Design Element				Manual Section	2-Lane				Multi-Lane	
Design Controls	Design Year Traffic (AADT)			40-2.01	< 400	400 ≤ AADT < 3000	3000 ≤ AADT < 5000	≥ 5000	Undivided	Divided
	Design Forecast Year			55-4.01	20 Years (1)				20 Years (1)	
	*Design Speed (km/h) (2)			55-4.01	Posted Speed Limit				Posted Speed Limit	
	Access Control			40-5.0	Partial Control / None				Partial Control / None	
	Level of Service			40-2.0	Desirable: B; Minimum: D				Desirable: B; Minimum: D	
Cross Section Elements	Travel Lane	*Width		55-4.05	3.6 m	3.6 m	3.6 m	3.6 m	3.6 m	
		Typical Surface Type (3)		Ch. 52	Asphalt / Concrete				Asphalt / Concrete	
	Shoulder (4)	*Width Usable		55-4.05	D: 1.8 m M: 0.6 m	D: 2.4 m M: 0.9 m	D: 2.4 m M: 1.8 m	D: 3.3 m M: 2.4 m	Desirable: 3.3 m Minimum: 2.4 m	Rt: D: 3.3 m; M: 2.7 m Lt: D: 1.2 m; M: 1.2 m
		*Width Paved		55-4.05	D: 1.2 m M: 0.0 m	D: 1.8 m M: 0.6 m	D: 1.8 m M: 0.6 m	D: 3.0 m M: 0.6 m	Desirable: 3.0 m Minimum: 2.4 m	Rt: D: 3.0 m; M: 2.4 m Lt: D: 1.2 m; M: 0.9 m
		Typical Surface Type (3)		Ch. 52	Asphalt / Concrete / Sealed Aggregate				Asphalt / Concrete / Sealed Aggregate	
	Cross Slopes	*Travel Lane (5)		55-4.05	2%				2%	
		Shoulder (6)		55-4.05	Paved Width ≤ 1.2 m: 2%; Paved Width > 1.2 m: 4% Asphalt / Concrete; 6% Sealed Aggregate				Paved Width ≤ 1.2 m: 2%; Paved Width > 1.2 m: 4% Asphalt / Concrete; 6% Sealed Aggregate	
	Auxillary Lanes	Lane Width		55-4.05	Desirable: 3.6 m; Minimum: 3.3 m				Desirable: 3.6 m; Minimum: 3.3 m	
		Shoulder Width			Des: Same as Next to Travel Lane; Min: 0.6 m				Des: Same as Next to Travel Lane; Min: 0.6 m	
	Median Width			55-4.05	N/A				0.0 m	Existing
	Obstruction Free Zone			55-5.02	See Section 55-5.02				See Section 55-5.02	
	Side Slopes	Cut	Foreslope	55-4.05	2:1 or Flatter (7)				2:1 or Flatter (7)	
			Ditch Width		(7)				(7)	
			Backslope		2:1 or Flatter (7)				2:1 or Flatter (7)	
		Fill			2:1 or Flatter (7)				2:1 or Flatter (7)	
	Median Slopes			55-4.05	N/A				Desirable: 8:1; Maximum: 4:1	
Bridges**	New or Reconstructed Bridge	*Structural Capacity		Ch. 60	HS-25 (8)					
		*Clear Roadway Width (9)		55-6.03	Full Paved Approach Width					
	Existing Bridge to Remain in Place	*Structural Capacity		Ch. 72	HS-20					
		*Clear Roadway Width		55-6.02	Travelway Plus 0.6 m on Each Side					
	*Vertical Clearance (Arterial Under) (10)	New or Replaced Overpassing Bridge		55-6.0	5.05 m					
		Existing Overpassing Bridge (11)			4.30 m					
		Sign Truss / Pedestrian Bridge			New: 5.35 m; Existing: 5.20 m					
	Vertical Clearance (Arterial Over Railroad) (12)			Ch. 69	7.00 m					

D or Des: Desirable; M or 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 RURAL ARTERIAL (3R Project)

Table 55-3A

Design Element			Manual Section			
Alignment Elements	Design Speed		---	80 km/h	90 km/h	100 km/h
	*Stopping Sight Distance		55-4.02	130 m	160 m	185 m
	DecisionSight Distance	Speed / Path / Direction Change	42-2.0	230 m	270 m	315 m
		Stop Maneuver		140 m	170 m	200 m
	Passing Sight Distance		42-3.0	Existing	Existing	Existing
	Intersection Sight Distance, -3% to +3% (14)		55-4.06	P: 190 m; SU: 235 m	P: 230 m; SU: 280 m	P: 265 m; SU: 320 m
	*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 (13)	Level	55-4.04	5%	4.5%	4%
		Rolling		6%	5.5%	5%
	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 land widths or shoulders, must be addressed in design exceptions whether or not actual construction or reconstruction is involved.

Design exception requests are required for Level One design criteria for each project type as follows:

a) Non-exempt federally-funded project on the Interstate system requires FHWA approval.
b) Exempt federally-funded project on the Interstate system requires Chief, Design Division approval.
c) Non-federally-funded project on the Interstate system requires Chief, Design Division approval with an information copy sent to FHWA.
d. Project not on the Interstate system requires Chief, Design Division approval.

GEOMETRIC DESIGN CRITERIA FOR RURAL ARTERIAL
(3R Project)

Table 55-3A (Continued)

GEOMETRIC DESIGN CRITERIA FOR RURAL ARTERIAL
(3R Project)

Footnotes to Table 55-3A

(1) Design Forecast Year. For a partial 3R project, 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 of 60 mph on a non-posted multilane divided highway or 55mph on a non-posted two-lane highway.

(3) Surface Type. The pavement type selection will be determined by the Materials and Tests Division's pavement design engineer or by the local jurisdiction.

(4) Shoulder. The following will apply:

a. On an INDOT facility, the shoulder should be paved to the front face of guardrail. The desirable guardrail offset is 0.6 m from the effective usable shoulder width. In a restrictive situation, the guardrail offset may be 0.3 m 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 should not be less than 1.2 m. 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.

(5) Cross Slope (Travel Lane). Cross slopes of 1.5% are acceptable on an existing bridge to remain in place.

(6) 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.

(7) Side Slopes. Section 55-4.05 provides additional information for side slope criteria.

(8) Structural Capacity (New or Reconstructed Bridge). The following will apply:

a. Each bridge on a facility with greater than 600 trucks per day should be checked using the Alternate Military loading.
b. Each State highway bridge within 25 km of a Toll Road gate must be designed for Toll Road Loading.
c. Each bridge on an Extra Heavy Duty Highway must be designed for the Michigan Train truck loading configuration.
d. See Chapter Sixty for additional information on the loading configurations.

(9) Width (New or Reconstructed Bridge). Width is the minimum for a 3R project. See Section 59-1.0 for additional information on bridge width. On a State highway, the minimum clear roadway width should be 9.4 m.

(10) Vertical Clearance (Arterial Under). Table values include an additional 150 mm allowance for a future pavement overlay. Vertical clearances apply from usable edge to usable edge of shoulders.

(11) Vertical Clearance (Existing Bridge). See Section 55-6.02 for additional information on minimum allowable vertical clearance.

(12) Vertical Clearance (Arterial Over Railroad). See Chapter Sixty-nine for additional information on railroad clearance under a highway.

(13) Maximum Grade. A grade that is 1% steeper may be used for a one-way downgrade.

(14) 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.