

Geometric Design Criteria

Design Feature	Design Criteria - Ohio								Design Criteria - Kentucky						Notes
	Mainline (60 MPH)		Directional Ramp1 (60/45 MPH)		Service Ramp2 (50/40/30 MPH)		Local Street (20 - 40 MPH)		Mainline (60 MPH)		Service Ramp2 (50/40/30 MPH)		Local Street (20 - 30 MPH)		
Horizontal Alignment															
Max Centerline Deflection w/o Horizontal Curve	1o00'	Fig. 202-1E	1o00' 1o45'	Fig. 202-1E	1o15' 2o15' 3o45'	Fig. 202-1E	2o15'	Fig. 202-1E	n/a		n/a		n/a		
Maximum Degree of Curve	4o15'	Fig 202-2E	4o15' 9o00'	Fig 202-2E Fig 202-10E	6o45' 11o45' 24o45'	Fig 202-2E Fig 202-10E Fig 202-10E	10o45'	Fig 202-9E	1205'	Exhibit 3-23 161	835' 510' 275'	Exhibit 3-22 159	300'	Exhibit 3-21 157	
Max Curve without Super	0o33'	Fig 202-3E	0o33' 0o57'	Fig 202-3E Fig 202-10E	0o47' 1o10' 1o58'	Fig 202-3E Fig 202-10E Fig 202-10E	7o42'	Fig 202-9E	12000'	Exhibit 3-23 161	8000' 6000' 3500'	Exhibit 3-22 159	3500'	Exhibit 3-21 157	
Maximum Superelevation (emax)	6.00%	Fig 202-8E	6.00%	Fig 202-8E Fig 202-10E	6.00%	Fig 202-8E Fig 202-10E	4.00%	Fig 202-9E	8.00%		6.00%		4.00%		
Vertical Alignment															
Maximum Grade ³	4%	Fig 203-1E	6%	Fig 203-1E	6%	Fig 203-1E	10%	Fig 203-1E	4%	Exhibit 8-1 510	5%	pg. 833	11%		1% steeper may be used in extreme cases or for one-way downgrades.
Max Vertical Deflection without a Vertical Curve	0.30%	Fig 203-2E	0.30% 0.55%	Fig 203-2E	0.45% 0.75% 1.30%	Fig 203-2E	0.75%	Fig 203-2E	n/a		n/a		n/a		Min. distance between deflections is 100' for speed ≥ 50 MPH, 50' for speed < 50 MPH.
Pavement Cross Slopes (normal)	0.016	301.1.5	---	---	---	---	---	---	2.00%		---	---	---	---	
Use of Spirals	D > 3o	202-11 202-5	---	---	---	---	---	---	e > 3.0%		---	---	---	---	
Spiral Length	≥ Length of Runoff		---	---	---	---	---	---	Length of Runoff		---	---	---	---	
Transition Length / Rate (drop line)	L= 60 x Lane Width	301.1.4	---	---	---	---	---	---	L = 50:1 to 70:1		---	---	---	---	
Pavement Transition Slope	222:1 max	Fig 202-4E	222:1 max 185:1 max	202-4E	200:1 max 172:1 max 152:1 max	202-4E	172:1	202-4E	222:1 max	Exhibit 3-27 170	200:1 max 172:1 max 152:1 max	Exhibit 3-27 170	152:1	Exhibit 3-27 170	For methods of transition see 202-5, 202-5a, 202-5b, 202-5c, 202-5d, 202-6.
Grade Point Position	Inside Edge		Inside/Outside Edge		Inside/Outside Edge		Outside Edge		Inside Edge		Inside/Outside Edge		Outside Edge		

Geometric Design Criteria

Design Feature	Design Criteria - Ohio								Design Criteria - Kentucky						Notes
	Mainline (60 MPH)		Directional Ramp1 (60/45 MPH)		Service Ramp2 (50/40/30 MPH)		Local Street (20 - 40 MPH)		Mainline (60 MPH)		Service Ramp2 (50/40/30 MPH)		Local Street (20 - 30 MPH)		
K-Values															
Crest Vertical Curve	151	Fig 203-3E	151 61	Fig 203-3E	84 44 19	Fig 203-3E	44	Fig 203-3E	151	Exhibit 3-76 274	84 44 19	Exhibit 3-76 274	19	Exhibit 3-76 274	
Sag Vertical Curve ⁴	136	Fig 203-6E	136 79	Fig 203-6E	96 64 37	Fig 203-6E	64	Fig 203-6E	136	Exhibit 3-79 280	96 64 37	Exhibit 3-79 280	37	Exhibit 3-79 280	
Sight Distance															
Stopping Sight Distance (vertical curves)	570' min.	Fig 201-1E	570' 360'	Fig 201-1E	425' 305' 200'	Fig 201-1E	305'	Fig 201-1E	570' min.	Exhibit 3-1 112	425' 305' 200'	Exhibit 3-1 112	200'	Exhibit 3-1 112	
Min. Passing Sight Distance	---	---	---	---	---	---	1470'	Fig 201-3E	---	---	---	---	1090'	Exhibit 3-7 124	
Intersection Sight Distance	---	---	---	---	---	---	445' LT 385' RT	Fig 201-5E	---	---	---	---	335' LT 290' RT	Exhibit 9-55, 665 Exhibit 9-58, 668	See Fig. 201-4 also.
Decision Sight Distance	1150' (B) 1280' (E)	Fig 201-6E	1150' (B) 1280' (E) 800' (B) 930' (E)	Fig 201-6E	910' (B) 1030' (E) 690' (B) 825' (E) 490' (B) 620' (E)	Fig 201-6E	690' (B) 825' (E)	Fig 201-6E	1150' (B) 1280' (E)	Exhibit 3-3 116	910' (B) 1030' (E) 690' (B) 825' (E) 490' (B) 620' (E)	Exhibit 3-3 116	490' (B) 620' (E)	Exhibit 3-3 116	
Clearances (New & Reconstructed)															
Lateral On Bridge (> 200' long)	12' Rt. 12' Med. ≤ 2 lanes 12'RT, 4'LT	Fig 302-1E	1-Lane / 2-Lane 8' Rt. / 12' Rt. 6' Lt. / 6' Lt.	Fig 303-1E	8' Rt. 6' Lt.	Fig 303-1E	Uncurbed / Curbed 4'-10' / 1'-2'	Fig 301-4E	12' Rt. 12' Med.	pg. 765	8' Rt. 6' Lt.	pg. 765	Uncurbed / Curbed 4'-10' / 1'-2'		12' accommodates future MOT. 4' lateral on median allowed on four-lane alternative.
Lateral On Bridge (< 200' long)	12' Rt. 12' Med. ≤ 2 lanes 12'RT, 4'LT	Fig 302-1E	1-Lane / 2-Lane 8' Rt. / 12' Rt. 6' Lt. / 6' Lt.	Fig 303-1E	8' Rt. 6' Lt.	Fig 303-1E	Uncurbed / Curbed 4'-10' / 1'-2'	Fig 301-4E	12' Rt. 12' Med.	pg. 765	8' Rt. 6' Lt.	pg. 765	Uncurbed / Curbed 4'-10' / 1'-2'		12' accommodates future MOT. 4' lateral on median allowed on four-lane alternative.
Vertical	17.0' Pref. 15.5' Min.	Fig 302-1E	17.0' Pref. 15.5' Min.	Fig 302-1E	17.0' Pref 15.5' Min.	Fig 302-1E	15.0' Pref 14.5' Min.	Fig 302-1E	17.5' Pref.. 16.0' Min.	pg. 511	17.5' Pref.. 16.0' Min.	pg. 511	17' Pref.. 14.5' Min.	pg. 511	

Geometric Design Criteria

Design Feature	Design Criteria - Ohio								Design Criteria - Kentucky						Notes
	Mainline (60 MPH)		Directional Ramp1 (60/45 MPH)		Service Ramp2 (50/40/30 MPH)		Local Street (20 - 40 MPH)		Mainline (60 MPH)		Service Ramp2 (50/40/30 MPH)		Local Street (20 - 30 MPH)		
Clear Zone	(>6000 ADT)		(>6000 ADT)		(>6000 ADT)		(>6000 ADT)		(>6000 ADT)		(>6000 ADT)		(>6000 ADT)		
Foreslope 6:1 or Flatter	30'	Fig 600-1E	30' 19'	Fig 600-1E	19' 15' 15'	Fig 600-1E	15'	Fig 600-1E	30'	Table 3.1 3-6a	22' 15' 15'	Table 3.1 3-6a	15'	Table 3.1 3-6a	
Foreslope Steeper than 6:1 to 4:1	30'	Fig 600-1E	30' 26'	Fig 600-1E	26' 17' 17'	Fig 600-1E	17'	Fig 600-1E	40'	Table 3.1 3-6a	26' 17' 17'	Table 3.1 3-6a	17'	Table 3.1 3-6a	
Backslope 6:1 or Flatter	27'	Fig 600-1E	27' 21'	Fig 600-1E	21' 15' 15'	Fig 600-1E	15'	Fig 600-1E	27'	Table 3.1 3-6a	22' 15' 15'	Table 3.1 3-6a	15'	Table 3.1 3-6a	
Backslope Steeper than 6:1 to 4:1	25'	Fig 600-1E	25' 19'	Fig 600-1E	19' 15' 15'	Fig 600-1E	15'	Fig 600-1E	25'	Table 3.1 3-6a	20' 15' 15'	Table 3.1 3-6a	15'	Table 3.1 3-6a	
Backslope Steeper than 4:1	21'	Fig 600-1E	21' 15'	Fig 600-1E	15' 15' 15'	Fig 600-1E	15'	Fig 600-1E	21'	Table 3.1 3-6a	15' 15' 15'	Table 3.1 3-6a	15'	Table 3.1 3-6a	
Lanes															
Number of Thru Lanes	>3 (by alt)		2 or 1		2 or 1		Varies		>3 (by alt)		2 or 1		Varies		
Lane Width	12'	Fig 301-4E	12' (2-lane) 16' (1-lane)	Fig 303-1E	12' (2-lane) 16' (1-lane)	Fig 303-1E	12' 11' (Min.)	Fig 301-4E	12'		12' (2-lane) 15' (1-lane)		12'		
Shoulders															
Treated Width	12' Rt. 12' Med ≤ 2lanes 12' Rt 4' Med	Fig 301-3E	10'Rt. / 4'Lt. 6'Rt. / 4'Lt.	Fig 303-1E5	6'Rt. / 3'Lt.	Fig 303-1E	2' Curb & Gutter	Fig 301-4E	10' Rt. 12' Med.		6'Rt. / 4'Lt.		2' Curb & Gutter		12' accommodates future MOT. 4' median shoulder allowed on four-lane alternative.
Graded Width with Barrier or Foreslopes Steeper Than 6:1	17' Rt. 17' Med.	Fig 301-3E	15'Rt. / 9'Lt. 11'Rt. / 9'Lt.	Fig303-1E	15'Rt. / 9'Lt. 11'Rt. / 9'Lt.	Fig 303-1E	---	---	See Clear Zone Criteria		See Clear Zone Criteria		---	---	Two lane (top) One lane (bottom)
Graded Width without Barrier and Foreslopes 6:1 or Flatter	12' Rt. 12' Med.	Fig 301-3E	10'Rt. / 6'Lt. 8'Rt. / 6'Lt.	Fig 303-1E	10'Rt. / 6'Lt. 8'Rt. / 6'Lt.	Fig 303-1E	---	---	See Clear Zone Criteria		See Clear Zone Criteria		---	---	Two lane (top) One lane (bottom)
Normal Barrier Offset ⁷	14' Rt. 14' Med. 12' RT & Med if Conc Barr	Fig 301-3E Or 10' RT 4' LT for ≤ 2 lanes w/ Conc Barr	12'Rt. / 6'Lt. 8'Rt. / 6'Lt.	Fig 303-1E	12'Rt. / 6'Lt. 8'Rt. / 6'Lt.	Fig 303-1E	4' Min.	602.1 .5.1	14' Rt. 14' Med.	pg. 319	8'Rt. / 6'Lt.		4' min.		Two lane (top) One lane (bottom)
Assumed Median Width	30' 27'? 12+12+3?	---	---	---	---	---	---	---	30'	---	---	---	---	---	

Geometric Design Criteria

Design Feature	Design Criteria - Ohio								Design Criteria - Kentucky						Notes
	Mainline (60 MPH)		Directional Ramp1 (60/45 MPH)		Service Ramp2 (50/40/30 MPH)		Local Street (20 - 40 MPH)		Mainline (60 MPH)		Service Ramp2 (50/40/30 MPH)		Local Street (20 - 30 MPH)		
Shoulder Pavement Cross Slopes (normal)	4%	Fig 301-8	4%	Fig 301-8	4%	Fig 301-8	4%	Fig 301-8	4%	pg. 320	4%	pg. 320	4%	pg. 320	
Terminal Classification															
Freeway Terminal	---	---	Highspeed	Fig 503-2aE Fig 503-3aE	Highspeed	Fig 503-2aE Fig 503-3aE	---	---	---	---			---	---	
	---	---	Low Speed	Fig 503-4aE Fig 503-4bE	Low Speed	Fig 503-4aE Fig 503-4bE	---	---	---	---			---	---	
	---	---	CD	Fig 504-1E Fig 504-2E	CD	Fig 504-1E Fig 504-2E	---	---	---	---			---	---	
	---	---	Multi-Entrance	Fig 505-1aE Fig 504-2E	Multi-Entrance	Fig 505-1aE Fig 504-2E	---	---	---	---			---	---	
	---	---	Multit-Exit	Fig 505-2aE Fig 505-2bE	Multit-Exit	Fig 505-2aE Fig 505-2bE	---	---	---	---			---	---	

Ohio geometric design criteria provided in the current ODOT Location and Design Manual, Volume 1.

Kentucky geometric design criteria provided in the American Association of State Highway and Transportation Officials (AASHTO) Roadside Design Guide and the AASHTO "Green Book" (A Policy on Geometric Design of Highways and Streets, Fourth Edition).

Table notes:

1. For Directional Ramps, top line indicates upper range speed (60 MPH), second line indicated middle range speed (45 MPH).
2. For Service Ramps, top line indicates upper range speed (50 MPH), middle line indicates middle range speed (40 MPH), and bottom line indicates lower range speed (30 MPH).
3. Grades may be increased by 1percent for freeways in developed areas where a flatter grade is precluded.
4. Where street lighting is present, the minimum length of sag vertical curve is three times the speed.
5. For three lanes or more use: 10 foot right/ 10 foot left
6. Local streets may have different criteria as required by the City of Cincinnati.
7. For the Interstate inside shoulder widths use an offset of 15' to the inside E/P.