

**NEBRASKA ADMINISTRATIVE CODE**

**Title 428 - BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS**

**Chapter 2 - Procedures for Standards**

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Title 428 - BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS

Chapter 2 - Procedures for Standards

001 MINIMUM DESIGN STANDARDS.

Copies of the most current editions of the following documents referred to in the Standards are on file in the NDOR Central Administration Complex, 1500 Highway ~~N-2~~, Lincoln, Nebraska:

AASHTO "A Policy on Geometric Design of Highways and Streets"

~~AASHTO "A Policy on Design Standards—Interstate System"~~

NDOR "Nebraska National Highway Functional Classification Map"

NDOR "Nebraska State Highway Functional Classification Map"

NDOR "State Functional Classification Maps" (Counties and Municipalities)

NDOR "Nebraska Interstate and Priority Commercial Systems Map"

NDOR "28 ft Top System Map"

The following abbreviations and symbols are used in the Standards:

<del>'</del>	<u>foot/feet</u>
AASHTO	American Association of State Highway and Transportation Officials
ADT	Average Daily Traffic
Board	Board of Public Roads Classifications and Standards
<del>℄</del>	centerline
<del>Deg</del>	<u>degree</u>
<del>DHV</del>	<u>Design Hourly Volume</u>
Div <sub>2</sub>	divided
FHWA	Federal Highway Administration
ft	foot/feet
HL93	<u>AASHTO Load and Resistance Factor Design (LRFD) Bridge Design Specification</u>
HS15	AASHTO loading requirements for a standard HS15 truck
HS20	AASHTO loading requirements for a standard HS20 truck
<del>km</del>	<u>kilometer</u>
<del>km/h</del>	<u>kilometers per hour</u>
Lt	left
<del>m</del>	<u>meter</u>
<del>Max.</del>	<u>maximum</u>
<del>Min.</del>	<u>minimum</u>
mph	miles per hour
<del>MS13.5</del>	<u>Metric equivalent of HS15 loading</u>
<del>MS18</del>	<u>Metric equivalent of HS20 loading</u>
N/A	not applicable
NDOR	Nebraska Department of Roads
<del>NHS</del>	<u>National Highway System</u>
<del>ROW</del>	<u>Right of Way</u>
Rt	right
%	percent



**MINIMUM DESIGN STANDARDS - PART ONE  
STATE HIGHWAY SYSTEM**

**001.01 MINIMUM DESIGN STANDARDS — NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS**

Any relaxation of these standards must have written approval by the Board.

For metric units, use a soft conversion of the English unit.

(1) Design Year Traffic	Design Number	(2) State Functional Classification	(3) National Functional Classification	Terrain	Maximum Grade Percent	(4) Design Speed km/h (mph)	(5) Horizontal Curve		Number of Lanes	Lane Width m (ft)	Median Width m (ft)	Shoulder Width m (ft)	Width of Shoulder Surfacing m (ft)	(6) Lateral Obstacle Clearance and Hinge Point Distance m (ft)
							Min. Radius m	(Max. Deg.)						
N/A	DR1	Interstate	Interstate	All	3% 4%	110 (68.35) 70 mph	500 1810'	(3.40)	4 Div.	3.6 (11.81) 12'	11 (36.00) 36'	1.8 (5.91) 6' Lt. 3.6 (11.81) 12' Rt.	1.2 (3.94) 4' Lt. 3 (9.84) 10' Rt.	10.5 (34.45) 35'
750-DHV & Over 9,000 ADT & Over	DR2	Expressway or Major Arterial	Arterial or Freeway	Level Rolling	3% A 4% A	110 (68.35) 100 (62.14) 65 mph	500 305 1480'	(3.40) (4.42)	4 Div.	3.6 (11.81) 12'	11 (36.00) 36' D	1.5 (4.92) 5' Lt. 3 (9.84) 10' Rt.	0.9 (2.95) 3' Lt. 2.4 (7.87) 8' Rt.	9 (29.53) 30'
330-740 DHV 4,000 - 8,999 ADT	DR3	Major Arterial	Arterial Arterial Collector Collector	Level Rolling Level Rolling	3% A 4% A 5% A B 6.5 A 6% B	110 (68.35) 100 (62.14) 100 (62.14) 90 (55.92) 60 mph	500 305 305 305 1200'	(3.40) (4.42) (4.42) (5.73)	2 B C	3.6 (11.81) 12'	None	3 (9.84) 10'	2.4 (7.87) 8'	9 (29.53) 30'
1700-2000 ADT 2,000 - 3,999 ADT	DR4	Major Arterial	Arterial Arterial Collector Collector	Level Rolling Level Rolling	3% A 4% A 5% A B 6.5 A 6% B	110 (68.35) 100 (62.14) 100 (62.14) 90 (55.92) 60 mph	500 305 305 305 1200'	(3.40) (4.42) (4.42) (5.73)	2	3.6 (11.81) 12'	None	2.4 (7.87) 8'	None E 2' F	9 (29.53) 30'
400-1699 ADT 400 - 1,999 ADT	DR5	Major Arterial	Arterial Arterial Collector Collector	Level Rolling Level Rolling	3% A 4% A 5% A B 6.5 A 6% B	110 (68.35) 100 (62.14) 100 (62.14) 90 (55.92) 60 mph	500 305 305 305 1200'	(3.40) (4.42) (4.42) (5.73)	2	3.6 (11.81) 12'	None	1.8 (5.91) 6' E	None E F, G	7 (22.97) 23'
Under 400 ADT	DR6	Major Arterial	Arterial Arterial Collector Collector	Level Rolling Level Rolling	3% B 4% B 5.5 A 5% B 6.5 A 6% B	110 (68.35) 100 (62.14) 90 (55.92) 90 (55.92) 60 mph	500 305 305 305 1200'	(3.40) (4.42) (5.73) (5.73)	2	3.6 (11.81) 12'	None	1.2 (3.94) 4'	None E G	7 (22.97) 16'

Note: Projects with full federal oversight require FHWA exception for values not meeting these standards.

Municipal State Highways standards 001.12 may be used in areas inside the municipal zoning boundaries, outside the corporate limits, or in rural areas that demonstrate urban traffic characteristics.

- (1) "Design Year" shall be year of initial construction plus 20 years.
  - (2) Refer to NDOR "Nebraska State Highway Functional Classification Map."
  - (3) Refer to NDOR "Nebraska National Highway Functional Classification Map."
  - (4) The design speed should be equal to or greater than the anticipated posted speed limit.
  - (5) Based on the 2004 edition of AASHTO "A Policy on Geometric Design of Highways and Streets"  $e_{max} = 8\%$ .
  - (6) This area, measured from the edge of the through driving lane, shall have 6:1 side slopes 4:6 or flatter which may have crashworthy or break-away obstacles and shall be free of non-shielded obstacles except: (a) Traffic signals, signal poles, railroad signals, railroad tracks, bridge rails, and non-recoverable slopes behind guardrail; (b) Other obstacles including, but not limited to, ditches, recoverable slopes, driveways, intersections, bike/pedestrian paths, earth dikes, sloping curbs, raised islands, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, safety treated culverts with flared end sections, erosion control devices, roadway lighting, mailboxes, and traffic control devices; if the NDOR, in its sole discretion, has determined that such obstacles are acceptable and are necessary for the operation and use of the highway system; (c) (b) Other obstacles if the NDOR, in its sole discretion, determines based upon an accident review and a cost-benefit Roadside Safety Analysis Program (RSAP) review or a comparable AASHTO approved economic analysis, that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment — on the National Highway System (NHS), FHWA concurrence is required.
- A Maximum grade may be one percent steeper for tangent lengths less than 500 ft.
- B Maximum grade shown may be one two percent steeper for short tangent lengths less than 500 ft, 150 m (492.13 ft).
- B C 4 lanes divided allowed by special study - use DR 2 standards.
- D Median widths of 16 ft are 5.4 m (17.72 ft) median width allowed at intersections and unique locations with the approval of the Director State Engineer or his/her designee based on NDOR Traffic Division recommendation.
- E 8 ft 2.4 m (7.87 ft) if on Priority Commercial System, refer to NDOR "Nebraska Interstate and Priority Commercial Systems Map."
- F 6 ft 1.8 m (5.91 ft) if on Priority Commercial System, refer to NDOR "Nebraska Interstate and Priority Commercial Systems Map."
- G 9 m (29.53 ft) when posted speed is 100 km/h (60 mph) or lower. 2 ft 0.6 m (1.97 ft) if on 28' Top System, refer to NDOR "28 ft Top System Map."

Chapter 2 — Procedures for Standards (Continued)

001.02 MINIMUM DESIGN STANDARDS — ~~NEW AND RECONSTRUCTED~~ BRIDGES ON **NEW AND RECONSTRUCTED** RURAL STATE HIGHWAYS

Any relaxation of these standards must have written approval by the Board.

For metric units, use a soft conversion of the English unit.

(1) Design Year Traffic	(2) State Functional Classification	(3) National Functional Classification	Design Number	NEW BRIDGES			RECONSTRUCTED BRIDGES			<sup>(3) (4)</sup> RECONSTRUCTED BRIDGES OR BRIDGES TO REMAIN IN PLACE		
				Roadway m	Width (ft)	Design Loading	Vertical Clearance m (ft)	Roadway Width	Design Loading	Vertical Clearance	Roadway Width	Vertical Clearance m (ft)
Interstate	Interstate	Interstate	DR1	<del>12.6 (41.34)</del> <b>42'</b> A	MS18 (HS20) <b>HL-93 D</b>	5 (16.40) <b>16'</b>	<b>42'</b>	HL-93	<b>16'</b>	<b>38'</b>	<del>4.9 (16.09)</del> <b>16'</b>	
750-DHV 9,000 ADT & Over	Expressway or Major Arterial	Arterial or Freeway	DR2	<del>11.7 (38.30)</del> <b>39'</b> A	MS18 (HS20) <b>HL-93</b>	5 (16.40) <b>16'</b>	<b>39'</b>	HL-93	<b>16' C</b>	<b>35'</b>	<del>4.4 (14.44)</del> <b>16' C</b>	
<del>330-740 DHV 4,000 - 8,999 ADT</del>	Major Arterial	Arterial Collector	DR3	<del>13.2 (43.31)</del> <b>44'</b> B A	MS18 (HS20) <b>HL-93</b>	5 (16.40) <b>16'</b>	<b>44' A</b>	HL-93	<b>14.5'</b>	<b>36'</b>	<del>4.4 (14.44)</del> <b>14.5'</b>	
<del>1700-2999 2,000 - 3,999</del> ADT	Major Arterial	Arterial Collector	DR4	<del>12 (39.37)</del> <b>40'</b> G A	MS18 (HS20) <b>HL-93</b>	5 (16.40) <b>16'</b>	<b>40' A</b>	HL-93	<b>14.5'</b>	<b>32'</b>	<del>4.4 (14.44)</del> <b>14.5'</b>	
400 - <del>1699 1,999</del> ADT	Major Arterial	Arterial Collector	DR5	<del>10.8 (35.43)</del> <b>36'</b> G B	MS18 (HS20) <b>HL-93</b>	5 (16.40) <b>16'</b>	<b>36' B</b>	HL-93	<b>14.5'</b>	<b>28'</b>	<del>4.4 (14.44)</del> <b>14.5'</b>	
Under 400 ADT	Major Arterial	Arterial Collector	DR6	<del>9.6 (31.50)</del> <b>32'</b> G	MS18 (HS20) <b>HL-93</b>	5 (16.40) <b>16'</b>	<b>32'</b>	HL-93	<b>14.5'</b>	<b>28'</b>	<del>4.4 (14.44)</del> <b>14.5'</b>	

Note: Projects with full federal oversight require FHWA exception for New and Reconstructed bridges less than the required roadway width or bridges to remain in place when the 2004 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" guidelines for width are not met.

Reconstructed bridges shall mean existing structures to be widened or remodeled.

- (1) "Design Year" traffic shall be year of initial construction plus: (a) 20 years for new and reconstructed bridges, or (b) the expected life of the surfacing up to 20 years for bridges to remain in place.
- (2) Refer to NDOR "Nebraska State Highway Functional Classification Map."
- (3) Refer to NDOR "Nebraska National Highway Functional Classification Map."
- ~~(3) (4) Reconstructed bridges shall mean existing structures to be widened or remodeled. Structural Capacity - A bridge can remain in place if the operating rating capacity can safely service the system for an additional 20 years of service life (i.e. Bridge does not require load posting).~~
- ~~(2) Bridges may be allowed to remain in place if they do not vary from the required roadway width by more than 1.2 m (3.94 ft). Bridges may be allowed to remain in place if the variance from the required roadway width is more than 1.2 m (3.94 ft) with the approval of the Director State Engineer and if AASHTO Guidelines for width are met. Projects with full oversight require FHWA exception for New and Reconstructed bridges less than the required roadway width or bridges to remain in place when AASHTO guidelines for width are not met.~~
  - A ~~Divided roadways. 36 ft allowed for bridges over 200 ft in length.~~
  - B ~~If divided roadways, use DR2.~~
  - G ~~B 13.2 m (43.31 ft) 40 ft if on Priority Commercial System. Refer to NDOR "Nebraska Interstate and Priority Commercial Systems Map."~~
  - D ~~C MS18 (HS20) or Alternate Military Loading. 14.5 ft for non-freeway.~~

001.03 MINIMUM DESIGN STANDARDS — RESURFACING, RESTORATION AND REHABILITATION (3R) PROJECTS ON NON-INTERSTATE RURAL STATE HIGHWAYS

Any relaxation of these standards must have written approval by the Board.

For metric units, use a soft conversion of the English unit.

(1) Design Year Traffic	(2) Horizontal Curve	Grade Percent	Number of Lanes	Lane Width m (ft)	Shoulder Width m (ft)	Width of Shoulder Surfacing m (ft)	(3) Fixed Obstacle Clearance m (ft)	Stopping Sight Distance	(4) Fill Slopes	Bridges to Remain in Place Roadway Width
<u>10,000 ADT &amp; Over</u>	<u>Existing</u>	<u>Existing</u>	<u>4</u>	<u>12'</u>	<u>5' Lt. 10' Rt.</u>	<u>3' Lt. 8' Rt.</u>	<u>30'</u>	<u>B</u>	<u>Existing</u>	<u>32'</u>
<del>3000 ADT &amp; Over</del> <u>4,000 - 9,999 ADT</u>	Existing	Existing	2	<del>3.6 (11.81)</del> <u>12'</u>	<del>2.4 (7.87)</del> <u>8' A</u>	<del>1.8 (5.91)</del> <u>6' A</u>	<del>7.5 (24.61)</del> <u>25'</u>	B	Existing	<del>E 32'</del>
<del>1700 - 2999 ADT</del> <u>2,000 - 3,999 ADT</u>	Existing	Existing	2	<del>3.6 (11.81)</del> <u>12'</u>	<del>1.8 (5.91)</del> <u>6' A</u>	Existing <u>A</u>	<del>6 (19.69)</del> <u>20'</u>	C	Existing	<del>E 28'</del>
<del>400 - 1699 ADT</del> <u>750 - 1,999 ADT</u>	Existing	Existing	2	<del>3.6 (11.81)</del> <u>12'</u>	<del>0.9 (2.95)</del> <u>3' A</u>	Existing <u>A</u>	<del>3.5 (11.48)</del> <u>12'</u>	D	Existing	<del>E 28'</del>
Under <del>400</del> <u>750</u> ADT	Existing	Existing	2	<del>3.3 (10.83)</del> <u>11'</u>	<del>0.6 (1.97)</del> <u>2'</u>	Existing	<del>3.5 (11.48)</del> <u>12'</u>	D	Existing	<del>E 26'</del>

Note: Projects with full federal oversight require FHWA exception for values not meeting these standards.

Interstate — The standards used for horizontal alignment, vertical alignment, and widths of median, traveled way, and shoulders for projects may be the AASHTO interstate standards that were in effect at the time of original construction.

For New and Reconstructed Bridges, refer to the Board's Section "001.02 Minimum Design Standards — Bridges on New and Reconstructed Rural State Highways."

- (1) "Design Year" traffic shall be year of initial construction plus ~~20 years~~ the expected life of the surfacing up to 20 years.
- (2) Horizontal curves not providing posted speed may have advisory curve and speed reduction signs.
- (3) This area, measured from the edge of the through driving lane, may have crashworthy or break-away obstacles and shall be free of non-shielded obstacles except:
  - (a) Traffic ~~signals~~ signal poles, railroad signals, railroad tracks, bridge rails, ditches, side slopes, driveways, intersections, bike/pedestrian paths, earth dikes, ~~and~~ parallel drainage culverts; (b) ~~Other obstacles including, but not limited to sloping curbs, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, safety treated culverts with flared end sections, erosion control devices, roadway lighting, mailboxes, and traffic control devices; if the NDOR, in its sole discretion, has determined that such obstacles are acceptable and are necessary for the operation and use of the highway system;~~ (b) Other obstacles if the NDOR, in its sole discretion, determines based upon an accident review and a cost-benefit Roadside Safety Analysis Program (RSAP) review or a comparable AASHTO approved economic analysis, that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment — on the National Highway System (NHS), FHWA concurrence is required.
- (4) Fill slopes shall be ~~guard-railed~~ shielded if warranted by a cost-effective analysis.
  - A If a 4-lane divided facility exists, the minimum inside shoulder width is ~~3 ft 0.9 m (2.95 ft)~~ with ~~2 ft 0.6 m (1.97 ft)~~ surfaced.
  - B An average of one vertical curve per ~~mile 1.5 km (0.93 mile)~~ will be allowed below ~~55 mph 90 km/h (55.92 mph)~~ minimum AASHTO stopping sight distance, however, no sag vertical less than ~~40 mph 60 km/h (37.28 mph)~~ and ~~or~~ crest vertical below ~~45 mph 70 km/h (43.50 mph)~~ will be allowed.
  - C An average of two vertical curves per ~~mile 1.5 km (0.93 mile)~~ will be allowed below ~~55 mph 90 km/h (55.92 mph)~~ minimum AASHTO stopping sight distance, however, no sag vertical less than ~~35 mph 50 km/h (31.07 mph)~~ and ~~or~~ crest vertical below ~~40 mph 60 km/h (37.28 mph)~~ will be allowed.
  - D ~~60 km/h (37.28 mph)~~ 40 mph minimum AASHTO stopping sight distance for crest vertical curves and existing conditions for sag vertical curves.
  - E ~~Bridges to remain in place shall be in accordance with the Board of Public Roads Classifications and Standards "Section 001.02 Minimum Design Standards — New and Reconstructed Bridges on Rural State Highways."~~

Section 001.04 Standards may be used only for approved **are for use on Major Arterials also** functionally classified Scenic-Recreation Roads.

Title 428 — BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS

Chapter 2 — Procedures for Standards (Continued)

001.04 MINIMUM DESIGN STANDARDS — SCENIC RECREATION - RURAL STATE HIGHWAYS

Any relaxation of these standards must have written approval by the Board.

For metric units, use a soft conversion of the English unit.

(1) Design Year Major Arterial	Design Speed km/h (mph)	(2) Horizontal Curve Radius		(3) Maximum Grade Percent	Number of Lanes	Lane Width m (ft)	Median Width m (ft)	Shoulder Width m (ft)	Width of Shoulder Surfacing m (ft)	(2) (4) Lateral Obstacle Clearance		(2) Normal Design ROW Width m (ft)	Access Control
		Desirable e-max = 0.06 m (deg)	Minimum e-max = 0.08 m (deg)							Desirable m (ft)	Minimum m (ft)		
Over 750-DHV	110 (68.35)	560 (2.12)	500 (3.40)	4 ***	(Special Study) 2-Minimum	3.6 (11.81)	11 (36.00) Ultimate if required	1.8 (5.91) Lt. 3 (9.84) Rt. 3 (9.84) on 2-Lane	1.2 (3.94) Lt. 2.4 (7.87) Rt. 2.4 (7.87) on 2-Lane	0 (20.53)	3.6 (11.81)	60 (196.85) (1-Lane) 36 (118.11) (2-Lane)	In accordance with NDOR Controlled Access Policy to the State Highway System
400-750-DHV	110 (68.35)	560 (2.12)	500 (3.40)	4 ***	2	3.6 (11.81)	None	3 (9.84)	None	0 (20.53)	3.6 (11.81)	36 (118.11)	"
2,000 ADT & Over 200-400-DHV	50 mph 100 *(62.14)	435 (4.04)	305 (4.02) 75'	4% ***	2	3.6 (11.81) 12'	None	2.4 (7.87) 8'	None	7 (22.97)	3 (9.84) 10'	36 (118.11)	"
400-1,999 ADT 850-1700 ADT	50 mph 90 *(55.92)	335 (5.24)	305 (5.73) 75'	4.5% ***	2	3.6 (11.81) 12'	None	1.8 (5.91) 6'	None	7 (22.97)	2.4 (7.87) 8'	30 (98.42)	"
Under 400 ADT Under 850 ADT	40 mph A 80 (49.74)	250 (6.90)	230 (7.50) 44' A	7% ***	2	3.3*** (10.83) 11'	None	1.2 (3.94) 4'	None	7 (22.97)	1.8 (5.91) 6'	24 (78.74)	"

Note: Projects with full federal oversight require FHWA exception for values not meeting these standards.

The 2004 2004 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" should be used for other design criteria.

A minimum 1.5 m (4.92 feet) flat bottom ditch may be used when environmental considerations warrant. Backslopes may be varied to fit conditions.

Minimum design policy for all classifications shall include seeding or reestablishment of vegetation of all disturbed areas.

Speed limits established for these routes shall be those as determined through an engineering analysis of the area by the Department of Roads.

Effort shall be made to preserve the natural environment to the extent possible without compromising the safety of those using the facility, at the speed limits that apply.

(1) "Design Year" traffic shall be year of initial construction plus: (a) 20 years for new and reconstructed, or (b) the expected life of the surfacing up to 20 years.

(2) Based on the 2004 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" e max = 8%.

\*\*\* (3) The maximum grades for rolling terrain may be one two percent steeper in short for tangent sections lengths less than 500 ft 150 m (492.13 ft) in length, or and one-way downgrades. For extreme cases, at some underpass and bridge approaches, steeper grades for relatively short lengths may be considered used. (For roadways with design numbers DR5 and DR6, highway grades may be 2 percent steeper.)

(2) (4) Measured clearances are from the edge of pavement. The desirable dimensions may be reduced to the minimum lateral clearances whenever it is not feasible to meet the specified desirable lateral clearances. Traffic may be protected from obstacles with guardrail when desirable, but guardrail may be deleted if considered more hazardous than the obstacle. Signs, light standards and similar objects may be provided with breakaway bases and may then be placed inside of the minimum lateral clearance. This area, measured from the edge of the through driving lane, shall have 6:1 side slopes or flatter which may have crashworthy or break-away obstacles and shall be free of non-shielded obstacles except: (a) Traffic signal poles, railroad signals, railroad tracks, bridge rails, ditches, driveways, intersections, bike/pedestrian paths, earth dikes, curbs, raised islands, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, culverts with flared end sections, erosion control devices, and traffic control devices; (b) Other obstacles if the NDOR, in its sole discretion, determines based upon an accident review and a Roadside Safety Analysis Program (RSAP) review or a comparable AASHTO approved economic analysis, that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment - on the National Highway System (NHS). FHWA concurrence is required.

(3) Right of Way width should not be less than that required for all elements of the cross section and appropriate border areas.

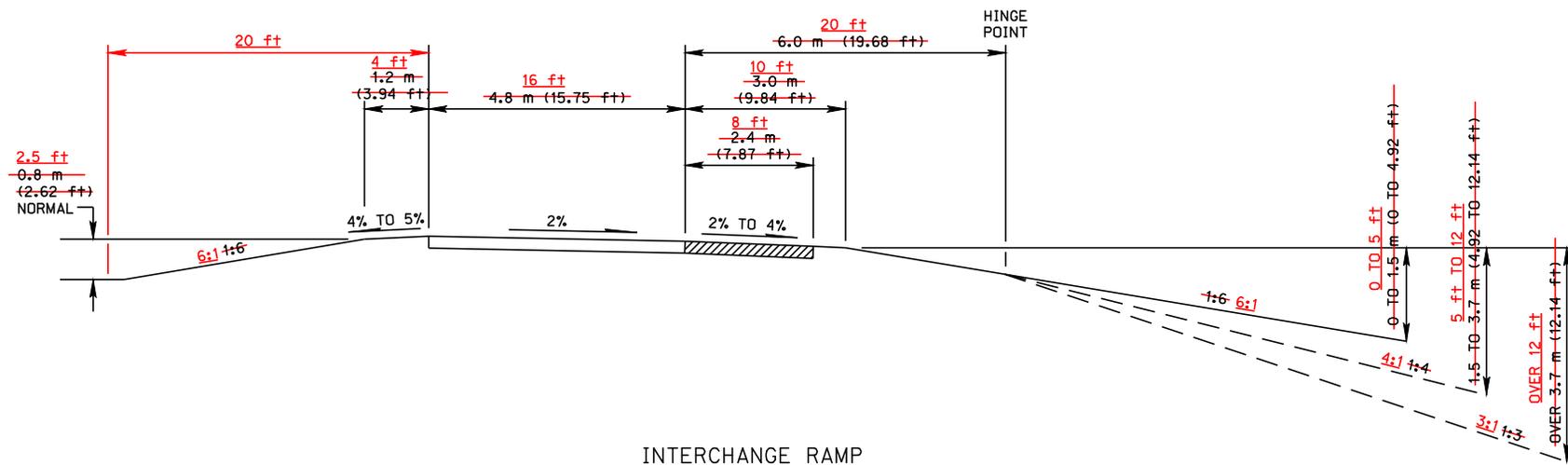
A Minimum design standards within the recreational area shall be consistent with the established speed limits according to the 2004 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" (if it has been reduced from 90 km/h (55.92 mph) and the topography and use of the facility. Design may be to urban or rural standards depending upon the terrain conditions.

\* Design speed 110 km/h (68.35 mph) except in rolling terrain.

\*\*\* 3.6 meter (11.81 foot) lane width desirable.

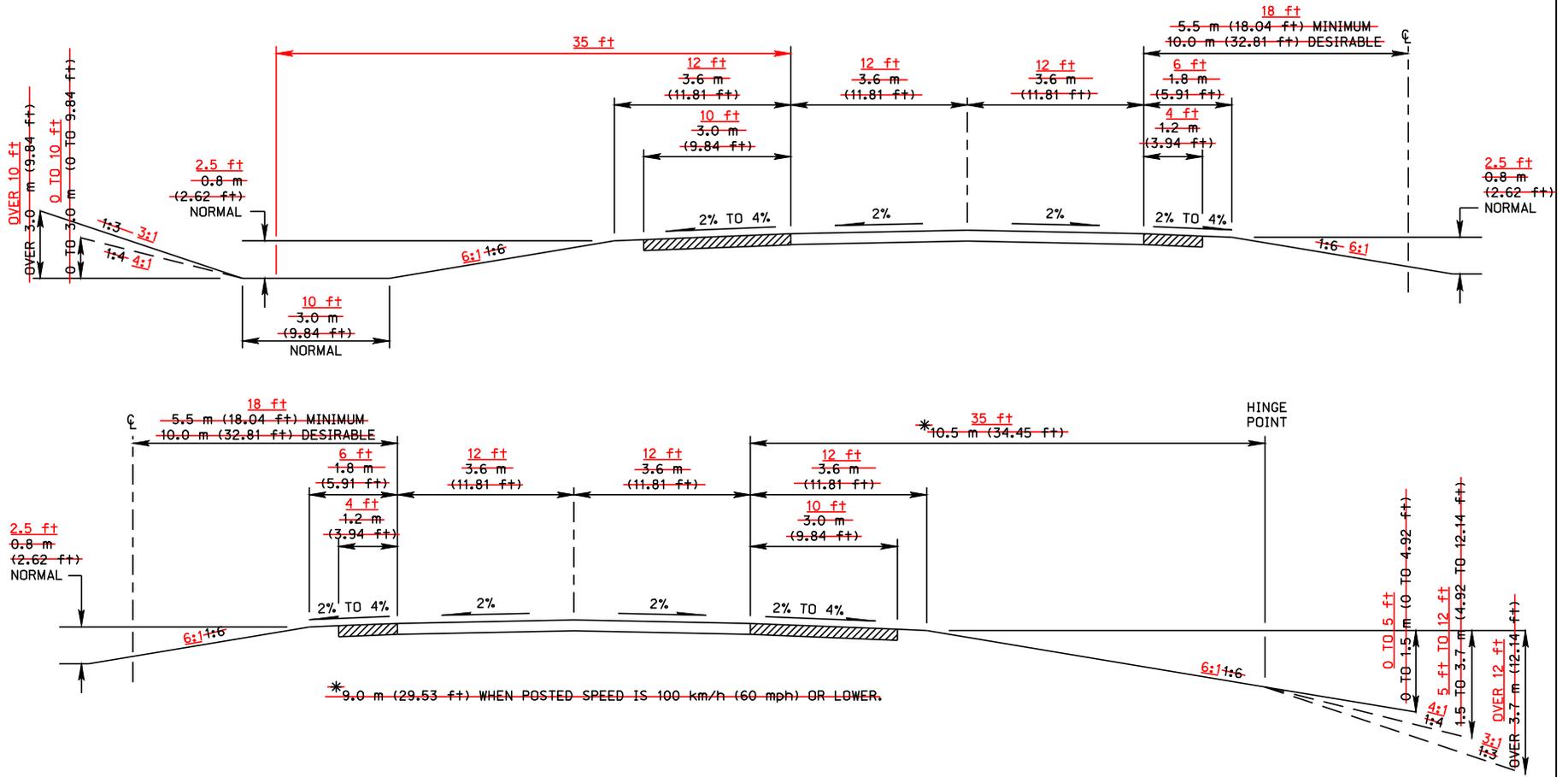
TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS  
 CHAPTER 2 -- Procedures For Standards (Continued)

001.05 - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED ~~RURAL~~ STATE HIGHWAYS : INTERCHANGE RAMP



TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS  
 CHAPTER 2 -- Procedures For Standards (Continued)

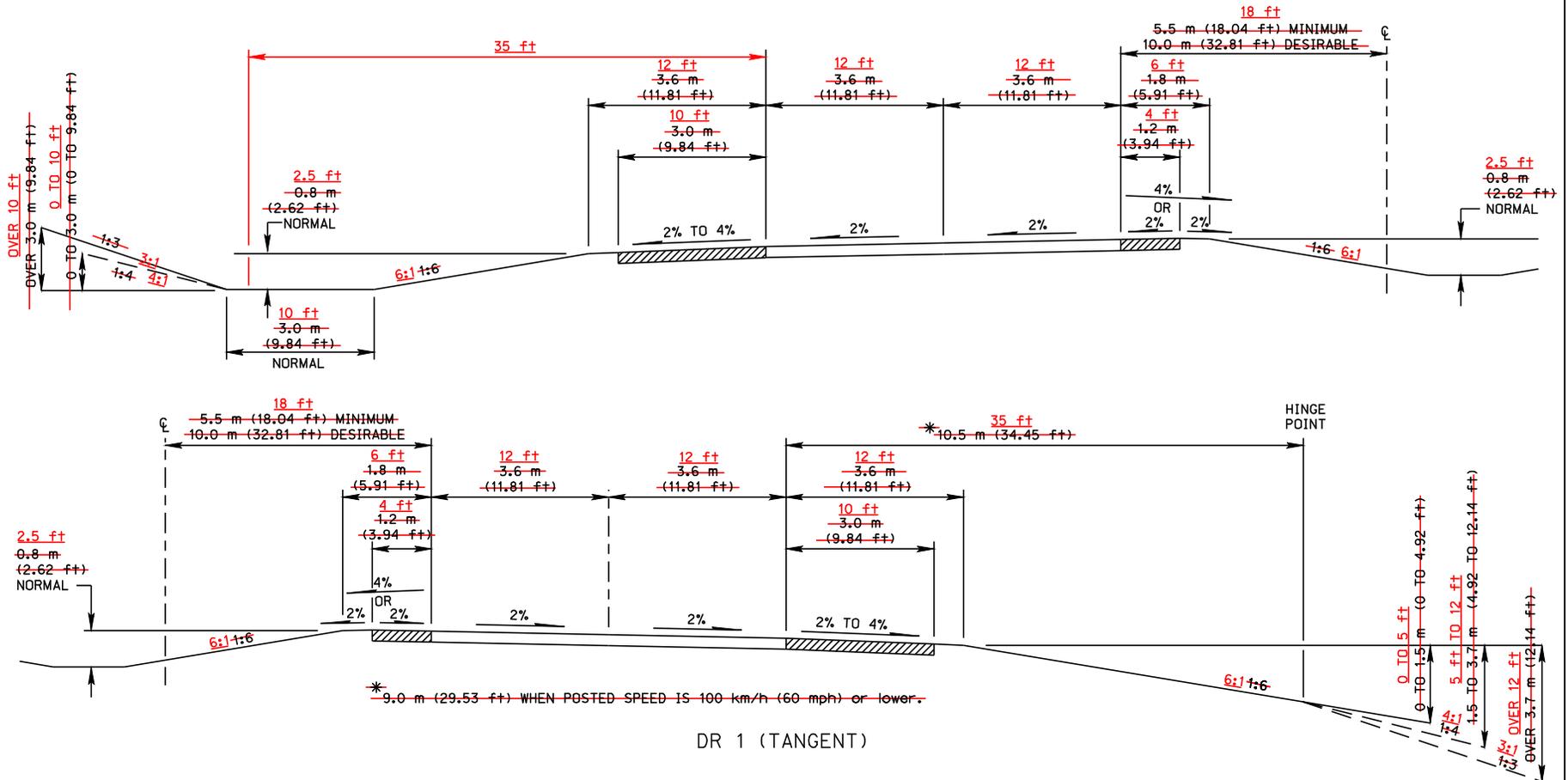
001.06 - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS: DR1 (CROWNED)



DR 1 (CROWNED)

TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS  
 CHAPTER 2 -- Procedures For Standards (Continued)

001.06A - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS: DR1 (TANGENT)

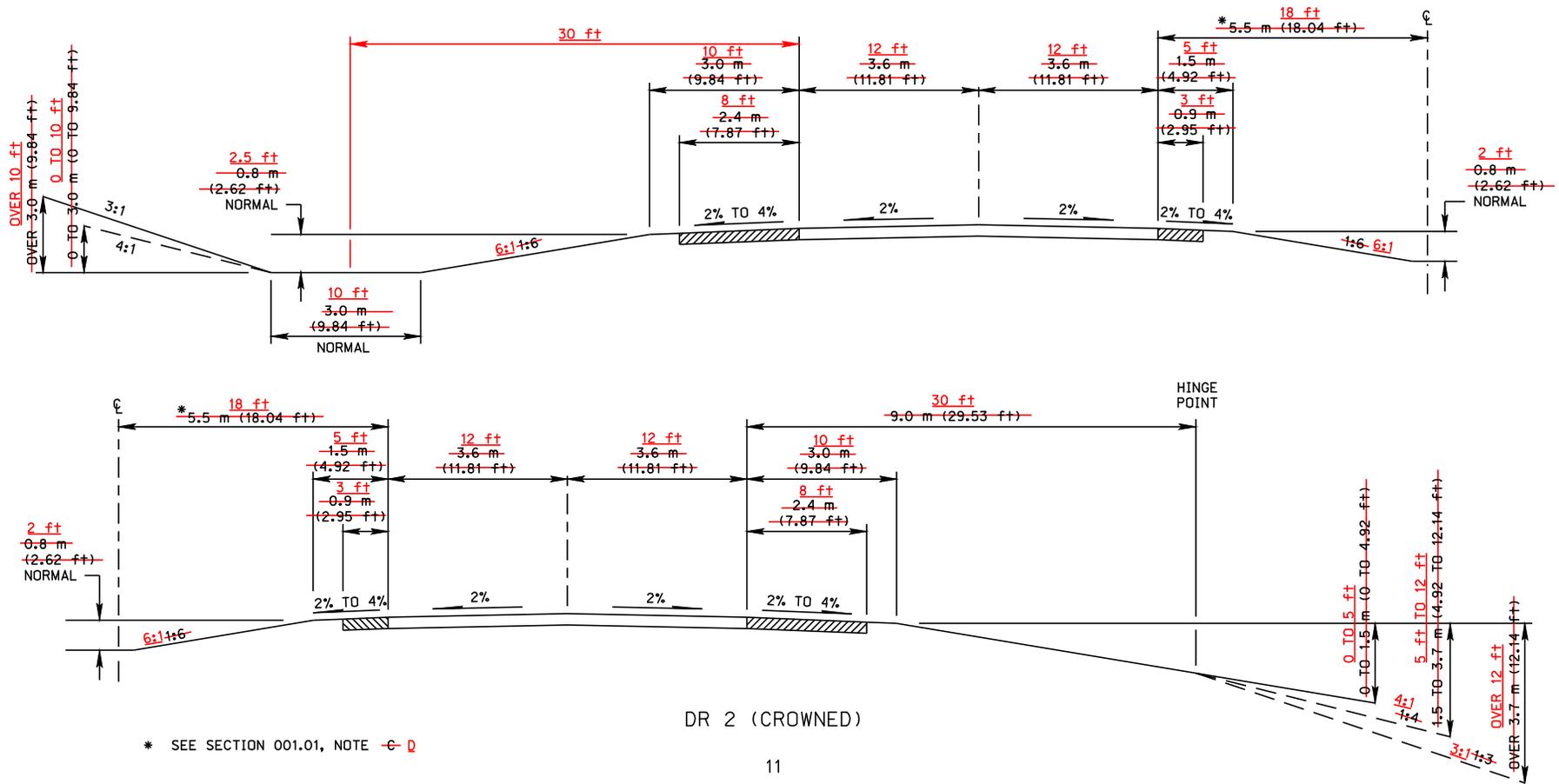


DR 1 (TANGENT)

TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS

CHAPTER 2 -- Procedures For Standards (Continued)

001.07 - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS: DR2 (CROWNED)

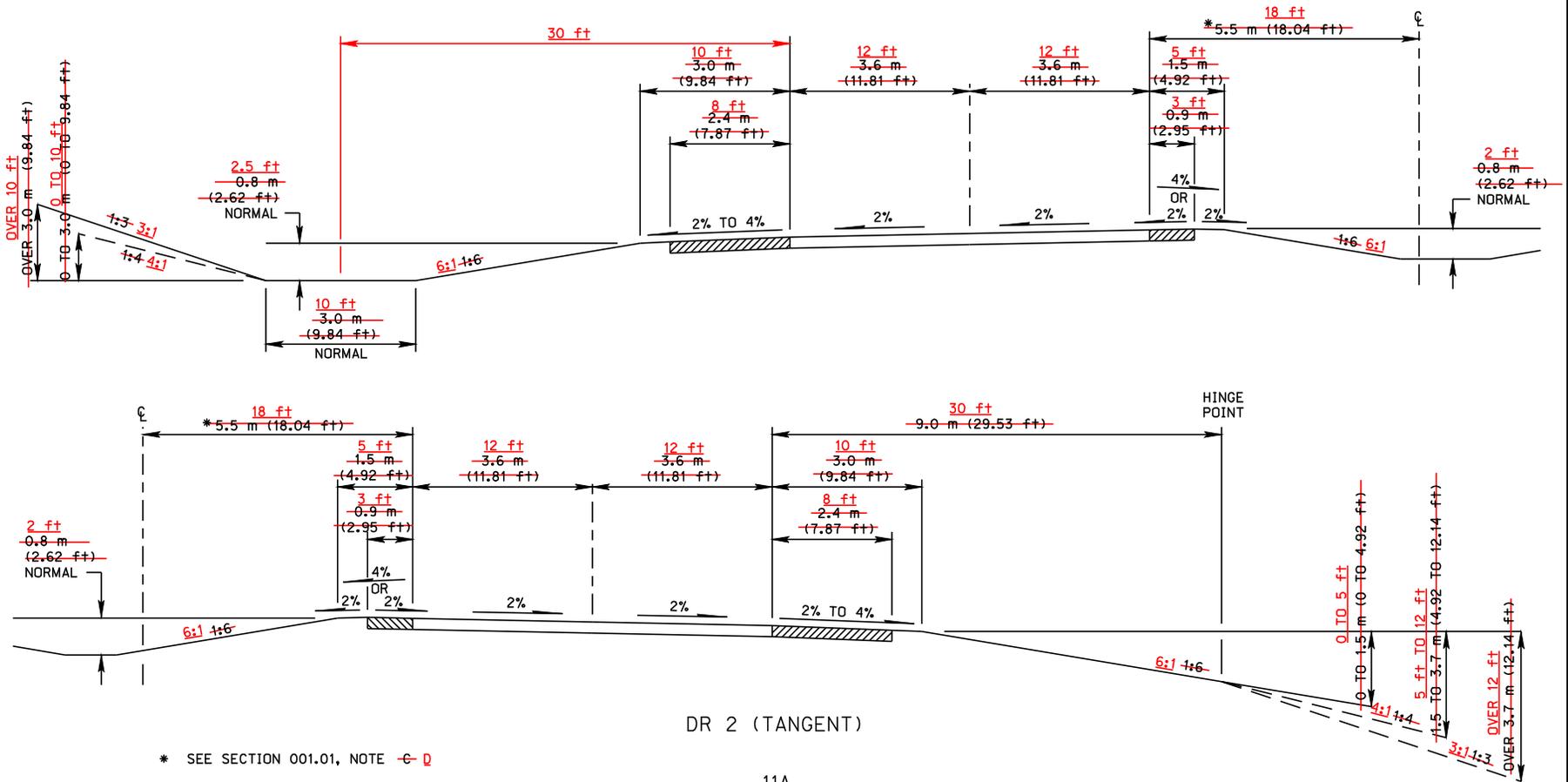


\* SEE SECTION 001.01, NOTE C-D

DR 2 (CROWNED)

TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS  
 CHAPTER 2 -- Procedures For Standards (Continued)

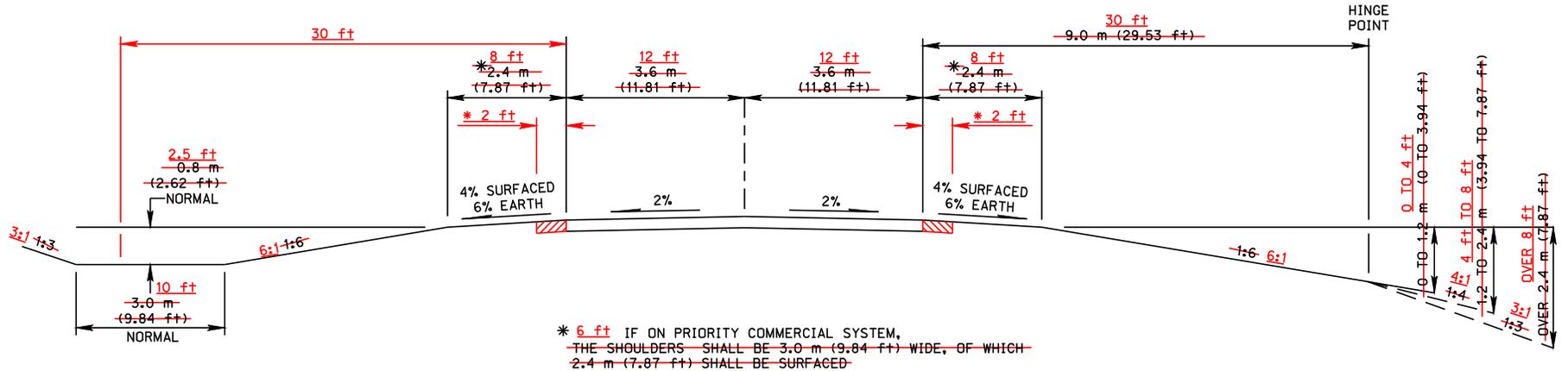
001.07A - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS: DR2 (TANGENT)





TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS  
 CHAPTER 2 -- Procedures For Standards (Continued)

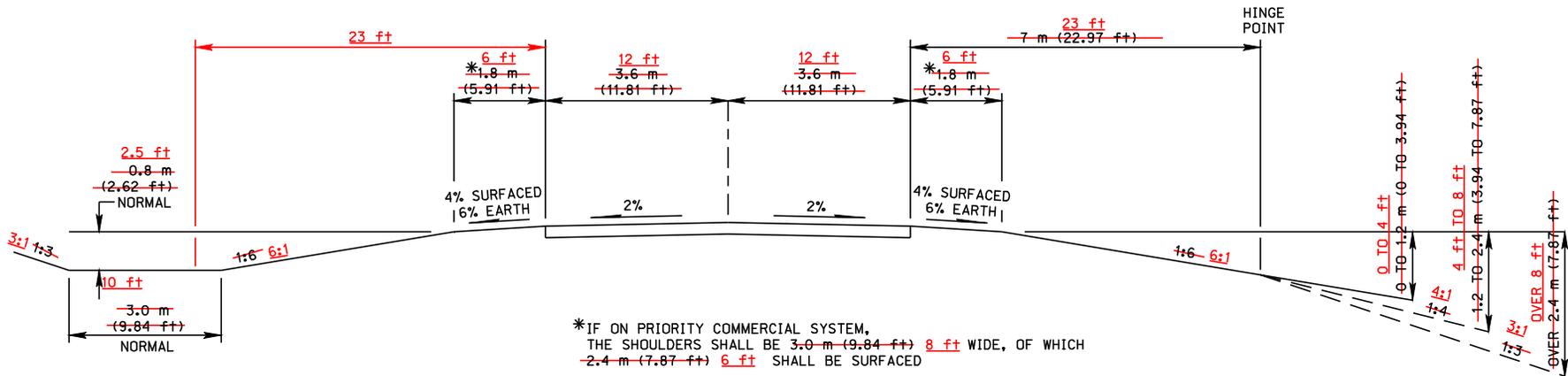
001.09 - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS: DR4



DR 4

TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS  
 CHAPTER 2 -- Procedures For Standards (Continued)

001.10 - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS: DR5



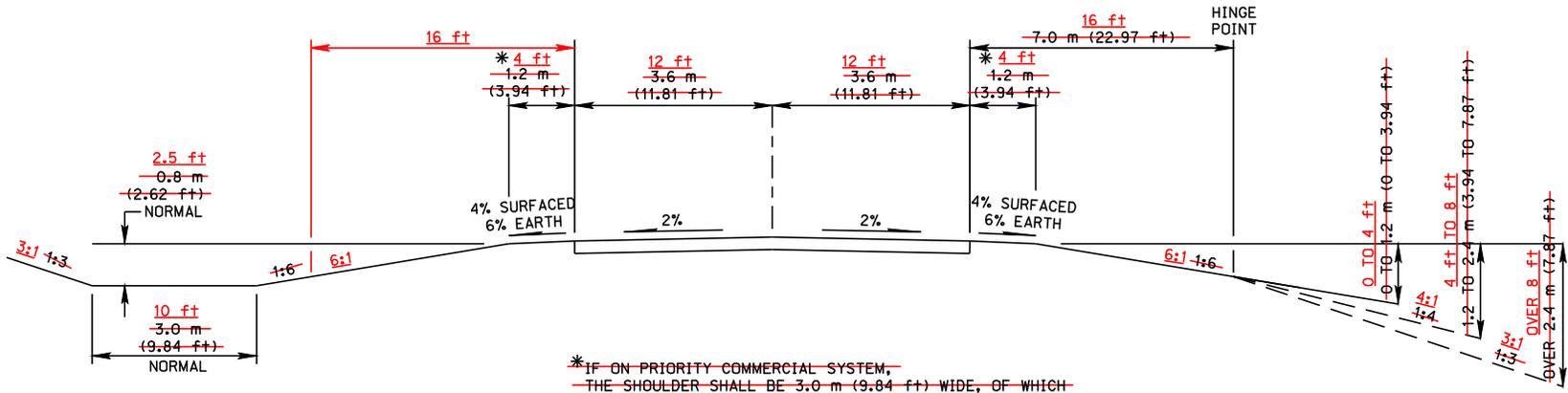
\*IF ON PRIORITY COMMERCIAL SYSTEM,  
 THE SHOULDERS SHALL BE 3.0 m (9.84 ft) 8 ft WIDE, OF WHICH  
 2.4 m (7.87 ft) 6 ft SHALL BE SURFACED

\*2 ft SURFACED SHOULDER IF ON 28 ft TOP SYSTEM

NOTES:  
 EXISTING SURFACING ALLOWED

TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS  
 CHAPTER 2 -- Procedures For Standards (Continued)

001.11 - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS: DR6



~~\*IF ON PRIORITY COMMERCIAL SYSTEM,  
 THE SHOULDER SHALL BE 3.0 m (9.84 ft) WIDE, OF WHICH  
 2.4 m (7.87 ft) SHALL BE SURFACED.~~  
 \*2 ft SURFACED SHOULDER IF ON 28 ft TOP SYSTEM

NOTES:  
 EXISTING SURFACING ALLOWED

DR 6

Title 428 — BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS

Chapter 2 — Procedures for Standards (Continued)

001.12 MINIMUM DESIGN STANDARDS — NEW AND RECONSTRUCTED MUNICIPAL STATE HIGHWAYS

Any relaxation of these standards must have written approval by the Board.

For metric units, use a soft conversion of the English unit.

(2) (1) State Functional Classification	(4) (2) National Functional Classification	(3) Design Speed km/h (mph)	Horizontal Curve		(4) Maximum Grade Percent	(5) (4) Number of Lanes	Median Width	Type of Roadway Section	Lane Width		Shoulder Width	Width of Shoulder Surfacing	(6) (5) Lateral Obstacle Clearance	
			Min. Radius m	(Max. Deg.)					m	(ft)			Posted Speed Below 50 mph (80 km/h) m (ft)	Posted Speed 50 mph (80 km/h) and Above m (ft)
Interstate	Interstate	80 (40.71) 50 mph	250	758' A (6.00)	3-5% C	4	Variable 10'	N/A	3-6 (11.81)	12'	6' Lt. 12' Rt.	4' Lt. 10' Rt.	N/A	30'
Expressway or Major Arterial	Arterial or Freeway	50 mph		758' A	5% C	4	10'	N/A		12'	5' Lt. 10' Rt.	3' Lt. 8' Rt.	N/A	30'
Expressway or Major Arterial	Arterial	60 (37.28) 30 mph	135	250' B (12.04)	5-7% C	2	Variable 0	Curbed Non-Curbed	3-6 (11.81)A 3-6 (11.81)	11' E 11'	B F G G	N/A G G	D H 4.5 (14.76)	D H 15' G G
Major Arterial	Collector	60 (37.28) 30 mph	135	250' B (12.04)	7-11% D	2	0	Curbed Non-Curbed	3-6 (11.81)A 3-6 (11.81)	11' E 11'	B F G G	N/A G G	D H 4.5 (14.76)	D H 15' G G

Note: Projects with full federal oversight require FHWA exception for values not meeting these standards.

(2) (1) Refer to NDOR "Nebraska State Highway Functional Classification Map."

(4) (2) Refer to NDOR "Nebraska National Highway Functional Classification Map."

(3) The design speed should be equal to or greater than the anticipated posted speed limit.

(4) The upper limits of these values should only be used in unusual circumstances. The lower limits of these values should be regarded as desirable.

(5) (4) The actual number of lanes for design shall be based on a capacity analysis using design year traffic and the selected level of service to be obtained. "Design Year" shall be year of initial construction plus 20 years.

(6) (5) This area, measured from the edge of the through driving lane or back of curb, shall have 6:1 side slopes 4:6 or flatter which may have crashworthy or break-away obstacles and shall be free of non-shielded obstacles except: (a) Traffic signals, signal poles, railroad signals, railroad tracks, bridge rails, and non-recoverable slopes behind guardrail; (b) Other obstacles including, but not limited to, ditches, recoverable slopes, driveways, intersections, bike/pedestrian paths, earth dikes, sloping curbs, raised islands, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, safety treated culverts with flared end sections, erosion control devices, trash cans, parking meters/facilities, fire hydrants, handrails, concrete barrier, barrier curb, roadway lighting, mailboxes, and traffic control devices; if the NDOR, in its sole discretion, has determined that such obstacles are acceptable and are necessary for the operation and use of the highway system; (c) (b) Other obstacles if the NDOR, in its sole discretion, determines based upon an accident review and a cost-benefit Roadside Safety Analysis Program (RSAP) review or a comparable AASHTO approved economic analysis, that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment — on the National Highway System (NHS), FHWA concurrence is required.

A Based on the 2004 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" e max = 8%.

B Based on the 2004 edition of AASHTO "A Policy on Geometric Design of Highways and Streets," Exhibit 3-16. Minimum Radii and Superelevation for Low-Speed Urban Streets e max = 4%.

C Maximum grade may be one percent steeper for tangent lengths less than 500 ft.

D Maximum grade may be two percent steeper for tangent lengths less than 500 ft.

A E These values do not include width of curb or curb offset.

B F Minimum 6 ft 1.8 m (5.91 ft), measured from back of curb.

G G In accordance with the Board of Public Roads Classifications and Standards "Section 001.01 Minimum Design Standards - New and Reconstructed Rural State Highways."

D H 6 ft 2 m (6.56 ft) measured from the edge of the through driving lane or 2 ft 0.6 m (1.97 ft) measured from the back of curb, whichever is the greater distance from the edge of the through driving lane.

Title 428 — BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS

Chapter 2 — Procedures for Standards (Continued)

001.13 MINIMUM DESIGN STANDARDS — ~~NEW AND RECONSTRUCTED~~ BRIDGES ON MUNICIPAL STATE HIGHWAYS

Any relaxation of these standards must have written approval by the Board.

For metric units, use a soft conversion of the English unit.

(2) (1) State Functional Classification	(4) (2) National Functional Classification	Type of Roadway Section	NEW BRIDGES			(3) & (4) RECONSTRUCTED BRIDGES			(4) BRIDGES TO REMAIN IN PLACE	
			Roadway Width m (ft)	Design Loading	Vertical Clearance m (ft)	Roadway Width m (ft)	Design Loading	Vertical Clearance m (ft)	Roadway Width m (ft)	Vertical Clearance m (ft)
Interstate	Interstate	N/A	<del>12.6 (41.34)</del> <u>42'</u>	MS18 (HS20) <u>HL-93</u> G	<del>5 (16.40)</del> <u>16'</u>	<del>12.6 (41.34)</del> <u>42'</u>	<u>HL-93</u>	<del>4.9 (16.08)</del> <u>16'</u>	<del>11.4 (37.40)</del> <u>38'</u>	<del>4.9 (16.08)</del> <u>16'</u>
<u>Expressway or Major Arterial</u>	<u>Arterial or Freeway</u>	<u>N/A</u>	<u>39'</u>	<u>HL-93</u>	<u>16'</u>	<u>39'</u>	<u>HL-93</u>	<u>16'</u>	<u>28'</u>	<u>16'</u>
<del>Expressway or Major Arterial</del>	Arterial	Curbed	A	MS18 (HS20)	<del>5 (16.40)</del>	A	<u>HL-93</u>	<del>4.4 (14.44)</del> <u>14.5'</u>	<del>6 (19.60)</del> <u>23' D A</u>	<del>4.4 (14.44)</del> <u>14.5'</u>
		Non-Curbed	B	MS18 (HS20) <u>HL-93</u>	<del>5 (16.40)</del> <u>16'</u>	B	<u>HL-93</u>	<del>4.4 (14.44)</del> <u>14.5'</u>	<del>8 (27.56)</del> <u>28' E</u>	<del>4.4 (14.44)</del> <u>14.5'</u>
Major Arterial	Collector	Curbed	A	MS18 (HS20) <u>HL-93</u>	<del>4.5 (14.76)</del> <u>15'</u>	A	<u>HL-93</u>	<del>4.4 (14.44)</del> <u>14.5'</u>	<del>6 (19.60)</del> <u>23' D A</u>	<del>4.4 (14.44)</del> <u>14.5'</u>
		Non-Curbed	B	<u>HL-93</u>	<del>4.5 (14.76)</del> <u>15'</u>	B	<u>HL-93</u>	<del>4.4 (14.44)</del> <u>14.5'</u>	<del>8 (27.56)</del> <u>28' E</u>	<del>4.4 (14.44)</del> <u>14.5'</u>

Note: Projects with full federal oversight require FHWA exception for New and Reconstructed bridges less than the required roadway width or bridges to remain in place when AASHTO guidelines for width are not met.

(2) (1) Refer to NDOR “Nebraska State Highway Functional Classification Map.”

(4) (2) Refer to NDOR “Nebraska National Highway Functional Classification Map.”

(3) Reconstructed bridges shall mean existing structures to be widened or remodeled.

(4) Structural Capacity - A bridge can remain in place if the operating rating capacity can safely service the system for an additional 20 years of service life (i.e. bridge does not require load posting).

A The clear roadway width of bridge shall be 1 ft 0.3 m (0.98 ft) wider than the gutter line to gutter line width of the approach roadway. The gutter line is defined as being 1 ft 0.3 m (0.98 ft) inside the back of the approach roadway curb.

B Bridge roadway width to be same as that required by the Board’s Section “001.02 Minimum Design Standards — ~~New and Reconstructed~~ Bridges on New and Reconstructed Rural State Highways.”

G MS18 (HS20) or Alternate Military Loading.

D The clear roadway width of bridge shall not be less than the width of the driving lanes on the approach roadway.

E ~~12 m (39.37 ft) if on Priority Commercial System. Refer to NDOR “Nebraska Interstate and Priority Commercial Systems Map.”~~

Title 428 — BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS

Chapter 2 — Procedures for Standards (Continued)

001.14 MINIMUM DESIGN STANDARDS — RESURFACING, RESTORATION AND REHABILITATION (3R) PROJECTS ON NON-INTERSTATE MUNICIPAL STATE HIGHWAYS

Any relaxation of these standards must have written approval by the Board.

For metric units, use a soft conversion of the English unit.

(1) Design Year Traffic	(2) Horizontal Curve Radius	Grade	Number of Lanes	Type of Roadway Section	(3) Lane Width		Shoulder Width	Width of Shoulder Surfacing	(3) Fixed Obstacle Clearance		Bridges to Remain in-Place Roadway Width			
					m	(ft)			Posted Speed Below 50 mph (80 km/h)	Posted Speed 50 mph (80 km/h) and Above		m	(ft)	
<del>3000</del> 15,000	ADT & Over	Existing	Existing	2	Curbed	3	(0.94) 11' A	N/A	N/A	0-9	(2.95) 3'	0-9	(2.95) 3'	C
					Non-Curbed	3-6	(11.81) 11'	2-4	(7.87) 8' A B	1-8	(5.91) 6' A B	3	(9.84) 10'	
<del>1700—2000</del> 2,000 - 14,999	ADT	Existing	Existing	2	Curbed	3	(0.94) 11' A	N/A	N/A	0-9	(2.95) 3'	0-9	(2.95) 3'	C
					Non-Curbed	3-6	(11.81) 11'	1-5	(4.92) 5'	Existing	A B	3	(9.84) 10'	
Under 1700 2,000	ADT	Existing	Existing	2	Curbed	3	(0.94) 11' A	N/A	N/A	0-9	(2.95) 3'	0-9	(2.95) 3'	C
					Non-Curbed	3-3	(10.93) 11'	0-6	(1.97) 2'	Existing		3	(9.84) 10'	

Note: Projects with full federal oversight require FHWA exception for values not meeting these standards.

Interstate – The standards used for horizontal alignment, vertical alignment, and widths of median, traveled way, and shoulders for projects may be the AASHTO interstate standards that were in effect at the time of original construction.

C Bridges to remain in place shall be in accordance with the Board’s “Section 001.13 ~~New and Reconstructed~~ Bridges on Municipal State Highways.”

- (1) “Design Year” traffic shall be year of initial construction plus ~~20 years~~ the expected life of the surfacing up to 20 years.
- (2) Horizontal curves not providing posted speed as stated in the 2004 edition of AASHTO “A Policy on Geometric Design of Highways and Streets.” may have advisory curve and speed reduction signs. Existing right angle turns in the central business district or at stop sign or signal controlled intersections are acceptable.
- (3) This area, measured from the edge of the through driving lane or back of curb, shall have 6:1 side slopes ~~4:6~~ or flatter which may have crashworthy or break-away obstacles and shall be free of non-shielded obstacles except: (a) Traffic ~~signals, signal poles,~~ railroad signals, railroad tracks, bridge rails, and non-recoverable slopes behind guardrail; (b) ~~Other obstacles including, but not limited to, ditches, recoverable slopes, driveways, intersections, bike/pedestrian paths, earth dikes, sloping curbs, raised islands, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, safety treated culverts with flared end sections, erosion control devices, trash cans, parking meters/facilities, fire hydrants, handrails, concrete barrier, barrier curb, roadway lighting, mailboxes, and traffic control devices; if the NDOR, in its sole discretion, has determined that such obstacles are acceptable and are necessary for the operation and use of the highway system;~~ (c) Other obstacles if the NDOR, in its sole discretion, determines based upon an accident review and a cost-benefit Roadside Safety Analysis Program (RSAP) review or a comparable AASHTO approved economic analysis, that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment – on the National Highway System (NHS), FHWA concurrence is required.

A These values do not include width of curb or curb offset.

A B For a 4-lane divided facility, the minimum inside shoulder width is 3 ft 0-9 m (2.95 ft) with 2 ft 0-6 m (1.97 ft) surfaced.

B C Refer to the Board’s “Section 001.03 Minimum Design Standards – Resurfacing, Restoration and Rehabilitation (3R) Projects on ~~Non-Interstate~~ Rural State Highways.”