

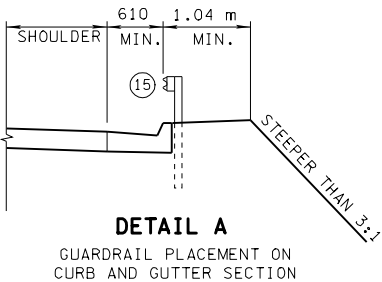
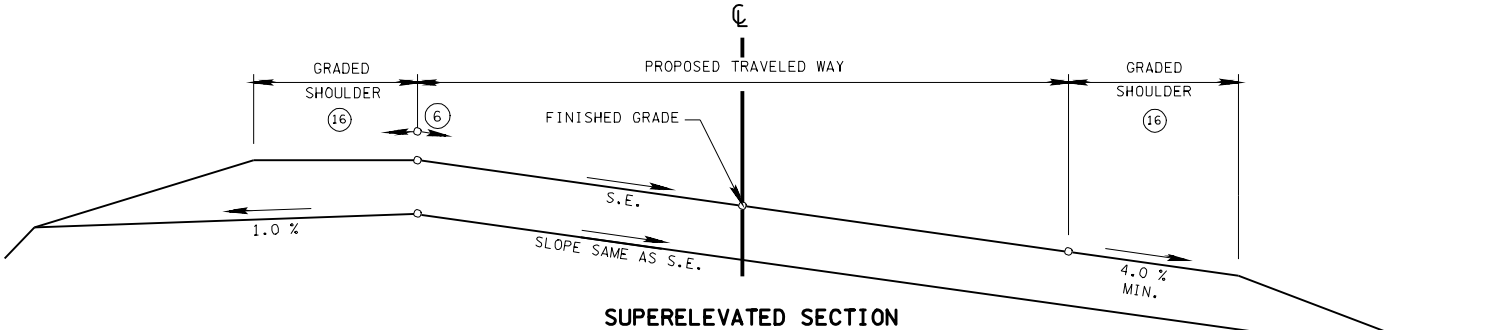
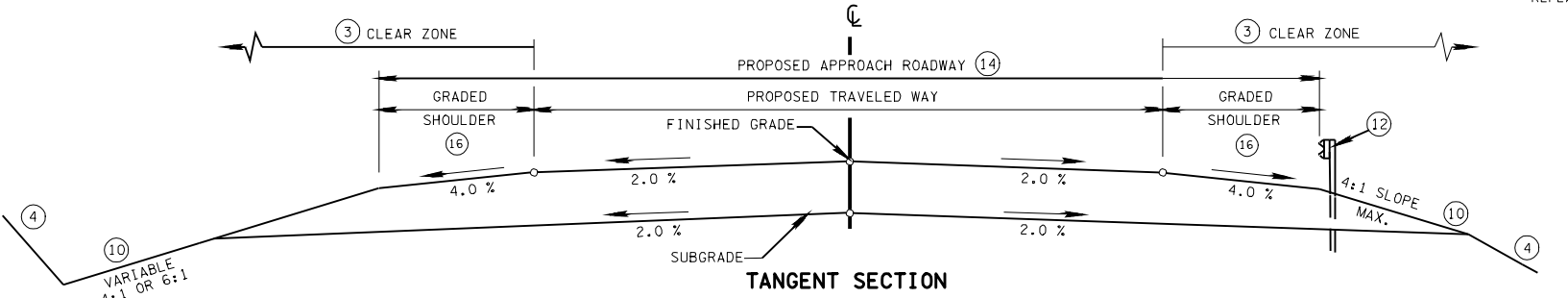
DESIGN LOADING: ALL NEW AND REHABILITATED BRIDGES SHALL BE DESIGNED FOR MS-18 LOADING.
FOR NEW ROUTE CONSTRUCTION OR ROUTE RECONSTRUCTION PROJECTS:
THE MINIMUM CLEAR WIDTH FOR NEW BRIDGES SHALL BE EQUAL TO THE FULL WIDTH OF THE APPROACH ROADWAY (CURB-TO-CURB OR FULL SHOULDER WIDTH AS APPLICABLE).

TABLE I. MINIMUM CLEAR ROADWAY WIDTHS AND DESIGN LOADINGS FOR NEW AND RECONSTRUCTED BRIDGES (SEE PAGE 430)		
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 1,500	MS-18	TRAVELED WAY + 2 m (1.0 m EACH SIDE)
1,500 TO 2,000	MS-18	TRAVELED WAY + 2.4 m (1.2 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 431) ②		
DESIGN ADT (VEH/DAY)	DESIGN LOADING (STRUCTURAL CAPACITY)	MINIMUM CLEAR ROADWAY WIDTH (m) ⑤
UNDER 400	MS-13.5	6.6
400 - 1,500	MS-13.5	6.6
1,500 - 2,000	MS-13.5	7.2
OVER 2,000	MS-13.5	8.4

TABLE III. MINIMUM DESIGN SPEEDS FOR RURAL COLLECTOR ROADS (SEE PAGE 426)			
TYPE OF TERRAIN	MINIMUM DESIGN SPEED (km/h) FOR SPECIFIED DESIGN ADT (VEH/DAY)		
	0-400	400-2,000	OVER 2,000
LEVEL	60	80	100
ROLLING	50 ⑦	60	80
MOUNTAINOUS	30	50	60

TABLE IV. COLLECTOR ROADS AND STREETS - DESIGN STANDARDS											⑬
DESIGN STANDARDS (FOR GIVEN DESIGN SPEED)		DESIGN SPEEDS (km/h)								MINIMUM WIDTH OF SHOULDERS FOR ALL SPEEDS (m) (SEE PAGE 429)	
		30	40	50	60	70	80	90	100		
MINIMUM WIDTH OF TRAVELED WAY IN RURAL AREAS (m) (SEE PAGE 429)	DESIGN ADT UNDER 400	6.0 ⑨	6.0 ⑨	6.0 ⑨	6.0 ⑨	6.0	6.0	6.6	6.6	1.2	
	DESIGN ADT 400 - 1,500	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	1.2	
	DESIGN ADT 1,500 - 2,000	6.6	6.6	6.6	6.6	6.6	6.6	7.2	7.2	1.8	
	DESIGN ADT OVER 2,000	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	2.4	
MINIMUM RADIUS (m) 0.04 MAX. S.E.		35	60	100	150	215	280	375	490	SEE PAGE 145	
MINIMUM RADIUS (m) 0.06 MAX. S.E.		30	55	90	135	195	250	335	435		
MINIMUM RADIUS (m) 0.08 MAX. S.E.		30	50	80	125	175	230	305	395		
MAXIMUM RURAL GRADES %	LEVEL TERRAIN	7	7	7	7	7	6	6	5	SEE PAGE 427	
	ROLLING TERRAIN	10	10	9	8	8	7	7	6		
	MOUNTAINOUS TERRAIN	12	11	10	10	10	9	9	8		
MAXIMUM URBAN GRADES %	LEVEL TERRAIN	9	9	9	9	8	7	7	6	SEE PAGE 436	
	ROLLING TERRAIN	12	12	11	10	9	8	8	7		
	MOUNTAINOUS TERRAIN	14	13	12	12	11	10	10	9		
MINIMUM STOPPING SIGHT DISTANCE (m)		35	50	65	85	105	130	160	185	SEE PAGE 426	
MINIMUM "K" VALUE	CREST VERTICAL CURVE	2	4	7	11	17	26	39	52		
	SAG VERTICAL CURVE	6	9	13	18	23	30	38	45		
MINIMUM PASSING SIGHT DISTANCE (m)		200	270	345	410	485	540	615	670	SEE PAGE 427	
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									



FOOTNOTES

- ① WHERE THE APPROACH ROADWAY WIDTH (TRAVELED WAY PLUS SHOULDERS) IS SURFACED, THAT SURFACE WIDTH SHOULD BE CARRIED ACROSS THE STRUCTURE.
- ② 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.
- ③ 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.
- ④ SEE STANDARD DRAWINGS RDM01-S-11 AND RDM01-S-11B FOR DESIRABLE SLOPES AND NOTE REGARDING GEOLOGICAL RECOMMENDATIONS.
- ⑤ CLEAR WIDTH BETWEEN CURBS OR RAILS, WHICHEVER IS THE LESSER, SHOULD BE EQUAL TO OR GREATER THAN THE APPROACH TRAVELED WAY.
- ⑥ THE SLOPE OF THE SHOULDER AND THE ROADWAY PAVEMENT SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 7.0 %.
- ⑦ EFFORTS SHOULD BE MADE TO SELECT A DESIGN SPEED GREATER THAN 30 KILOMETERS PER HOUR. REFER TO PAGE 426 FOR FURTHER INFORMATION.
- ⑧ ON ROADWAYS TO BE RECONSTRUCTED, A 6.6 METER TRAVELED WAY MAY BE RETAINED WHERE THE ALIGNMENT AND SAFETY RECORDS ARE SATISFACTORY.
- ⑨ THE 5.4 METERS MINIMUM WIDTH MAY BE USED FOR ROADWAYS WITH DESIGN ADTS UNDER 250 VEHICLES PER DAY.
- ⑩ DESIGN ADTS OVER 400 AND DESIGN SPEEDS OF 80 KILOMETERS PER HOUR AND GREATER SHALL REQUIRE 6:1 FORESLOPES, AND 1.06 METERS DEPTH DITCHES INSTEAD OF 0.6 METER DITCHES.
- ⑪ SHORT LENGTHS OF GRADE IN RURAL AND URBAN AREAS, SUCH AS GRADES LESS THAN 150 METERS IN LENGTH, ONE-WAY DOWNGRADES, AND GRADES ON LOW-VOLUME RURAL OR URBAN COLLECTORS MAY BE UP TO 2 PERCENT STEEPER THAN THE GRADES SHOWN IN TABLE IV.
- ⑫ SEE DETAIL A FOR GUARDRAIL PLACEMENT AND GUARDRAIL STANDARD DRAWINGS (SM-GR-SERIES).
- ⑬ 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).
- ⑭ PROPOSED ROADWAY WIDTH WILL NOT BE LESS THAN EXISTING WIDTH.
- ⑮ WHEN GUARDRAIL IS PLACED BEHIND CURB AND GUTTER, THE SLOPING CURB HEIGHT MUST BE 100 MILLIMETERS OR LESS.
- ⑯ 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.

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 PAGE NUMBERS REFERRED TO ON THIS DRAWING ARE FROM "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS," AASHTO, 2001, UNLESS OTHERWISE NOTED.
- C REFERENCE SHOULD ALSO BE MADE TO THE "ROADSIDE DESIGN GUIDE," AASHTO, 2002.
- D FOR URBAN DESIGN GUIDANCE AND CRITERIA, SEE PAGES 433-444.
- E DESIRABLE RIGHT-OF-WAY IS SLOPE LINES PLUS 4.6 METERS.
- F FOR RURAL INTERSECTION DESIGN, SEE PAGE 432.
- G FOR URBAN INTERSECTION DESIGN, SEE PAGE 442.
- H IF NO ABOVE GROUND UTILITIES ARE INVOLVED, MINIMUM RIGHT-OF-WAY SHALL BE TRAVELED WAY PLUS CLEAR ZONE.
- I IF ABOVE GROUND UTILITIES ARE INVOLVED, MINIMUM RIGHT-OF-WAY SHALL BE SUFFICIENT TO ACCOMMODATE THE UTILITIES OUTSIDE THE CLEAR ZONE.



ALL UNITS ARE IN MILLIMETERS
UNLESS NOTED OTHERWISE.

☐ MINOR REVISION -- FHWA
APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

DESIGN STANDARDS
FOR COLLECTOR
ROADS AND STREETS

10-15-02 RDM01-TS-2