

FINAL SUMMARY REPORT ON TRUCK ROUTE ACCESS EVALUATION

“Freight Movement and Intermodal Access in Kentucky”  
SPR 98-189



Lisa Aultman-Hall

with

Ken Agent  
Brian Aldridge  
Joel Weber  
Dave Cain  
Bradford Johnson  
Nick Stamatiadis

Kentucky Transportation Center and the Department of Civil Engineering  
University of Kentucky

The contents of this report reflect the views of the authors, who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the University of Kentucky, the Kentucky Transportation Cabinet, or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

May 1999



1. Report No. KTC-99-48	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle  Final Summary Report on Truck Route Access Evaluation		5. Report Date May 1999	
		6. Performing Organization Code	
7. Author(s) Lisa Aultman-Hall, Ken Agent, Brian Aldridge		8. Performing Organization Report No.6 KTC-99-48	
9. Performing Organization Name and Address  Kentucky Transportation Center College of Engineering University of Kentucky Lexington, KY 40506-0281		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No. SPR 98-189	
12. Sponsoring Agency Name and Address Kentucky Transportation Cabinet State Office Building Frankfort, KY 40601		13. Type of Report and Period Covered Final	
		14. Sponsoring Agency Code	
15. Supplementary Notes  Prepared in cooperation with the Kentucky Transportation Cabinet.			
16. Abstract This report summarizes the evaluation of truck route access between the National Highway System and 46 truck generating sites, including intermodal sites, throughout Kentucky (includes 81 routes and 800 miles of highway). Routes were evaluated quantitatively for nine highway features, assigned an overall route rating and recommendations for routine maintenance and re-construction were made. The level and quality of truck access to the NHS varies dramatically throughout the state. Some facilities are between 25 and 50 miles from the NHS. No significant difference in route ratings or other measures was found by geographic location. The different typography throughout the state contributed to differences in grade and curvature quality. Very few non-NHS truck routes have 12-foot lanes along their whole length. The intermodal facility routes in general were found to be of better quality than routes leading to truck only sites. Trucks are not always using the routes they should. Ten of the routes were considered the "best" and required no improvements at this time. Improvements on other routes varied from routine maintenance to the need for complete reconstruction. Routes were prioritized by length and amount of truck traffic to recommend the most critical routes for improvement.			
17. Key Words truck intermodal highway design		18. Distribution Statement  Unlimited, with approval of the Kentucky Transportation Cabinet	
19. Security Classif. (of this report)  Unclassified	20. Security Classif. (of this page)  Unclassified	21. No. of Pages  52	22. Price



## Table of Contents

<b>1.0</b>	<b>Introduction</b>	<b>1</b>
<b>2.0</b>	<b>Summary of Evaluation Methodology</b>	<b>2</b>
<b>3.0</b>	<b>Site and Route Descriptions</b>	<b>4</b>
<b>4.0</b>	<b>Overall Route Ratings</b>	<b>5</b>
<b>5.0</b>	<b>Specific Route Features</b>	<b>6</b>
	5.1 Horizontal Curvature	6
	5.2 Lane Width and Shoulders	6
	5.3 Intersection Turning Radii	7
	5.4 Bridges	7
	5.5 Railway Crossings	7
	5.6 Sight Distance	7
	5.7 Traffic Level of Service	8
	5.8 Truck Accidents	8
<b>6.0</b>	<b>Findings and Recommendations for Individual Routes</b>	<b>9</b>
	6.1 Dollar General (Site #2655) Allen County	9
	6.2 Westvaco (Site #2683) Ballard County	9
	6.3 Bath County Industrial Site (Site #26) Bath County	10
	6.4 JRB Incorporated and the Paul Coffey Industrial Park (Site #2561 & 2682) Boyd County	10
	6.5 Bullitt County Stone (Site # 2031) Bullitt County	10
	6.6 Dow Corning, Varity Dayton Walther and Ghent Generating Station (Site # 33 & 51) Carroll County	11
	6.7 Kenmore Stone and Ruth Brothers Quarry (Site #2620) Carter County	11
	6.8 Cook Family Foods (Site #2663 )Carter County	12
	6.9 Hopkinsville Industrial Park (Site #41) Christian County	12
	6.10 Owensboro Riverport Authority / Miles Farm Supply Dock (Site #24) Daviess County	12
	6.11 Edmonson County (No Site Number) Edmonson, Grayson, and Warren Counties	12
	6.12 Estill County Industrial Park (Site # 2679) Estill County	13
	6.13 Transport Court Cluster (Site # 28) Fayette County	13
	6.14 Central Kentucky Asphalt (Site # 2634) Fayette County	14
	6.15 Ivel Prep Plant (Site #1353) Floyd County	14
	6.16 Topy Corporation (Site #53) Franklin County	14
	6.17 Hickman Riverport Area (Site # 16) Fulton County	15
	6.18 Grant County Industrial Park (Site # 2677) Grant County	15
	6.19 Seaboard Farms (Site #2623) Graves County	15



6.20	Campbell-Hausfeld (Site # 2637) Grayson County	16
6.21	Greensburg Manufacturing (Site # 2666) Green County	16
6.22	Willamette Industries (Site #2659) Hancock County	16
6.23	Nally & Hayden (Site # 15) Harlan County	17
6.24	Henderson County Riverport Area (Site #2) Henderson County	17
6.25	Tyson Foods (Site #2684) Henderson County	17
6.26	Safety Kleen	18
6.27	Centennial Resources, Inc./B.Four, Inc. (Site #2685) Hopkins County	18
6.28	Louisville Airport, UPS, Ford Motor Company (Site # 6) Louisville,8 Jefferson County	18
6.29	Bells Lane Cluster (Site #7) Jefferson County	19
6.30	Campground Road Cluster (Site #8) Jefferson County	19
6.31	Norfolk Southern Rail Intermodal Terminal (Site # 1767) Louisville, Jefferson County	19
6.32	Sapphire Tipple (Site #1499) Letcher County	20
6.33	Logan Aluminum (Site #2657) Logan County	20
6.34	Madison County Industrial Park (Site # 2678) Richmond, Madison County	21
6.35	Dravo Lime Company (Site # 30) Mason County	21
6.36	Inland Container Corporation (Site # 2632) Mason County	21
6.37	Paducah-McCracken County Riverport Area (Site #14) McCracken County	22
6.38	Midland Trail Industrial Park / Heilig-Meyers (Site # 32) Montgomery County	22
6.39	Paradise Power Plant (Site #1113) Muhlenberg County	22
6.40	Bardstown Industrial Park & Smith Brothers Distributing (Site #52) Nelson County	22
6.41	Dravo Lime Company (Site # 44) Pendleton County	23
6.42	Millard Processing (Site # 1677) Pike County	23
6.43	Praise Loadout (Site # 1700) Pike County	24
6.44	Plum Springs Industrial Site (Site #2575) Warren County	24
6.45	Medusa Aggregates (Site #2628) Warren County	24
6.46	American Greeting Corporation (Site # 2569) Whitley County	25
<b>7.0</b>	<b>Conclusions</b>	<b>25</b>





<b>Appendix A</b> .....	<b>37</b>
Truck Route Summary Information Listed by County .....	38
Truck Route Summary Information Listed by Area Development District ....	41
Truck Route Summary Information Listed by Facility Name .....	44
Truck Route Summary Information Listed by Site Number .....	47
Truck Route Summary Information Listed by Rank .....	50

### List of Tables

Table 1: Interpretation of the Overall Route Rating .....	3
Table 2: Sites by Area Development District .....	5
Table 3: Routes with Problematic Bridges .....	8
Table 4: Best Truck Access Routes .....	26
Table 5: Longest Routes with the Lowest Overall Route Rating .....	27
Table 6: Routes with the Lowest Overall Route Rating Weighted by Length and Truck Volumes .....	28

### List of Figures

Figure 1: Intermodal Facilities in Kentucky .....	29
Figure 2: Truck Trip Generating Sites throughout Kentucky .....	30
Figure 3: Sites and Clusters of Sites Selected for Study .....	31
Figure 4: Truck Access Routes in Western Kentucky .....	32
Figure 5: Truck Access Routes in North Eastern Kentucky .....	33
Figure 6: Truck Access Routes in South Eastern Kentucky .....	34
Figure 7: Frequency of Overall Route Ratings .....	35
Figure 8: Spatial Distribution of Overall Route Ratings .....	36



## 1.0 Introduction

This study entitled "Freight Movement and Intermodal Access in Kentucky" was initiated in July 1997 for a two-year period funded by the Kentucky Transportation Cabinet (KYTC) and undertaken by the Kentucky Transportation Center (KYTC) with the University of Kentucky's (UK) Department of Civil Engineering. The study was undertaken on the recommendation of KYTC's Intermodal Advisory Panel. This report summarizes the results of the evaluation of highway access for trucks to intermodal facilities and other truck generating sites throughout Kentucky. In all, 81 routes used to access 46 facility sites or clustered sites were evaluated. These routes represented approximately 800 miles of highway. Another portion of this study considered freight commodity flows in Kentucky and those results are reported in a separate document.

The truck access evaluation involved the following stages of work.

- The existing intermodal and truck facility databases were updated. The intermodal facility directory had been originally created by the Kentucky Transportation Center as part of an ongoing project (see Figure 1). The database of sites generating more than 25 trucks per day had been compiled in 1994 by the KYTC Division of Transportation Planning along with the Area Development Districts (ADD) (see Figure 2). The geo-coding of these sites for Geographic Information System (GIS) use was not accurate enough for site selection in this project. Therefore, researchers with this project phoned all intermodal facilities and the highest truck trip generators in each area development district in the truck site database. While contacting the facilities to clarify location, other information such as commodity handled and number of transportation modes at the facility was also updated.
- In order to select approximately 50 sites for study throughout Kentucky, a GIS program was used to determine which sites were located in clusters and to determine their distance from the National Highway System (NHS). Clusters of facilities were then chosen for study based on total trucks per day and distance to the NHS, while ensuring that a variety of modes, commodities and geographic areas throughout the state were included. Transportation planners from Highway Districts and ADD offices were asked to recommend sites with truck access problems. The sites selected and studied are shown in Figure 3 and listed in Appendix A. This list contains the names of only the facilities which were in the original databases. In many cases, other facilities are also located at these sites as noted in the individual truck access reports.
- At the same time site databases were being updated and site selection was undertaken, researchers were also developing a procedure to evaluate the highway access between the NHS and the sites. This approach of evaluating the truck route between a site and the NHS was recommended by the state Intermodal Advisory Panel which is sponsored by and provides direction to the KYTC on intermodal issues. In this way, the study could focus on the actual route segments in use and the actual problems being experienced by the truck traffic using the route even when different highway sections fall under the responsibility of different jurisdictions. This type of approach is also applicable to economic development-related access studies where the routes leading to prime development sites may cross several

jurisdictions and include both state and local roads. Objective measures that allowed for prioritization of route problems were needed. This report summarizes the methodology that was developed but a more complete description is contained in Kentucky Transportation Center Report 98-14 "A Methodology for Evaluating Large Truck Access to Intermodal and Other Facilities".

- Once a site or cluster of sites was identified for potential route evaluation, the managers of the facilities were contacted (by fax and subsequently by phone). The nature and purpose of the study was described to the managers to solicit their cooperation. Those interested in participating were then asked to provide details regarding truck traffic, to identify the routes used to travel to the NHS and to identify the location and time of day of traffic problems affecting their trucks. Information on the largest typical truck using the route was collected to calculate many of the geometric adequacy measures described below. Finally, information regarding the origin, destination, quantity, and mode of freight flowing through the facility was collected for use in other freight commodity flow modeling studies. The cooperation of the site managers was very good. All managers but one have requested a copy of the final report, which was offered in the initial phone contact. Survey responses are contained within the reports on each individual site.
- Between May 1998 and January 1999, engineers conducted the evaluation of the highway routes leading to the sites from the NHS. The evaluation involved route video taping, site visits, field measurements, compilation of HIS data and use of traffic counts conducted by KYTC specifically for this project. A separate report was prepared for the routes leading to each site.
- Finally, in May 1999 the route characteristics and quantitative measures of truck access were compiled into a joint database for preparation of this report and delivery to KYTC. This database is in Appendix A.

## **2.0 Summary of Evaluation Methodology**

The methodology involves tabulation of the following four types of information or measures: 1) problem truck miles and problem truck points, 2) subjective or unstructured evaluations, 3) overall route rating and 4) maintenance improvement locations. Problem truck miles and problem truck points were used for both point and continuous quantitatively evaluated route features: lane width, shoulders, bridges, railway crossings, grade, safe speed on horizontal curves, offtracking on horizontal curves, intersection turning radii, and stopping sight distance. Using criteria developed in brainstorming sessions and from reference sources, each of the above features along route sections or at points along the routes were graded as "preferred", "adequate" or "less than adequate" for truck access. In order to obtain the weighted sum of problem truck points along a route with respect to a particular feature, the number of less than "preferred" points were weighted by the number of trucks per day that passed that point. The "less than adequate" points were weighted twice that of "adequate" points. For continuous features, such as lane width, the problem truck miles were obtained by weighting the summation by the length of the sections with less than "preferred" features. Sections or points that are graded "preferred"

with respect to a particular route feature do not contribute to the sum of problem truck points or miles for that particular feature. In this way, the problem route features reported in section 5.0 are weighted by the number of trucks as well as the length of truck route as a measure of relative urgency.

Several truck route features that are important to an evaluation of truck access could not be graded as “preferred”, “adequate” or “less than adequate”. Some of these features were still rated quantitatively using other methods. These features included traffic level of service which was only studied when facility managers indicated a problem existed. Accident history was considered by plotting accident locations over a three-year period and referencing route sections that had been determined to have critically high truck accident rates in a previous KTC study. Clear zone inadequacies, pavement problems, parking issues, traffic control device problems, signage and other problems were noted when observed in the field. Some notes regarding these features are contained in the summary of route evaluation database that is provided in Appendix A. Information on most of these features must be obtained from the individual route reports.

Through use of the problem trucks per day and problem truck miles per day, specific sections or routes can be compared on a feature by feature basis to determine the urgency of needed improvements. However, there is also a need for a measure of the overall route quality, considering all route features, including those subjectively evaluated. Some consideration was given to weighting each of the features such that a composite quantitative measure could be determined. It was concluded that such a measure would be inaccurate due to the relative weighting of different features and the inability to include subjective features or elements such as traffic operations which are evaluated at only selected points. Therefore, the decision was made that the researcher who inspected the route, together with the research team, would consider the data collected and then grade the overall route on a scale of 1 through 10. In this case, 10 would represent a route that currently accommodates trucks with reasonably good standards of geometry, safety and operating conditions and therefore needs no improvements. The guidelines for this rating are shown in Table 1.

**Table 1: Interpretation of the Overall Route Rating**

Overall Route Rating	Qualitative Interpretation of Rating
1	Trucks should not be using this route
2	Major construction is required to improve this route
3-5	Minor improvements are <u>required</u> on this route
6-8	Minor improvements could <u>improve</u> this route
9	Minor problems exist that do not seriously impede truck access
10	Trucks are served with reasonable access

The final type of result that is provided for each site or cluster of sites is a list of maintenance improvement locations along the routes. These locations might result from subjective or point features that have been evaluated. The maintenance improvements list includes locations where a feature might be improved simply by routine work or maintenance already performed by some agency. As an example of a problem that could be rectified through maintenance improvement is an intersection sight distance problem that can be improved by simply removing overgrown vegetation or trees along the roadway. Recommendations for these types of improvements can be found in individual reports. The most common recommendations made in this category related to signage, pavement surface condition, brush removal, and parking.

### 3.0 Site and Route Descriptions

In all, the routes to 46 sites of individual or clustered facilities were evaluated. This number was reduced from the initial 57 sites because some facilities were combined as they used the same route(s). Others were not evaluated because the phone surveys found very few trucks. Two others were removed because newly open highway facilities connected the facility to the NHS. While many sites had only one facility, others had as many as 20. Riverport areas and industrial parks, in particular, had a large number of facilities in a cluster. In many cases, more than one route led from the facility to the National Highway System<sup>1</sup>. On average there were 1.8 routes evaluated per site. The sites were located in 37 different counties with no more than 4 in any single county. In many cases, the routes crossed county boundaries. The number of sites evaluated in each Area Development District (ADD) is shown in Table 2. The sites and routes are illustrated in Figures 3 through 6. These figures illustrate that facilities in the west and south of Kentucky were located further from the NHS than in the central and northern areas of the state. A brief description of the routes is contained with the other summary information in Appendix A. A total of 13 of the sites had at least one intermodal facility, while the others involved only truck freight movements. A total of 4 riverports and one airport were evaluated.

The route lengths ranged from 0.4 miles to 54.3 miles with a mean length of 10.0 miles. Twenty five percent of the routes were less than 2.0 miles from the NHS while another quarter were above 14.2 miles. The site truck traffic on a route ranged from 15 to 600 trucks per day with a mean of 143. However, the maximum truck volume on the routes ranged from 20 to 2283 with a mean of 739. The Average Daily Traffic (ADT) varied along the length of each truck route (from a minimum of 348 to a maximum of 38,589). In order to consider the range of ADTs over all the routes studied, the maximum (ADT) for each route section was considered. The mean maximum ADT was 11,243 vehicles with a standard deviation of 8,635. These statistics further illustrate the variability of route characteristics.

---

<sup>1</sup> Note that in several cases the route evaluated was not to the National Highway System but to the state line or the actual destination for the freight.

**Table 2: Sites by Area Development District**

<b>ADD</b>	<b>Number of Sites</b>	<b>Mean Overall Route Rating (/10)</b>
Green River	4	6.5
KIPDA	6	6.4
Purchase	4	4.6
Cumberland Valley	2	4.3
Gateway	2	7.5
Bluegrass	5	6.8
Buffalo Trace	2	5.0
Northern Kentucky	3	6.3
Pennyrile	3	7.3
Lincoln Trail	2	8.0
Big Sandy	3	5.3
Kentucky River	1	2.7
Barren River	5	5.4
FIVCO	3	4.7
Lake Cumberland	1	2.0

#### **4.0 Overall Route Ratings**

The overall route rating (see section 2.0), while subjective, is the most convenient measure to consider for route comparison and prioritization because it considers all factors studied. The distribution of ratings is shown in Figure 7. While the most frequent rating was 2 out of 10, the mean rating was 5.6, and 25 percent of the routes had a rating of 8 or higher. Again this illustrates the variety and range of route conditions with respect to truck access.

Table 2 indicates the average route ratings by ADD. The two lowest average ratings were for eastern Kentucky area development districts where topography is a significant limiting factor for highway development. Note also that these ADDs only had one site evaluated in each district. Figure 8 illustrates the lowest overall route rating by site. This figure further demonstrates that good and bad routes are found throughout the state.

Using linear regression, no relationship was found between route length and overall route rating. The mean overall rating for intermodal facility routes was 5.1 while the mean for truck site routes was 5.8. This difference was not statistically significant when tested using a Student's t

test. The difference in mean rating was found to be statistically significant when tested using a Student's t

Locations where offtracking may occur were estimated using wheel base lengths, horizontal curvature information from the HIS database and lane widths measured in the field. A total of 37 of the 81 routes had no curves with offtracking problems. The total problem truck points for offtracking ranged up to 78,278. However, four routes in particular stand out as unusually problematic when weighted by truck volume and the number of problematic curves. The following routes have problem truck miles greater than 25,000: the Sapphire Tipple in Letcher County; Willamette Industries in Hancock County; and both routes leading to Nally and Hayden in Harlan County.

Safe speed on horizontal curves was evaluated using a ball bank indicator. Two of the above sites also have routes that are in the most critical six with respect to safe speed (both routes to Nally and Hayden, and 3 routes to the Sapphire Tipple). The Estill County Industrial Park was the other site with problem truck points for safe speed exceeding 12,000. All other routes had less than 7,800 points including 46 routes with no safe speed problems on curves.

Grade was considered problematic when length and steepness combined to cause trucks to slow excessively. In some cases, downgrades were also problematic. Only 30 of the 81 routes had any grade problems noted. For the non-zero grade problem truck miles, the median was only 683 truck miles. However, three routes stand out with problem truck miles for grade exceeding 5,000 truck miles: Nally and Hayden in Harlan County, the Greensburg Manufacturing Company in Green County, and Willamette Industries in Hancock County.

### 5.2 Lane Width and Shoulders

Lane width is a critical highway feature for many aspects of truck access. Only 11 of the 81 routes had 12-foot lanes along their entire length. Further, 21 of the routes had no sections of 12-foot lanes. A total of 54 routes had all sections with at least 11-foot lanes. Only 10 routes were completely comprised of 10-foot or narrower lanes. For problem truck miles for lane width, each route had on average 4486 truck miles (5201 with the zero observations removed). Four sites had routes with total problem truck miles greater than 20,000. Nally and Hayden and Willamette Industries, previously mentioned for curvature problems, make this list as well as Westvaco in Ballard County and Logan Aluminum in Logan County. The routes to these four sites can be considered the routes where the most trucks travel the longest sections on narrow lanes from among the routes studied.

No relationship was found between route length and the percent of the route that had 12-foot lanes or was less than or equal to 10-foot lanes. The percent of the route in different lane width



categories also did not vary for intermodal versus non-intermodal sites. However, the total number of problem truck miles for lane width was significantly greater for non-intermodal routes (5,261) versus intermodal routes (2,161). This finding suggests intermodal facility routes may be less of a concern than routes to truck only sites. The number of problem truck miles for lane width did not vary significantly by ADD.

Shoulders are not only part of the clear zone but also provide emergency stopping opportunities for trucks. Shoulders were evaluated based on their width and surface type. All but 2 routes were assigned problem truck miles for shoulders. Two routes stand out with greater than 30,000 problem truck miles for shoulders: Willamette Industries in Hancock County and one route to Westvaco in Ballard County. There is a high correlation between problem truck miles for shoulders and for lane width (Pearson's Correlation Coefficient = 0.84).

### **5.3 Intersection Turning Radii**

The majority of the routes (49) did not have any intersection turning radius problems for the largest truck using the route. All but one of the others had total problem truck points for turning radii below 1,500. Smith Brothers and Intertec Systems in Nelson County had a problem truck total of 9,394. Willamette Industries in Hancock County and Citgo Petroleum/Marathon Petroleum in Jefferson County each had problem truck points for turning radii between 1,400 and 1,500.

### **5.4 Bridges**

Bridges were evaluated using the bridge sufficiency rating from the KYTC Division of Operations. A total of 49 routes contained bridges that were rated less than "preferred". When weighed by truck volume on the route sections, seven routes are high outliers that should be considered for bridge improvements. These seven routes have problem truck points for bridges ranging from 3,865 to 8,712 while all others are below 3,000. A description of these routes is shown in Table 3.

### **5.5 Railway Crossings**

Only 14 of the routes had railway crossings that were rated less than "preferred". These problem truck points ranged from 40 to 2576. Six of these are considered particularly problematic. Three of these are in Eastern Kentucky (Millard Processing and Praise Loadout in Pike County and Sapphire Tipple in Letcher County). The other three are in Jefferson County at the two sites on the Ohio River off I-264. Before improvements are recommended at these crossings, investigation of the train traffic and speed should be undertaken.

### **5.6 Sight Distances**

Only two routes were assigned problem truck points for inadequate stopping sight distances: Kenmor Stone in Carter County and Praise Loadout in Pike County. Each route is approximately 2 miles long and also has other problems associated with it.

**Table 3: Routes with Problematic Bridges**

Site	County	Problem Truck Points (Bridges)	Maximum Truck Volume on Route (/day)	Route Description
Westvaco	Ballard	8712	702	KY 121 to KY 286 to US 62 to I-24
Logan Aluminum	Logan	7920	720	US 431 North to the Western KY Pkwy
Westvaco	Ballard	6368	730	US 51 South to Pennyrile Pkwy
Bowling Green Concrete	Warren	5447	2283	Plum Springs Loop Rd to US 31W to KY 446 to I-65
Nally & Hayden	Harlan	4400	400	North on US 421, Then KY 118 to the Daniel Boone Pkwy
Willamette Industries	Hancock	4283	986	South Route to Western Kentucky Pkwy at Leitchfield
Medusa Aggregates	Warren	3865	2283	McGinnis Quarry Rd to US 31W to KY 446 to I-65

### 5.7 Traffic Level of Service

Many sites had intersections or route sections identified by the facility managers as congested or problematic that were evaluated using the Highway Capacity Manual level of service procedures or traffic signal evaluations. Field traffic counts were collected on the days and at the times indicated by facility managers. All routes but one had acceptable levels of service given the surrounding land use and road type. The intersection of Grade Lane and the Preston Highway near I-65 on the UPS access route in Jefferson County has delay problems in the PM peak. This route is otherwise rated very high.

The discrepancy between the facility managers' perceptions and the actual levels of service is a matter of concern. It seems that traffic delay expectations may not be able to be met along many truck routes.

### 5.8 Truck Accidents

In 1997 the Kentucky Transportation Center studied all state-maintained roads throughout Kentucky and determined average truck accident rates for different types of road sections. A critical accident rate was then calculated using the average accident rate for a specific highway type along with an assumed level of statistical significance and exposure (vehicle miles traveled). A total of the 28 routes studied had sections that were identified in the KTC study as having critically high truck accident rates for the particular road classification. Average differences for

routes with and without high truck accident sections with respect to average route rating and total problem truck miles for several variables was tested using the Student's t test. No statistically significant difference (0.10 level) was found for lane width, overall route rating, offtracking, grade, intersection turning radius or safe speed on curves. This confirms that accident rates and their causes are not easily understood.

## **6.0 Findings and Recommendations for Individual Routes**

This section of the report summarizes the deficiencies and recommendations for the routes to each site or area studied. Sites are presented in alphabetical order by county and the overall route rating (see Table 1 on page 3) is shown in parentheses after the subsection title. When more than one overall route rating is specified, this indicates the number of routes to this facility that were evaluated. The conclusions as to the most critical routes for improvement are found in section 7.0, while the data indices for different features of each route are contained in Appendix A.

### **6.1 Dollar General (Site #2655) Allen County (Overall Route Rating: 6, 8)**

The following problems were identified along the truck access routes to the Dollar General Corporation Site:

- 10-foot lane widths on KY 100 in Allen County;
- 9-foot lane widths on KY 3499
- narrow shoulder widths on KY 100 in Allen County;
- narrow shoulder widths on US 31E in Barren County;
- curbed shoulders on US 31E near Glasgow;
- less than "preferred" bridge sufficiency ratings on all routes; and
- accident histories along sections of KY 100, US 31E and KY 90.

In order to correct the surface width problems along these routes, complete reconstruction would be necessary. However, the problems associated with lane and shoulder widths are not believed to be severe enough at this time to warrant such action. If truck volumes were to increase, the need to correct the less than "preferred" features present on some route would become more of a priority. Curbed shoulders are located in an urban area along a section of US 31E with four lanes and 45 mph speed limits. Any corrective action would not be warranted other than to insure a two- to three-meter clear zone is maintained from the edge of the traveled roadway.

### **6.2 Westvaco (Site #2683) Ballard County (Overall Route Rating: 4, 7, 5)**

The following problems were identified along the truck access routes to Westvaco in Wickliffe:

- significant lengths of each route with less than "preferred" lane widths and shoulders;
- numerous less than "preferred" bridge sufficiency ratings;
- numerous less than "preferred" grades;
- numerous curves where offtracking may occur;
- one curve with safe speed problems (south route); and

- one problematic intersection (US 51 and US 60 in Wickliffe on the north route) with problems for left turning trucks.

The intersection of US 51 and US 60 could be improved by widening the lanes on US 51 so that trucks have more space available to turn into. In order to correct the lane width, shoulder, and curve deficiencies along these routes, complete reconstruction would be necessary. If growth in the area were to increase truck volumes, such action may be considered.

### **6.3 Bath County Industrial Site (Site #26) Bath County (Overall Route Rating: 7)**

The following problems were identified along the truck access routes to the Bath County Industrial Site in Bath County:

- significant length of route with less than "preferred" lane widths and shoulders;
- two less than "preferred" grades; and
- one curve with offtracking and safe-speed problems.

The only problem with the state-maintained portion of this route is the grade on KY 36. The section of Kendall Springs Road with no clear zone or usable shoulder is in need of drainage improvements, shoulder construction, and speed advisory signs. The remaining problems associated with lane widths and shoulders can only be alleviated by reconstructing the non state-maintained portion of the route. If truck volumes along this portion of the route were to increase, then such action might be considered.

### **6.4 JRB Incorporated and the Paul Coffey Industrial Park (Site # 2561 & 2682) Boyd County (Overall Route Rating: 5, 5, 5)**

In conclusion, the following problems were identified along the truck route:

- sections of US 60 with narrow lanes and shoulders;
- several curves on US 60 where offtracking could occur;
- missing and incorrect traffic signs on US 60;
- "less than adequate" bridges; and
- accident history along sections of US 60.

A recommended improvement is the replacement or correction of traffic signs along US 60. Given the truck volume and accident history some improvements to the route, particularly in Ashland, are recommended.

### **6.5 Bullitt County Stone (Site # 2031) Bullitt County (Overall Route Rating: 7)**

The following problems were identified along the truck route:

- narrow lanes and shoulders on KY 61;
- problematic horizontal curves on KY 61;
- inadequate turning radius at the intersection of KY 44 and KY 61;

- a humped railroad crossing on KY 44; and
- an intersection in the merge area of a lane drop on KY 44.

The recommended improvements are:

- the intersection of KY 44 and KY 61 could be rebuilt;
- the humped railroad crossing could be improved; and
- the merge area on KY 44 could be moved away from the intersection.

**6.6 Dow Corning, Varsity Dayton Walther and Ghent Generating Station (Site # 33 & 51) Carroll County (Overall Route Rating: 8, 2)**

The following problems were identified along the truck routes:

- sections with narrow lanes and shoulders,
- problematic horizontal curves on the Gallatin County route;
- sections of grade on KY 35;
- inadequate turning radii at two intersections;
- a lack of directional signing at the intersection of KY 36 and US 42; and
- a railroad crossing that is not perpendicular to the roadway.

The recommended improvements are:

- remove sign and widen pavement at the intersection of KY 36 and US 42 and
- add directional signing at the intersection of KY 35 and US 42.

**6.7 Kenmore Stone and Ruth Brothers Quarry (Site #2620) Carter County (Overall Route Rating: 2, 3)**

The following problems were identified along the truck route:

- narrow lanes and shoulders;
- problematic grades;
- problematic horizontal curves;
- poor turning radius from US 60 onto KY 2;
- a narrow bridge on US 60;
- problematic site distance on US 60; and
- accident history.

The following improvements are recommended on these routes: elimination of sections of on-street parking on US 60 in Olive Hill, and pavement widening at the intersection of US 60 and KY 2. The narrow cross section problem can only be addressed through reconstruction which is most critical at this time in the town of Olive Hill.

**6.8 Cook Family Foods (Site #2663 )Carter County (Overall Route Rating: 8)**

The following problems were observed along the truck route:

- narrow lanes and shoulders; and
- limited turning radius at the intersection of KY 1/KY 7 and CW Stevens Road.

It is recommended that pavement be widened at the intersection of CW Stevens Road and KY 1/KY 7. Given the short length of this route road widening is only recommended if further land use that attracts trucks is developed.

**6.9 Hopkinsville Industrial Park (Site #41) Christian County (Overall Route Rating: 10)**

The conclusion was that trucks were served with reasonable access to this facility. The only feature which was not given a "preferred" rating was the shoulders. The shoulder on US 41 could be changed from gravel to paved and shoulders could be added to the roads inside the industrial park.

**6.10 Owensboro Riverport Authority / Miles Farm Supply Dock (Site #24) Daviess County (Overall Route Rating: 9, 8)**

The following problems were identified along the truck access routes to the Owensboro Riverport Authority and Miles Farm Supply outside Owensboro:

- significant lengths of route with less than "preferred" lane widths and shoulders;
- significant lengths of roadway with insufficient clear zone;
- one horizontal curve with offtracking and safe speed problems;
- one less than "preferred" turning radius with problems for right turning trucks; and
- one less than "preferred" turning radius with problems for both left and right turning trucks.

In order to correct the less than "preferred" lane and shoulder widths found along the routes, complete reconstruction of both the east and west route would be necessary. Given the current volume of trucks found along both routes, such action may not be feasible. Should the area see an increase in truck volumes in the future, such reconstruction might be reconsidered. Both intersections with turning radius problems could be improved through lane widening in the vicinity of the intersection.

**6.11 Edmonson County (No Site Number) Edmonson, Grayson, and Warren Counties (Overall Route Rating: 2)**

The following problems were identified along this route:

- insufficient sight distance at the intersection of KY 226 and KY 259;
- a level railway crossing that is currently inappropriate for trucks;
- four less than "preferred" bridges;
- clear zone problems along some sections of the route;

- narrow lanes and shoulders along entire route;
- one grade that would be inappropriate for large or heavy trucks; and
- numerous horizontal curves where offtracking and safe speed would be a problem.

Providing large truck access to Edmonson county would require major construction. The northern route to the Western Kentucky Parkway would require re-construction to address curvature problems. The southern section of this route along KY 101 through the town of Smith's Grove cannot be made adequate for larger trucks due to the railway crossing and the proximity of residential and commercial land uses to the highway. Both the sections of US 31W to the east and west of KY 101 could provide access to I-65. However, the sections of KY 259 and KY 101 to the north of US 31W would still require re-construction. A decision on whether to proceed with re-construction should consider possible stimuli for economic development and the extent of truck size violations on the route.

At this time, the inadequate sight distance problem at the intersection of KY 259 and KY 226 could be addressed with traffic control (i.e., an all way stop).

#### **6.12 Estill County Industrial Park (Site # 2679) Estill County (Overall Route Rating: 6)**

The following problems were observed along the truck route.

- narrow lanes and shoulders,
- problematic horizontal curves;
- problematic grades (especially on KY 1840); and
- narrow bridges.

The problems with lane width and curvature could be addressed by rebuilding KY 82 and KY 89. The only recommended improvement for this route is the addition of edge lines on KY 1840.

#### **6.13 Transport Court Cluster (Site # 28) Fayette County (Overall Route Rating: 9, 2, 9)**

The following problems were identified along the truck routes:

- narrow lanes on Mercer Road and KY 1978;
- narrow shoulders along most of the route;
- problematic horizontal curves on Nandino Boulevard; and
- brush blocking signs on KY 1978.

A recommended improvement is clearing the brush along KY 1978. No other improvements are necessary at this time.

#### **6.14 Central Kentucky Asphalt (Site # 2634) Fayette County (Overall Route Rating: 7, 6)**

The following problems were identified along the truck access routes to Central Kentucky Asphalt in Fayette County:

- significant length of route with less than "preferred" shoulders;
- one less than "preferred" turning radius for right-turning trucks (west route); and
- one less than "preferred" railroad crossing (west route).

The problematic turning radius at the intersection of US 421 and KY 1723 could be remedied by widening the lanes or removing the curbed shoulder on KY 1723. The railroad crossing on the US 421 west route could benefit from resurfacing. The problems associated with shoulders can only be alleviated by reconstructing the routes. If truck volumes along the routes were to increase, then such action might be considered.

#### **6.15 Ivel Prep Plant (Site #1353) Floyd County (Overall Route Rating: 6)**

The following problems were identified along the truck access route to the Ivel Prep Plant in Floyd County:

- significant length of route with less than "preferred" lane widths and shoulders;
- one curve with less than "preferred" safe speed and offtracking;
- one less than "preferred" grade; and
- one short section of roadway with poor pavement conditions.

Complete reconstruction of the route (specifically Ivy Creek Road) would be required to remedy the majority of the access-limiting problems. The facility manager indicated that there is an expected increase in production of up to 100%. With such an increase possible in the near future, such action might be considered. However, reconstruction of the state-maintained portion of this route (US 23) is not required. In addition, the Stratton Branch Road portion of the route, with the relatively new bridge over the Levisa Fork of the Big Sandy River, does not require reconstruction.

#### **6.16 Topy Corporation (Site #53) Franklin County (Overall Route Rating: 8)**

The following problems were identified along the truck access route to the Topy Corporation in Frankfort:

- significant lengths of route with less than "preferred" lane widths and shoulders;
- one intersection (Industrial Road with Chenault Road) with problems for right turning trucks; and
- one less than "preferred" bridge sufficiency rating.

Lane widening near the intersection of Chenault and Industrial Roads might alleviate the turning radius problem for right turning trucks. The problems associated with lane and shoulder widths could only be corrected through reconstruction of both Chenault and Industrial Roads, which is



currently unnecessary. However, should traffic volumes increase, such reconstruction might be reconsidered.

#### **6.17 Hickman Riverport Area (Site # 16) Fulton County (Overall Route Rating: 2, 2, 2, 2)**

The following problems were identified along the truck access routes to the Hickman Riverport Area:

- minor offtracking and horizontal curve safe speed problems;
- significant lengths of highway with less than “preferred” lane widths and shoulders;
- two problematic intersections (KY 1099 with KY 309 and KY 125) with turning radii problems for both left and right turning trucks;
- one problematic railway crossing on KY94 west of Hickman;
- traffic backups at the riverport between July and October due to delays in processing trucks; and
- minor truck accident problems.

Possible minor improvements, and even complete reconstruction, should be considered for the two intersections on the Hickman By-pass (KY 1099). Routing traffic such that KY 309 is avoided might be possible if improvements west of Hickman, particularly the KY 94 and KY 1099 intersection, were implemented.

#### **6.18 Grant County Industrial Park (Site # 2677) Grant County (Overall Route Rating: 8)**

The following problems were identified along the truck route:

- narrow lanes on KY 22;
- inadequate turning radius at park entrance; and
- accident history on KY 22.

A recommended improvement is pavement widening to improve the turning radius from the industrial park onto US 25. As the industrial park develops widening of the lanes on KY 22 will be necessary.

#### **6.19 Seaboard Farms (Site #2623) Graves County (Overall Route Rating: 8)**

The following problems were identified along the truck access route to the Seaboard Farms mill in Mayfield:

- less than "preferred" lane widths and shoulders;
- turning bay deficiencies (southern intersection of US 45B and US 45);
- one less than “preferred” bridge sufficiency rating; and
- one problematic intersection (Macedonia Road with US 45) with problems for left turning trucks.

The intersection of US 45 and Macedonia Road could be improved by widening the lanes on Macedonia so that trucks have more space available to turn into. However, with the railroad crossing so close to the intersection, this may not be feasible. Consideration should be made for placing warning signs on US 45B so that drivers are aware of the turning bay deficiencies. In order to correct the lane width and shoulder problems along this route, complete reconstruction would be necessary. However, the problems associated with lane and shoulder widths are not severe enough to warrant such action.

#### **6.20 Campbell-Hausfeld (Site # 2637) Grayson County (Overall Route Rating: 7, 8)**

The following problems were identified along the truck route:

- narrow lanes and shoulders;
- low truck weight class (“A”) on KY 224;
- poor turning radius from KY 920 onto Embry Drive; and
- two bridges with “adequate” rating.

The recommended improvement is the reconstruction of the intersection of KY 920 and Embry Drive to eliminate the turning radius problem. Other roadways with lane and shoulder width problems could be addressed by rebuilding those sections of highways.

#### **6.21 Greensburg Manufacturing (Site # 2666) Green County (Overall Route Rating: 2, 2, 2)**

The following problems were identified along these truck routes:

- narrow lanes and shoulders;
- frequent grades;
- curves with offtracking and curve speed problems; and
- turning radii at two intersections.

The solution to these problems is the construction of new roads or realignment of the current roads. Improvement of one of these routes may be warranted at this time.

#### **6.22 Willamette Industries (Site #2659) Hancock County (Overall Route Rating: 3, 8, 6)**

The following problems were identified along the truck access routes to Willamette Industries in Hawesville:

- accident-related concerns along the west and south routes;
- significant lengths of each route with less than "preferred" lane widths and shoulders;
- numerous less than “preferred” bridge sufficiency ratings;
- numerous less than “preferred” grades (predominately along south route);
- numerous curves where offtracking may occur (predominately along south route);
- two curves with safe speed problems (south route); and

- two problematic intersections (KY 69 and KY 334 on the north route, KY 54 and KY 69 on the south route) with problems for right turning trucks.

The intersection of KY 54 and KY 69 could be improved by widening the lanes on both roads in the vicinity of the intersection so that trucks have more space available to turn into. Preventing vehicles from parking near the intersection of KY 69 and KY 334 in Hawesville might alleviate that turning radius problem. In order to correct the lane width, shoulder, and curve deficiencies along these routes, complete reconstruction would be necessary. If growth in the respective areas were to increase truck volumes, such action may be considered.

### **6.23 Nally & Hayden (Site # 15) Harlan County (Overall Route Rating: 2, 2)**

The following problems were observed along the truck routes:

- narrow lanes and shoulders;
- steep grades;
- problematic horizontal curves;
- clear zone problems;
- two “less than adequate” bridges;
- accident history; and
- limited turning radius at the intersection of US 421 and KY 257 in Hayden.

A recommended improvement is the enforcement of a no-parking zone to improve the turning radius at the intersection of US 421 and KY 257. The problems with lane width, grade and curvature along KY 421 could be addressed by rebuilding sections of that highway.

### **6.24 Henderson Riverport Area (Site #2) Henderson County (Overall Route Rating: 7)**

The conclusion was that the roadways provided adequate access with possible minor improvements which could improve the route. The only substantial potential improvement on a state-maintained road was to widen the lanes and shoulders on a section of KY 136 east of US 60 in the area of the side roads. Improvements on the side roads would involve adding shoulders and placing standard signs and pavement markings and performing some surface maintenance. There was also one sharp curve on Industrial Park Road which resulted in offtracking into the opposing lane.

### **6.25 Tyson Foods (Site #2684) Henderson County (Overall Route Rating: 5, 5, 7, 7)**

Trucks use several routes to access the Pennyryle Parkway. The routes using US 41 and KY 425 to Exit 76 (Route 3) and using US 41 and KY 138 to Exit 54 (Route 4) currently provide the best access relative to roadway conditions but are substantially longer than the alternate routes. The only potential improvements on these routes would be increasing the shoulder and lane widths.

The shortest route uses US 41, KY 2097, KY 2096, and KY 416 to Exit 68 which is a partial interchange (southbound exit ramp and northbound entrance ramp). A recommendation would be upgrading Exit 68 to a full interchange and reconstructing the section of KY 416 between KY 2096 and US 41.

#### **6.26 Safety Kleen (Site #2145) Henry County (Overall Route Rating: 5)**

The following problems were identified along the truck access route to Safety Kleen in Smithfield:

- significant lengths of route with less than "preferred" lane widths and shoulders;
- four curves with offtracking problems;
- two curves with less than "preferred" ball-bank indicator readings;
- one less than "preferred" grade;
- two less than "preferred" bridge sufficiency ratings;
- accidents on KY 146; and
- short lengths of highway with no clear zone.

The section of KY 146 with no shoulder or clear zone could be improved by installing guardrails, which has already been done on portions of the route in the vicinity. The remaining problems could only be remedied through reconstruction of the route, which is deemed unnecessary at the current time. If further development increases the truck volumes in the area, such reconstruction might be reconsidered.

#### **6.27 Centennial Resources, Inc./B.Four, Inc. (Site #2685) Hopkins County (Overall Route Rating: 6)**

The conclusion was that the facility provided adequate, although less than ideal, access. The access can be improved with minor improvements to the route. While no accident problem has been found to be associated with the roadway width, the 10-foot lanes and two-foot shoulders are considered "less than adequate" and should be widened. This also applies to the bridges along the route.

#### **6.28 Louisville Airport, UPS, Ford Motor Company (Site # 6) Louisville, Jefferson County (Overall Route Rating: 10, 10)**

The following problems were identified along the truck route:

- minor shoulder deficiencies; and
- one section with a critically high truck accident rate.

Trucks are served with good access at this site. A minor improvement for the right turning bay at Fern Valley Road and Grade Lane might be considered. Further investigation as to the reasons for the high truck accident rates on Fern Valley Road might also be considered.

### **6.29 Bells Lane Cluster (Site #7) Jefferson County (Overall Route Rating: 3, 5)**

The following problems were observed along the truck route:

- narrow lanes and shoulders;
- rough railroad crossings; and
- problematic horizontal curves.

Pavement repair at railroad crossings is required. It is recommended that sections of Bells Lane be widened.

### **6.30 Campground Road Cluster (Site #8) Jefferson County (Overall Route Rating: 5, 5)**

The following problems were observed along the truck route:

- narrow lanes and shoulders;
- turning radii at two intersections;
- rough railroad crossings; and
- problems from a truck accident history perspective.

The following minor improvements are recommended on this route: repainting the pedestrian crosswalk on Campground Road, and pavement widening at the intersection of Kramers Lane and Campground Road. This is a heavy truck traffic area and some sections of this route are identified as National Highway System intermodal connections. Therefore, serious consideration to reconstruction of some segments of these route to have wider cross sections should be made.

### **6.31 Norfolk Southern Rail Intermodal Terminal (Site # 1767) Louisville, Jefferson County (Overall Route Rating: 8)**

The following problems were identified along the truck route:

- minor pavement problems;
- traffic signal needs a left arrow;
- narrow shoulders;
- limited turning radius from I-264 ramp on Newburg Road; and
- a critically high truck accident rate on Newburg Road at I-264

Although the first two improvements should be undertaken, urban development limits the ability of the state to correct the third and fourth problems. Further investigation of the accident hazard should be seriously considered.

### **6.32 Sapphire Tipple (Site #1499) Letcher County (Overall Route Rating: 4, 2, 2)**

The following problems were identified along these truck routes:

- narrow lanes and shoulders;
- steep grades;
- curves with offtracking and curve speed problems;
- turning radii at two intersections;
- rough railroad crossings;
- poor pavement; and
- incorrect road signs.

Some of these problems can only be eliminated by rebuilding the roads. Many of the pavement problems were caused by trucks hauling coal on roads not part of the coal haul system and could be alleviated by enforcing the existing weight limits. The following improvements are recommended on these routes:

- pavement widening at the intersection of KY 15 and KY 7;
- complete resurfacing of KY 931;
- pavement repair at railroad crossings and other problem areas on KY 7;
- bridge work on KY 931 at bridge 99; and
- removing incorrect road signs.

### **6.33 Logan Aluminum (Site #2657) Logan County (Overall Route Rating: 6, 7, 5)**

The following problems were identified along the truck access routes to the Logan Aluminum Site:

- 11-foot lane widths on US 431;
- less than “preferred” shoulder widths on US 431;
- 10-foot lane widths on US 79;
- less than “preferred” shoulder widths on US 79;
- less than “preferred” bridge sufficiency ratings on all routes; and
- turning radius at US 431 and US 79.

The turning radius problem should be addressed. Major construction to correct other problems should be considered depending on future traffic and truck projections. Continuation of the bypass south of Russellville would correct many problems.

The Six Year Highway Plan project to widen US 431 from north of the intersection with US 68/KY 80 to the Logan Aluminum entrances will correct deficiencies associated with this section of roadway.

**6.34 Madison County Industrial Park (Site # 2678) Richmond, Madison County  
(Overall Route Rating: 7)**

The following problems were found on this route:

- some sections with 11-foot lanes;
- most of the route has less than “preferred” shoulders;
- minor traffic congestion on KY 876;
- pavement in fair condition on US 25; and
- three problematic intersection turning radii.

While minor problems exist on this route, no improvements are indicated unless traffic levels increase.

**6.35 Dravo Lime Company (Site # 30) Mason County (Overall Route Rating: 5, 3)**

The following problems were identified along the truck route:

- narrow lanes and shoulders;
- problematic grades;
- problematic horizontal curves;
- poor turning radius from US 68 onto KY 10;
- a narrow bridge on KY 1237; and
- faded pavement markings on Springdale Road.

The recommended improvements are repainting the center line of Springdale Road and improving the intersection of US 68 and KY 10 to eliminate turning radius problems. Rebuilding sections of KY 10 to address lane width and curvature problems could be considered if traffic volumes increase.

**6.36 Inland Container Corporation (Site # 2632) Mason County (Overall Route Rating: 6, 9, 2)**

The following problems were identified along these truck routes:

- narrow lanes and shoulders;
- sections with problematic horizontal curves;
- problematic grade (especially on KY 19);
- minor turning radii problems; and
- a non-standard “Bump” sign on KY 8.

Major improvements are not recommended because the most direct route to the NHS (KY 3017) has few problems. The “Bump” sign on KY 8 should be removed or replaced. Limiting the parking to one side of the street on westbound KY 8 in Maysville would improve the lane width problem in that area.

**6.37 Paducah-McCracken County Riverport Area (Site #14) McCracken County  
(Overall Route Rating: 9)**

The following problems were identified along the truck access routes to the Paducah US 60 Business Route and Locust Drive area.

- clear zone problem on Wayne Sullivan Drive (US 60X) at the ITAPCO facility;
- rough railroad crossing on Locust Street near TBI Steel;

Only minor problems were noted along this truck route. No improvements are required at this time.

**6.38 Midland Trail Industrial Park / Heilig-Meyers (Site # 32) Montgomery County  
(Overall Route Rating: 8)**

The following problems were identified along the truck route:

- sections with narrow lanes and shoulders;
- one problematic horizontal curve;
- a misplaced stop sign; and
- a minor lack of signing for the industrial park.

Recommended improvements are:

- move the stop sign to the correct position and
- add a sign along US 60 indicating the park entrance.

**6.39 Paradise Power Plant (Site #1113) Muhlenberg County (Overall Route Rating: 6)**

The conclusion was that the facility was provided with adequate, although less than ideal, access. The access can be improved with minor improvements to the route. A wider shoulder could be provided on KY 176 and a portion of US 431. Some bridge improvements could be made. There are also limitations in the clear zone provided on US 431.

**6.40 Bardstown Industrial Park & Smith Brothers Distributing (Site #52) Nelson  
County (Overall Route Rating: 9, 8 )**

The following problems were identified along the truck access routes to the Bardstown Industrial Park and Smith Brothers Distributing in Bardstown:

- turning radii on Nutter Drive at intersection with KY 245;
- turning radii on Kelly Drive at intersection with KY 245;
- turning radii on Withrow Court at intersection with US 31E; and
- shoulder width on US 31E less than “preferred”.



Several sections of KY 245 and US 31E along the access routes are targeted for reconstruction as part of the Six Year Highway Plan. This reconstruction should address the problems along these routes.

#### **6.41 Dravo Lime Company (Site # 44) Pendleton County (Overall Route Rating: 7)**

The following problems were identified along the truck route.

- narrow lanes and shoulders;
- minor curvature problems;
- limited turning radius at the intersection of KY 8 and KY 2828; and
- dust at the facility entrance.

The recommended improvements are:

- pavement widening to increase the turning radius from KY 2828 onto KY 8;
- signs or other warning devices on KY 8 where dust causes visibility problems at the facility entrance;
- add route markers and directional signing at the intersection of KY 8 and KY 2828; and
- lane widening could be considered on KY 8 if traffic volumes increase significantly.

#### **6.42 Millard Processing (Site # 1677) Pike County (Overall Route Rating: 2)**

The following problems were identified along the truck route:

- two-way traffic on a one-lane road (Nelse Hill Road);
- lack of usable shoulders;
- problematic horizontal curves on KY 1789;
- inadequate turning radius from Nelse Hill Road onto KY 1789;
- rough railroad crossings;
- sight distance around bridge pier; and
- narrow bridge on Nelse Hill Road.

The low traffic volumes on Nelse Hill Road may not justify major improvements along that road. The intersection of Nelse Hill Road, KY 1441 and KY 1789 could be improved to eliminate the problems with turning radius and rough railroad crossings. These problems could also be addressed through enforcement of existing weight limits on KY 1789. Enforcing the weight limit would encourage trucks to use KY 1441 (the official coal haul route) rather than KY 1789.

#### **6.43 Praise Loadout (Site # 1700) Pike County (Overall Route Rating: 8)**

The following problems were identified along the truck route:

- narrow shoulders;
- offtracking of several curves;
- rough railroad crossing;
- sight distance at intersection of KY 80 and US 460; and
- accident history.

The improvements recommended for this site are:

- resurface the railroad crossing and
- install a warning light on US 460 at the intersection with KY 80.

#### **6.44 Plum Springs Industrial Site (Site #2575) Warren County (Overall Route Rating: 2)**

The following problems were identified along the truck access routes to the Plums Springs industrial site:

- significant offtracking and clear zone problems in the vicinity of the railroad underpass on Plum Springs Loop;
- minor lengths of highway with less than "preferred" lane widths and shoulders;
- one problematic intersection (Plum Spring Loop with Commerce Street) with turning radius problems for right turning trucks;
- three less than "preferred" bridge sufficiency ratings; and
- truck accident problems at the intersection of US 31W and Plum Springs Loop.

Complete reconstruction should be considered for the railroad underpass on Plum Springs Loop. While an alternate route does exist (Plum Springs to US 31W / US 68 / KY 80), the predominately-used route has trucks traveling through the underpass. Lane widening at the end of Commerce Street near its confluence with Plum Springs Loop could improve the turning radius problems of the intersection.

#### **6.45 Medusa Aggregates (Site #2628) Warren County (Overall Route Rating: 7)**

The following problems were identified along the truck access route to Medusa Aggregates:

- Minor lengths of highway with less than "preferred" lane widths and shoulders;
- One problematic intersection (McGinnis Quarry Road with US 31W) with turning radius problems for right turning trucks;
- Two bridges with less than "preferred" sufficiency ratings; and
- Minor truck accident problems.

Minor improvements (such as lane widening) to the intersection of US 31W and McGinnis Quarry Road could alleviate the turning radius problem. The remaining access-limiting issues could only be corrected with major construction. Should future growth in the area create higher volumes of truck traffic on the route, such construction might become feasible.

#### **6.46 American Greeting Corporation (Site # 2569) Whitley County (Overall Route Rating: 9)**

The following problems were identified along the truck route:

- narrow shoulders; and
- minor clear zone problems.

Some of the clear zone problems could be eliminated by adding guardrails.

### **7.0 Conclusions**

The primary objectives of this study were to develop a methodology to evaluate truck access along truck routes and to apply this methodology to a set of facilities throughout the state. The methodology involved tabulation of four types of information or measures: 1) problem truck miles and problem truck points, 2), subjective or unstructured evaluations 3) overall route rating and 4) maintenance improvement locations. The methodology is deemed relatively easy to use, time efficient and comprehensive. Although data requirements were high, data collection in the field and use of HIS data proved time efficient. However, the method relied significantly on truck and traffic counts which were difficult to obtain for all sections of all routes. If further use of the methodology is considered, a more comprehensive plan to obtain traffic and truck count information should be developed.

In all, 81 routes used to access 46 facility sites or clustered sites were evaluated. These routes represented approximately 800 miles of highway. A total of 13 of the sites had at least one intermodal facility while the others involved only truck freight movements. The level and quality of truck access to the NHS varies dramatically throughout the state. Some facilities are between 25 and 50 miles from the NHS. No significant difference in route ratings or other measures was found by ADD. The different topography throughout the state contributed to differences in grade and curvature quality. Very few non-NHS truck routes have 12-foot lanes along their whole length. The intermodal facility routes in general were found to be of better quality than routes leading to truck only sites.

Trucks are not always using the routes they should. In several cases, trucks were observed using routes not on the designated truck network, the coal haul system or the route indicated by the facility manger. These observations confirm that enforcement issues still exist. The routes indicated in Table 4 were considered the best routes and were assigned overall route ratings of 9 or 10. Most of these routes are in larger urban areas. They do not at this time require consideration for improvements based on this evaluation.

**Table 4: Best Truck Access Routes**

Facility	County	Route Description	Length (miles)	Overall Route Rating
Inland Container Corporation	Mason	KY 3071 to KY 9	5	9
American Greeting Corporation	Whitley	KY 3431 South to US 25 E	1.4	9
CF Motor Freight, USF Holland Inc.	Fayette	Mercer Rd to KY 1978 to US 421 to KY 4	1.2	9
CF Motor Freight, USF Holland Inc.	Fayette	Mercer Rd to KY 1978 to US 421 to I-64	10.6	9
Owensboro Riverport Authority	Daviess	Harbor Dr to Ky 331, Southwest on KY 331 to US 60.	2	9
Smith Brothers, Intertec Systems	Nelson	KY 245 North to I-65	14.6	9
Paducah-McCracken Co. Riverport Authority	McCracken	Wayne Sullivan Dr to KY 1954 to I-24	4.2	9
Regional Airport Authority, UPS	Jefferson	Grade Ln/KY 1631 to I-65	2	10
White Hydraulics	Christian	US 41 to Pennyryle Pkwy	1.7	10
Regional Airport Authority, UPS	Jefferson	Crittendon Ave to I-264	1.4	10

The routes indicated in Table 5 received the lowest overall route ratings and had a route length of greater than 10 miles. In total, 18 and 4 routes were assigned overall route ratings of 2 or 3 respectively; however, the longer routes were considered more critical.

One method to prioritize routes for improvement is to weight the overall route rating by route length and number of trucks on the route in the same fashion as undertaken for individual route features. In order to calculate this weighted overall route rating, the maximum number of trucks per day at any point on the route was used. The number of trucks was multiplied by the length and divided by the overall route rating. The ranking of each route is shown in the far right column of Appendix A for all routes evaluated. Table 6 indicates the six high outliers using this weighted approach. All four of these sites have been mentioned in at least one section of this report as a critical route with respect to a particular route feature. All are relatively long routes and each has a maximum number of trucks per day of more than 400. However, the number of trucks destined for the particular facility or facilities under study is not necessarily high. Only Willamette Industries has a high number of site trucks per day (200). These routes are considered most critical for improvements.

From a truck volume point of view, the two routes leading to the Sapphire Tipple which has a daily site truck volume of 600 might also be considered critical as these routes received only a 2 for overall route quality. The most critical intermodal facilities are the Hickman-Fulton Riverport Authority in Fulton County, the Sapphire Tipple in Letcher County, Millard Processing in Pike County, and the BP Oil/Itapco Wharf in Jefferson County.

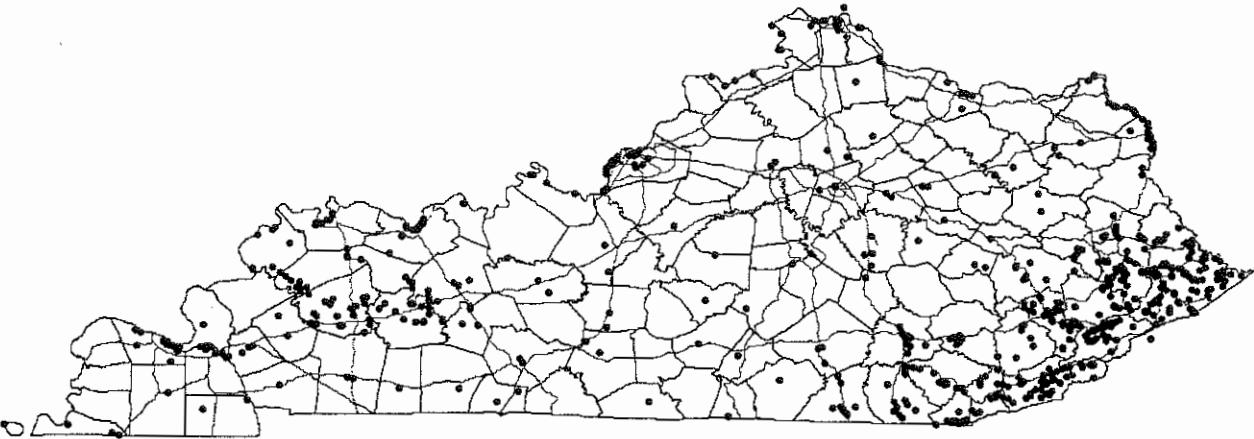
**Table 5: Longest Routes with the Lowest Overall Route Rating**

Facility	County	Route Description	Length (miles)	Overall Route Rating
Hickman-Fulton Co. Riverport Authority	Fulton	KY 94 to Tennessee State Line	12.2	2
Dow Corning and Ghent Generating Station	Carroll	US 42 East to KY 35 to I-71	15	2
Inland Container Corporation	Mason	KY 8 West to KY 19 to KY 9	16	2
Hickman-Fulton Co. Riverport Authority	Fulton	KY 125 to KY 166, East to Purchase Pkwy	18.6	2
Hickman-Fulton Co. Riverport Authority	Fulton	KY 94 East to Purchase Pkwy	20.9	2
Greensburg Manufacturing Company	Green	KY 61 South to the Cumberland Pkwy	22	2
Greensburg Manufacturing Company	Green	KY 61 North to KY 88, West to I-65	28	2
Nally & Hayden	Harlan	North on US 421, Then KY 118 to the Daniel Boone Pkwy	31	2
Greensburg Manufacturing Company	Green	KY 61 North to I-65	36	2
No Facility	Edmonson	KY 259 and KY 101 between Western KY Pkwy and I-65	40	2
Willamette Industries	Hancock	South Route to Western Kentucky Pkwy at Leitchfield	54.3	3

**Table 6: Routes with the Lowest Overall Route Rating Weighted by Length and Truck Volume**

<b>Facility</b>	<b>County</b>	<b>Route Description</b>	<b>Length (miles)</b>	<b>Overall Route Rating</b>
Greensburg Manufacturing Company	Green	KY 61 North to KY 88, West to I-65	28	2
Greensburg Manufacturing Company	Green	KY 61 South to the Cumberland Pkwy	22	2
Westvaco	Ballard	US 51 South to Pennyrile Pkwy	33.7	4
Nally & Hayden	Harlan	North on US 421, Then KY 118 to the Daniel Boone Pkwy	31	2
Greensburg Manufacturing Company	Green	KY 61 North to I-65	36	2
Willamette Industries	Hancock	South Route to Western Kentucky Pkwy at Leitchfield	54.3	3

**Figure 1: Intermodal Facilities in Kentucky**

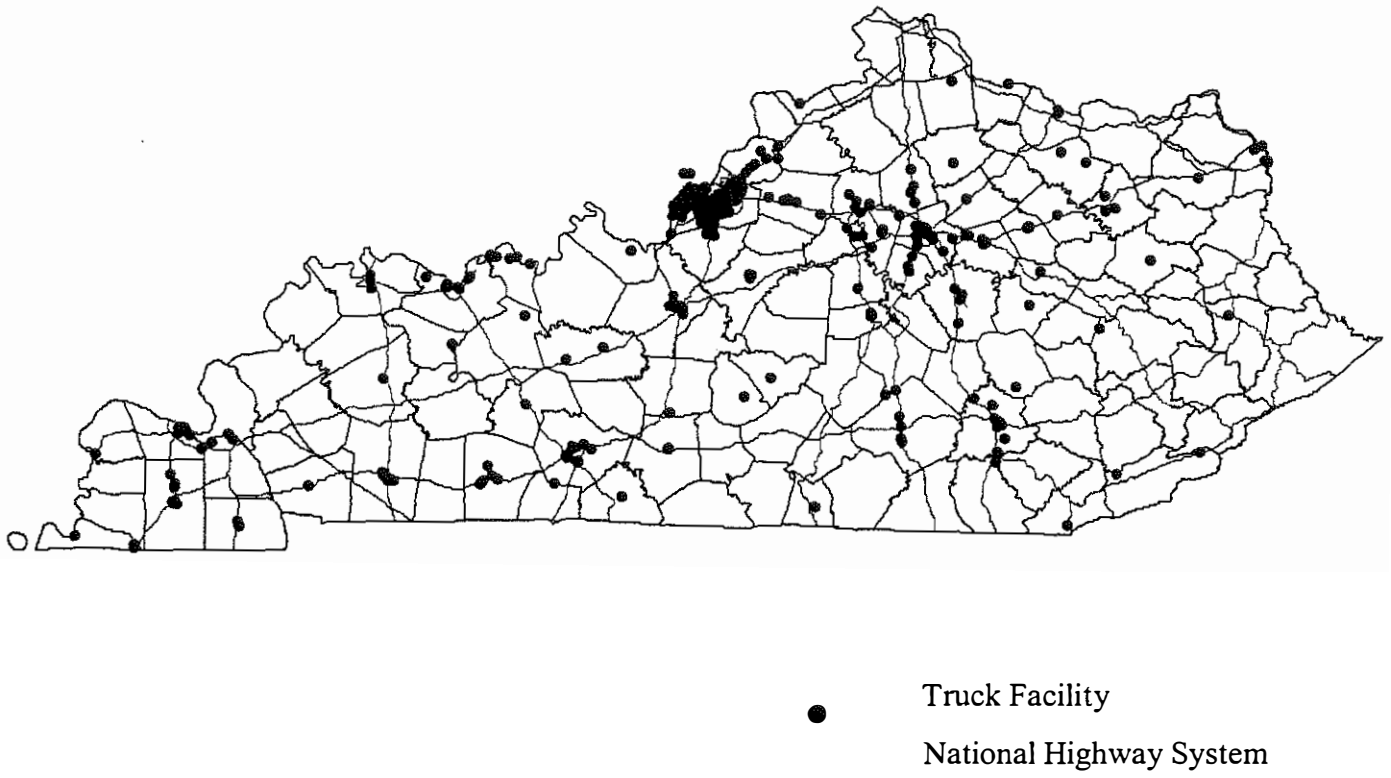


● Facility  
— National Highway System



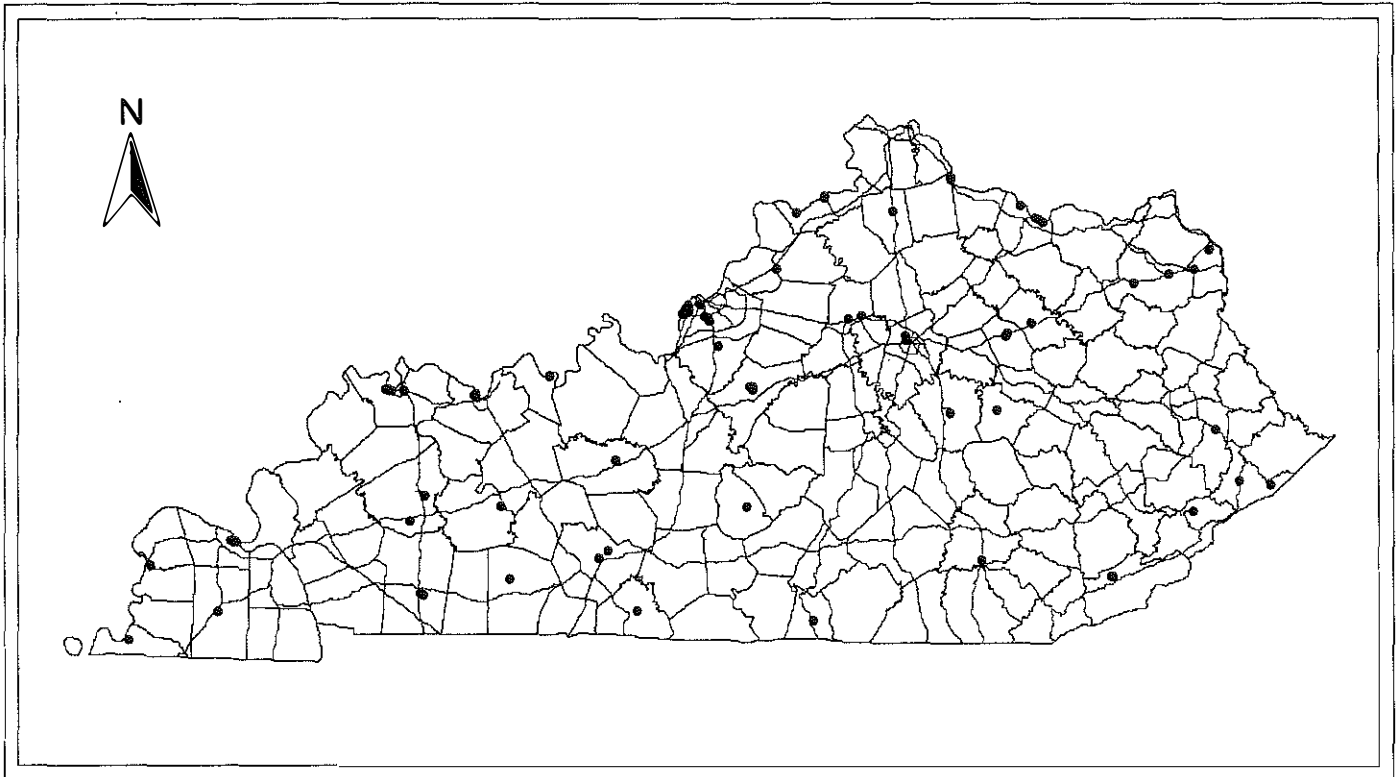


**Figure 2: Truck Trip Generating Sites throughout Kentucky**





**Figure 3: Sites and Clusters of Sites Selected for Study**



**LEGEND**

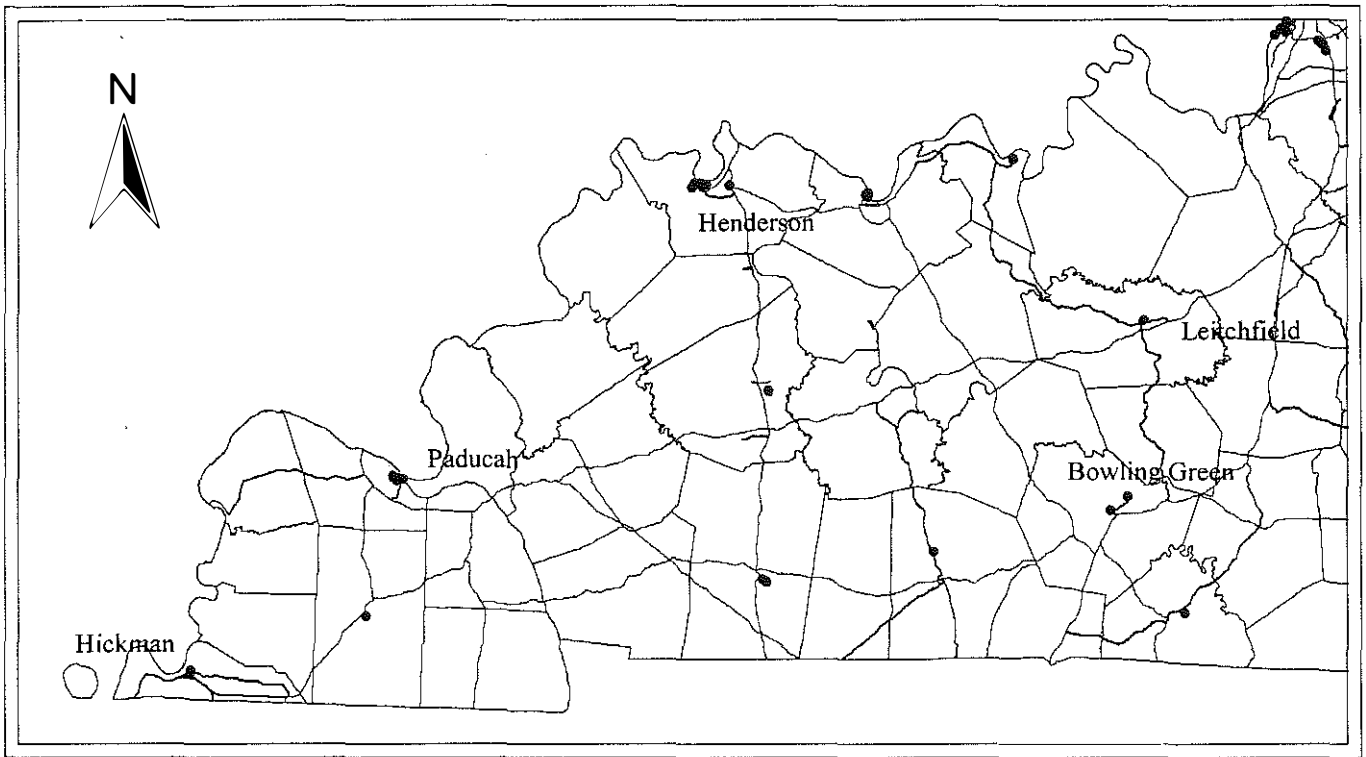
- Facility
- National Highway System
- County Boundary

1:3000000





Figure 4: Truck Access Routes in Western Kentucky



- LEGEND**
- Facility
  - Freight Access Route
  - National Highway System
  - County Boundary

1:1500000

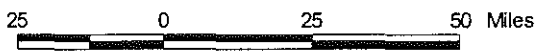
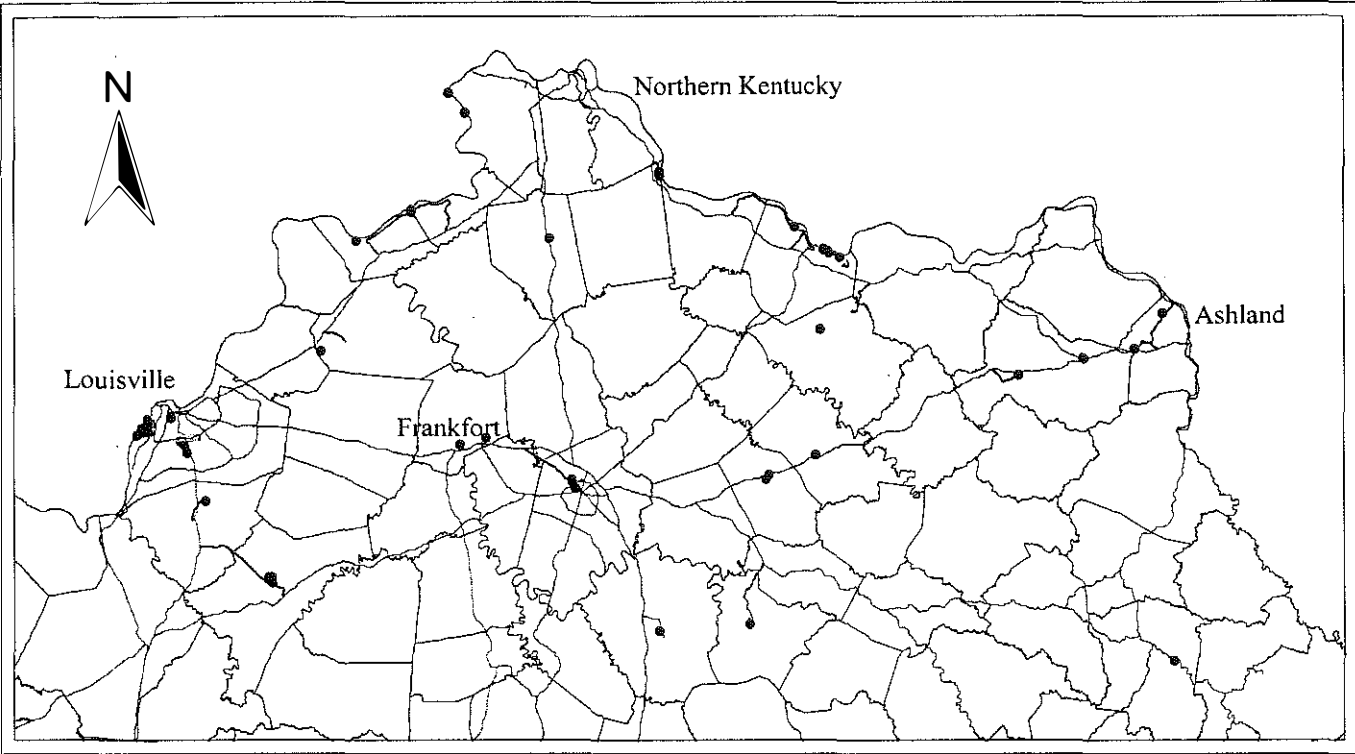




Figure 5: Truck Access Routes in North Eastern Kentucky



**LEGEND**

- Facility
- Freight Access Route
- National Highway System
- County Boundary

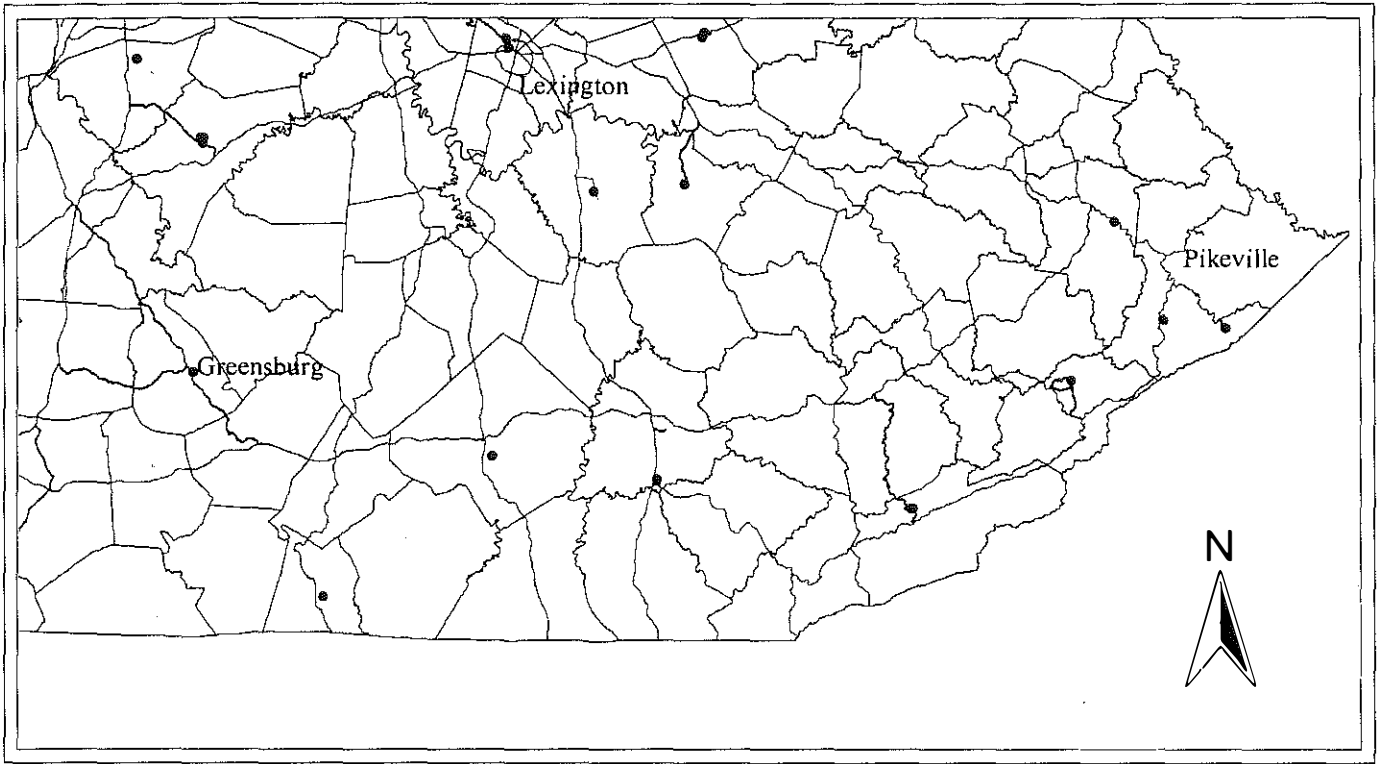
1:1500000







**Figure 6: Truck Access Routes in South Eastern Kentucky**



**LEGEND**

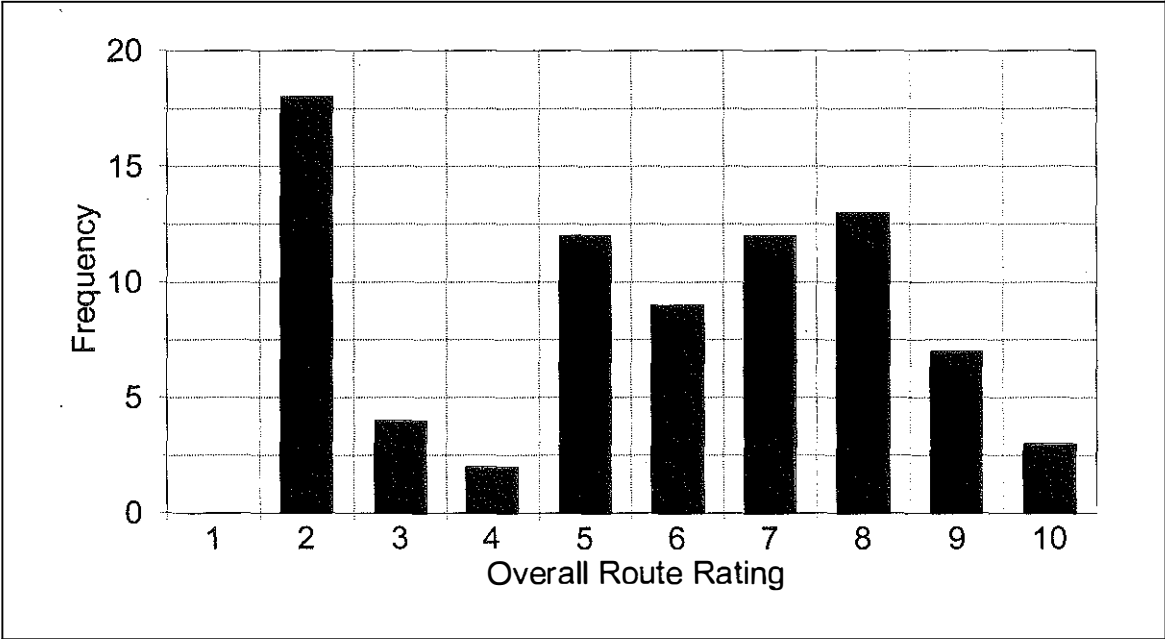
- Facility
- Freight Access Route
- National Highway System
- County Boundary

1:1500000

25 0 25 50 Miles

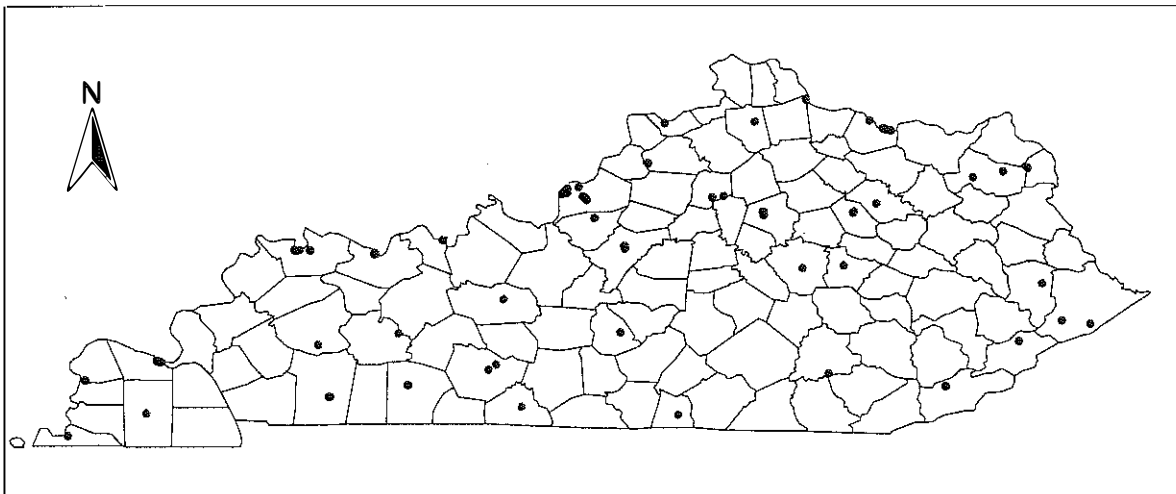


**Figure 7: Frequency of Overall Route Ratings**





**Figure 8: Spatial Distribution of Overall Route Ratings**



Route Rating Code

- 1 - 2
- 3 - 5
- 6 - 8
- 9 - 10

□ County\_boundary

40 0 40 80 Miles



50 0 50 100 Kilometers





## **Appendix A: Truck Route Summary Information**





**Truck Route Summary Information Listed by County**







**Truck Route Summary Information Listed by Area Development District**









**Truck Route Summary Information Listed by Facility Name**



Site (center #)	Facility Name	Railway Crossings (points)	Bridges (points)	Grade (truck miles)	Lane Width (truck miles)	Shoulders (truck miles)	Intersection Turning Radii (points)	Sight Distance (points)	# of Trucks To The Site (/day)	Max Truck Volume On Route (/day)	Critical Truck Accident Rate Factor (Yes/No)	ADT's Min-Max Range	Lane Width Less Than or Equal To 10 ft (miles)	Lane Width Between 10 and 12 ft (miles)	Lane Width Greater Than or Equal To 12 ft (miles)	Potential STAA Violation <sup>1</sup>	Weighted Overall Route Factor <sup>2</sup>	Rank (/79)
2569	American Greeting Corporation	0	0	0	1044.4	2088.8	0	0	30	746	No	3161-5239	0	1.4	0	No	116.0	67
26	Bath Manufacturing, Dnortech Electronics	0	0	161.4	28.3	54.1	0	0	15	213	No	7191-8770	0.5	0	0	No	42.6	76
7	BP Oil Co., Inapco Louisville Wharf	1388	0	0	1388	1388	0	0	40	694	No	2290	1	0	0	No	231.3	59
7	BP Oil Co., Inapco Louisville Wharf	2576	0	0	2399.2	2399.2	0	0	185	1288	No	425-2323	1	0	0	No	257.6	57
2031	Bullitt County Stone	664	2074	0	3325.6	5737.2	705	0	60	1410	No	6593-24987	1.5	2.1	0.7	No	866.1	34
2637	Campbell Hausfeld	0	480	0	5996	6260	860	0	60	660	No	3970-20200	4.7	0.4	0	Yes	480.9	48
2637	Campbell Hausfeld	0	845	0	1103	2815	860	0	60	1265	No	3970-20018	0.7	0	1.4	No	312.1	51
2685	Central Resources Inc.	0	954	286	2989	2989	0	0	100	318	Yes	2796-3472	4.7	0	0	No	249.1	58
2634	Central Kentucky Asphalt	0	0	0	442.4	0	0	0	60	553	No	11724	0	0	0.4	No	31.6	72
2634	Central Kentucky Asphalt	120	0	0	0	684	240	0	60	480	Yes	7791-19791	0	0	1.25	No	1000	70
8	Clio Petroleum, Marathon Petroleum	1614	0	0	2116	3470	1452	0	425	1052	Yes	4150-8930	0.8	1.3	0.5	No	547.0	45
8	Clio Petroleum, Marathon Petroleum	888	0	0	2617.6	5235.2	0	0	425	888	No	4150-8930	0	2.8	0	No	497.3	46
2663	Cook Family Foods	0	0	0	221.1	221.1	307	0	30	307	No	NA	0.24	0.24	0	No	19.2	79
2655	Dollar General Corporation	0	1385	0	12759	13154	0	0	100	495	Yes	1318-4890	19	0	3	Yes	1806.8	21
2655	Dollar General Corporation	0	2650	0	198	12923	0	0	100	1120	Yes	1318-24000	0.2	0	33.8	No	4760.1	7
33	Dow Corning and Ghent Generating Station	0	2559	0	10625	20989.4	800	0	180	1285	No	5707-10563	4.9	2.7	3.4	No	1766.9	23
33	Dow Corning and Ghent Generating Station	464	464	356.6	5168	8982.8	0	0	180	438	No	3,133-5,337	4.9	6.4	3.7	Yes	3285.0	13
40	Dravo Lime Company	0	412	376.3	1394.6	1394.6	0	0	50	138	No	1152-1589	5.3	0	0	Yes	146.3	62
44	Dravo Lime Company	0	0	0	754.4	918.4	80	0	50	164	No	793-818	1.8	1	0	No	65.6	72
30	Dravo Lime Company	0	1024	415.6	1706.2	4076.2	474	0	50	474	No	11170	6.2	0	2.5	Yes	1374.6	27
2678	Darceason Rd Industrial Park	0	1382	0	1010	3150.2	833	0	220	993	Yes	13867-38589	0	3	2	No	709.3	38
2679	Eastl Cooney Industrial Park	0	676	1848.6	1836	12112.4	0	0	18	338	No	851-6419	11.3	0.4	0.3	Exc	676.0	39
2677	Grant County Industrial Park	0	0	0	712.9	727.6	NA	0	NA	639	Yes	8558-16345	0.4	0.4	0.1	No	71.9	71
2666	Greeneburg Manufacturing Company	0	1285	945.3	12327.2	12958.3	0	0	50	463	No	1255-13315	22.5	1.4	12.5	Yes	8334.0	2
2666	Greeneburg Manufacturing Company	0	1210	6823.4	9443.6	12933.7	0	0	50	559	No	1966-5192	17.5	1.4	3.1	Yes	6149.0	5
2666	Greeneburg Manufacturing Company	0	549	773.8	6663.8	5259.8	172	0	50	418	No	735-2622	24	2.3	1.7	Yes	5852.0	6
33	Heilige-Myers	0	1164	0	2672.3	4092	0	0	75	1164	No	6030-9226	1.1	0.1	0.2	No	203.7	60
2	Henderson County Riverport Authority	400	0	0	1180	1920	0	0	0	600	No	3542-6717	0.4	0.1	6	No	557.1	44
16	Hickman-Fulton Co. Riverport Authority	40	20	0	472	362	0	0	75	20	No	348-1249	11.8	0	0.4	Yes	122.0	65
16	Hickman-Fulton Co. Riverport Authority	0	314	0	1760.2	2060.2	600	0	75	157	No	1249-2942	8.3	0	0	Yes	651.6	41
16	Hickman-Fulton Co. Riverport Authority	0	1100	0	5334.1	6264.3	600	0	75	187	No	1249-2153	18.6	0	0	Yes	1739.1	24
16	Hickman-Fulton Co. Riverport Authority	0	75	0	4405.1	4775.2	300	0	75	187	No	1249-2503	11.8	9.1	0	Yes	1954.2	17
41	Hopkinsville Industrial Park	0	0	0	0	2344	0	0	NA	765	No	11699-15092	0	0	1.7	No	130.1	61
2632	Inland Container Corporation	0	0	98	1309.2	1771.2	440	0	80	440	No	2442-6751	3.9	0.3	0	No	330.0	52
2632	Inland Container Corporation	0	0	98	235.2	235.2	0	0	80	98	No	2442	1.2	0	3.8	No	54.4	75
2632	Inland Container Corporation	0	98	239.7	2633.4	3333.4	60	0	80	219	No	920-2442	13.3	0.1	2.6	Yes	952.0	29
1353	Ivel Prep Plant	0	0	219.6	1756.8	3220.8	0	0	200	732	No	2146-15353	1.2	0	0.1	No	158.6	61
2620	Kenmar Stone	0	413.5	608	699.2	0	0	40	30	304	No	5936-6740	0	1.5	0.4	No	288.8	55
2620	Kenmar Stone	0	304	626.3	243.2	2316.4	348	0	30	304	Yes	3082-11915	0	0.8	4.7	Yes	557.3	43
2657	Lozen Aluminum	0	7920	0	20232	0	0	0	290	720	No	1955-11000	0	28.1	0	Yes	3372.0	11
2657	Lozen Aluminum	0	1085	0	9336	18672	0	0	200	720	Yes	2143-11000	0	27.6	2.4	Yes	3085.7	14
2657	Lozen Aluminum	0	840	0	12563	23603	0	0	200	720	Yes	2640-11000	0	21.1	2.9	Yes	3456.0	9
2628	Modusa Aggregates	0	3865	0	264.9	20855.7	616	0	50	2283	Yes	2225-22476	0.4	0	5.1	No	1793.8	22
1677	Millard Processing	1209	0	0	880	1200	400	0	200	800	No	2395-2518	0.7	0.4	0	No	440.0	49
15	Nally & Hayden	0	0	3240	3024	3132	0	0	75	360	Yes	2224-18704	4.2	0	3.8	No	810.0	35
15	Nally & Hayden	0	4400	5800	21760	22240	0	0	75	400	Yes	2224-10988	27.2	0	0.3	Yes	6200.0	3
2686	No Facility	340	590	680	11500	11500	0	280	NA	170	No	1781-5132	40	0	0	Yes	3400.0	10
1767	Norfolk Southern Rail Intermodal	0	0	0	0	640	400	0	300	400	Yes	23375	0	0	1.2	No	60.0	73
24	Owensboro Riverport Authority	0	0	0	0	1653.6	530	0	225	530	No	1790-6163	0	0.5	1.5	No	117.8	66
24	Owensboro Riverport Authority	0	0	0	NA	496.8	NA	0	225	421	No	1790-6163	0	2	0	No	105.3	69
14	Paducah-McCracken Co. Riverport Authority	100	0	0	0	1143	0	0	293	635	No	8430-15514	0	0	4.2	No	296.3	53
1113	Paradise Power Plant	0	874	175	1180	7254	0	0	120	437	Yes	1471-6840	0	2.7	6.3	Yes	655.5	40
2682	Paul Coffey Industrial Park, JRB Inc.	0	0	0	1637.1	1951.1	0	0	33	1567	Yes	2235-29000	1.9	0.5	0.4	No	877.5	32
2682	Paul Coffey Industrial Park, JRB Inc.	0	1567	0	1783.2	1783.2	0	0	33	1032	No	2235-12200	0.1	1.7	7.6	No	1940.2	18
2682	Paul Coffey Industrial Park, JRB Inc.	0	2779	1599.9	2144.7	2205.3	0	0	33	606	Yes	2235	0.1	3.5	3.9	No	909.0	30
2575	Plum Springs Industrial Site	0	3164	0	135.8	2471.8	0	0	100	3283	Yes	5691-38092	0	0.2	1.3	No	1712.3	25
1700	Praise Loudout	2366	0	0	2366	4732	0	590	150	1183	Yes	4797-6103	0	2	0	No	295.8	54
6	Regional Airport Authority, LPS	0	0	0	0	685	0	0	150	137	Yes	30819	0	2	2	No	27.4	78
6	Regional Airport Authority, LPS	0	0	0	NA	NA	0	0	NA	NA	No	NA	0	0	1.4	No	NA	NA
2145	Safety Kleen Corporation	0	276	82.8	1401	1104	0	0	60	495	Yes	2612-5007	4.3	0	0	Yes	425.7	50
1499	Sapphire Tipple	1320	330	0	3960	3960	330	0	600	330	No	1346-8137	6	0	0	Yes	495.0	47
1499	Sapphire Tipple	0	600	780	3480	3480	600	0	600	300	No	921-1577	5.8	0	0	Yes	870.0	33
1499	Sapphire Tipple	0	2046	1914	7524	7658.4	540	0	600	570	No	1362-6858	6.6	0	0.2	Yes	1928.0	19
2623	Seaboard Farms Kentucky Mill	0	0	0	166.4	2059.8	130	0	65	1582	No	3344-7274	0.1	0.72	0.33	No	128.5	64
52	Smith Brothers, Intersect Systems	0	0	0	0	0	9394	0	132	2075	No	8560-21400	0	0	14.6	No	3366.1	12
52	Smith Brothers, Intersect Systems	0	1237	0	0	328	0	0	132	1237	No	8800-22000	0	0	5	No	773.1	37
53	Topy Corporation	0	363	0	798.6	798.6	726	0	70	363	No	1613-23543	1.1	0	0.1	No	34.5	74
28	Transport Court Cluster	0	0	0	1194.3	2665.5	0	0	255	2157	No	9776-22501	0.3	0.3	0.6	No	287.6	56
28	Transport Court Cluster	0	1336	0	3740.8	7024	0	0	255	1824	No	24255	1.4	0	1.1	No	2280.0	16
28	Transport Court Cluster	0	1434	0	7073.7	15210	0	0	255	1336	No	7005-11619	0.3	8.5	1.8	No	1573.5	26
2684	Tyson Foods	0	1000	80	1300	2600	0	0	120	1000	Yes	1748-3571	0.2	3.5	0.8	No	900.0	31
2684	Tyson Foods	0	2250	0	3800	8926	0	0	120	1250	Yes	2458-5184	0	3.2	1.7	No	1225.0	28
2684	Tyson Foods	0	1000	0	5050	10100	0	0	120	500	Yes	2198-7034	0	10.1	0.8	No	778.6	36
2684	Tyson Foods	0	2000	0	10710	26070	0	0	120	1250	Yes	1176-6719	0	13.2	0.6	Yes	2464.3	15
2683	Westvaco	0	6368	2622.3	17507.3	30378.3	0	0	90	730	No	2009-7771	6.4	37.3	0	No	6278.0	4
2683	Westvaco	0	0	686.2	0	1179.7	988	0	90	494	No	5360-6258	0	0	1.6	No	112.9	68
2683	Westvaco	0	1867	2651.1	12649	23133.3	0	0	90	577	No	2331-7319	3.3	25.4	1.6	No	3519.7	8
2683	Westvaco	0	8712	1186.3	21867.4	23060.8	0	0	90	702	Yes	1288-15946	25	0.2	1.8	Yes	NA	



**Truck Route Summary Information Listed by Site Number**









**Truck Route Summary Information Listed by Rank**





