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"

The following abbreviations and symbols are used in the Standards:

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

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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.

(1) Design Year Traffic	Design Number	(2) National Functional Classification	(3) State Functional Classification	Terrain	(4) Design Speed km/h (mph)	Horizontal Curve Min. Radius m	Horizontal Curve (Max. Deg.)	Maximum Grade Percent	Number of Lanes	Lane Width m (ft)	Median Width m (ft)	Shoulder Width m (ft)	Width of Shoulder Surfacing m (ft)	(5) Lateral Obstacle Clearance and Hinge Point Distance m (ft)
N/A	DR1	Interstate	Interstate	All	110 (68.35)	500	(3.49)	3	4 Div.	3.6 (11.81)	11 (36.09)	1.8 (5.91) Lt. 3.6 (11.81) Rt.	1.2 (3.94) Lt. 3 (9.84) Rt.	10.5 (34.45) F
750 DHV & Over	DR2	Arterial	Expressway or Major Arterial	Level	110 (68.35)	500	(3.49)	3	4 Div.	3.6 (11.81)	11 (36.09) C	1.5 (4.92) Lt. 3 (9.84) Rt.	0.9 (2.95) Lt. 2.4 (7.87) Rt.	9 (29.53)
"	"	"		Rolling	100 (62.14)	395	(4.42)	4	4 Div.	3.6 (11.81)	11 (36.09) C	1.5 (4.92) Lt. 3 (9.84) Rt.	0.9 (2.95) Lt. 2.4 (7.87) Rt.	9 (29.53)
330 - 749 DHV	DR3	Arterial	Major Arterial	Level	110 (68.35)	500	(3.49)	3	2 B	3.6 (11.81)	None	3 (9.84)	2.4 (7.87)	9 (29.53)
"	"	"	"	Rolling	100 (62.14)	395	(4.42)	4	2 B	3.6 (11.81)	"	3 (9.84)	2.4 (7.87)	9 (29.53)
"	"	Collector	"	Level	100 (62.14)	395	(4.42)	5 A	2 B	3.6 (11.81)	"	3 (9.84)	2.4 (7.87)	9 (29.53)
"	"	"	"	Rolling	90 (55.92)	305	(5.73)	6.5 A	2 B	3.6 (11.81)	"	3 (9.84)	2.4 (7.87)	9 (29.53)
1700 - 2999 ADT	DR4	Arterial	Major Arterial	Level	110 (68.35)	500	(3.49)	3	2	3.6 (11.81)	None	2.4 (7.87) D	None E	9 (29.53)
"	"	"	"	Rolling	100 (62.14)	395	(4.42)	4	2	3.6 (11.81)	"	2.4 (7.87) D	"	9 (29.53)
"	"	Collector	"	Level	100 (62.14)	395	(4.42)	5 A	2	3.6 (11.81)	"	2.4 (7.87) D	"	9 (29.53)
"	"	"	"	Rolling	90 (55.92)	305	(5.73)	6.5 A	2	3.6 (11.81)	"	2.4 (7.87) D	"	9 (29.53)
400 - 1699 ADT	DR5	Arterial	Major Arterial	Level	110 (68.35)	500	(3.49)	3	2	3.6 (11.81)	None	1.8 (5.91) D	None E	7 (22.97)
"	"	"	"	Rolling	100 (62.14)	395	(4.42)	4	2	3.6 (11.81)	"	1.8 (5.91) D	"	7 (22.97)
"	"	Collector	"	Level	100 (62.14)	395	(4.42)	5 A	2	3.6 (11.81)	"	1.8 (5.91) D	"	7 (22.97)
"	"	"	"	Rolling	90 (55.92)	305	(5.73)	6.5 A	2	3.6 (11.81)	"	1.8 (5.91) D	"	7 (22.97)
Under 400 ADT	DR6	Arterial	Major Arterial	Level	110 (68.35)	500	(3.49)	3	2	3.6 (11.81)	None	1.2 (3.94) D	None E	7 (22.97)
"	"	"	"	Rolling	100 (62.14)	395	(4.42)	4	2	3.6 (11.81)	"	1.2 (3.94) D	"	7 (22.97)
"	"	Collector	"	Level	90 (55.92)	305	(5.73)	5.5 A	2	3.6 (11.81)	"	1.2 (3.94) D	"	7 (22.97)
"	"	"	"	Rolling	90 (55.92)	305	(5.73)	6.5 A	2	3.6 (11.81)	"	1.2 (3.94) D	"	7 (22.97)

(1) "Design Year" shall be year of initial construction plus 20 years.

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

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

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

(5) This area, measured from the edge of the through driving lane, shall have sideslopes 1:6 or flatter and shall be free of obstacles except: (a) Traffic signals, railroad signals, railroad tracks and non-recoverable slopes behind guardrail; (b) Other obstacles including, but not limited to, ditches, recoverable slopes, driveways, intersections, earth dikes, sloping curbs, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, safety treated culverts, 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 a cost benefit analysis, that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment.

A Maximum grade shown may be one percent steeper for short lengths less than 150 m (492.13 ft).

B 4 lanes divided allowed by special study - use DR2 standards.

C 5.4m (17.72 ft) median width allowed at intersections and unique locations with the approval of the Director-State Engineer based on NDOR Traffic Division recommendation.

D 3 m (9.84 ft) if on Priority Commercial System, refer to NDOR "Nebraska Interstate and Priority Commercial Systems Map."

E 2.4 m (7.87 ft) if on Priority Commercial System, refer to NDOR "Nebraska Interstate and Priority Commercial Systems Map." 0.6 m (1.97 ft) if on 28' Top System, refer to NDOR "28 ft Top System Map."

F 9 m (29.53 ft) when posted speed is 100 km/h (60 mph) or lower.

Section 001.02 Standards do not apply if roadway section is curbed. See Section 001.13.

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

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

(1) Design Year Traffic	Design Number	(2) Roadway Width m	(ft)	NEW BRIDGES Design Loading	Vertical Clearance m	(ft)	(3) RECONSTRUCTED BRIDGES OR BRIDGES TO REMAIN IN PLACE Vertical Clearance m	(ft)
Interstate	DR1	12.6	(41.34) A	MS18 (HS20) D	5	(16.40)	4.9	(16.08)
750 DHV & Over	DR2	11.7	(38.39) A	MS18 (HS20)	5	(16.40)	4.4	(14.44)
330 - 749 DHV	DR3	13.2	(43.31) B	MS18 (HS20)	5	(16.40)	4.4	(14.44)
1700 - 2999 ADT	DR4	12	(39.37) C	MS18 (HS20)	5	(16.40)	4.4	(14.44)
400 -1699 ADT	DR5	10.8	(35.43) C	MS18 (HS20)	5	(16.40)	4.4	(14.44)
Under 400 ADT	DR6	9.6	(31.50) C	MS18 (HS20)	5	(16.40)	4.4	(14.44)

(1) "Design Year" shall be year of initial construction plus 20 years.

(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.

(3) *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).*

A Divided roadways.

B If divided roadways, use DR2.

C 13.2 m (43.31 ft) if on Priority Commercial System. Refer to NDOR "Nebraska Interstate and Priority Commercial Systems Map."

D MS18 (HS20) or Alternate Military Loading.

Section 001.03 Standards do not apply to Curbed Urban Highways or Reduced Speed Zone Highways. See Section 001.14.

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.

(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
3000 ADT & Over	*Existing*	*Existing*	2	*3.6 (11.81)*	*2.4 (7.87) A*	*1.8 (5.91) A*	*7.5 (24.61)*	*B*	*Existing*	E
1700 - 2999 ADT	Existing	Existing	2	3.6 (11.81)	1.8 (5.91)	Existing	6 (19.69)	C	Existing	E
400 - 1699 ADT	Existing	Existing	2	3.6 (11.81)	0.9 (2.95)	Existing	3.5 (11.48)	D	Existing	E
Under 400 ADT	Existing	Existing	2	3.3 (10.83)	0.6 (1.97)	Existing	3.5 (11.48)	D	Existing	E

(1) "Design Year" shall be year of initial construction plus 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, will be free of obstacles except: (a) Traffic signals, railroad signals, railroad tracks, ditches, sideslopes, driveways, intersections, 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, 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 a cost benefit analysis, that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment.

(4) Fill slopes shall be guard railed if warranted by a cost benefit analysis.

A If a 4-lane divided facility exists, the minimum inside shoulder width is 0.9 m (2.95 ft) with 0.6 m (1.97 ft) surfaced.

B An average of one vertical curve per 1.5 km (0.93 mile) will be allowed below 90 km/h (55.92 mph) minimum AASHTO stopping sight distance, however, no sag vertical less than 60 km/h (37.28 mph) and crest vertical below 70 km/h (43.50 mph) will be allowed.

C An average of two vertical curves per 1.5 km (0.93 mile) will be allowed below 90 km/h (55.92 mph) minimum AASHTO stopping sight distance, however, no sag vertical less than 50 km/h (31.07 mph) and crest vertical below 60 km/h (37.28 mph) will be allowed.

D 60 km/h (37.28 mph) 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 functionally classified Scenic-Recreation Roads.

001.04 MINIMUM DESIGN STANDARDS — SCENIC - RECREATION - RURAL STATE HIGHWAYS

(1) Design Year Traffic Major Arterial	Design Speed km/h (mph)	Horizontal Curve Radius: Desirable e max = 0.06 Meters (Degree)	Horizontal Curve Radius: Minimum e max = 0.08 Meters (Degree)	Maximum Grade Percent	Number of Lanes	Lane Width Meters (Feet)	Median Width Meters (Feet)	Shoulder Width Meters (Feet)	Width of Shoulder Surfacing Meters (Feet)	(2) Lateral Obstacle Clearance: Desirable Meters (Feet)	(2) Lateral Obstacle Clearance: Minimum Meters (Feet)	Normal Design ROW Width Meters (Feet)	(3) Access Control
Over 750 DHV	110 (68.35)	560 (3.12)	500 (3.49)	4★★	(Special Study) *2 Minimum*	3.6 (11.81)	11 (36.09) Ultimate *if required*	1.8 Lt. (5.91) 3 Rt. (9.84) 3 (9.84) *on 2 Lane*	1.2 Lt. (3.94) 2.4 Rt. (7.87) 2.4 (7.87) on 2 Lane	9 (29.53)	3.6 (11.81)	60 (196.85) (4 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 (3.12)	500 (3.49)	4★★	2	3.6 (11.81)	None	3 (9.84)	None	9 (29.53)	3.6 (11.81)	36 (118.11)	"
200 - 400 DHV	100★ (62.14)	435 (4.01)	395 (4.02)	4★★	2	3.6 (11.81)	None	2.4 (7.87)	None	7 (22.97)	3 (9.84)	36 (118.11)	"
850 - 1700 ADT	90★ (55.92)	335 (5.21)	305 (5.73)	4.5★★	2	3.6 (11.81)	None	1.8 (5.91)	None	7 (22.97)	2.4 (7.87)	30 (98.42)	"
Under 850 ADT	80 (49.71)	250 (6.99)	230 (7.59)	7★★	2	3.3★★★ (10.83)	None	1.2 (3.94)	None	7 (22.97)	1.8 (5.91)	24 (78.74)	"

Note: The 2001 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" should be used for other design criteria.

(1) "Design Year" shall be year of initial construction plus 20 years.

(2) 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.

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

★ Design speed 110 km/h (68.35 mile per hour) except in rolling terrain.

★★ The maximum grades may be 1 percent steeper in short sections less than 150 meters (492.13 feet) in length, or one-way downgrades. For extreme cases, at some underpass and bridge approaches, steeper grades for relatively short lengths may be considered. (For roadways with design numbers DR5 and DR6, highway grades may be 2 percent steeper.)

★★★ 3.6 meter (11.81 feet) lane width desirable.

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

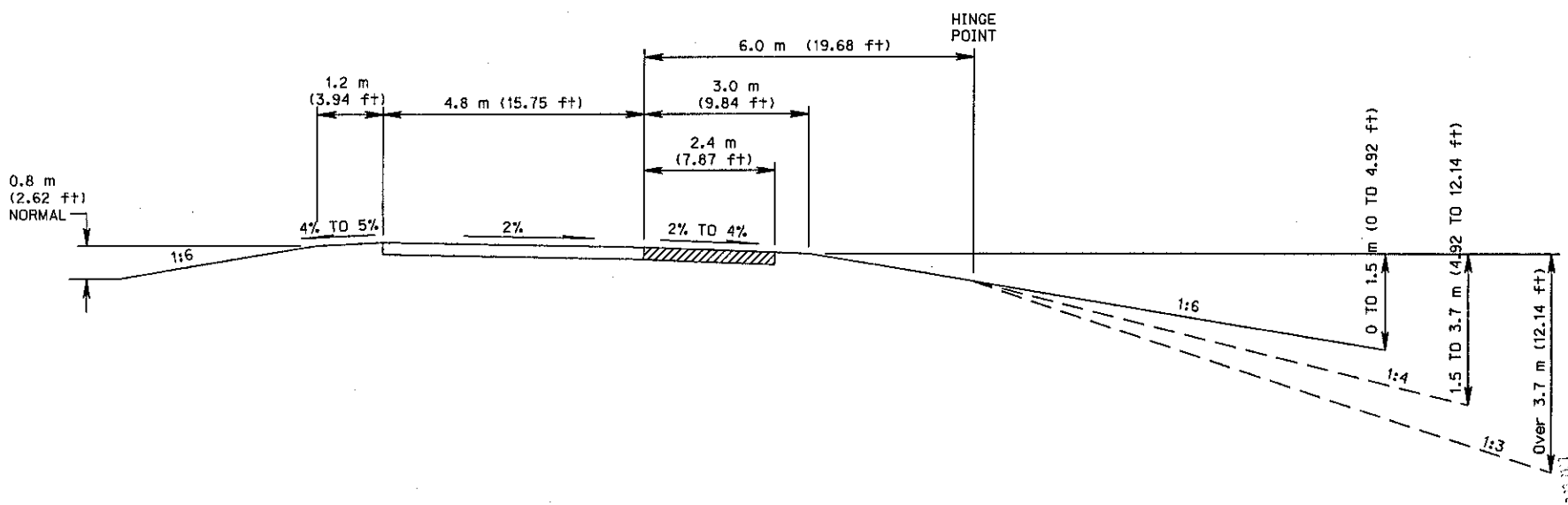
Minimum design policy for all classifications shall include seeding or reestablishment of vegetation of all disturbed areas.

Minimum design standards within the recreational area shall be consistent with the established speed limits (if it has been reduced from 90 km/h (55.92 miles per hour) or (55 miles per hour) and the topography and use of the facility. Design may be to urban or rural standards depending upon the terrain conditions.

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

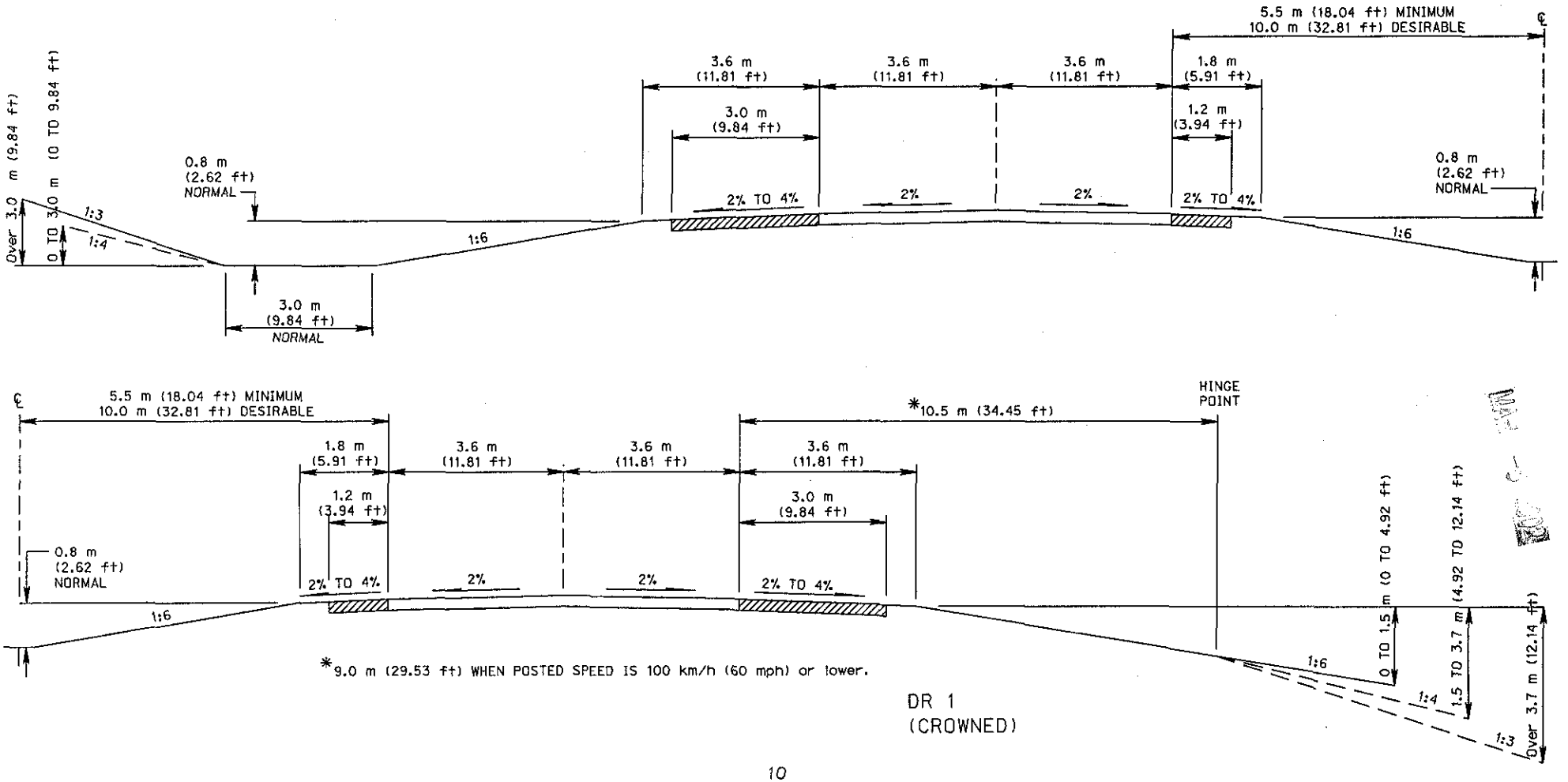
Effort shall be made to preserve the natural environment to the extent possible without compromising the safety of those using the facility, at the speed limits that apply.

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



INTERCHANGE RAMP

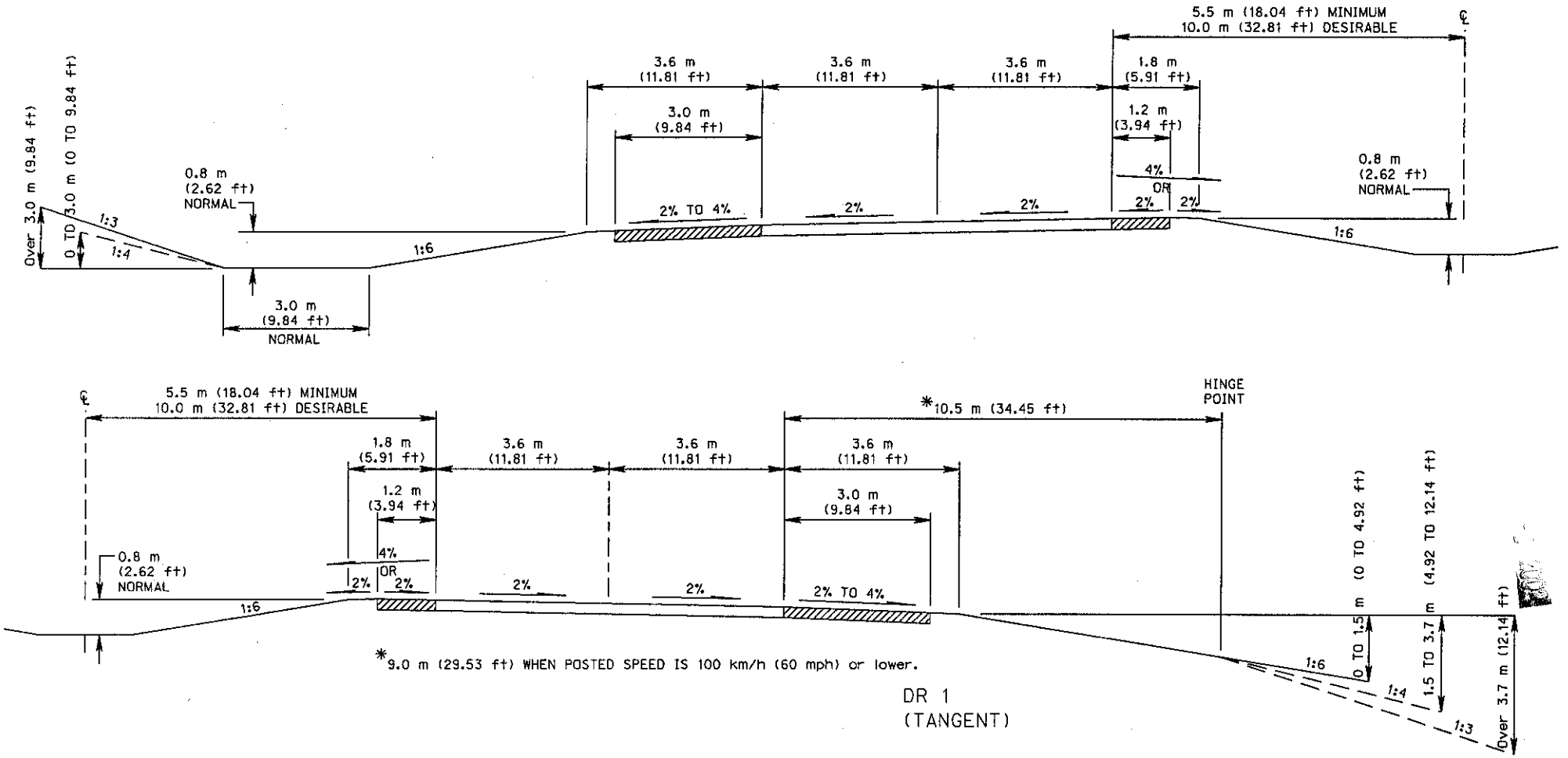
001.06 - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS: DR1 (CROWNED)



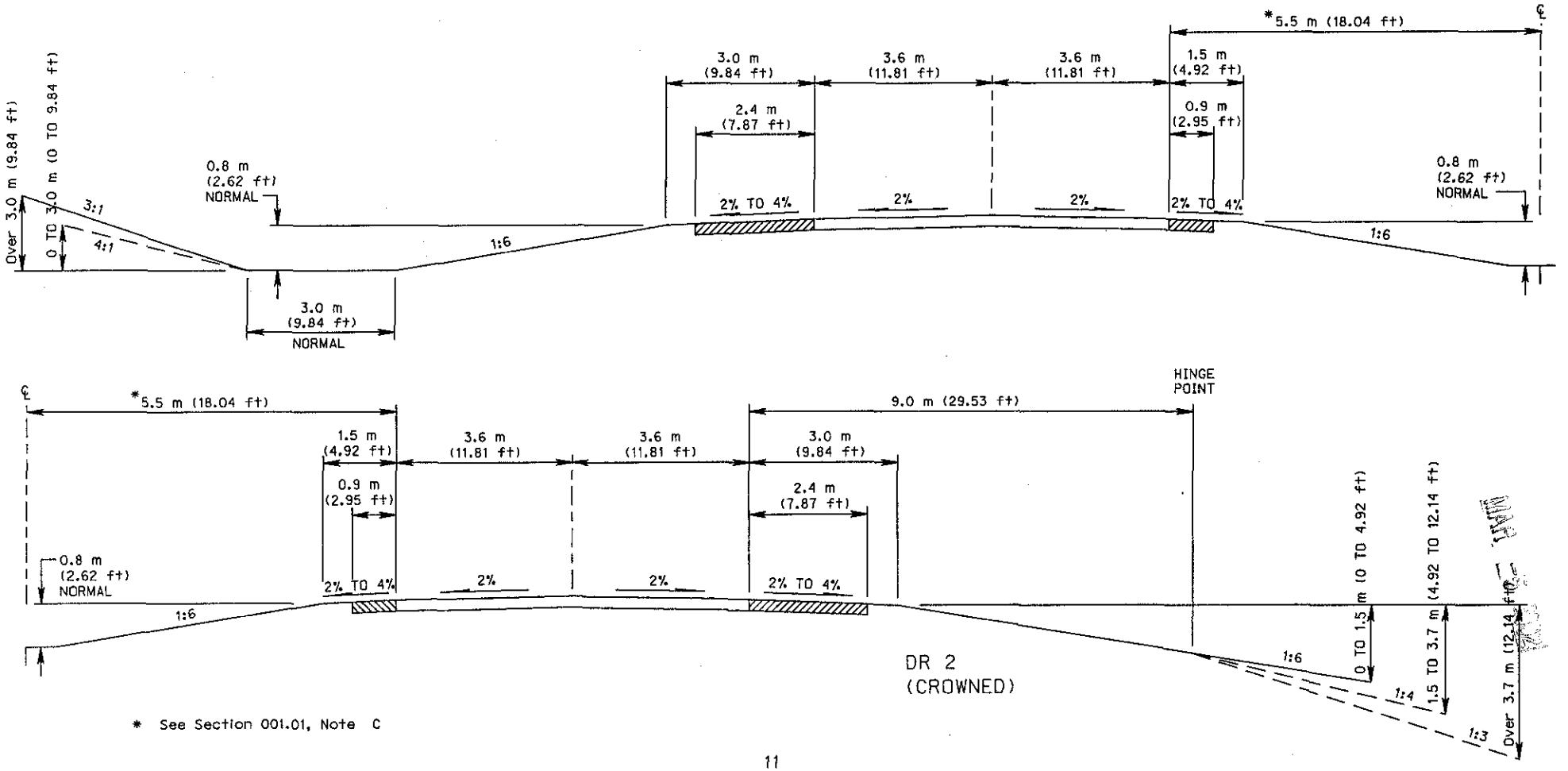
*9.0 m (29.53 ft) WHEN POSTED SPEED IS 100 km/h (60 mph) or lower.

DR 1
(CROWNED)

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

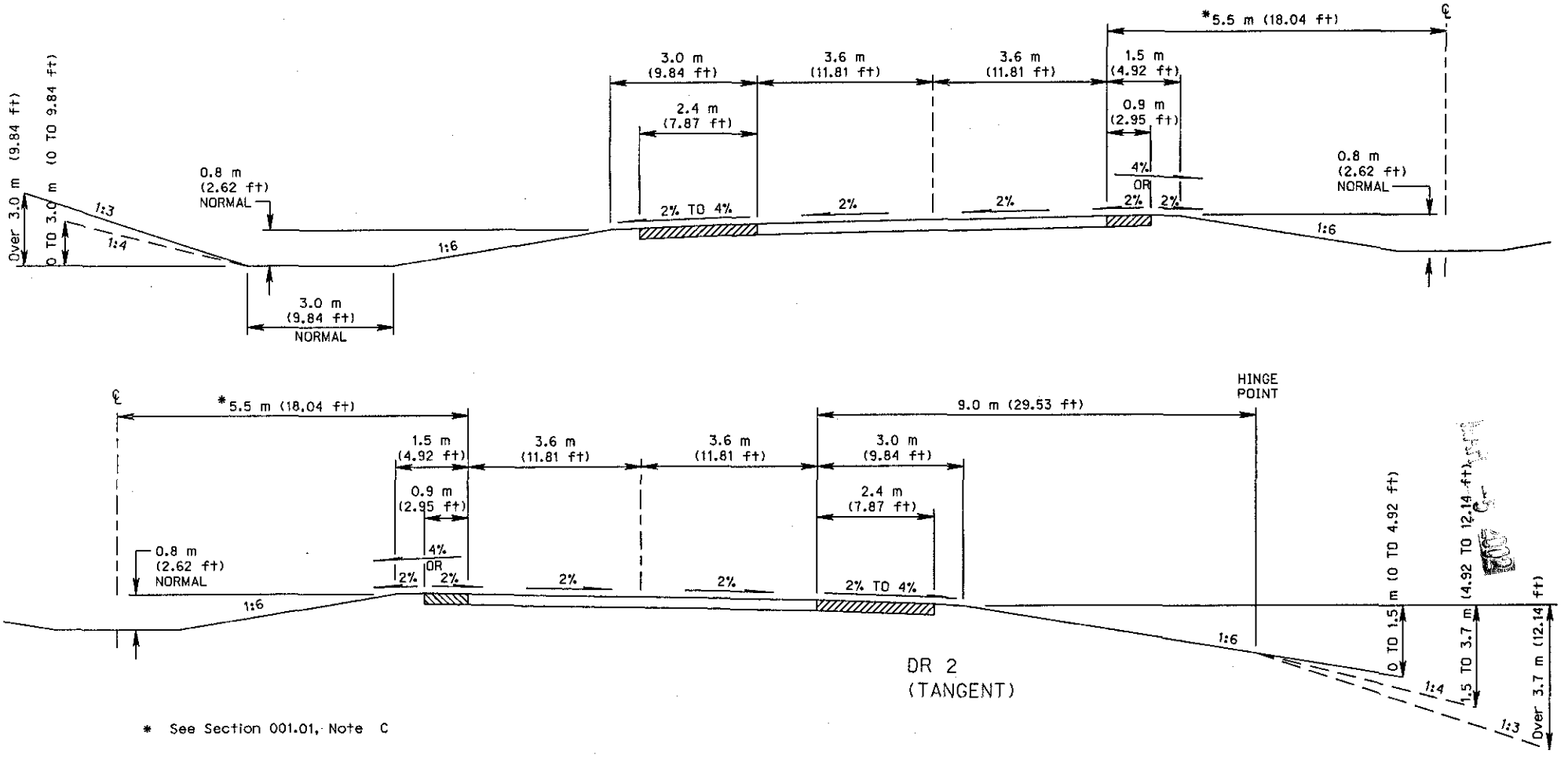


001.07 - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS: DR2 (CROWNED)



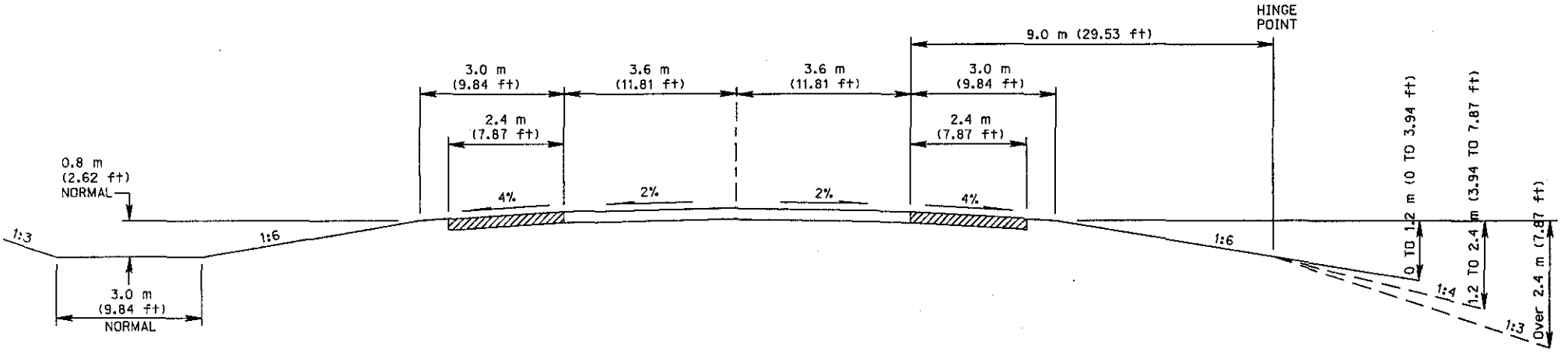
* See Section 001.01, Note C

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



* See Section 001.01, Note C

001.08 - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS: DR3



DR 3

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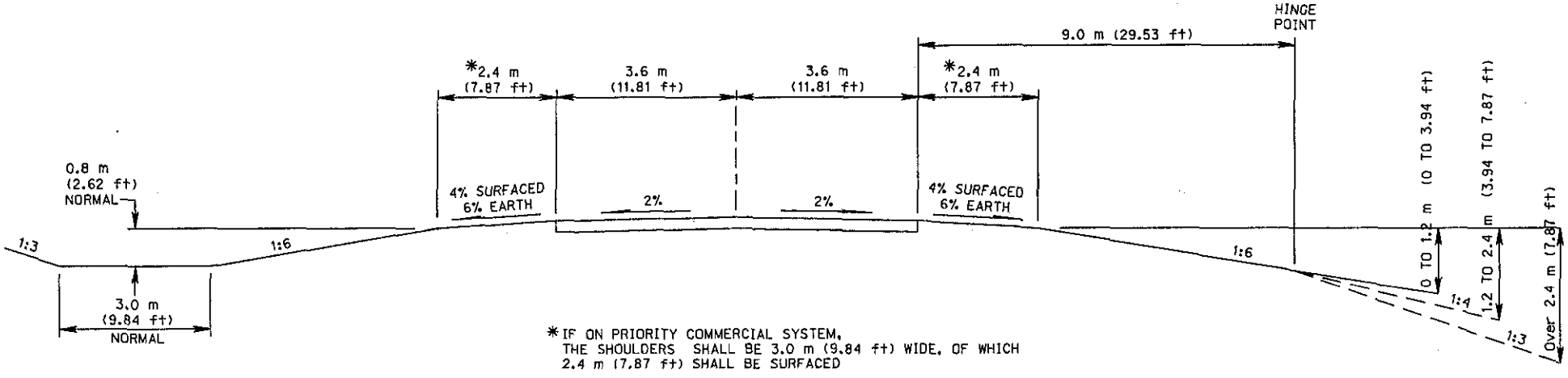
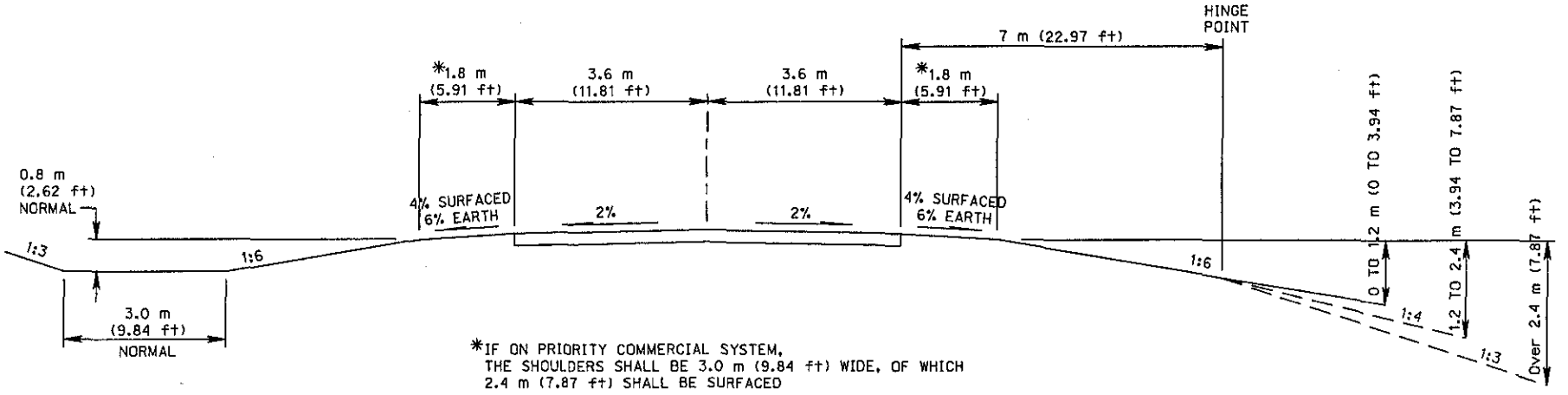
001.09 - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS: DR4



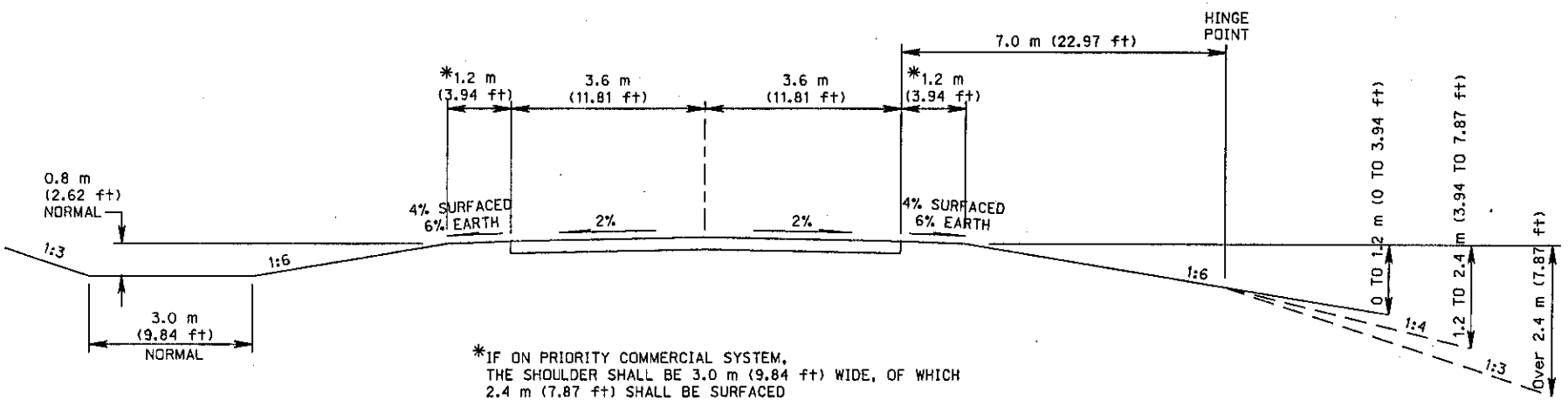
DR 4

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



DR 5

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



DR 6

001.12 MINIMUM DESIGN STANDARDS — NEW AND RECONSTRUCTED MUNICIPAL STATE HIGHWAYS

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

(1) National Functional Classification	(2) State Functional Classification	Type of Roadway Section	(3) Design Speed km/h	(mph)	Horizontal Curve Min. Radius m	(Max. Deg.)	(4) Maximum Grade Percent	(5) Number of Lanes	Lane Width m	(ft)	Median Width	Shoulder Width	Width of Shoulder Surfacing	(6) Lateral Obstacle Clearance: Posted Speed Below 80 km/h (50 mph) m (ft)	(6) Lateral Obstacle Clearance: Posted Speed 80 km/h (50 mph) and Above m (ft)
Interstate	Interstate	N/A	80	(49.71)	250	(6.99)	3 - 5	4	3.6	(11.81)	Variable	C	C	N/A	C
Arterial	Expressway or Major Arterial	Curbed	60	(37.28)	135	(12.94)	5 - 7	2	3.6	(11.81) A	Variable	B	N/A	D	D
		Non-Curbed	60	(37.28)	135	(12.94)	5 - 7	2	3.6	(11.81)	Variable	C	C	4.5 (14.76)	C
Collector	Major Arterial	Curbed	60	(37.28)	135	(12.94)	7 - 11	2	3.6	(11.81) A	0	B	N/A	D	D
		Non-Curbed	60	(37.28)	135	(12.94)	7 - 11	2	3.6	(11.81)	0	C	C	4.5 (14.76)	C

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

(2) Refer to NDOR "Nebraska State 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) 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) This area, measured from the edge of the through driving lane, shall have sideslopes 1:6 or flatter and shall be free of obstacles except: (a) Traffic signals, railroad signals, railroad tracks and non-recoverable slopes behind guardrail; (b) Other obstacles including, but not limited to, ditches, recoverable slopes, driveways, intersections, earth dikes, sloping curbs, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, safety treated culverts, 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 a cost benefit analysis, that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment.

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

B Minimum 1.8 meters (5.91 feet), measured from back of curb.

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

D 2m (6.56 ft) measured from the edge of the through driving lane or 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.

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.

(1) National Functional Classification	(2) State Functional Classification	Type of Roadway Section	NEW BRIDGES Roadway Width m (ft)	NEW BRIDGES Design Loading	NEW BRIDGES Vertical Clearance m (ft)	(3) & (4) RECONSTRUCTED BRIDGES Roadway Width m (ft)	(3) & (4) RECONSTRUCTED BRIDGES Vertical Clearance m (ft)	(4) BRIDGES TO REMAIN IN PLACE Roadway Width m (ft)	(4) BRIDGES TO REMAIN IN PLACE Vertical Clearance m (ft)
Interstate	Interstate	N/A	12.6 (41.34)	MS18 (HS20) C	5 (16.40)	12.6 (41.34)	4.9 (16.08)	11.4 (37.40)	4.9 (16.08)
Arterial	Expressway or Major Arterial	Curbed	A	MS18 (HS20)	5 (16.40)	A	4.4 (14.44)	6 (19.69) D	4.4 (14.44)
		Non-Curbed	B	MS18 (HS20)	5 (16.40)	B	4.4 (14.44)	8 (27.56) E	4.4 (14.44)
Collector	Major Arterial	Curbed	A	MS18 (HS20)	4.5 (14.76)	A	4.4 (14.44)	6 (19.69) D	4.4 (14.44)
		Non-Curbed	B	MS18 (HS20)	4.5 (14.76)	B	4.4 (14.44)	8 (27.56) E	4.4 (14.44)

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

(2) Refer to NDOR "Nebraska State 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 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 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 Rural State Highways."

C 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."

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.

(1) Design Year Traffic	Type of Roadway Section	(2) Horizontal Curve Radius	Grade	Number of Lanes	Lane Width m (ft)	Shoulder Width m (ft)	Width of Shoulder Surfacing m (ft)	(3) Fixed Obstacle Clearance: Posted Speed Below 80 km/h (50 mph) m (ft)	(3) Fixed Obstacle Clearance: Posted Speed 80 km/h (50 mph) and Above m (ft)	Bridges to Remain in Place Roadway Width
3000 ADT & Over	Curbed	Existing	Existing	2	3 (9.84)	N/A	N/A	0.9 (2.95)	0.9 (2.95)	C
	Non-Curbed	Existing	Existing	2	3.6 (11.81)	2.4 (7.87) A	1.8 (5.91) A	3 (9.84)	B	C
1700 - 2999 ADT	Curbed	Existing	Existing	2	3 (9.84)	N/A	N/A	0.9 (2.95)	0.9 (2.95)	C
	Non-Curbed	Existing	Existing	2	3.6 (11.81)	1.5 (4.92)	Existing A	3 (9.84)	B	C
Under 1700 ADT	Curbed	Existing	Existing	2	3 (9.84)	N/A	N/A	0.9 (2.95)	0.9 (2.95)	C
	Non-Curbed	Existing	Existing	2	3.3 (10.83)	0.6 (1.97)	Existing	3 (9.84)	B	C

(1) "Design Year" shall be year of initial construction plus 20 years.

(2) Horizontal curves not providing posted speed 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, will be free of obstacles except: (a) Traffic signals, railroad signals, railroad tracks and non-recoverable slopes behind guardrail; (b) Other obstacles including, but not limited to, ditches, recoverable slopes, driveways, intersections, earth dikes, sloping curbs, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, safety treated culverts, 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 a cost benefit analysis, that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment.

A For a 4-lane divided facility, the minimum inside shoulder width is 0.9 m (2.95 ft) with 0.6 m (1.97 ft) surfaced.

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

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."

MINIMUM DESIGN STANDARDS - PART TWO
LOCAL ROADS AND STREETS

001.15 MINIMUM DESIGN STANDARDS — MUNICIPAL STREETS (1)

(2) State Functional Classification	(3) Design Year Traffic	(4) Design Speed (mph)	(5) Maximum Horizontal Curve (Degree)	Maximum Grade (Percent)	(6) Number of Lanes	(7) Lane Width (Feet)	Median Width (Feet)	Non-Curbed Section Shoulder Width (Feet)	(8) Fixed Obstacle Clearance (Feet)	Lighting	New and Reconstructed Bridge Design Loading
Other Arterial	–	30	15	8	2	11	0 - As Required	8	–	Full	HS-20
Collector	–	25	20	10	2	11	None	6	–	Desirable	HS-20
Local	–	25	30★	10	2	11	None	6	–	Desirable	HS-20

(1) The 2001 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" should be used for other design criteria.

(2) Refer to NDOR "State Functional Classification Maps."

(3) "Design Year" shall be year of initial construction plus 20 years.

(4) The design speed should be equal to or greater than the anticipated posted speed limit. Stopping sight distance is a critical component of design speed.

(5) 0.06 feet per foot maximum superelevation rate. The superelevation rate should match the design speed.

(6) 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.

(7) Lane width shall not include width of curb or curb offset.

(8) Minimum fixed obstacle clearance for a curbed section shall be 2 feet as measured from the back of the curb, or for a non-curbed section shall be 8 feet as measured from the edge of the through driving lane. This area shall be free of obstacles except: (a) Traffic signals, railroad signals and railroad tracks; (b) Other obstacles including, but not limited to: ditches, slopes, driveways, intersections, earth dikes, curbs, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, culverts, bridges, roadway lighting, and traffic control devices if the municipality, through an engineering study, has determined that such obstacles are acceptable and are necessary for the operation and use of the street system; (c) Other obstacles if the municipality, through an engineering study and based upon a cost benefit analysis, has determined that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment. Fixed obstacle clearance for a non-curbed section may be reduced further for a turn-out lane, provided a minimum clearance of 2 feet is maintained from any paved surface.

★ Local street radii can be reduced to 100 feet if compatible with overall development and a design speed study.

001.16 MINIMUM DESIGN STANDARDS — RURAL ROADS (1)

(2) Roadway Classification	Design Number	(3) Current Year ADT	(4) Design Speed (mph)	(5) Maximum Horizontal Curve (Degree)	(6) Maximum Grade (Percent)	(7) Number of Lanes	(8) Lane Width (Feet)	Shoulder Width (Feet)	(9) Fixed Obstacle Clearance (Feet)	(10) New and Reconstructed Bridges (100 Feet and Under in Length) Roadway Width	(10) New and Reconstructed Bridges (Over 100 Feet in Length) Roadway Width	(11) Bridges to Remain in Place (100 Feet and Under in Length) Roadway Width	New and Reconstructed Bridge Design Loading	(12) Surfacing Type
Other Arterial	ROA1	401 - 750	50	7.5	7	2	12	6	12	30'	28'++	24'	HS-20	Aggregate or Paved
	ROA2	251 - 400	50	7.5	7	2	11	4	10	30'	28'	22'	HS-20	Aggregate or Paved
	ROA3	51 - 250	50	7.5	7	2	10	4	10	28'	28'	20'	HS-20	Aggregate or Paved
	ROA4	0 - 50	40	8.0	8	2	10	3	8	26'	26'	20'	HS-15+++	Aggregate ★
Collector	RC1	251- 400	50	7.5	7	2	11	4	10	30'	28'	22'	HS-20	Aggregate or Paved
	RC2	51- 250	50	7.5	7	2	10	4	10	28'	28'	20'	HS-15+++	Aggregate or Paved
	RC3	0- 50	40	10.0	9	2	10	3	5	24'	24'	20'	HS-15+++	Aggregate ★
Local	RL1	251- 400	50	7.5	7	2	11	4	8	26'	26'	22'	HS-20	Aggregate or Paved
	RL2	51- 250	50	7.5	7	2	10	4	8	24'	24'	20'	HS-15+++	Aggregate or Paved
	RL3	0- 50	30	23.0	10	2	10	3	5	20'+	20'+	20'	HS-15+++	Aggregate★
Scenic Recreation	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★
Minimum Maintenance	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★

(1) The Typical Cross Sections (sections 001.18 through 001.22) in these regulations and the 2001 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" should be used for other design criteria. Municipal Streets Design Standards (Sec. 001.15, above) may be used in residential and commercial areas lying outside municipal boundaries. This may be particularly appropriate for Sanitary and Improvement Districts and for developed areas under municipal zoning jurisdiction.

(2) Refer to NDOR "State Functional Classification Maps."

(3) "Current year" shall mean year of initial construction. Minimum design criteria for ADT volumes over 400 in the "Collector" and "Local" classifications shall conform to the minimum standards set forth in the "Other Arterial" classification. Minimum design criteria for ADT volumes over 750 in the "Other Arterial" classification shall conform to the minimum standards set forth in AASHTO "A Policy on Geometric Design of Highways and Streets."

(4) The design speed should be equal to or greater than the anticipated posted speed limit. Stopping sight distance is a critical component of design speed. New or reconstructed roads that are designed for a speed less than the statutory speed limit require an engineering and traffic investigation to determine the appropriate speed limit. Reference 60-6,190 Neb.Rev.Stat.

(5) 0.08 feet per foot maximum superelevation rate. The superelevation rate should match the design speed.

(6) Maximum grades may be exceeded by 2 percent for tangent distance of up to 500 feet in rough terrain.

(7) 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.

(8) Lane width shall not include width of curb or curb offset. See Typical Cross Sections (001.18 through 001.22) for cross slope.

(9) Minimum fixed obstacle clearance for a curbed section shall be 2 feet as measured from the back of the curb. Minimum fixed obstacle clearance for a non-curbed section shall be measured from the edge of the through driving lane. This area shall be free of obstacles except: (a) Traffic signals, railroad signals and railroad tracks; (b) Other obstacles including, but not limited to: ditches, slopes, driveways, intersections, earth dikes, curbs, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, culverts, bridges, roadway lighting, and traffic control devices if the county, through an engineering study, has determined that such obstacles are acceptable and are necessary for the operation and use of the road system; (c) Other obstacles if the county, through an engineering study and based upon a cost benefit analysis, has determined that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment.

(10) Low water stream crossings may be constructed on very low volume (0 - 50 ADT) county roads functionally classified as Local or Minimum Maintenance, provided a relaxation of standards has been granted by the Board. New low water stream crossings shall not be constructed on county roads functionally classified as Other Arterial and Collector. All proposed construction or reconstruction shall be submitted to the Board for review in accordance with the rules and regulations for relaxation of standards.

(11) Existing bridges over 100 feet must be evaluated in accordance with AASHTO guidelines to determine the suitability of leaving them in place.

(12) A road graded to meet or exceed ROA1, ROA2, ROA3, RC1, RC2, RL1 or RL2 Minimum Design Standards in effect between September 2, 1970 and January 1, 2003 may be paved without being graded to current minimum design standards.

★ The paving of roads built to ROA4, RC3 and RL3 Minimum Design Standards, except for "Sandhills" soils, is prohibited. Such roads (0 - 50 ADT) in "Sandhills" soils may require paving because of the light, granular nature of the soils involved. It shall also be permissible to pave one 12-foot lane on roads built to RL3 Minimum Design Standards in "Sandhills" soils.

★★ See Section 001.17 of these regulations for standards applicable to the functional classification category "Scenic Recreation."

★★★ All proposed construction or reconstruction on Minimum Maintenance Roads shall be submitted to the Board for review in accordance with the rules and regulations for relaxation of standards. There are no set design standards for Minimum Maintenance Roads.

+ 24 feet desirable

++ 30 feet desirable

+++ HS-20 desirable

001.17 MINIMUM DESIGN STANDARDS — SCENIC-RECREATION — RURAL ROADS (1)

Roadway Sub-Classification	Design Number	(2) Current Year ADT	(3) Design Speed (mph)	(4) Maximum Horizontal Curve (Degree)	(5) Maximum Grade (Percent)	(6) Number of Lanes	(7) Lane Width (Feet)	Shoulder Width (Feet)	(8) Fixed Obstacle Clearance (Feet)	(9) New and Reconstructed Bridges (100 Feet and Under in Length) Roadway Width	(9) New and Reconstructed Bridges (Over 100 Feet in Length) Roadway Width	(10) Bridges to Remain in Place (100 Feet and Under in Length) Roadway Width	New and Reconstructed Bridge Design Loading	(11) Surfacing Type
Other Arterial	ROA2	401 - 750	50	7.5	7	2	11	4	10	30'	28'	22'	HS-20	Aggregate or Paved
	ROA3	251 - 400	50	7.5	7	2	10	4	10	28'	28'	20	HS-20	Aggregate or Paved
	ROA4	0 - 250	40	8.0	8	2	10	3	9	26'	26'	20'	HS-15++	Aggregate ★
Collector	RC2	251 - 400	50	7.5	7	2	10	4	10	28'	28'	20'	HS-15++	Aggregate or Paved
	RC3	0 - 250	40	10.0	9	2	10	3	5	24'	24'	20'	HS-15++	Aggregate ★
Local	RL2	251 - 400	50	7.5	7	2	10	4	6	24'	24'	20'	HS-15++	Aggregate or Paved
	RL3	0 - 250	30	23.0	10	2	10	3	5	20'+	20'+	20'	HS-15++	Aggregate ★
Internal	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★

(1) Refer to NDOR "State Functional Classification Maps." 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. The Typical Cross Sections (Sections 001.19 through 001.22) in these regulations and the 2001 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" should be used for other design criteria.

(2) "Current year" shall mean year of initial construction. Minimum design criteria for ADT volumes over 400 in the "Collector" and "Local" classifications shall conform to the minimum standards set forth in the "Other Arterial" classification. Minimum design criteria for ADT volumes over 750 in the "Other Arterial" classification shall conform to the minimum standards set forth in AASHTO "A Policy on Geometric Design of Highways and Streets."

(3) The design speed should be equal to or greater than the anticipated posted speed limit. Stopping sight distance is a critical component of design speed. New or reconstructed roads that are designed for a speed less than the statutory speed limit require an engineering and traffic investigation to determine the appropriate speed limit. Reference 60-6,190 Neb.Rev.Stat.

(4) 0.08 feet per foot maximum superelevation rate. The superelevation rate should match the design speed.

(5) Maximum grades may be exceeded by 2 percent for tangent distance of up to 500 feet in rough terrain.

(6) 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.

(7) Lane width shall not include width of curb or curb offset. See Typical Cross Sections (001.19 through 001.22) for cross slope.

(8) Minimum fixed obstacle clearance for a curbed section shall be 2 feet as measured from the back of the curb. Minimum fixed obstacle clearance for a non-curbed section shall be measured from the edge of the through driving lane. This area shall be free of obstacles except: (a) Traffic signals, railroad signals and railroad tracks; (b) Other obstacles including, but not limited to: ditches, slopes, driveways, intersections, earth dikes, curbs, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, culverts, bridges, roadway lighting, and traffic control devices if the county, through an engineering study, has determined that such obstacles are acceptable and are necessary for the operation and use of the road system; (c) Other obstacles if the county, through an engineering study and based upon a cost benefit analysis, determines that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment.

(9) Low water stream crossings may be constructed on very low volume (0 - 50 ADT) county roads functionally classified as Local or Minimum Maintenance, provided a relaxation of standards has been granted by the Board. New low water stream crossings shall not be constructed on county roads functionally classified as Other Arterial and Collector. All proposed construction or reconstruction shall be submitted to the Board for review in accordance with the rules and regulations for relaxation of standards.

(10) Existing bridges over 100 feet must be evaluated in accordance with AASHTO guidelines to determine the suitability of leaving them in place.

(11) A road graded to meet or exceed ROA1, ROA2, ROA3, RC1, RC2, RL1 or RL2 Minimum Design Standards in effect between September 2, 1970 and January 1, 2003 may be paved without being graded to current minimum design standards.

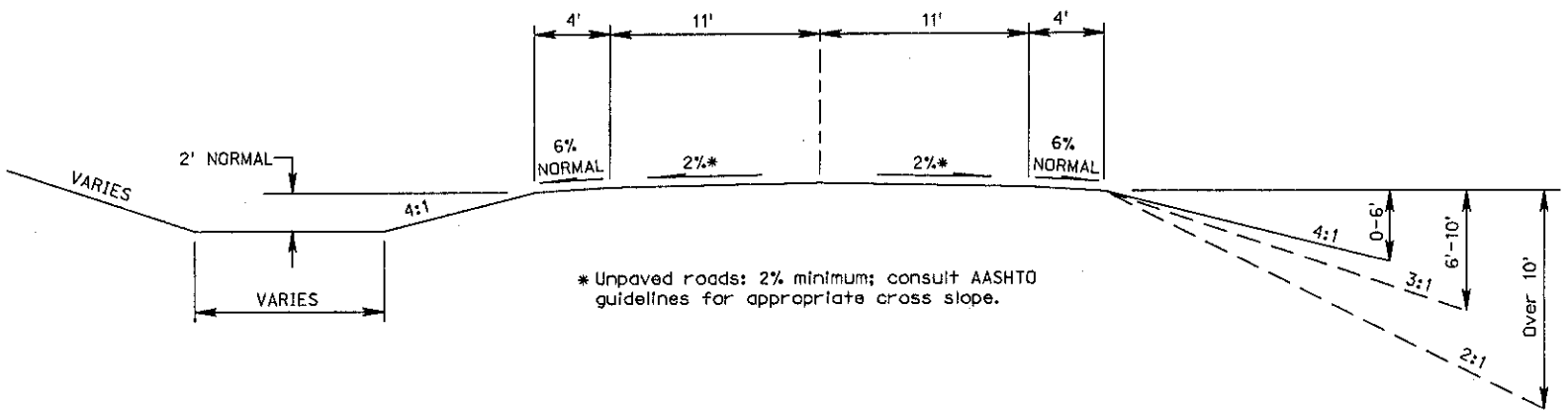
★ The paving of roads built to ROA4, RC3 and RL3 Minimum Design Standards, except for "Sandhills" soils, is prohibited. Such roads (0 - 50 ADT) in "Sandhills" soils may require paving because of the light, granular nature of the soils involved. It shall also be permissible to pave one 12-foot lane on roads built to RL3 Minimum Design Standards in "Sandhills" soils.

★★ Minimum design standards within the recreational area shall be consistent with the established speed limits, the topography and use of the facility. Design may be to either municipal or rural standards depending on terrain conditions. Minimum design speed permissible 20 mph.

\+ 24' desirable

++ HS-20 desirable

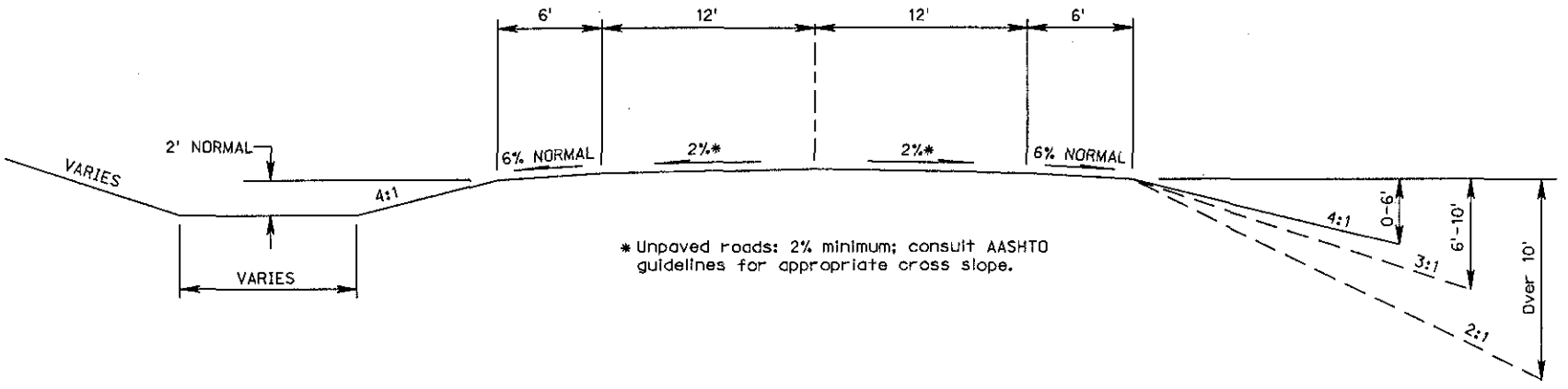
001.19 - TYPICAL CROSS SECTIONS OF IMPROVEMENT FOR RURAL ROADS



ROA2	RC1	RL1
OTHER ARTERIAL	COLLECTOR	LOCAL
251 - 400 ADT	251 - 400 ADT	251 - 400 ADT

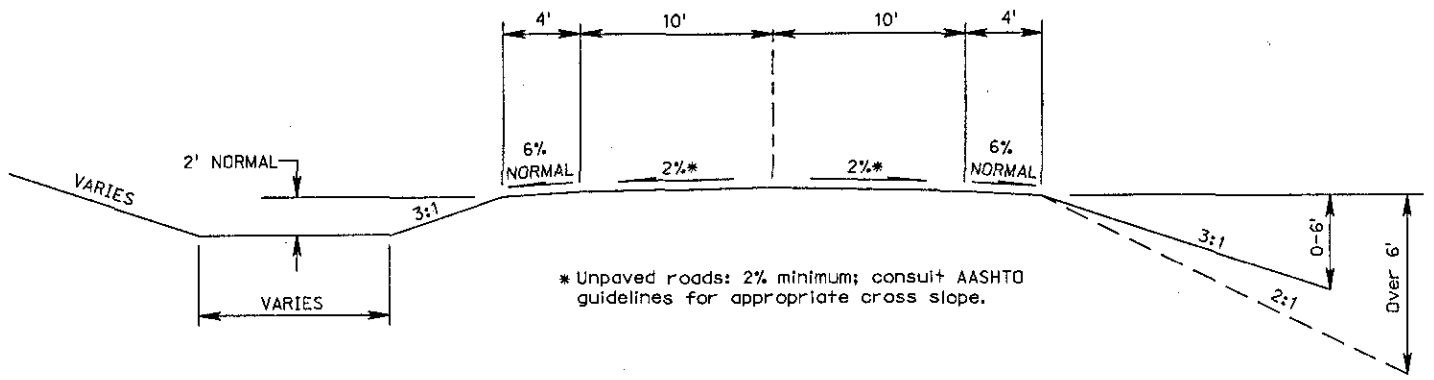
(401 - 750 ADT FOR SCENIC RECREATION)

001.18 - TYPICAL CROSS SECTIONS OF IMPROVEMENT FOR RURAL ROADS



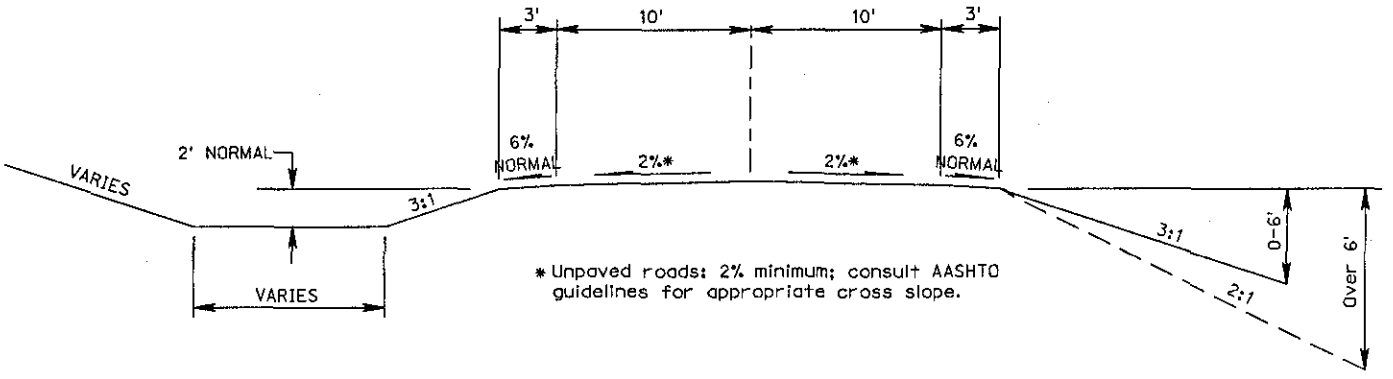
ROA1		
OTHER ARTERIAL	COLLECTOR	LOCAL
401 - 750 ADT	OVER 400 ADT	OVER 400 ADT

001.20 - TYPICAL CROSS SECTIONS OF IMPROVEMENT FOR RURAL ROADS



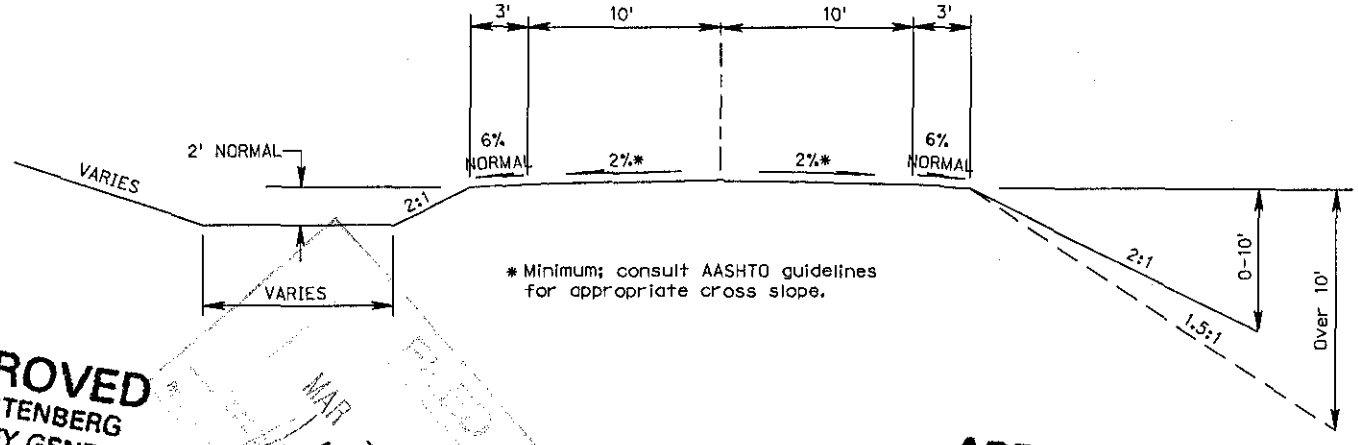
	ROA3 OTHER ARTERIAL	RC2 COLLECTOR	RL2 LOCAL
	51 - 250 ADT	51 - 250 ADT	51 - 250 ADT
FOR SCENIC RECREATION:	251 - 400 ADT	251 - 400 ADT	251 - 400 ADT

001.21 - TYPICAL CROSS SECTIONS OF IMPROVEMENT FOR RURAL ROADS



	ROA4 OTHER ARTERIAL	RC3 COLLECTOR
	0 - 50 ADT	0 - 50 ADT
FOR SCENIC RECREATION:	0 - 250 ADT	0 - 250 ADT

001.22 - TYPICAL CROSS SECTIONS OF IMPROVEMENT FOR RURAL ROADS



APPROVED
DON STENBERG
ATTORNEY GENERAL
BY
Assistant Attorney General
DATE 1/16/2002

FILED
MAR 5 2002

APPROVED
MAR 04 2002
MIKE JOHANNS
GOVERNOR

RL3
LOCAL
0 - 50 ADT

FOR SCENIC RECREATION: 0 - 250 ADT