

Exit Design Speed - The minimum design speed at the exit nose should be 80 kph or greater for both ramps and branch connections. Decision sight distance should be provided at freeway exits and branch connectors.

Entrance Design Speed - The design speed at the nose should be consistent with approach alignment standards. If the approach is a branch connection or diamond ramp with high alignment standards, the minimum design speed should be 80 kph.

Entrance/Exit Designs - Design of freeway entrances and exits should conform to the standard designs in Figures 500.13, 500.14, and 500.15 for single lane, two lane entrances and exits, and diverging branch connections, respectively. A branch connection is defined as a multilane connection between two freeways.

The minimum deceleration length shown on Figure 500.13 shall be provided prior to the first curve beyond the exit nose. This provides for adequate deceleration before entering the curve. When the subsequent curve is a descending loop or hook ramp, or if the upstream condition is a sustained downgrade, deceleration length should be increased. (see AASHTO, “A Policy on Geometric Design of Highways and Streets”, 1994, Chap. X for additional information).

Single-lane Freeway to Freeway Connections
Freeway-to-freeway connectors may be single lane or multilane. Where design year volume is between 900 and 1500 equivalent passenger cars per hour, initial construction should provide a single lane connection with the capability of adding an additional lane. Single lane directional connectors should be designed using the general configurations shown on Figure 500.13, but utilizing the flatter diverge angle shown in Figure 500.15. Single lane loop connectors may use a diverge angle of as much as that shown on Figure 500.13 for ramps, if necessary. The choice will depend upon interchange configuration and driver expectancy. Single-lane connectors in excess of 300 m in length should be widened to two lanes to provide for passing maneuvers.

Two-Lane Exit Ramps - Where design year estimated volumes exceed 1500 equivalent passenger cars per hour, a 2-lane exit per Figure 500.14 should be used. A minimum 400 m auxiliary lane should be provided in advance of a two-lane exit. Provisions should also be made for widening to three or more lanes at the cross road intersection.

For volumes less than 1500 but more than 900, a one-lane width exit ramp should be provided with provision for adding an auxiliary lane and an additional lane on the ramp.

Branch Connections - A branch connection should be provided when the design year volume exceeds 1500 equivalent passenger cars per hour.

Merging branch connections should be designed as shown in Figure 500.14. Diverging branch connections should be designed as shown in Figure 500.15. The standard ramp exit connects to a local street. The diverging branch connection connects to another freeway and has a flatter angle that allows a higher departure speed.

At a branch merge, an 800 m length of auxiliary lane should be provided beyond the merge of one lane of the inlet, except where it does not appear that capacity on the freeway will be reached until five or more years after the 20 year design period. In this case the length of auxiliary lane should be a minimum of 300 m. For diverging connections where less than capacity conditions beyond the design year are anticipated, the length of auxiliary lane in advance of the exit should be 400 m.

Branch Lane Drops - The lane drop taper on a freeway-to-freeway connector shall not be less than 70:1.