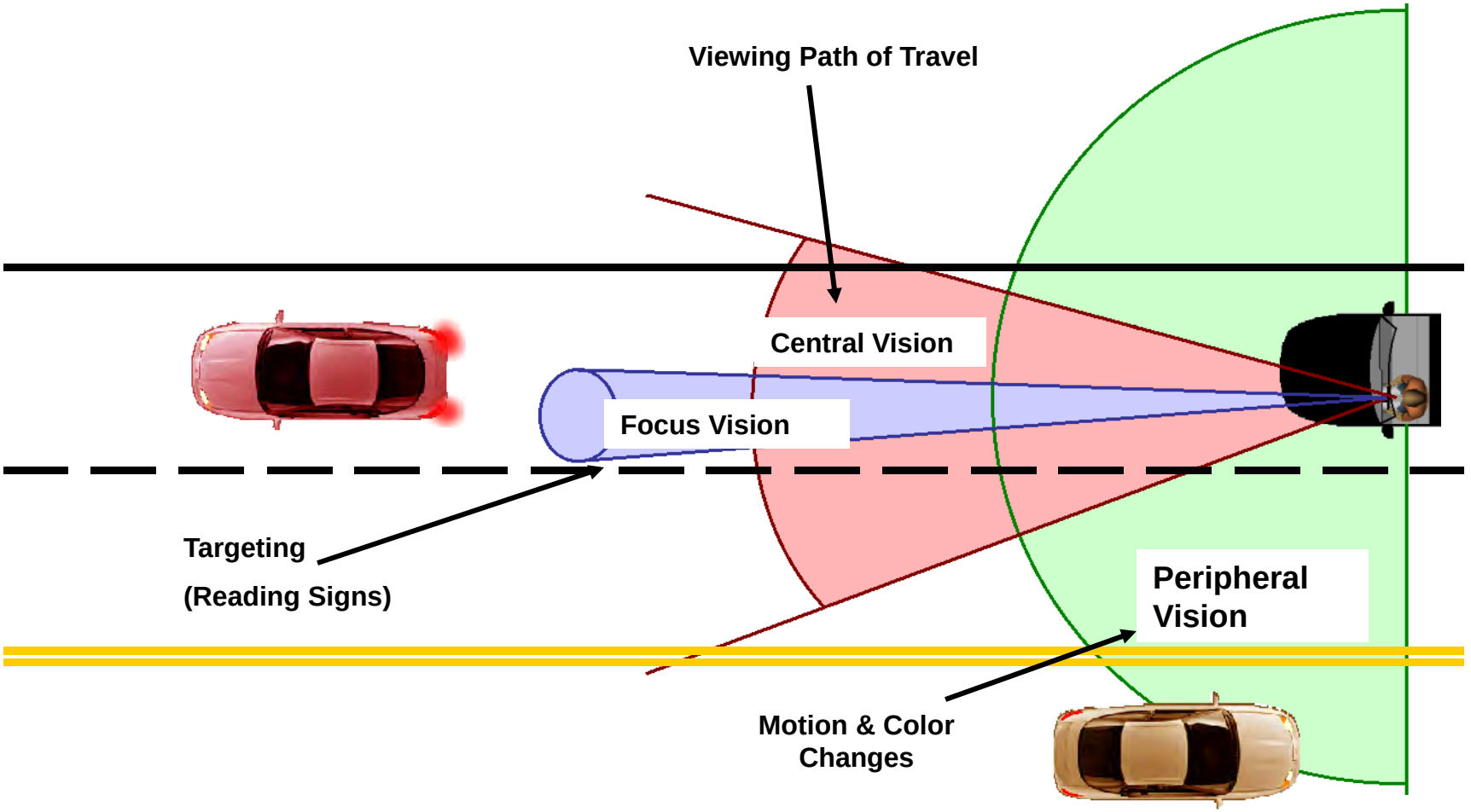
The driver must:

- **SEARCH** for objects or conditions;
- **EVALUTE** the path ahead for alternate paths of travel; and
- **EXECUTE** any needed adjustments in speed or position **in Time**

More detailed information on SEEiT system may be reviewed in Module 4.

Field of Vision

Area a Driver Can See While Looking Straight Ahead

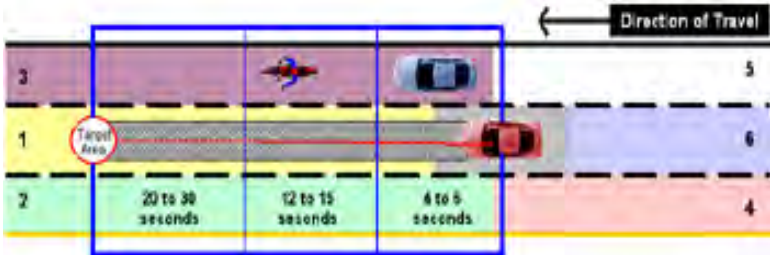


90 percent of driving decisions are based on information gathered with the eyes.

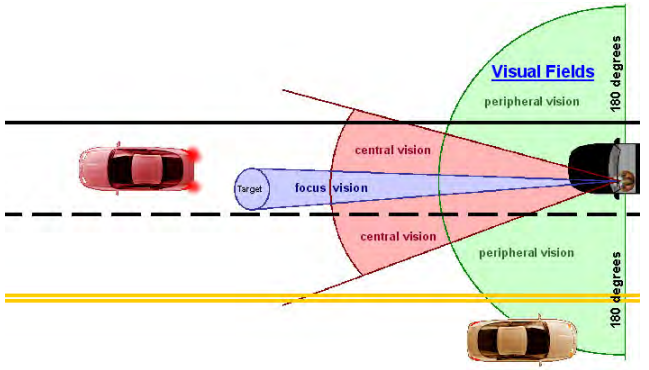
Search Practices

Where to search **involves identifying objects or conditions that increase your level of risk and adjusting your speed or vehicle position in time to minimize these risks.**

When to search **involves systematically scanning the driving environment. The defensive driver constantly monitors the conditions around the vehicle, especially before initiating any maneuver**



How to search **involves looking in a pattern that goes from 20 – 30 seconds ahead of the vehicle to the dashboard, as well as to the left, right, and to the rear of the vehicle.**



Searching

Looking for Clues from Other Drivers

Actions of the Driver

- ✓Distractions
  - •Cell Phone
  - •Passengers
- ✓Lost
- ✓Impaired

Vehicle Signals

- •Turning
- •Backing
- •Hazard Lights
- •Hand Signals

Headlights

Horn

Brake Lights

Position of Vehicle

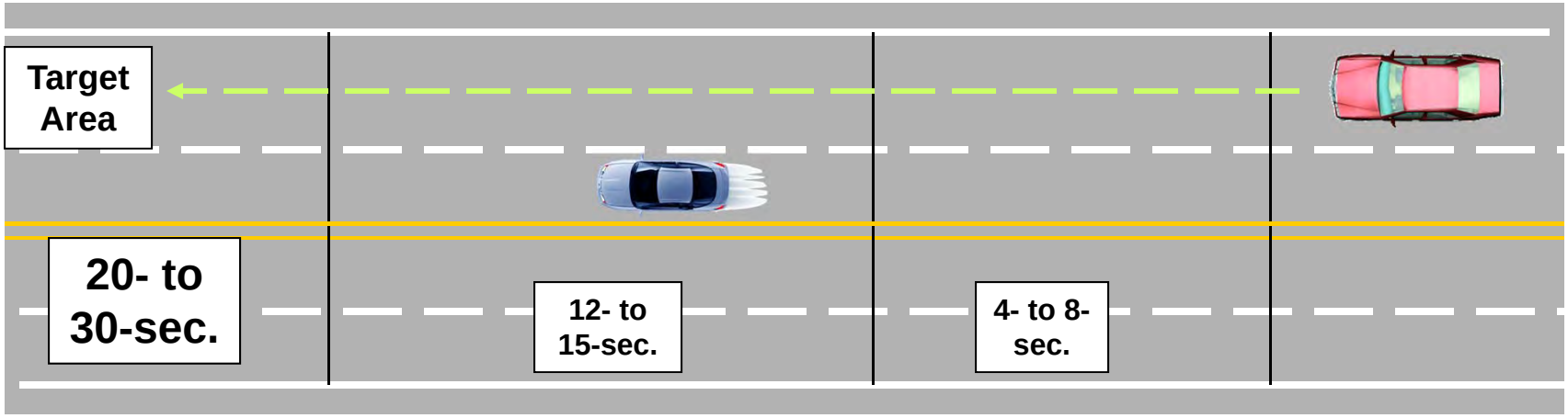
Speed of Vehicle

Managing Visual Searches

20- to 30-Second Search Area

Search far ahead to identify potential conflicts

- **Objects in Path of Travel**
- **Limitations to Line of Sight**



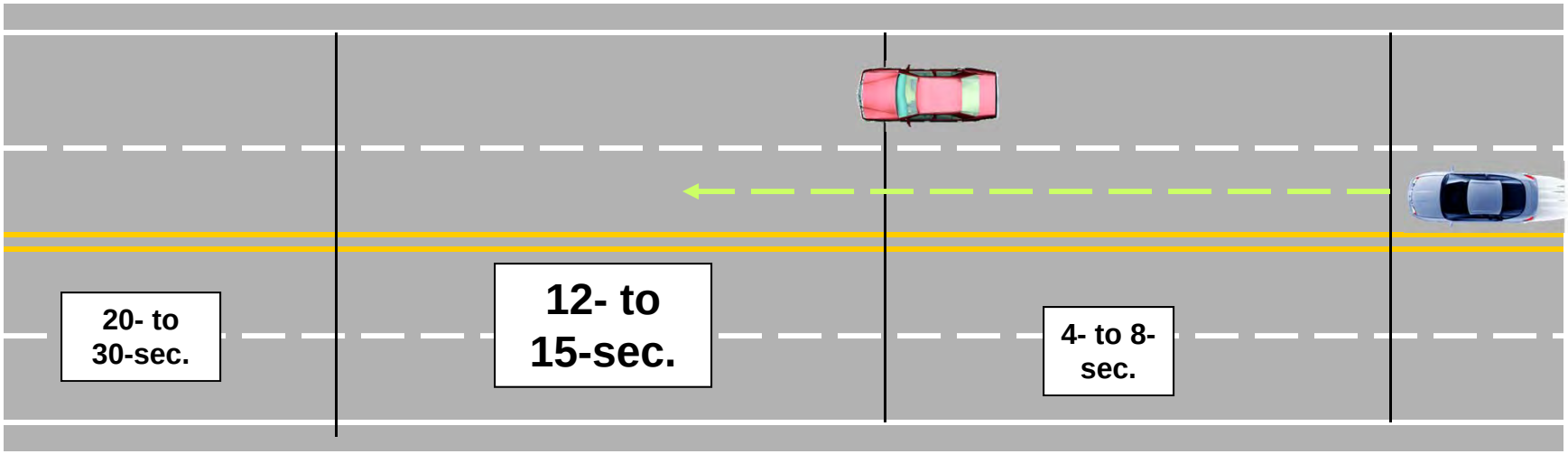
Managing Visual Searches

12- to 15-Second Search Area

Search for Closed or Changing Path of Travel

Identify an Alternate Path of Travel or a Safe Stopping Zone

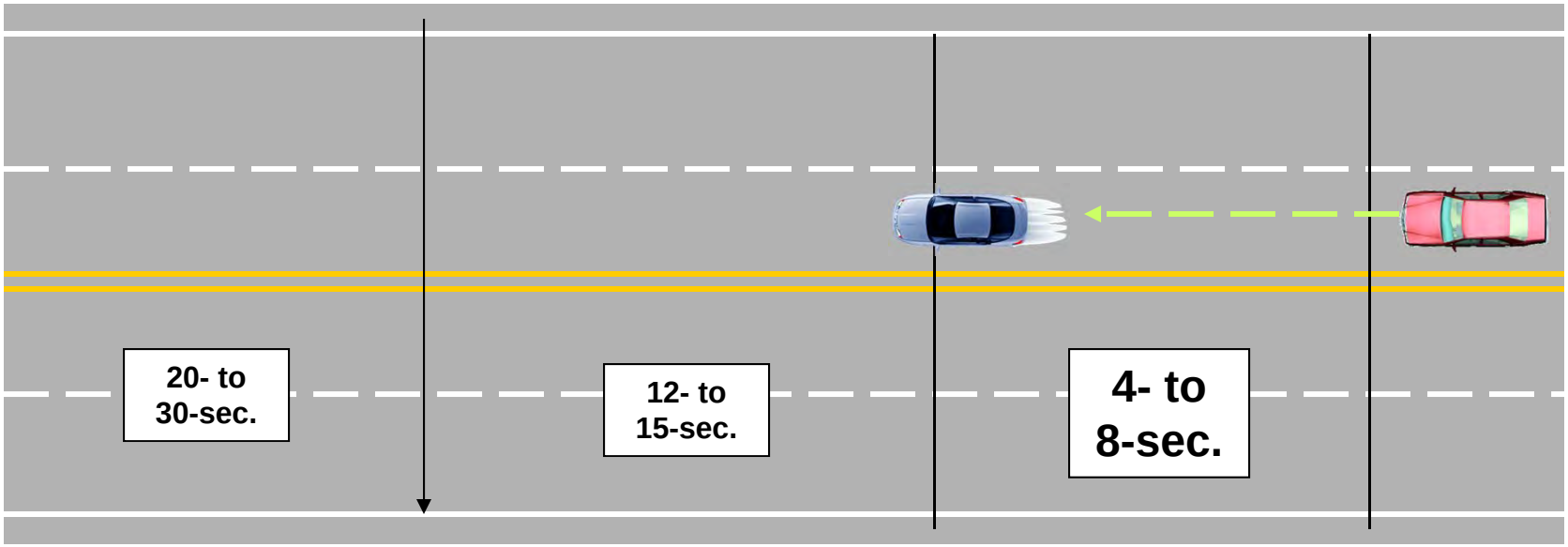
Evaluate Open Zones to the Sides and Rear



Managing Visual Searches

4- to 8-Second Search Area

- Immediate Path of Travel
- Direct Response Area
- Stopping Zone and Following Interval



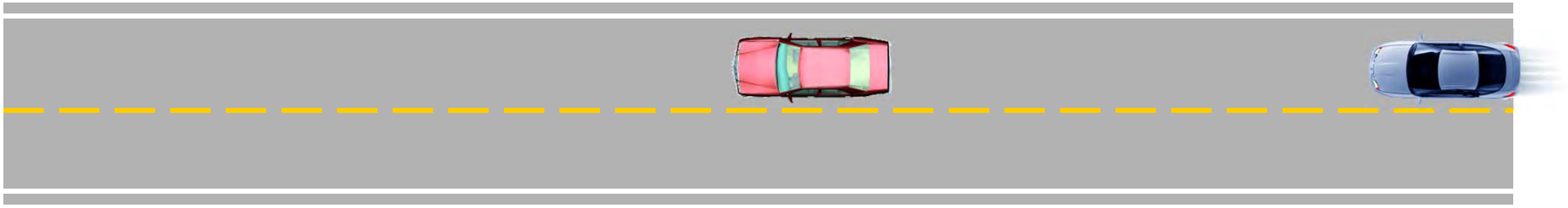
Determining Following Intervals

Two second following interval at speeds less than 35 mph

- allows the driver time to steer out of problem areas on dry surfaces
- designed for use if there is an alternate path of travel

Four second following interval at speeds up to 65 mph

- allows the driver time to steer out of problem areas on dry surfaces
- allows the driver time to stop before problem areas on dry surfaces



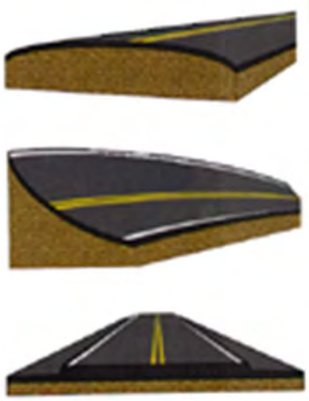
Visual Search Categories

- **Traffic Controls**
- **Motor Vehicles**
- **Non-Motorized Users**
- **Roads**

Processing Highway Conditions

Roadway Structure

- Width
- Curbing
- Curves
- Slopes

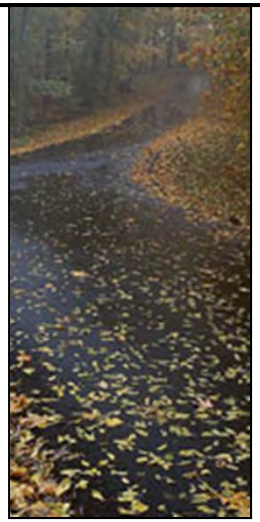


Intersections

Highway Conditions

Roadway Surface

- Roughness
- Slick
- Wet Leaves
- Mud
- Sand



Atmosphere

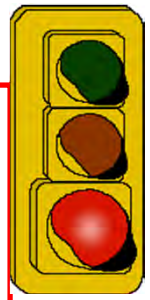
- Illumination
- Glare
- Precipitation
- Wind/Noise

Roadway Features

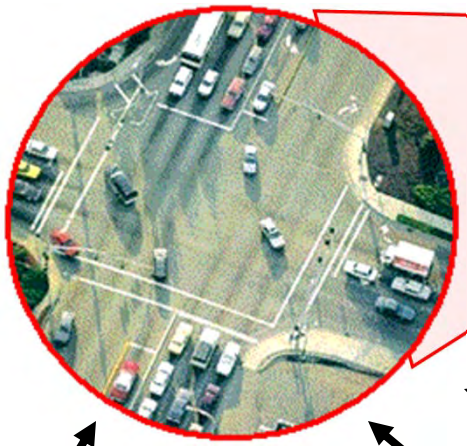
- Shoulders
- Affixed Objects
- Adjacent Buildings

Processing TRAFFIC CONTROL Devices

Signs
- Regulatory
- Warning
- Guide
- RR



Signals
- Stop/Go
- Lane Usage
- Flashing



Roadway Markings
- Passing
- Traffic Flow
- Crosswalks

Sensory Input to the Brain

Unmarked Intersections

Interchanges

Motor Vehicles

Type

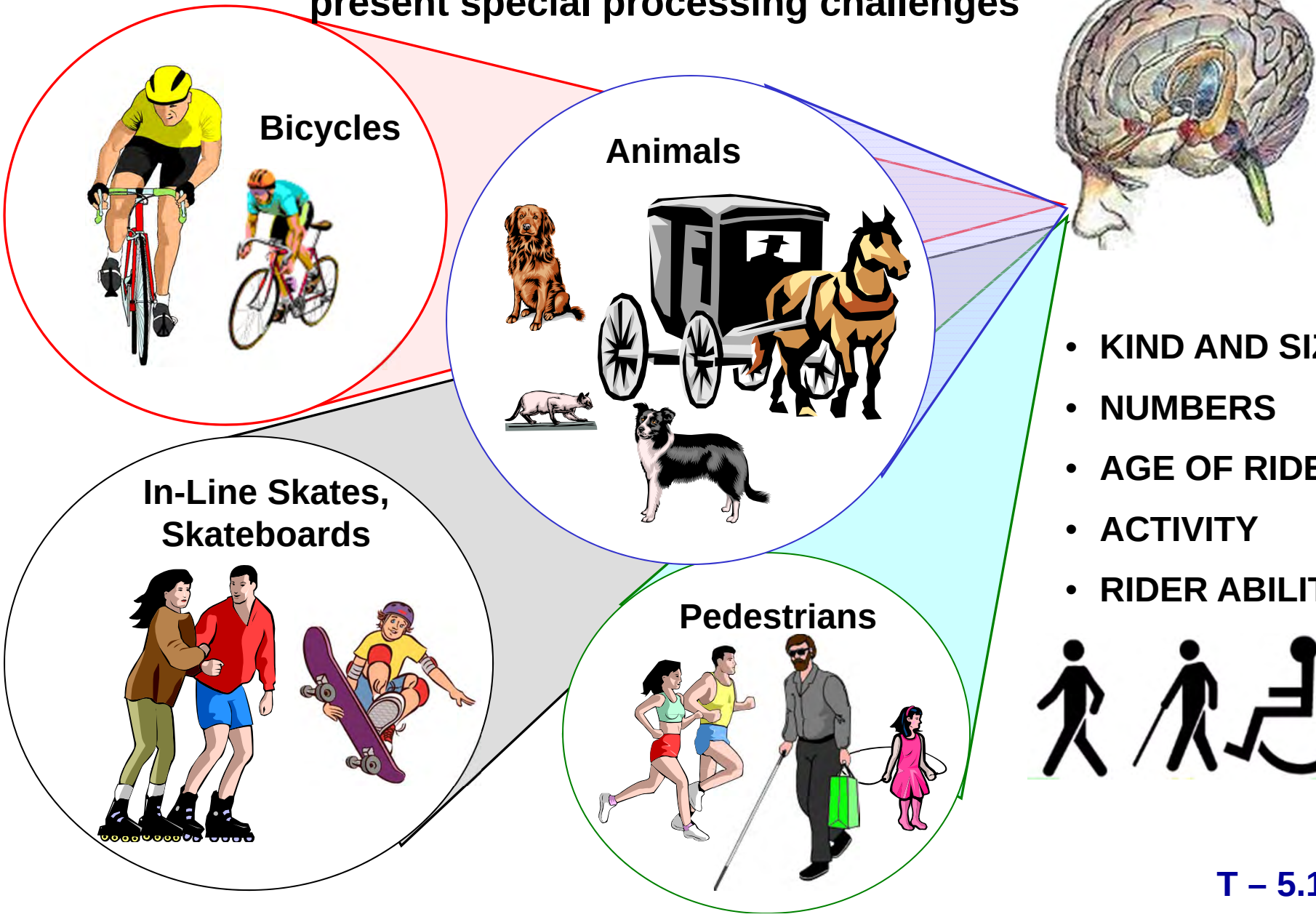
- Automobile
- SUV
- Camper
- Pick-up
- Motor Home
- Motorcycle
- Farm Machines
- Tractor-Trailer

Drivers must understand the handling characteristics of other motor vehicles sharing the roadway.

Road Handling Characteristics

Non-Motorized Users…

present special processing challenges



- KIND AND SIZE
- NUMBERS
- AGE OF RIDER
- ACTIVITY
- RIDER ABILITY

Positioning the Vehicle

Vehicle Placement is Critical for Establishing a Good Visual Field

✓Controlling Space to the Front

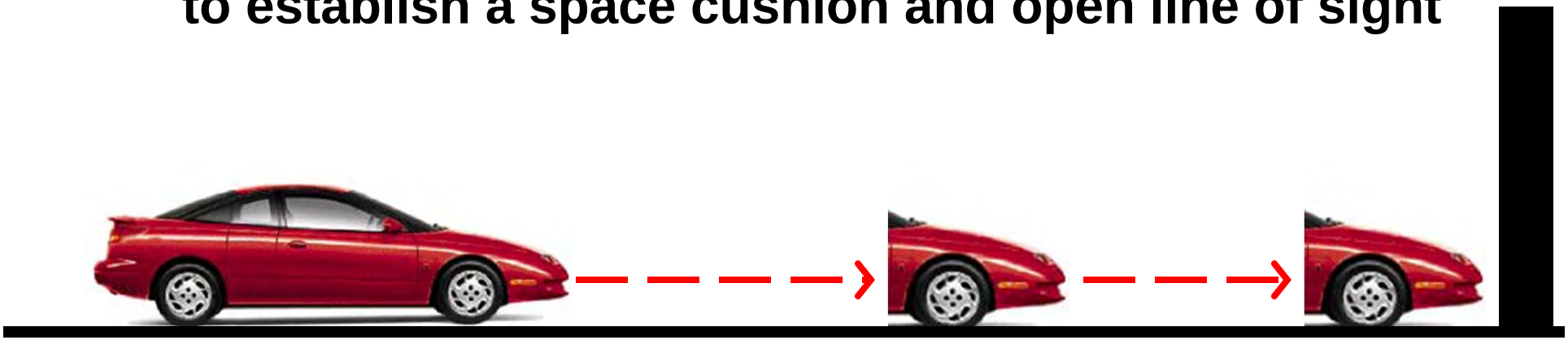
✓Lane Position

✓Staggered Stops

Maintaining Space/Visibility to the Front

Three ways to control space in front of the vehicle:

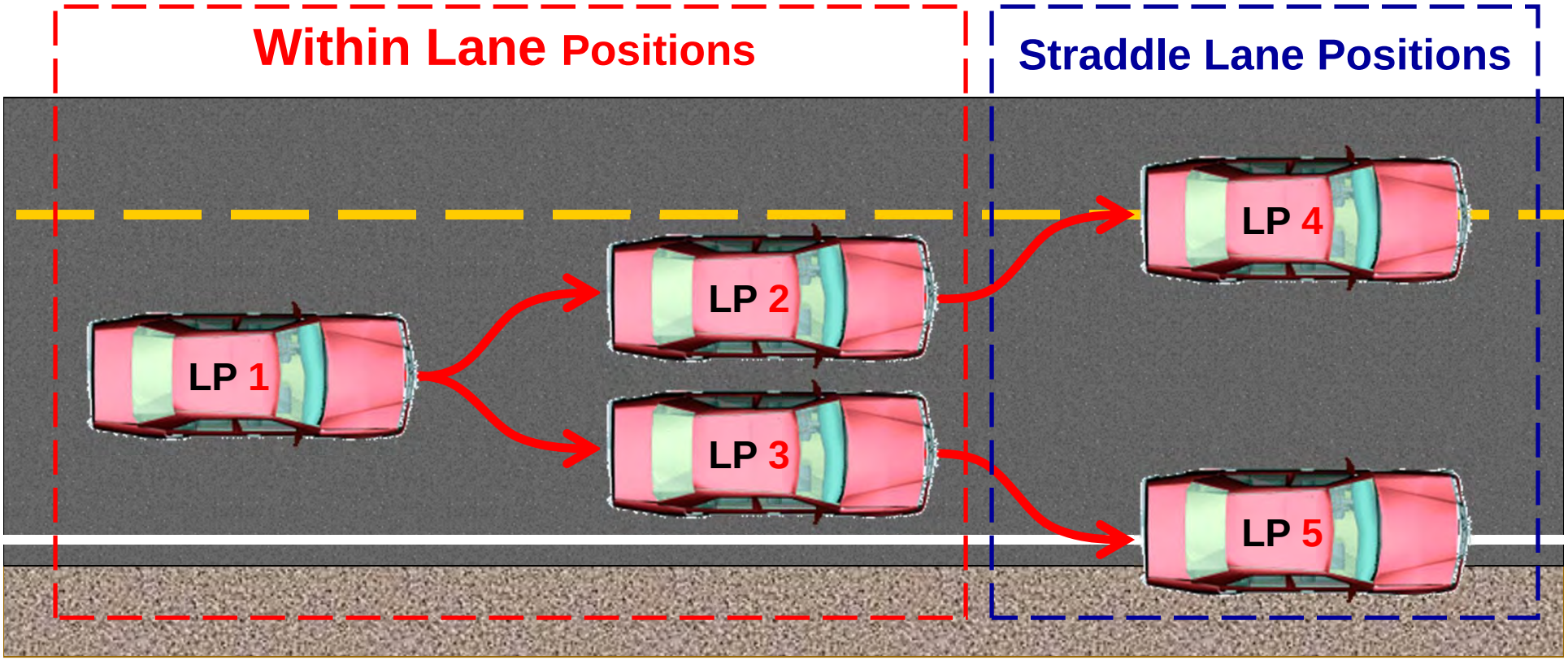
1. **Time your Arrival – adjust speed early to avoid unnecessary braking, stops, and to conserve fuel**
2. **Forward Placement at an Intersection – maintain a position that allows you to monitor the intersection**
3. **Following Interval -- control space while in motion to establish a space cushion and open line of sight**



Lane Position

Create Space and Improve Visibility by Adjusting the Position of the Vehicle in the Lane

Lane Positions – 1, 2, 3, 4, and 5

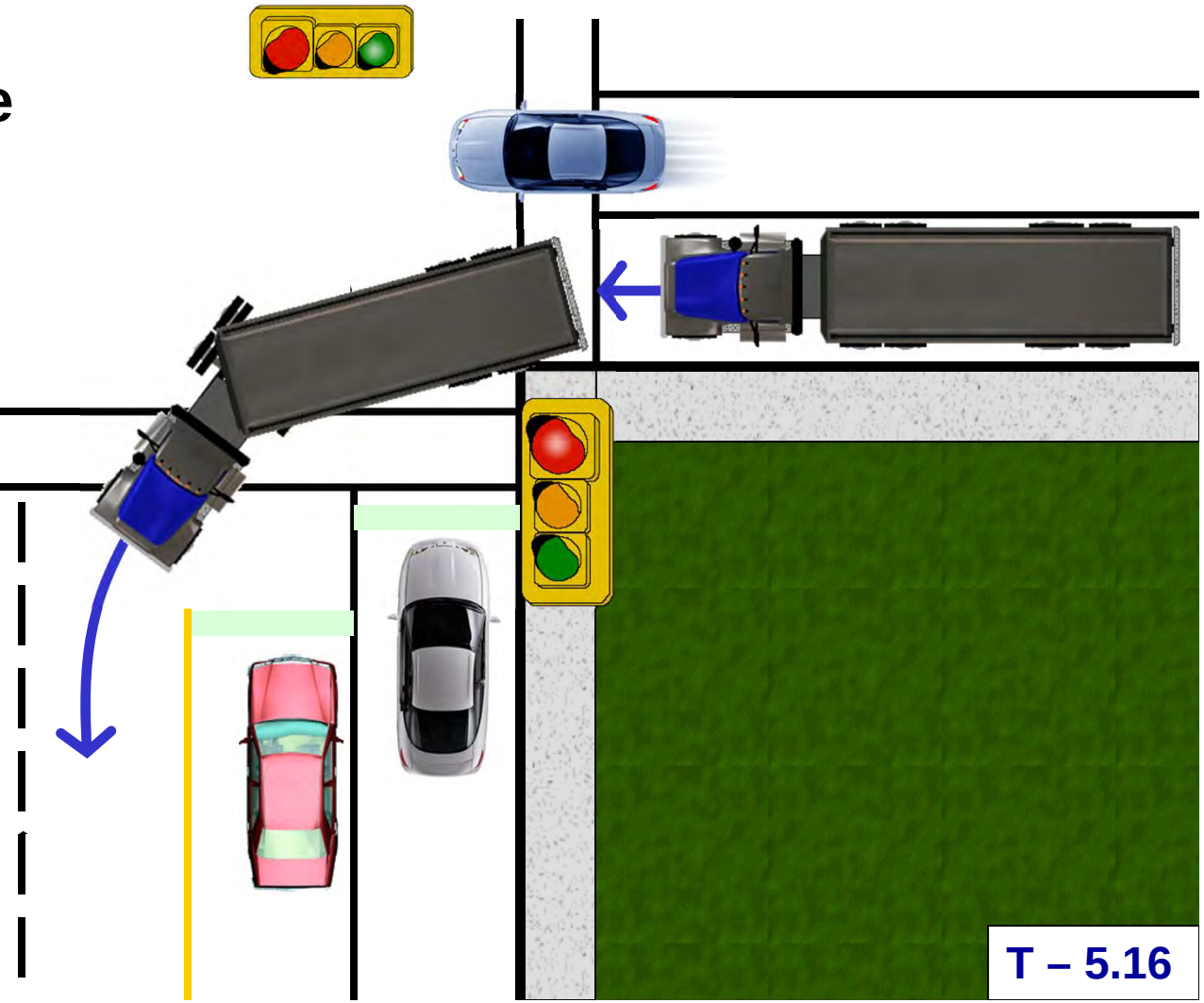


Staggered Stops

Improving Visibility and Creating Space for a Truck Making a Left Turn

Stop your vehicle **(RED car)** behind the white stop bar

Select Lane Position 3 to give the truck as much space as possible



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Intersection Search Patterns

Intersection Approach:

Step 1 (Search)

- ✓ Identify intersection
- ✓ Identify controls
- ✓ Check rear areas
- ✓ Search for intersection problems

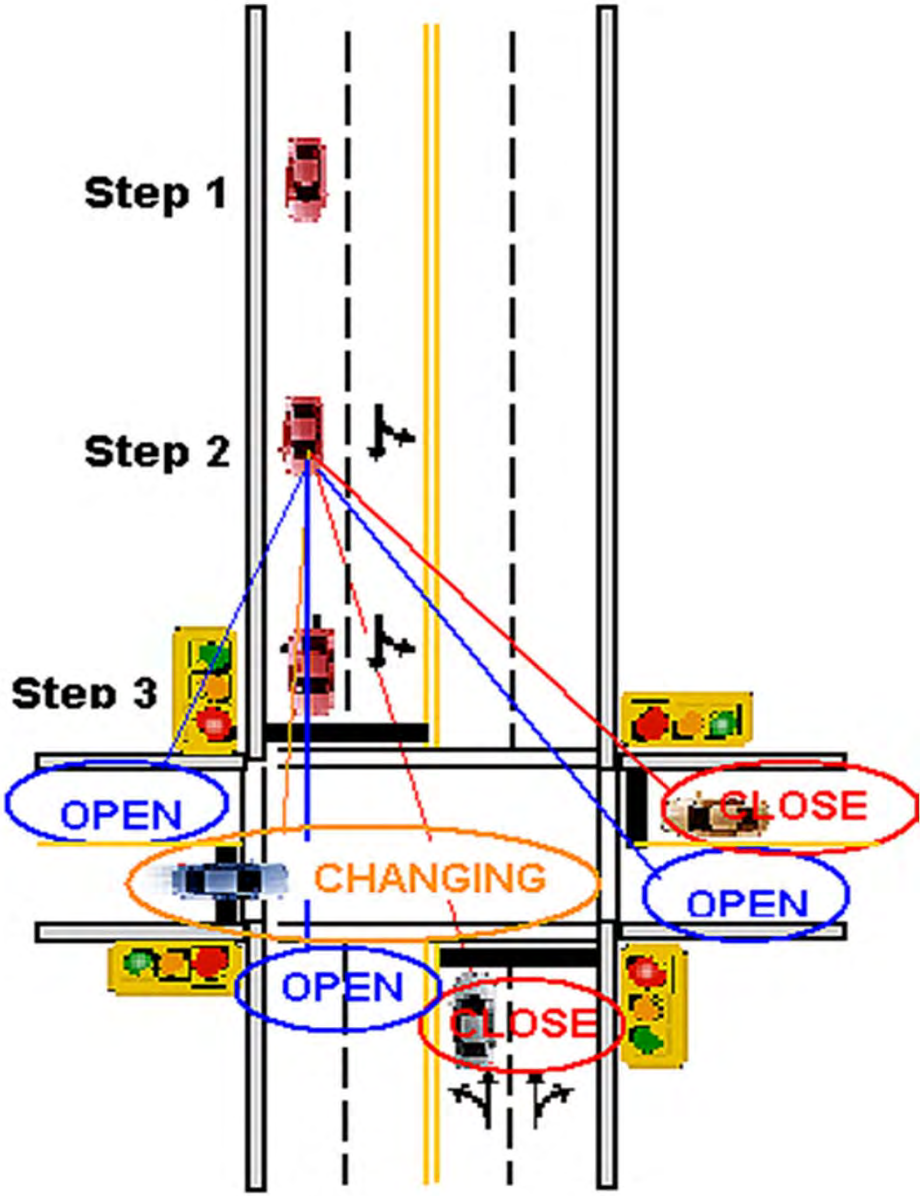
Step 2 (Evaluate)

- ✓ Scan path of travel 1st
- ✓ Scan all other areas
- ✓ Look for closed or changing frontal areas

Step 3 (Execute)

- ✓ Adjust speed
- ✓ Maintain lane position
- ✓ Stop behind crosswalk, or
- ✓ Proceed through open space area

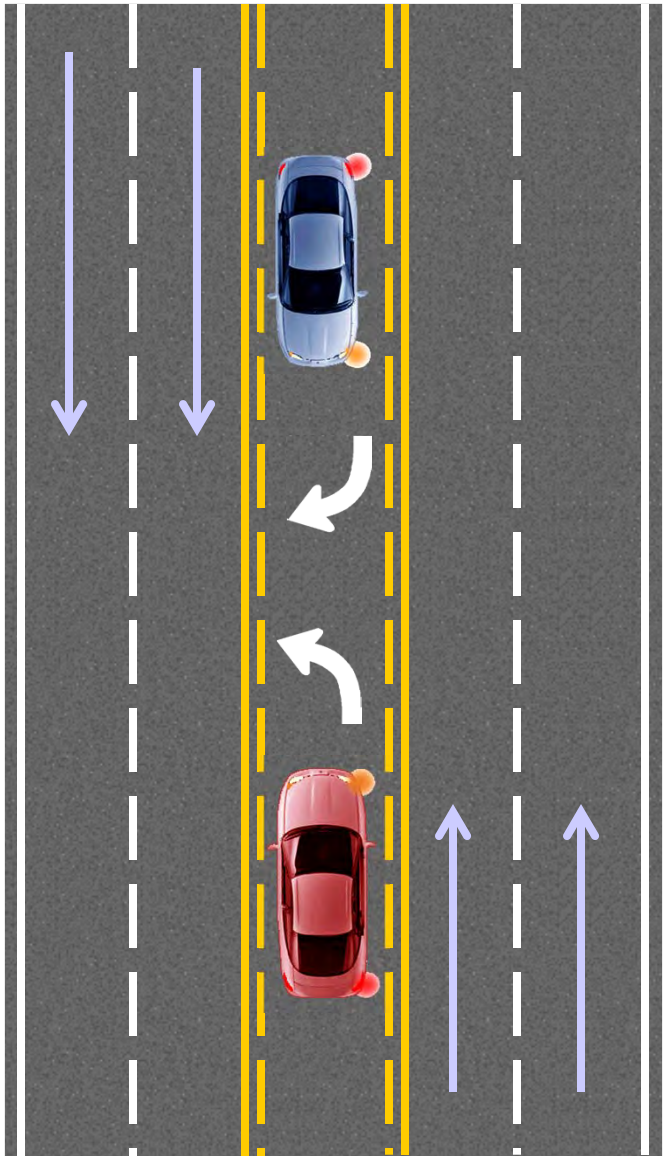
in Time



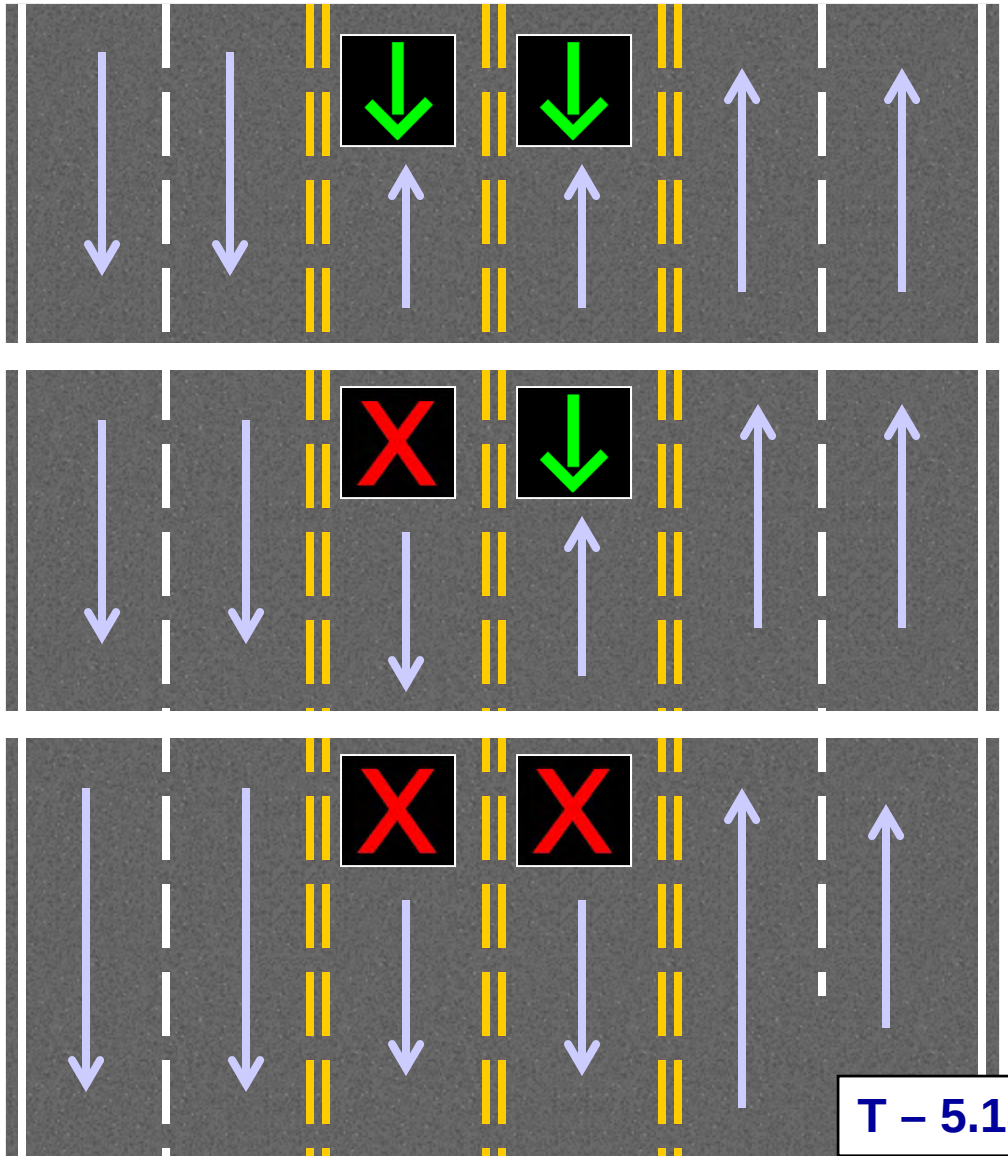
Topic 2 Lesson 1

Understanding Lane Markings

Shared Left Turn Lane



Reversible Lanes



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Special Lane Markings

Shared Left Turn Lane

Drivers traveling in either direction may use this lane for making left turns.

Drivers may not travel further than 150 feet in this shared lane.

Driver may use the shared left turn lane to enter a street from a driveway.

Reversible Lanes

Traffic in these lanes moves in one direction during certain periods of the day and in the opposite direction during other times of the day.

Often found in areas with a large volume of traffic coming in a city during the morning hours and going out during the afternoon hours.

Limited Line of Sight Through Curves

LOS/POT Curves

Entering a Curve to the Right

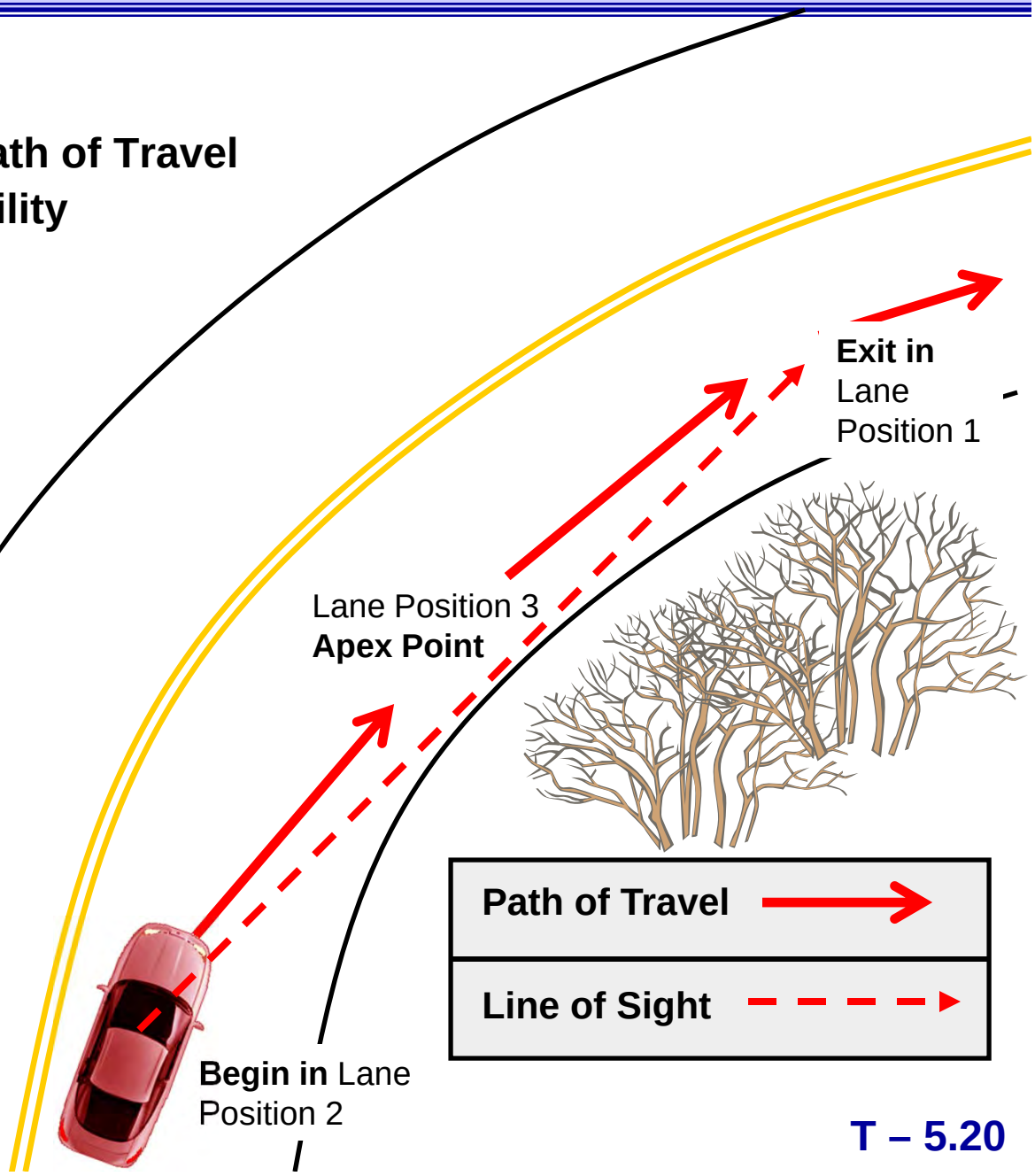
- **Determine Line of Sight / Path of Travel**
- **LP2 provides the best visibility**
- **Check traffic to the rear**

Moving Through the Curve

- **Determine target area**
- **LP3 provides best space cushion**

Exiting the Curve

- **Adjust speed and position for best visibility and space cushion**



LOS/POT Curves

Entering a Curve to the Left

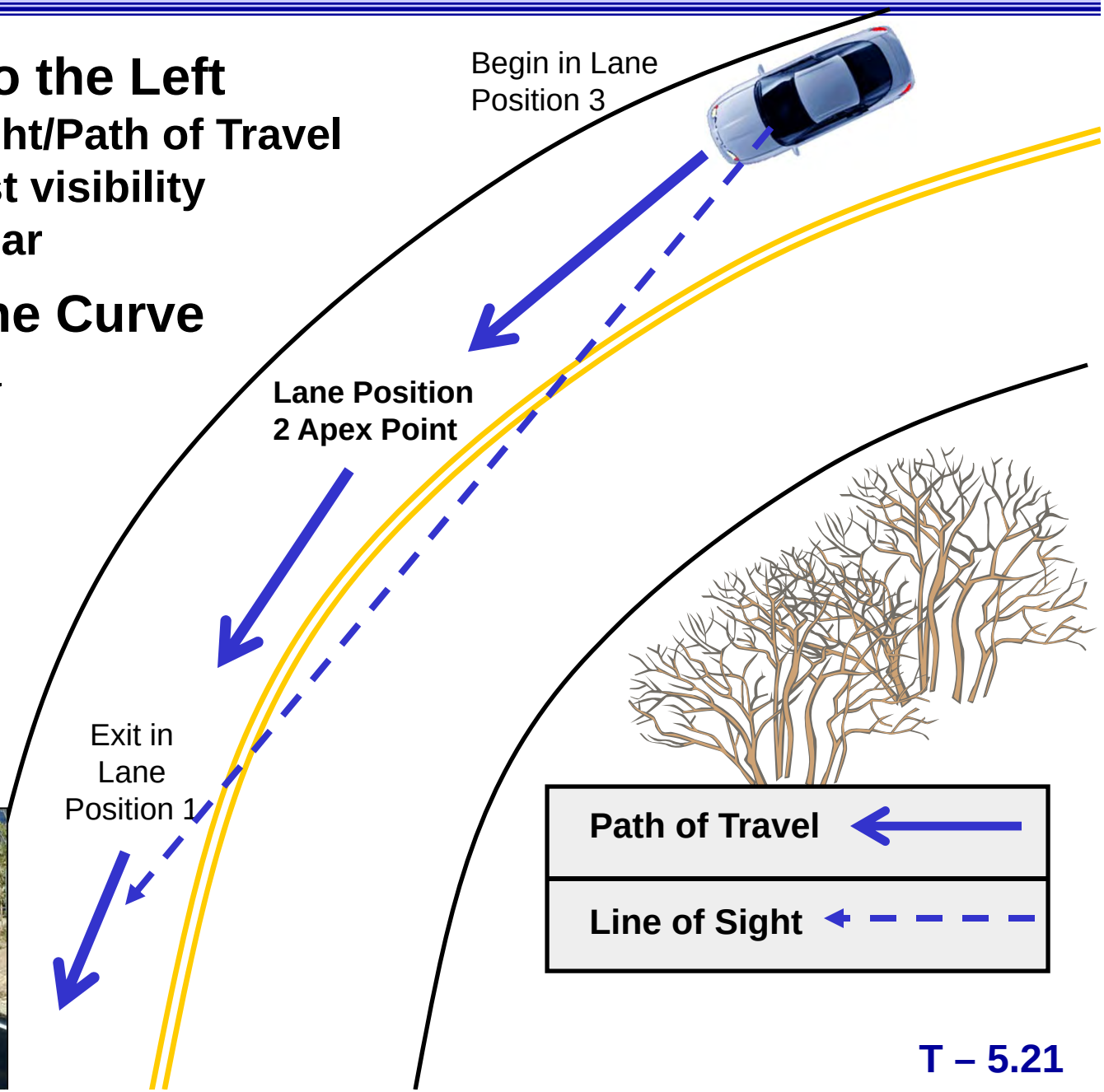
- Determine Line of Sight/Path of Travel
- LP 3 provides the best visibility
- Check traffic to the rear

Moving Through the Curve

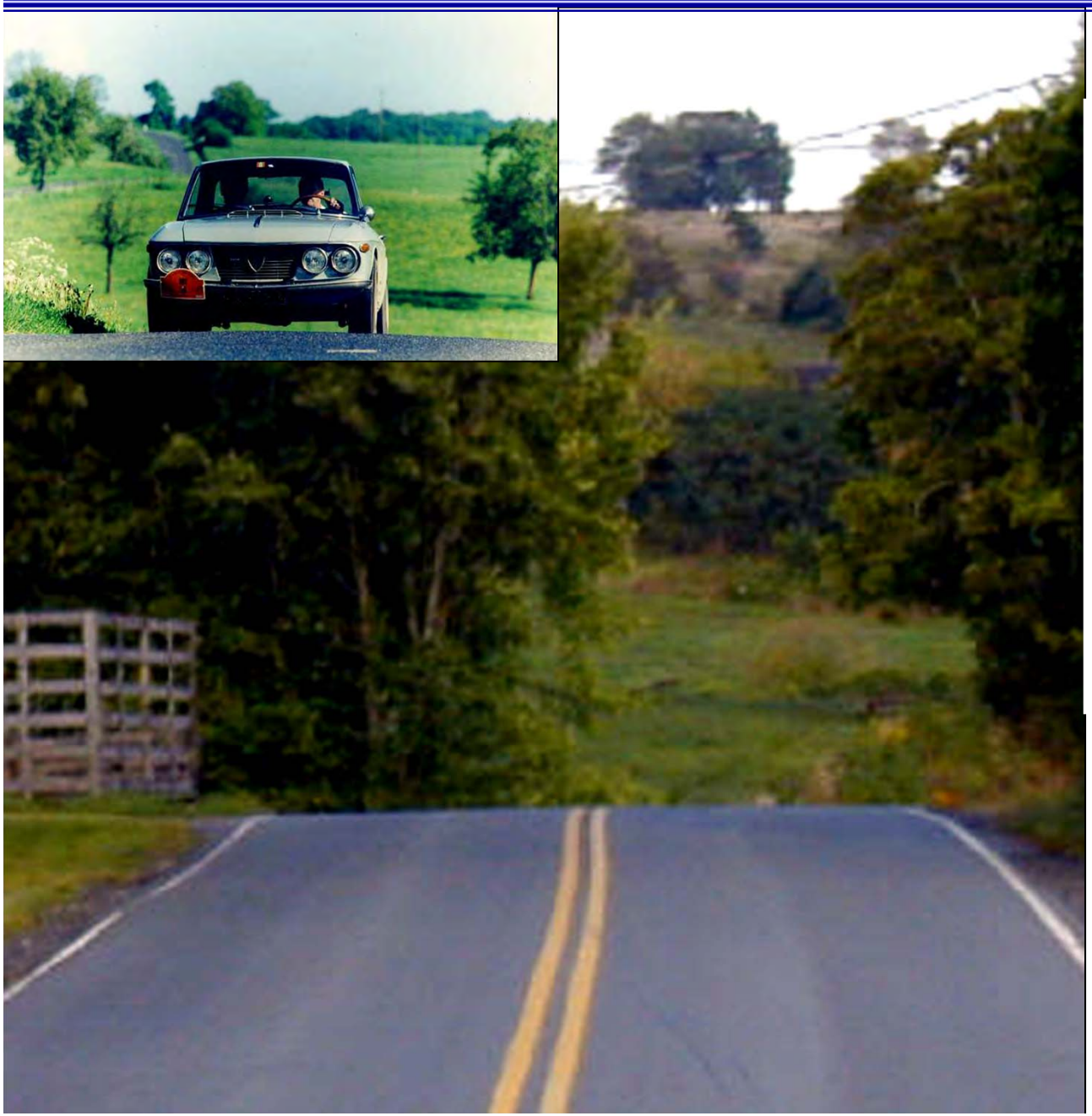
- Determine target area
- Determine Apex

Exiting the Curve

Adjust speed and position for best visibility and space cushion

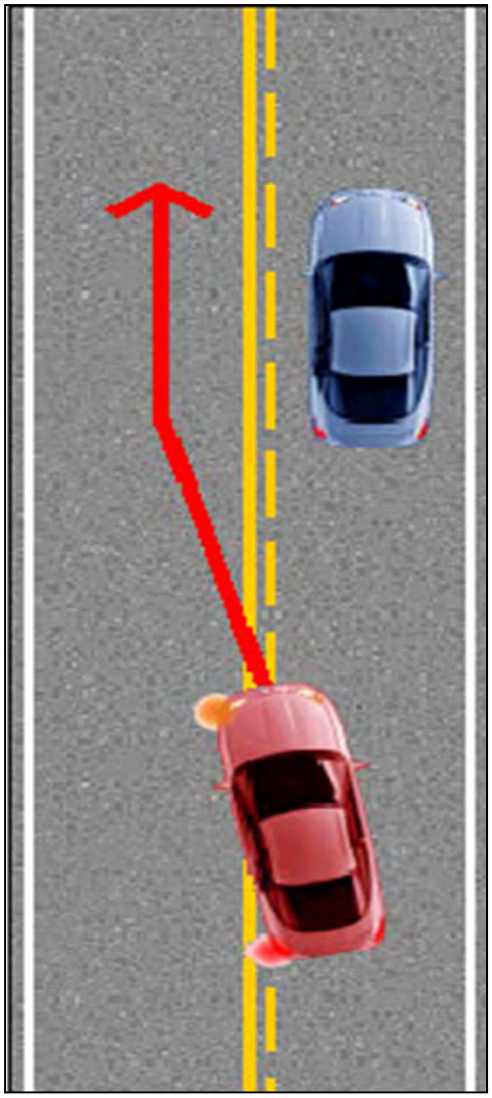


Line of Sight Over Hill



- ✓ **Determine the Best Line of Sight and Path of Travel**
- ✓ **Lane position 3 provides the best space cushion**
- ✓ **Line of Sight is Restricted Up and Down Hill**

Determining Passing Time/Space Needs



To pass another vehicle safely you must:

- identify a safe and legal passing zone;
- judge the time and space needed to pass;
- judge the relative speed and distance of other vehicles; and
- apply proper passing skills and complete the maneuver safely.

Determining Passing Time/Space Needs

Identifying a Safe and Legal Passing Zone

Before you pass, you must determine:

1. **if you are in a legal passing zone**
   - **broken line = pass with caution**
   - **solid line = no passing**
   - **list other areas where passing is prohibited**
2. **the time you will need to pass safely**
3. **the space you will need to safely pass the other vehicle**

TRAVEL TIME = SPACE

- Formula – Speed + ½ speed = feet per second (fps) traveled
  - 60 mph -- 60 + 30 = 90 fps

Determining Passing Time/Space Needs

Judging Time and Space Needed to Pass Safely

Distance traveled = speed + ½ speed in feet per second

Time to pass = distance traveled to complete pass, divided by difference in distance traveled per second by each vehicle

RED car traveling 40 mph = 60 fps
(40 mph X 1.5 fps = 60 fps)

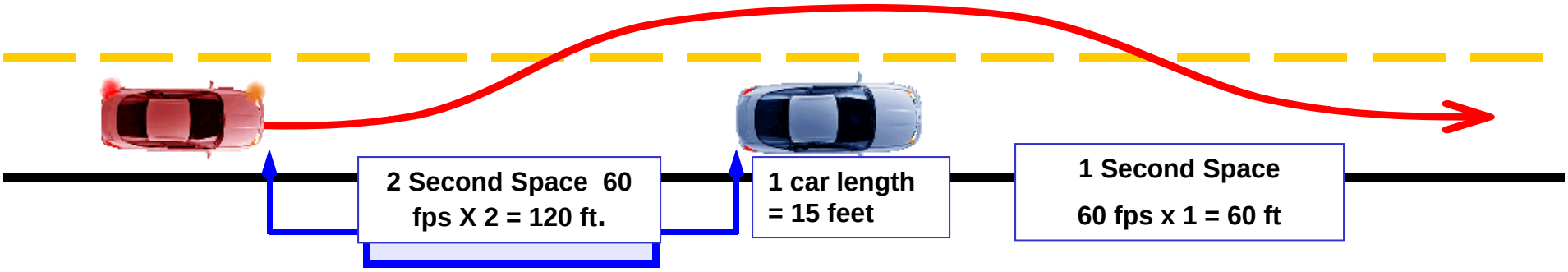
BLUE car traveling 30 mph = 45 fps
(30 mph X 1.5 fps = 45 fps)

60 ft - 45 ft = 15 ft.

Red car is traveling 15 fps faster than Blue car

2 sec. following distance	= 120 ft.
1 car length	= 15 ft.
1 sec. gap	= 60 ft
Total additional distance traveled	= 195 ft.
Time needed to pass: 195 ft. /15 ft.	= 13 sec.
Total distance traveled: 13 sec. X 60 fps.	= 780 ft.

Total distance traveled: 13 sec. X 60 fps. = 780 ft.

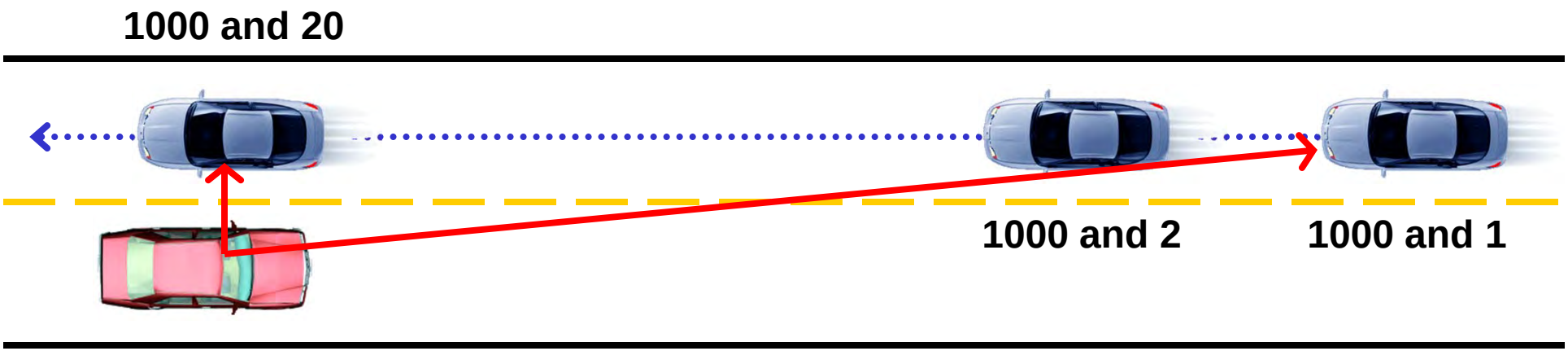


Determining Passing Time/Space Needs

Judging the Relative Speed and Distance of Other Vehicles

To estimate the time and distance of an oncoming vehicle, begin counting when the vehicle is first seen: 1000 and 1; 1000 and 2; etc. Continue the count until the approaching vehicle is opposite your vehicle.

Practicing this technique will help you develop the ability to judge speed and distance.



COUNT --- 1000 and 1 = 1 second

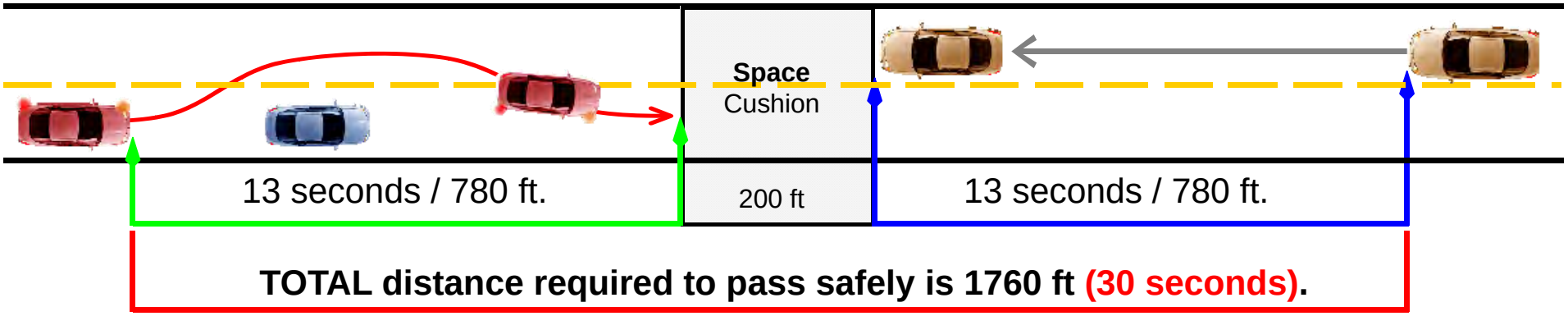
Passing Time/Space Needs — Oncoming Vehicles

Judging the Relative Speed and Distance of Oncoming Vehicles

The example below is based on the approaching vehicle traveling at 40 mph.

- **Red vehicle will need 780 feet to complete the pass**
- **Brown vehicle will travel 780 feet**
- **Allows a minimum 200 ft. space cushion**

To complete a pass safely you must take ALL factors into account



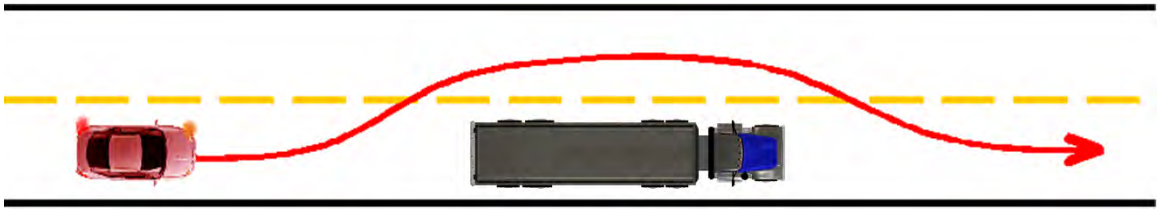
Passing Considerations — Larger Vehicles

Passing a 90-foot tractor trailer

- **Would require an additional 5 seconds for the Red vehicle**

  90-foot truck + 15-foot car = 75 feet additional distance traveled = 5 seconds

- **18 seconds x 60 fps = 1080 feet needed by Red vehicle**



If there is an oncoming vehicle traveling 40 mph, the total clear distance needed to pass safely becomes 1360 feet (23 seconds) 1080 + 1080 + 200 (space cushion)

Daylight Headlight Use

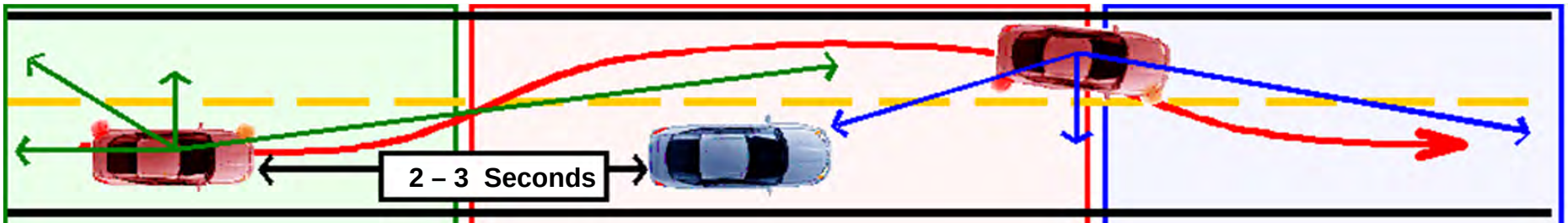
Enhances Safety

- an approaching vehicle without headlights becomes visible at about **2,200 to 2,500** feet
- an approaching vehicle with headlights becomes visible at distances up to **4500** feet

Passing on Multi-lane Roadways

- safer than on two lane roadways
- head-on crashes are rare
- will not feel rushed into returning to the lane
- can safely pass larger vehicles that require more time and space to pass

Passing Procedures



Prepare to Pass:

- Position vehicle two to three seconds behind the vehicle to be passed.
- Check mirrors, blind spot and oncoming traffic.
- Check ahead for safe passing distance.
- Signal intention.

Overtake the Ongoing Vehicle:

- Accelerate into passing lane.
- Accelerate quickly to a legal appropriate speed.
- Monitor the path ahead.
- Check the mirror for following vehicles.

Return to Lane:

- Check rear-view mirror for the front of the vehicle being passed.
- Signal intention.
- Change lanes and maintain speed.
- Cancel turn signal.

Virginia Law

§ 46.2-838 — Passing when overtaking a vehicle

The driver of any vehicle overtaking another vehicle proceeding in the same direction shall pass at least two feet to the left of the overtaken vehicle and shall not again drive to the right side of the highway until safely clear of such overtaken vehicle.

§ 46.2-839 — Passing bicycle or moped

In approaching or passing a person riding a bicycle or moped, the driver of a motor vehicle shall pass at a safe distance and at a reasonable speed.

§ 46.2-841 — When overtaking vehicle may pass on right

A. The driver of a vehicle may overtake and pass to the right of another vehicle only:
   1. When the overtaken vehicle is making or about to make a left turn, and its driver has given the required signal
   2. On a highway with unobstructed pavement, not occupied by parked vehicles, of sufficient width for two or more lines of moving vehicles in each direction; or
   3. On a one-way street or on any one-way roadway when the roadway is free from obstructions and of sufficient width for two or more lines of moving vehicles.

B. The driver of a vehicle may overtake and pass another vehicle on the right only under conditions permitting such movement in safety. Except where driving on paved shoulders is permitted by lawfully placed signs, no such movement shall be made by driving on the shoulder of the highway or off the pavement or main traveled portion of the roadway

§ 46.2-842 — Driver to give way to overtaking vehicle

Except when overtaking and passing on the right is permitted, the driver of an overtaken vehicle shall give way to the right in favor of the overtaking vehicle on audible signal and shall not increase the speed of his vehicle until completely passed by the overtaking vehicle. Any over-width, or slow-moving vehicle shall be removed from the roadway at the nearest suitable location when necessary to allow traffic to pass.