TRUCK ROUTE ACCESS EVALUATION

Madison County Industrial Park
Off US 25 South of Richmond
Site # 2678

Report No. KTC-98-31

"Freight Movement and Intermodal Access in Kentucky"
SPR 98-189

Lisa Aultman-Hall

with
Ken Agent
Brian Aldridge
Dave Cain
Nicole Lefever
Nick Stamatiadis
Joel Weber

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

September 1998

Table of Contents

Appendices

List of Tables

List of Figures

1.0 Introduction

There are two main objectives of the Freight Movement and Intermodal Access in Kentucky Study (SPR 98-189) undertaken by the Kentucky Transportation Center for the Kentucky Transportation Cabinet: 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 one cluster of facilities located in Madison county in the Bluegrass Area Development District (ADD) and KYTC Highway District # 7. 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 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 national highway system, and the number of trucks accessing the site. Consideration was also made for the freight type handled and transportation modes used. This industrial park located along Duncannon Road in Madison county was recommended for study by the Bluegrass ADD planners.

The site was visited several times for data collection and video recording as listed in Appendix A. The following facilities are located in the area: American Tape, Precision Tube, South Park Tool and Die, Mikron Industries, PK Tool, Ajax Magnathermic, and Concrete Materials Inc. Some of these facilities are located south off Duncannon Road, approximately 0.2 miles from US 25 on Industry Road, while others are located on Enterprise Drive 0.7 miles from US 25. Approximate locations are shown in Figure 2. The surrounding area is generally rural. The phone survey found approximately 208 trucks per day accessing these clustered sites, while KYTC data indicates only 389 trucks per day travel along US 25. The site trucks are generally semi tractor trailers with a maximum length of 53 feet. A phone survey with facility managers was conducted early in the study process (results are shown in Appendix B).

2.0 Truck Routes in Use

There is currently only one primary route for trucks to reach the National Highway System. The trucks accessing the industrial areas on Duncannon Road are generally traveling to and from Interstate 75, a distance of approximately 5.0 miles as shown in Figure 1. The facilities are located on Industry Road and Enterprise Drive which connect with Duncannon Road. From Duncannon Road, trucks travel north on US 25 then west on KY 876 to I-75. Industry Road is paved and curbed while Enterprise Drive is paved with no shoulder. Duncannon Road is a small rural road with no pavement markings. After heading south from KY876, US 25 becomes a two-way two-lane roadway of generally rural character. KY 876 is in an urban / suburban area and can be considered a signalized arterial roadway. KY 867 and US 25 are both state maintained roadways. There is traffic signal control at both the intersection of US 25 and Duncannon Road as well as US 25 and KY 876.

Figure 1: Location of Truck Generating Sites

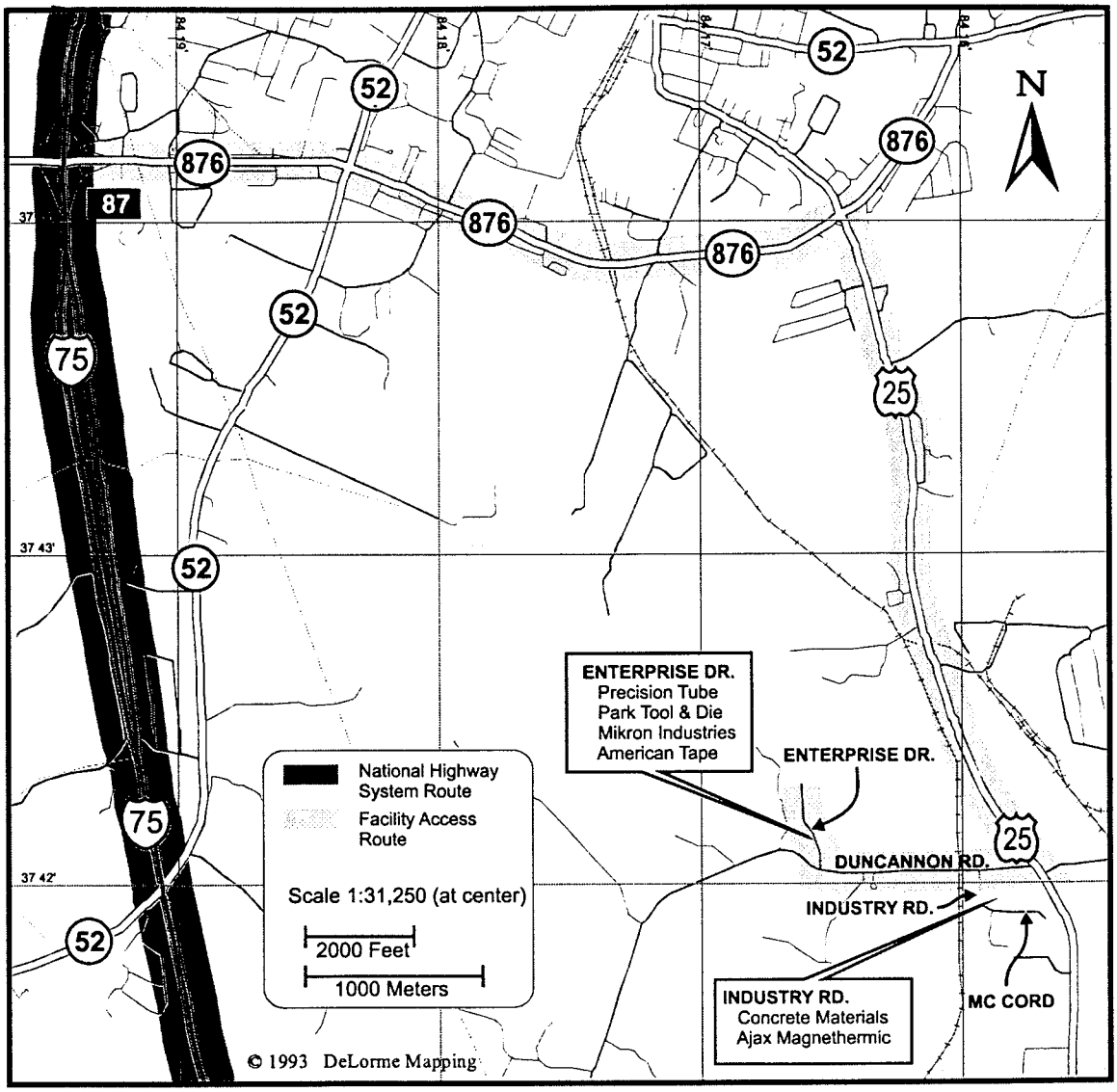
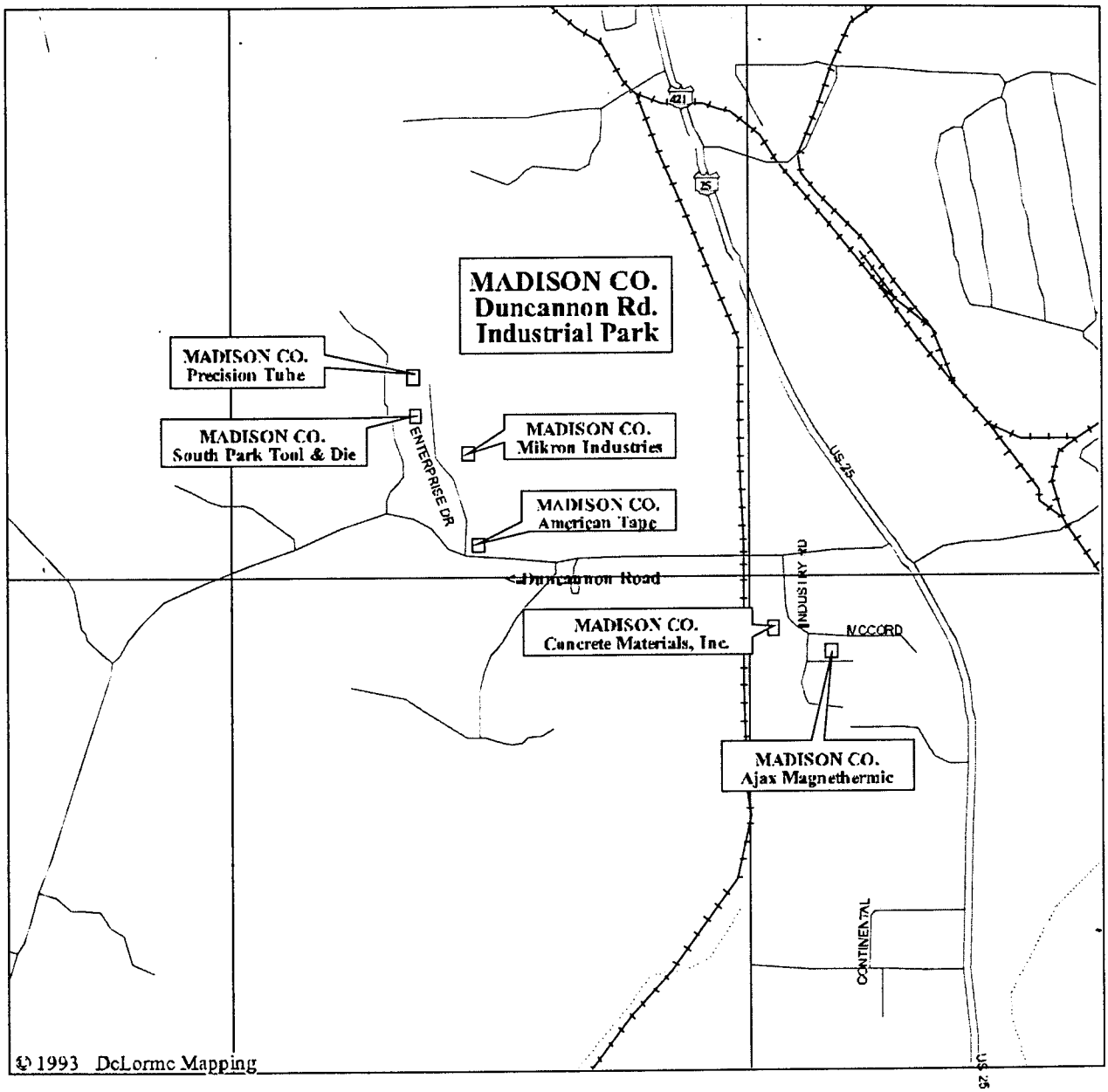


Figure 2: Industrial Park Layout



A bypass (KY 876) is being extended northward around Richmond to connect with Interstate 75 at exit 90. When complete, this project will improve access for trucks that travel north on I-75. Another possible improvement under consideration by planners is an interchange where Duncannon Road crosses I-75 to the west of these industries. This would require a significant upgrade of Duncannon Road between the industrial area and I-75 as this section currently has very low geometric standards and is not appropriate for truck traffic. There is currently construction underway on US 25 just south of KY 876 which might be the source of the congestion indicated by facility managers.

Phone surveys were conducted 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 phone surveys conducted with facility managers indicated the following traffic problems with the Madison county truck route. "Rush hour" congestion is a problem along KY 876 and US 25, at the intersection of KY 876 and US 25 as well as at Duncannon Road and US 25.

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 Chapter 4).

3.1 Traffic Operations and Level of Service

The problem areas identified in the surveys were the intersections along KY 876. Therefore, only the signalized intersections along KY 876 were analyzed. The analysis was performed using a two step approach: 1. Level of Service (LOS) using the Highway Capacity Software (HCS) for each intersection; and 2. Overall arterial LOS using a travel time study. These signalized intersections have actuated signals, an issue that neither the Highway Capacity Manual nor the HCS address adequately in the existing software version. Basic assumptions for all intersections is the lack of signal coordination, the absence of pedestrians (note that during the field counts very few were noted), and the use of 3 seconds as lost time per phase. To resolve the actuated signal problem and since the period examined is the p.m. peak, it was assumed that the demand will be high enough to force the signals to revert to an underlying timing plan consisting of maximum green times (thus it operates as a fixed signal). The lane use diagrams and volume counts for each intersection are shown in Appendix C.

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

The results for each intersection using the HCS analysis and volume collected in the field are shown in Table 2. The LOS for all intersections analyzed was within acceptable levels; most were at C or D, and none of their approaches have significant delays. The higher delays experienced at some of the intersections are expected for an urban arterial during the peak period and thus, are not indicative of any specific problems for truck access. It is obvious that coordination of the signals could improve the operation and reduce delays along the corridor. The lane assignments are not very clear, particularly for the minor roads that intersect KY 876; turning and through movements were observed using different lanes at various times. It is important to identify the desirable use and mark the lanes appropriately. Finally, a significant part of the congestion observed along KY 876 may be attributed to the construction of the I-75 ramps and it is likely that some problems will be alleviated upon completion of the overpass.

A travel time study was also conducted where an observer traveled along KY 876 in both directions while maintaining the speed of the traffic during the weekday PM peak. Six passes were made for each direction (field data is shown in Appendix C) and the average time for each direction was computed--east-bound 454.93 sec and west-bound 541.94 sec. Given the length of the roadway, 2.824 miles, the average travel speeds were computed--east-bound 22.4 mph and west-bound 18.8 mph. Using the Highway Capacity Manual and for a type I arterial--suburban with medium development and 45 mph speed limit--the LOS is C for east-bound and D for west-bound traffic. It is apparent that no significant delays or operational problems experienced along KY 876 since the arterial operates at acceptable LOS during the peak period.

Given this analysis, the access route currently operates at an adequate traffic and operational level. However, if significant future development occurs the traffic LOS issue may require reconsideration.

Table 2. Summary of LOS Analysis for Each Intersection (sec/veh / LOS) (April 20-24/98)

Intersection		KY 876 @ Kilarney	KY 876 @ Brown	KY 876 @ Lancaster	KY 876 @ Boggs	KY 876 @ US 25
East-bound	L	5.2/B	8.0/B	53.3/E	11.7/C	18.2/C
	T+R	13.7/B	15.6/C	31.9/D	11.2/B	48.2/E
	App	13.2/B	15.1/C	37.3/D	11.7/B	43.1/E
West-bound	L	5.7/B	8.5/B	46.2/E	10.1/B	22.6/C
	T+R	14.0/B	17.4/C	36.9/D	10.6/B	25.3/D
	App	13.2/B	16.2/C	38.6/D	10.6/B	24.7/C
North-bound	LTR	21.8/C	22.8/C	43.8/E	62.4/F	24.5/C
	App	21.8/C	22.8/C	43.8/E	62.4/F	24.5/C
South-bound	LTR	21.2/C	21.2/C	46.3/E	41.0/E	24.0/C
	App	21.2/C	21.2/C	46.3/E	41.0/E	24.0/C
Inters.		14.5/B	16.9/C	40.5/E	17.4/C	32.2/D

3.2 Accidents

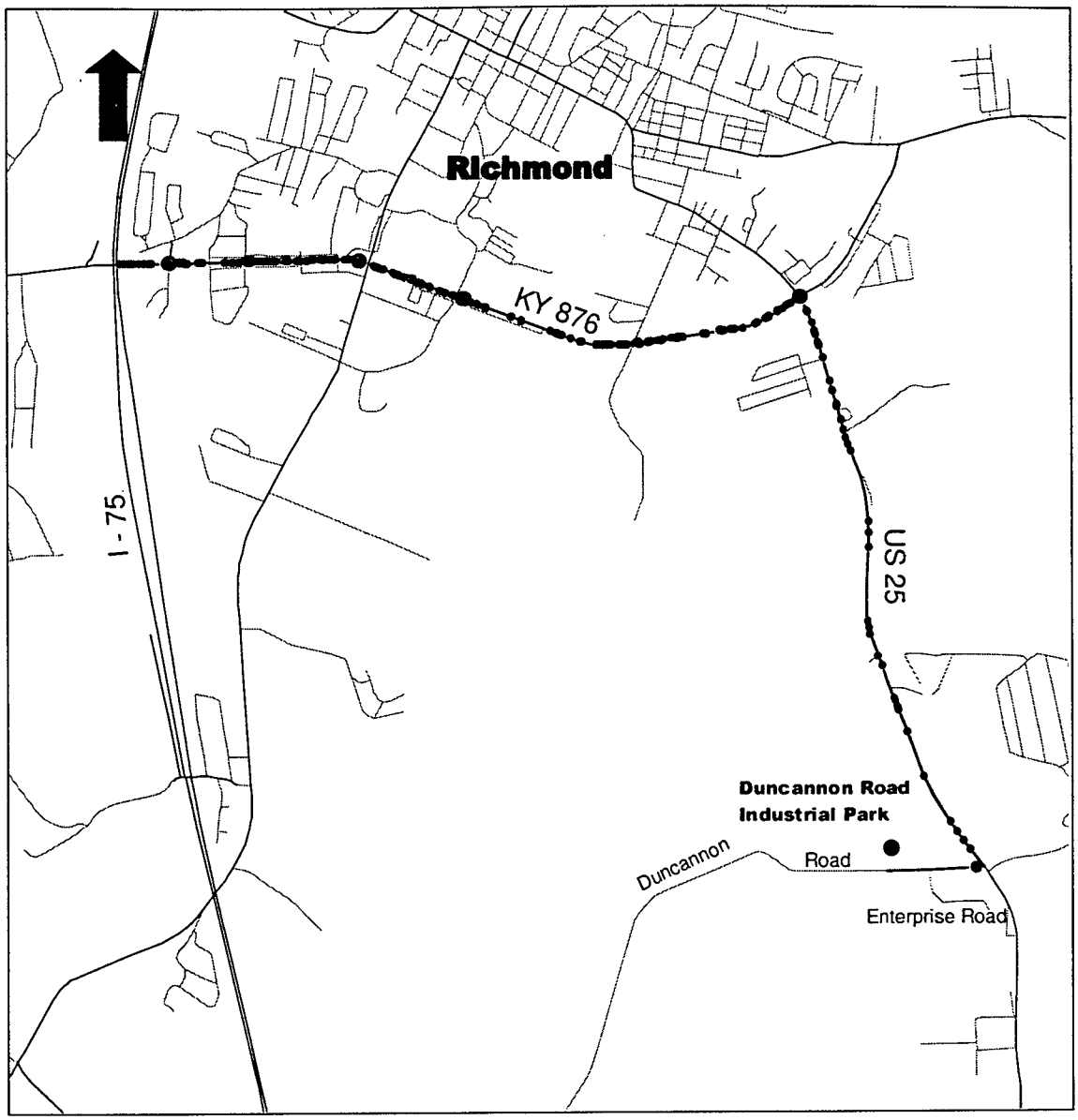
In 1997 the Kentucky Transportation Center studied all state-maintained roads throughout Kentucky and determined average truck accident rates for different types of road sections. A critical accident rate was then calculated using the average accident rate for a specific highway type along with an assumed level of statistical significance and exposure (vehicles miles traveled). One section along this Madison county truck route had a truck accident rate higher than the critical rate for that particular highway type: the section of KY 876 between milepoints 7.8 and 8.6 (I-75 is at milepost 7.2 while KY 52 is at milepost 8.2 see Figure 1). This section had a critical rate factor (the ratio of the actual accident rate to the critical accident rate) of 1.1 indicating that the truck accident rate is higher than the critical rate. Therefore, it is statistically probable that these accidents are not random occurrences.

Figure 3 shows the locations of accidents during the years 1994, 1995 and 1996. While the figure clearly illustrates that accidents are occurring at intersections as would be expected, it also confirms that accidents along KY 876 are an issue. A large number of accidents also occurred along Duncannon Road. A summary of the accidents along the entire truck route (for all roads not just state-maintained roads) is shown in Table 3 for the same three year period. Truck accidents represent a significant portion of the overall accidents along this route. The 4.4 % of accidents involving trucks is higher than either the percent of trucks along KY 876 (3%) or US 25 (2.8%). This suggests there are some safety concerns from an accident history point of view that must be addressed along this route.

Table 3: Accident Types along Madison County Truck Route

	Non-Truck Accidents	*Truck Accidents*	*Percent Trucks*
Total	270	16	5.6
Fatal Accidents	1	0	0.0
Injury	102	4	3.8
Intersection	34	1	2.9

Figure 3: Accident Locations (1994-1996)



LEGEND

- Facility
- Accidents: 1 - 10
- Accidents: 11 - 20
- Accidents: 21 - 30
- Accidents: 31 - 45
- Freight Access Route
- State Highway System
- Other Roads

Scale - 1:40000

0.5 0 0.5 1 Miles

500 0 500 1000 1500 2000 Meters

3.3 Cross Section Features

Figures 4 and 5 illustrate the sections of the route having different widths of lanes and shoulders. While the 12 foot lanes on KY 876 are considered "preferred" for trucks, the 11 foot lanes on US 25 are only "adequate". Duncannon Road and Industry Road within the industrial area have only 11 foot "adequate" lane widths. Enterprise Drive has "preferred" 12 foot lanes. The county roads within the industrial area have only 2 to 4 foot turf shoulders which are considered "less than adequate" for truck traffic. US 25 has "less than adequate" one foot shoulders while sections of KY 876 vary from "preferred" to "less than adequate".

No significant clear zone problems other than the narrow bridges were noted. The pavement was in fair condition on US 25 and in good condition along the rest of the route.

3.4 Curvature Features

Grades are considered problematic if they cause trucks to slow down. No such grades were found on this route. There were no segments where safe speed on curves or off tracking would be a problem for trucks along this route.

Several turning radii were approximated in the field. There appeared to be radius problems turning from US 25 onto Duncannon Road (approximately 75 foot radius with a less than 90 degree turn), from Duncannon Road onto Enterprise Drive (approximately 50 foot radius), and from Industry Road onto Duncannon Road (approximately 57 foot radius). These locations are shown in Figures 6a through 6c. The turning radii at all three intersections was rated "less than adequate" due to the trucks turning into opposing traffic lanes.

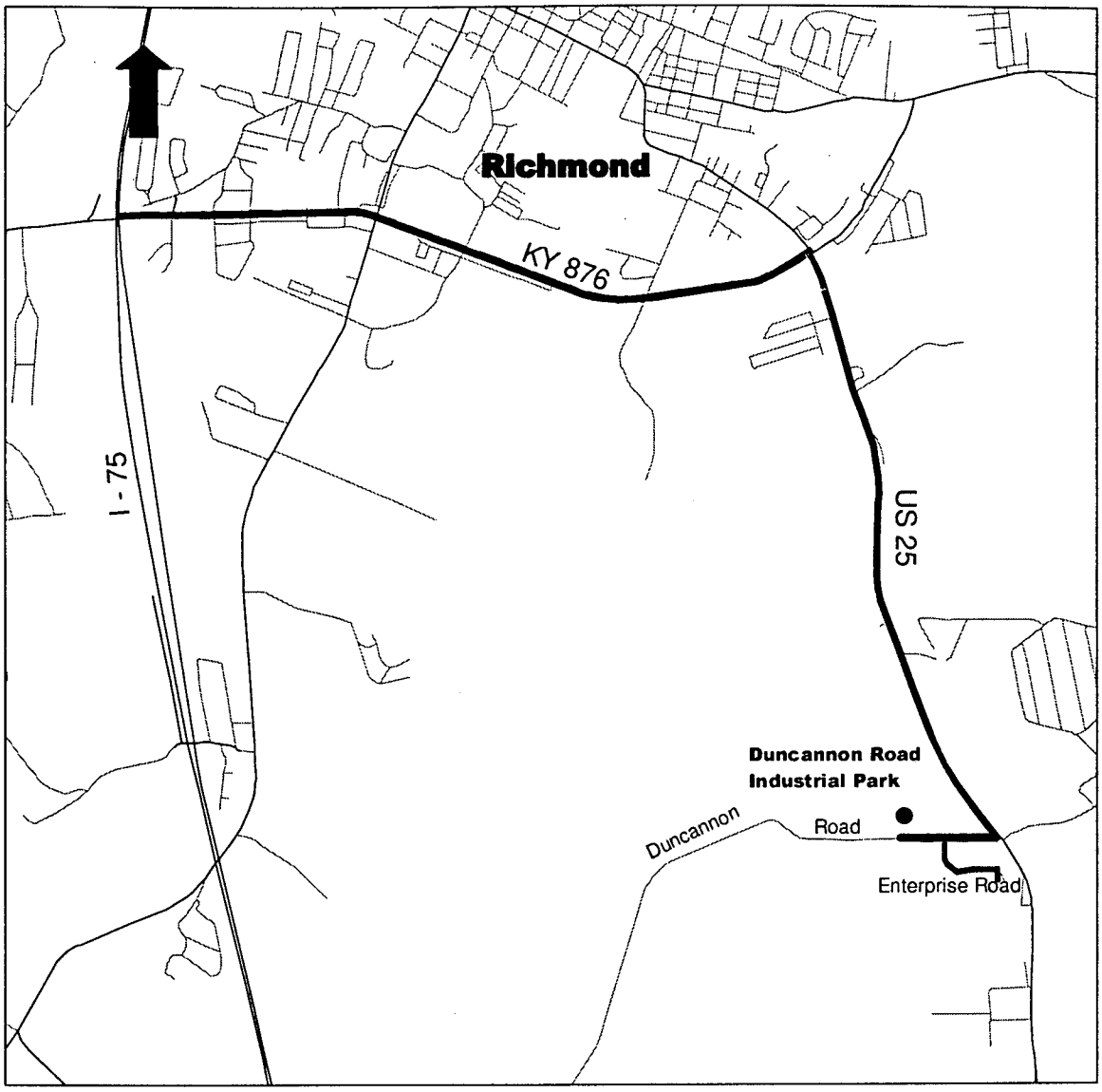
3.5 Railroad Crossings

There were no at-grade railroad crossings on this route.

3.6 Bridges

The locations of the three bridges are shown on Figure 7. Two cross railroad lines and the other crosses I-75. The bridge on US 25 near milepost 14 has a bridge sufficiency rating (provided by the Division of Operations at the KYTC) of 71.9 (out of a possible 100) which can be considered "adequate". The bridge on Duncannon Road west of Industry Road has a 97.9 rating and is considered "preferred". The bridge over I-75 has a 71.3 rating and is considered "adequate". Both bridges over the railway lines are relatively narrow and obstruct the clear zone.

Figure 4: Lane Widths



LEGEND

- Facility
- Lane Width: 11 - 11.25 Feet
- Lane Width: 12 Feet
- Lane Width: 13 Feet
- Lane Width: 14 Feet
- Lane Width: 16 Feet
- State Highway System
- Other Roads

Scale - 1:40000

0.5 0 0.5 1 Miles

500 0 500 1000 1500 2000 Meters

Figure 5: Shoulder Widths

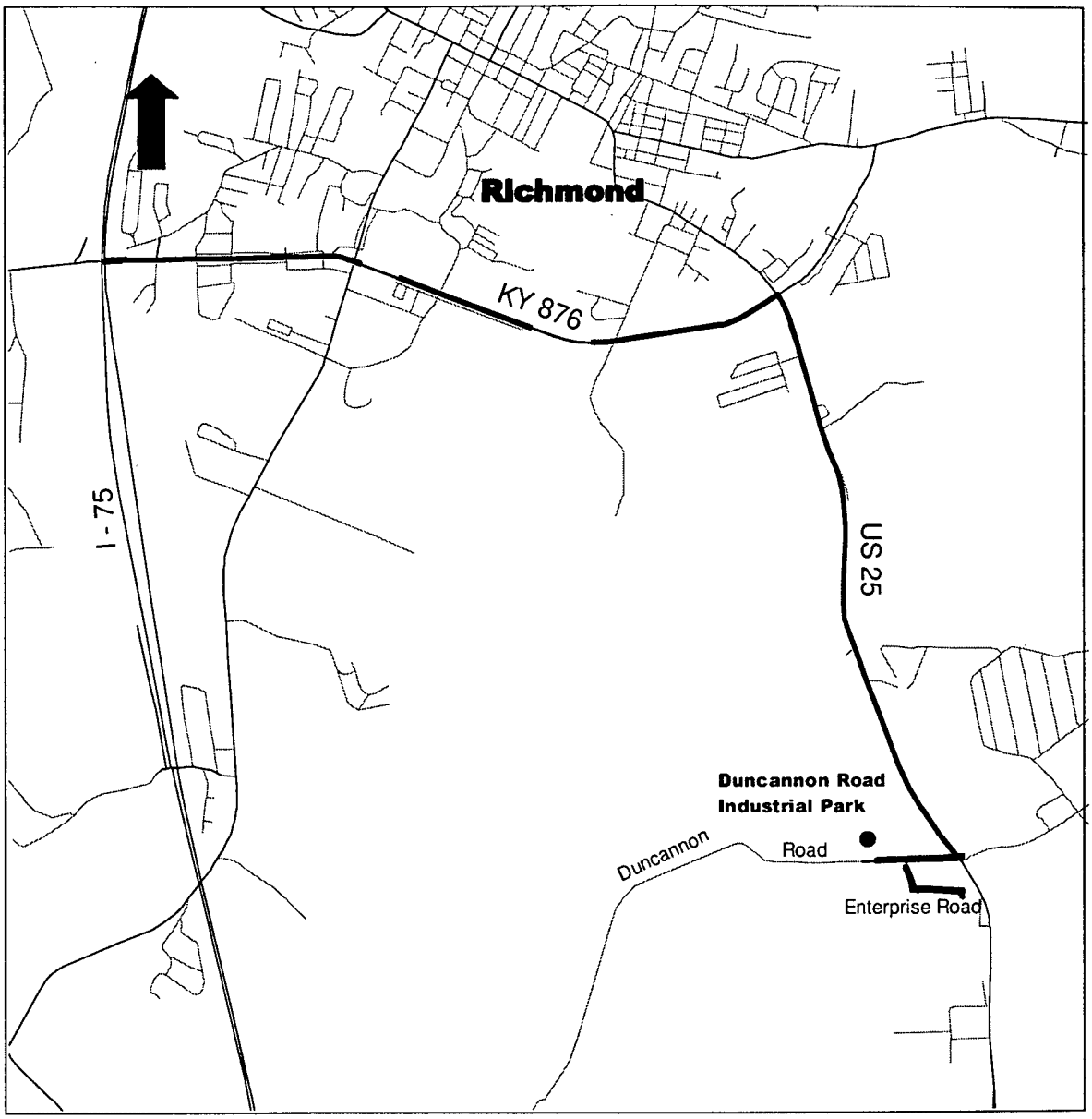


Figure 6a: Approximate Turning Radius at Industry Road and Duncannon Road

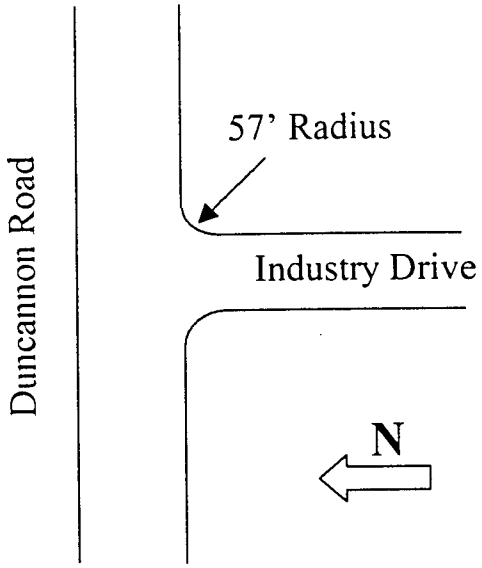


Figure 6b: Approximate Turning Radius at US 25 and Duncannon Road

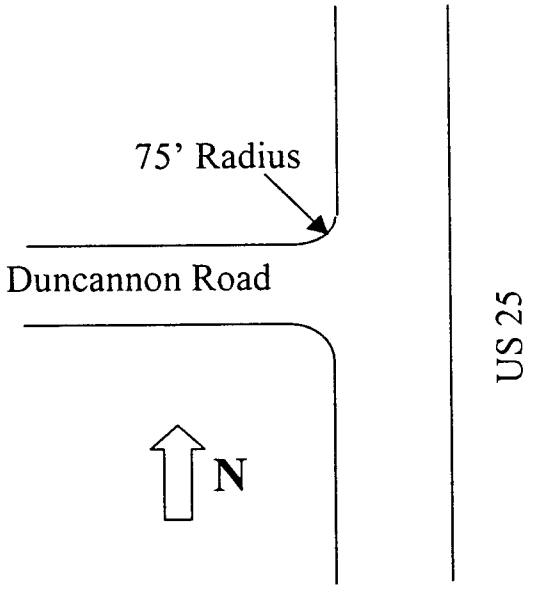


Figure 6c: Approximate Turning Radius at Duncannon Road and Enterprise Drive

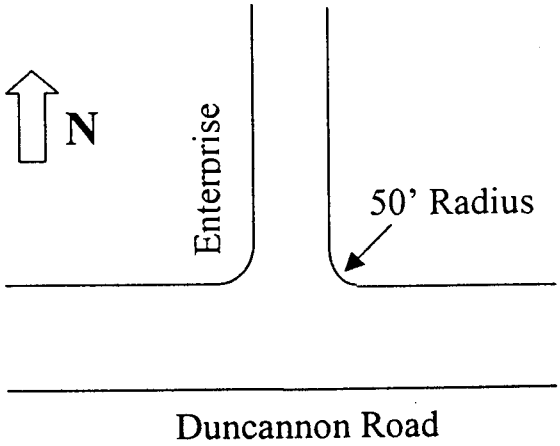
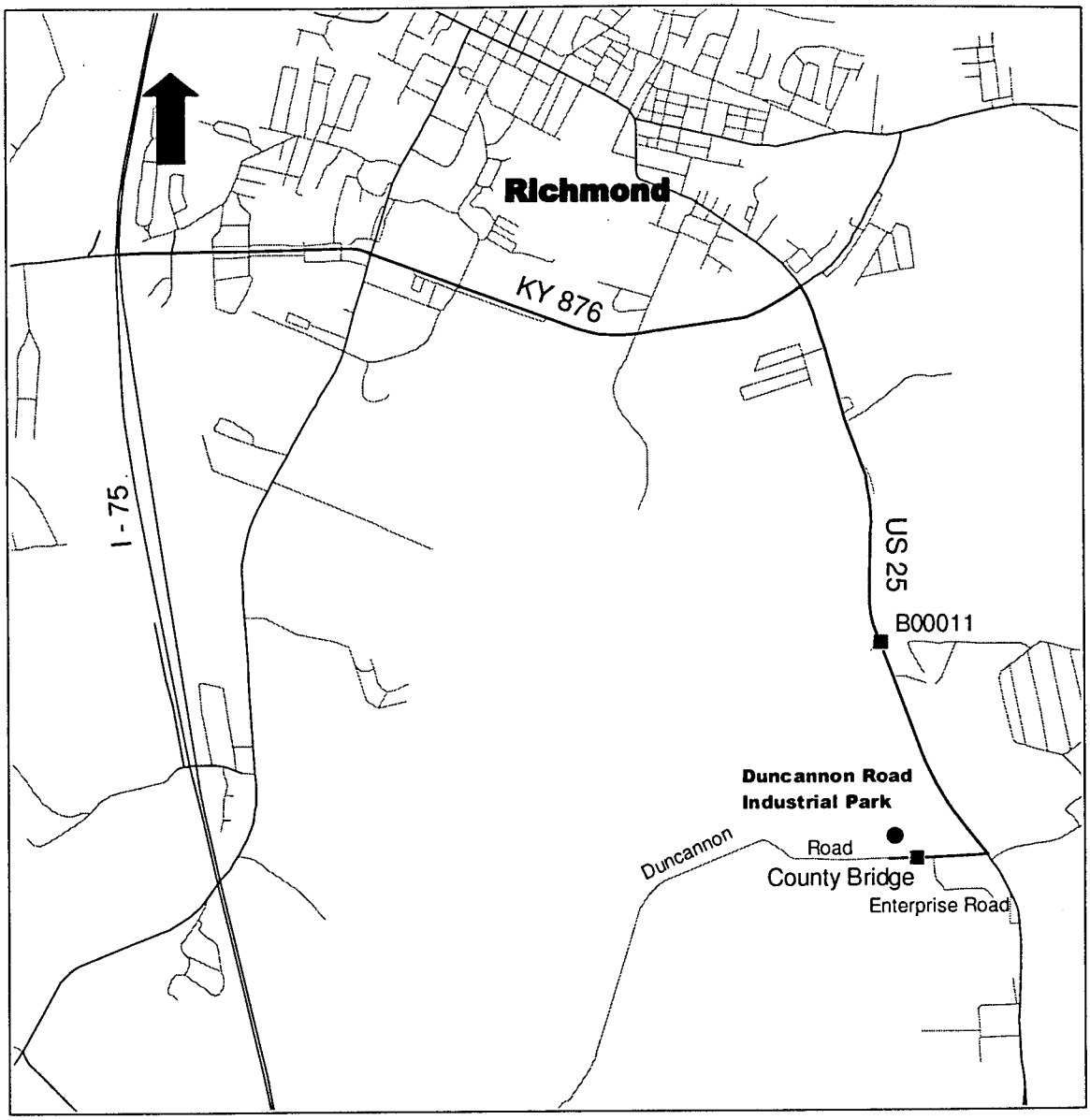


Figure 7: Bridge Locations



LEGEND

- Facility
- B00000 Bridges - Bridge Number
- Freight Access Route
- State Highway System
- Other Roads

Scale - 1:40000

0.5 0 0.5 1 Miles

500 0 500 1000 1500 2000 Meters

3.7 Sight Distance

Only one intersection was considered to have potential sight distance problems during the site inspection and was therefore measured. The right turning trucks from Industry Road onto Duncannon Road looking left towards the bridge has a measured sight distance of 300 feet which is considered "preferred". Therefore no sight distance problems appear to exist on this truck route.

3.8 Other Route Features

The speed limit of 25 mph on Duncannon Road seems inappropriately low given the surrounding land use and relative quality of the road. Construction just south of KY 876 on US 25 is currently affecting trucks and may be the reason for reports of traffic congestion. Lane usage at signalized intersections intersecting KY 876 should be considered for improvements in lane markings and permitted turning movements. A school and retail activities on US 25 appear to have appropriate access to the adjacent truck route.

4.0 Composite Route Evaluation and Recommendations

4.1 Problem Truck Miles and Truck Points

In order to compare different routes to consider the relative urgency of needed route improvements the features rated "preferred", "adequate" and "less than adequate" along a route are normalized for the number of miles, number of points and number of trucks using the route section. In the case of this Madison county 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.

Table 4 contains the total problem truck miles and total problem points for lane width, shoulders, turning radii and bridges along this route. The rating of this route relative to other selected routes will be reported in the final report.

4.2 Maintenance Improvement Locations

Several features noted during the site work could be addressed during routine maintenance programs by either the state or county and therefore could improve truck access without requiring major construction or expense. First, lane markings on minor street approaches and traffic signal coordination along KY 876 might be investigated. Second, right turn radius problems require pavement widening at three intersections: US 25 and Duncannon Road; Duncannon Road and Industry Road; and Duncannon Road and Enterprise Dr.

Table 4: Summary of Problem Truck Miles and Problem Truck Points for Entire Route

Feature	Road	Location	Points*	Length (miles)	Trucks (/day)	Truck-points	Truck-miles
Lane Width	US 25	length	1	2.2	389		855.8
	Duncannon	to Industry	1	0.2	456		91.2
	Duncannon	to Enterprise	1	0.5	58		29
	Industry	length	1	0.1	340		34
Total							**1010**
Shoulders	KY 876	curbed	2	0.5	993		496.5
	KY 876	combination	1	1.6	993		1588.8
	US 25	length	2	2.2	389		855.8
	Duncannon	to Industry	2	0.2	456		91.2
	Duncannon	to Enterprise	2	0.5	116		58
	Enterprise	to Mikron	2	0.3	64		19.2
	Enterprise	to end	2	0.3	24		7.2
	Industry	length	2	0.1	340		34
Total							**3150.7**
Turning Radii	US 25	Duncannon	2		208	416	
	Industry	Duncannon	2		170	340	
	Duncannon	Enterprise	2		38	76	
Total						**832**	
Bridge Ratings	US 25	B00011	1		389	389	
	KY 876	B00037	1		993	993	
Total						**1382**	

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

4.3 Overall Route Rating

In order to account for both the subjectively and objectively evaluated route features along truck routes throughout the state, a panel of UK engineers who studied the route and its features either during a site visit or by viewing a video of trucks using the routes will score the overall access on a scale of 1 through 10. The interpretation for these ratings is shown in Table 5. The route in Madison county to the Duncannon Road industrial area was given an overall rating of 7 indicating that minor improvements could improve the truck access along this route.

Table 5: 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 required on this route
6-8	Minor improvements could improve 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

August 12, 1997 - site layout, facility identification, photographs
September 26, 1998 - traffic counts and geometric measurements
April 3, 1998 - final data collection
April 20-24, 1998 - traffic counts and travel time survey

Appendix B: Phone Surveys Conducted with Facilities

PHONE SURVEY RESULTS

Facility ID	*Facility Name*	*Location / City*	*County*	*ADD*
2678	Mikron Industries	Richmond	Madison	Bluegrass

Contact Name	*Title*	*Phone*	*Fax*
Joe Hudecki	Shipping Manager	606-623-2643	606-623-4484

1. **Is the location of your facility on the map correct?** Yes

2. **Our information shows about _____ trucks per day access your facility. Is that correct?** ***If not, fill in correct volume.*** 10-12

3. **Is the truck traffic to and from your facility seasonal or mostly constant?**
   Seasonal, more traffic in summer peak

4. ***(If truck traffic is seasonal)*** **Is the** 10-12 **trucks/day for the peak season?** No, 12-15 in peak

5. **What is the most common size truck operating at your facility?** Semitrailer 48' flatbed

6. **What is the largest truck operating at your facility?** Semitrailer 53'

7. **What type of freight or commodity is shipped, and is incoming and outgoing freight different?** ***(one may be an empty truck)***
   Vinyl plastic

8. **Does the truck traffic peak at specific times of the day? (e.g., out in the morning and return in the afternoon)** Noon

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)** All of U.S. (mainly Ohio)

11. **Do you have any other problems or concerns along the route you would like us to consider?**
    US 25 is hazardous in winter
12. **Would you like a copy of the final report (roadway/route evaluation ???)** Yes

NOTES/COMMENTS:

PHONE SURVEY RESULTS

Facility ID	*Facility Name*	*Location / City*	*County*	*ADD*
2678	American Tape Co.	Richmond	Madison	Bluegrass

Contact Name	*Title*	*Phone*	*Fax*
Jerry Fossum	Traffic Manager	606-623-7177	606-623-5551

1. **Is the location of your facility on the map correct?** Yes

2. **Our information shows about** 20 **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 48'
6. **What is the largest truck operating at your facility?** Semitrailer 53'

7. **What type of freight or commodity is shipped, and is incoming and outgoing freight different?** ***(one may be an empty truck)***
   In: Raw materials, packaged goods in drums, tank truck shipments
   Out: Tape, packaged goods

8. **Does the truck traffic peak at specific times of the day? (e.g., out in the morning and return in the afternoon)** 3-4 p.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*
US 25 congestion	Rush hour
I-75	

10. **Where do trucks at your facility go to and come from? (This may be an interstate, cities, general direction-N,S,E,W)** Outbound: Lexington
    Inbound: I-75

11. **Do you have any other problems or concerns along the route you would like us to consider?**

12. **Would you like a copy of the final report (roadway/route evaluation ???)** Yes

NOTES/COMMENTS: Extension of KY 876 north to I-75 will help with congestion.

PHONE SURVEY RESULTS

Facility ID	*Facility Name*	*Location / City*	*County*	*ADD*
2678	Concrete Materials, Inc.	Richmond	Madison	Bluegrass

Contact Name	*Title*	*Phone*	*Fax*
Larry Lannum		606-623-4238	606-623-4255

1. **Is the location of your facility on the map correct?** Yes

2. **Our information shows about** 160 **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 last two years. April - November is normal

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?** Single unit redi mix truck
6. **What is the largest truck operating at your facility?** Semitrailer 8,000 lb. boom truck

7. **What type of freight or commodity is shipped, and is incoming and outgoing freight different?** ***(one may be an empty truck)***
   Cement, sand, rebar, brick, stone, building materials

8. **Does the truck traffic peak at specific times of the day? (e.g., out in the morning and return in the afternoon)** 9-10 a.m. and 2-3 p.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*
US 25 congestion	
I-75 construction has diverted traffic to US 25	

10. **Where do trucks at your facility go to and come from? (This may be an interstate, cities, general direction-N,S,E,W)** US 25 N to KY 876 to I-75
    US 25 S to I-75

11. **Do you have any other problems or concerns along the route you would like us to consider?**
    US 25 daylight to dark
12. **Would you like a copy of the final report (roadway/route evaluation ???)**

NOTES/COMMENTS:

PHONE SURVEY RESULTS

Facility ID	*Facility Name*	*Location / City*	*County*	*ADD*
2678	Ajax - Magnathermic	Richmond	Madison	Bluegrass

Contact Name	*Title*	*Phone*	*Fax*
Tom Flicky		606-254-0833	606-623-0134
John Turner		606-623-9602	

1. **Is the location of your facility on the map correct?** Yes

2. **Our information shows about** __10__ **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 45'

6. **What is the largest truck operating at your facility?** Semitrailer 48'

7. **What type of freight or commodity is shipped, and is incoming and outgoing freight different?** ***(one may be an empty truck)***
   In: transformers, steel, copper, raw materials
   Out: capital equipment, melting equipment, gas

8. **Does the truck traffic peak at specific times of the day? (e.g., out in the morning and return in the afternoon)** A. M. and Noon - 4:00

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*
KY 876 exit 87	
US 25	4:00 - 6:00 (rush hour)

10. **Where do trucks at your facility go to and come from? (This may be an interstate, cities, general direction-N,S,E,W)** Mostly I-75 to Lexington

11. **Do you have any other problems or concerns along the route you would like us to consider?**

12. **Would you like a copy of the final report (roadway/route evaluation ???)** Yes

NOTES/COMMENTS:

PHONE SURVEY RESULTS

Facility ID	*Facility Name*	*Location / City*	*County*	*ADD*
2678	Precision Tube	Richmond	Madison	Bluegrass

Contact Name	*Title*	*Phone*	*Fax*
Lisa Mattingly	Shipping Director	606-623-5995	606-623-6116

1. **Is the location of your facility on the map correct?** Yes

2. **Our information shows about** __20__ **trucks per day access your facility. Is that correct?** ***If not, fill in correct volume.*** No, 7-8

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 48'

6. **What is the largest truck operating at your facility?** Semitrailer 48'

7. **What type of freight or commodity is shipped, and is incoming and outgoing freight different?** ***(one may be an empty truck)***
   In: Steel and fittings
   Out: Steel tubing and machine components

8. **Does the truck traffic peak at specific times of the day? (e.g., out in the morning and return in the afternoon)** 3:30 - 5:30 p.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*
US 25	4-6 p.m.

10. **Where do trucks at your facility go to and come from? (This may be an interstate, cities, general direction-N,S,E,W)** To: Lexington, Berea
    From: Lexington, Cincinnati

11. **Do you have any other problems or concerns along the route you would like us to consider?**

12. **Would you like a copy of the final report (roadway/route evaluation ???)** Yes

NOTES/COMMENTS:

PHONE SURVEY RESULTS

Facility ID	*Facility Name*	*Location / City*	*County*	*ADD*
2678	South Park Tool & Die	Richmond	Madison	Bluegrass

Contact Name	*Title*	*Phone*	*Fax*
Pete Ray		606-624-5700	606-624-3311

1. **Is the location of your facility on the map correct?** Yes

2. **Our information shows about** __20__ **trucks per day access your facility. Is that correct?** ***If not, fill in correct volume.*** No, 4

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?** Single Unit 14' flatbed

6. **What is the largest truck operating at your facility?** Semitrailer 48'

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)**

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*
US 25	All day
KY 876	Afternoon rush hour

10. **Where do trucks at your facility go to and come from? (This may be an interstate, cities, general direction-N,S,E,W)** Lexington, Frankfort, and occasionally Berea

11. **Do you have any other problems or concerns along the route you would like us to consider?**

12. **Would you like a copy of the final report (roadway/route evaluation ???)** Yes

NOTES/COMMENTS:

PHONE SURVEY RESULTS

Facility ID	*Facility Name*	*Location / City*	*County*	*ADD*
2678	P-K Tool	Richmond	Madison	Bluegrass

Contact Name	*Title*	*Phone*	*Fax*
Tim Sowder	Production Manager	606-623-0300	606-623-0321

1. **Is the location of your facility on the map correct?** Yes

2. **Our information shows about** 20 **trucks per day access your facility. Is that correct?** ***If not, fill in correct volume.*** No, 5-6

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 48'

6. **What is the largest truck operating at your facility?** Semitrailer 48'

7. **What type of freight or commodity is shipped, and is incoming and outgoing freight different?** ***(one may be an empty truck)***
   In: Metal stamping

8. **Does the truck traffic peak at specific times of the day? (e.g., out in the morning and return in the afternoon)**

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*
US 25 & Duncannon	4:30 - 5:30 p.m.
KY 876 & US 25 (turn lane)	Late afternoon

10. **Where do trucks at your facility go to and come from? (This may be an interstate, cities, general direction-N,S,E,W)** I-75 (north and south), Winchester

11. **Do you have any other problems or concerns along the route you would like us to consider?**

12. **Would you like a copy of the final report (roadway/route evaluation ???)** Yes

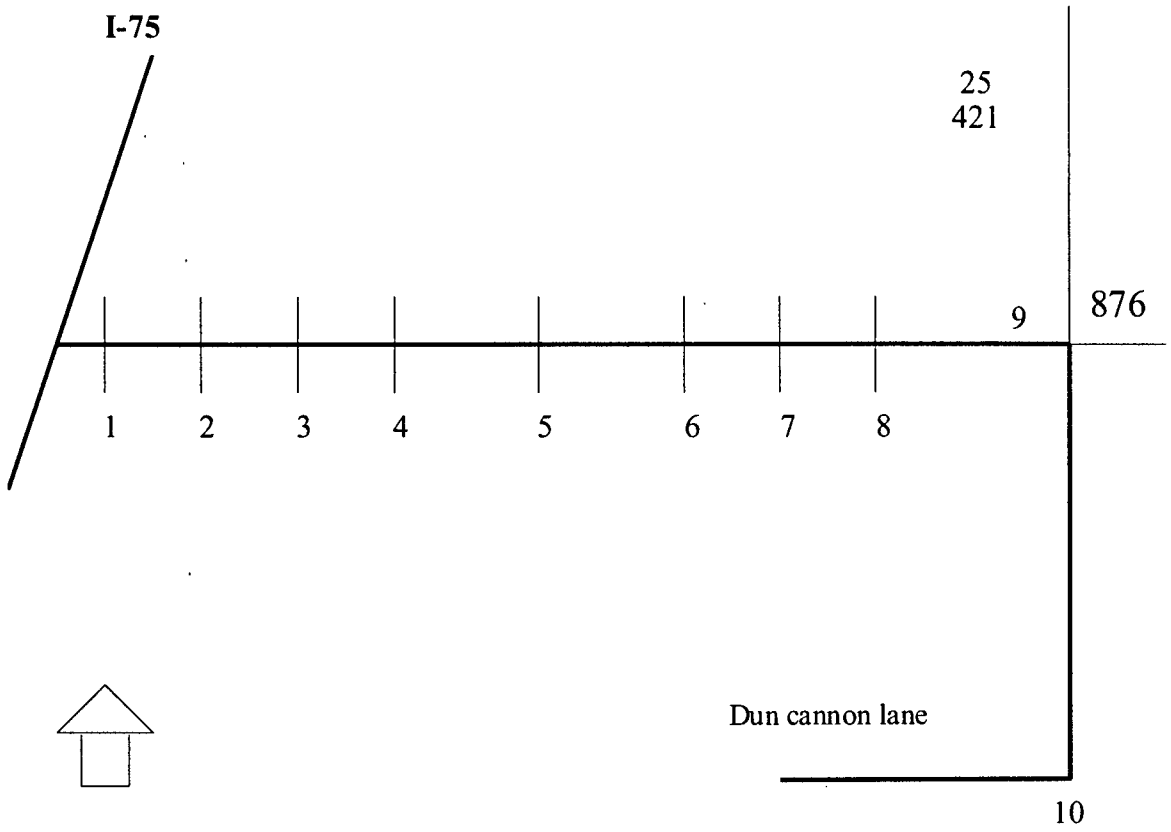
NOTES/COMMENTS:

Appendix C: Traffic Counts, Intersection Layout and Travel Time Data

Travel Time Data

East-bound		West-bound	
Pass	Time (min)	Pass	Time (min)
1	6:37.85	1	9:35.38
2	8:49.53	2	9:07.44
3	7:02.46	3	9:48.32
4	7:41.43	4	8:36.07
5	8:11.91	5	9:43.59
6	7:04.38	6	7:20.84
Avg (sec)	454.59		541.94

NETWORK DIAGRAM



Intersecton	East/West	North/South
1	Kilarney Lane	KY 876
2	Wayne Drive	KY 876
3	Brown Road	KY 876
4	KY 52	KY 876
5	(Enters State Police Barracks)	KY 876
6	Kit Carson Drive	KY 876
7	N/A	KY 876
8	Boggs Lane	KY 876 (Eastern Bypass)
9	US 25 (421)	KY 876 (Eastern Bypass)
10	Duncannon	US 25 (421)