

CHAPTER 2

The Essentials

Content Notes

Approximate time required to complete this chapter: **Three hours**

Classroom Concepts:

- 2.1 Reference Points
- 2.2 Lane Positions
- 2.3 Smooth Starts and Stops
- 2.4 Communication
- 2.5 Precision Turns

2.1 - Reference Points

Standard Reference Points

Drivers cannot see the actual position of the car in relation to the roadway. The body of the car blocks the driver's view of the road. That area is the vehicle's blind area. (Not to be confused with the vehicle's blind spots.) Reference points serve as a guide to overcome the vision problems a driver encounters.

Definition: A place on the vehicle that visually relates to some part of the roadway

The Advantages of Using Reference Points

1. First and foremost, they give you the ability to be successful consistently.
2. There is a rapid transfer of techniques from one vehicle to another and to new situations.
3. You can get into a larger or strange vehicle and, within five minutes, feel confident in maneuvering in tight spaces and in various traffic situations.
4. You will feel confident getting into and out of tight parking spaces and you will be able to back into parking spaces with confidence.
5. While driving in the right lane, you will know exactly how far your car is from a parked car. Knowing that your car is more than six feet away from a parked car will reduce the need to swerve when a driver suddenly opens a door in front of your vehicle.
6. With the use of reference points, you can make tight right turns into driveways, alleys, and narrow streets without feeling the need to swerve to the left before turning, and you will know that your right rear tire will not hit the curb.
7. You can feel confident driving in confined areas such as: municipal parking garages with spiral ramps, tunnels with fast moving traffic, a narrow bridge with a bus or truck approaching from the opposite direction, and a highway narrowed by concrete construction barriers.
8. You can feel confident and operate your vehicle efficiently while passing a jogger, bicyclist, or pedestrian on narrow roads.
9. They will help you in passing a double-parked car or a construction site with the minimum amount of movement into oncoming traffic.
10. When going into a curve, you will be able to select the best travel path to minimize the chance of a head-on crash.
11. During slippery road conditions, you will be able to get the best drive line to help reduce the chances of going into a skid.
12. You can make the best possible decisions for using the various lane positions to get maximum control of the zones to either side of the vehicle.

13. You will be able to get reliable feedback to tell exactly where your vehicle is within the lane and increase your awareness for what is an okay or not an okay lane position.
14. You will use reference points to overcome optical illusions, rather than using or depending on what “feels right.”

Reference Point Usage

Reference points are the tools necessary for the driver to receive accurate feedback for successful performance. If a driver parks alongside a curb perfectly but did not use reference points, there was no learning of what gave the perfect results. It would be difficult to repeat the same actions with the same results.

Use of Central and Fringe Vision for Reference Points

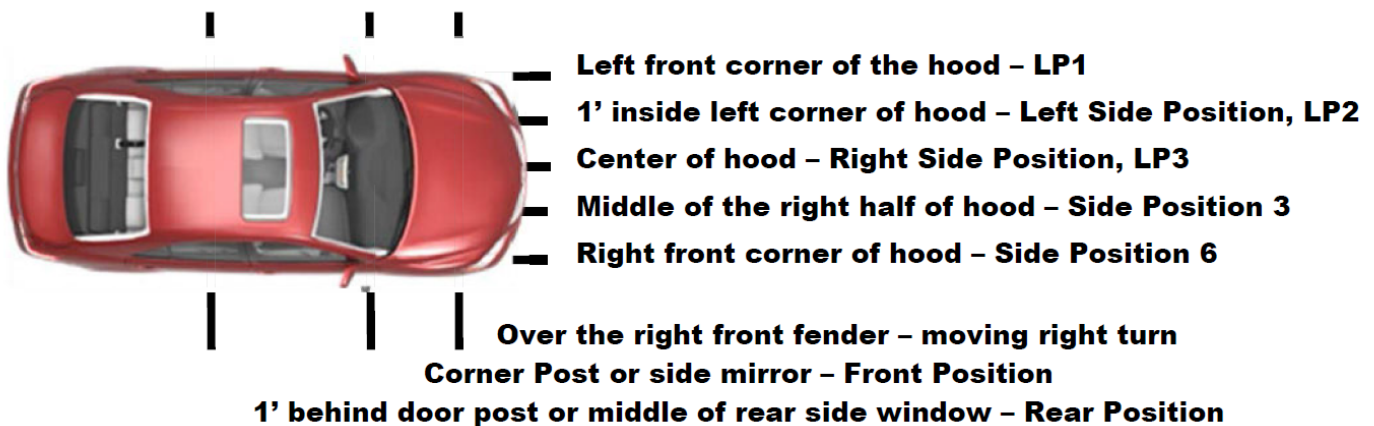
Central vision is the part of our seeing which allows us to recognize detail. The other part of vision involves the use of fringe vision, which allows us to see over a wide area but without the clear focusing ability of our central vision. Once the reference point for a maneuver has been learned, then it should be used by seeing it with your fringe vision rather than by focusing on it with your central vision. The important use of your fringe vision is to maintain the tracking path of your vehicle, while using your central vision to search for details of zone changes. Under most circumstances, reference points will provide you with the information needed to tell where the car is and to know where it should be.

Central Vision: Is used to read and identify distinct objects. It is the basis for the visual lead, targeting, and searching tasks in driving.

Fringe Vision: Is the area around the focal area that is used to judge depth and position. One’s fringe vision gives support information to central vision. It is used to see standard reference points and vehicle position on the roadway.

Standard Reference Points

The diagram below represents some of the standard reference points and where a driver would see them in relationship to various lines. To see the side position of the vehicle, look across the front of the vehicle. To see the front or rear position of the vehicle, look across the side of the vehicle.



Right Side

The standard reference point for the right side is the center of the hood. On a vehicle with a scooped hood, the standard may be somewhere to the left of the center of the dash or windshield. Used for parking on the right and Lane Position 3, or the far right edge of a lane.

Left Side

The standard reference point for the left side is approximately one foot inside the left corner of the hood. In a vehicle with a scooped hood, the reference point will be about one foot inside the left corner post on the dash or windshield wiper. It is used for parking on the left and Lane Position 2, or the far left edge of a lane.

Forward Position

The standard reference points for the forward position are the left and the right corner posts or side mirrors. Use one or both sides, whichever is the most easily seen. Used for stopping before crosswalks and stop lines; safety stops to get a clear line of sight without entering a traffic lane; and beginning sharp right turns.

Rear Position

The standard reference point for the rear position is approximately one foot behind the corner post or the middle of the passenger window. It also works on both sides, whichever is most easily seen. Use to back to rear line or curb of a parking space, stopping before sidewalk or crosswalk, or making a safety stop without penetrating a traffic lane when performing turnabouts.

Side Position 3

The standard reference point for side position 3 is approximately the middle of the right half of the hood. It is used for approaching a right turn when a bike lane is not present, back-in parking and parallel parking.

Side Position 6

The standard reference point for side position 6 is the right edge of the hood. It is used for approaching angle and perpendicular parking.

Some Variables That Influence Reference Points

The reference points presented in the classroom presentation and resource materials are “standard” reference points. Reference points may differ for each individual; however, they usually are not more than a few inches away from the standard.

Factors that cause these variations:

- **Vehicle Design**
- **Seating in relationship to wheelbase:** In most passenger vehicles, the driver is seated at the left/center position in relationship to the wheelbase. In some vehicles, the cockpit of a vehicle is located farther forward, closer to the front axle or even above the axle. This causes a change to the shape and size of the vehicle blind area. The driver is able to see more of the roadway to the front and less to the rear
- **Scooped Hood:** In vehicles with scooped hoods, the reference point is seen where the roadway disappears into the body of the vehicle. That point will be along the same line of sight that intersects the Standard Reference Point but closer to the driver than that standard. When the hood is not visible to the driver, use the dash.
- **Driver height in seat:** Make sure the driver is seated normally
- **Head movement:** Look with central vision when finding reference points, then use central vision to see them.
- **Eye dominance:** Most drivers are right eye dominant and will see reference points close to the standard. However, individuals who are left eye dominant will see their reference points a bit differently. Participants who attempt to find or learn a reference point with one eye closed may see them differently than when they use two eyes. Encourage them to use both eyes.

2.2 - Lane Positions

Lane Positions are used to place your vehicle in various positions on the roadway and within your lane. They help you place your vehicle for the best use of space and to communicate with others.

There are five lane positions and two side positions.

Lane Position 1

Center of your lane. Used for most driving situations. It gives you space to make adjustments to the left or right if necessary. If lane position 1 is your only option, you must reduce speed.

Lane Position 2

3-6 inches from the left line, center line or curb. Used for creating space to the right or preparing for a left turn. Cannot be used if there is on-coming traffic.

Lane Position 3

3-6 inches from the right side (fog line/bike lane). Used for creating space to the left or preparing to turn right.

Lane Position 4

Straddling line to the left. Used for creating more space to the right, i.e., bicycles, pedestrians, lane changes, disabled vehicles etc.

Lane Position 5

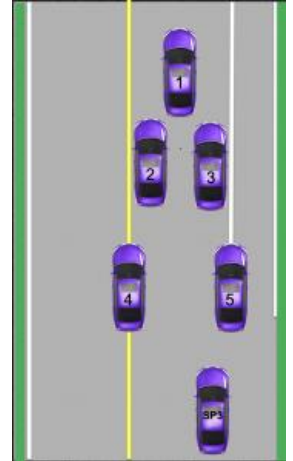
Straddling line to the right. Used for creating more space to the left, i.e., debris in the roadway, crash, disabled vehicle etc.

Side Position 3

3 feet from the curb or edge of road – Used for turning right when a curb is present but no bike lane. Also used for side position for parallel parking.

Side Position 6

6 feet from a parking space.



Effective use of lane positioning is able to give the driver space management.

Explain to the class that most travel lanes are 12 feet wide, and most cars are less than six feet wide; therefore, it is possible to have enough empty space on either side of the car to give an escape path for other vehicles, which can help to prevent them from crashing into your car.

A large percentage of cars that end up in a junk yard due to a crash would not be there if the driver had effectively used the full amount of space available in the travel lane.

2.3 - Smooth Starts and Stops

Keeping your actions smooth will help maintain vehicle balance and create less wear and tear on the car.

To make a smooth start, release the brake, allow the vehicle to start moving on its own, pivot to the accelerator and use smooth steady acceleration.

To make a smooth stop, apply smooth steady pressure early and release brake pressure slightly during the last two seconds before stopping.

During starting and stopping procedures, very little or no pitch should be evident.

Speed Control Techniques and Options:

Releasing Accelerator

Use smooth, consistent release of pressure to maintain vehicle balance. Abrupt release of accelerator pressure can and does increase the pitch forces, exposing the driver to unnecessary and dangerous risks.

Cover the Break

Ready to use

Controlled Braking

Smooth, consistent application of pressure

Threshold Braking

Maximum braking pressure, without locking the wheels

Trail Braking with Slight Pressure

Slight decrease (or holding pressure) of braking pressure, which does not change speed but allows driver to maintain control and balance when stopping and turning

Release Partial Brake

The idle speed of the car will allow adequate movement on a level surface with a partial release of the brake

Inching Speed

It takes considerable control of the brake pedal to make the car move one inch at a time. The objective is to keep the car moving, inch-by-inch, without varying the speed, even when the gradation of the parking lot changes.

Walking Speed

Moving the car at a very slow walking pace. It requires controlling the speed.

Releasing the Brake

When ready to move, take your foot off the brake and allow the car to move by its idle speed before pressing the accelerator pedal.

Covering the Accelerator

Ball of foot is poised over the accelerator, but not touching it. Allow the idle speed to begin the movement of the car, to give a smooth movement when acceleration takes place.

Light Acceleration

For the beginning of smooth starts and stopped turns. Use light acceleration and deceleration technique to increase/decrease speed slightly (+/- 2 mph).

Progressive Acceleration

A firm accelerator pressure used to increase speed. Use this technique during a turn, not before the vehicle has reached the apex (transition point) in order to keep the car in balance. If this technique is used with incorrect timing, prior to reaching the transition point, roll forces are increased, risk is increased.

Thrust Acceleration

A firm push or thrust of the accelerator is used to deal with problems to the rear.

Normal Smooth Stop = Controlled Brake + Trail Brake

To make a "Normal Smooth Stop," use controlled braking at the beginning of a braking action (feel the grab point and then steady even pressure), then decrease some braking pressure 1-2 seconds before the car stops.

Hard Smooth Stop = Threshold Brake + Trail Brake

To make a "Hard Smooth Stop," (use only for emergencies) apply maximum braking pressure, without locking the wheels, at the start of braking, then decrease braking pressure slightly 1-2 seconds before the car stops. Together, these techniques will stop the car in the shortest distance possible and help to avoid an abrupt unbalanced halt.

Smooth Start = Releasing Brake + Light Acceleration + Progressive Acceleration

Smooth, Balanced Stopped Turn = Releasing Brake + Light Acceleration + Progressive Acceleration at the Transition Point

Smooth, Balanced Moving Turn = Controlled Brake on Approach + Trail Brake to Begin + Progressive Acceleration at the Transition Point

2.4 - Communication

Effective communication can prevent potential problems and conflicts with other roadway users.

Communication Options

- Turn signals - 5 seconds ahead (or 100 feet ahead when appropriate)
- Hand signals – Can only be used during daylight hours.
- Headlights - to be more visible
- Brake lights - to alert traffic of speed change
- Backup lights – Bright white lights warn others of intention to back
- Horn – warning device
- Emergency flashers/hazard lights - to warn of a problem with your vehicle or a problem up ahead
- Vehicle lane position- identifies your intent
- Vehicle speed- my intentions or conditions up ahead

2.5 - Precision Turns

Definition of Precision Turns

A precision turn consists of having a predetermined idea of where you want to begin and end the turn, and having the skill to complete it with accuracy and consistency.

The advantages of a precision turn are:

- The driver has the ability to make tight turns.
- The vehicle will use the least amount of road space.
- They give an escape path for other traffic.
- They increase steering accuracy.
- They help the driver to visualize the space that the vehicle will be occupying.
- They allow the driver to plan ahead.
- They can be adapted easily to large, unfamiliar vehicles.

Set Up for Precision Turns

Making a right turn requires a more precise use of space than making a left turn, because a vehicle making a right turn has a tighter turning radius and the closeness of the vehicle's tires to the curb makes it even more restrictive.

Variables that may require an adjustment for a precision turn are:

1. The length of the vehicle's wheelbase
2. The radius of the curb
3. The moment at which the steering begins
4. The rate of steering
5. The speed of the vehicle

Before Turning

Use of Signals: Signal at least 5 seconds before making the turn. Be aware of situations in which others may enter your path before you turn.

Mirrors -- Blind Spot Check: Search the inside mirror before taking any braking action and the side mirror before turning or moving to a new side position. Make an over-the-shoulder check.

Side Position Reference Point: Select the proper and legal lane from which to begin your turn. Then, use the reference point to get 3-6 inches from the center of the road for left turns and 3 feet from the curb for right turns.

Speed Control - Apply the Brake: For turns from a stopped position, begin braking action that will result in a smooth stop. For moving turns, the speed is reduced and the foot will remain on the brake pedal until the car is at the transition point.

Smooth Legal Stop: The legal stop needed for a stop sign is a stop before going past the stop line. To make a smooth stop, release brake pressure slightly during the last two seconds before stopping.

Forward Position Reference Point: The forward position for a left turn is found when the driver is able to see the target area without his or her vision cutting across the curb line. For a right turn, the forward position is found when the front of the car is even with the curb line of the street to be entered.

Select Target: Before turning, pick a target that will be in the center of your path-of-travel.

Search the Intersection L-F-R: Before entering the intersection, search the left, front, and the right spaces to see if each will be open. When a space is not open, identify when the gap will be safe to enter.

During the Turn

Select Gap/Get Commitment: Be certain how you are reading the actions of others.

Avoid Hesitation: Once you are certain of a safe gap, go for it.

Looking into Turns, Targeting: Before turning the wheel, turn your head so that you see your target.

Speed Control (Brake or Gas): For turns that begin from a stopped position, speed control is achieved through the effective use of the gas pedal. For moving turns, speed control is achieved by keeping the foot on the brake until the car is the transition point, then you should accelerate.

Steering Technique/Recovery: Demonstrate pull-push or hand-over-hand turning for both the turn and the recovery of the steering wheel.

Push-Pull: Gives a smoother steering action

Accurate Tracking Path: Maintain an accurate position on the roadway

After the Turn

Precision Turn Results: Verify you are in the correct position when the turn is completed

Evaluate: Your new target area and the targeting path that you will occupy.

For Every Turn:

Search Left, Forward, Right (LFR), check the rear, communicate, check the blind spot, and look to the target before turning the wheel.

For a Left Turn:

Lane Position 2 without oncoming traffic. Lane Position 1 with oncoming traffic. Forward position is when you can see to the target without your vision cutting across the curb line. And then begin to straighten the wheel at the transition point (left corner post).

For a Right Turn:

Lane Position 3 with a bike lane or Side Position 3 without a bike lane. The forward position is when your side-view mirror lines up with the outside edge of the curb (safety stop position). And then begin to straighten the wheel at the transition point (inside rear-view mirror)

When waiting to turn left, keep your wheels straight until you are initiating the turn, so you are not pushed into traffic if rear-ended.