

**Brent Spence Bridge
Design Exceptions - Alternative I**

I-71/I-75/US 50 INTERCHANGE	Station	Design Exception	D.E. Number	Design Speed Met (Required)	Horizontal Dc (Maximum)	Horizontal SSD (Minimum)	Vertical Curvature - K (Minimum)	Other	Design Speed Existing	Reason(s) For Design Exception	Potential Impact(s) to Eliminate Design Exceptions	Potential Mitigation Solutions
Interstate 75 (OH)	PI Sta. 46+82.32 (Horiz.)	Y	1	57 mph (60)		526' (570')			44 mph	<ul style="list-style-type: none"> The line of sight for the northbound inside lane is impeded by the median barrier and the southbound outside lane a the bridge parapet. The proposed 12' median shoulder (minimum) needs to be widened to 20' to meet the needed sight distance. The median shoulder width was discussed with the Office of Roadway Engineering and a guideline was given to cap the width at 12'. This is due to several factors; expense, excessively wide shoulders can confuse drivers and be used as a passing lane, and collecting debris. 	<ul style="list-style-type: none"> Widen the inside shoulder for the I-75 NB. This can be accomplished by either linearly transitioning the shoulder or separating the NB and SB horizontal alignments. The two profiles will be different as well and bifurcated barrier will be required. This will impact the connection from Clay wade Bailey to I-75. If this connection from Claywade Bailey is to be maintained, all NB alignments will need to shift to the East potentially causing vertical clearance issues with US 50 WB and I-71 SB. This would potentially impact the Dunhumby Building also. If using a flatter curve, 5 structures (businesses) could potentially be impacted and additional impacts to Longworth Hall would be needed. A design speed of 55 MPH would also fix this design exception. 	<ul style="list-style-type: none"> Add Signage/ Lighting
	Sta. 45+00 to Sta. 49+00 (Southbound Only)	Y	2					6.0% (Downgrade)		<ul style="list-style-type: none"> A grade of 6.0% (5.0 % max) needed to achieve clearance over the existing railroad/I-71 SB to SB CD road and under I-71 SB to SB CD road to maintain a 60 mph design speed. The 6.0 % grade has a tangent length of 150'. 	<ul style="list-style-type: none"> Shift SB CD road alignment further West so that the lower deck does not cross under the upper deck until after the existing railroad. This would increase the impact to Longworth Hall and could potentially impact 4 additional buildings and parking. Classify area as Hilly will increase allowable grades. 	
	PI Sta. 55+68.60 (Horiz.)	Y	3	51 mph (60)		443' (570)			50 mph	<ul style="list-style-type: none"> The line of sight for the inside lane is impeded by the median barrier. The proposed 12' median shoulder needs to be widened to 25' to meet the needed sight distance. The median shoulder width was discussed with the Office of Roadway Engineering and a guideline was given to cap the width at 12'. This is due to several factors; expense, excessively wide shoulders can confuse drivers and be used as a passing lane, and collecting debris. 55 mph would require a 17' minimum shoulder. 	<ul style="list-style-type: none"> Widen the inside shoulder for the I-75 NB. This can be accomplished by either linearly transitioning the shoulder or separating the NB and SB horizontal alignments. The two profiles will be different as well and bifurcated barrier will be required. This will impact the connection from Clay wade Bailey to I-75. If this connection from Claywade Bailey is to be maintained, all NB alignments will need to shift to the East potentially causing vertical clearance issues with US 50 WB and I-71 SB. This would potentially impact the Dunhumby Building also. If using a flatter curve, 5 structures (businesses) could potentially be impacted and additional impacts to Longworth Hall would be needed. 	<ul style="list-style-type: none"> Add Signage/ Lighting
	PI Sta. 85+41.45 (Horiz.)	Y	4	52 mph (60)		463' (570)			40 mph	<ul style="list-style-type: none"> The line of sight for the outside lane is impeded by the roadside barrier. The proposed 12' outside shoulder needs to be widened to 20' to meet the needed sight distance. 55 mph would require a 15' shoulder (standard minimum shoulder is 12'). 	<ul style="list-style-type: none"> The ramp from Freeman Ave to I-75 NB and Winchell Ave would have to shift to the East. This would impact the property on the SE corner of Ezzard Charles and Winchell Ave. There is also a potential impact to a 60" combined sewer under Winchell Ave. The Freeman Ave to Winchell Ave bridge and the Ezzard Charles Bridges would need to be lengthened to span the additional pavement width. If using a flatter curve, this could potentially impact 8 structures, relocate 3 local roads (Ezzard Charles EB and WB, Winchell Ave.), cut off 2 local roads (West Court Street and Freeman Ave to I-75 NB). 	<ul style="list-style-type: none"> Add Signage/ Lighting
I-75 SB Baseline at Ezzard Charles	PI Sta. 85+50.82 (Horiz.)	Y	5	54 mph (60)		488' (570)			40 mph	<ul style="list-style-type: none"> The line of sight for the inside lane is impeded by the median barrier. The proposed 12' median shoulder needs to be widened to 20' to meet the needed sight distance. The median shoulder width was discussed with the Office of Roadway Engineering and a guideline was given to cap the width at 12'. This is due to several factors; expense, excessively wide shoulders can confuse drivers and be used as a passing lane, and collecting debris. 55 mph would require a 13' shoulder (standard minimum shoulder is 12'). 	<ul style="list-style-type: none"> Widen the inside shoulder of the I-75 SB. This can be accomplished by either linearly transitioning the shoulder or separating the NB and SB horizontal alignments. The Northbound lanes would remain the same. This location will have a bi-furcated barrier section. By changing the SB baseline, the Southbound CD Road would need to move further to the SW which would change three other alignments (I-75 SB to Freeman Ave, Western Ave. to SB CD road and Gest Street). Gest Street was already narrowed down to 3 lanes and this will narrow it even further. If using a flatter curve, this could potentially impact 8 structures and 3 local roads (Western Ave, Gest St., and part of Freeman Ave.). 	<ul style="list-style-type: none"> Add Signage/ Lighting

N/A = Not Applicable
D.E. = Design Exception
Design Speed for Interstate is 60 mph and ramps per 503-1

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I-71 Southbound (OH)	PI Sta. 37+82.74 (Horiz.)	Y	6	50 mph (60)	6° 30' 00" (4° 15' 00")				35 mph	<ul style="list-style-type: none"> Curve needed to tie into existing Fort Washington Way footprint, avoid Dunhumby building, and to tie into proposed new bridge before bridge abutment. 	<ul style="list-style-type: none"> Using Fort Washington Way (I-71 SB) as a fixed tie in point, a 4 degree curve will require the new Bridge crossing the river to move about 250' to the West. Additional potential impacts from this alignment change would include going through an electrical substation. In addition, the I-75 centerline would also need to shift West possibly impacting half of the Longworth Hall and an additional 5 structures just to the west of I-75 between 3rd street and 9th street which include two electric company buildings, two UPS buildings, and the TV station. The curves (super transitions) from these alignment changes may also extend onto the new bridge. 	<ul style="list-style-type: none"> Add Signage/Traffic Control Devices
	PI Sta. 37+82.74 (Horiz.)	Y	7	42 mph (60)		339' (570)			35 mph	<ul style="list-style-type: none"> The line of sight for the inside lane is impeded by the bridge parapet. The proposed shoulder needs to be widened to meet the needed sight distance therefore increasing the structure width. 50 mph would require a 20' shoulder (standard minimum shoulder is 12'). 	<ul style="list-style-type: none"> Widen inside shoulder to match the proposed bridge width (3 lanes and 14' shoulder). A flatter curve is not possible without introducing a curve starting around Plum street and extending onto the new bridge which would also need to move west as described above. Some connections may potentially become a problem doing this (i.e. US 50) and using the existing bridge would be very difficult. 	<ul style="list-style-type: none"> Add Signage/ Lighting
		Y	8					Shoulder Width		<ul style="list-style-type: none"> Allows for a deceleration lane to be added to exit from I-71 SB to SB CD Road within the existing footprint of Fort Washington Way (4' left shoulder, 6.5' right shoulder for about 700'). 	<ul style="list-style-type: none"> Widen pavement width on outside of I-71 SB (Fort Washington Way) from Elm street to Central Ave. This will impact the Elm Street bridge and reduce the 3rd street on ramp to SB CD Road to 1 lane from 2 lanes. 	<ul style="list-style-type: none"> Add Signage/ Lighting
	Sta. 42+00 to Sta. 54+00	Y	9					5.9 % (Upgrade)		<ul style="list-style-type: none"> A grade of 6.0% (5.0 % max) needed to achieve clearance over the existing railroad/I-71 SB to SB CD road and under I-71 SB to SB CD road to maintain a 60 mph design speed. This grade matches the existing profile set during the Fort Washington Way project. It allows for clearmce over Plum street, flood wall, future rail lines. 	<ul style="list-style-type: none"> A flatter grade of 5.0 % would create a clearance problem over the NB CD road to 5th Street resulting in the potential of this connection being cut off. Classify area as Hilly will increase allowable grades. 	
I-71 Northbound (OH)	PI Sta. 35+71.12 (Horiz.)	Y	10	50 mph (60)	6° 30' 00" (4° 15' 00")				45 mph	<ul style="list-style-type: none"> Curve needed to tie into existing bridge abutment and still tie in with US 50 EB before entering Fort Washington Way. 	<ul style="list-style-type: none"> Using Fort Washington Way (I-71 NB) as a fixed tie in point and trying to tie into the existing bridge, several connections would be lost. Connections off of the NB CD Road from Kentucky to I-71 NB and to 2ND street would be lost. Clearance over the existing railroad may also be an issue coming off of the bridge if the existing profile is to be maintained. Another option using Fort Washington Way (I-71 NB) as a fixed tie in point and trying to tie into the new bridge, a 4 degree curve will require the new Bridge crossing the river to move about 250' to the West if we were to maintain all connections. Other connections including I-75 NB and SB, and NB CD Road would need to be investigated on whether their connections could be maintained. 	<ul style="list-style-type: none"> Add Signage/Traffic Control Devices
	PI Sta. 35+71.12 (Horiz.)	Y	11	44 mph (60)		358' (570)			41 mph	<ul style="list-style-type: none"> The line of sight for the inside lane is impeded by the bridge parapet. The proposed shoulder needs to be widened to meet the needed sight distance therefore increasing the structure width. 50 mph would require a 20' shoulder (standard minimum shoulder is 12'). 	<ul style="list-style-type: none"> Widen inside shoulder with a pavement taper on the bridge. A flatter curve tying into the existing bridge is not possible without introducing a curve starting around Plum street and extending onto the existing bridge. Second street would need to be relocated along with the flood wall. Connections off of the NB CD Road from Kentucky to I-71 NB and to 2ND street would be lost. 	<ul style="list-style-type: none"> Add Signage/ Lighting
	Sta. 47+00 to Sta. 51+00	Y	12					6.0 % (Downgrade)		<ul style="list-style-type: none"> A grade of 6.0% (5.0 % max) needed to achieve clearance over Plum Street for pedestrians. The 6.0 % grade has a tangent length of about 300'. This grade matches the existing profile set during the Fort Washington Way project. It allows for clearmce over Plum street, flood wall, future rail lines. 	<ul style="list-style-type: none"> A flatter grade of 5.0 % could potentially create a clearance problem over US 50 WB and 3rd Street. Classify area as Hilly will increase allowable grades. 	
US 50 EB	PI Sta. 23+09.18 (Horiz.)	Y	13	40 mph (50)	10° 30' 00" (6° 45' 00")				30 mph	<ul style="list-style-type: none"> Curve needed to achieve clearance over SB CD Road and under US 50 to 5th Street 		<ul style="list-style-type: none"> Add Signage/Traffic Control Devices
	PI Sta. 23+09.18 (Horiz.)	Y	14	36 mph (50)		261' (425)			30 mph	<ul style="list-style-type: none"> The line of sight for the inside lane is impeded by the bridge parapet. The proposed shoulder needs to be widened to meet the needed sight distance therefore increasing the structure width. This potentially could reduce clearances over SB CD Road to 2nd Street to below minimum. 	<ul style="list-style-type: none"> See US 50 WB impacts. 	<ul style="list-style-type: none"> Add Signage/ Lighting

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US 50 WB	PI Sta. 35+79.90 (Horiz.)	Y	15	40 mph (50)	10° 30' 00" (6° 45' 00")				35 mph	<ul style="list-style-type: none"> • Curve needed to achieve clearance over I-75 NB and under US 50 to 5th Street 	<ul style="list-style-type: none"> • Design exceptions 9, 10, 11, 12, and 13 need to be treated as a whole in order to fix. To design an alignment to maintain a 50 mph design speed (existing US 50 posted speed West of I-75), the geometry would follow the proposed alignment shown for US 50 EB/SB CD to 2nd street. US 50 EB would parallel US 50 WB in order to tie into existing US 50 lanes through Fort Washington Way to the East causing some connections to be lost. 	<ul style="list-style-type: none"> • Add Signage/Traffic Control Devices
	PI Sta. 35+79.90 (Horiz.)	Y	16	34 mph (50)		242' (425)			30 mph	<ul style="list-style-type: none"> • The line of sight for the inside lane is impeded by the bridge parapet. • The proposed shoulder needs to be widened to meet the needed sight distance therefore increasing the structure width. This potentially could reduce clearances over I-75 NB to below minimum. 	<ul style="list-style-type: none"> • Connections that could potentially be lost would include: 1) US 50 EB to 5th, 2) I-75 SB to I-71 NB from I-75 mainline lanes, 3) SB CD Road to Claywade Bailey, 4) US 50 WB to Gest Street, 5) Linn St. to US 50 EB (would be significantly impacted if not cut off) which is beyond our current project limits. • SB CD Road alignment would shift West approximately 200' which would impact the television station office building in addition to their parking garage and the UPS warehouse would also now be impacted in addition to their parking. In addition, the Electric company buildings North of 3rd Street, Longworth Hall, and the electrical substation along the river will have additional impacts. 	<ul style="list-style-type: none"> • Add Signage/ Lighting
	PI Sta. 48+95.01 (Horiz.)	Y	17	40 mph (50)	10° 30' 00" (6° 45' 00")				35 mph	<ul style="list-style-type: none"> • Curve needed to avoid Dunhumby building and achieve clearance under I-71 SB 	<ul style="list-style-type: none"> • The proposed I-75 mainline bridge would need to be either moved west or widened to accommodate the taper of the SB CD road into the I-71 SB to SB CD road ramp which would not come together soon enough to tie into the current bridge typical section and abutment limits. • The horizontal sight distance can not be fixed with out taking the alignment for US 50 west from Fort Washington Way along 3rd Street. 	<ul style="list-style-type: none"> • Add Signage/Traffic Control Devices

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NB CD ROAD to I-75 NB (NB CD Road)	PI Sta. 56+22.27 (Horiz.)	Y	18	41 mph (50)		315' (425)			N/A	<ul style="list-style-type: none"> The line of sight is impeded by a roadside barrier and retaining wall. The proposed shoulder needs to be widened to meet the needed sight distance therefore increasing the structure length of 6th Street to US 50 WB. 50 mph would require a 14' shoulder (standard minimum shoulder is 4'). 	<ul style="list-style-type: none"> Widen inside shoulder by changing alignment. This could impact the NB CD Road to 5th Street alignment and an existing parking lot between 4th and Central Ave. Another way to possibly eliminate this DE would be to switch NB CD Road to US 50 WB and NB CD Road to I-75 alignments. This may allow for a flatter curve but the connection from NB CD to US 50 WB would need to be investigated to see if it would work. 	<ul style="list-style-type: none"> Add Signage/Traffic Control Devices
I-75 SB to SB CD ROAD (SB CD Road)	Sta. 49+50 to Sta. 54+00	Y	19					6.45 % (Upgrade)		<ul style="list-style-type: none"> A grade of 6.45% (5.0 % max) needed to achieve clearance under US 50 EB and yet tie into the ramp from I-71 SB to SB CD Road. The 6.45 % grade has a tangent length of 315'. 	<ul style="list-style-type: none"> Using a flatter grade potentially could impact US 50 EB to 5th, US 50 EB, and US 50 WB to Gest St. clearances. 	
I-75 SB to I-71 NB	PI Sta. 34+77.63 (Horiz.)	Y	20	43 mph (45)		341' (360)			N/A	<ul style="list-style-type: none"> The line of sight for the inside lane is impeded by the bridge parapet. The proposed shoulder needs to be widened to meet the needed sight distance therefore increasing the structure width. 45 mph would require a 8' shoulder (standard minimum shoulder is 4', a 6' shoulder is used). 	<ul style="list-style-type: none"> Widen inside shoulder using a pavement taper. Using a flatter curve for sight distance may impact vertical clearance with 3rd to I-75 NB, NB CD Road to US 50 WB, and I-71 SB. Also, impacts to the Dunhumby building would need to be investigated. 	<ul style="list-style-type: none"> Add Signage/ Lighting
	PI Sta. 39+94.03 (Horiz.)	Y	21	40 mph (45)	10° 30' 00" (9° 00' 00")				40 mph	<ul style="list-style-type: none"> Curve needed to avoid Dunhumby building and achieve clearance under I-71 SB. 	<ul style="list-style-type: none"> Using a flatter curve may impact vertical clearance with 3rd to I-75 NB, NB CD Road to US 50 WB, and I-71 SB. Also, impacts to the Dunhumby building would need to be investigated. 	<ul style="list-style-type: none"> Add Signage/Traffic Control Devices
	PI Sta. 39+94.03 (Horiz.)	Y	22	34 mph (45)		240' (360)			33 mph	<ul style="list-style-type: none"> The line of sight for the inside lane is impeded by the bridge parapet. The proposed shoulder needs to be widened to meet the needed sight distance therefore increasing the structure width. 45 mph would require a 22.5' shoulder (standard minimum shoulder is 4', a 6' shoulder is used). 	<ul style="list-style-type: none"> Widen inside shoulder using a pavement taper. Using a flatter curve for sight distance may impact vertical clearance with 3rd to I-75 NB, NB CD Road to US 50 WB, and I-71 SB. Also, impacts to the Dunhumby building would need to be investigated. 	<ul style="list-style-type: none"> Add Signage/ Lighting
I-71 SB to SB CD ROAD (Directional Ramp)	PI Sta. 49+88.43 (Horiz.)	Y	23	35 mph (45)	14° 15' 00" (9° 00' 00")				N/A	<ul style="list-style-type: none"> Curve needed to clear I-75 then tie into SB CD Road on the lower deck of the proposed bridge. 	<ul style="list-style-type: none"> A flatter curve could impact 3 structures including additional impact to Longworth hall. Other potential impacts may occur to the North when southbound alignments are adjusted to tie into flatter curve. 	<ul style="list-style-type: none"> Add Signage/Traffic Control Devices
	PI Sta. 49+88.43 (Horiz.)	Y	24	31 mph (45)		213' (360)			N/A	<ul style="list-style-type: none"> The line of sight for the inside lane is impeded by the bridge parapet. The proposed shoulder needs to be widened to meet the needed sight distance therefore increasing the structure width. 		
	PI Sta. 56+34.22 (Horiz.)	Y	25	35 mph (45)	14° 30' 00" (9° 00' 00")				N/A	<ul style="list-style-type: none"> Curve needed to avoid Dunhumby building, structure on NE corner of Central Ave. and 3rd Street, and tie into I-71 SB. 	<ul style="list-style-type: none"> If using a flatter curve, 3rd Street ramp to SB CD Road might be cut off, 2 structures may be impacted, and Fort Washington Way would need to be widened at the West end of the trench. 	<ul style="list-style-type: none"> Add Signage/Traffic Control Devices
	PI Sta. 56+34.22 (Horiz.)	Y	26	31 mph (45)		213' (360)			N/A	<ul style="list-style-type: none"> The line of sight for the inside lane is impeded by the bridge parapet. The proposed shoulder needs to be widened to meet the needed sight distance therefore increasing the structure width. 	<ul style="list-style-type: none"> Widen inside shoulder. Widening the inside shoulder would reduce the width of the 3rd Street to SB CD Road ramp. If using a flatter curve, 3rd Street ramp to SB CD Road might be cut off, 2 structures may be impacted, and Fort Washington Way would need to be widened at the West end of the trench. 	<ul style="list-style-type: none"> Add Signage/ Lighting
I-71 SB/US 50 WB to NB CD ROAD (Directional Ramp)	PI Sta. 39+34.49 (Horiz.)	Y	27	40 mph (45)	11° 45' 00" (9° 00' 00")				35 mph	<ul style="list-style-type: none"> Curve needed to achieve clearance under I-71 SB and avoid the Dunhumby building. 	<ul style="list-style-type: none"> If using a flatter curve, I-71 SB would be shifted North through the Dunhumby building so that clearance under I-71 SB can be maintained. Shifting I-71 SB would also reduce the design speed for I-71 SB unless the proposed I-75 minline bridge is shifted further West. 	<ul style="list-style-type: none"> Add Signage/Traffic Control Devices
	PI Sta. 39+34.49 (Horiz.)	Y	28	33 mph (45)		230' (360)			35 mph	<ul style="list-style-type: none"> The line of sight for the inside lane is impeded by the bridge parapet. The proposed shoulder needs to be widened to meet the needed sight distance therefore increasing the structure width. 	<ul style="list-style-type: none"> Widen inside shoulder. There is a potential impact to the vertical minimum clearance under I-71 SB if the shoulder is widened. 	<ul style="list-style-type: none"> Add Signage/ Lighting

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NB CD ROAD to US 50 WB (Directional Ramp)	PI Sta. 44+80.30 (Horiz.) (NB CD Road)	Y	29	44 mph (50)		354' (425)			N/A	<ul style="list-style-type: none"> The line of sight for the inside lane is impeded by the bridge parapet. The proposed shoulder needs to be widened to meet the needed sight distance therefore increasing the structure width. 50 mph would require a 17' shoulder (standard minimum shoulder is 10'). 	<ul style="list-style-type: none"> Widen the inside shoulder. This may impact the clearance over 4th Street to NB CD Road ramp. 	<ul style="list-style-type: none"> Add Signage/ Lighting
	PI Sta. 55+52.81 (Horiz.) (Directional Ramp)	Y	30	40 mph (45)	11° 45' 00" (9° 00' 00")				35 mph	<ul style="list-style-type: none"> Curve needed to tie into 6th Street to US 50 WB and clear 4th Street to NB CD Road. 	<ul style="list-style-type: none"> A flatter curve could require the 4th Street NB on ramp to be relocated from its current alignment creating weaving on the NB CD Road. The ramp from US 50 WB to Gest Street potentially could be cut off also if US 50 WB would also need to be flattened. 	<ul style="list-style-type: none"> Add Signage/Traffic Control Devices
	PI Sta. 55+52.81 (Horiz.) (Directional Ramp)	Y	31	33 mph (45)			236' (360)		32 mph	<ul style="list-style-type: none"> The line of sight for the inside lane is impeded by the bridge parapet. The proposed shoulder needs to be widened to meet the needed sight distance therefore increasing the structure width. 45 mph would require a 26' shoulder (standard minimum shoulder is 4', a 6' shoulder is used). 	<ul style="list-style-type: none"> Widen the inside shoulder. A flatter curve could require the 4th Street NB on ramp to be relocated from its current alignment creating weaving on the NB CD Road. The ramp from US 50 WB to Gest Street potentially could be cut off also if US 50 WB would also need to be flattened. 	<ul style="list-style-type: none"> Add Signage/ Lighting
NB CD ROAD to I-71 NB (Directional Ramp)	Sta. 49+75	Y	32					Shoulder Width	N/A	<ul style="list-style-type: none"> < 8' min due to flood wall. A 39:1/acceleration lane taper Sta. 36+52 to Sta. 52+92 (I-71 NB) is needed to minimize the impact to the flood wall/I-71 (FWW) and maintain a 4' minimum shy line from the roadside barrier. 	<ul style="list-style-type: none"> If a 50:1 taper is used I-71 in the trench will need to be widened just to maintain a 4 foot shoulder. 	
	Sta. 31+25	Y	33					6.69 % (Upgrade)		<ul style="list-style-type: none"> A grade of 6.69% (5.0 % max) needed to achieve clearance under I-71 NB (upper deck) and yet tie into I-71 NB before entering the Fort Washington Way trench and to clear the existing railroad. The 6.69 % grade does not have a tangent length, the vertical curves are reverse curves. 	<ul style="list-style-type: none"> A flatter grade would violate railroad clearance if existing vertical curve on the existing bridge is to be maintained. 	
SB CD ROAD to 7th Street (OH)		Y	34					7.6 % (Upgrade)		<ul style="list-style-type: none"> A grade of 7.6% (7.0 % max) needed to achieve clearance over existing I-75 SB for MOT. The 7.6 % grade has a tangent length of 250'. 	<ul style="list-style-type: none"> A flatter grade would require the ramp to be built later potentially forcing the traffic onto other exits and over loading those connections. 	
SB CD ROAD to 5th Street (OH)		Y	35					7.5% upgrade		<ul style="list-style-type: none"> Sta. 49+75 to Sta. 56+25 (Vertical, 7.0% max) a grade of 7.5% is needed to achieve clearance under US 50 WB and over I-75 SB to I-71 NB. 	<ul style="list-style-type: none"> Flattening the vertical curve will impact the clearance over I-75 SB to I-71 NB. Either the SB CD Road to 5th or I-75 SB to I-71 NB alignment will potentially be cut of and traffic will need to be directed another way. If the connections are to be maintained, raising the US 50 WB profile would be an alternate but there may be a potential that US 50 WB to Gest St. may be cut off due to the higher profile. Changing the profiles for NB CD Road to US 50 WB and 6th Street to US 50 WB will also need to be investigated. 	<ul style="list-style-type: none"> Add Signage/Traffic Control Devices
US 50 EB to SB CD ROAD	PI Sta. 29+81.48 (Horiz.)	Y	36	40 mph (45)	10° 45' 00" (9° 00' 00")				N/A	<ul style="list-style-type: none"> Diverging curvature per table 505-2a is not met. 	<ul style="list-style-type: none"> Flattening the curve in gore area could increase impacts to the UPS warehouse, cut off on ramp from Linn Street, and create a pavement taper on the new bridge. 	<ul style="list-style-type: none"> PI Sta. 29+81.48 (Horiz.) Exit Geometry
	PI Sta. 29+81.48 (Horiz.)	Y	37	34 mph (45)			246' (360)		N/A	<ul style="list-style-type: none"> The line of sight for the inside lane is impeded by the bridge parapet. The proposed shoulder needs to be widened to meet the needed sight distance therefore increasing the structure width. 	<ul style="list-style-type: none"> Widen shoulder which could potentially increase impact to the UPS Building and increase retaining wall heights. 	<ul style="list-style-type: none"> Add Signage/Traffic Control Devices

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Design Exceptions - Alternative I**

I-71/I-75/US 50 INTERCHANGE	Curve PI	Design Exception	D.E. Number	Design Speed Met (Required)	Horizontal SSD (Minimum)	Horizontal Dc (Maximum)	Vertical Curvature - K (Minimum)	Other	Design Speed Existing	Reason For Design Exception	Potential Impact(s) to Eliminate Design Exceptions	Potential Mitigation Solutions
NB CD ROAD to Winchell Ave (Local)	PI Sta. 87+20.00 (Vertical)	Y	38	27 mph (40)			30 (44) - crest		N/A	<ul style="list-style-type: none"> Curve needed to be able to tie profile in from NB CD road to Winchell Ave. 	<ul style="list-style-type: none"> To fix, the horizontal alignment would need to be adjusted for three connections (NB CD Rd. to Winchell Ave., 6th to Winchell Ave., and W. Court Street.). Moving these alignments could potentially impact 7 structures along Winchell Ave. and W. Court Street. 	<ul style="list-style-type: none"> Add Signage/ Lighting Vertical Curve 2.0 times the minimum length needed.
	PI Sta. 91+00.00 (Vertical)	Y	39	30 mph (40)			37.3 (64) - sag		N/A	<ul style="list-style-type: none"> Vertical curve used to match existing profile. 	<ul style="list-style-type: none"> Fill in the sag point which may impact neighboring apartment building. 	<ul style="list-style-type: none"> Add Signage/ Lighting Vertical Curve 2.0 times the minimum length needed.
						Existing posted speed limit on Winchell Ave. is 40 mph						
Gest Street (OH)	PI Sta. 14+34.53 (Horiz.)	Y	40	30 mph (40)	207' (305)				33 mph	<ul style="list-style-type: none"> The line of sight is impeded by a roadside barrier and retaining wall. The proposed shoulder needs to be widened to meet the needed sight distance therefore increasing the structure length of 7th and 9th streets. 	<ul style="list-style-type: none"> Widen shoulder using a pavement taper. Flattening the curve could potentially impact a hotel parking garage. Extend overhead bridges to set abutments outside of the clear zone so that ne barrier is needed. 	<ul style="list-style-type: none"> Add Signage/ Lighting

N/A = Not Applicable
D.E. = Design Exception
Design Speed for Interstate is 60 mph and ramps per 503-1

**Brent Spence Bridge
Design Exceptions - Alternative I**

I-75/I-71	Station	Design Exception	D.E. Number	Design Speed Met (Required)	Horizontal SSD (Minimum)	Horizontal Dc (Maximum)	Vertical Curvature - K (Minimum)	Other	Design Speed Existing	Reason For Design Exception	Potential Impact(s) to Eliminate Design Exceptions	Potential Mitigation Solutions
SB I-75 to Kyles Lane	Sta. 445+00	Y	1					Grade		<ul style="list-style-type: none"> Proposed ramp grade is 8.1 percent due to right of way considerations. 	<ul style="list-style-type: none"> Extending the beginning of ramp further south and thus widening the right of way limits required for the connection to the existing elevation at the ramp terminal. 	<ul style="list-style-type: none"> This steep slope is less than 500 feet long and provides an exit ramp to Kyles Lane on which traffic has to decelerate.
NB CD Road	Existing Bridge (Lower Deck)	Y	2					Lane Width		<ul style="list-style-type: none"> 11' lanes needed to utilize the existing bridge width. 	<ul style="list-style-type: none"> Replace the existing bridge and rebuild structure to accommodate a wider section. 	<ul style="list-style-type: none"> Will be maintaining one 12' lane on the lower bridge deck.
	Existing Bridge (Lower Deck)	Y	3					Shoulder Width		<ul style="list-style-type: none"> A minimum 4' left shoulder and an 8' right shoulder are needed to maintain 3 through lanes and utilize the existing bridge width. 	<ul style="list-style-type: none"> Replace the existing bridge and rebuild structure to accommodate a wider section. 	

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