



TRUCK ROUTE ACCESS EVALUATION

Campground Road Cluster
Louisville
Site # 8

Report No. KTC-98-30

“Freight Movement and Intermodal Access in Kentucky”
Project No. SPR 98-189

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1.0 Introduction

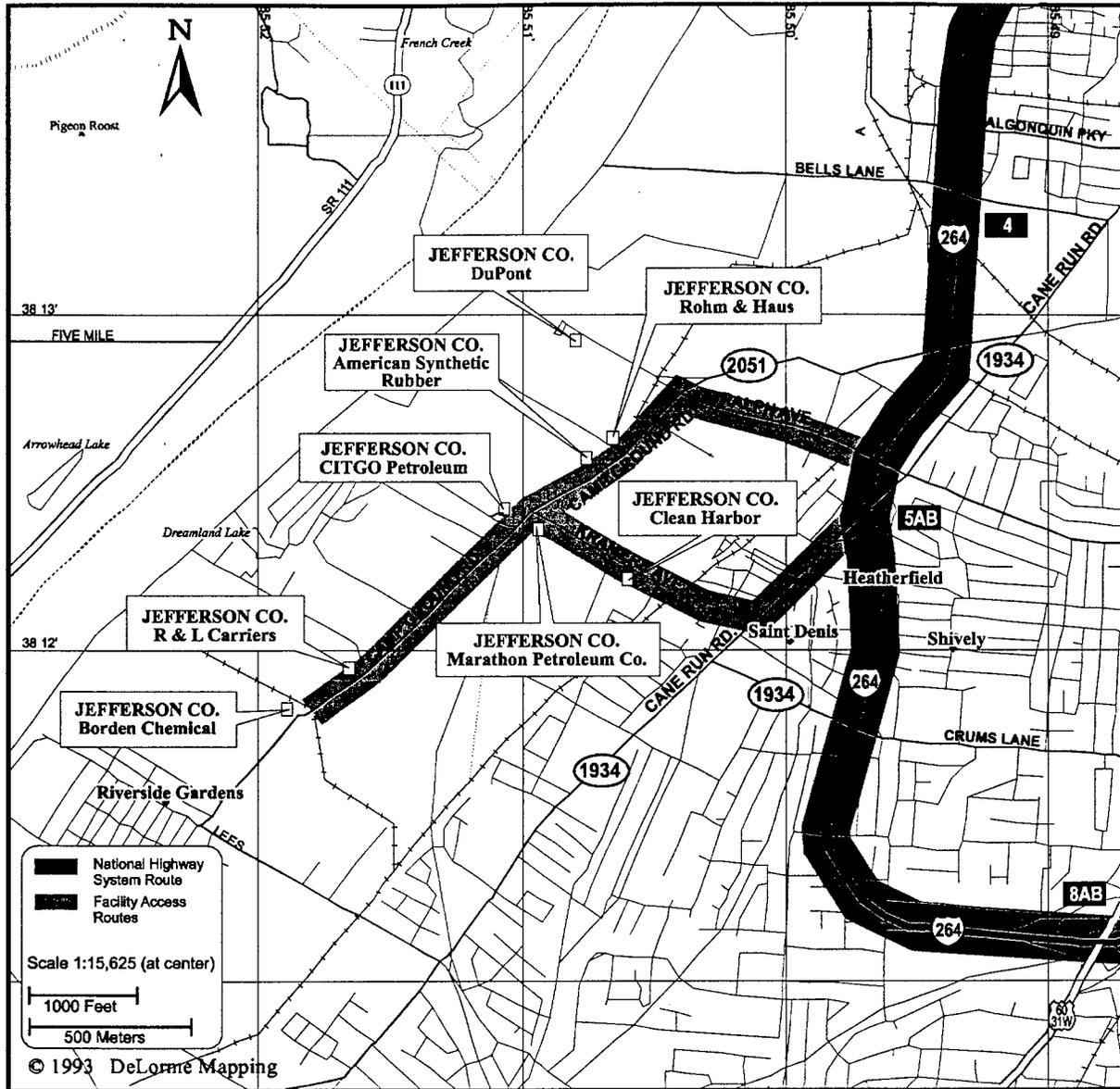
This is a study undertaken on behalf of the Kentucky Transportation Cabinet (KYTC). There are two main objectives of the Freight Movement and Intermodal Access in Kentucky Study (SPR 98-189): evaluation of the access for trucks between intermodal or other truck generating sites and the National Highway System (NHS); and furthering the understanding of freight commodity flows throughout the state. This report summarizes the access evaluation for a cluster of facilities located along Campground Road in Louisville in the KIPDA Area Development District (ADD) and KYTC Highway District #5. The location of the site is shown in Figure 1. Work on other specific sites as well as the freight commodity flow task are on-going and are documented elsewhere.

The sites to be evaluated in this study were selected from two existing databases (a truck facility survey from 1994 and the intermodal facility inventory) based on ADD and KYTC Highway District planner recommendations, geographic location, distance to the NHS, and the number of trucks accessing the site. Consideration was also made for the freight type handled and transportation modes used.

The site was visited for video recording and data collection as listed in Appendix A. The following facilities are located in the area: CITGO Petroleum, Marathon Petroleum, Borden Chemical Division, American Synthetic Rubber Corporation, Rohm & Hass, Clean Harbor, R&L Carriers and Dupont. The Clean Harbor facility is on Kramers Lane, and the others are located along Campground Road as shown in Figure 1. All facilities are less than three miles from Interstate 264, which is part of the National Highway System. The surrounding area is generally urban/suburban with a variety of land uses.

A phone survey was conducted with facility managers early in the study process. The surveys were conducted only with industries in the pre-existing intermodal or truck databases or the major industries observed during the sites visits. While the overall response from industries was very good, in some cases facility managers could not be contacted or did not want to assist with the survey. In order to stay within the resources available for the project not all smaller facilities with lower truck volumes could be contacted. The surveys for this site were conducted with CITGO Petroleum and Marathon Petroleum. The number of trucks per day at specific sites varies from 25 to 200. The most common trucks indicted were 9,000 gallon tankers. Problems indicated along the route include potholes and inadequate turning radius from Kramers Lane onto Campground Road. The phone survey information can be found in Appendix B.

Figure 1: Location of Truck Generating Sites



2.0 Truck Route in Use

*Although KY 1934 (Cane Run Road) is part of the National Highway System, the route to I-264 was evaluated for these facilities. As shown in Figure 1, trucks from these facilities access I-264 exit 5a (Ralph Avenue) and exit 5b (Cane Run Road). Exit 5a is a partial interchange with an on ramp to eastbound I-264 and a westbound off ramp. Exit 5b is a full interchange. The layout of these interchanges is shown in Figure 2. Cane Run Road is a four lane signalized arterial. Ralph Avenue and Kramers Lane are two lane paved roads with no shoulders. They are slightly less than a mile in length and connect Cane Run Road and Campground Road (KY 2051). Campground Road is a two lane road with narrow shoulders. Cane Run Road and Campground Road are the only state maintained roads on this route.

3.0 Route Data Collection and Evaluation

The route features that are to be evaluated in this study are shown in Table 1 along with a brief description of the evaluation method. While some of these features require only subjective evaluation by the engineer during site inspection, others required quantitative measurement in order to label the particular point or section as “preferred,” “adequate” or “less than adequate” for truck access. The guidelines for labeling a point or section into one of these three descriptive categories are provided in both the interim and final report for this project. In several cases measurements were only taken where subjective evaluation indicated a problem might exist as “preferred” type sections and points do not contribute to an increase in the problem truck points or miles that are summed for the route (see Section 4).

3.1 Traffic Operations and Level of Service

The survey of this site indicated that there were no operational problems or concerns for this site. Thus, the route is assumed to operate at an acceptable traffic level of service.

* For most sites in study 98-189, only the route from the facilities to the NHS was studied (i.e. not any NHS sections).

Figure 2: Layout of I-264 Interchange

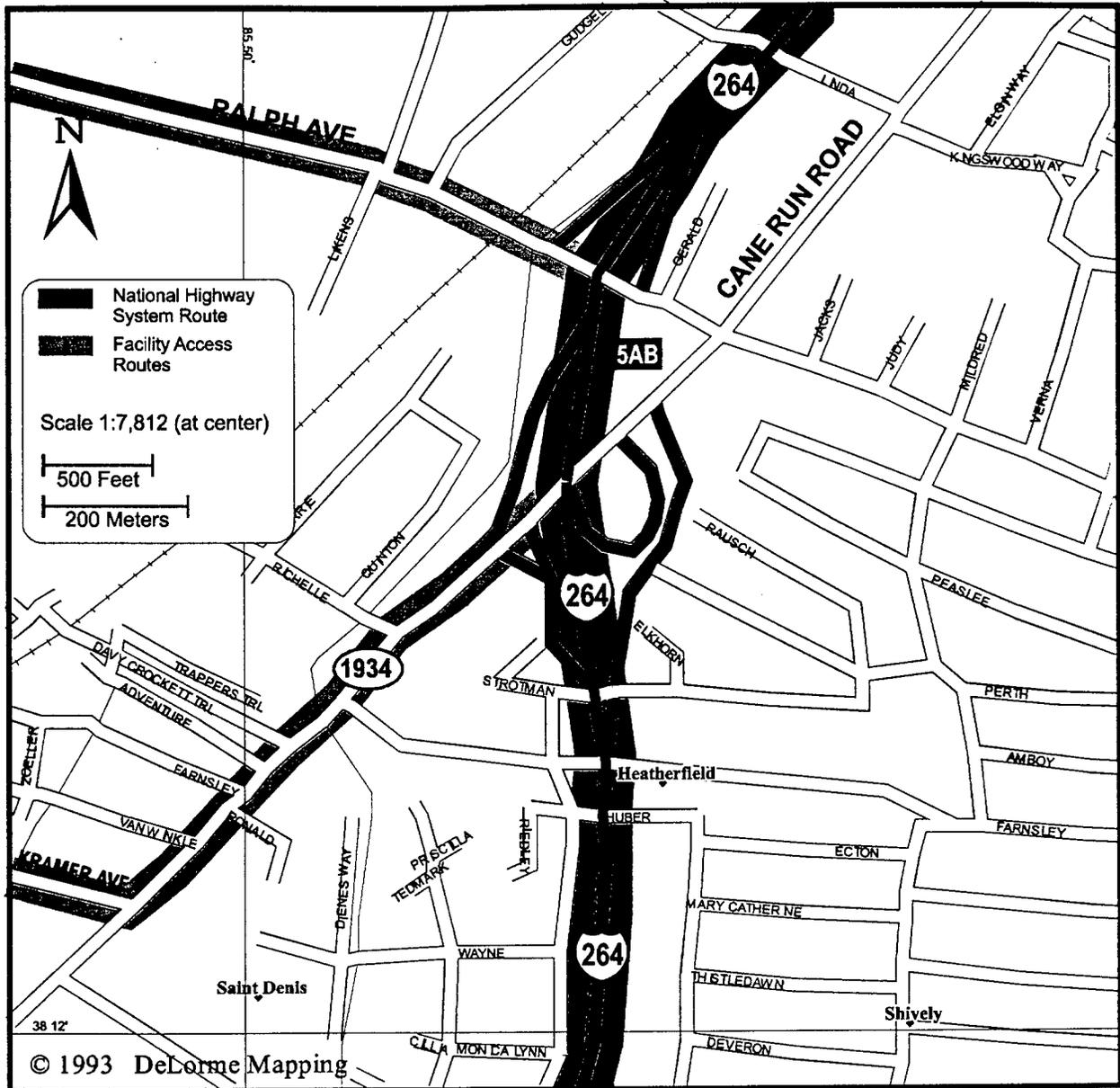


Table 1: Route Features and Method of Evaluation

Feature	Methodology	Team Consensus based on Committee Meeting and Draft Report Feedback	Feature Type
Offtracking	Lane Width with formula based on wheel and axle spacing	Evaluate where observation of trucks indicates possible offtracking - use HIS data and collect in field	Point
Max. Safe Speed on a Curve	Ball Bank Indicator Reading	Evaluate complete route due to ease of data collection	Point
Grade	Speed Reduction Tables with Percent Grade and Direct Observation	Evaluate where observation of trucks indicates speed reduction occurs using HIS data and collect in field as needed	Continuous
Lane Width	HIS data and field measurement	Review complete route due to ease of data collection	Continuous
Clear Zone	Observation	Subjective evaluation	Subjective
Shoulders	HIS data and field measurement	Evaluate where HIS data is available and estimate based on observation elsewhere	Continuous
Pavement Condition	Observation	Subjective evaluation	Subjective
Truck Stopping Sight Distance	Field measurements	Measure only when observation indicates possible problem	Point
Turning Radii	Field measurements and observations of trucks	Measure only when observation indicates possible problem	Point
Accident History	Accident data files and KTC High Truck Accident Report	Do for entire route	Subjective
Intersection LOS	Traffic counts	Only where problems are indicated by facility managers	Point
Route LOS	Traffic counts and travel time studies	Only where problems are indicated by managers	Continuous
RR Crossings	Field Observation	Evaluate all level crossings	Point
Bridges	KYTC Sufficiency Rating	Evaluate all bridges	Point

3.2 Accident History

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 (vehicles miles traveled). The section of Cane Run Road that is included in this route (milepoints 7.0 to 7.8) had a critical rate factor (the ratio of the actual accident rate to the critical accident rate) of 1.0 indicating that the truck accident rate is equal to the critical rate for that particular highway type.

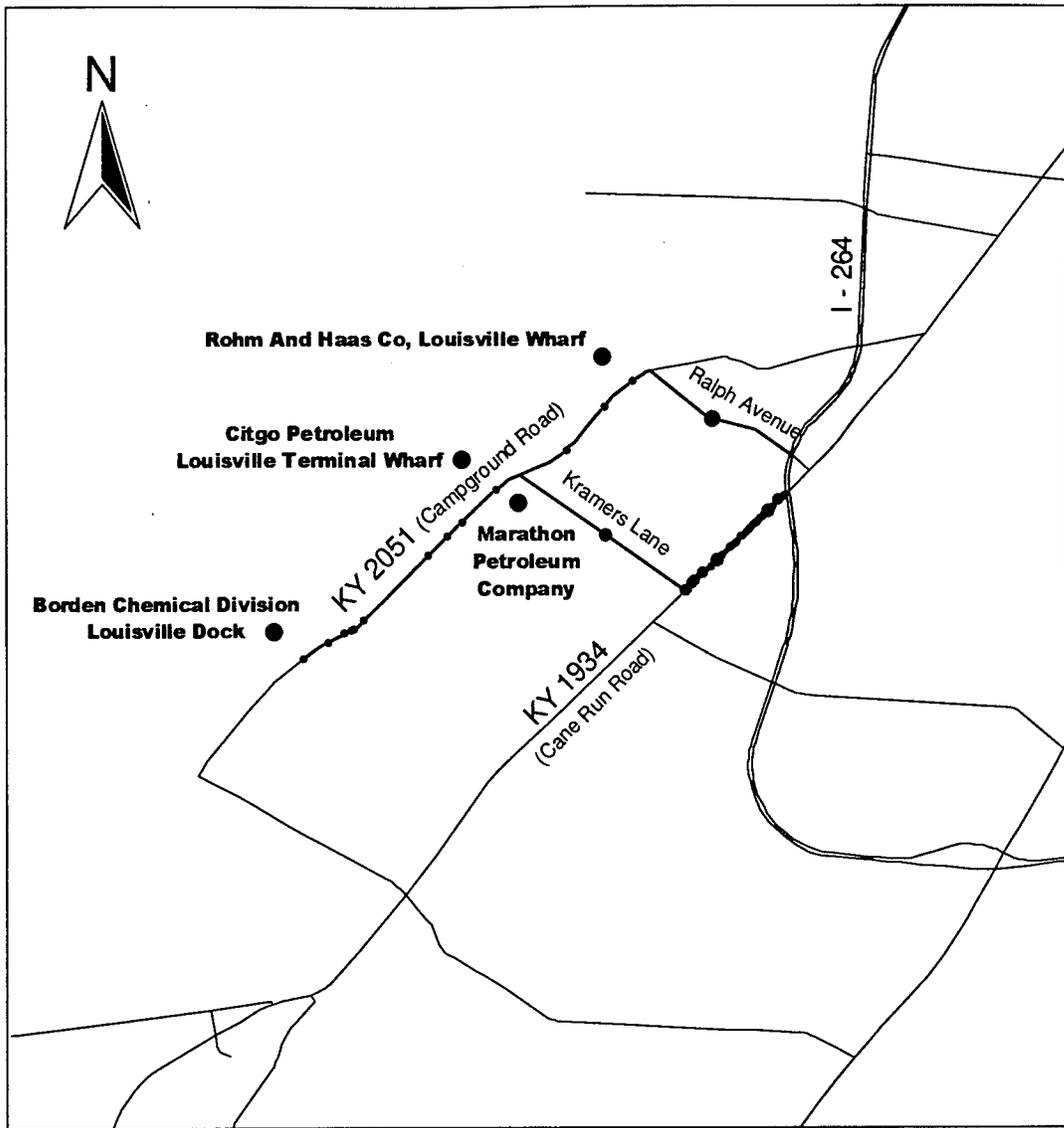
Figure 3 shows the locations of all accidents during the years 1994, 1995 and 1996. The section of Cane Run Road with critical accident rate is shown in the figure. The accidents on Ralph Avenue and Kramers Lane are grouped together because specific locations were not available. The figure clearly shows that accidents along Cane Run Road are an issue and that a large number of accidents also occurred along Ralph Avenue.

A summary of the accidents along the entire truck route (for all roads not just state-maintained roads) is shown in Table 2 for the same three year period. Trucks were involved in 8.0% of injury accidents and 10.9% of all accidents. This is significantly less than the percent trucks along this route (19.8%). The percent trucks was obtained from 1998 KYTC Vehicle Classification Counts.

Table 2: Accident Types along Truck Route

	<i>Non-Truck Accidents</i>	<i>Truck Accidents</i>	<i>Percent Trucks</i>
Fatal Accidents	2	0	0.0
Injury	115	10	8.0
Intersection	186	24	11.4
Total	385	47	10.9

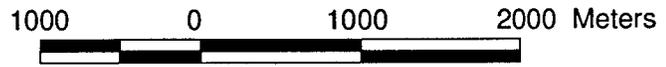
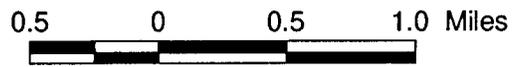
Figure 3: Accident Locations (1994 - 1996)



LEGEND

- Facility
- Accidents: 1 - 4
- Accidents: 5 - 9
- Accidents: 10 - 14
- Accidents: 72
- Critical Accident Rate
- Freight Access Route
- State Highway System

Scale - 1:40000



3.3 Cross Section Features

Figures 4 and 5 illustrate the sections of the route having different widths of lanes and shoulders. Cane Run Road has “preferred” 12 foot lanes with curbs in place of shoulders. Ralph Avenue has “preferred” 13 foot lanes and a curb east of the railroad crossing, with “adequate” 11 foot lanes and no shoulders west of the crossing. Kramers Lane has “less than adequate” 10 foot lanes and no shoulders. Campground Road has “adequate” 11 foot lanes and “less than adequate” shoulders that vary from 2 to 8 feet in width.

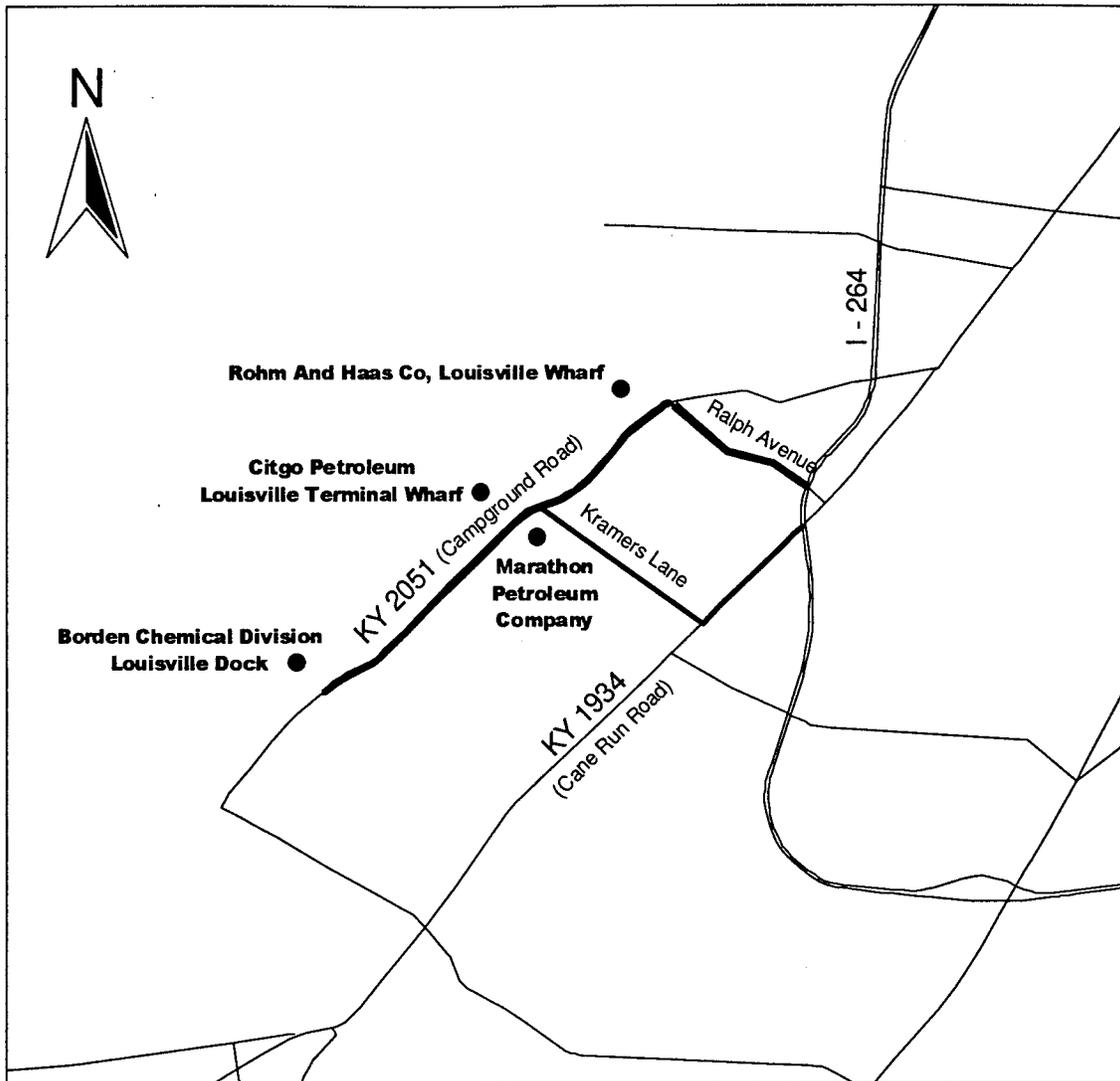
There were no significant clear zone problems found along Cane Run Road or Campground Road. Mailboxes and fencing caused minor clear zone problems along Ralph Avenue. Drainage ditches and poles near the roadway caused significant clear zone problems on Kramers Lane. The pavement was in good condition on Cane Run Road and Kramers Lane, and in fair condition on the rest of the route.

3.4 Curvature Features

Grades are considered problematic if they cause trucks to slow down excessively. There were no such grades on this route. Offtracking is considered a problem where a truck cannot stay in its lane while traveling a curve. There were no curves where offtracking or safe speed on the curve would be a problem.

The turning radius from Kramers Lane onto Campground Road was approximated in the field. The layout of this location is shown in Figure 6. The turn (35 foot radius) was rated “less than adequate” because trucks must turn into the opposing traffic lane. A pole adjacent to the intersection (shown in Figure 7) has been repeatedly hit by trucks attempting to make the turn. The turning radius from Cane Run Road onto Kramers Lane was also “less than adequate” due to trucks turning into opposing lanes. The curb was broken as a result of being hit by trucks.

Figure 4: Lane Widths



LEGEND

- Facility
- Lane Width : 10 Feet
- Lane Width: 11 Feet
- Lane Width : 12 Feet
- Lane Width : 13 Feet
- State Highway System

Scale - 1:40000

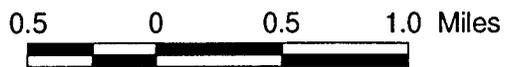
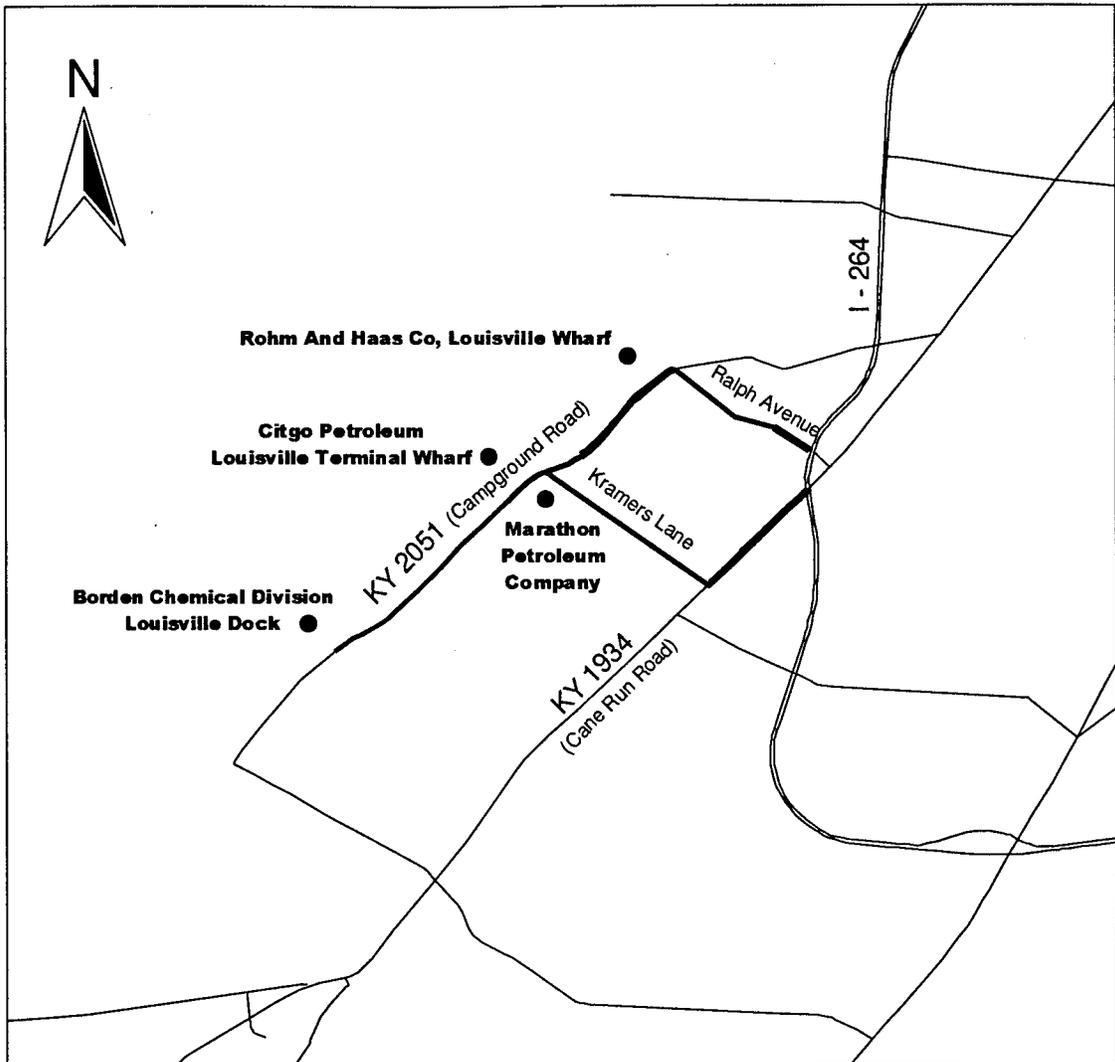


Figure 5: Shoulder Widths

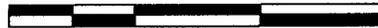


LEGEND

- Facility
- Shoulder Width : No Shoulder
- Shoulder Width : Curb Only
- Shoulder Width: 4 Feet
- Shoulder Width : 6 Feet
- Shoulder Width : 8 Feet
- Freight Access Route
- State Highway System

Scale - 1:40000

0.5 0 0.5 1.0 Miles



1000 0 1000 2000 Meters



Figure 6: Approximate Turning Radius at Kramers Lane and Campground Road

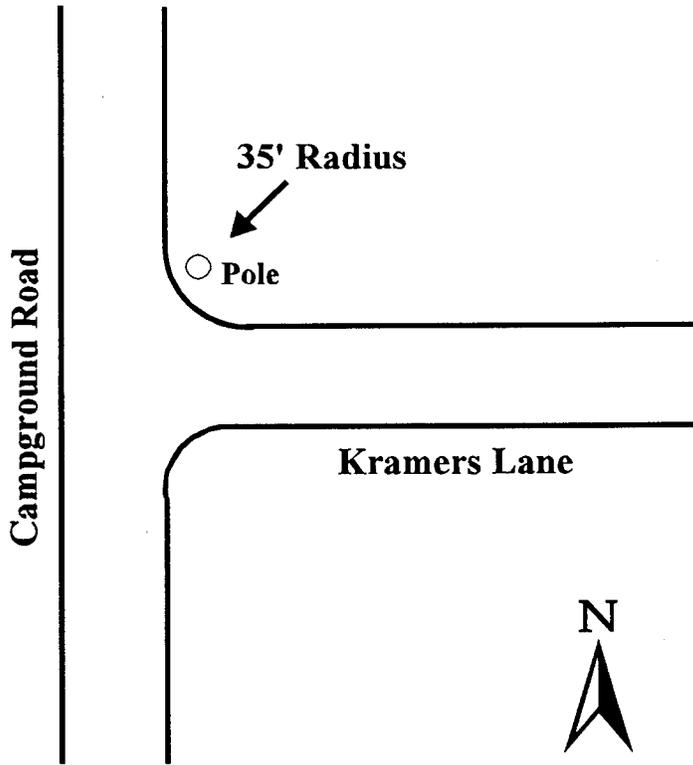


Figure 7: Pole at Intersection of Kramers Lane and Campground Road



3.5 Railroad Crossings

There were three railroad crossings on this route. The crossings on Campground Road and Kramers Lane were rated “adequate” because of a rough or uneven surfaces. The crossing on Ralph Avenue received a “preferred” rating.

3.6 Bridges

There were no bridges on this route.

3.7 Sight Distance

There were no significant sight distance problems on this route.

3.8 Other Route Features

The entrance of the Marathon facility (see Figure 1) occasionally becomes congested forcing trucks to wait on the side of the road. As shown in Figure 8, this partially blocks the eastbound lane of Kramers Lane.

Ralph Avenue is in a residential area with houses along both sides of the road. The crosswalk on Campground Road near Rohm & Hass is extremely faded. The interchange layout is unique because exit 5 is divided between two intersecting roads (see Figure 2).

Figure 8: Trucks Waiting to Enter the Marathon Facility



4.0 Route Evaluation and Recommendations

4.1 Problem Truck Miles and Truck Points

In order to compare different routes to consider relative urgency of needed route improvements the features rated “preferred,” “adequate” and “less than adequate” along a route are to be normalized for the number of miles, number of points and number of trucks using the route section. In the case of this truck route, four features that were evaluated quantitatively have sections or points that are considered only “adequate” or “less than adequate.” A section or point that is considered “less than adequate” is weighted two times that of an “adequate” point or section. Less than “preferred” sections are weighted by length as well as the number of trucks passing that point. The number of trucks was obtained from 1998 KYTC Vehicle Classification Counts.

Table 3 contains the total problem truck miles and total problem points for lane width, shoulders, turning radii and railroads along this route. The rating of this route relative to others evaluated will be reported in the final report.

Table 3: Summary of Problem Truck Miles and Points for Entire Route

Feature	Road	Location	Points*	Length (miles)	Trucks (/day)	Truck-points	Truck-miles
Lane Width	Ralph	West of Railroad	1	0.8	1052		841.6
	Campground	Length	1	2.0	888		1776.0
	Kramers	Length	2	0.8	726		1161.6
Total							3779.2
Shoulders	Ralph	Length	2	0.8	1052		1683.2
	Kramers	Length	2	0.8	726		1161.6
	Campground	Length	2	2.0	888		3552.0
Total							6396.8
Turning Radii	Kramers	Campground	2		363	726.0	
	Cane Run	Kramers	2		363	726.0	
Total						1452.0	
Railroads	Kramers	West of Cane Run	1		726	726.0	
	Campground	Near Borden	1		888	888.0	
Total						1614.0	

*1 point for “adequate” features and 2 points for “less than adequate” features (0 points for “preferred” features not shown)

4.2 Maintenance Improvement Locations

Some features noted during the site work could be changed to improve truck access without requiring major construction or expense. The pedestrian crosswalk on Campground Road could be repainted.

4.3 Overall Route Rating

In order to account for both the subjectively and objectively evaluated route features along truck routes throughout the state, UK engineers who studied the route and its features either during a site visit or by viewing a video of trucks using the routes have rated the overall access on a scale of 1 through 10. The interpretation for these ratings is shown in Table 4. The route from the Campground Road area to I-264 was given an overall rating of 5 indicating that minor improvements are required to improve the truck access along this route.

Table 4: 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

Appendices

Appendix A: Field Site Visit Dates and Activities

February 13, 1998 - initial site visit and video taping

April 23, 1998 - field data collection

May 29, 1998 - additional field data collection

Appendix B: Phone Surveys Conducted with Facilities

<u>Facility ID</u>	<u>Facility Name</u>	<u>Location / City</u>	<u>County</u>	<u>ADD</u>
8	Marathon Petroleum	Louisville	Jefferson	KIPDA
<u>Contact Name</u>	<u>Title</u>	<u>Phone</u>	<u>Fax</u>	
Tommy Joiner		502-447-3530	502-448-7315	

1. Is the location of your facility on the map correct? Yes
2. Our information shows about 400 trucks per day access your facility. Is that correct? *If not, fill in correct volume.* No, 200
3. Is the truck traffic to and from your facility seasonal or mostly constant? Constant
4. *(If truck traffic is seasonal)* Is the trucks/day for the peak season?
5. What is the most common size truck operating at your facility? Semitrailer 9,000 gal. tanker
6. What is the largest truck operating at your facility? Semitrailer 9,400 gal. tanker
7. What type of freight or commodity is shipped, and is incoming and outgoing freight different? *(one may be an empty truck)*
8. Does the truck traffic peak at specific times of the day? (e.g., out in the morning and return in the afternoon) 5:00 a.m. - 11:00 a.m.
9. What traffic congestion and delay problems along the routes are you aware of, or feel need improvement?

<u>Location (route segment, intersection, etc.)</u>	<u>Time and Day of Week</u>
None	
10. Where do trucks at your facility go to and come from? (This may be an interstate, cities, general direction-N,S,E,W) Exit 5B
11. Do you have any other problems or concerns along the route you would like us to consider? Potholes
12. Would you like a copy of the final report (roadway/route evaluation ???) Yes

<u>Facility ID</u>	<u>Facility Name</u>	<u>Location / City</u>	<u>County</u>	<u>ADD</u>
8	CITGO Petroleum	Louisville	Jefferson	KIPDA
<u>Contact Name</u>	<u>Title</u>	<u>Phone</u>	<u>Fax</u>	
Bill Wieneke		502-447-1030	502-447-6800	

1. Is the location of your facility on the map correct? No, directly across from Marathon
2. Our information shows about 25 trucks per day access your facility. Is that correct? *If not, fill in correct volume.* Yes
3. Is the truck traffic to and from your facility seasonal or mostly constant? Constant
4. *(If truck traffic is seasonal)* Is the trucks/day for the peak season?
5. What is the most common size truck operating at your facility? Semitrailer 9,000 gal. tanker
6. What is the largest truck operating at your facility? Semitrailer 9,200 gal. tanker
7. What type of freight or commodity is shipped, and is incoming and outgoing freight different? *(one may be an empty truck)*
8. Does the truck traffic peak at specific times of the day? (e.g., out in the morning and return in the afternoon) 6:00 a.m. - 10:00 a.m.
9. What traffic congestion and delay problems along the routes are you aware of, or feel need improvement?
Location (route segment, intersection, etc.) Time and Day of Week
None
10. Where do trucks at your facility go to and come from? (This may be an interstate, cities, general direction-N,S,E,W) 100 mile radius
11. Do you have any other problems or concerns along the route you would like us to consider? Pole too close to the road at the intersection of Kramers Lane and Campground Road
12. Would you like a copy of the final report (roadway/route evaluation ???) Yes