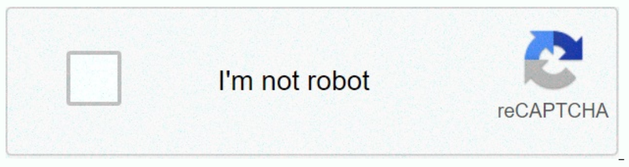

Continue

Bus turning radius diagram

Anchor: #CHDBDAJD Anchor: #i1013368 This section contains the following information about the minimum design for truck and bus turns: Anchor: #i1013404Application There are no strict guidelines governing the selection of the type of large vehicle to be used as a design vehicle. Factors influencing the selection of vehicle design are as follows: Anchor: #EEMRIOFSType and frequency of use by large vehicles, Anchors: #YJCJLBORConsequences encroachment into other lanes or roadsides, Anchors: #CNWFALBFAvailability right-of-way, and Anchors: class #WFYLPYGLFunctional routes and intersecting locations (urban versus rural) affect this choice in the general sense. Project-specific traffic data, particularly the frequency of use by different classes of design vehicles, is often the most important consideration in the selection process. The Transportation Planning and Programming Division (TPP) can be contacted to obtain volume data for various classes of vehicles. Minimum rotary path template for single unit trucks or buses, semi-trailer combination with 40 wheelbase, A combination of 50 and 62 ft [12.2, 15.24 and 18.9 m], and double-trailers with wheelbases of 67 ft [20.43 m] respectively] are shown in Figures 7-1, 7-2, 7-3, 7-4, 7-5, and 7-6. The publication of AASHTO's Policy on The Geometric Design of Highways and Roads provides additional information about the rotary and rotating paths of these vehicles and others. Anchor: #i1001418grtopFigure 7-1. Rotating Template for Single Unit Trucks or Buses, (not for scaling). NOTE: According to AASHTO's Policy on Road and Road Geometric Design (2018), the 'SU' design accommodates deep turn radii for six types of buses and all but one (BUS-45, intercity) of radii turn outside. If bike racks are a bus consideration, see AASHTO for additional radii requirements outside. Anchor: #i1001420grtopFigure 7-2. Changed template for Semi-Trailer with Wheelbase 40 ft [12.20 m], (not to scale). Anchor: #i1001422grtopFigure 7-3. Changed template for Semi-Trailer with Wheelbase 50 ft [15.24 m], (not to scale). Anchor: #i1001424grtopFigure 7-4. Changed template for Semi-Trailer with Wheelbase 62 ft [18.9 m], (not to scale). Anchor: #i1001426grtopFigure 7-5. Changed template for Semi-Trailer with Wheelbase 62 ft [18.9 m] (Radius = 75 ft [22.9 m], (not for scale). Anchor: #i1001428grtopFigure 7-6. Changed template for Double-Trailer Combination with 67 ft [20.41 m] Wheelbase, (not to scale numbers). Anchor: #i1001430grtopFigure 7-7. (USA). Examples of Sidewalk Geometry (U.S. Custom). Anchor: #HKNBRHHHgrtopFigure 7-8. (M). Examples of Sidewalk Geometry (Metrics). Anchor: #i1013514Channelization where the edge in the pavement for a right turn at an intersection is designed to accommodate a combination of semi-trailers or where allow passenger vehicles to turn at 15 mph [20 km/h] or (i.e., 50 ft [15 m] or more radius), the pavement area at the intersection may become too large for proper traffic control. In this case, channeling the island should be used to control, direct and/or divide traffic lanes more effectively. Physically, the island must be at least 50 ft2 [4.5 m2] in urban areas and 75 ft2 [7.0 m2] for rural conditions (100 ft2 [9.0 m2] preferred for both) in size and can range from painted to a tightened area. Anchor: #i1013531Alternatives to Simple Curvature To accommodate the longest vehicle, off-tracking characteristics in combination with large radius (simple curves) that should be used produce a large pavement area. In this case, three-center compound curves, or offset simple curves in combination with lanpel, are preferred because they better suit the vehicle's path. Tables 7-2 show the minimum edge of pavement design for right turns to accommodate a variety of vehicle designs for round angles varying from 60 to 120 degrees. Anchor: #i1009736Table 7-2: Minimum Edge of Pavement Designs for Right Turns for Various Design Vehicles for Turn Angle Varying from 60 to 120 Degrees Simple Curve Radius (ft.) Simple Curve Radius with Taper 3-Centered Compound Curve, Symmetric 3-Centered Compound Curve, Asymmetric 60 P 40 - - - - - - - - SU 60 - - - - - - - - WB-40 90 - - - - - - - - WB-50 150 120 3.0 15:1 200-75-200 5.5 200-75-275 2.0-7.0 75 P 35 25 2.0 10:1 100-75-100 2.0 - - - SU 55 45 2.0 10:1 120-45-120 2.0 - - - WB-40 - 60 2.0 15:1 120-45-120 5.0 120-45-195 2.0-6.5 - WB-50 - 65 3.0 15:1 150-50-150 6.5 150-50-225 2.0-10.0 90 P 30 20 2.5 10:1 100-20-100 2.5 - - - SU 50 40 2.0 10:1 120-40-120 2.0 - - - WB-40 - 45 4.0 10:1 120-40-120 5.0 120-40-200 2.0-6.5 - WB-50 - 60 4.0 15:1 180-60-180 6.5 120-40-200 2.0-10.0 105 P - 20 2.5 - 100-20-100 2.5 - - - SU - 35 3.0 - 100-35-100 3.0 - - - WB-40 - 40 4.0 - 100-35-100 5.0 100-55-200 2.0-8.0 - WB-50 - 55 4.0 15:1 180-45-180 8.0 150-40-210 2.0-10.0 120 P - 20 2.0 - 100-20-100 2.0 - - - SU - 30 3.0 - 100-30-100 3.0 - - - WB-40 - 35 5.0 - 120-30-120 6.0 100-30-180 2.0-9.0 - WB-50 - 45 4.0 15:0 1 180-40-180 8.5 150-35-220 2.0-12.0 1 Angle of Turn is the angle at which the vehicle travels in making the turn. This is measured from the tangent extension where the vehicle approaches the corresponding tangent on the intersecting road where the vehicle turns. This is the same angle commonly called delta angle in surveying terminology. Anchor: #i1009993Table 7-2: Minimum Edge Pavement Design for Right Turn for Various Vehicles Design for Turning Angles Varies from 60 to 120 Degree Simple Curve Radius with 3-Centered Compound Curve Taper, Symmetric 3-Centered Compound Curve, Asymmetric 60 P 12 -- - SU 18 - - - - -- - WB-12 28 - - WB-15 45 29 15:1 60-123-60 1.7 60-23-84 0.6-2.0 75 P 11 8 0.6 10:1 30-8-30 0.6 - - SU 17 17 0.6 10:1 36-14-36 0.6 - - - WB-12 - 18 0.6 15:1 36-14-36 1.5 36-14-60 0.6-2.0 - WB-15 - 20 1.0 15:1 45-15-45 2.0 45-15-69 0.6-3.0 90 P 9 6 0.8 10:1 30-6-30 0.8 - - - SU 15 12 0.6 10:1 36-12-36 0.6 - - - WB-12 - 14 1.2 10:1 36-12-36 1.5 36-12-60 0.6-2.0 - WB-15 - 18 1.2 15:1 55-18-55 2.0 36-12-60 0.6-3.0 105 P - 6 0.8 8:1 30-6-30 0.8 - - - SU - 11 1.0 10:1 30-11-30 1.0 - - - WB-12 - 12 1.2 10:1 30-11-30 1.5 30-17-60 0.6-2.5 - WB-15 - 17 1.2 15:1 55-14-55 2.5 45-12-64 0.6-3.0 120 P - 6 0.6 10:1 30-6-30 0.6 - - - SU - 9 1.0 10:1 30-9-30 1.0 - - - WB-12 - 11 1.5 8:1 36-9-36 2.0 30-9-55 0.6-2.7 - WB-15 - 14 1.2 15:1 55-12-55 2.6 45-11-67 0.6-3.6 1Angle of Turn is the angle through which a vehicle travels in making a turn. This is measured from the tangent extension where the vehicle approaches the corresponding tangent on the intersecting road where the vehicle turns. This is the same angle commonly called delta angle in surveying terminology. Figures 7-7 show alternate samples (for simple curvature) of pavement geometry edges for 90 degree turns using WB 50 [WB-15] design vehicles. Although not shown in this figure, a radius of 80 ft [25 m] without channeling the island will be necessary to accommodate the vast and untraceable path of WB-50 [WB-15] without unwanted encroachment. This kind of geometric design is undesirable, however, since there will be a vast expanse of confusing surface area; in addition, there is no convenient and effective location for traffic control devices. Anchor: #i1013545Urban Angle Intersection radii at intersections on arterial roads must meet the requirements of the driver to use it as far as practical and consider the number of right-way available, the angle of the intersection, the amount and space for pedestrians, the width and number of lanes on intersecting roads, and the number of speed reductions. The following summary is offered as a guide: Anchor: #AQAQWKVRRadii 15 ft [4.5 m] to 25 ft [7.5 m] is adequate for passenger vehicles. This radii can be provided on small cross roads where there is little chance for the truck to turn or at the main intersection where there is a parking lane. Where the road has sufficient capacity to maintain sidewalk lanes as parking lanes for the foreseeable future, parking should be restricted to the appropriate distance from the crossing. Anchor: #GYENMVRNRadii 25 feet [7.5 m] or more on a small cross road should be provided on new construction and on reconstruction where space is possible. Anchor: #MGVDVJWBRadii 30 ft [9 m] or more on the main causeway should be provided if feasible so that the occasional truck can turn without too much encroachment. Anchor: #URUTHCECRadii 40 ft [12 m] or more, and preferably a 3-center compound curve or a simple curve with a lanpel to fit the vehicle's appropriate design path, provided where a combination of large trucks and buses often turn. Larger radii are also desirable where a reduction in speed will cause problems. Anchor: #MLXDKCGYRadii dimensions must be coordinated with the crossing distance or a special design to make the crossing safe for all pedestrians. For urban junctions of arteries, rotating radii 75 ft [23 m] or more is desirable if frequent use is anticipated by the WB-62 [WB-19] design vehicle. Where other types of truck combinations are used as design vehicles, pavement edge geometry as shown in Tables 7-2: Minimum Edge Pavement Design at Intersections and Figures 7-7 allows the use of smaller radii. The promising operational step is to provide guidance in the form of an edge line to accommodate the passenger car turning path, while providing enough paved areas outside the edge line to accommodate the occasional large vehicle back lane. Additional Right Turn slip lane guides are provided at Appendix D. Anchor: #i1013587Rural In rural areas are generally more available and higher speeds. These factors suggest a more liberal design for rotating trucks even when the frequency of long vehicles may not be as large as in urban areas. In the design of highway intersections with other public roads (non-highway systems), long vehicles are generally rarely users. At a minimum, SU, or on some occasions WB–40 [WB-12], design vehicles are suitable for use unless special circumstances (truck stop or terminal location) affect the frequency of use by a particular class of vehicle. For arterial junctions with collectors, wb-40 design vehicles [WB-12] are generally appropriate and WB-50 [WB-15] should be used where certain circumstances warrant. For arterial junctions, use by vehicle design WB-62 [WB-19] should be anticipated in the life of the project. Two template layouts, Figure 7-4 and Figure 7-5, are displayed with radii of 45 ft [13.7 m] and 75 ft [23 m] respectively. To change the width of the road to a reasonable width, a design radius of 75 ft [23 m] or more is required. Where circumstances at certain rural arterial intersections preclude the use of WB-62 [WB-19] design vehicles, the WB-50 [WB-15] should be used. Used.

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