

Reference Point Training for Bus Drivers

Reference Guide and Test

Produced by
Video Communications

INTRODUCTION

I. School bus drivers are trained for multiple bus driving skills. A trained school bus driver must be comfortable with their abilities to perform these skills. To feel comfortable, drivers must practice and understand many types of driving maneuvers. Some of these maneuvers require precision skills.

II. The video will be discussing school bus reference points in relation to executing turns, lane positioning, backing up and much more. The host throughout the video is Martin Ward, Trainer and CEO at Mid Placer Transportation Agency. He guides Leslie Harrison, a school bus driver, on many of the reference points that can be utilized both on board and outside of the school bus. Our goal is to give each school bus driver a clear understanding of knowing how the bus can be used as a tool when establishing reference points.

Factors that Affect Reference Points

1) School bus drivers have to be aware of many issues when establishing reference points on the school bus. Here are a few examples of these issue: making turns, positioning lanes, backing up and parking the school bus. In each of these issues there are multiple factors to be considered.

2) **A reference point is visually aligning two points.** This will require the driver to align a point located on the bus, with a point located outside of the bus. An example of this would be aligning the back edge of the service door with an object outside of the bus, such as a fog line or the edge of a roadway.

3) Reference points can be applied for various driving situations. One of the primary uses for applying reference points is making precise turns. However, **school bus drivers instinctively apply reference points in all manners of driving.**

4) There are several factors that affect reference point locations. This can include but is not limited to:

a) Seat positioning. *Reference points will be affected - depending on the driver's seat position.*

b) The driver's height.

c) Vehicle height and length.

5) Something else that drivers must understand is **line of sight**. Line of site is equally as important as the factors we previously mentioned. Line of site is a path which is in a direct line between the driver's eyes and a reference point outside of the bus. Established reference points will connect within your line of site. If you were to look at the edge of the service door and it aligns with the right side of the roadway, the points have visually connected within your line of site.

6) **Speed, steering control and proper mirror adjustment are additional factors that play an important role, when setting up reference points.**

Establishing Reference Points for Turning

7) When negotiating turns in a school bus, **it is important that you understand that you are in control of how the bus maneuvers a corner.** The steering wheel causes the wheels to turn and who controls the steering wheel? You, of course.

8) It is also important to understand that there are different styles of buses. That means the wheel base on buses will vary. Buses with a longer wheel base start to track a turn later than those with a shorter wheel base. A conventional bus has the front tires in front of the driver. Transit style buses have the front tires to the rear of the driver. Both styles turn differently and will have an impact when setting up reference points on the bus.

9) You can practice applying reference and turning points using ropes or cones, as we show in the video. Martin sets up cones in this instance to help Leslie gauge where her bus's turning point is located. These types of practices will help you understand where YOUR bus's turning point is.

10) As you approach a turn, visualize the turn outside of the reference point. To do this, imagine a line extending across the roadway. It is an extension of the turn you will be making. Martin explains that the imaginary line (*ground reference*) can be anything from a fog line to a parked car.

11) As you pull the bus forward in preparation to make a turn, you would align the

reference point ON the bus with the reference point OUTSIDE of the bus. Once those two points align, it is time to turn the steering wheel 100% lock in the direction you are turning.

12) Understanding how to apply reference points for turns is an important tool for bus drivers to implement. Remember this important point! It doesn't matter what type of turn it is, reference points allow drivers to operate the bus with more control.

13) During the video, Leslie accomplishes a successful right and left hand turn by establishing where the onboard reference point intersects with the ground reference outside.

14) By establishing reference points, and using the bus as a tool, bus drivers have more control. However, there are many variables when applying reference points during turns including:

- a) Placement of the bus
- b) Speed
- c) Steering control
- d) Seat Positioning and more.

15) To apply reference points in real world situations it takes practice and really knowing the bus you are driving.

Reference Points for Backing Up

16) Reference points are not only applicable while traveling in a forward direction, but also when the bus needs to be backed up. Establishing a rear bumper reference when backing into a stall or a tight area, is necessary in order to avoid backing into items or objects. Depth perception plays an important role and mirror usage is CRITICAL.

17) In the video, we show Martin explaining to Leslie that she will need a reference point both on the bus, which is being represented by the rear tires.....with a reference point outside of the bus, represented by the cones. This practice will help gauge the distance from the rear bumper to the problem object. This is where depth perception, mirror usage and plenty of practice, all come into play.

18) In the video, Martin has Leslie look into her mirrors before pulling the bus forward. Leslie estimates that the cones appear to be halfway up the tire when looking into her mirrors. Martin then has Leslie pull the bus forward....He then explains that when backing up the bus, she would want to use her mirrors and back up until the cones appear to be halfway up the tire again. Leslie successfully establishes her rear bumper reference in this particular bus.

19) As you can see, bus drivers have tools to help aid them when backing up the bus. This is just one example of how reference points can be applied. There are several other areas on the bus that can be used as well. A note of caution. When backing up a school bus the bus drivers must always be aware of mirror usage as well as depth perception

Additional Uses for Reference Points

20) As previously mentioned, bus drivers instinctively apply reference points when operating the bus.

21) One thing to consider is the bus's lane position, when driving down a roadway. When high winds are present, high winds can move the bus around. Applying reference points can help drivers maintain lane position in such conditions.

22) In the video, we show Leslie driving down the road when Martin asks her what reference points she is using to make sure she is positioned in her lane properly. Leslie explains that she has established her lane position by intersecting the onboard reference point, which in this case is the D.P.F. box located on the dash, with the outside reference point - which is the fog line. Using reference points can allow you to have more control of the bus and maintain proper lane position.

23) Keep in mind, that **many things can be used as reference points. It all depends on the bus you are driving and the factors that we have covered earlier in the video.** It is important to remember that when establishing lane position by applying reference points, you must do this by aligning the bus with stationary objects outside of the bus. **NEVER use a car or any other moving object as an outside reference point.**

24) **There is yet another use for applying reference points. That is when you**

pull into a loading zone to pick up or drop off students. Many school bus loading zones are curbed. Curbs not only have the potential to cause damage to tires, but it is also unsafe for students if the bus is not properly positioned.

25) Students should be able to easily step from the bus to a curbed sidewalk. The goal is to keep the right side of the bus 4 to 6 inches from the curb.

26) You can practice by placing the bus 4-6 inches from the curb. Remember, driver line of sight and seat positioning are important when positioning the bus. You want to keep your viewpoint as consistent as possible.

27) There are several different ways to apply reference points when setting up the bus to load or offload students. In the video, we show how Leslie has established reference points in two areas. She will track the curb using both. She uses the service door to align the bus with the curb. She uses that in conjunction with intersecting the bottom bracket of the windshield wiper with the curb. Using a mixture of both, allows her to precisely position the bus.

CLOSING

Throughout the video, we have covered several practices and techniques that can be applied using reference points, on and outside of the school bus. We went over the importance of understanding how to set up reference points for multiple uses. Practicing and applying reference points provides the foundation for acquiring excellent bus handling skills. Remember, there are reference points all over your bus, and everywhere outside of the bus. How you apply them to everyday operation of the bus, is up to you. Think outside the box and utilize the tools the bus provides to make it even safer for the students you transport. Stay safe.

TEST QUESTIONS

1) A reference point is visually aligning two points.

TRUE or FALSE

2) It doesn't matter how tall you are when establishing reference points.

TRUE or FALSE

3) As you pull the bus forward in preparation to make a turn, you would align the reference point ON the bus with the reference point OUTSIDE of the bus.

TRUE or FALSE

4) To apply reference points in real world situations it takes practice and really knowing the bus you are driving.

TRUE or FALSE

5) Variables when applying reference points during turns are:

a) Speed

b) Steering Control

c) Placement of bus

d) None of the above

e) All of the above

6) Depth perception is not so critical when backing the bus, as long as your mirrors are properly adjusted.

TRUE or FALSE

7) Reference points can help drivers maintain proper lane position.

TRUE or FALSE

8) The goal when entering loading zones is to keep 5-7 inches away from the curb.

TRUE or FALSE

9) Using the car directly in front of you to establish lane position is a good practice.

TRUE or FALSE

10) Reference points are all over the bus and everywhere outside of the bus.

TRUE or FALSE

ANSWER KEY

- 1) TRUE
- 2) FALSE
- 3) TRUE
- 4) TRUE
- 5) e
- 6) FALSE
- 7) TRUE
- 8) FALSE
- 9) FALSE
- 10) TRUE