

**DESIGN LOADING:** ALL NEW AND REHABILITATED BRIDGES SHALL BE DESIGNED FOR MS-18 LOADING.

**FOR NEW ROUTE CONSTRUCTION OR ROUTE RECONSTRUCTION PROJECTS:**

THE MINIMUM CLEAR WIDTH FOR NEW BRIDGES SHALL BE EQUAL TO THE FULL WIDTH OF THE APPROACH ROADWAY (CURB-TO-CURB OR FULL SHOULDER WIDTH AS APPLICABLE).

**TABLE I. MINIMUM CLEAR ROADWAY WIDTHS AND DESIGN LOADINGS FOR NEW AND RECONSTRUCTED BRIDGES (SEE PAGE 390)**

DESIGN ADT (VEH/DAY)	DESIGN LOADING	MINIMUM CLEAR ROADWAY WIDTH OF BRIDGE (1)
UNDER 400	MS-18	TRAVELED WAY + 1.2 m (0.6 m EACH SIDE)
400 TO 2,000	MS-18	TRAVELED WAY + 2.0 m (1.0 m EACH SIDE)
OVER 2,000	MS-18	APPROACH ROADWAY WIDTH

**TABLE II. MINIMUM STRUCTURAL CAPACITIES AND MINIMUM ROADWAY WIDTHS FOR EXISTING BRIDGES TO REMAIN IN PLACE (SEE PAGE 390) (3)**

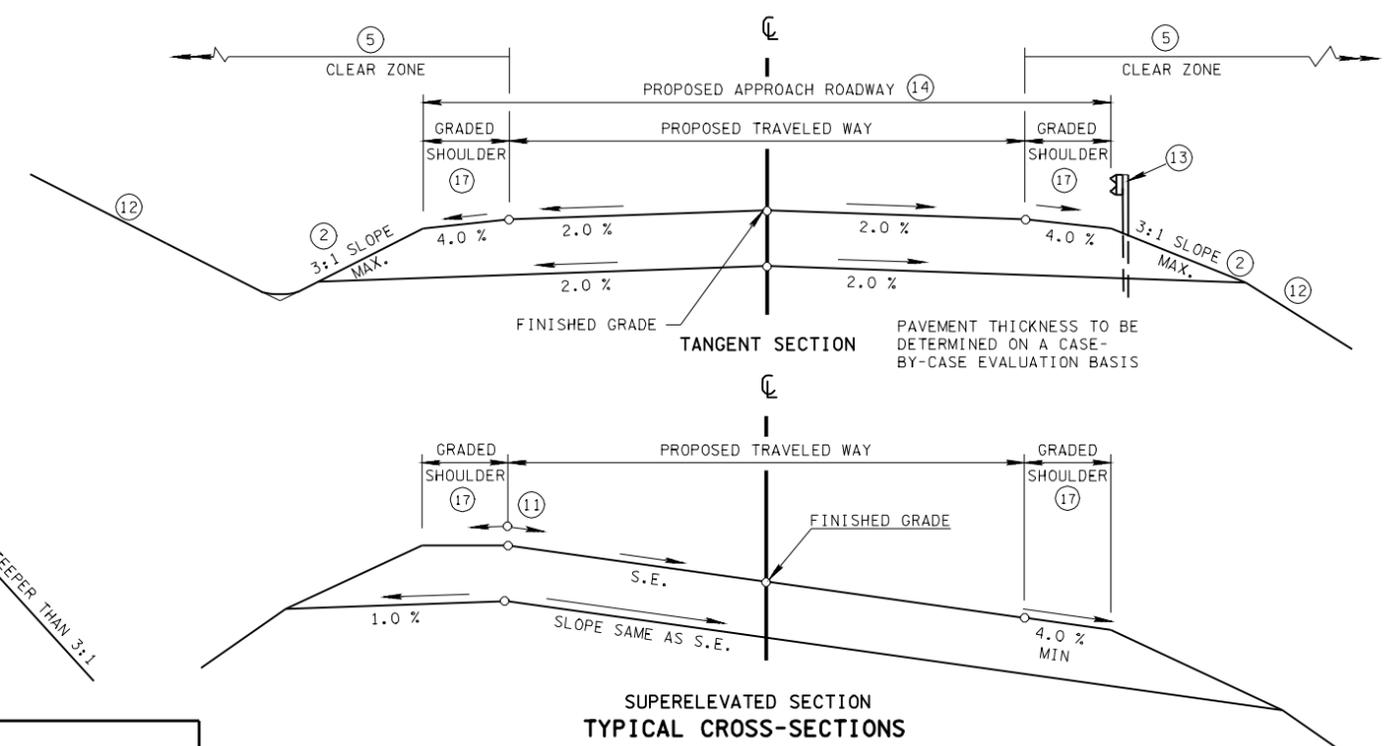
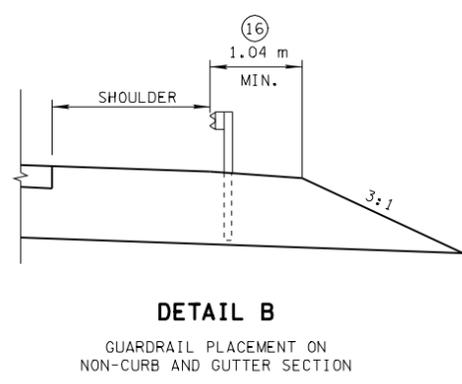
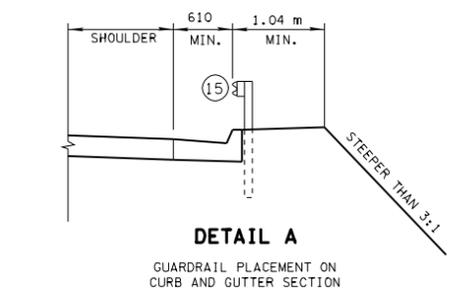
DESIGN ADT (VEH/DAY)	DESIGN LOADING (STRUCTURAL CAPACITY)	MINIMUM CLEAR ROADWAY WIDTH (m) (4)
0 TO 50	M13.5	6.0
50 TO 250	M13.5	6.0
250 TO 1,500	M13.5	6.6
1,500 TO 2,000	M13.5	7.2
OVER 2,000	M13.5	8.5

**TABLE III. MINIMUM DESIGN SPEEDS FOR LOCAL RURAL ROADS**

TYPE OF TERRAIN	DESIGN SPEED (km/h) FOR SPECIFIED DESIGN ADT (VEH/DAY)					
	UNDER 50	50 TO 250	250 TO 400	400 TO 1,500	1,500 TO 2,000	2,000 AND OVER
LEVEL	50	50	60	80	80	80
ROLLING	30 (6)	50	50	60	60	60
MOUNTAINOUS	30 (6)	30 (6)	30 (6)	50	50	50

**TABLE IV. LOCAL ROADS AND STREETS - DESIGN STANDARDS (8)**

DESIGN STANDARDS (FOR GIVEN DESIGN SPEED)	DESIGN ADT	DESIGN SPEEDS (km/h)									MINIMUM WIDTH OF SHOULDERS FOR ALL SPEEDS (METERS) SEE PAGE 388
		20	30	40	50	60	70	80	90	100	
MINIMUM WIDTH OF TRAVELED WAY IN RURAL AREAS (METERS) (SEE PAGE 388)	DESIGN ADT UNDER 400	5.4	5.4	5.4	5.4	5.4	6.0	6.0	6.6	6.6	1.2 (7)
	DESIGN ADT 400-1,500	6.0 (7)	6.0 (7)	6.0 (7)	6.0 (7)	6.0 (7)	6.6	6.6	6.6	6.6	1.5 (7) (9)
	DESIGN ADT 1,500-2,000	6.0	6.6	6.6	6.6	6.6	6.6	6.6	7.2 (10)	7.2 (10)	1.8
	DESIGN ADT OVER 2,000	6.6	7.2 (10)	7.2 (10)	7.2 (10)	7.2 (10)	7.2 (10)	7.2 (10)	7.2 (10)	7.2 (10)	2.4
MINIMUM RADIUS (m) 0.04 MAX. S.E.		15	35	60	100	150	215	280	375	490	
MINIMUM RADIUS (m) 0.06 MAX. S.E.		15	30	55	90	135	195	250	335	435	SEE PAGE 145
MINIMUM RADIUS (m) 0.08 MAX. S.E.		10	30	50	80	125	175	230	305	395	
MAXIMUM RURAL GRADES %	LEVEL TERRAIN	9	8	7	7	7	6	6	5		
	ROLLING TERRAIN	12	11	11	10	10	9	8	7	6	SEE PAGE 386
	MOUNTAINOUS TERRAIN	17	16	15	14	13	12	10	10		
MINIMUM STOPPING SIGHT DISTANCE (FEET)		20	35	50	65	85	105	130	160	185	
MINIMUM "K" VALUE	CREST VERTICAL CURVE	1	2	4	7	11	17	26	39	52	SEE PAGE 385
	SAG VERTICAL CURVE	3	6	9	13	18	23	30	38	45	
MINIMUM PASSING SIGHT DISTANCE (m)			200	270	345	410	485	540	615	670	SEE PAGE 386
MINIMUM "K" VALUE FOR CREST VERTICAL CURVE			46	84	138	195	272	338	438	520	
SUPERELEVATION		SEE STANDARD DRAWINGS RDM01-SE-2 AND RDM01-SE-3									

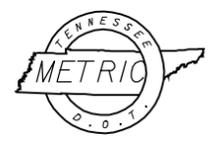


**GENERAL NOTES**

- (A) FOR SPECIFIC CONDITIONS NOT COVERED ON THIS SHEET, REFERENCE SHOULD BE MADE TO "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS," AASHTO, 2001.
- (B) FOR URBAN DESIGN GUIDANCE AND CRITERIA, REFERENCE IS MADE TO "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS," AASHTO, 2001, PAGES 393 TO 408.
- (C) PAGE NUMBERS REFERRED TO ON THIS DRAWING ARE FROM "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS," AASHTO, 2001.
- (D) REFERENCE IS ALSO MADE TO THE "ROADSIDE DESIGN GUIDE," AASHTO, 2002.
- (E) FOR CORNER SIGHT DISTANCE AT RURAL INTERSECTIONS SEE PAGES 654 THROUGH 681.
- (F) IF NO ABOVE GROUND UTILITIES ARE INVOLVED, MINIMUM RIGHT-OF-WAY SHALL BE TRAVELED WAY PLUS CLEAR ZONE (MINIMUM 3.0 METERS EACH SIDE).
- (G) IF ABOVE GROUND UTILITIES ARE INVOLVED, MINIMUM RIGHT-OF-WAY SHALL BE SUFFICIENT TO ACCOMMODATE THE UTILITIES OUTSIDE THE CLEAR ZONE.
- (H) DESIRABLE RIGHT-OF-WAY IS SLOPE LINES PLUS 3.0 METERS.

**FOOTNOTES**

- (1) WHERE THE APPROACH ROADWAY WIDTH (TRAVELED WAY PLUS SHOULDERS) IS SURFACED, THAT SURFACE WIDTH SHOULD BE CARRIED ACROSS THE STRUCTURE.
- (2) 4:1 SLOPE FOR 60 KILOMETERS PER HOUR OR GREATER WITH A DESIGN ADT OF 1,000 OR GREATER OR ANY LOCATION GUARDRAIL IS USED.
- (3) THESE STRUCTURES SHOULD BE ANALYZED INDIVIDUALLY, TAKING INTO CONSIDERATION THE CLEAR WIDTH PROVIDED, TRAFFIC VOLUMES, REMAINING LIFE OF THE STRUCTURE, PEDESTRIAN VOLUMES, SNOW STORAGE, DESIGN SPEED, ACCIDENT RECORD, AND OTHER PERTINENT FACTORS.
- (4) CLEAR WIDTH BETWEEN CURBS OR RAILS, WHICHEVER IS THE LESSER. MINIMUM CLEAR WIDTHS THAT ARE 0.6 METERS NARROWER MAY BE USED ON ROADS WITH FEW TRUCKS. IN NO CASE SHALL THE MINIMUM CLEAR WIDTH BE LESS THAN THE APPROACH TRAVELED WAY WIDTH.
- (5) THE CLEAR ZONE WIDTH SHALL BE DETERMINED FROM STANDARD DRAWING RDM01-S-12. SEE THE "ROADSIDE DESIGN GUIDE," AASHTO, 2002, FOR FURTHER INFORMATION ON CLEAR ZONES.
- (6) EFFORTS SHOULD BE MADE TO SELECT A DESIGN SPEED GREATER THAN 30 KILOMETERS PER HOUR. SEE PAGE 384 FOR FURTHER INFORMATION.
- (7) FOR ROADS IN MOUNTAINOUS TERRAIN WITH DESIGN ADT OF 0 TO 600 VEHICLES PER DAY AND THE DESIGN SPEED GREATER THAN OR EQUAL TO 20 KILOMETERS PER HOUR AND LESS THAN OR EQUAL TO 60 KILOMETERS PER HOUR, USE 5.4 METERS TRAVELED WAY WIDTH AND 0.6 METERS SHOULDER WIDTH.
- (8) ALTHOUGH THE SELECTED DESIGN SPEED ESTABLISHES THE LIMITING VALUES OF CURVE RADIUS AND MINIMUM SIGHT DISTANCE THAT SHOULD BE USED IN DESIGN, THERE SHOULD BE NO RESTRICTION ON THE USE OF FLATTER HORIZONTAL CURVES OR GREATER SIGHT DISTANCES WHERE SUCH IMPROVEMENTS CAN BE PROVIDED AS A PART OF AN ECONOMICAL DESIGN (SEE PAGE 69).
- (9) MAY BE ADJUSTED TO ACHIEVE A MINIMUM ROADWAY WIDTH OF 9 METERS FOR DESIGN SPEEDS GREATER THAN 60 KILOMETERS PER HOUR.
- (10) WHERE THE WIDTH OF THE TRAVELED WAY IS SHOWN AS 7.2 METERS, THE WIDTH MAY REMAIN AT 6.6 METERS ON RECONSTRUCTED HIGHWAYS WHERE ALIGNMENT AND SAFETY RECORDS ARE SATISFACTORY.
- (11) THE SLOPES OF THE SHOULDER AND ROADWAY PAVEMENT SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 7.0 %.
- (12) SEE STANDARD DRAWINGS RDM01-S-11 AND RDM01-S-11B (CASE II) FOR DESIRABLE SLOPES & NOTE REGARDING GEOLOGICAL RECOMMENDATIONS.
- (13) SEE DETAILS A AND B FOR GUARDRAIL PLACEMENT AND GUARDRAIL STANDARD DRAWINGS (SM-GR-SERIES).
- (14) PROPOSED APPROACH ROADWAY WIDTH WILL NOT BE LESS THAN EXISTING WIDTH.
- (15) WHEN THE AVAILABLE SPACE BETWEEN THE BARRIER AND THE OBJECT IS LESS THAN 1.04 METERS, THE BARRIER SHOULD BE STIFFENED IN ADVANCE AND ALONGSIDE THE FIXED OBJECT.
- (16) WHERE DESIGN ADT IS 400 OR LESS, THE 610 MILLIMETERS OFFSET TO THE FACE OF GUARDRAIL OR CURB MAY BE ELIMINATED. APPLICABLE TO "CURB ONLY" OR WHEN NO CURB AND GUTTER IS USED.
- (17) SHOULDER SURFACE TREATMENT TO BE SPECIFIED BY THE DESIGN DIVISION'S PAVEMENT DESIGN SECTION. DESIGNERS SHOULD REFER TO THE DESIGN GUIDELINES FOR PAVEMENT REQUEST PROCEDURES. WHEN SHOULDERS ARE PAVED AND GRADED SHOULDER WIDTH IS 1.8 METERS OR GREATER, THE SHOULDER SHOULD BE PAVED THE GRADED SHOULDER WIDTH MINUS 600 MILLIMETERS. WHEN SHOULDERS ARE PAVED AND THE GRADED SHOULDER WIDTH IS LESS THAN 1.8 METERS, THE SHOULDER SHOULD BE PAVED THE WIDTH OF THE GRADED SHOULDER.



ALL UNITS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.  
 MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

DESIGN STANDARDS FOR LOCAL ROADS AND STREETS