

CHAPTER 8820
DEPARTMENT OF TRANSPORTATION
LOCAL STATE-AID ROUTE STANDARDS, FINANCING

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8820.0100 DEFINITIONS.

[For text of subps 1 to 2f, see M.R.]

Subp. 3. **City engineer.** "City engineer" means a licensed professional engineer employed as the city engineer or the director of public works, city engineer of each urban municipality.

[For text of subps 3a and 3b, see M.R.]

Subp. 3c. **Clear zone.** "Clear zone" is the distance measured from the edge of the outside through-traffic lane, which must be free of fixed objects and meet or exceed the minimum in-slope dimensions indicated in the design charts of this chapter.

[For text of subps 4 and 4a, see M.R.]

Subp. 5. **County highway engineer.** "County highway engineer" means a licensed professional engineer employed as the county highway engineer, county engineer, or the director of public works, county engineer of each county.

[For text of subps 6 to 13a, see M.R.]

Subp. 13b. **Reconditioning.** "Reconditioning" includes resurfacing, replacement, or rehabilitation of the pavement structure to extend the life of the roadway and effectively address critical safety and operations needs through minor improvements to the existing facility. Reconditioning projects generally utilize the existing horizontal and vertical alignment, may entail minor widening or geometric improvement, and normally require little or no additional right-of-way. Reconditioning may include changes in vertical or horizontal alignment involving no more than 20 percent of the length of the project. Reconditioning may include curb replacement along no more than 20 percent of the length of the project, not including curb replacement for purposes of the Americans with Disabilities Act of 1990, United States Code, title 42, section 12101 et seq. Work does not normally extend beyond the existing ditch bottom.

[For text of subps 13c to 22, see M.R.]

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

History: *36 SR 925*

8820.1500 CONSTRUCTION FUNDS.

Subpart 1. [Repealed by amendment, 8 SR 2146]

Subp. 2. **State-aid contracts.** Upon receipt of an abstract of bids, a certification as to the execution of a contract that includes a requirement for bond, and a payment request, the

commissioner shall promptly release from the funds available to the county or urban municipality up to 95 percent of the state-aid portion of the contract. Upon further receipt of a signed supplemental agreement, including by means of an electronic signature, for a major addition to the contract, or appraised values for additional right-of-way costs, the commissioner shall promptly release from the funds available to the county or urban municipality up to 95 percent of the state-aid portion of the supplemental agreement or right-of-way appraised value. The commissioner shall keep the remaining percentage of the state-aid share of the contract, except of approved right-of-way claims which will be paid in full upon proof of acquisition and availability of funds, until the project is 95 percent or more completed as substantiated and requested by the county or city engineer.

Upon receipt of the final project acceptance and final cost determination by the county or city engineer, and upon concurrence of project acceptance by the district state aid engineer, the commissioner shall promptly release from the funds available any remaining money due to the state-aid portion of the contract.

[For text of subps 3 to 12, see M.R.]

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

History: *36 SR 925*

8820.2500 MINIMUM STATE-AID STANDARDS.

[For text of subps 1 to 2, see M.R.]

Subp. 3. **Right-of-way.** The minimum widths of right-of-way for state-aid routes must be at least 60 feet within cities and 66 feet in rural areas, except that the right-of-way may be less for routes that are within a city, that were constructed before November 13, 1995, and that can be reconstructed to new construction standards within the previously existing right-of-way. Before construction, the governing body shall acquire control of the additional widths of right-of-way as may be necessary to properly maintain the ditch section, drainage structures, and the clear zone. Permanent easements for highway purposes are considered to be right-of-way for the purposes of this subpart.

[For text of subp 4, see M.R.]

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

History: *36 SR 925*

8820.3100 GENERAL STATE-AID LIMITATIONS.

[For text of subp 1, see M.R.]

Subp. 2. **Lighting hazardous areas.** The cost of roadway and bridge lighting of locations at which accidents are likely to occur or are otherwise hazardous is an eligible expense if that lighting:

[For text of items A and B, see M.R.]

[For text of subps 3 to 9, see M.R.]

Subp. 9a. [Repealed, 36 SR 925]

[For text of subp 10, see M.R.]

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

History: *36 SR 925*

8820.3200 LOCAL ROAD RESEARCH BOARD.

Subpart 1. **Appointment.** The commissioner shall appoint a local road research board consisting of the following members:

[For text of items A and B, see M.R.]

C. two Department of Transportation staff engineers, one of whom must be the department's state-aid engineer;

[For text of items D and E, see M.R.]

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Subp. 2. **Terms.** Appointments of county highway and city engineers, except for unexpired terms, are for four years. The other members shall serve at the will of the commissioner.

[For text of subp 3, see M.R.]

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

History: *36 SR 925*

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

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 may be used to choose a lane-width or shoulder-width dimension other than the widths indicated in the chart for roadways. Factors to consider may be safety, speed, population/land use, benefit/cost analysis, traffic mix, peak hourly traffic, farm equipment, environmental impacts, terrain limitations, bicycle traffic, pedestrian traffic, other nonmotorized uses, functional classification, or other factors. Widths 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 8820.0100, 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.

(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.

For roundabout design, the design criteria of the current edition of the Minnesota State Aid Roundabout Guide are recommended.

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

History: *36 SR 925*

8820.9922 MINIMUM DESIGN STANDARDS; NEW BRIDGE, BRIDGE REPLACEMENT, OR BRIDGE REHABILITATION PROJECTS AND APPROACH ROADWAYS ON RURAL OR SUBURBAN UNDIVIDED ROADWAYS THAT ARE NOT ON THE STATE-AID SYSTEM.

New bridge, bridge replacement, or bridge rehabilitation projects and approach roadways on rural or suburban undivided roadways that are not on the state-aid system must meet or exceed the minimum dimensions indicated in the following design chart.

Existing ADT (a)	Lane Width (feet)	Shoulder Width (feet)	Inslope (b) (rise: run)	Clear Zone (c) (feet)	Design Speed (d) (mph)
0-49	11	1	1:3	7	30-60
50-149	11	3	1:4	9	30-60
150-400	12	4	1:4	15(e)	30-60

Engineering judgment may be used to choose a lane-width or shoulder-width dimension other than the widths indicated in the chart for roadways. Factors to consider may be safety, speed, population, land use, benefit/cost analysis, traffic mix, farm equipment, environmental impacts, terrain limitations, bicycle traffic, pedestrian traffic, other nonmotorized uses, functional classification, or other factors. Widths less than those indicated in the chart require a variance in accordance with parts 8820.3300 and 8820.3400.

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- (a) For existing ADT greater than 400, part 8820.9920 standards apply.
- (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.
- (d) Subject to terrain.
- (e) For roadways in suburban areas, 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 miles per hour or less, the clear zone may be reduced to a width of ten feet.

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 equal to the proposed lane plus shoulder widths, but in no case less than the minimum lane width plus four feet, and in no case less than required per Minnesota Statutes, section 165.04.

Bridge structures of minimum 20-foot clear width may be constructed where existing ADT is less than 50, potential for increasing ADT is low, and the local government agency finds that the bridge width can operate effectively at that width for the expected life of the bridge.

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

History: *36 SR 925*

8820.9936 MINIMUM DESIGN STANDARDS, URBAN; NEW OR RECONSTRUCTION PROJECTS.

New or reconstruction projects for urban roadways must meet or exceed the minimum dimensions indicated in the following design chart.

Functional Classification and Projected Traffic Volume	Design Speed	Lane Width (a)	Curb Reaction Distance (e)	Parking Lane Width
	mph	feet	feet	feet
Collectors or Locals with ADT < 10000	30-40	(b) 11	2	8
	over 40	12	2	10
Collectors or Locals with ADT \geq 10000 and Arterials	30-40	(b) 11	(c) 4	10
	over 40	12	(c) 4	(d) 10

Engineering judgment may be used to choose a lane-width dimension other than the widths indicated in the chart for roadways. Factors to consider may be safety, speed, population/land use, benefit/cost analysis, traffic mix, peak hourly traffic, farm equipment, environmental impacts, terrain limitations, bicycle traffic, pedestrian traffic, other nonmotorized uses, functional classification, or other factors. Widths less than those indicated in the chart require a variance in accordance with parts 8820.3300 and 8820.3400.

- (a) One-way turn lanes must be at least ten feet wide, except 11 feet is required if the design speed is over 40 mph.
- (b) Wherever possible, lane widths of 12 feet, rather than 11 feet, should be used.

(c) May be reduced to two feet if there are four or more traffic lanes and on one-way streets.

(d) No parking is allowed for six or more traffic lanes or when the posted speed limit exceeds 45 mph.

(e) Curb reaction must be provided only where parking is not provided.

One-way streets must have at least two through-traffic lanes.

When a median is included in the design of the two-way roadway, a one-foot reaction distance to the median is required on either side of the median. Minimum median width is four feet.

Urban design roadways must be a minimum nine tons structural axle load design.

Roadways not on the state-aid system are not subject to the minimum structural design strength requirements.

The minimum curb-to-curb width of a new bridge must be the required street width, but in no case less than required per Minnesota Statutes, section 165.04. 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 and a minimum of HS 18 loading is required for all rehabilitated bridges. Where the new bridge approach roadway includes elements for the accommodation of pedestrians or bicycles, the new bridge width must also provide for pedestrians or bicycles unless pedestrians or bicycles are otherwise accommodated.

For ADT less than 150, the widths of bridges to remain must be at least the sum of the lanes. For ADT greater than or equal to 150, the widths of bridges to remain must be at least the sum of the lanes plus half the sum of the shoulders, parking lane, and curb reaction distance.

Clearance of 1.5 feet from the face of the curb to fixed objects must be provided when the posted speed is 40 to 45 mph. A ten-foot clear zone measured from the driving lane must be provided when the posted speed exceeds 45 mph.

For volumes greater than 15,000 projected ADT, at least four through-traffic lanes are required, unless a capacity analysis demonstrates that a different lane configuration achieves level of service D or better.

"Level of service" has the meaning given it in the Highway Capacity Manual, Special Report 209, as revised and published by the Transportation Research Board of the National Research Council, Washington, D.C. The definition is incorporated by reference, is not subject to frequent change, and is located at the Minnesota State Law Library, 25 Rev. Dr. Martin Luther King Jr. Blvd., St. Paul, Minnesota 55155.

For roundabout design, the design criteria of the current edition of the Minnesota State Aid Roundabout Guide are recommended.

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

History: *36 SR 925*

8820.9946 MINIMUM DESIGN STANDARDS, URBAN; RECONDITIONING PROJECTS.

Subpart 1. **Two-way streets.** In the following design chart, total width is from face-to-face of curbs.

Reconditioning projects for two-way urban roadways must meet or exceed the minimum dimensions indicated in the chart.

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Number of Through Lanes, Functional Class, and Present Traffic Volume	Total Width with No Parking (feet)	Total Width with Parking on One Side (feet)	Total Width with Parking on Both Sides (feet)	Proposed Structural Design Strength (tons)
2-Lane Collector or Local with ADT < 10000	26	32	38	(b) 9
4-Lane Collector or Local with ADT < 10000	44	52	60	(b) 9
2-Lane Collector or Local with ADT ≥ 10000 or 2-Lane Arterial (a)	26	32	42	9
4-Lane Collector or Local with ADT ≥ 10000 or 4-Lane Arterial	44	54	64	9
6-Lane Collectors or Arterials	66	(c)	(c)	9

Engineering judgment may be used to choose a lane-width or shoulder-width dimension other than the widths indicated in the chart for roadways. Factors to consider may be safety, speed, population/land use, benefit/cost analysis, traffic mix, peak hourly traffic, farm equipment, environmental impacts, terrain limitations, bicycle traffic, pedestrian traffic, other nonmotorized uses, functional classification, or other factors. Widths less than those indicated in the chart require a variance in accordance with parts 8820.3300 and 8820.3400.

- (a) Permissible for present traffic volumes less than 15,000 ADT.
- (b) When ADT is less than 5,000, seven tons is allowable.
- (c) No parking is allowed.

When a median is included in the design of the two-way roadway, a one-foot reaction distance to the median is required on either side of the median. Minimum median width is four feet.

For ADT less than 150, the widths of bridges to remain must be at least the sum of the lanes. For ADT greater than or equal to 150, the widths of bridges to remain must be at least the sum of the lanes plus half the sum of the shoulders, parking lane, and curb reaction distance.

For roundabout design, the design criteria of the current edition of the Minnesota State Aid Roundabout Guide are recommended.

[For text of subps 2 and 3, see M.R.]

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

History: *36 SR 925*

8820.9981 MINIMUM DESIGN STANDARDS: NATURAL PRESERVATION ROUTES, DESIGNATED NATIONAL FOREST HIGHWAYS WITHIN NATIONAL FORESTS, AND STATE PARK ACCESS ROADS WITHIN STATE PARKS; NEW OR RECONSTRUCTION PROJECTS.

Subpart 1. **Type I route.** New or reconstruction projects for type I natural preservation routes, designated national forest highways within national forests, and state park access roads within state parks must meet or exceed the minimum dimensions indicated in the following design chart.

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Surface Type	Design Speed (mph)	Lane Width (feet)	Shoulder Width (feet)	Inslope (rise: run)	Clear Zone (feet)	Design Strength (tons)	Bridge to Remain (feet)
			(a)	(b)	(c)		(d)
Aggregate	30	11	1	1:3	3		22
Paved	30	11	2	1:3	9	9	22

(a) If the route has scenic vistas that will require parking vehicles along the shoulder, widening the shoulder at these locations is acceptable. The designer will provide a four-foot paved shoulder if the route is a popular bicycle route.

(b) Applies to slope within the clear zone only. Other design features, such as guardrails or retaining walls, should be considered in particularly sensitive areas in lieu of reconstructing the inslope in accordance with part 8820.4060.

(c) 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 width is less than the sum of the lane and shoulder widths.

Mailbox supports must be in accordance with chapter 8818.

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

HS 20 loading with AASHTO Standard Specifications or HL-93 loading with load and resistance factor design (LRFD) is required for new bridges. HS 18 loading is required for all rehabilitated bridges. The curb-to-curb minimum width for new or reconstructed bridges is the sum of the lane and shoulder widths plus four feet.

Ditch depths and widths must be kept to the minimum required to function hydraulically and to provide for adequate snow storage when a standard ditch would negatively impact the surroundings.

The designer shall specify in the plan and special provisions that the clearing width is to be kept to the absolute minimum. In sensitive areas, the normal clearance allowed to a contractor for working room is zero unless otherwise required for special conditions.

Curb and gutter may be used in lieu of a ditch section under the paved option. The lane width, shoulder width, and clear zone must be maintained.

For designated national forest highways within national forests, and state park access roads within state parks, this subpart applies only where the projected ADT is less than 100, unless the route has been designated as a natural preservation route.

For roundabout design, the design criteria of the current edition of the Minnesota State Aid Roundabout Guide are recommended.

Subp. 2. **Type II route.** New or reconstruction projects for type II natural preservation routes, designated national forest highways within national forests, and state park access roads within state parks must meet or exceed the minimum dimensions indicated in the following design chart.

Surface Type	Design Speed (mph)	Lane Width (feet)	Shoulder Width (feet)	Inslope (rise: run)	Clear Zone (feet)	Design Strength (tons)	Bridge to Remain (feet)
			(a)	(b)	(c)		(d)
Aggregate	30	11	2	1:3	9		22
Paved (e)	30	11	3	1:4	9	9	22
Paved	40	11	3	1:4	9	9	22

(a) The designer will provide a six-foot paved shoulder if the route is a popular bicycle route. If the route has scenic vistas that will require parking vehicles along the shoulder, widening the shoulder at these locations is acceptable.

(b) Applies to slope within clear zone only. Other design features, such as guardrail or retaining walls, should be considered in particularly sensitive areas in lieu of reconstructing the inslope in accordance with part 8820.4060. Approach sideslopes must be 1:4 or flatter within the clear zone when the ADT exceeds 400.

(c) 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 width is less than the sum of the lane and shoulder widths.

Mailbox supports must be in accordance with chapter 8818.

(d) This standard may be applied only when the project is located in a subdivided area.

(e) Inventory rating of HS 15 is required. A bridge narrower than these widths may remain in place if the bridge does not qualify for federal-aid bridge funds.

HS 20 loading with AASHTO Standard Specifications or HL-93 loading with load and resistance factor design (LRFD) is required for new bridges. HS 18 loading is required for all rehabilitated bridges. The curb-to-curb minimum width for new or reconstructed bridges is the sum of the lane and shoulder widths, but may not be less than 30 feet.

Ditch depths and widths must be kept to the minimum required to function hydraulically, to be traversable if within the clear zone, and to provide for adequate snow storage when a standard ditch would negatively impact the surroundings.

The designer shall specify in the plan and special provisions that the clearing width is to be kept to the absolute minimum. In sensitive areas, the normal clearance allowed to a contractor for working room is zero unless required for special conditions.

For designated national forest highways within national forests, and state park access roads within state parks, this subpart may be applied only where the projected ADT is less than 300, unless the route has been designated as a natural preservation route.

For roundabout design, the design criteria of the current edition of the Minnesota State Aid Roundabout Guide are recommended.

Subp. 3. **Type III route.** New or reconstruction projects for type III natural preservation routes, designated national forest highways within national forests, and state park access roads within state parks must meet or exceed the minimum dimensions indicated in the following design chart.

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Surface Type	Design Speed (mph)	Lane Width (feet)	Shoulder Width (feet)	Inslope (rise: run)	Clear Zone (feet)	Design Strength (tons)	Bridge to Remain (feet)
			(a)	(b)	(c)		(d)
Aggregate	30	12	3	1:4	10		24
Paved (e)	30	12	4	1:4	10	9	24
Paved	40	12	4	1:4	15	9	24

(a) The designer will provide a six-foot paved shoulder if the route is a popular bicycle route. If the route has scenic vistas which will require parking vehicles along the shoulder, widening the shoulder at these locations is acceptable.

(b) Applies to slope within the clear zone only. Other design features, such as guardrail or retaining walls, should be considered in particularly sensitive areas in lieu of reconstructing the inslope in accordance with part 8820.4060. Approach sideslopes must be 1:4 or flatter within the clear zone when the ADT exceeds 400.

(c) 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 width is less than the sum of the lane and shoulder widths.

Mailbox supports must be in accordance with chapter 8818.

(d) Inventory rating of HS 15 is required. A bridge narrower than these widths may remain in place if the bridge does not qualify for federal-aid bridge funds.

(e) This standard may be applied only when the project is located in a subdivided area or an area in a detailed development process, and physical restraints are present that prevent reasonable application of another level of these standards.

HS 25 loading with AASHTO Standard Specifications or HL-93 loading with load and resistance factor design (LRFD) is required for new bridges. HS 18 loading is required for all rehabilitated bridges. The curb-to-curb minimum width for new or reconstructed bridges is the sum of the lane and shoulder widths, but may not be less than 32 feet.

Ditch depths and widths must be kept to the minimum required to function hydraulically, to be traversable if within the clear zone, and to provide for adequate snow storage when a standard ditch would negatively affect the surroundings.

The designer shall specify in the plan and special provisions that the clearing width is to be kept to the absolute minimum. In sensitive areas, the normal clearance allowed to a contractor for working room is zero unless required for special conditions.

For roundabout design, the design criteria of the current edition of the Minnesota State Aid Roundabout Guide are recommended.

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

History: *36 SR 925*

8820.9995 MINIMUM BICYCLE PATH STANDARDS.Minimum Bicycle Path Standards^(a)

For Off-Road Bike Path Design, the following shall apply:	
Minimum Surface Width (two-way)	8 ft (b)
Shoulder/Clear Zone	2 ft (c) (d)
Inslope	Maximum 1:2 (rise:run)
Design Speed	20 mph (e)
Vertical Clearance over lane and shoulder	9 ft-9 in (7 ft-9 in if passage of emergency or maintenance vehicles is not required)

(a) For on-road bicycle facilities, the current Minnesota Department of Transportation bicycle design guidelines are recommended for design purposes.

(b) Ten feet is desired for a combined bicycle/pedestrian path. Five feet is required for a one-way bicycle path.

(c) Whenever practicable, the shoulder/clear zone of an off-road bike path should be carried across bridges and through underpasses. Minimum structure clear width must be 12 feet. When the full width of the approach bike 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 bike path may be narrowed at a 1:50 taper while maintaining minimum surface width and shoulder/clear zone through the structure.

(d) Clear zone is measured from the edge of the bicycle travel lane.

(e) Use a 30 mph design speed for grades longer than 500 feet and greater than four percent, from the uphill point where the grade equals four percent to 500 feet beyond the downhill point where the grade becomes less than four percent. The maximum allowable grade is 8.3 percent.

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

History: *36 SR 925*