

VII. KEY FINDINGS OF EXISTING CONDITIONS OVERVIEW

In their present form, the Ford and Breathitt Parkways do not operate in a manner that is appreciably different than they would operate were they to be designed to meet or exceed existing design guidelines for interstate highways. For reference, a summary of the AASHTO guidelines are highlighted in **Table 17** as they were discussed in previous chapters. These two Parkways already provide many of the basic design characteristics, or physical features, that are common for interstate highway facilities, such as full control of access, divided cross-sections, two travel lanes in each direction and 70 mile-per-hour design speeds. However, it is the actual dimensions of these physical features (the width of medians, the length and curvature of ramps, the width of bridges, the height of overpasses, etc.) on the Parkways that do not always meet current interstate design standards.

To facilitate an understanding of where the deficiencies are relative to each other, the deficiencies have been summarized on **Figure 20** for the Ford Parkway and **Figure 21** for the Breathitt Parkway. Each deficiency is coded and can be cross-referenced to **Table 18** for the Ford Parkway and **Table 19** for the Breathitt Parkway. Summary comments related to these deficiencies are listed below in **Sections C, D, E, and F**.

The findings presented in this chapter are based on available data and limited field reviews. Additional analysis in future phases of this project will serve to further define the conclusions and recommendations drawn from this analysis.

The following is a brief summary of the key issues associated with the two Parkways and their proposed conversion to Interstate 69:

A. Project Goals

The initial set of national goals for I-69 include:

- The movement of goods;
- The provision of more job opportunities to local communities; and
- System linkage.

Consideration has been given to integrating local needs and concerns for the Eddyville to Henderson segment with the national goals. Preliminary local project goals considered for this section include:

- Maximize the use of the existing Parkways;
- Serve local industry; and
- Provide an improved facility for increased truck traffic.

Table 17 – AASHTO Minimum Guidelines

Area Type	Rural			Urban			Urban/Rural		
Design Element	Mainline	Ramps	Loops	Mainline	Ramps	Loops	Directional	Entrance	Exit
Design Speed (MPH) (507, 829, 830)	70	35	25	50	25	25	40		
Level of Service (508)	C			D					
Driving Lane Width (508, 842)	12'	15'	15'	12'	15'	15'			
Inside Shoulder Width (4-lane freeway & ramps) (509,514,517,842)	4'	2'-4'	2'-4'	4'	2'-4'	2'-4'	1'-6'		
Inside Shoulder Width (6-lane, Truck DDHV <=250) (509,514,517,842)				10'					
Inside Shoulder Width (6-lane, Truck DDHV > 250) (509,514,517,842)				12'					
Outside Shoulder Width (Truck DDHV <= 250) (509, 842)	10'	8'-10'	8'-10'	10'	8'-10'	8'-10'	8'-10'		
Outside Shoulder Width (Truck DDHV > 250) (509, 842)	12'			12'					
Depressed Median Width ¹ (513)	36'			36'					
Over Freeway Vertical Bridge Clearance (510, 767)	16'-00"								
Bridge Width (Horizontal) ADT>2000 (390)	Traveled Lanes + shoulders (approach roadway width)								
Bridge Width (Horizontal) Length > 200' ²	Traveled Lanes + 4' each side								
Design ADT (vehicles per day)	> 6,000	750-1,500		>6,000	750-1,500				
Clear Zone (Fill Slope 1V:4H or flatter) ³	30'-46'	14'-18'		20'-28'	14'-18'				
Clear Zone (Cut Slope 1V:3H or flatter) ³	22'-30'	14'-16'		14'-22'	14'-16'				
Superelevation (509)	+/- 8%								
Horizontal Curvature Minimum Radius (8% max SE) (161)	1820'	350'	170'	750'	170'	170'	465'		
Minimum Runoff (8% max SE) (174)	240'	155'	137'	192'	137'	137'	165'		
Minimum Runout (8% max SE) (174)	60'	39'	34'	48'	34'	34'	41'		
Maximum Grade (510, 833)	4%	5%-7%	5%-7%	5%	5%-7%	5%-7%	4%-6%		
Stopping Sight Distance (112)	730'	250'	155'	425'	155'	155'	305'		
Taper Ratio (849)								50:1	
Divergence Angle (853)									2%-5%

Note: Page number references from AASHTO's *A Policy on Geometric Design of Highways and Streets* are provided in parenthesis.

¹ AASHTO Draft *A Policy on Design Standards - Interstate System* calls for a minimum of 36' in rural areas, but page 513 of AAHSTO's *A Policy on Geometric Design of Highways and Streets* specifies 50'.

² This item is referenced in the AASHTO Draft *A Policy on Design Standards - Interstate System*

³ Information on clear zones is provided in AASHTO's *Roadside Design Guide*.

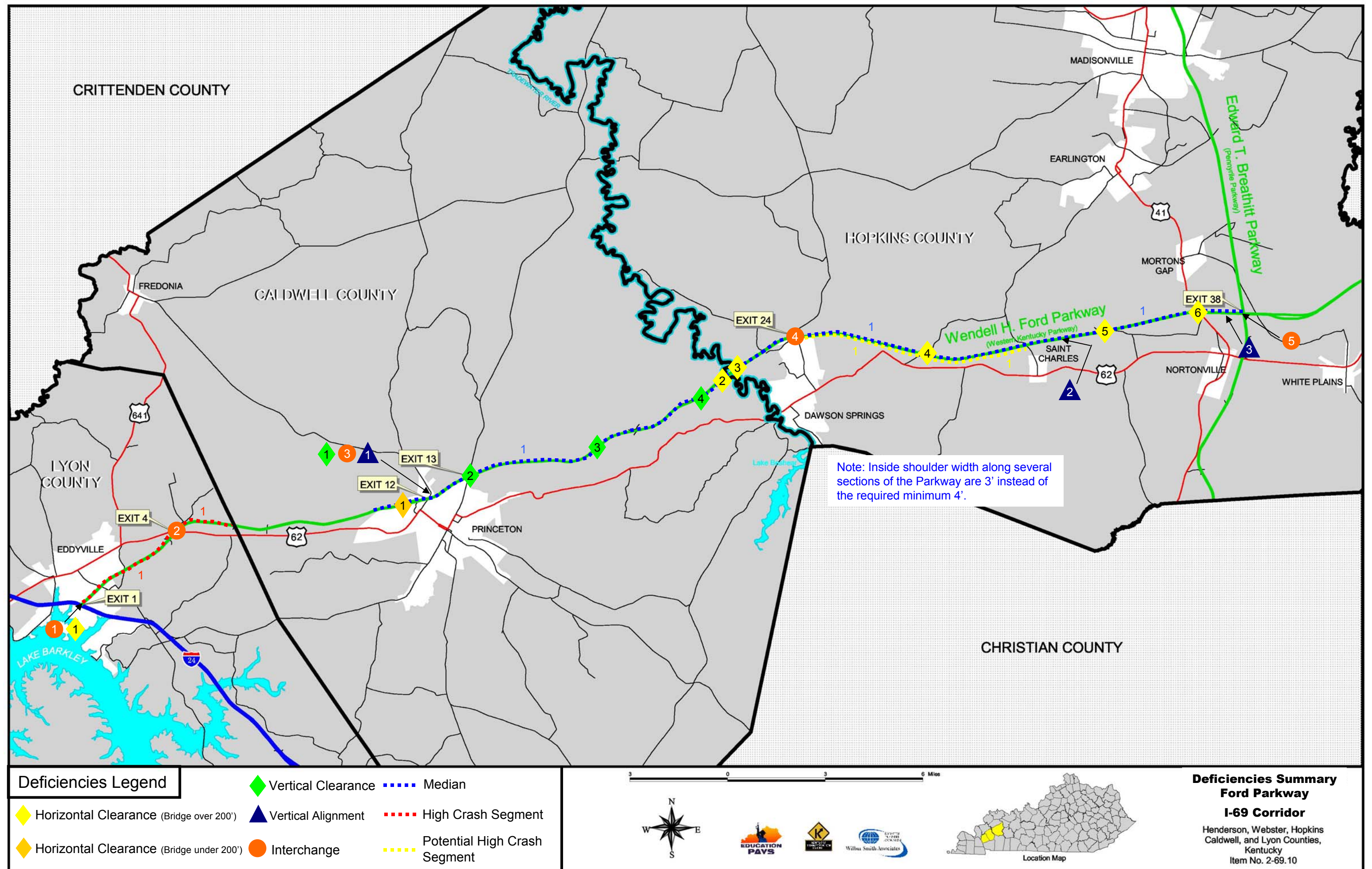


Figure 20. Deficiencies Summary – Ford Parkway 7-3

Figure 21. Deficiencies Summary – Breathitt Parkway 7-4

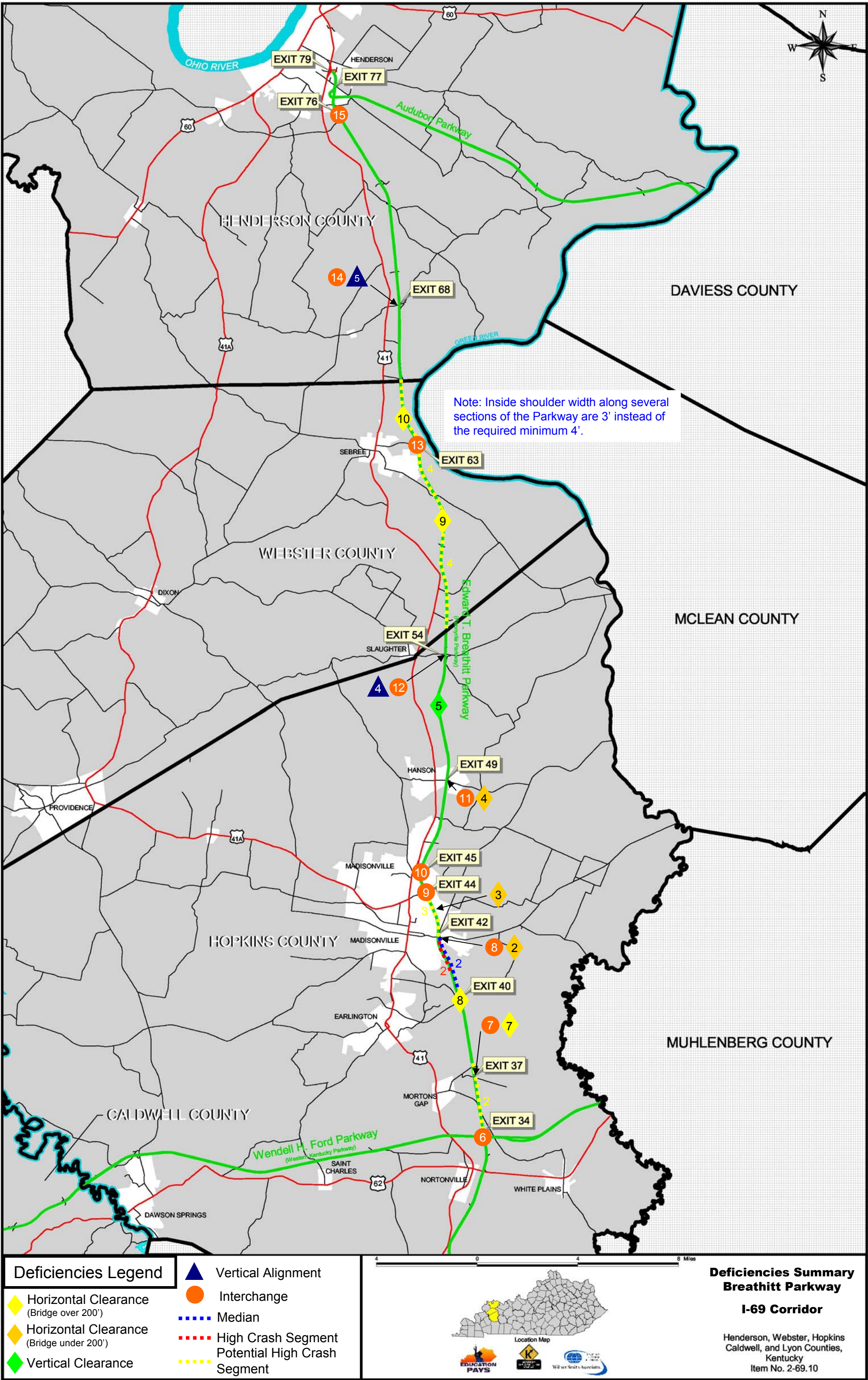


Table 18 – Deficiencies Summary for the Ford Parkway

Deficiency Type	Milepoint	Deficiency Description
Ford Parkway - Lyon County		
	0.001	Horizontal clearance less than minimum (note: bridge is over 200')
	0.000	All ramps have substandard geometrics
	3.708	All ramps have substandard geometrics
	0.000 - 5.610	High crash segment (critical rate ≥ 1.0)
Ford Parkway - Caldwell County		
	11.357	Horizontal clearance less than minimum (note: bridge is under 200')
	11.714	Vertical curve radius less than minimum
	11.700	All ramps have substandard geometrics
	11.700	Vertical clearance less than minimum
	13.120	Vertical clearance less than minimum
	17.308	Vertical clearance less than minimum
	20.880	Vertical clearance less than minimum
	21.752	Horizontal clearance less than minimum (note: bridge is over 200')
	9.880 - 21.764	Median width less than minimum
Ford Parkway - Hopkins County		
	22.003	Horizontal clearance less than minimum (note: bridge is over 200')
	24.437	All ramps have substandard geometrics
	28.346	Horizontal clearance less than minimum (note: bridge is over 200')
	32.733	Vertical curve radius less than minimum
	33.872	Horizontal clearance less than minimum (note: bridge is over 200')
	36.900	Horizontal clearance less than minimum (note: bridge is over 200')
	37.357	Vertical curve radius less than minimum
	38.373	All ramps have substandard geometrics
	21.764 - 38.332	Median width less than minimum
	24.435 - 31.581	Potential high crash segment (critical rate 0.90 - 0.99)

Table 19 – Deficiencies Summary for the Breathitt Parkway

Deficiency Type	Milepoint	Deficiency Description
Breathitt Parkway - Hopkins County		
	38.373	All ramps have substandard geometrics
	37.058	All ramps have substandard geometrics
	37.054	Horizontal clearance less than minimum (note: bridge is over 200')
	39.774	Horizontal clearance less than minimum (note: bridge is over 200')
	42.437	All ramps have substandard geometrics
	42.418	Horizontal clearance less than minimum (note: bridge is under 200')
	43.438	Horizontal clearance less than minimum (note: bridge is under 200')
	44.337	All ramps have substandard geometrics
	44.713	All ramps have substandard geometrics
	48.500	All ramps have substandard geometrics
	48.971	Horizontal clearance less than minimum (note: bridge is under 200')
	51.941	Vertical clearance less than minimum
	54.073	All ramps have substandard geometrics
	54.122	Vertical curve radius less than minimum
	34.271 - 37.070	Potential high crash segment (critical rate 0.9-.99)
	39.550 - 42.437	Median width less than minimum
	41.002 - 42.437	High crash segment (critical rate ≥ 1.0)
	42.437 - 44.337	Potential high crash segment (critical rate 0.9-.99)
Breathitt Parkway - Webster County		
	59.280	Horizontal clearance less than minimum (note: bridge is over 200')
	62.632	All ramps have substandard geometrics
	63.887	Horizontal clearance less than minimum (note: bridge is over 200')
	55.003 - 65.305	Potential high crash segment (critical rate 0.9-.99)
Breathitt Parkway - Henderson County		
	68.500	Vertical curve radius less than minimum
	68.373	All ramps have substandard geometrics
	76.258	All ramps have substandard geometrics

B. Early Coordination and Public Involvement

The following findings are summarized from **Chapter II** of this report and are based on comments at the local coordination and public meetings, responses to a written survey, and/or responses received from local, state, and federal agencies. Detailed summaries of local and public comment surveys, as well as resource agency letters, are included for reference in **Appendices B, C, and D**.

Meetings with Local Officials and Stakeholders:

- 98% (42 of 43 survey respondents) of the attendees indicated that the I-69 project would be beneficial to the region.
- Public perception of the main issues along the existing Parkways includes traffic congestion, high speeds, large trucks, poor sight distance, substandard curves, narrow lanes, narrow shoulders, and stopped vehicles.
- Survey respondents indicated that additional access is needed near the Princeton Industrial Park, 4 Star Industrial Park, KY 862, US 41, US 62 and KY 935. Improved access is suggested on the Ford Parkway at Exit 4, Exit 13 and Exit 24. Improved access is suggested on the Breathitt Parkway at Exit 30, Exit 37, Exit 40, Madisonville, Exit 63 and Exit 68.
- Local officials also recommended that the main areas to be avoided by future improvements include natural areas or habitats and historic or cultural sites, followed by businesses, commercial properties and hazardous sites.

Public Meetings and Surveys:

- 92% (76 of 83) of survey respondents indicated that the I-69 project would be beneficial to the region.
- During the public meetings, some local officials and other citizens expressed support for implementing I-69 signage along the Parkways. Public meeting discussions included concern about having the route labeled on the map, but having no signs along the Parkways, since this may confuse motorists.
- Public perception of the main issues identified along the existing Parkways includes narrow shoulders, large trucks, too much traffic, high speeds, surface repair, and signs and markings.
- Survey respondents indicated that additional access is needed near the Princeton Industrial Park, at KY 93, east of KY 293, near the Riverport Authority and Mineral Mound State Park, Nortonville, at KY 814, at KY 416, and between Madisonville and Henderson. Improved access is suggested at Exits 1 and 24 on the Ford Parkway, and at Exit 37, near Madisonville, and Exit 63 on the Breathitt Parkway.
- Survey respondents recommended that the main areas to be avoided by future improvements include historic or cultural sites, followed by personal properties or homes.

Resource Agency Coordination – Local Agencies and Stakeholders

Comments were received from eight local agencies and stakeholders, as follows:

- Three responses provided support for I-69 due to increased economic development expected to result from this interstate highway passing through the area.
- Two responses recommended that I-69 should follow the existing Parkways.
- The other three respondents appeared to assume that I-69 would follow along the existing Parkways and, therefore, addressed issues associated with this designation. Among those were a request for (1) signs to identify the Parkways as the I-69 corridor, (2) a full interchange on the Breathitt Parkway at KY 2097 for the Henderson Industrial Park, (3) a new interchange on the Ford Parkway at US 41 in Hopkins County, (3) reconstruction of the KY 109 interchange on the Ford Parkway, and (4) reconstruction of KY 335 from the Breathitt Parkway to KY 481.
- Other issues mentioned in the responses included improving high crash locations, avoiding surface mining and underground mining activity, and giving consideration to animal feeding operations and wildlife refuges.

Resource Agency Coordination – State and Federal Agencies

Responses were received from six state agencies and five federal agencies. Three respondents indicated that they had no comments. One stated that I-69 should be located along the existing Parkways. Some respondents addressed procedural requirements, should the proposed project advance into future phases. Others provided information and/or concerns about the following:

- Kentucky Geological Survey – The project is located within two physiographic regions which may include the following issues: karst features, minimal/moderate landslide hazards, gas wells, some suitable aggregate for road construction, the potential for faults or earthquake ground motion, and potential conflicts related to mineral rights.
- KYTC Division of Materials: The following geotechnical information and issues were identified and provided: rock formations and appropriate uses; vertical displacement faults; previous and active coal mining locations; oil and gas extraction wells; wetland areas and blueline streams; erosion control methods; karst drainage systems and sinkholes; soil qualities; cut slopes and embankment benches; and earthquake activity (a geologic map of the study area was provided).
- KYTC Division of Multimodal Programs: Coordination with the Henderson MPO was encouraged. It was also noted that changes to the Sebree interchange in Webster County should consider the TransAmerica bicycle trail east of Sebree.
- Federal Aviation Administration: Four public airports located in the vicinity of the proposed project were identified, and maps of these facilities were provided.
- United States Department of Health and Human Services: Issues identified were public health concerns, including air quality; water quality/quantity; wetlands and floodplains; hazardous materials/wastes; non-hazardous solid waste; noise; occupational health and safety; land use and housing; and environmental justice.

- United States Environmental Protection Agency: Highlighted were the scoping and streamlining process and documentation to comply with the National Environmental Policy Act (NEPA) as the project advances. Maps were provided detailing Potential Environmental Justice Areas, Sensitive Environmental Areas and General Landcover Types.

C. Operational Considerations and Safety

The following is a summary of the key findings related to the operational considerations and safety of the Parkways:

- Crash Analysis (Ford Parkway): When compared to other state parkways, there is one high crash segment along the Ford Parkway near the US 62 interchange at Eddyville in Lyon County (MP 3.702 to MP 5.610) where the crash rate exceeds the statewide average for all parkways. 72% of these accidents were a combination of collisions with fixed objects or animals. Another segment between MP 0.000 and MP 3.702, just east of the I-24 interchange in Lyon County, nearly exceeds the statewide average for parkways and should be considered a potential high crash segment.
- Crash Analysis (Breathitt Parkway): When compared to other parkways, there is one high crash segment where the actual crash rate exceeds the statewide average for Parkways. The high crash segment is in Hopkins County between MP 41.002 and MP 42.437, near the KY 70/85 exit at Madisonville. Sixty-nine percent (69%) of these accidents are the result of rear-end collisions likely related to the ramp operations at Interchange 42 at Madisonville. There is also one potential high crash segment in Hopkins County between MP 42.437 and 44.337, near the US 41A exit at Madisonville.
- Crash Analysis (as an Interstate): When compared to Kentucky interstate highways, rather than state parkways, one additional high crash segment was identified along the Ford Parkway located just east of the I-24 interchange in Lyon County (between MP 0.000 and MP 3.702). 74% of these crashes are either a collision with an animal or fixed object.
- Potential High Crash Segments: There are five (5) additional segments considered to be potential high crash segments, including three (3) in Hopkins County and two (2) which are side-by-side in Webster County.
- Additional Findings Related to Crash Analysis: There were only 6 crashes coded as 'median cross-over' or 'head-on' collisions on the parkways. Three interchanges are located in high crash locations – Exits 1 and 4 on the Ford Parkway and Exit 42 on the Breathitt Parkway. Further analysis in the high crash segments may identify corrections related to horizontal clearance, wildlife measures, ramp design or operational controls. However, this is not unlike other existing interstates in Kentucky.
- Traffic Volumes (2002): Existing traffic volumes along the Ford Parkway range from 9,000 vpd in Lyon County to 10,900 vpd in Hopkins County. For the

Breathitt Parkway, 2002 traffic volumes range from 10,500 vpd in Hopkins County near the Ford Parkway to 26,400 vpd in Hopkins County (within the urban area of Madisonville).

- Truck Percentages (2002): Existing truck percentages range from 25.0% to 31.3% along the Ford Parkway while truck percentages range from 22.9% to 32.9% along the Breathitt Parkway.
- Traffic Volumes without I-69 (2030): Average annual growth rates along the Parkways range from 1.7% to 2.1%. These rates result in traffic volumes ranging from 15,100 to 18,100 vpd along the Ford Parkway and from 17,200 to 43,500 vpd along the Breathitt Parkway.
- Traffic Volumes with I-69 (2030): Assuming I-66 and I-69 will travel along a portion of the Ford Parkway, growth rates range from 3.2% to 3.7% along the Ford Parkway. Rates range from 2.2% to 2.3% along the Breathitt Parkway. These result in traffic volumes ranging from 23,100 to 30,500 vehicles per day along the Ford Parkway and from 19,100 to 50,500 vehicles per day along the Breathitt Parkway.
- Truck Percentages (2030): Future truck volumes were not forecast as part of this study; however, truck traffic is expected to increase substantially if the national goals of I-69 are met.
- Level of Service (2002): All Parkway segments operate at LOS C or better in the Year 2002 and should therefore be considered acceptable at present.
- Level of Service (2030): Future year (Year 2030) levels of service are expected to operate at acceptable conditions throughout the study area both with and without the I-69 designation, since only one segment along either Parkway is expected to fall below LOS C. This segment, expected to operate at LOS D, is found in Hopkins County in the urban area of Madisonville and can, therefore, be considered an acceptable LOS.

D. Mainline Geometry/Typical Section

The following is a summary of the key findings related to the suitability of the mainline geometry and typical section of the Parkways:

- Design Speed: The Ford and Breathitt Parkways meet or exceed minimum design speed guidelines for interstate highways in rural and urban areas.
- Lane Width: Lane widths on the mainline of the two Parkways meet the minimum AASHTO guidelines for freeway design.
- Outside Shoulder Width: It is anticipated that all of the existing outside shoulders will meet interstate highway criteria for shoulder width.
- Inside Shoulder Width: The Parkways do not fully conform to AASHTO design guidelines for inside shoulder widths on freeways. All of the Ford Parkway and

sections of the Breathitt Parkway have 3' inside shoulder widths, while guidelines recommended a 4' inside shoulder.

- Median Width: The existing median width along the Breathitt Parkway meets AASHTO standards for rural freeways with the exception of a short roadway section between Milepoint 39.550 and Milepoint 42.437 in Hopkins County. While portions of the Ford Parkway also meet accepted practice, the majority in Caldwell and Hopkins Counties do not meet current AASHTO standards.
- Clear Zones: It is not possible to evaluate the applicability of current design standards and availability of acceptable clear zones with the information currently available.
- Guardrail Placement and Condition: Sufficient information does not exist on the as-built plans to evaluate the placement of guardrail along the I-69 corridor.
- Superelevation: The design speeds and maximum radius used for the design of the mainline sections of the existing Parkways are acceptable and in general compliance with the intent of the current AASHTO design guidelines.
- Horizontal Alignment: The horizontal curvature for the Parkways is acceptable and in general compliance with current AASHTO design guidelines.
- Vertical Alignment: The majority of vertical curves along the Parkways are sufficient to meet current AASHTO guidelines. Of the five (5) unacceptable vertical curves, three (3) are located on the Ford Parkway and two (2) on the Breathitt Parkway.

E. Bridges and Overpasses

The following is a summary of the key findings related to the bridges and overpasses along the Parkways:

- Lateral Clearance (Ford Parkway): Of the 22 mainline bridges along the Ford Parkway, 14 (70%) fail to meet the minimum 38'-00" lateral (horizontal) clearance.
- Lateral Clearance (Breathitt Parkway): Of the 28 mainline bridges on the Breathitt Parkway, 14 (50%) fail to meet the minimum lateral (horizontal) clearance.
- Vertical Clearance: Five (5) overpass structures along the two Parkways do not meet minimum vertical clearance standards of 16'-00".
- Functional Adequacy: Thirteen (13) bridges are considered functionally obsolete. Of these thirteen (13) structures, 2 pass over the Parkways (both along the Ford Parkway) and 11 are mainline bridges (6 on the Breathitt Parkway and 5 on the Ford Parkway). Two (2) overpasses are considered structurally deficient, with one located along each Parkway.

F. Interchanges and Ramps

The following is a summary of the key findings related to the interchanges and ramps along the Parkways:

- Design Speed: Although there was insufficient information from the as-built plans to properly locate or quantify possible deficiencies on the Ford and Breathitt Parkways, many of the ramps do not meet the minimum guidelines for design speed.
- Lane Width: Lane widths ranged from 15' to 18' and are acceptable and in general compliance with AASHTO guidelines.
- Shoulder Width: Ramps at interchanges on the two Parkways do not meet AASHTO guidelines for shoulder width.
- Horizontal Alignment: Many of the directional and loop ramps at the existing interchanges do not meet recommended design guidelines for horizontal alignment.
- Vertical Alignment: The as-built plan sets do not provide vertical profile information for ramps. However, it is not anticipated that significant problems exist in this area.
- Superelevation: Many of the directional and loop ramps have superelevations that exceed the 8% maximum.
- Speed-Change Lanes: Existing ramps on the Ford and Breathitt Parkways do not meet the minimum guidelines for tapers.
- Weaving Characteristics: There are three (3) interchanges where the length of weaving is below recommended design guidelines. Two are on the Ford Parkway: KY109 at MP 24.437 in Hopkins County and the Breathitt Parkway at MP 38.373 in Hopkins County. The third is the KY 56 interchange on the Breathitt Parkway at MP 62.632 in Webster County.