8820.9920 MINIMUM DESIGN STANDARDS; RURAL AND SUBURBAN UNDIVIDED; NEW OR RECONSTRUCTION PROJECTS.

When the road authority has determined that the roadway will be specifically designed to include on-road bicycle facilities, and only if the roadway surface is paved, the appropriate design criteria in the current MnDOT Bikeway Facility Design Manual are recommended for design purposes.

New or reconstruction projects for rural and suburban undivided roadways must meet or exceed the minimum dimensions indicated in the following design chart.

Projected ADT (a)	Lane Width	Shoulder Width	In-slope (b)	Clear Zone (c)	Design Speed (d)	Sur-facing	Structural Design Strength	Bridges to Remain (e) Width Curb to Curb
	feet	feet	rise: run	feet	mph		tons	feet
0-49	11	1	1:3	7	30-60	Agg.		22
50-149	11	3	1:4	9	40-60	Agg.		22
150-299	12	4	1:4	15	40-60	Agg./ Paved	7-ton/ 10-ton Staged (g)	28
300-749	12	4	1:4	15	40-60	Paved	10-ton Staged (g)	28
750-1499	12	4	1:4	25	40-60	Paved	10-ton Staged (g)	28
1500 and over	12	6(f)	1:4	30	40-60	Paved	10	30

Engineering judgment should be used to choose a lane-width, on-road bicycle facility, or shoulder-width dimension other than the widths indicated in the chart for roadways. Factors to consider include safety, speed, population/land use, benefit/cost analysis, traffic mix, peak hourly traffic, farm equipment, environmental impacts, terrain limitations, bicycle traffic, pedestrian traffic, on-street parking, intersection and driveway spacing, rights-of-way constraints, vehicle turn lane configuration, sight distance, sight lines, bus routes, other nonmotorized uses, functional classification, or other factors. Dimensions less than those indicated in the chart require a variance in accordance with parts 8820.3300 and 8820.3400.

For rural divided roadways, use the geometric design standards of the Mn/DOT Road Design Manual, with a minimum ten tons structural design and minimum 40 mph design speed.

(a) Use the existing traffic for highways not on the state-aid system.

(b) Applies to slope within the clear zone only.

(c) Culverts with less than 30-inch vertical height allowed without protection in the clear zone.

Guardrail is required to be installed at all bridges where the design speed exceeds 40 mph, and either the existing ADT exceeds 400 or the bridge clear width is less than the sum of the lane and shoulder widths.

Mailbox supports must be in accordance with chapter 8818.

For roadways in suburban areas as defined in part 8820.0200, the clear zone may be reduced to a width of ten feet for projected ADT under 1,000 and to 20 feet for projected ADT of 1,000 or over. Wherever the legal posted speed limit is 40 mph or less, the clear zone may be reduced to a width of ten feet.

(d) Subject to terrain. In suburban areas, the minimum design speed may be equal to the current legal posted speed where the legal posted speed is 30 mph or greater.

(e) Inventory rating of H 15 is required. A bridge narrower than these widths may remain in place if the bridge is not deficient structurally or hydraulically.

(f) Shoulders are required to be a minimum width of eight feet for highways classified as minor arterials and principal arterials with greater than 1,500 ADT projected, at least two feet of which must be paved. If the roadway is designated as a bicycle facility by the road authority, at least four feet of the shoulder shall be paved.

(g) Except within municipal corporate limits, ten-ton staged structural design must be able to carry ten-ton axle loads except during spring load-restriction periods, or year-round if needed for system continuity. Roadbed width must accommodate ultimate ten-ton pavement overlay thickness and ultimate 1:4 sideslope. Within municipal corporate limits, minimum structural design must support nine-ton axle strength.

Approach sideslopes must be 1:4 or flatter when the ADT exceeds 400.

HS 25 loading with AASHTO Standard Specifications or HL-93 loading with load and resistance factor design (LRFD) is required for new or reconstructed bridges. HS 18 loading is required for all rehabilitated bridges. The curb-to-curb minimum width for new or reconstructed bridges must be no less than either the minimum required lane plus shoulder widths or the proposed lane plus shoulder widths, whichever is greater, but in no case less

than the minimum lane widths plus four feet, and in no case less than required per Minnesota Statutes, section 165.04.

Vehicular roadway bridge and underpass structures when two-way bicycle traffic is accommodated: on bridge or underpass sidewalks, the sidewalk clear width shall be no less than eight feet, but preferably ten feet. Whenever practicable, the shoulder/clear zone of an off-road shared use path should be carried across bridges and through underpasses and the minimum structure clear width must be 12 feet. When the full width of the approach shared use path (surface width plus shoulder/clear zone) is greater than the proposed clear width of the structure, then lead-in bicycle safety railing is required at each end of the bridge or underpass. As an alternative to lead-in bicycle safety railing, the surface width of the approach shared use path may be narrowed at a 1:50 taper while maintaining minimum surface width and shoulder/clear zone through the structure.

Statutory Authority: *MS s 14.386; 14.389; 162.02; 162.09*

History: *20 SR 1041; 23 SR 1455; 24 SR 1885; 29 SR 449; 32 SR 608; 36 SR 925; 37 SR 697*

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