

present along the roadway). However buses have to merge with general traffic and gradually cross to the other side of the highway when transitioning between median shoulders and right-hand entry and exit ramps. This can be challenging when crossing right due to restricted bus driver visibility towards the right rear of the bus.

### **Clearance at Barriers and Overpasses**

In the Twin Cities and most other cities, a 10 foot shoulder width is the minimum acceptable for BOS operation, and is also acceptable for short distances on an overpass. For longer bridges, a minimum of 11.5 feet is required due to the challenge of driving a bus next to a bridge railing.

**In general, there should be a 1.5 or 2 foot clearance beyond the shoulder width to any barrier or wall, as well as any drainage gratings or culverts.**

Vertical clearance is not typically an issue, unless a facility has bridges that predate modern design clearances, or if repeated resurfacing has raised the road height over time.

### **Posted Signage, Markings, and Warning Devices**

**In general, BOS implementation has used minimal signing and markings.** In addition to relevant signage recommended in the Manual for Uniform Control Devices (MUTCD), regions implementing BOS projects have used a number of different signs as appropriate to their state codes, though there does appear to be a gradual convergence. Signs will indicate authorized bus use of shoulders, both along the shoulders and at intersections and merges. For roads within the National Highway System, the precise signage is subject to approval from the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA).

Figure 3: Samples of BOS Signage



In the Twin Cities, small yellow advisory "pinch-point" signs are posted when the shoulder narrows to less than 10 feet and the bus must re-merge into the general lanes.