

Design Element			Manual Section	2-Lane					
Design Controls	Design Year Traffic (AADT)		40-2.01	< 400	400 ≤ AADT < 1000	1000 ≤ AADT < 3000	3000 ≤ AADT < 5000	≥ 5000	
	Design Forecast Year		55-4.01	20 Years (1)					
	*Design Speed (mph) (2)		55-4.01	Posted Speed Limit					
	Access Control		40-5.0	None					
	Level of Service		40-2.0	Desirable: B; Minimum: D					
Cross Section Elements	Travel Lane	*Width	55-4.05	Des: 12 ft. Min: 10 ft.	Des: 12 ft. Min: 11 ft.	Des: 12 ft. Min: 11 ft.	12 ft. (3)	12 ft. (3)	
		Typical Surface Type (4)		Ch. 52	Asphalt / Concrete				
	Shoulder (5)	*Width Usable	55-4.05	Des: 4 ft. Min: 2 ft.	Des: 6 ft. Min: 2 ft.	Des: 8 ft. Min: 3 ft.	Des: 8 ft. Min: 6 ft.	Des: 10 ft. Min: 6 ft.	
		*Width Paved	55-4.05	Des: 2 ft. Min: 0 ft.	Des: 4 ft. Min: 0 ft.	Des: 4 ft. Min: 2 ft.	Des: 6 ft. Min: 2 ft.	Des: 8 ft. Min: 2 ft.	
		Typical Surface Type (4)		Ch. 52	Asphalt / Concrete / Sealed Aggregate				
	Cross Slope	*Travel Lane (6)	55-4.05	2% Typical; 3% Maximum					
		Shoulder (7)		55-4.05	Paved Width ≤ 4 ft: 2% - 3%; Paved Width > 4 ft: 4%-6% Asphalt / Concrete; 6% Sealed Aggregate				
	Auxiliary Lanes	Lane Width	55-4.05	Des: Same as Travel Lane Min: 10 ft.		Des: Same as Travel Lane Min: 11 ft.			
		Shoulder Width		Des: Same as Next to Travel Lane; Min: 2 ft.					
	Obstruction Free Zone			55-5.02	See Section 55-5.02				
	Side Slopes	Cut	Foreslope	55-4.05	2:1 or Flatter (8)				
			Ditch Width		(8)				
			Backslope		2:1 or Flatter (8)				
Fill		55-4.05	2:1 or Flatter (8)						
Bridges**	New or Reconstructed Bridge	*Structural Capacity	Ch. 60	HS-25 (9)					
		*Clear Roadway Width (10)		55-6.03	Full Paved Approach Width				
	Existing Bridge to Remain in Place	*Structural Capacity	Ch. 72	HS-15					
		*Clear Roadway Width (11)		55-6.02	22 ft.	22 ft.	24 ft.	28 ft.	28 ft.
	*Vertical Clearance (Collector Under)	New or Replaced Overpassing Bridge (12)		55-6.0	14.5 ft.				
		Existing Overpassing Bridge (13)			14.0 ft.				
Vertical Clearance (Collector Over Railroad) (14)			Ch. 69	23.0 ft.					

Des: Desirable; Min: Minimum.

\* Controlling design criteria (see Section 40-8.0). \*\* Selection of the cross section and bridge elements is based on the design year traffic volumes irrespective of the design speed.

**GEOMETRIC DESIGN CRITERIA FOR STATE RURAL COLLECTOR ROAD (3R Project)**  
**Table 55-3B**

Design Element		Manual Section	2-Lane					
Alignment Elements	Design Speed	---	35 mph	45 mph	50 mph	55 mph	60 mph	
	*Stopping Sight Distance	Desirable	55-4.02	275 ft.	350 ft.	425 ft.	525 ft.	600 ft.
	Decision Sight Distance	Speed / Path / Direction Change	42-2.0	550 ft.	650ft.m	750ft.	875 ft.	1025ft.
		Stop Maneuver		300 ft.	375 ft.	450 ft.	550 ft.	650 ft.
	Passing Sight Distance		42-3.0	Existing	Existing	Existing	Existing	Existing
	Intersection Sight Distance, -3% to +3% (16)		55-4.06	P: 410 ft SU: 530 ft	P: 500 ft SU: 610 ft	P: 630 ft SU: 770 ft	P: 760 ft SU: 920 ft	P: 870 ft SU: 1050 ft
	*Minimum Radii		55-4.03	See Section 55-4.03				
	*Superelevation Rate		55-4.03	See Section 55-4.03				
	*Horizontal Sight Distance		55-4.03	See Section 55-4.03				
	*Vertical Curvature (K-values)	Crest	55-4.04	See Section 55-4.04				
		Sag		See Section 55-4.04				
	*Maximum Grade (15)	Level	55-4.04	9%	8%	8%	7.5%	7%
		Rolling		10%	9%	9%	8.5%	8%
Minimum Grade		44-1.03	Desirable: 0.5%; Minimum: 0.0%					

\* Controlling design criteria (see Section 40-8.0).

Deviations from controlling design criteria should be addressed in an approved design exception. Also, any operational or maintenance changes, permanent or temporary, exclusive of work-zone traffic control that in fact create substandard conditions such as by re-striping to obtain added lane(s) by reducing existing lane widths or shoulders, must be addressed in design exceptions whether or not actual construction or reconstruction involved.

Design exception requests for Level One design criteria require Chief, Design Division approval.

## GEOMETRIC DESIGN CRITERIA FOR STATE RURAL COLLECTOR ROAD (3R Project)

**Table 55-3B (Continued)**

**GEOMETRIC DESIGN CRITERIA FOR STATE RURAL COLLECTOR ROAD**  
**(3R Project)**  
**Footnotes to Table 55-3B**

- (1) Design Forecast Year. For resurfacing projects, the pavement should be designed for at least a 10-year design life.
- (2) Design Speed. The minimum design speed should equal a) the anticipated posted speed limit after construction or b) the state legal limit (55 mph) on non-posted highways.
- (3) Travel Lane (Widths). A minimum 11 ft. travel lane may be used where truck volumes are less than 200 trucks per day.
- (4) Surface Type. The pavement type selection will be determined by the Materials and Tests Division's pavement design engineer or by the local jurisdiction.
- (5) Shoulder. The following will apply:
  - a. On INDOT facilities the shoulder is paved to the front face of guardrail. The desirable guardrail offset is 1 ft from the effective usable shoulder width. In restrictive situations, the guardrail offset may be 1 ft from the effective usable shoulder width. See Section 49-5.0 for more information.
  - b. If guardrail is present, the minimum offset from E.T.L. to the front face of guardrail should desirably be equal to the shy line distance, but not less than 4 ft. See Section 49-5.0 for shy line offsets.
  - c. Usable shoulder width is defined as the distance from the edge of the travel lane to the shoulder break point.
- (6) Cross Slope (Travel Lane). Cross slopes of 1.5% are acceptable on existing bridges to remain in place.
- (7) Cross Slopes (Shoulder). Table values are for tangent sections. See Figure 45-1A(1) or Figure 45-1A(2) for more-specific information. See Figure 43-3M or Figure 43-3N for shoulder cross slope on a horizontal curve.
- (8) Side Slopes. Section 55-4.05 provides additional information for side slope criteria.
- (9) Structural Capacity (New and Reconstructed Bridges). The following will apply:
  - a. All bridges on facilities with greater than 600 trucks per day should be checked using the Alternate Military Loading.
  - b. All State highway bridges within 15 mi. of a Toll Road Gate must be designed for Toll Road Loading.
  - c. All bridges on "Extra Heavy Duty Highways" must be designed for the Michigan Train truck loading configuration.
  - d. See Chapter Sixty for additional information on the loading criteria.
- (10) Width (New and Reconstructed Bridges). Widths are minimums for 3R projects. See Section 59-1.0 for additional information on bridge widths. On State highways, the minimum clear roadway width should be 30 ft.
- (11) Width (Existing Bridges to Remain in Place). Clear width will be at least equal to the approach traveled way width or table values, whichever is

greater.

- (12) Vertical Clearance (Collector Under). Table values include an additional 0.5 ft. allowance for future pavement overlays. Vertical clearances apply from usable edge to usable edge of shoulders.
- (13) Vertical Clearance (Existing Bridges). See Section 55-6.02 for additional information on minimum allowable vertical clearances.
- (14) Vertical Clearance (Collector Over Railroad). See Chapter Sixty-nine for additional information on railroad clearances under highways.
- (15) Maximum Grades. For grades less than 500 ft. in length (PVT to PVC), the maximum grade may be up to 2% steeper than table value. For low-volume roads (AADT<400), the maximum grade may also be 2% steeper.
- (16) Intersection Sight Distance. For left turn onto a 2-lane road. P = Passenger car; SU = single unit truck. See Figure 46-10G for values for combination trucks.