

Geometric Design Exceptions										
	Alignment	Design Exception – General	Design Exception – Specific	Station Location	Criteria ¹	Criteria Requirement	Criteria as Designed	Required Design Speed	Designed Design Speed	Comments
Alternative B – Kentucky	9 TH STREET ON-RAMP to I-71/I-75 NB	Horizontal Alignment	Radius	P.V.I. STA. 14+17.32	AASHTO	660 ft	97 ft	45 mph	15 mph	These curves are limited by the distance between Bullock Street and Jillian's Way.
	I-71 SB OFF-RAMP to 5 TH STREET	Horizontal Alignment	Radius	P.V.I. STA. 15+25.38	AASHTO	660 ft	131 ft	45 mph	20 mph	
Alternative B – Ohio	I-71 NB	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 21+11.70	202-2E	4^15' max	5^24'19"	60 mph	55 mph	These curves are limited by the distance from the Fort Washington Way trench to the new Queensgate Alignment Bridge and the length of curve requiring a 60 mph design speed.
	I-71 NB	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 39+17.26	202-2E	4^15' max	6^42'09"	60 mph	50 mph	
	I-71 NB	Vertical Alignment	Maximum Grade	P.V. I STA. 17+88.63	203-1E	4%	6.0%	60 mph	50 mph	Matches existing grade (Fort Washington Way)
	I-71 SB	Vertical Alignment	Maximum Grade	P.V. I. STA. 18+00.00	203-1E	4%	5.64%	60 mph	50 mph	Matches existing grade (Fort Washington Way)
	I-71 SB	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 7+77.01	202-2E	4^15' max	5^24'19"	60 mph	55 mph	These curves are limited by the distance from the Fort Washington Way trench to the new Queensgate Alignment Bridge and the length of curve requiring a 60 mph design speed.
	I-71 SB	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 65+39.54	202-2E	4^15' max	6^27'08"	60 mph	50 mph	
	I-71 SB	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 53+57.59	202-2E	4^15' max	6^36'31"	60 mph	50 mph	
Alternative C – Kentucky	9 TH STREET ON-RAMP to I-71 NB	Horizontal Alignment	Radius	P.V.I. STA. 15+46.65	AASHTO	660 ft	131 ft	45 mph	20 mph	This curve is limited by the distance between Bullock Street and Jillian's Way.
Alternative C – Ohio	I-71 SB	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 12+05.66	202-2E	4^15' max	4^58'26"	60 mph	55 mph	This alignment was used to show the impact of a single curve from Fort Washington Way westbound to I-71 southbound (rather than a reverse curve to the north first). This limited the location and degree of curve.
	I-71 SB	K-values	Crest Vertical Curve	P.V.I. STA. 2+61.09	203-3E	151	84	60 mph	50 mph	This can be corrected by lengthening the curve.
	I-71 SB	K-values	Crest Vertical Curve	P.V.I. STA. 14+88.86	203-3E	151	84	60 mph	50 mph	The curve is a result of meeting clearance requirements of the other structures below, then tying into existing Fort Washington Way in a short distance.
	I-71 SB	Vertical Alignment	Stopping Sight Distance	P.V.I. STA. 14+88.86	201-1E	570 ft	425.8 ft	60 mph	50 mph	
	I-71 SB	Vertical Alignment	Maximum Grade	14+88.86 to 25+52.16	203-1E	4%	-6.9%	60 mph	50 mph	The 6.9% grade was required to achieve clearing the structures below I-71 southbound, and meet existing Fort Washington Way grade and elevation requirements.

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	I-71 SB	K-values	Sag Vertical Curve	P.V.I. STA. 25+52.16	203-6E	136	96	60 mph	50 mph	This can be corrected by lengthening the curve.
	I-71 SB	Vertical Alignment	Maximum Grade	P.V.I. STA. 25+52.16	203-1E	4%	-6.2%	60 mph	50 mph	This grade matches existing (Fort Washington Way).
	MAINLINE I-75	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 12+25.46	202-2E	4^15' max	4^17'12"	60 mph	55 mph	This can be corrected by flattening the curve. With the combination of Alternative C and D this is possible.
	MAINLINE I-75	Vertical Alignment	Maximum Grade	5+15.68 to 18+27.95	203-1E	4%	4.2%	60 mph	55 mph	These grades were a result of clearing the structure above, then I-71 southbound below, then OH 5 th Street above.
	MAINLINE I-75	Vertical Alignment	Maximum Grade	18+27.95 to 38+19.59	203-1E	4%	-5.2%	60 mph	55 mph	
	EB US-50	Horizontal Alignment	Maximum Degree of Curve	P.I. STA 12+74.08	202-2E	4^15' max	9^00'00"	60 mph	45 mph	Both of these curves are restricted by location, number of converging roadways and tying into existing Fort Washington Way eastbound.
	EB US-50	Horizontal Alignment	Maximum Degree of Curve	P.I. STA 28+23.95	202-2E	4^15' max	6^39'21"	60 mph	50 mph	
	EB US-50	K-values	Crest Vertical Curve	P.V.I. STA 5+16.66	203-3E	151	114	60 mph	55 mph	The length of curve was limited by the location of the gore/tie-in to the west and meeting the grades of three converging roadways.
	EB US-50	Vertical Alignment	Stopping Sight Distance	P.V.I. STA 5+16.66	201-1E	570 ft	496 ft	60 mph	55 mph	
	EB US-50	K-values	Sag Vertical Curve	P.V.I. STA 16+41.09	203-6E	136	115	60 mph	55 mph	This can be corrected by lengthening the curve.
	EB US-50	K-values	Crest Vertical Curve	P.V.I. STA 35+15.15	203-3E	151	114	60 mph	55 mph	The length of curve was limited by the meeting the grades of two converging roadways.
	EB US-50	Vertical Alignment	Stopping Sight Distance	P.V.I. STA 35+15.15	203-1E	570 ft	496 ft	60 mph	55 mph	
	EB US-50	Vertical Alignment	Maximum Grade	P.V.I. STA 35+15.15	203-1E	4%	-5.77%	60 mph	55 mph	This grade matches existing (Fort Washington Way).
	WB US-50	Horizontal Alignment	Maximum Degree of Curve	P.I. STA 18+35.95	202-2E	4^15' max	9^00'00"	60 mph	45 mph	This curve is restricted by the location of the tie-in to existing Fort Washington Way and the converging roadways.
	WB US-50	K-values	Crest Vertical Curve	P.V.I. STA 6+57.08	203-3E	151	114	60 mph	55 mph	The length of curve was limited by the location of the gore/tie-in to the west and meeting the grades of three converging roadways.

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	WB US-50	Vertical Alignment	Stopping Sight Distance	P.V.I. STA 6+57.08	201-1E	570 ft	496 ft	60 mph	55 mph	
	WB US-50	K-values	Sag Vertical Curve	P.V.I. STA 18+15.59	203-6E	136	115	60 mph	55 mph	This can be corrected by lengthening the curve.
	WB US-50	K-values	Crest Vertical Curve	P.V.I. STA 35+90.84	203-3E	151	114	60 mph	55 mph	The length of curve was limited by meeting the grades of two converging roadways.
	WB US-50	Vertical Alignment	Maximum Grade	P.V.I. STA 35+90.84	203-1E	4%	-5.98%	60 mph	55 mph	This grade matches existing (Fort Washington Way).
	EZZARD CH to C-D SB (COVINGTON)	K-values	Crest Vertical Curve	P.V.I. STA 0+27.22	203-3E	19	12	30 mph	25 mph	This vertical design was restricted by C-D southbound being configured in the center (horizontally), creating steep grades necessary to meet clearances and match existing.
	EZZARD CH to C-D SB (COVINGTON)	K-values	Sag Vertical Curve	P.V.I. STA 3+88.90	203-6E	37	26	30 mph	25 mph	
	NB I-75 to WB US-50	K-values	Sag Vertical Curve	P.V.I. STA 3+19.86	203-6E	79	49	45 mph	35 mph	The curve is a result of matching the northbound service drive grade, then OH 5 th Street underclearance, then westbound US 50 ramp underclearance, all within 600 feet.
	NB I-75 to WB US-50	K-values	Crest Vertical Curve	P.V.I. STA 21+69.74	203-3E	61	44	45 mph	40 mph	This can be corrected by lengthening the curve.
	NB I-75 to WB US-50	Vertical Alignment	Stopping Sight Distance	P.V.I. STA 21+69.74	201-1E	360 ft	333 ft	45 mph	40 mph	This can be corrected by lengthening the curve.
	C-D SB (LOCAL)	K-values	Crest Vertical Curve	P.V.I. STA 57+61.44	203-3E	61	44	45 mph	40 mph	These curves are the result of the C-D southbound roadway being configured in the center (horizontally), creating steep grades necessary to meet underclearance and match existing Fort Washington Way.
	C-D SB (LOCAL)	Vertical Alignment	Stopping Sight Distance	P.V.I. STA 57+61.44	201-1E	360 ft	308 ft	45 mph	40 mph	
	C-D SB (LOCAL)	K-values	Sag Vertical Curve	P.V.I. STA 66+30.00	203-6E	79	64	45 mph	40 mph	
	RAILROAD	Vertical Alignment	Clearance	17+93.30	302-1E	23'	19.3'	N/A	N/A	This can be corrected by adjusting the grades.
Alternative D – Kentucky	-	-	-	-	-	-	-	-	-	-
Alternative D – Ohio	SB I-71	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 12+05.66	202-2E	4^15' max	4^58'26"	60 mph	55 mph	This alignment was used to show the impact of a single curve from Fort Washington Way westbound to I-71 southbound (rather than a reverse curve to the north first). This limited the location and degree of curve.

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	SB I-71	K-values	Crest Vertical Curve	P.V.I. STA. 2+61.09	203-3E	151	114	60 mph	55 mph	This curve was restricted by the existing bridge grades and maintaining underclearance from the overhead parallel structure.
	SB I-71	Vertical Alignment	Stopping Sight Distance	P.V.I. STA. 2+61.09	201-1E	570 ft	532 ft	60 mph	55 mph	
	SB I-71	K-values	Sag Vertical Curve	P.V.I. STA. 8+20.63	203-6E	136	96	60 mph	50 mph	This curve was restricted by the adjacent vertical alignment and maintaining the underclearance of the overhead parallel structure.
	SB I-71	K-values	Crest Vertical Curve	P.V.I. STA. 15+74.24	203-3E	151	84	60 mph	50 mph	The curve was restricted by maintaining clearance of structures underneath and the steep grade required to match existing Fort Washington Way.
	SB I-71	Vertical Alignment	Stopping Sight Distance	P.V.I. STA. 15+74.24	201-1E	570 ft	425.8 ft	60 mph	50 mph	
	SB I-71	Vertical Alignment	Maximum Grade	15+74.24 to 25+52.16	203-1E	4%	-7.5%	60 mph	45 mph	This grade was required to meet underclearance requirements of crossing roadways and tie into existing Fort Washington Way.
	SB I-71	K-values	Sag Vertical Curve	P.V.I. STA. 25+52.16	203-6E	136	115	60 mph	55 mph	This curve was restricted by the steep grade and matching existing Fort Washington Way.
	SB I-71	Vertical Alignment	Maximum Grade	P.V.I. STA. 25+52.16	203-1E	4%	-6.2%	60 mph	50 mph	Matches existing grade (Fort Washington Way).
	EB US-50	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 12+05.50	202-2E	4^15' max	8^30'03"	60 mph	45 mph	Both of these curves are restricted by location, number of converging roadways and tying into existing Fort Washington Way.
	EB US-50	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 20+90.88	202-2E	4^15' max	4^54'47"	60 mph	55 mph	
	EB US-50	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 28+36.93	202-2E	4^15' max	6^39'19"	60 mph	50 mph	
	EB US-50	K-values	Crest Vertical Curve	P.V.I. STA. 1+66.31	203-3E	151	114	60 mph	55 mph	This vertical curve was restricted to matching/following a proposed grade for another roadway.
	EB US-50	K-values	Crest Vertical Curve	P.V.I. STA. 6+62.03	203-3E	151	114	60 mph	55 mph	This grade was restricted by matching a previous grade. Moving the curve forward creates a conflict with adjacent roadways.
	EB US-50	Vertical Alignment	Stopping Sight Distance	P.V.I. STA. 6+62.03	201-1E	570 ft	497 ft	60 mph	55 mph	
	EB US-50	K-values	Sag Vertical Curve	P.V.I. STA. 14+03.09	203-6E	136	115	60 mph	55 mph	This can be correctable by lengthening the curve.

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	EB US-50	K-values	Crest Vertical Curve	P.V.I. STA. 34+94.06	203-3E	151	114	60 mph	55 mph	The length of curve was limited by the meeting the grades of two converging roadways.
	EB US-50	Vertical Alignment	Stopping Sight Distance	P.V.I. STA. 34+94.06	201-1E	570 ft	496 ft	60 mph	55 mph	
	EB US-50	Vertical Alignment	Maximum Grade	P.V.I. STA. 34+94.06	203-1E	4%	-5.29%	60 mph	55 mph	Matches existing grade (Fort Washington Way).
	WB US-50	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 14+17.68	202-2E	4^15' max	8^30'03"	60 mph	45 mph	Both of these curves are restricted by location, number of converging roadways and tying into existing Fort Washington Way.
	WB US-50	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 29+19.10	202-2E	4^15' max	7^03'39"	60 mph	45 mph	
	WB US-50 to NB I-75	K-values	Crest Vertical Curve	P.V.I. STA. 19+33.46	203-3E	61	44	45 mph	40 mph	This curve was restricted by the proximity of adjacent ramps, OH 5 th Street, maintaining I-75 underclearance, and then matching existing Fort Washington Way.
	WB US-50 to NB I-75	Vertical Alignment	Stopping Sight Distance	P.V.I. STA. 19+33.46	201-1E	360 ft	308 ft	45 mph	40 mph	
	WB US-50	K-values	Crest Vertical Curve	P.V.I. STA. 2+03.12	203-3E	151	84	60 mph	50 mph	This curve is restricted by the location of the tie-in to existing and the converging roadways.
	WB US-50	K-values	Sag Vertical Curve	P.V.I. STA. 7+24.82	203-6E	136	96	60 mph	50 mph	This can be corrected by lengthening the curve.
	WB US-50	K-values	Crest Vertical Curve	P.V.I. STA. 12+32.28	203-3E	151	84	60 mph	50 mph	This curve/tangent/curve combination was restricted by the southbound I-75 underclearance (over) and making the OH 5 th Street underclearance, and matching adjacent roadway grades for merging.
	WB US-50	Vertical Alignment	Stopping Sight Distance	P.V.I. STA. 12+32.28	201-1E	570 ft	425.8 ft	60 mph	50 mph	
	WB US-50	Vertical Alignment	Maximum Grade	12+32.28 to 20+38.06	203-1E	4%	-5.6%	60 mph	50 mph	
	WB US-50	K-values	Sag Vertical Curve	P.V.I. STA. 20+38.06	203-6E	136	96	60 mph	50 mph	
	WB US-50	K-values	Crest Vertical Curve	P.V.I. STA. 34+24.13	203-3E	151	84	60 mph	50 mph	The length of curve was limited by the meeting the grades of two converging roadways.
	WB US-50	Vertical Alignment	Stopping Sight Distance	P.V.I. STA. 34+24.13	201-1E	570 ft	425.8 ft	60 mph	50 mph	

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	WB US-50	Vertical Alignment	Maximum Grade	P.V.I. STA. 34+24.13	203-1E	4%	-5.79%	60 mph	50 mph	Matches existing grade (Fort Washington Way).
	RAILROAD	Vertical Alignment	Clearance	2+51.34 (2nd St)	302-1E	23'	21.2'	N/A	N/A	This can be corrected by adjusting the profile.
	RAILROAD	Vertical Alignment	Clearance	12+00.15 (5th Ramp)	302-1E	23'	18.0'	N/A	N/A	
	RAILROAD	Vertical Alignment	Clearance	17+78.05 (NB Loc)	302-1E	23'	18.9'	N/A	N/A	
Alternative E – Kentucky	5 TH STREET to I-71 NB	Horizontal Alignment	Radius	P.I. STA. 13+82.58	AASHTO	660 ft	185 ft	45 mph	25 mph	This curve is limited by the location of the retaining wall at Goebel Park.
Alternative E – Ohio	WB FWW to I-75 NB	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 13+80.65	202-2E	4^00'	6^22'35"	60 mph	50 mph	Both of these curves are restricted by the location of adjacent roadways and proposed structures.
	WB FWW to I-75 NB	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 24+80.77	202-2E	4^00'	5^18'30"	60 mph	55 mph	
	WB FWW to I-75 NB	K-values	Crest Vertical Curve	P.V.I. STA. 6+92.14	203-3E	151	114	60 mph	55 mph	This can be corrected by adjusting the clearance and vertical profile.
	WB FWW to I-75 NB	Vertical Alignment	Stopping Sight Distance	P.V.I. STA. 6+92.14	201-1E	570 ft	495 ft	60 mph	55 mph	
	WB FWW to I-75 NB	Vertical Alignment	Maximum Grade	P.V.I. STA. 6+92.14	203-1E	-4%	-5.9%	60 mph	50 mph	Matches existing grade (Fort Washington Way).
	SB C/D to 7 TH STREET	K-values	Crest Vertical Curve	P.V.I. STA. 37+25.94	203-3E	151	84	60 mph	50 mph	This curve is limited by the intersection of OH 8 th Street and the southbound C-D Roadway to the existing Brent Spence Bridge. Can be corrected by adjusting clearance and the vertical profile.
	SB C/D to 7 TH STREET	Vertical Alignment	Stopping Sight Distance	P.V.I. STA. 37+25.94	201-1E	570 ft	425 ft	60 mph	50 mph	
	I-75 SB to EB FWW	Vertical Alignment	Maximum Grade	P.V.I. STA. 33+92.58	203-1E	-4%	-6.0%	60 mph	50 mph	Matches existing grade (Fort Washington Way).
	WB FWW to US 50	Vertical Alignment	Maximum Grade	P.V.I. STA. 6+86.15	203-1E	-4%	-5.9%	60 mph	50 mph	Matches existing grade (Fort Washington Way).
	SB C/D to SB BSB	K-values	Sag Vertical Curve	P.V.I. STA. 35+83.35	203-3E	96	79	50 mph	45 mph	These curves are limited as a result of meeting clearance requirements under US 50 and then tying into existing OH 8 th Street – all within 400 feet.

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	SB C/D to SB BSB	Vertical Alignment	Stopping Sight Distance	P.V.I. STA. 35+83.35	201-1E	425 ft	360 ft	50 mph	45 mph	Can be corrected by adjusting clearance and vertical profile.
	SB C/D to SB BSB	K-values	Crest Vertical Curve	P.V.I. STA. 43+65.83	203-3E	84	61	50 mph	45 mph	
	SB C/D to SB BSB	Vertical Alignment	Stopping Sight Distance	P.V.I. STA. 43+65.83	201-1E	425 ft	360 ft	50 mph	45 mph	
	I-71 SB	Vertical Alignment	Maximum Grade	P.V.I. STA. 21+47.78	203-1E	-4%	-6.0%	60 mph	50 mph	Matches existing grade (Fort Washington Way).
	I-71 SB	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 33+82.36	202-2E	4^00'	8^00'08"	60 mph	45 mph	These curves are restricted by clearances from the existing Brent Spence Bridge, I-71 northbound ramp and grade requirements.
	I-71 SB	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 26+04.49	202-2E	4^00'	8^59'41"	60 mph	45 mph	
	I-71 NB	Vertical Alignment	Maximum Grade	P.V.I. STA. 17+83.27	203-1E	-4%	-6.0%	60 mph	50 mph	Matches existing grade (Fort Washington Way).
	I-71 NB	K-values	Sag Vertical Curve	P.V.I. STA 6+34.94	203-3E	136	115	60 mph	55 mph	Can be corrected by adjusting clearances and vertical profile.
	I-71 NB	Vertical Alignment	Stopping Sight Distance	P.V.I. STA 6+34.94	201-1E	570 ft	495 ft	60 mph	55 mph	
	I-71 NB	Horizontal Alignment	max degree of curve	P.I. STA 21+02.37	202-2E	4^00'	8^00'08"	60 mph	45 mph	These curves are restricted by clearances from the existing Brent Spence Bridge, grade requirements, and meeting the proposed Ohio River Bridge connections.
	I-71 NB	Horizontal Alignment	max degree of curve	P.I. STA 29+37.36	202-2E	4^00'	8^59'41"	60 mph	45 mph	
	SB BSB to 2 ND STREET	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 12+76.92	202-2E	9^00'	10^43'46"	45 mph	40 mph	Curve was limited to meeting underclearance requirements as well as tying into existing ramps from the southbound C-D roadway to OH 2 nd Street.
Alternative G – Kentucky	I-71 SB to 5 TH STREET	Horizontal Alignment	Radius	P.I. STA. 23+79.13	AASHTO	660 ft	153 ft	45 mph	20 mph	This curve was restricted by the potential impact to Crescent Avenue and the hillside and then tying into the southbound C-D KY 5 th Street exit.
Alternative G – Ohio	I-71 NB	Horizontal Alignment	Maximum Degree of Curve	P.I. STA. 16+02.92	202-2E	4^00'	6^30'00"	60 mph	50 mph	This curve is restricted by tying into the existing Brent Spence Bridge at the diverging point of two roadways and then matching the converging point of another roadway as it ties into the Fort Washington Way trench.
	I-71 NB	Vertical Alignment	Maximum Grade	P.V.I. STA 27+00.00	203-1E	-4%	-6.0%	60 mph	50 mph	Matches existing grade (Fort Washington Way).

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	I-71 SB	K-values	Crest Vertical Curve	P.V.I. STA. 16+75.00	203-3E	151	61	60 mph	45 mph	This curve is limited by meeting the clearance requirements of the Railroad Bridge and matching the existing Brent Spence Bridge.
	I-71 SB	Vertical Alignment	Stopping Sight Distance	P.V.I. STA. 16+75.00	201-1E	570 ft	360 ft	60 mph	45 mph	
	I-71 SB	K-values	Crest Vertical Curve	P.V.I. STA. 28+75.00	203-3E	151	84	60 mph	50 mph	This curve can be corrected by lengthening the curve.
	I-71 SB	Vertical Alignment	Stopping Sight Distance	P.V.I. STA. 28+75.00	201-1E	570 ft	425 ft	60 mph	50 mph	
	I-71 SB	Vertical Alignment	Maximum Grade	P.V.I. STA. 28+75.00	203-1E	-4%	-5.9%	60 mph	50 mph	Matches existing grade (Fort Washington Way).
	I-71 SB	Horizontal Alignment	Maximum Degree of Curve	P.I. STA 23+71.01	202-2E	4^00'	8^30'00"	60 mph	45 mph	These curves are limited by the location of the OH 3 rd Street on-ramp, meeting clearance requirements and tying into the new Ohio River Bridge.
	I-71 SB	Horizontal Alignment	Maximum Degree of Curve	P.I. STA 32+48.17	202-2E	4^00'	8^00'00"	60 mph	45 mph	
	C-D NB to I-71 NB	Shoulder Width	Shoulder Width	STA. 29+00	301-4E	12'	8'	NA	NA	Required to avoid impacting the flood wall at Plum Street.
	US 50 EB	Vertical Alignment	Maximum Grade	P.V.I. STA. 59+25.00	203-1E	-4%	-6.63%	60 mph	50 mph	These grades can be corrected by adjusting the vertical profiles and clearances from OH 5 th Street and the southbound C-D roadway.
	US 50 WB	Vertical Alignment	Maximum Grade	P.V.I. STA. 50+00.00	203-1E	-4%	-7.0%	60 mph	50 mph	

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