August 2002

LaGrange Bypass *Scoping Study*

Summary of Findings and Recommendations

Prepared for:

KIPDA
Kentuckiana Regional Planning and Development Agency

OLDHAM COUNTY KENTUCKY
Oldham County Fiscal Court

Kentucky Transportation Cabinet

KENTUCKY TRANSPORTATION CABINET

EDUCATION PAYS

LaGrange, Kentucky
"We're on track"

Prepared by:

PB PARSONS BRINCKERHOFF
100 YEARS

LAGRANGE BYPASS SCOPING STUDY

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Parsons Brinckerhoff Quade & Douglas, Inc.

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100 YEARS

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Preparation of this report has been financed through KIPDA, the Federal Highway Administration, the Kentucky Transportation Cabinet, and the Indiana Department of Transportation. This financial assistance notwithstanding, the contents of this report do not necessarily reflect the official views of policies of the funding agencies. Accuracy of the information presented herein is the responsibility of the "Contractor".

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1.0 INTRODUCTION

1.1 Study Purpose

The Kentuckiana Regional Planning and Development Agency (KIPDA), in cooperation with the Oldham County Fiscal Court, City of LaGrange, and the Kentucky Transportation Cabinet (KYTC), performed this technical transportation study to explore multimodal solutions to transportation and traffic problems associated with access, mobility, safety, congestion and other issues in LaGrange, Kentucky. Specifically, the project sought to:

- Identify and analyze the access, mobility, safety, congestion and other issues in the study area;

- Develop a set of alternate multimodal solutions including: No-Build, Transportation Systems Management (TSM), bicycle, pedestrian, transit and various other roadway options, perhaps including a bypass;

- Assess the effectiveness and feasibility of implementing one or more alternates, and

- Recommend a preferred alternate or package of alternates for future implementation, including phasing of construction and possible funding sources.

This report represents the findings and conclusions of the study based upon input from a variety of sources including: various public stakeholders, the Project Work Group, the Project Team and the technical analysis and recommendations of the Consultant. The information, analysis, conclusions and recommendations are all being used to identify and understand the existing transportation problems and issues in the study area, as well as to develop, analyze, recommend and ultimately plan for and prioritize a wide array of multimodal improvement alternates.

This report is being submitted to the Kentuckiana Regional Planning and Development Agency (KIPDA), Oldham County, City of LaGrange, Kentucky Transportation Cabinet (KYTC), as well as the Project Work Group and citizens of Oldham County and the City of LaGrange.

1.2 Study Area

The 4th Class city of LaGrange is the county seat of Oldham County and is located in the north-central area of Kentucky east of Louisville. LaGrange, or "*the farm*", was formed in 1827 and is named for the French estate of the Revolutionary War hero Marquis de Lafayette.

The study area for the project is bounded by and adjacent to: US 42 to the north, KY 53 to the east, KY 22 to the south, and KY 393 to the west all in the vicinity of LaGrange, KY. Figure 1.1 illustrates the project study area.

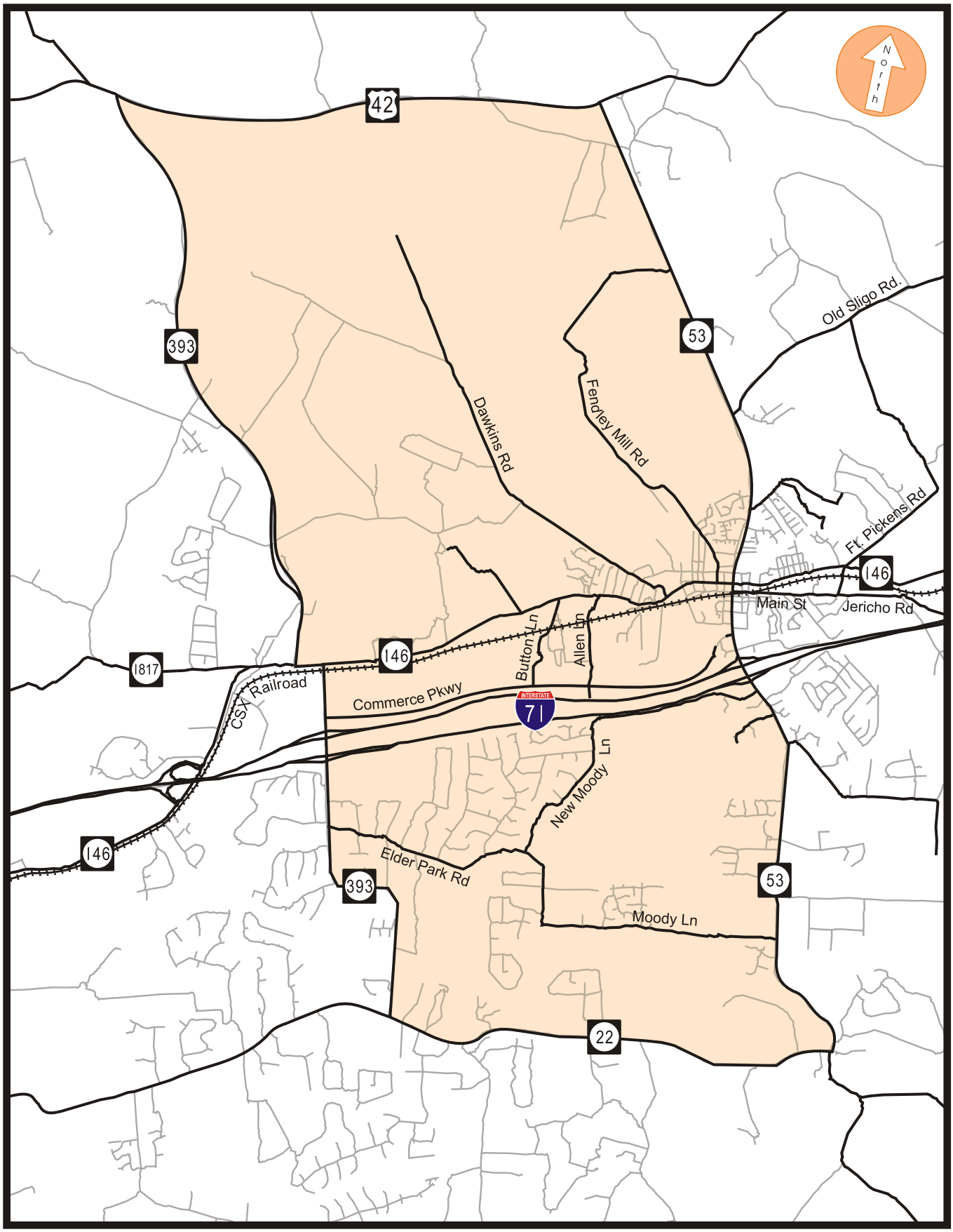

North
42
393
53
146
1817
71
INTERSTATE
Dawkins Rd
Fendley Mill Rd
Old Sligo Rd.
Ft. Pickens Rd
Main St
Jericho Rd
Button Ln
Allen Ln
CSX Railroad
Commerce Pkwy
New Moody Ln
Elder Park Rd
Moody Ln
22

Figure 1.1

2.0 GOALS AND OBJECTIVES

The study's adopted goals and objectives, which were based on input at the initial public meeting, discussions with the Project Work Group and Project Team, and initial stakeholder interviews, were developed to guide the LaGrange Bypass Scoping Study project. The goals and objectives were also used in order to assist the Project Team, Project Workgroup and others in the development and evaluation of study alternatives, by focusing on key concerns and issues. For each goal, a set of specific objectives was also developed. The adopted goals and objectives for the study included:

Goal 1

Reduce Existing and Future Traffic Congestion and Improve Vehicle and Pedestrian Mobility.

Objectives

- Propose cost-effective operational and/or physical improvements that will facilitate traffic flows, improve connectivity, and reduce delay, congestion and travel time on study area roadways.
- Propose cost-effective improvements that will enhance pedestrian mobility in the project study area.
- Propose improvements that address the need for improved emergency vehicle access and mobility in the study area.
- Propose improvements to expand the range of transportation modes and services available in the study area (i.e., carpool/vanpool, transit, bicycle and pedestrian).

Goal 2

Enhance Vehicular and Pedestrian Safety

Objectives

- Propose improvements that will enhance traffic safety on existing and proposed roadways and at critical study intersections.
- Propose improvements that will provide safe facilities for pedestrians and cyclists within the study area.

- Propose improvements that will help the transportation system operate more safely and efficiently and respond to and recover from incidents in a timely manner.

Goal 3

Support Future Development and Community Growth

Objectives

- Develop improvements that will enhance access to development sites targeted for future growth in the study area.

- Develop improvements that are compatible with land use, zoning, comprehensive plans and other guidance documents that help shape the urban landscape.

Goal 4

Maintain and Improve Community Character and Quality of Life

Objectives

- Preserve culturally and / or historically valuable community resources as well as the character of residential neighborhoods and commercial areas.

- Maintain and improve environmental quality (air, water, and land) in the study area and in the City and County at-large.

These goals and objectives guided the development of and ultimately the evaluation of alternates for the project. The feasibility of the alternates in meeting one or more of the goals and objectives, and how well they accomplish this is ultimately the focus of the analysis.

3.0 SOCIOECONOMIC PROFILE

3.1 Population

For much of its history, LaGrange was primarily a rural agricultural community. Two early events that laid the foundation for the future development of LaGrange included the arrival of a freight railroad line in 1851, and the extension of Louisville's Interurban passenger rail line to the city in 1907. These events strengthened LaGrange's position as an economic and social hub to Louisville, a characteristic that has continued to this day.

More recently, LaGrange, along with the rest of Oldham County, has experienced a rapid rate of growth compared to the rest of the Commonwealth of Kentucky. Table 3.1 illustrates Oldham County's position as one of the fastest growing counties in the state based on percentage increases in population.

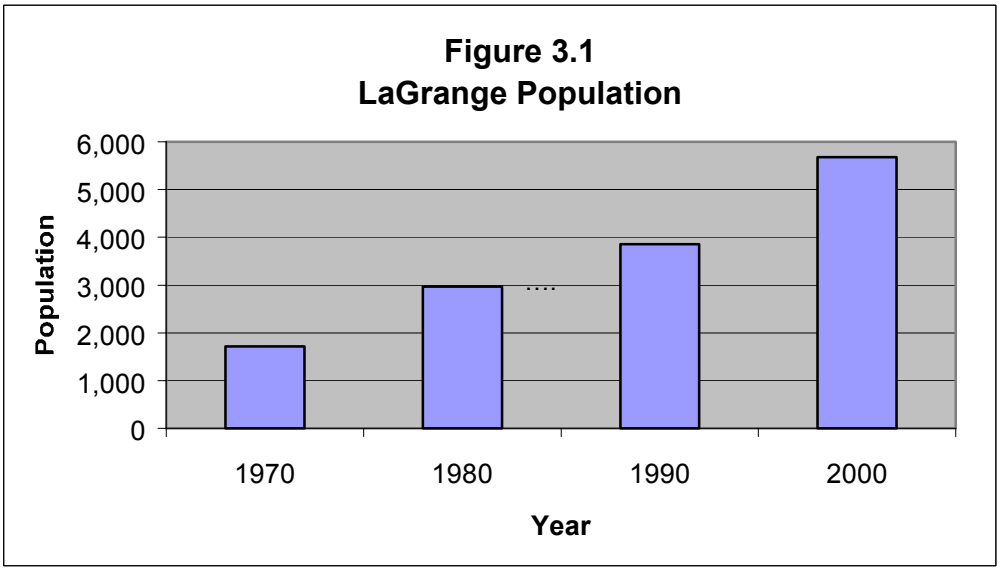
Table 3.1
Kentucky's Fastest Growing Counties
1970 – 2000

1970 – 1980	**%**	**1980-1990**	**%**	***1990 – 2000***	**%**
1. Oldham	89.2	1. Boone	25.6	***1. Oldham***	34.6
2. Bullitt	66.1	***2. Oldham***	19.6	2. Warren	32.8
3. Jessamine	50.0	3. Grant	18.2	3. Laurel	27.9
4. Martin	48.5	4. Jessamine	16.6	4. Scott	27.5
5. Powell	44.1	5. Anderson	15.9	5. Anderson	27.4

Source: Kentucky State Data Center, University of Louisville

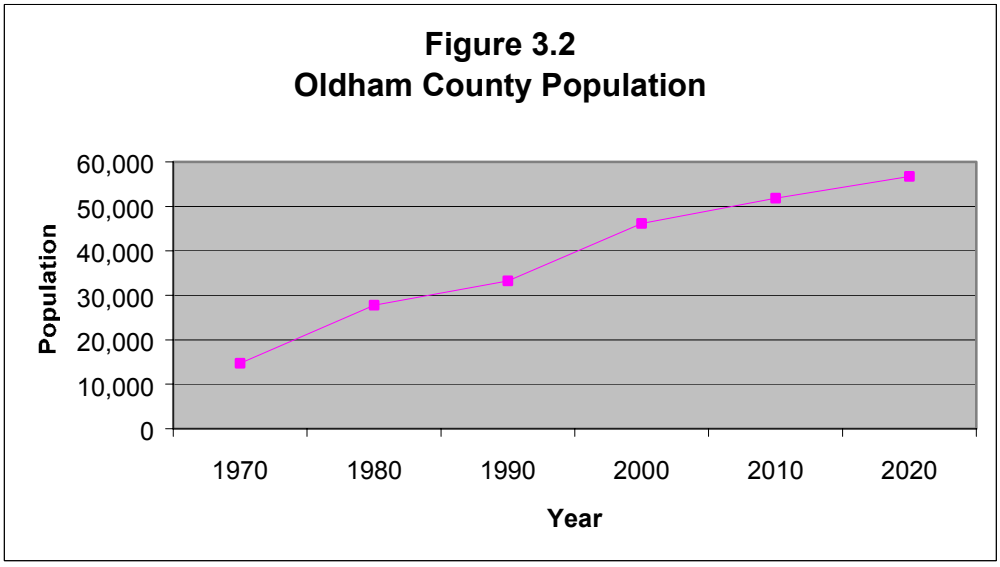
Until the 1970s, the population of LaGrange grew at a slow to moderate rate. During the 1970s however, the population of LaGrange nearly doubled after the completion of Interstate 71 from Louisville. In addition, the 1975 Jefferson County court-ordered school system desegregation decision sparked some in-migration to LaGrange and the rest of Oldham County. Figure 3.2 illustrates the level of population growth in LaGrange since 1970, and Figure 3.3 presents population growth with Oldham County.

Figure 3.1
LaGrange Population



Source: U.S. Department of Commerce, Bureau of Census

Figure 3.2
Oldham County Population



Source: Kentucky State Data Center, University of Louisville

Accordingly, with the historic and recent population increases, the total number of housing units in LaGrange and Oldham County also increased. Table 3.2 displays the overall rise in total housing units between 1970 and 2000 in comparison with the county and the Louisville-Southern Indiana Metropolitan Statistical Area.

Table 3.2
Total Housing Units 1970 - 2000

	1970	1980	1990	2000
LaGrange	627	1,127	1,522	2,330
% change		79.8	35.1	53.1
Oldham County	4,248	8,694	11,202	15,541
% change		104.7	28.9	38.7
Louisville-IN MSA	226,493	288,288	310,075	344,536
% change		27.3	7.6	11.1

Source: Kentucky State Data Center, University of Louisville

(Note: The Louisville, KY – IN Metropolitan Statistical Area (MSA) in 1970 included the following counties: Clark, Floyd, and Jefferson Counties. Additions in subsequent census years are as follows: 1980 - + Oldham and Bullitt Counties, 1990 - + Harrison and Shelby Counties, 2000 - + Scott County and – Shelby County.)

3.2 Economics

As a result of the growth in population since the 1970s, LaGrange, as well as the rest of Oldham County has experienced a continuing expansion of their respective economies. While there has recently been a relative decline in manufacturing and contract construction, there have been offsetting increases in retail trade and service industries. From 1990 to 1998, Oldham County witnessed a 34.1% economic growth rate, placing it among the top counties in the region. The county per capita income of $29,802 in 1998 ranked Oldham County number one out of the twenty-three counties that comprise the Louisville Economic Area (LEA).

3.3 Commuting

The commuting patterns of the citizens of Oldham County demonstrate the close economic and social ties that exist with Louisville and the surrounding areas. In 1997, only 19.9% of Oldham County commuters stayed within the county, while 71.6% regularly commuted to Jefferson County.

4.0 ROADWAY & TRANSPORTATION CHARACTERISTICS

4.1 Existing Study Area Roadways

The project study area is bordered by KY 53 to the east, KY 22 to the south, KY 393 to the west, and US 42 to the north. I-71, the main interstate linking Louisville and Cincinnati, runs roughly through the middle of the study area. Principal roadways within the study area include those mentioned above as well as: KY 146 (Jefferson Street), Dawkins Road (KY 2854), New Moody Lane (KY 2857), Moody Lane (KY 2856), Elder Park Road (KY 2856), Main Street (KY 2853 east of Cedar), and Old Sligo Road (KY 3223). Other roads in the vicinity that are important for this study include Allen Lane, Button Lane, and Fendley Mill Road. Each of the primary study area roadways is discussed briefly below. Figure 4.1 shows the study area roadways with average daily traffic (ADT) volumes. Table 4.1 provides a summary of the important characteristics for the primary roadways.

Interstate 71 is the major freeway serving the study area. I-71 is currently a four lane divided interstate highway with interchanges at KY 146, KY 393, and KY 53. The posted speed limit on I-71 is 65 miles per hour (mph). According to data provided by the KYTC, Year 2001 average daily traffic volumes are approximately 45,000 southwest of the KY 53 interchange.

KY 53 is the major north-south route through LaGrange. In the northern portion of the study area KY 53 is a two-lane facility. In LaGrange it widens from two to four lanes. South of LaGrange it remains a four-lane facility until it reaches New Moody Lane. South of New Moody Lane it returns into a two-lane roadway. The posted speed limit ranges from 35 in town to 55 mph in the rural areas. There are currently seven signalized intersections on KY 53 between the LaGrange Square shopping center and the Kroger shopping center. There are two all way STOP intersections in downtown LaGrange one at KY 53 and Main Street and the other at KY 53 and KY 146. Average daily traffic on KY 53 ranges from a low of 2,200 south of US 42 to a high of 29,400 in the vicinity of I-71.

KY 22 is a two-lane collector running east and west along the southern border of the study area. The posted speed limit ranges from 35 to 55 mph. The average daily traffic on KY 22 ranges from 2,200 to 5,700.

KY 146 (Jefferson Street) is a two-lane minor arterial running east and west through the study area. Posted speeds range from 35 mph to 55 mph and the average daily traffic is approximately 9,100 just west of LaGrange. The CSX railroad runs parallel to and just south of KY 146 through the study area. KY 146 carries an increasing amount of traffic due to new development in the area. It also provides access to the Kentucky State Reformatory and the Oldham County Fairgrounds. KY 146 also has the potential to relieve traffic, especially for those vehicles heading to Louisville, when trains block the KY 53 and Main Street intersection.

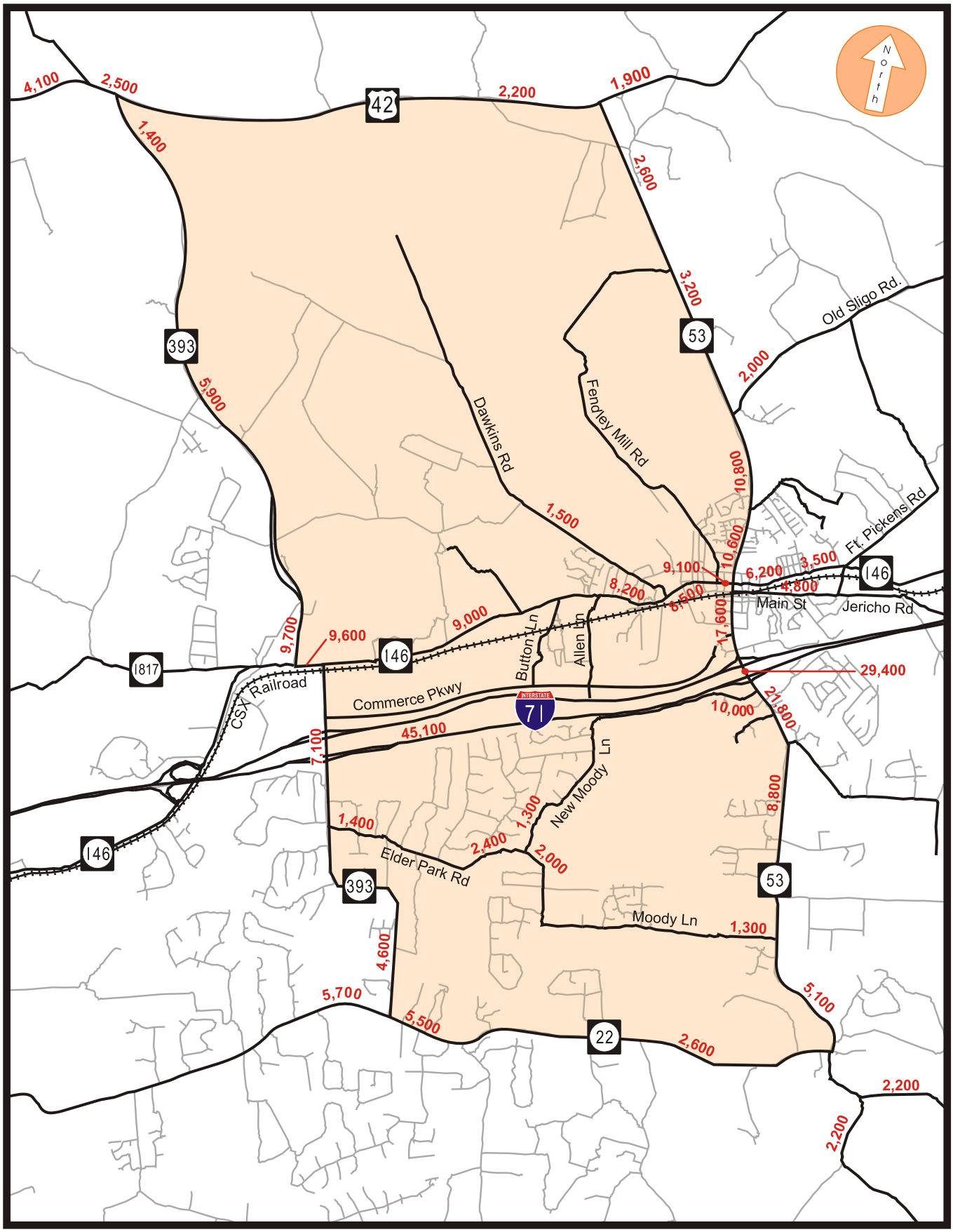


Figure 4.1

2001 Average Daily Traffic Volumes

Table 4.1
Summary of Study Area Roadway Characteristics

Roadway	Classification	Approx. ROW (ft)	No. of Lanes	Approx. Lane Widths (ft)	Posted Speed (mph)	Approx. Ave. Daily Traffic (ADT)	Comments
KY 22	Rural Major Collector	60	2	9-10	35-55	2,200 – 5,700	
US 42	Rural Major Collector	60	2	10	55	1,900 – 4,100	
KY 53 (First Avenue)	Rural Minor Arterial	40-80	2-4	9-12	25-55	2,200 – 29,400	
I-71	Rural Interstate	270-500	4	12	65	45,100	
KY 146 (Jefferson Street)	Rural Minor Arterial	50-60	2	10-12	35-55	3,500-9,600	
KY 393	Rural Maj/Min Collector	60	2	9-11	35-55	1,400 – 9,700	
Main St. (KY 2853 E. of Cedar)	Rural Local	50	2	10	35	4,800	On-street parking in town
Dawkins Road (KY 2854)	Rural Minor Collector	50	2	7-12	25-55	1,500	
Moody/Elder Park (KY 2856)	Rural Minor Collector	35-40	2	8-10	55	1,300 – 2,400	
New Moody Lane (KY 2857)	Rural Minor Collector	40	2	8-9	35-45	1,300 – 10,000	
Old Sligo Road (KY 3223)	Rural Minor Collector	60	2	10	35-55	2,000	

KY 393 is a two-lane collector running along the west edge of the study area. The posted speed limit is 55 mph, except near 146, where it is set at 35 mph. Traffic volumes range from 1,400 near US 42 to 9,700 near KY 146. KY 393 provides access to the Oldham County High School, Oldham County Police Department, and other community facilities including the Oldham County Convention / Aquatic Center. KY 393 intersects KY 146 at two "T" intersections causing traffic to make a left and then a right turn to remain on KY 393. Improvements to these intersections were proposed in the 1996 LaGrange Transportation Study. The KYTC is currently pursuing projects to upgrade KY 393 from KY 22 to north of KY 146 and is in various stages of project development.

US 42 is a two-lane rural collector running along the northern edge of the study area. It has a posted speed limit of 55 and an ADT of approximately 2,200 west of KY 53. US 42 is designated as a scenic byway.

Dawkins Road (KY 2854) is a two-lane road providing access from KY 146 north through a residential area to farmland and to the Luther Luckett Correctional Complex. The road has narrow lanes and limited shoulders. The average daily traffic volume is approximately 1,500 vehicles per day, and the posted speeds range from 25 mph to 55 mph.

New Moody Lane (KY 2857) is a two-lane collector running from KY 53 west to Moody Lane / Elder Park Road with approximate ADT of 10,000 near KY 53 and 1,300 in the residential areas. It provides access from the I-71 interchange to commercial developments (i.e. Wal-Mart), a hospital, a wastewater treatment plant, and west to residential areas south of I-71.

Moody Lane (KY 2856) and **Elder Park Road** (KY 2856) are two-lane collectors in the southern portion of the study area providing access to residential areas south of I-71. Average daily traffic volumes on these roadways range from 1,300 to 2,400.

Main Street (KY 2853 East of Cedar) is a two-lane road running east and west through downtown LaGrange. It has parking on both sides of the street on the bocks located adjacent to KY 53. The railroad tracks run down the center of Main Street through the downtown area. The KY 53 / Main Street intersection is a four-way STOP controlled intersection. The Main Street / Walnut Street intersection is a 3-way STOP controlled intersection.

Old Sligo Road (KY 3223) is a two-lane road providing access from KY 53 east to residential, farming, and undeveloped areas (including the L' Esprit development) east of the study area.

Allen Lane is a two-lane local road running from KY 146 south to the new Commerce Drive. It crosses the CSX railroad tracks at grade and provides access to developing industrial and commercial property in the Oldham County Business Park.

Button Lane provides access in a similar manner to Allen Lane. It also has an at-grade crossing with the CSX railroad line.

Commerce Parkway is a new two-lane collector road running from KY 53 west to KY 393. It is the major spine road providing access to (and through) the Oldham County Business Park. Most of the property along the road is currently undeveloped and existing traffic volumes on Commerce Parkway are relatively low. However, the roadway does experience some cut through traffic that use the route as an alternative to KY 146.

Fendley Mill Road runs from Third and Fourth Streets north into a rural residential area. It is a two-lane road with limited shoulders and poor geometry in certain locations.

4.2 Current Traffic Operations

4.2.1 Data Collection

To complete the existing traffic conditions analysis, data was gathered from a variety of sources including new field data collection, office data collection, and previous studies. Average daily traffic data for all of the state maintained roadways was supplied by the KYTC from their count program database. To augment this information, Consultant and KIPDA staff collected new turning movement counts in the field for the signalized intersections on KY 53. All of the signalized intersections on KY 53 from New Moody Lane north to the LaGrange Square Shopping Center were counted as well as the KY 53/KY 146 intersection.

The peak hour counts were conducted on typical weekdays in November 2001. Prior to the field data collection, the peak periods were defined using hourly traffic count data. The peak periods were defined as approximately 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. Figure 4.2 shows the 2001 peak hour turning movement counts. The turning movement counts and average daily traffic counts were then employed to develop estimates for the intersection design hourly volumes (DHVs). The theoretical 30th highest hour was used as the design hour for these estimates as discussed in the methodology section.

Roadway and intersection geometry data was collected in the field in October 2001. The current intersection lane assignments are illustrated in Figure 4.3. Additional roadway characteristic data was obtained through the KYTC Highway Information System. Signal timing data was provided by the KYTC District 5 - Traffic Division.

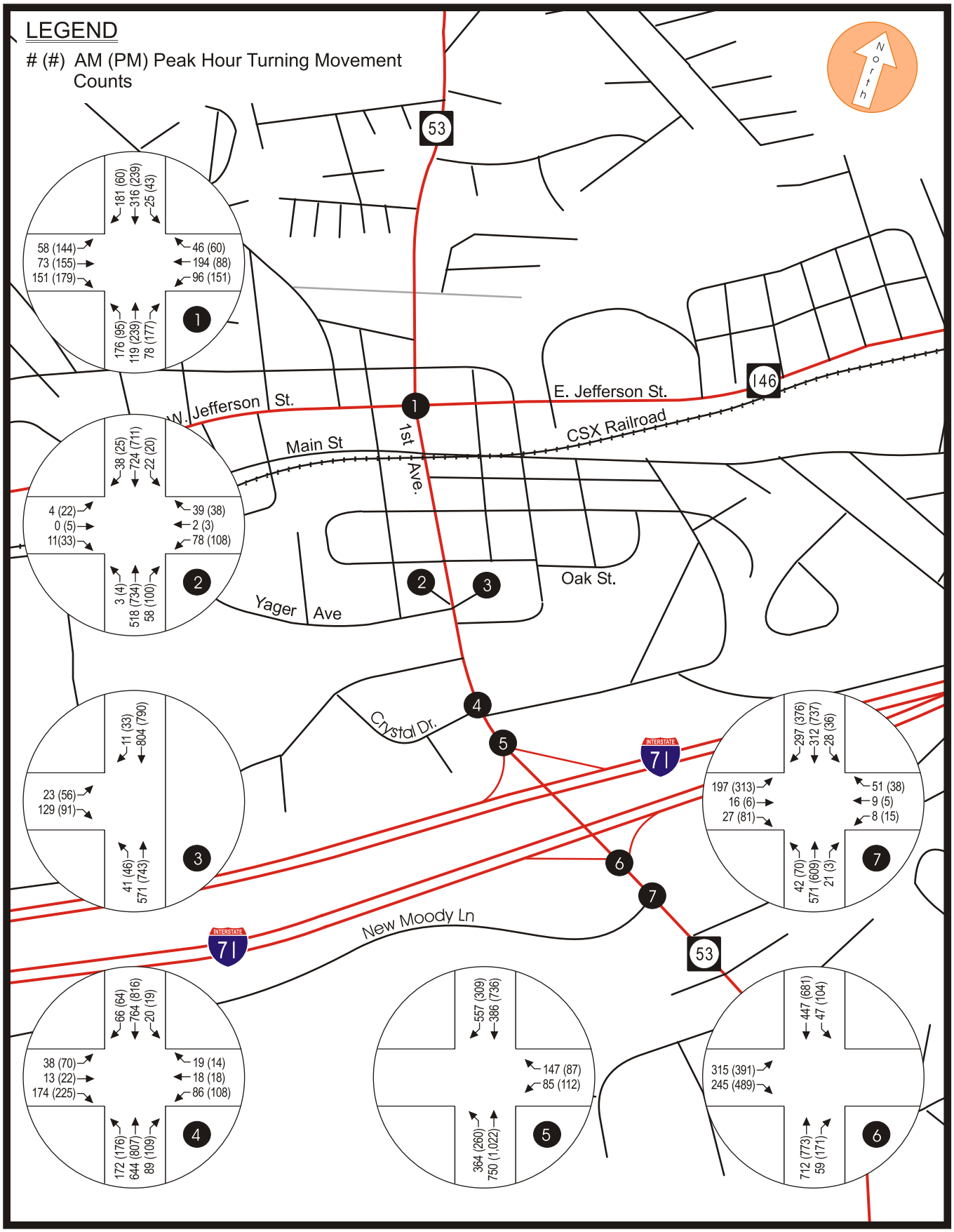

LEGEND
(#) AM (PM) Peak Hour Turning Movement Counts
North
53
146
W. Jefferson St.
E. Jefferson St.
Main St
1st Ave.
CSX Railroad
Yager Ave
Oak St.
Crystal Dr.
New Moody Ln
INTERSTATE 71
181 (60)
316 (239)
25 (43)
58 (144)
73 (155)
151 (179)
46 (60)
194 (88)
96 (151)
176 (95)
119 (239)
78 (177)
38 (25)
724 (711)
22 (20)
4 (22)
0 (5)
11(33)
39 (38)
2 (3)
78 (108)
3 (4)
518 (734)
58 (100)
11 (33)
804 (790)
23 (56)
129 (91)
41 (46)
571 (743)
297 (376)
312 (737)
28 (36)
197 (313)
16 (6)
27 (81)
51 (38)
9 (5)
8 (15)
42 (70)
571 (609)
21 (3)
66 (64)
764 (816)
20 (19)
38 (70)
13 (22)
174 (225)
19 (14)
18 (18)
86 (108)
172 (176)
644 (807)
89 (109)
557 (309)
386 (736)
147 (87)
85 (112)
364 (260)
750 (1,022)
447 (681)
47 (104)
315 (391)
245 (489)
712 (773)
59 (171)

Figure 4.2

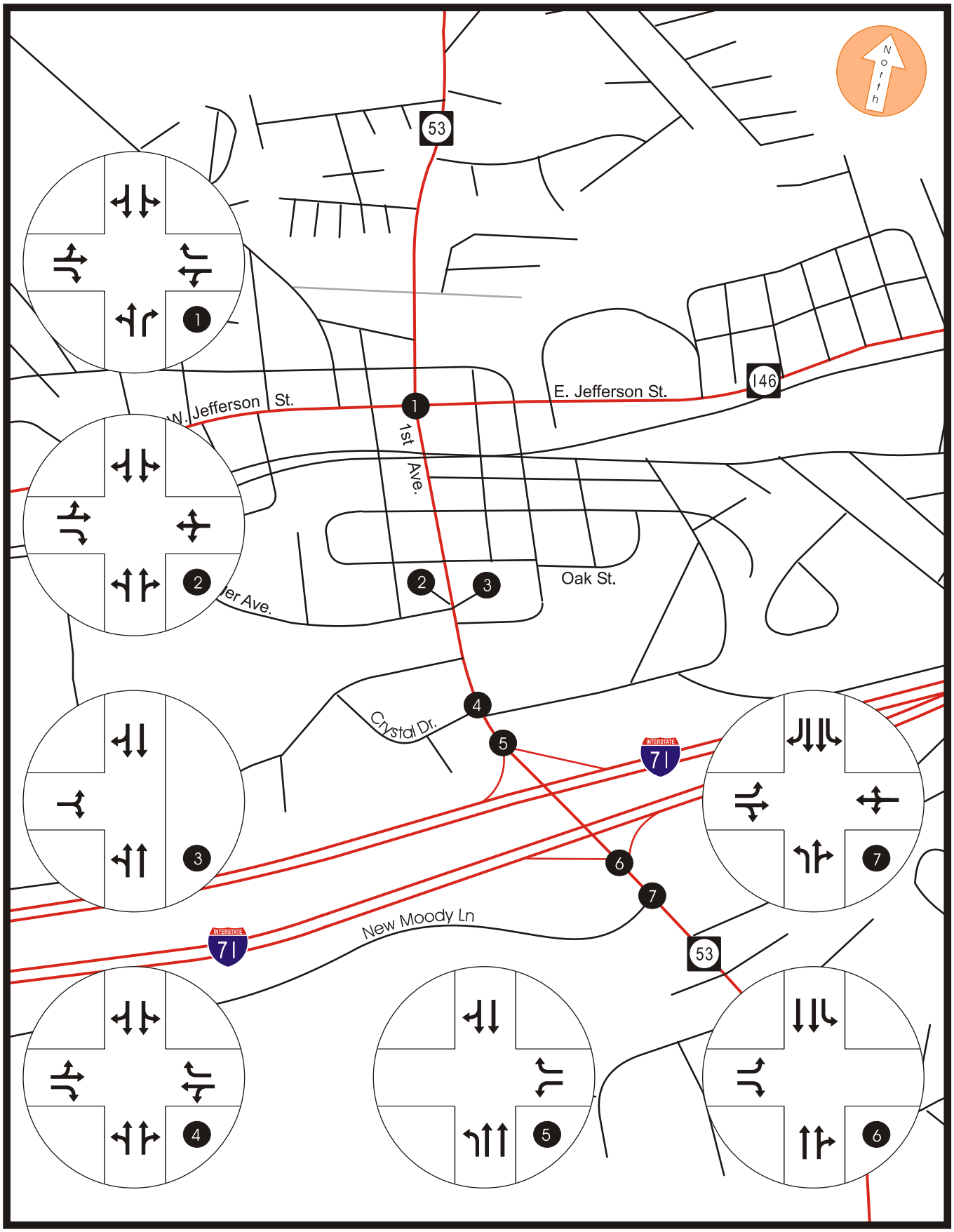

North
53
1
W. Jefferson St.
E. Jefferson St.
146
1st Ave.
2
3
Oak St.
er Ave.
Crystal Dr.
4
5
INTERSTATE
71
6
7
New Moody Ln
53
INTERSTATE
71
1
2
3
4
5
6
7

Figure 4.3

4.2.2 Analysis Methodology

Traffic Volumes

The traffic analysis evaluated the study intersections during both the AM and PM *average peak traffic conditions* and the projected AM and PM *design hour traffic conditions*. The average peak traffic conditions were defined as the typical recurring weekday peak periods. The unadjusted weekday traffic counts conducted for this study were used to represent the average peak periods.

The design hour traffic volume in transportation engineering is normally defined as the 30th highest hour volume of the year (30HV)[1]. This is the hourly volume of traffic only exceeded by 29 other hours over the course of the year. To determine the 30HV for the study intersections, the turning movement counts were factored up. The factor was calculated by comparing the count volumes with theoretical design hour volumes for KY 53. The theoretical design hour volumes were derived by multiplying the 2001 ADT volumes by a factor representing the 30HV as a percent of ADT (also known as the K-Factor). The K-Factor employed was developed by the KYTC based on data from roads with the same classification as KY 53 (Rural Minor Arterials). K-Factors were taken from Traffic Forecasting Report 2000, Division of Multimodal Programs, Kentucky Transportation Cabinet, September 2000 (Table 3A). Figure 4.4 shows the 2001 estimated AM and PM design hour traffic volumes A similar process was used to develop design hour volumes for other study area roadways.

Intersection Analysis

For this analysis the standard Highway Capacity Manual (HCM) intersection analysis method was used to assess the AM and PM peak hour traffic operating conditions for both the average peak and design hour. For each study intersection, average vehicle delays were calculated as well as the resulting Levels of Service (LOS). The Synchro software package was employed to complete the HCM calculations. Synchro implements the 2000 Highway Capacity Software program method.

Level of Service (LOS) is a qualitative measure of expected traffic conflicts, delay, and congestion. Levels of service are described according to a letter rating system ranging from LOS A (free flow, minimal or no delays - best) to LOS F (stop and go conditions, very long delays - worst). For intersections the Highway Capacity Manual (2000) defines levels of service based on the average delay due to signal or STOP control as shown in Table 4.2.

[1] A Policy on Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials, Washington, D.C., 1990, pg. 54.

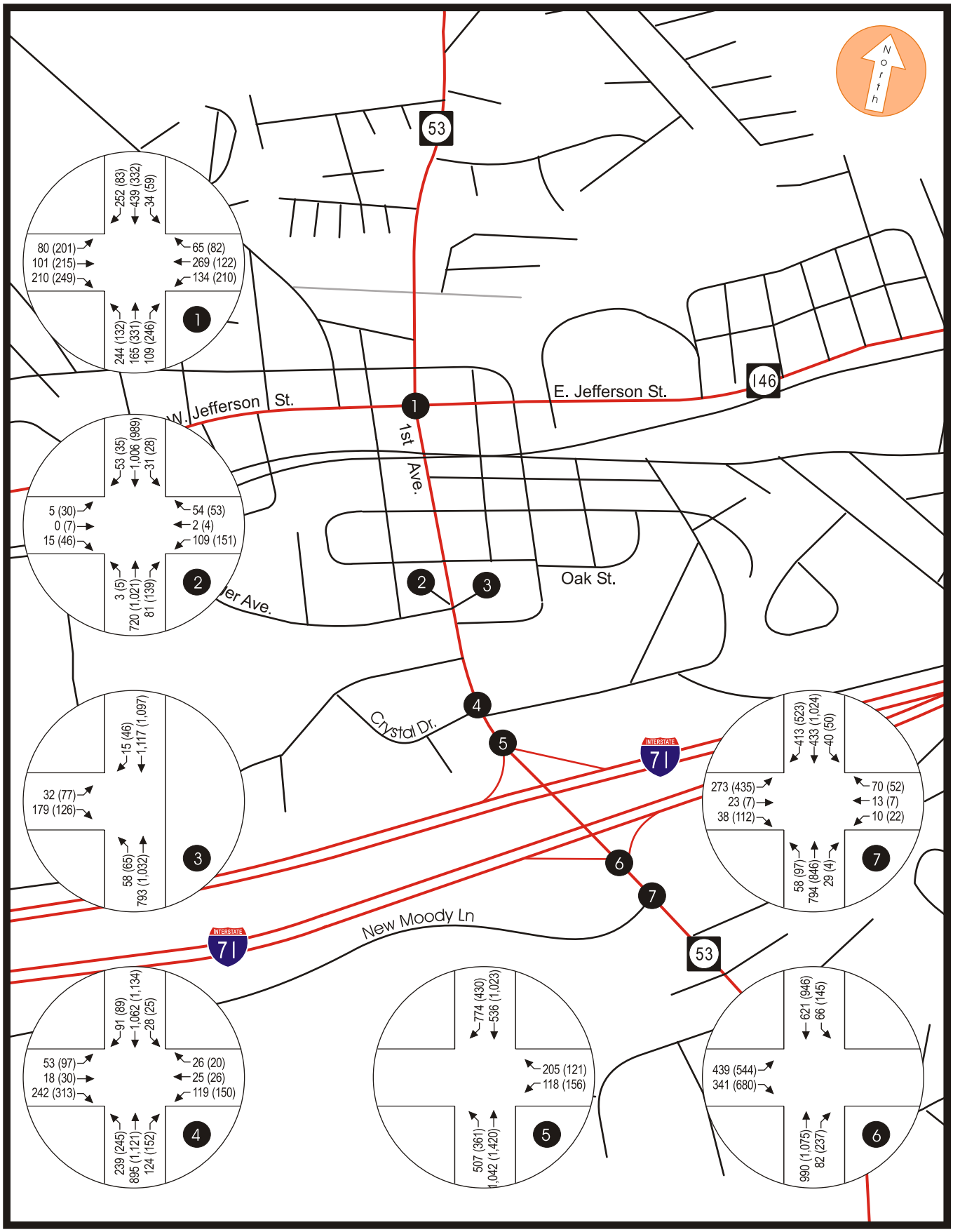

North
53
146
E. Jefferson St.
W. Jefferson St.
1st Ave.
Oak St.
Crystal Dr.
New Moody Ln
INTERSTATE 71
80 (201)
101 (215)
210 (249)
252 (83)
439 (332)
34 (59)
65 (82)
269 (122)
134 (210)
244 (132)
165 (331)
109 (246)
1
5 (30)
0 (7)
15 (46)
53 (35)
1,006 (989)
31 (28)
54 (53)
2 (4)
109 (151)
3 (5)
720 (1,021)
81 (139)
2
3
15 (46)
1,117 (1,097)
32 (77)
179 (126)
58 (65)
793 (1,032)
4
5
6
7
413 (523)
433 (1,024)
40 (50)
273 (435)
23 (7)
38 (112)
70 (52)
13 (7)
10 (22)
58 (97)
794 (846)
29 (4)
91 (89)
1,062 (1,134)
28 (25)
53 (97)
18 (30)
242 (313)
26 (20)
25 (26)
119 (150)
239 (245)
895 (1,121)
124 (152)
774 (430)
536 (1,023)
205 (121)
118 (156)
507 (361)
1,042 (1,420)
621 (946)
66 (145)
439 (544)
341 (680)
990 (1,075)
82 (237)

Figure 4.4

Table 4.2: LOS Criteria for Intersections

LOS	Signalized Intersections Control Delay per Vehicle (s/veh)	Unsignalized Intersections Control Delay per Vehicle (s/veh)
A	≤ 10	≤ 10
B	>10 - 20	>10 - 15
C	>20 - 35	>15 - 25
D	>35 - 55	>25 - 35
E	>55 - 80	>35 - 50
F	>80	>50

Source: Highway Capacity Manual (2000)

For intersections, LOS C is the acceptable threshold in rural areas. LOS C was selected by Oldham County to be the desirable threshold for traffic operations in the LaGrange study area. Operations below this threshold are noted as unacceptable and warrant improvement. LOS C corresponds to ≤ 35 seconds of delay per vehicle at a signalized intersection and ≤ 25 seconds of delay at an unsignalized intersection. (Refer to the Highway Capacity Manual published by the Transportation Research Board for more specific information.)

Rural Two-Lane Road Analysis

A traffic operations analysis was prepared for rural two-lane roads in the study area. The examination was conducted at a general planning level and employed estimated 30HV volumes. The Highway Capacity Software two-lane road analysis package was used. This is based on the 2000 Highway Capacity Manual (HCM Chapter 20) methodology. For this method, there are two classes of roadways: Class I highways include higher speed arterials and daily commuter routes, Class II highways include lower speed collector roadways and roads primary designed to provide access. Driver expectations regarding speed and flow are important in determining a highway's class. The major arterials in the Lagrange study area are Class I highways, including KY 53, KY 146, KY 393, and KY 22. The local collector roadways such as Elder Park Road and Moody Lane could be classified as Class II highways.

Levels of Service for Class I highways are based on the estimated average travel speeds and percent time vehicles spend following other vehicles. Levels of Service for Class II highways are based only on the percent time spent following as shown in Table 4.3. Refer to the Highway Capacity Manual for more details.

Table 4.3: LOS Criteria for Two-Lane Highways

LOS	Class I Highways		Class II Highways
	Percent Time Spent Following	Average Travel Speed	Percent Time Spent Following
A	≤ 35	>55	≤ 40
B	>35 - 50	>50 – 55	>40 – 55
C	>50 - 65	>45 – 50	>55 – 70
D	>65 – 80	>40 - 45	>70 – 85
E	>80	≤40	>85
F	LOS F applies whenever the flow rate exceeds the capacity		

Source: Highway Capacity Manual (2000)

Again, LOS C was selected by Oldham County to be the desirable threshold for traffic operations in the LaGrange study area. Operations below this threshold are noted as unacceptable and warrant improvement. For Class I highways the LOS C threshold corresponds to an average travel speed of >45 miles per hour with ≤65 percent of the time spent following another vehicle. For Class II highways the LOS C threshold corresponds to ≤70 percent of the time spent following another vehicle. (Refer to the Highway Capacity Manual published by the Transportation Research Board for more specific information.)

4.2.3 Traffic Operating Conditions

The AM and PM peak hour traffic operating conditions at the seven critical study area intersections are presented in Table 4.2. The current operating conditions at all intersections are within the currently acceptable range (LOS C or better) during the average AM and PM peak hours with the exception of the KY 53 / KY 146 intersection. During the AM average peak hour this intersection falls to LOS D. (Note however, that the average delay is just above the 25-second threshold between LOS C and LOS D.)

Four intersections degrade to unacceptable conditions with the design hour traffic volumes. Figure 4.5 graphically illustrates the levels of service with the design hour volumes. The KY 53 / KY 146 intersection reaches failure conditions with delays of nearly three minutes for northbound through/left traffic during the PM Peak Hour. Average vehicle delay at the intersection is over one and a half minutes. The KY 53 / Crystal Drive intersection reaches LOS E during the PM Peak Hour with an average vehicle delay value of over one minute. The longest delays are experienced by northbound traffic due to the moderately high northbound left turn volume and the presence of a shared through / left turn-lane.

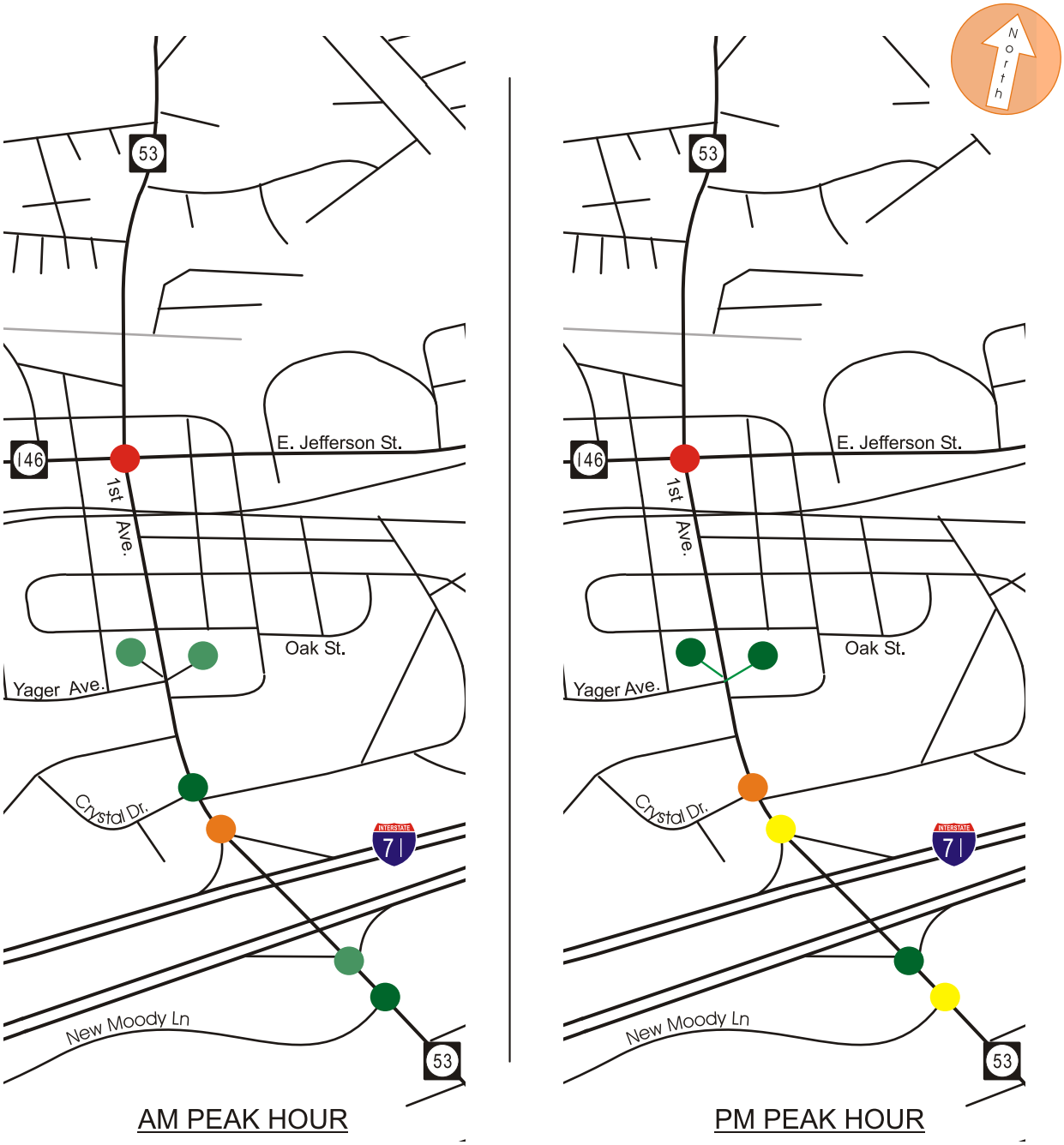


Figure 4.5

2001 Design Hour Levels of Service

The KY 53 / I-71 Southbound ramps intersection degrades to LOS E during the AM Peak Hour. This is due in large part to the volume of northbound left turning traffic. The through movements at the intersection operate at LOS A during this period, indicating that this condition could be improved through adjustments to the signal timing and/or phasing. In addition, the KY 53 / New Moody Lane intersection falls to LOS D during the PM peak hour.

Table 4.4
2001 Levels of Service

Int. No.	Intersection	Type	Peak Hour	Average Peak Hour		Design Hour	
				Ave. Delay	LOS	Ave. Delay	LOS
1	KY 53 (First Street) / KY 146 (Jefferson Street)	4-Way STOP	AM PM	25.3 23.6	D C	100.1 91.5	F F
2, 3	KY 53 / LaGrange Square Driveway / Yager Avenue	Signal	AM PM	12.6 16.6	B B	18.1 27.7	B C
4	KY 53 / Crystal Drive	Signal	AM PM	9.8 12.3	A B	32.1 69.9	C E
5	KY 53 / I-71 Southbound Ramps	Signal	AM PM	10.3 6.4	B A	65.9 37.9	E D
6	KY 53 / I-71 Northbound Ramps	Signal	AM PM	17.3 19.9	B B	19.8 29.5	B C
7	KY 53 / New Moody Lane	Signal	AM PM	16.1 19.1	B B	25.9 40.6	C D

Note: The intersections with unacceptable levels of service are shaded.

In addition to the critical intersection analysis, the traffic volumes on key two lane rural roadways were examined. This analysis focused on KY 146, KY 393, KY 53, and KY 22. Based on the estimated design hour traffic volumes, many of the study area roadways operate at acceptable levels of service during the design hour (30 HV). Again, LOS C was used as the threshold for acceptable traffic operations, therefore, the segments shaded in yellow (LOS D) are roadways that should be considered for improvements. The roadway segments in red operate at LOS E during the design hour and should be improved to achieve an acceptable level of service. Figure 4.6 illustrates the level of service results for the rural two-lane road analysis.

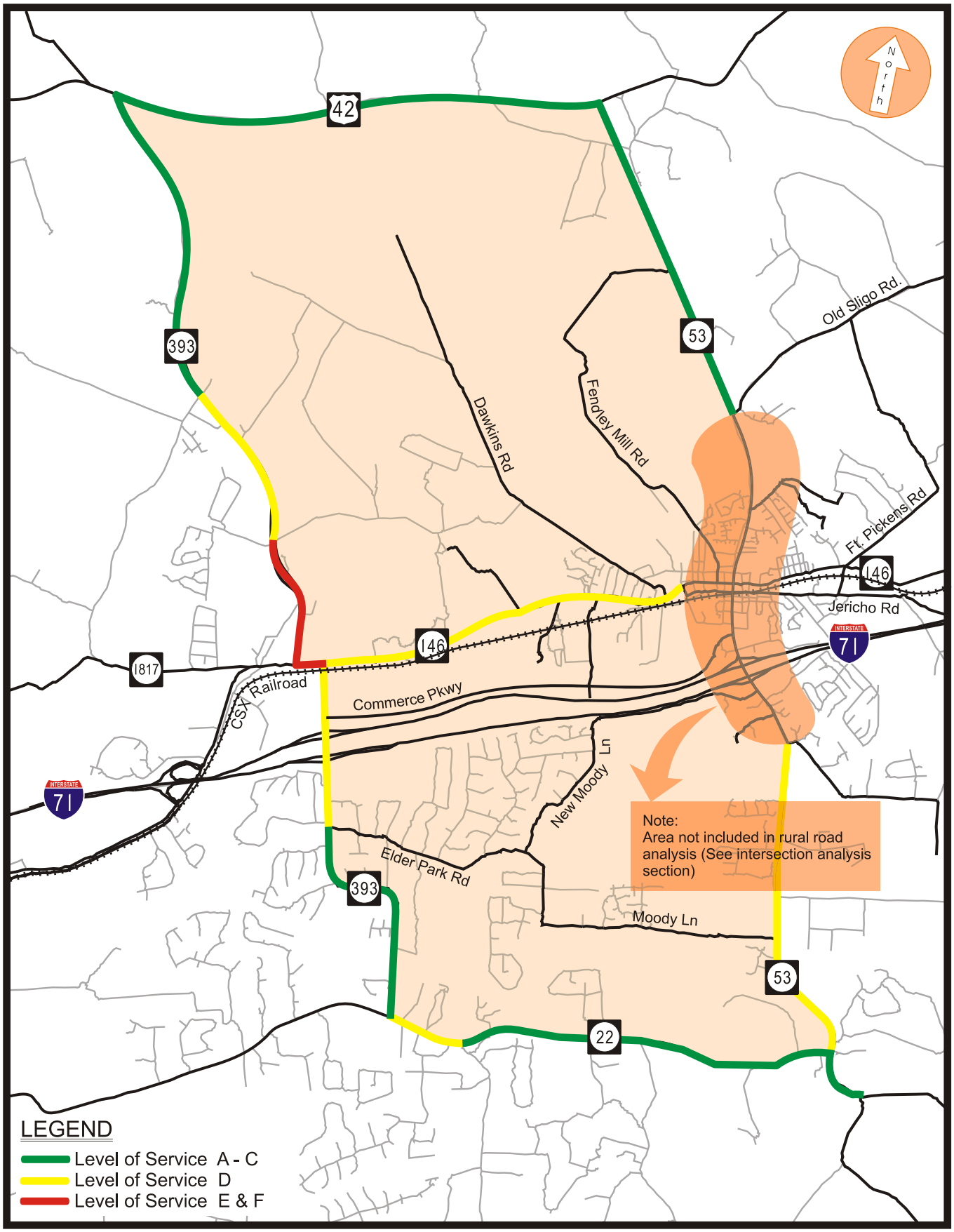

North
42
393
53
Old Sligo Rd.
Dawkins Rd
Fendley Mill Rd
Ft. Pickens Rd
146
Jericho Rd
INTERSTATE
71
1817
CSX Railroad
Commerce Pkwy
New Moody Ln
Note:
Area not included in rural road analysis (See intersection analysis section)
Elder Park Rd
Moody Ln
22
LEGEND
Level of Service A - C
Level of Service D
Level of Service E & F

Figure 4.6

Safety Analysis

An evaluation of roadway safety (including traffic safety and pedestrian/bicycle safety) was completed as part of the existing conditions analysis. This involved three primary elements: 1) Analysis of KYTC crash data 2) Public and stakeholder feedback 3) Roadway conditions review / field view.

4.2.4 Crash Data

Crash data was collected for the primary study area roadways. The data was aggregated into analysis segments and then crash rates were estimated for each segment. The crash rates were then examined in relation to statewide averages to determine possible high crash rate segments / locations. The method used in this analysis was the Rate Quality Control Method (RQCM)[2]. The method provided a determination of whether a segment's average rate was higher than the statewide average rate at a 90% confidence interval. Therefore, if a segment rate exceeds the RQCM threshold then it is worthy of closer examination for possible safety improvements. If the rate exceeds the statewide average but not the RQCM threshold, then there is less statistical certainty that a safety problem exists and the segment falls into a second category. If the rate was below the statewide average, then the segment was placed in a third category. The results of the analysis are summarized in Figure 4.7, which graphically highlights study area roadway segments with higher than average crash rates. The analysis indicates that portions of KY 53, KY 146, and KY 393 all have higher than average accident rates, including:

- KY 53 from New Moody Lane north through Downtown LaGrange;
- KY 53 from KY 1315 to KY 22;
- KY 146 through Downtown LaGrange;
- KY 146 in the vicinity of KY 393; and
- KY 393 from KY 22 to KY 146.

These findings were consistent with the roadway conditions review, field view and public input.

[2] Manual of Transportation Engineering Studies, Institute of Transportation Engineers, Washington, D.C., 2000. Page 205.

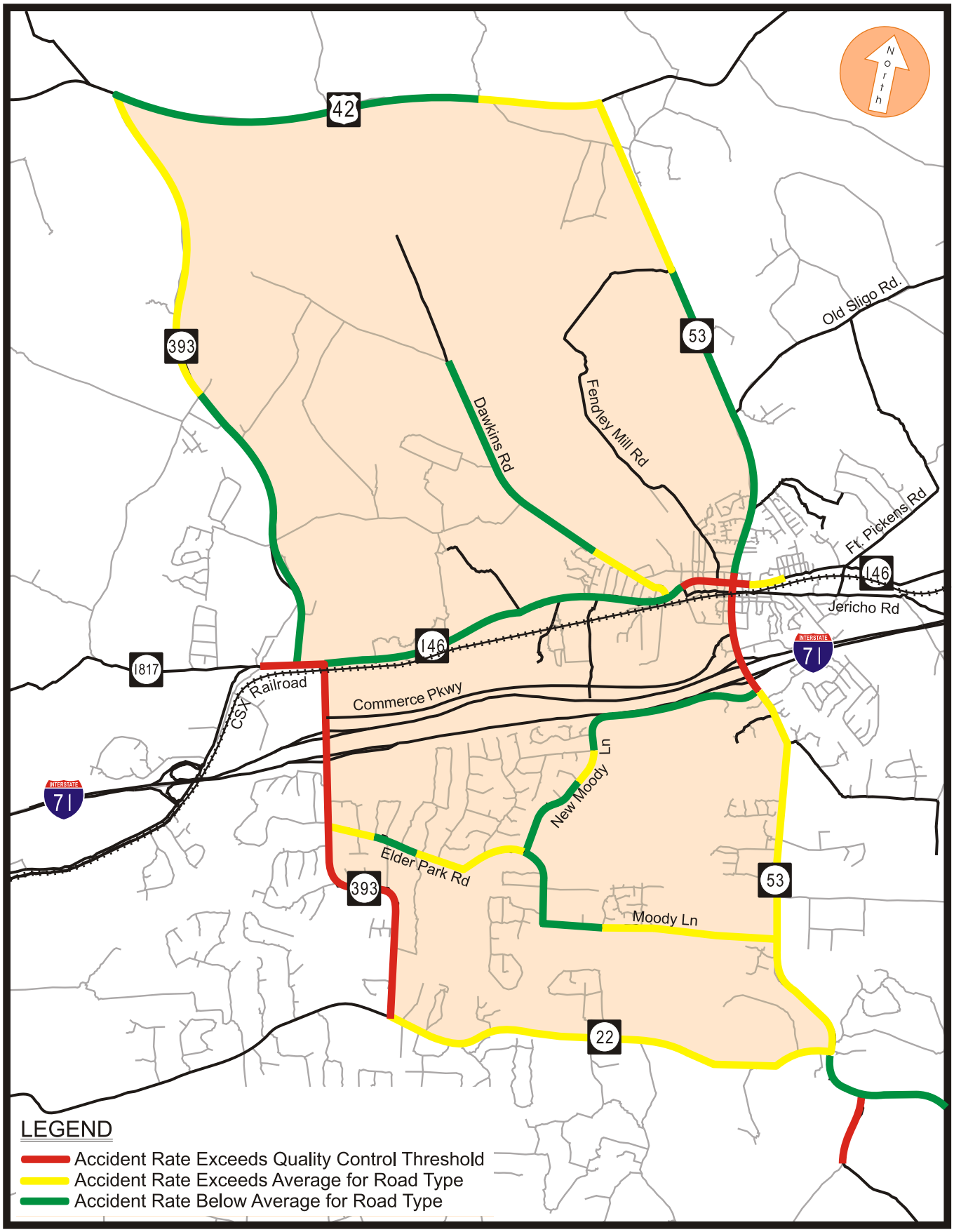

North
42
393
53
Old Sligo Rd.
Dawkins Rd
Fendley Mill Rd
Ft. Pickens Rd
146
Jericho Rd
INTERSTATE
71
1817
CSX Railroad
Commerce Pkwy
New Moody Ln
Elder Park Rd
Moody Ln
22
LEGEND
Accident Rate Exceeds Quality Control Threshold
Accident Rate Exceeds Average for Road Type
Accident Rate Below Average for Road Type

Figure 4.7

4.3 Roadway Conditions Review / Field View

Many of the roadways within the study area were constructed as two-lane rural roadways with limited lane widths and shoulders. For example, Moody Lane and New Moody Lane both have lane widths as low as 8 feet with minimal shoulders. Dawkins Road has lanes as narrow as 7 feet north of the currently developed areas. On more heavily traveled roadways such as KY 53, KY 146, and KY 393, lane widths range from 9 feet to 12 feet depending on the location. Shoulders range from as little as 1 foot to as wide as 10 feet. There are some highway segments with relatively high average daily traffic volumes and relatively narrow lane widths. One example is KY 146 between KY 393 and Dawkins Road where the lane widths are approximately 10 feet with 2-foot earth shoulders. At this location, the average daily traffic is over 8,000 vehicles per day. This has operational implications as discussed earlier, but it also has safety implications as well.

Roads with narrow shoulders have been shown to have higher accident rates than roads with wide shoulders. Similar findings have been reported in research regarding lane widths (though at least one study has indicated that lane widths of over 11 feet do not provide an added safety benefit).

Intersection alignment issues also present safety problems in at least two locations: KY 393 / KY 146 and KY 53 at the LaGrange Square Shopping Center. The intersection of KY 393 and KY 146 is comprised of two intersections offset a short distance. One of the intersections is signalized and is located near the Oldham County High School. The second is unsignalized and is located a very short distance from an at-grade railroad crossing. This section of KY 146 had a higher than average accident rate and is also viewed by many as a safety hazard.

The KYTC is currently planning improvements to KY 393 in this area. The improvements will include realigning the two intersections at one new signalized location and depressing the roadway to provide a grade separated railroad crossing. The old section of KY 393 will be tied into the new roadway to provide more local access to Oldham County High School and other public facilities.

The KY 53 intersections with Yager Avenue and the LaGrange Square Shopping Center operate as one offset intersection. This location is part of the KY 53 corridor that has a higher than average accident rate and is being studied for improvements. Other intersection safety issues include left turn treatments and signalization issues on KY 53 from New Moody Lane to KY 146. The lack of a left turn lane is hazardous given vehicle speeds and high volumes. The number of curb cuts only exacerbates this problem. Again, the need to look at this corridor is supported by the crash rate analysis. A number of accidents and near accidents were also observed on KY 53 or side street approaches during the traffic counts.

Pedestrian safety problems were observed both in downtown LaGrange as well as on KY 53 south of Crystal Drive. While the volume of pedestrians is relatively low, this

appears to be an issue of concern to at least a portion of the public and the lack of safe crossings and sidewalks is an issue for pedestrian safety and mobility.

4.4 Other Traffic Issues

Other traffic issues that are important in the study area include:

1. Train Operation Impacts in Downtown LaGrange: Train operations pose both capacity and safety issues. They also pose issues with mobility and may slow or impede emergency vehicle access and response times. Ways to mitigate the impact of train operations will be explored.

   The current rail line that runs through LaGrange is part of the CSX mainline to Louisville. Approximately 24 scheduled trains per day pass on the single track through LaGrange. Trains speeds are slow as there is a "head" restriction whereby operating speed of the locomotive is controlled at a maximum of 10 MPH as long as the locomotive (head) is in the City limits. Once the locomotive is out of the City limits, train speed increases to 20 MPH.

   Commodities on the trains include mixed freight, automobiles and other cargo including break bulk. According to CSX, average train lengths are 7,000 feet (1.3 miles). In downtown LaGrange, most crossings lack audible warnings and do not have automatic gates. Other crossings in the study area are only marked with cross-buck signs.

2. Cut through traffic in various areas: Cut through traffic problems are an issue on various local streets in an around downtown LaGrange. Ways to mitigate cut through traffic will be included in the future recommendations and analysis.

3. Industrial / Commercial traffic in Downtown LaGrange: The volume of truck traffic in downtown LaGrange was raised as an issue by the public. The traffic counts show fairly low volumes during peak hours (under 5 percent on KY 53). However, options for mitigating the affects of truck traffic (real or perceived) will be examined and presented in this report.

4.5 Intermodal Considerations

Transportation options other than the private automobile, such as pedestrian and bicycling options, transit, para-transit and taxi services, are important considerations for an area's transportation system. Often, these other modes are the only means of mobility for some individuals. This is especially true for those with a disability, for the young, for seniors and for those without the means to purchase or maintain an automobile. The following section inventories the multimodal opportunities in the study area.

4.5.1 Transit

In terms of regularly scheduled fixed-route transit service, one bus route currently serves transit users in the study area. The regional transit provider - the Transit Authority of River City's (TARC), operates route #64, the Oldham County Express. The Oldham County Express serves commuters in LaGrange as well as Fincastle, Pewee Valley, Crestwood, and Buckner, eventually connecting all of them to the City of Louisville. The service is provided during both the morning (AM) and the afternoon (PM) peak periods only and there is no weekend or holiday service. Typical travel times according to the published schedule are one hour and eight minutes for each trip (inbound and outbound).

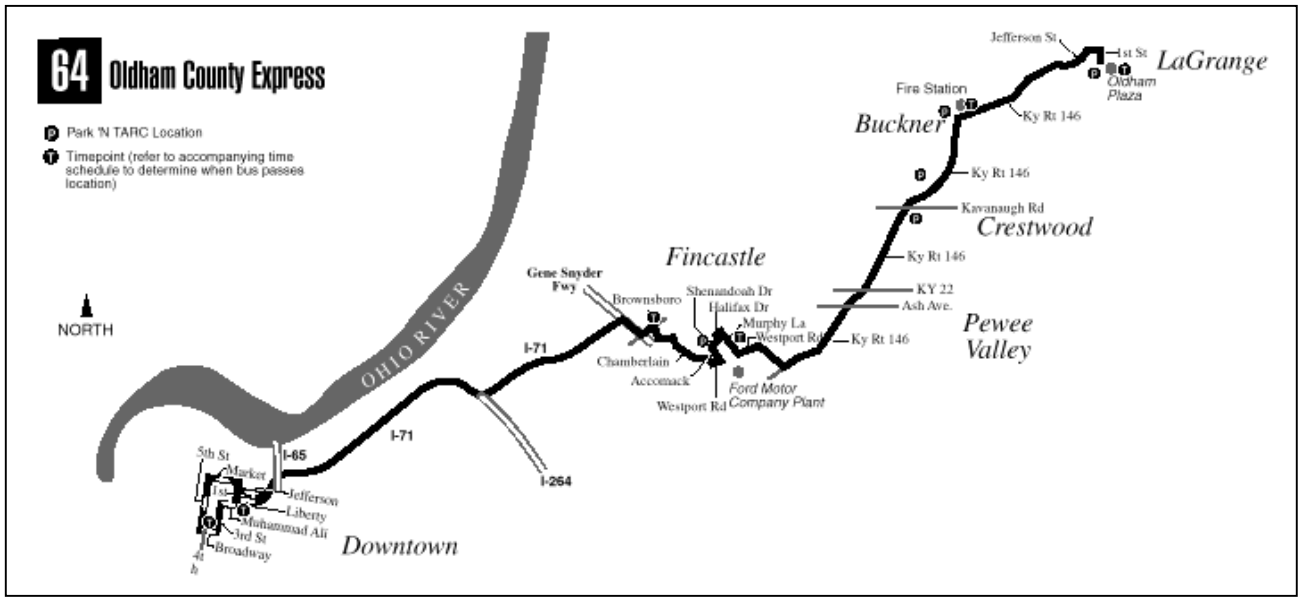
A total of twelve trips daily are provided. Fares are currently $1.00 cash and reductions are available for monthly passes ($23 / month) and for books of ten rides ($5.00). In addition to the Oldham Plaza Shopping Center, the route serves the following park-and-ride locations as well:

- Crestwood United Methodist Church
- DeHaven Memorial Baptist Church
- Oldham County Ball Field (Buckner)

Currently, this is the only route in the study area that serves transit needs.

Para-transit services are also available for individuals within ¼ mile of all fixed routes. These services are for qualified individuals with a disability or seniors. This contracted service provides door-to-door transit service for the individual patron and an assistant as well as their belongings and packages. Prior reservations are required for eligible participants, typically individuals who (1) are unable, because of a disability, to board, ride or disembark from an accessible fixed-route bus; (2) any person with a disability who is capable of using an accessible vehicle, but the desired trip cannot be made because a portion of the fixed-route service is not yet accessible; or (3) persons with specific impairments who cannot travel to or from a bus stop. The following map depicts TARC Route 64 operations.

Figure 4.8: Oldham County Express Route Map (TARC Route 64)



Source: Transit Authority of the River City

Transportation services for the elderly and low-income individuals for trips to the doctor and medical facilities are available through Medicare and /or KIPDA's brokered transportation services.

Despite the railroad heritage of the area, there is no existing rail transit service in the area at this time. TARC's T^2 or Transportation Tomorrow light rail transit (LRT) project is currently examining fixed-guideway transit in the form of LRT in a corridor running from downtown Louisville south to the Gene Snyder Freeway. Long-term system plans call for the advancement of five other lines / corridors through the Advanced Transportation System plan. A line parallel to I-71 extending from downtown Louisville into Oldham County is envisioned as part of this plan.

4.5.2 Pedestrian / Bicyclist

Facilities for pedestrians and bicyclists are limited in the study area. Aside from local streets in subdivisions and in downtown LaGrange, few other roadways have sidewalks. Some crosswalks and few pedestrian signs exist at intersections. There are also few if any pedestrian pre-warning signs. For the most part, there are few pedestrian amenities. This is especially true over I-71 along KY 53.

For bicycle facilities the picture is much the same. There are few off-road trails outside of parks and other areas, although the Oldham County Interurban Greenway project is advancing a multi-use trail parallel to the CSX railroad and KY 146. Many, if not most of the existing roadways in the study area are narrow two-lane facilities that accommodate a number of vehicles per day traveling at speeds of 35 to 55 miles per hour or more. As a result, there are effectively limited routes for cyclists other than to mix with traffic along a narrow shoulder or in the travel lanes.

4.5.3 Other Mobility Services

There is currently no taxi service available in the study area. One former taxi company, Oldham County Cab / Accent Limousine operated in Oldham County until very recently. Anecdotal evidence from local stakeholders indicates that the waiting periods were long for taxis to arrive, and that their availability was limited and often unreliable.

For seniors, there are also limited mobility replacement services provided by the Tri County Community Action Agency. According to KIPDA's *Getting Around in the Kentuckiana Region*, the agency does provide transportation services for qualifying seniors 60 and older in Oldham County. Certification and reservations for trips at least one day in advance are required. The agency also provides certain programs that in some cases replace the need to travel. Examples include the meals on wheels program and other community based services, including elder visits by volunteers, visiting health care providers, and other programs.

5.0 REVIEW OF RELATED STUDIES

Numerous transportation planning studies, Comprehensive Plans and other related reports and documents have been developed to plan for, design, and implement various transportation-related improvements in the study area. One aspect of the LaGrange Bypass Scoping Study is to develop a clear understanding of the other studies, recommendations, reports, etc. that were previously done in order to fully understand the realm of problems identified and the range of possible solutions that have been already examined or studied.

Documents were examined for: (1) their relevance to the LaGrange Bypass Scoping Study project and (2) their mention or description of possible transportation improvements that could have an impact to the transportation system in the study area. Studies or documents that were analyzed included:

- Oldham County Comprehensive Plan
- Oldham County Short Range and Long Range Transportation Plan
- LaGrange Transportation Study
- KIPDA Regional Thoroughfare Plan

5.1 Summary of Related Studies

5.1.1 Oldham County Comprehensive Plan

Produced by - Oldham County Planning and Zoning Commission, April 1992

The Oldham County Comprehensive Plan is an official document adopted by the Oldham County Planning and Zoning Commission. Its purpose is to serve as a guide for public and private actions and decisions concerning the physical development of the community. The Plan informs the community as to the long-term growth trends that can be expected, provides analysis of alternative plans or patterns of development, and establishes a clear direction for locating and guiding growth into appropriate areas.

The sections of the Comprehensive Plan that relate most to the LaGrange Bypass Scoping Study is Chapter 6, the Transportation Element of the plan.

In Chapter 6, Specific recommendations for transportation improvements are enumerated for three classes of roadways including arterials, collectors, and local streets. Project recommendations in the Comprehensive Plan that are relevant to the study area include the following:

Clayton and Lambert Collector
A collector street that realigns the congested Highway 393 and Highway 146 intersection at the Clayton and Lambert site should be encouraged. The collector would alleviate traffic congestion at the doglegged street intersection of Highway 146 and 393 and bypass Oldham County High School campus.

Luther Luckett Collector
A collector street that alleviates traffic congestion created by the Luther Luckett Complex. The collector street would alleviate traffic congestion created by the amount of traffic the complex generates and the poor intersection at Dawkins Road and Highway 146. The proposed collector would connect Highway 146 to Dawkins Road near the Oldham County Fairgrounds.

Central LaGrange Bypass
A highway bypass that circumvents congested central LaGrange on its west side. This includes a railroad overpass or underpass to eliminate traffic congestion and access problems associated with crossing the CSX tracks. The identified route would parallel Kentucky Avenue from Yager Avenue to Allen Lane.

Dawkins Road and Highway 53 Connector
A collector street that circumvents congested central LaGrange on its northwest side should be encouraged. The collector street would adequately access a large area that lies northwest of central LaGrange for residential development. The collector street would connect Dawkins Road and Highway 53 with an intersection at Fendley Mill Road.

Fendley Mill Road and Highway 53 Connector
A collector road that alleviates traffic congestion created by the inadequacies of the Fendley Mill Road/Fourth Street network should be encouraged. The collector street would adequately access an area along Fendley Mill Road for continued residential development. The collector street would enable traffic generated by the development along Fendley Mill Road to efficiently move within the residential neighborhood and efficiently enter the county's transportation network.

5.1.2 Oldham County Short Range and Long Range Transportation Plans

Produced by - Oldham County Transportation Task Force, undated (referenced via the Oldham County Comprehensive Plan)

According to the 1992 Oldham County Comprehensive Plan, the Oldham County Transportation Task Force completed a short and long-range transportation plan for Oldham County. The short-range plan addressed minor transportation improvements such as increased shoulder widths and guardrail placement for safety purposes. The long-range plan addressed major improvements, such as relocation of existing facilities and new highway construction to ensure the continued functionality of the county's

system. Relevant recommendations made, according to the Plan, that have yet to be completed in the study area include:

- Construct a highway bypass around central LaGrange

5.1.3 LaGrange Transportation Study

Produced by - Kentuckiana Regional Planning and Development Agency (KIPDA) June, 1996

The LaGrange Transportation Study examined numerous locations in the LaGrange area that had traffic problems. The City of LaGrange and Oldham County officials identified these "problem" locations. Options were developed and analyzed for each location. Options ranged from no build or low cost measures such as signalization, intersection improvements, and the installation of signs (typically referred to as Transportation Systems Management (TSM) options) to those that are more capital intensive, (i.e.. projects that could extend over several years and cost several million dollars), such as additional travel lanes, a bypass, and the relocation of the CSX railroad. Locations examined and the proposed improvements included:

- KY 53 and KY 146 – installation of a traffic signal
- KY 53 and Main Street – no improvement recommended
- Railroad operations (downtown LaGrange) – various grade separation options (3rd. Street, 6th Street, and Allen Lane) as well as a railroad relocation option
- KY 53 and Washington Street – installation of advance intersection warning sign and provision of additional police enforcement for speed control
- Truck problems in downtown LaGrange (specifically KY 146 / KY 53 intersection) – increase curb radii, move stop bars back, consider truck restrictions on nearby local streets
- KY 53 and Yeager Avenue/LaGrange Square – no improvement recommended
- KY 53 and Crystal Drive – accommodate planned development via the following options:
    1. Make Crystal Drive from KY 53 west a 3-lane facility with a left turn lane at KY 53 perhaps with a left turn phase;
    2. Make Crystal Drive from KY 53 east a 2-lane facility with 12-foot lanes, providing a left turn phase if development occurs; if no additional development occurs east of KY 53 no phasing will be necessary to provide the left turn
- Possible improvements from Crystal Drive to New Moody Lane - signal interconnection from Crystal Drive to New Mood Lane
- KY 53 and New Moody Lane – modification of signal timing
- KY 53 and Kroger – no recommendation
- Preservation of Interurban Right-of-Way – recommend right-of-way preservation
- LaGrange Bypass – construct 4-lane bypass facility on an "L" shaped route with the north / south leg along Allen Lane and the other east / west leg parallel to and between KY 146 and I-71.

6.0 FUTURE TRANSPORTATION PROJECTS

As part of the LaGrange Bypass Scoping Study, a clear understanding of what future investment are already planned for and what facilities may be built from them is needed. For this determination, documents were examined for: (1) their relevance to the LaGrange Bypass Scoping Study project and (2) their mention or description of transportation improvements that would have an impact on the existing transportation system in the study area. Studies or documents analyzed with relevant dates included:

- KIPDA's Transportation Improvement Plan (TIP) (September 2001)
- KIPDA's Long Range Transportation Plan (LRTP) Update II – Horizon 2020 (September 1999 - including amendments through February 2001)
- KYTC's Recommended Six Year Highway Plan FY 2001 – FY 2006 (February 2000)
- KYTC's Statewide Transportation Plan FY 1999 – FY 2018 (December 1999)
- KYTC's District 5 Unscheduled State Highway Plan Needs (March 2001)
- KYTC's Plan Sheet Showing Proposed Alignment for Improvements to KY 393 from KY 22 to I-71 (November 2001)
- KYTC's Plans Showing Proposed Improvements to KY 393 from I-71 to North of Oldham County High School (not dated)

From this analysis, numerous transportation projects were referenced in various ways and /or stages. Those projects include ones that are existing and committed, ones that have been incorporated into official planning and programming documents; either by the region's Metropolitan Planning Organization (MPO) – the Kentuckiana Regional Planning and Development Agency (KIPDA) or the state department of transportation – the Kentucky Transportation Cabinet (KYTC).

Also included are projects that are outside the current process for one or more reasons, not currently funded, in a longer-term time frame, or in need of more planning or engineering. These projects are still being considered, but are not currently incorporated into the planning documents. This includes the Unscheduled State Highway Plan Needs as developed by KYTC District 5 and KIPDA.

6.1 History of Transportation Projects in the Study Area

Few transportation projects have been completed in the study area in the past several decades. In fact, few projects have been completed countywide. This comes despite the growth that has taken place in terms of population and households during the 1980s and 1990s. The projects that were completed in the study area include:

- I-71 / KY 393 interchange, and ramps and
- Construction of the two-lane roadway through the business park known as Commerce Parkway between KY 146 and I-71.

The only other project completed of significance in the county includes the Crestwood Bypass along KY 329, which is out of the study area.

6.2 Summary of Future Transportation Projects

6.2.1 KIPDA TIP

The KIPDA TIP identifies multimodal projects that are programmed for planning, design, and/or construction in the near term, usually one to three years. The plan is revised each year. Currently, there is only one project in the study area in the KIPDA TIP scheduled for construction in the next three (3) years. This project is to improve KY 393 from KY 22 to I-71 by widening it to three (3) lanes and realigning it south of Elder Park Road. The project will increase capacity and improve safety.

Other projects are on the KIPDA TIP, but only for planning, design, and right-of-way/utilities. No other projects have construction funding programmed for the TIP program years. The KIPDA TIP and Long Range Plan projects are shown graphically on Figure 6.1.

6.2.2 KIPDA LRTP – Horizon 2020

The Horizon 2020 Plan is the official long-range transportation plan for the KIPDA region. It specifies multimodal projects across the region that are needed beyond the three (3) year TIP time horizon. Projects identified in the LRTP that have an impact on the study area include:

- Construct non-motorized, interurban greenway corridor from LaGrange to Jefferson County line – programmed for Phase 2 (2004 – 2010); cost unspecified
- Widen KY 22 from two (2) to three (3) lanes from KY 329 to KY 393 – programmed for Phase 2 (2004-2010); cost $20,000,000
- Reconstruct US 42 as a two-lane road from KY 1694 to KY 53 – programmed for Phase 3 (2011-2020); cost $15,000,000
- Reconstruct KY 53 as a two lane roadway from Ballardsville to Zhale Smith Road and add a northbound lane from Zhale Smith Road to New Moody Lane - programmed for Phase 2 (2004 – 2020); cost $14,000,000

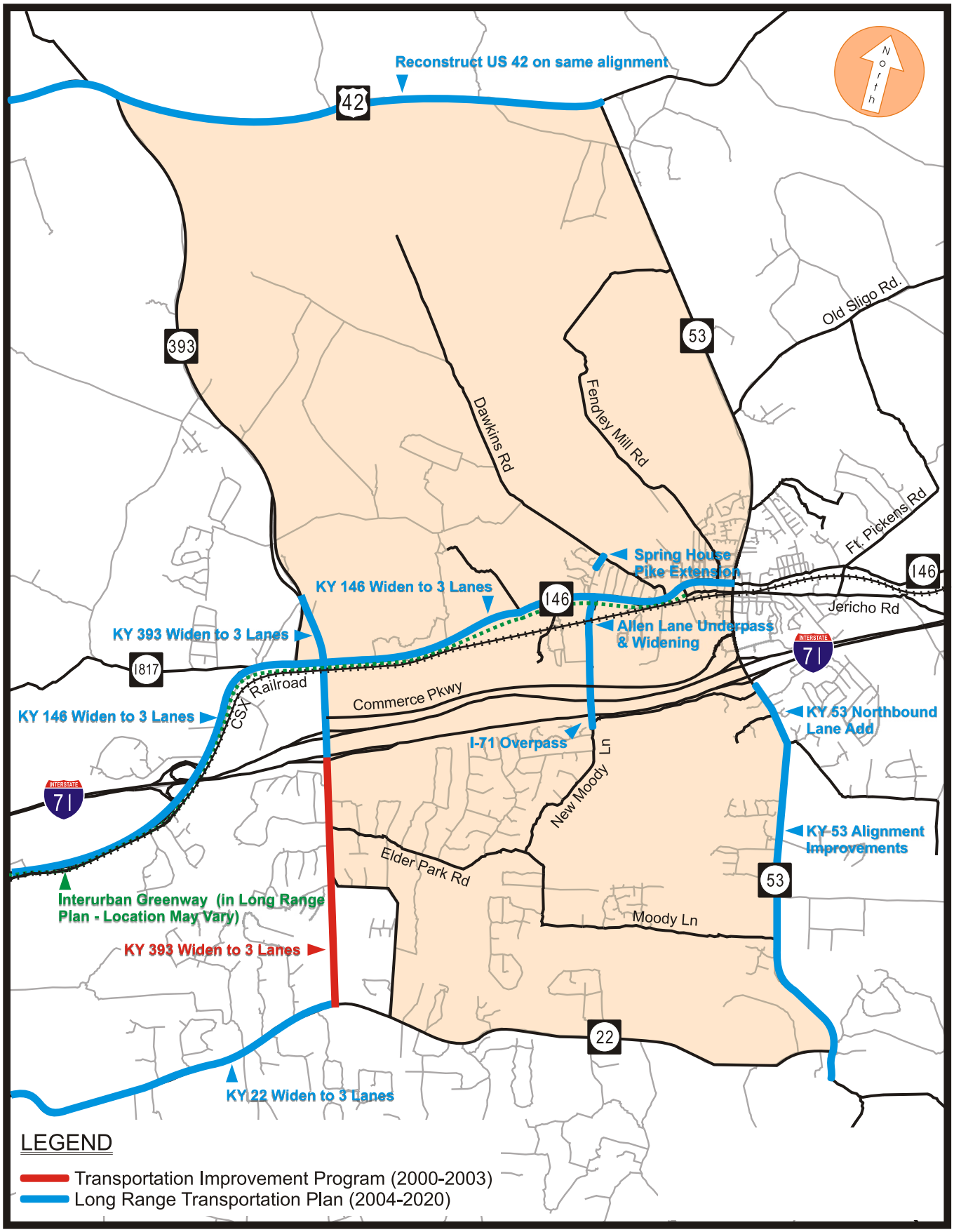

Reconstruct US 42 on same alignment
42
North
393
53
Old Sligo Rd.
Dawkins Rd
Fendley Mill Rd
Ft. Pickens Rd
Spring House Pike Extension
146
KY 146 Widen to 3 Lanes
Jericho Rd
Allen Lane Underpass & Widening
KY 393 Widen to 3 Lanes
1817
71
CSX Railroad
Commerce Pkwy
KY 146 Widen to 3 Lanes
KY 53 Northbound Lane Add
I-71 Overpass
New Moody Ln
KY-53 Alignment Improvements
Elder Park Rd
Interurban Greenway (in Long Range Plan - Location May Vary)
Moody Ln
KY 393 Widen to 3 Lanes
22
KY 22 Widen to 3 Lanes
LEGEND
Transportation Improvement Program (2000-2003)
Long Range Transportation Plan (2004-2020)

Figure 6.1

- Widen KY 146 from two to three lanes from KY 393 in Buckner to KY 53 in LaGrange – programmed for Phase 2 (2004 – 2010); cost $14,000,000
- Widen KY 393 from two to three lanes from I-71 to north of KY 146 – programmed for Phases 1 and 2 (2000 – 2010); cost $10,000,000
- Widen KY 393 from two to three lanes from KY 22 to I-71- programmed for Phases 1 and 2 (2000 – 2010); cost $10,000,000 (project in TIP)
- LaGrange Underpass / Allen Lane: construct uninterrupted rail underpass and widen Allen Lane from two to five lanes from Business Park Road to KY 146; programmed for Phase 2 (2004 – 2010); cost $5,000,000
- LaGrange Overpass: construct overpass over I-71 from Commerce Parkway to New Moody Lane – programmed for Phase 3 (2011-2020); cost $5,000,000
- Spring House Pike: extend as a two-lane road from existing road terminus to Dawkins Road – programmed for Phase 1 (2000-2003); cost $200,000

Construction of the LaGrange Bypass from Dawkins Road to KY 53 is also in the Long Range Plan for illustrative purposes and is not part of the fiscally constrained plan. It is also on the unscheduled needs list (see discussion below).

6.2.3 KYTC Recommended Six-Year Highway Plan – FY 2000 – FY 2006

The Six Year Highway Plan is a bi-annually developed document that serves as a capital improvements list for transportation projects at the state level. The first two years of the plan are funded and the rest of the years are un-funded. In the KIPDA region, input to the plan is gathered from a regional committee.

In terms of projects for the FY 2000 – FY 2006 the current Six-Year Plan, there are two related projects that are of consequence in the study area. Both projects involve the reconstruction of KY 393. One project involves reconstruction from KY 22 north to I-71. This project was programmed for right-of-way and utility work in FY 2000 and is currently funded for construction in FY 2002. Total costs are $9,550,000 and the length of the project is just over 1.88 miles.

The other project involves the reconstruction and widening of KY 393 from the I-71 interchange ramps to north of KY 146. This project is programmed for right-of-way and utility work in FY 2002 and for construction in FY 2004. Total costs are $10,000,000 and the project is 1.24 mile in length.

6.2.4 KYTC Statewide Transportation Plan

The Statewide Transportation Plan is a long-range 20-year plan for all modes of transportation. The plan includes listings of project for all modes in two phases: the short-range (generally one to six years) which is the Six Year Plan, and a long-range element generally fourteen to fifteen years beyond the short range element. After review of the plan, no additional projects were identified that are in the study area or would have an immediate impact.

6.2.5 KYTC District 5 Unscheduled State Highway Plan Needs

The KYTC District 5 in cooperation with the MPO has developed an unscheduled needs list for highway projects. These are identified projects beyond the funding capabilities of the current Six-Year Plan or other planning and programming documents in the KIPDA region. There is, however, some overlap between the Unscheduled Needs List and the KIPDA Long Range Plan. Relevant projects that would have an impact to the study area include a major widening of I-71, the LaGrange Bypass, and accelerated funding for the Allen Lane underpass.

The list of projects includes those identified in the following table:

Table 6.1

KYTC District 5 - Unscheduled State Highway Plan Needs

Facility	Activity	Result	From	To	Comments
I-71	Major Widening	Additional 2 lanes	KY 146	KY 393	
I-71	Major Widening	Additional 2 lanes	KY 393	KY 53	
New	New Construction		KY 53	Commerce Parkway	LaGrange Bypass
New	New Construction		KY 146	Commerce Parkway	LaGrange Bypass, Rail Underpass, Widen Allen Lane
New	New Construction		KY 146	KY 53	LaGrange Bypass
KY 53	Reconstruction		Shelby Co. Line	New Moody Lane	
KY 146	Major Widening	Additional 2 lanes	KY 393	KY 53	
KY 146	Major Widening	Additional 2 lanes	I-71	KY 393	
Local	New Construction		Springhouse Pike	Dawkins Road	Extension of Springhouse Pike
US 42	Reconstruction		KY 1694	KY 53	Low MPO priority

Source: KYTC, District 5

6.2.6 Other Projects

The Oldham County School Board has proposed an extension of Fible Lane (KY 2859) northward across KY 22 to Moody Lane as part of their KY 22 Campus Master Plan, a planned development for an elementary, middle and high school.

7.0 ENVIRONMENTAL OVERVIEW

An initial environmental overview was conducted to determine the general characteristics of the study area. The environmental overview is based on secondary sources, and limited field verifications. Resources addressed in this section include ecological: Threatened, Rare, Endangered, or Special Concern Species; national wetland inventory areas; 100-year floodplains, soil characteristics; sites with potential hazardous materials concerns (Including underground storage tanks (USTs), cultural / historic sites, and known or potential archaeological sites.

7.1 Threatened, Endangered, or Special Concern Species

A review of the Kentucky State Nature Preserves Commission (KSNPC) database was conducted to identify known occurrences of endangered, rare, threatened, or special concern species or exemplary natural communities in or near the study area. A total of eight occurrences of five species monitored by the KSNPC were identified within the study area. These species, along with their state listing status, year of most recent occurrence near the study area, and preferred habitat are found in Table 6.1.

With the exception of the trout-perch, no site-specific locations are recorded by the KSNPC for any of these species. Information provided indicates that the occurrence for these species may be frequent on the USGS quadrangle maps, or the species is very mobile. These characteristics indicate the possibility that any one of the species could occur within the study area. Trout-perch locations were from Floyds Creek and Curry Run Basin, outside and downstream of the proposed LaGrange Bypass study area.

At this level of detail, the presence of specific species will have to be confirmed on a project-by-project basis as they develop. There appears to be no area of special concern with regard to this type of resource.

7.2 Floodplains

Portions of the Harrods Creek, Brush Creek, North Fork, South Fork, and Cedar Creek 100-year floodplain occur within the study area. No significant impediments due to floodplains are anticipated.

Table 7.1
Endangered Species in the LaGrange Bypass Study Area

Common Name	Scientific Name	State Listing	Year of most recent occurrence near study area	Habitat
Trout Perch	*Percopsis Omiscomaycus*	Special Concern	1981	Clear, small to moderated size streams in pools or raceways over clean sand or mixed sand and gravel bottoms
Henslow's Sparrow	*Ammodramus henslowii*	Special Concern	1989	Open fields and meadows with grass interspersed with weeds or shrubby vegetation, especially in damp or low-lying areas adjacent to salt march in some areas. Migration and wintering habitat includes grassy areas adjacent to pine woods or second growth woods
Bobolink	*Dolichonyx oryzivorus*	Special Concern	1992	Tall grass areas, flooded meadows, prairie, deep cultivated grains, alfalfa and clover fields. Migration and winters in rice fields, marshes, and open woody areas
Savannah Sparrow	*Passerculus sandwichenesis*	Special Concern	1988	Open areas, especially grassland, tundra, meadows, bogs, farmlands, grassy areas with scattered bushes, and marshes
Bewick's Wren	*Thryomanes bewickii*	Special Concern	1989	Brushy areas, thickets and scrub in open country, open and riparian woodlands and chaparral, more commonly in arid regions, but locally in humid areas, found in country towns and farms.

7.3 Wetlands

The project's study area falls within portions of the LaGrange, Smithfield, Crestwood, and Ballardsville, Kentucky US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Maps. Digital NWI data were obtained for the study area in order to identify the potential for wetlands. Within the study area, most of the NWI wetlands are less than 5 acres in size as shown in Table 6.2. Figure 6.2 shows the known wetlands within the study area. The most common NWI wetlands are Palustrine Unconsolidated Bottom (PUB) areas that are less than 1 acre in size. These areas are most like farm ponds that are frequent throughout the county. Reformatory Lake is the largest water body in the study area, and the only one greater than 20 acres in size.

Table 7.2: NWI Wetlands within the LaGrange Bypass Study Area

NWI Classification (Symbol)	Approximate Size (Acres)			
	<1	1- 5	6-19	>20
Lacustrine Limnetic, Unconsolidated Bottom (LIUB)	0	0	0	1
Palustrine Aquatic Bed (PAB)	1	1	0	0
Palustrine Emergent (PEM)	18	7	0	0
Palustrine Forested (PFO)	0	5	2	0
Palustrine Scrub/Shrub (PSS)	2	0	0	0
Palustrine Unconsolidated Bottom (PUB)	153	35	4	0
Palustrine Unconsolidated Shore (PUS)	1	0	0	0
Riverine, Lower Perennial (R2)	1	0	3	0
Riverine, Intermittent (R4)	9	1	2	0

7.4 Soils

Soil information within the study area is based on information from the Natural Resource Conservation Service of Oldham County. No hydric soils occur within the county. According to the *Soil Survey of Oldham County, Kentucky* (USDA-NRCS, 1976), four Soil Associations are found within the study area. Soils of the Lowell-Faywood-Beasley Association cover the southeastern corner of the study area and are characterized as deep to moderately deep, with gently sloping to moderately steep slopes.

The Beasley-Nicholson Association covers approximately the center two-thirds of the study area. The soils classified in this association are characterized as deep, gently sloping to strongly sloping and well drained to moderately well drained. The Beasley-Caneyville Association soils are deep to moderately deep with strong to steep slopes. This association is generally associated with the lower portions of the Harrods Creek, North Fork, and Cedar Creek drainage areas. The Crider-Nicholson Association soils are deep, gently sloping to sloping well drained to moderately well drained with loamy subsoil. Soils classified in this association occur only on the north portion of the study area around US Route 42.

7.5 Hazardous Materials

This section presents the findings of a secondary source review conducted by EDR, Inc. to identify hazardous material/hazardous waste handlers or generators located within the study area. This review is based on the standards for developed by the American Society for Tests and Measurements (ASTM). ASTM has established guidelines for identifying federal and state standard and supplemental databases that provide information regarding potential areas of concern.

There were 29 site-specific locations identified within the study area. In addition, 28 non-specific sites (orphan sites) were identified as having the potential for occurring in the study area. No field reviews were conducted to locate the orphan sites.

Table 7.3
Hazardous Materials Site Summary

ASTM Database	Description of Database	No. of sites in study area
Federal Standard		
National Priority List (NPL)	The U.S. Environmental Protection Agency's (EPA) list that identifies sites for priority cleanup under the Superfund Program.	0
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)	Provides data on potentially hazardous waste sites that have been reported to the U.S. EPA by states, cities, private companies, and the public. These sites are either on the NPL, proposed for inclusion on the NPL, or are in the screening and assessment phase for possible inclusion on the NPL.	1
No Further Remedial Action Planned (CERC-NFRAP)	This U.S.EPA database contains sites that have been removed from CERCLIS. Sites are removed when it has been determined that no contamination was found, contamination was removed quickly, or the contamination was not serious enough to require federal action.	0
Corrective Action Report (CORRACTS)	This U.S. EPA database identifies hazardous waste handlers with Resource Conservation and Recovery Act (RCRA) corrective action activity.	0
Resource Conservation and Recovery Information System (RCRIS)	This database contains information on sites that transport, store, treat, and/or dispose of hazardous waste as defined by RCRA. The database has three listings: Large Quantity Generator (LQG), Small Quantity Generator (SQG) and Treatment, Storage, Disposal (TSD).	10
Emergency Response Notification System (ERNS)	This U.S. EPA database contains information on reported releases of oil and hazardous substances	1
State Standard		
State Hazardous Waste Sites (SHWS)	This Department of Environmental Protection EPA database contains records for priority sites planned for cleanup. It is the state equivalent to the CERCLIS list.	0
Licensed Solid Waste Facilities (SWF/LF)	The Solid Waste Facilities/Landfill sites records typically contain an inventory of solid waste disposal facilities or landfills in the state.	4
Underground Storage Tank File (UST)	This Department of Commerce database contains an inventory of registered underground storage tanks	27
FIFRA and TSCA Tracking System (FTTS)	This database tracks facility inspections, violations found and enforcement actions taken by KY EPA and include related compliance under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), TSCA, and the Emergency Planning and Community Right-to-Know Act (EPCRA).	2
Federal Supplemental		
Superfund Consent Decrees (CONSENT)	This U.S. EPA regional database contains information regarding responsibility and cleanup standards at NPL sites.	0
Records of Decision (ROD)	This database maintains Record of Decision documents that mandate a permanent remedy at NPL sites.	0
Delisted NPL	This U.S. EPA database contains sites that have been removed from the NPL where no further response is appropriate based on criteria established by the National Oil and Hazardous Substances Pollution Contingency Plan	0
Facility Index System (FINDS)	This U.S. EPA database contains additional databases that provide facility information and pointers to other sources that contain additional information and detail. The following databases included the Facility Index System relate to sites identified within the study area. Permit Compliance System (PCS), Enforcement Docket on civil enforcement cases (DOCKET), National Compliance Database (NCDB) and Aerometric Information Retrieval System (AIRS)	0
Hazardous Material Information Reporting System (HMIRS)	This U.S. Department of Transportation (DOT) database contains hazardous material spill incidents reported to DOT.	0
Material Licensing Tracking System (MLTS)	This Nuclear Regulatory Commission database contains information on sites that possess or use radioactive materials and are subject to commission licensing requirements.	0
Mines Master Index File (MINES)	Database maintained by the Department of Labor, Mine Safety and Health Administration.	0
Federal Superfund Liens (NPL Liens)	This U.S. EPA database contains records of liens filed against real property in order to recover remedial action expenditures or liens against property owners who have received notification of potential liability.	0
PCB Activity Database System (PADS)	This database identifies generators, storers, transporters, brokers, or disposers of PCBs	0
RCRA Administrative Tracking Systems (RAATS)	This discontinued U.S. EPA database contains records of enforcement actions issued and administrative and civil actions brought by the U.S. EPA.	0
Toxic Chemical Release Inventory System (TRIS)	This U.S. EPA database contains information on facilities that release toxic chemical to the air, water, and land in reportable quantities as established under SARA Title III.	0
Toxic Substances Control Act (TSCA)	This U.S. EPA database contains manufacturers and importers of chemicals included on the TSCA Chemical Substances Inventory.	0

7.6 Previously Recorded (Known) Archaeological Sites

A review of the archaeological site records maintained by the Office of State Archaeology was conducted to determine if known sites were located in the study area. There are eight previously recorded archaeological sites located in the study area: 15Oi7, 15Oi105, 15Oi106, 15Oi120, and 15Oi121. Site 15Oi7 is recoded as a prehistoric open habitation site dating to the Middle Archaic period. It's National Register eligibility has not been assessed. Sites 15Oi105 and 105 are prehistoric lithic scatters of undetermined function and age. Neither site is considered to be National Register eligible. Sites 15Oi120 and 121 are 19th-20th century historic farmsteads and neither is considered eligible to the National Register.

7.7 Potential Historic Archaeological Sites

A review of available historic maps of the study area was initiated to identify any structures or other information within the study area that would indicate the location of potential historic period archaeological sites. The following maps were examined:

- 1879 Atlas of Jefferson and Oldham Counties, Kentucky. From New and Actual Surveys Compiled and Published by Beers & Lanagan;
- 1932 LaGrange, Kentucky USGS 15 minute topographic quadrangle;
- 1961 (photo revised 1978) Ballardsville, Kentucky USGS 7.5 minute series digital topographic quadrangle, Map H35;
- 1969 (revised 1993) LaGrange, KY-IND USGS 7.5 minute series digital topographic quadrangle, Map G34;
- 1969 (revised 1993) Smithfield, KY USGS 7.5 minute series digital topographic quadrangle, Map G35;
- 1981 (revised 1993) Crestwood, KY USGS 7.5 minute series digital topographic quadrangle, Map H34.

Due to their scale, these maps were most useful in examining rural areas within the study area. Numerous structures are depicted within the study area, particularly along roads and near water sources. Nine stock farms were indicated on the earliest map of the area available (1879). Many of the structures observed on the historic maps are not depicted on the more recent quadrangles, and therefore, the exact location of these potential resources may not be readily apparent.

A separate set of maps was therefore consulted to obtain information on potential sites located in and around LaGrange. These maps included:

- 1886 LaGrange, Kentucky. Sanborn Map & Publishing Co., Limited;
- 1895 LaGrange, Oldham County, Kentucky. Sanborn-Perris Map Co., Limited;
- 1901 LaGrange, Oldham County, Kentucky. Sanborn-Perris Map Co., Limited;
- 1908 LaGrange, Oldham County, Kentucky. Sanborn Map Company;
- 1915 LaGrange, Oldham County, Kentucky. Sanborn Map Company;
- 1925 LaGrange, Oldham County, Kentucky. Sanborn Map Company.

These maps indicated that LaGrange had a population of around 700 by 1886. The town included several hotels, churches, and schools, as well as numerous shops and dwellings. Funk's Seminary, in existence by 1886, had become the LaGrange Public School by 1908. In 1886 there was a woolen mill, by 1895 there was added a lumber mill and a canning works, and by 1908 there was also a roller mill. By the time of the last Sanborn Fire Insurance map, the town's population had nearly doubled to 1,500. The Sanborn maps illustrate the great amount of development and expansion that occurred within the developed areas of LaGrange.

Generally speaking, the potential historic archaeological sites within the study area are farm/residence sites in the more rural areas. A cemetery was depicted on the early 1879 atlas in Ballardsville that was not observed on any of the other maps. Valley Rest Cemetery in LaGrange seems to date to at least as early as 1932. Four churches depicted on the earliest map appear to still be standing. A distillery east of LaGrange and a saw and grist mill southwest of Russell Corner were depicted on the 1879 atlas but no longer appear to be standing. Of three blacksmith shops identified on the earliest map, two may still be standing. Of ten schools, eight may still be standing in some form. Finally, the county alms house, located east of LaGrange as early as 1879, may still be standing as well. It must be noted however, that the presence of these potential sites has not been field verified. They are noted here because they are considered to be areas of archaeological interest that could contain significant remains, which if present, may be considered eligible to the National Register.

Table 7.4 Previously Documented Cultural Historic Sites

SITE NO.	KHC SURVEY NO.	PROPERTY NAME	NR ELIGIBILITY
1	Various	Russell Court Historic District	Listed
2	Various	Central LaGrange Historic District	Listed
3	OL-83	Mallory Taylor Hospital	Not determined
4	OL-84	Kentucky State Reformatory	Meets NR Criteria
5	OL-156	House	Not determined
6	OL-155	House	Not determined
7	OL-157	Overstreet House	Not determined
8	OL-161	Fishback House	Not determined
9	OL-110	Old Kirkpatrick Place	Not determined
10	OL-111	Covington Baptist Church	Not determined
11	OL-105	Balldock House	Not determined
12	OL-109	W.A. Leet House	Not determined
13	OL-108	Trigg House	Not determined
14	OL-106	Eighteen Mile Baptist Church	Not determined
15	OL-107	Bell Rose School	Not determined
16	OLL-55	McMahan House	Listed
17	OL-141	House	Meets NR Criteria
18	OL-144	Albert Button House	Meets NR criteria
19	OL-145	H. Bennett House	Not determined
20	OL-146	J. Bennett House	Not determined
21	OL-148	R. Bennett Sr. House	Not determined
22	OL-152	Woolfolk-Bennett House	Not determined
23	OL-151	Woolfolk House	Listed
24	OL-153	George Dick House	Not determined
25	OL-154	Overstreet House	Not determined
26	OL-162	Fenley House	Not determined
27	OL-167	Cassady House	Meets NR Criteria
28	OL-166	Alonzo Brown House	Not determined
29	OL-102	Beall House/Longdale Stock Farm	Not determined
30	OL-99	Barnhill House/Valley Home Stock Farm	Meets NR Criteria
31	OL-100	J. Barnhill House	Not determined
32	OL-89	Ballardsville School	Not determined
33	OL-90	Ray House	Not determined
34	OL-91	Bays House	Not determined
35	OL-92	Coleman House	Not determined
36	OL-95	Rice/Doty/Fible House	Meets NR Criteria
37	OL-94	Tenant House	Not determined
38	OL-93	House	Meets NR Criteria

8.0 ALTERNATES DEVELOPMENT

This section presents the alternatives development process employed for the LaGrange Bypass Scoping Study. This includes a description of how the alternates were developed and how they were grouped or classified for further analysis. It also provides a comprehensive list of the initial alternates considered in the study.

8.1 Alternates Development

A wide-range of multimodal improvement alternates was developed in response to the transportation deficiencies identified in the study area. In addition, each alternate was intended to address some or all of the study's adopted goals and objectives.

The alternates development took into account suggestions and input from a variety of sources, including:

- Stakeholder / Public input
- Work Group input
- Project Team input
- Previous studies
- Existing transportation plans

The inclusion of the first item, stakeholder / public input was important to the overall course of the project and was particularly useful in developing a wide range of preliminary alternates. Public input improved the overall quality and effectiveness of the proposed improvements by allowing citizens who actually reside in the study area to develop and have input on the scope and nature of the alternates. This public input process allowed the public to "take ownership" of many of the alternatives from the moment they were conceived.

Activities to solicit input into the alternates development process included:

- Initial group and one-on-one interviews with local stakeholders and a continuing dialogue concerning the nature of problems and the range of possible solutions.

- Two public meetings held in workshop format - one specifically devoted to the development of alternatives by geographic location and a second devoted to receiving public comment on the previously developed alternatives.

The initial alternatives were designed to address many observed transportation system deficiencies and problems including:

- Lack of alternative routes to KY 53, especially through downtown LaGrange
- Congestion on KY 53, through LaGrange and near the I-71 interchange
- Vehicle congestion, delay, and safety concerns at specific intersections

- Vehicle congestion and safety on specific road segments
- Pedestrian and bicycle safety (i.e. lack of sidewalks and bike facilities)
- Lack of turn lanes and shoulders
- Trains blocking roadways (i.e. KY 53 in LaGrange as well as other locations)
- Poor intersection sight distance (i.e. Madison at Dawkins)
- Need for new roadways to facilitate orderly and beneficial economic development

Although not all encompassing, the list provides a good indication of the types of problems that were addressed by the proposed improvements.

Initially, the public, the Work Group, and the Project Team identified over 65 preliminary alternates. These improvements covered the full range of options, including policy-oriented improvements, small facility enhancements (traffic signal or turn lane), new construction (new roadways or extensions of existing roadways), and new multimodal services, including transit. The alternates were grouped into three primary categories to facilitate a better understanding of them as well as to aid in the eventual evaluation process. The three categories included:

1. **Low-Build Alternates** – primarily Transportation Systems Management (TSM) type improvements, typically lower cost / lower impact improvements with the potential for quick positive benefits (i.e. little or no new right-of-way, minimal environmental or community impacts). An example would be adding a stop sign or changing a stop-controlled intersection to signal control.

2. **Medium-Build Alternates** – projects with a moderate cost and moderate impact potential (i.e. some new right-of-way, moderate environmental or community impacts). Possible examples include adding a short turn lane or reconstructing an existing intersection.

3. **High-Build Alternates** – projects with a higher cost and a higher impact potential (i.e. new right-of-way required, higher potential for environmental and community impacts). An example would be a new roadway on a new alignment.

To facilitate review, the proposed build alternates were also initially divided into five geographic groups based on their location within the study area:

- Entire Study Area (primarily policy orientated alternates)
- Downtown LaGrange
- KY 53 in the Vicinity of I-71
- South Study Area
- North Study Area

Table 8.1 presents the complete list of alternatives by type and location. A total of 65 alternates are identified. Note that few if any specific recommendations were made for KY 22. Similarly, the only recommendation for US 42 was to protect it as an existing

scenic byway. Conversely, there were many proposed improvements throughout downtown LaGrange, along KY 53, and to the north and west of downtown LaGrange.

8.2 No-Build Scenario

In addition to the low, medium, and high build alternates, a No-Build Scenario was also evaluated. The No-Build Scenario presents the expected traffic conditions in the study area in the year 2025 if no transportation improvements are constructed other than those already committed to by KYTC and other local agencies. This analysis provides the baseline for evaluating and comparing the proposed improvement scenarios and alternates. It reveals where the transportation system is anticipated to be deficient in the future and gives an indication of how extensive these problems may be if not addressed appropriately.

The only major KYTC project within the study area included in the No-Build Scenario was the reconstruction and realignment of KY 393 from just north of KY 146, south to KY 22. One local project, the proposed road between KY 22 and Moody Lane serving the new school campus was included in the No-Build Scenario as part of the school development. All other potential future projects were evaluated as alternates in the study.

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Complete List of Proposed Alternates

Alternates Information			
#	Proposed Alternate	Improvement Category	Location(s)
1	Allow / promote high density (high-rise) office development	Policy	Entire study area
2	Add turn lanes and possible signal at KY 146 and Colonels Drive	Medium	Out of Study Area
3	Make Walnut St. and 2nd St. a one-way street pair	Low	Downtown
4	Widen and extend 6th Street	Medium	Downtown
5	Relocate the railroad	High	Downtown / Entire study area
6	Add turn lanes at KY 146 and Allen Lane	Medium	North / KY 146
7	Add turn lanes on KY 53 from KY 146 south to Moody Lane	High	North / South Study Area
8	Widen KY 53 to add a bicycle / pedestrian way (especially over I-71)	High	North / South Study Area
9	Use utility easment(s) - gas and/or electric lines for bypass alignment	High	North / South Study Area
10	Widen Allen Lane (no underpass)	Medium	North/ KY 146
11	Main St - at Walnut/Cedar - address RR tracks and run off road issue	Medium	Downtown
12	Restrict parking on KY 53 north of 146 and restripe for four through lanes	Low	Downtown
13	Work with City, County, state police, Fire / EMS and dispatch to enhance incident management and traffic rerouting	Low	Entire study area
14	Investigate and implement access management policy especially along major thoroughfares (KY 22, KY 53, KY 146, KY 393 and US 42)	Policy	Entire study area
15	Add connector roadway from Wal-Mart to Kroger	Medium	South / KY 53
16	Signal coordination / timing on KY 53 from KY 146 to Kroger Driveway	Low	KY 53 / Downtown
17	Add turn lanes to KY 146 from KY 393 to KY 53	Medium	North / KY 146
18	Add Luther Luckett connector road (KY 146 to Dawkins Rd.)	Medium	North / KY 146
19	Add signal KY 146 and 4th. St.	Low	Downtown
20	Add signal KY 146 and 5th. St	Low	Downtown
21	Add signal KY 146 and 6th. St.	Low	Downtown
22	Add Allen Lane underpass	High	North / KY 146
23	Widen shoulders on all roads	High	Entire study area
24	Develop in-town local transit service	Medium	Entire study area
25	Provide area-wide pedestrian and bicycle amenities	High	Entire study area
26	Add center turn lanes / pockets on KY 53 from KY 146 to KY 22	High	Downtown / KY 53, South
27	Add two through lanes on KY 53 from New Moody Lane to KY 22	High	South / KY 53
28	Provide I-71 overpass (bridge) from Allen Lane to New Moody Lane	High	North / South
29	Add South Bypass Option A	High	South
30	Add South Bypass Option B	High	South
31	Add South Bypass Option C	High	South
32	Add South Bypass Option D	High	South
33	Add South Bypass Option E	High	South
34	Investigate and implement developer impact fees to pay for new infrastructure (roads)	Policy	Entire study area
35	Discontinue / curb business tax exemptions and incentives	Policy	Entire study area

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Complete List of Proposed Alternates

Alternates Information			
#	**Proposed Alternate**	**Improvement Category**	**Location(s)**
36	Encourage neighborhood commercial development in KY 393 / KY 146 area	Policy	North
37	Add new connector road behind Oldham Plaza	Medium	KY 53
38	Add two through lanes to KY 53 from KY 146 north	High	North
39	Protect US 42 as scenic byway	Low	North
40	Train approaching warning signal / dynamic message sign on KY 53	Low	Downtown
41	Convert 4-way stop at KY 146 and KY 53 to signal	Low	Downtown
42	Add shoulders and intermittent turn lanes on KY 146 from KY 393 to KY 53	Medium	North / KY 146
43	Install lights and cross bucks at Downtown railroad signals	Low	Downtown
44	Work with CSX to improve rail operations through LaGrange	Low	Downtown
45	Add North Bypass (Option A) - Original (Springhouse Pike / Allen Lane)	High	North
46	Add North Bypass (Option B) - N/W Fairgrounds	High	North
47	Add North Bypass Option C	High	North
48	Add North Bypass Option D	High	North
49	Add North Bypass Option E	High	North
50	Intersection realignment KY 146 / KY 393	No Build	North / KY 146
51	Add new signage to encourage trucks to use KY 146 to reach I-71	Low	Downtown / KY 53
52	Resolve sight distance problem at Madison and Dawkins	Medium	Downtown / North
53	Add curb and gutter along Madison and 5th Streets	Medium	Downtown / North
54	Convert 4-way stop at Main St. and KY 53 to signal	Low	Downtown
55	Add one lane each direction to KY 146 from KY 393 to KY 53	High	North / KY 146
56	Restrict parking on Madison	Low	Downtown
57	Add left turn arrows on I-71 north and south ramps from KY 53	Low	KY 53
58	Install traffic signal at Commerce Parkway and Parker Drive	Low	KY 53
59	Convert stop at Main St. and 2nd. St. to 4-way stop	Low	Downtown
60	Develop fixed guideway rail transit service	High	Entire study area
61	Close / realign off-set intersection @ Yeager Drive	High	KY 53
62	Add collector / distributor road near Wal-Mart parallel to KY 53	High	KY 53 / South
63	Add center turn lane (free L turns) on KY 53 from KY 146 to KY 22	High	KY 53 / Downtown / South
64	Add center turn lane (restrict L turns) on KY 53 from KY 146 to KY 22	High	KY 53 / Downtown / South
65	Add turn lanes and signals to KY 53 from New Moody Lane to Moody Lane	High	KY 53 / South

9.0 EVALUATION METHODOLOGY

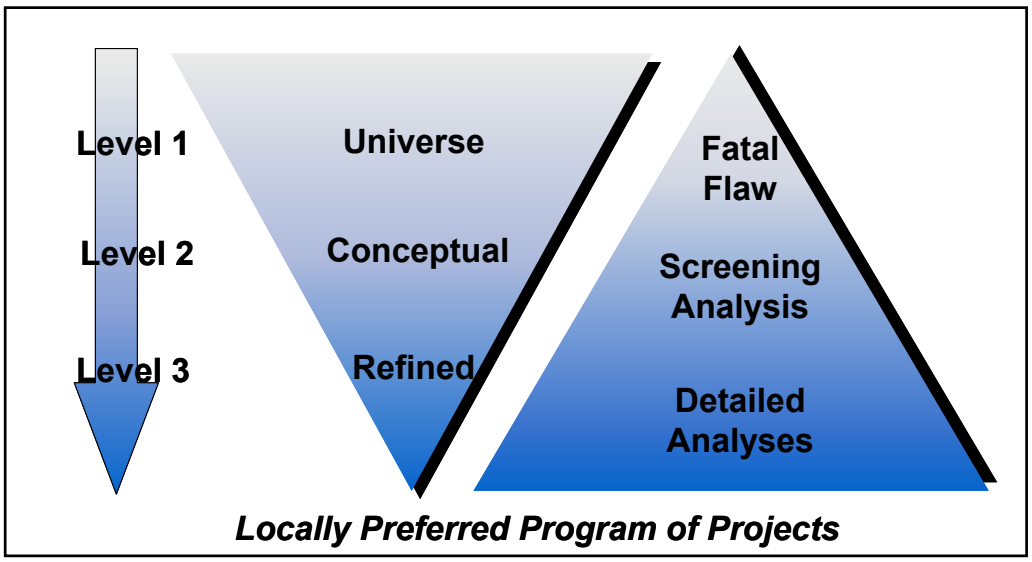
This section describes the methods used to evaluate the future improvement alternatives. This includes a review of the evaluation process, evaluation criteria, and analytical methods.

9.1 Evaluation Process

The 65 initial alternates identified in Section 8 were evaluated using a three-step screening procedure. This screening procedure iteratively worked through each of the improvement categories (low, medium, and high), refining the list of alternates based on public and Work Group input, as well as on an increasing amount of technical analysis and knowledge. The goal of the screening procedure was to develop a final package of recommended improvements. Throughout the process, the No-Build alternate provided the baseline for evaluation and comparison.

At the outset, the full universe of over 65 alternates was considered. At this initial stage, called Level 1 screening, only a few critical factors were examined regarding the broad array of potential improvements. As the evaluation advanced to Level 2 and eventually Level 3 screening, the range and depth of information and technical analysis widened as the number of possible alternates narrowed. Figure 9.1 illustrates this three-level evaluation process.

Figure 9.1: Evaluation Process



The first analysis phase, Level 1 or “Fatal Flaw” screening, was conducted primarily on a qualitative, rather than quantitative basis. As the screening process progressed, more detailed information was developed. The criteria and analyses for the later stages,

Levels 2 and 3 respectively, gradually became more definitive and provided more quantitative rather than qualitative results. The following sections provide additional details for each the three screening steps.

9.2 Level 1 – "Fatal Flaw" Screening

The Level 1 or "fatal flaw" screening analysis applied a limited number of evaluation measures to all alternates in order to eliminate those that the Project Work Group and Consultants agreed were flawed or unworkable. Alternates were also eliminated if they were inconsistent with the study's overall Goal's and Objectives, if they did not address the problems identified in the Existing Conditions Report, or if they had a characteristic that would prevent implementation. The Level 1 analysis relied on initial analysis as well as judgments by the Project Work Group and Consultant team based on qualitative evaluations in three primary areas. These areas included:

- **Implementation Feasibility –** To what extent did an alternate lend itself to being implemented within the social, physical and fiscal constraints of the study area?
- **Potential Community or Environmental Impacts -** To what extent did an alternate enhance or degrade the natural, social, built or economic environments?
- **Potential Order of Magnitude Benefits vs. Costs -** To what extent did an alternate achieve key study goals and objective or provide transportation benefits compared to expected project costs?

The initial screening determined whether an alternate minimally satisfied one or more of the above criteria. If an alternate was deficient in one or more of the categories above, it was a candidate for elimination from further consideration.

9.3 Level 2 – Screening Analysis

The Level 2 screening analysis involved a more detailed evaluation of the alternates remaining from Level 1. As shown in Figure 9.1, the Level 2 screening involved knowing more information about a smaller number of alternates. The goal of the Level 2 screening was to compare, contrast and group the remaining alternates to develop a shorter narrower list for further evaluation and refinement in Level 3. At this stage of the study, qualitative information was combined with limited quantitative data to develop a comparative matrix.

The generalized evaluation criteria used in Level 1 were expanded for the Level 2 screening. Eight specific evaluation criteria were developed and refined to examine potential impacts in more detail. The Level 2 evaluation criteria were:

- **Traffic and Pedestrian Conditions** – a general category addressing mobility, accessibility, and safety improvements with three specific evaluation criteria:

  - Traffic Operations and Level of Service

- Traffic and Pedestrian Safety
- Number of Users

- **Support of New Development** – compatibility with existing and future land use plans and concepts of development, and future community character

- **Community Impacts** – compatibility with adjacent existing and proposed land uses, and effects on neighborhoods and community cohesion

- **Property Impacts** – impacts to property including the potential need for new right-of-way acquisition

- **Environmental Impacts** – affects on threatened, rare and/or endangered species, known or potential cultural historic sites / structures, known or potential archaeological sites, number of hazardous materials (HAZMAT) sites, and underground storage tanks (USTs)

- **Capital Costs / Benefits** – capital costs (construction, design, relocation of utilities, etc.) evaluated against perceived or actual benefits

In addition to the above criteria, Project Work Group and public input was also used extensively during the Level 2 screening process. The Level 2 screening resulted in the selection of the most promising alternates for further more detailed examination in Level 3.

In assessing each project, scores of “+1”, “0”, or “-1” were assigned for each of the evaluation criteria and the score was entered in a matrix. The scores were based on available qualitative data, quantitative data, and Work Group / public input. These simple scores (essentially a determination of positive, negative or neutral with regards to a specific criteria) allowed for a comparison of competing alternates. Projects with a combined score of 0 or less were removed from further consideration.

9.4 Level 3 – Detailed Analysis and Refinement

A third, and final round of more technical analysis and refinement was completed to evaluate and compare the alternates remaining from Level 2. This Level 3 evaluation employed more detailed, quantitative and technical analysis methods. The evaluation criteria used for the Level 2 analysis were refined once again for use in Level 3.

As illustrated in Figure 9.1, the Level 3 analysis further increased the breadth and depth of information known about a smaller number of remaining alternates. During Level 3, efforts were made to establish the most definitive information for each alternate. At this stage, the quantity and quality of technical data known about each of the alternates was at its highest. This detailed level of analysis facilitated informed decision-making regarding the remaining alternates as they related to developing the preferred package.

The Level 3 alternates analysis was designed to determine which projects best achieved the study's adopted goals and objectives. It also assessed the extent to which each alternative addressed the specific transportation deficiencies identified in the study area. To accomplish this, four principal evaluation criteria were defined. For each of these criteria, performance measures were selected to facilitate the analysis and ultimately to compare the remaining alternates. These criteria and performance measures were related to those used in Level 2, but were refined further in order to facilitate quantification and allow for more meaningful comparisons between competing or similar alternates.

The evaluation criteria and performance measures that were used included:

- **Traffic and Transportation**
  1. 2025 Average Daily Traffic (ADT) Volumes
  2. 2025 Levels of Service (LOS)
  3. Access, Circulation, and Safety

- **Costs**
  1. Capital Costs

- **Impacts**
  1. Community Impacts
  2. Environmental Impacts

- **Execution**
  1. Feasibility / Meets Goals and Objectives
  2. Priority / Phasing

A future design year of 2025 was used for the Level 3 analysis. Thus both land-use and transportation projections were forecasted to the year 2025.

9.4.1 Level 3 Scenarios

To facilitate a meaningful comparison of the alternates, those remaining after the Level 2 screening phase were grouped for the final Level 3 evaluation. The groups or improvement scenarios included the No-Build scenario and various build scenarios representing increasingly more significant levels of investment. For example, the Medium Build scenario included both the No Build improvements and the Medium Build improvements. Likewise, the High Build scenario included all the No Build, all the Medium Build, and the various High Build scenarios. The following definitions outline the scenarios evaluated in the Level 3 screening:

- No-Build Scenario – This scenario represents the baseline and serves as a comparison for other scenarios and for developing the recommended package of improvements. The No-Build scenario consists of only "existing and committed" projects; projects that are part of an existing plan and are deemed a "given" in

terms of implementation and funding. The only major projects included in the No-Build for the LaGrange Bypass Scoping Study is the realignment of KY 393 from north of KY 146 in Buckner, south to KY 22.

- Low-Build or Transportation System Management (TSM) Scenario – This scenario included lower cost, lower impact improvements. Typically, they could be implemented relatively quickly (1 – 3 years). An example would be converting a four-way STOP controlled intersection to a signal controlled intersection at the KY 146 / KY 53 intersection.

- Medium-Build Scenario – This scenario included projects with more costs and impacts than those in the Low Build or TSM scenario but less than the High-Build scenario. The identified projects could typically be implemented in approximately four to seven years. An example would be a short connector road or widening of a roadway within the existing right of way.

- High-Build Scenario – This scenario included the projects that are the most costly, most complex and would likely have the most impacts. These projects would typically be implemented in a long time frame (8+ years). An example would be a new roadway or bypass on new right-of-way.

For the study, there was one (1) No-Build Scenario, one (1) Low-Build Scenario, one (1) Medium-Build Scenario, and three (3) High-Build scenarios. The three High-Build scenarios were exactly the same with the exception that each included a different north bypass alignment (options A, B and D respectively).

9.4.2 Traffic and Transportation

For this evaluation criteria, three performance measures were chosen, including 2025 Average Daily Traffic (ADT); 2025 Design Hour Volume (DHV) Level of Service (LOS); and Access, Circulation, and Safety. These performance measures quantify the extent to which a specific improvement alternate affects roadway usage, congestion, and safety.

2025 Average Daily Traffic

Average daily traffic (ADT) is an estimate of the average number of vehicles using a roadway over a typical 24-hour period. It takes into account total traffic on the roadway, including all vehicle types in both directions of traffic flow. Estimates of year 2025 traffic flows were developed for the six different scenarios covering all of the proposed improvement alternates. The travel demand forecasting methods used to develop these estimates are described later in this section.

2025 Design Hour Volume Level of Service

The design hour volume (DHV) is an estimate of peak hour demand. This is the time that the transportation system would typically face the most "stress" from congestion and usage. The 2025 design hour volumes were derived from the 2025 average daily traffic estimates. The technical definition of design hour volume was presented in Section 4.2.2. In summary, it is an estimate of the peak hourly volume of traffic only exceeded by 29 other hours over the course of the year. This traffic volume standard typically used for highway engineering design purposes and is adequate and applicable to this study.

Estimates of the 2025 design hour volumes were used to project the 2025 design hour volume level of service (LOS). Level of Service (LOS) as described previously in Section 4.2.2 is a qualitative measure of expected traffic conflicts, delay, and congestion. Levels of service are described according to a letter rating system ranging from LOS A (free flow, minimal or no delays) to LOS F (stop and go conditions, very long delays).

LOS C was selected by Oldham County to be the desirable threshold for traffic operations in the LaGrange study area. LOS C is frequently employed as the acceptable threshold in non-urbanized areas. Therefore, an intersection or roadway segment operating at LOS D or worse would be considered deficient. Each alternate was examined to determine if it improved deficient locations to LOS C or better.

Intersection Level of Service

For intersections, LOS C corresponds to less than 35 seconds of delay per vehicle at a signalized intersection and less than 25 seconds of delay at an unsignalized intersection. Refer to section 4.2.2 for more detailed information.

Rural Two-Lane Road Level of Service

Levels of Service for rural two lane roadways are based on the estimated average travel speeds and/or the percent time vehicles spend following other vehicles. Refer to section 4.2.2 for more detailed information.

Multi-Lane Arterial Road Levels of Service

In addition, to the intersection and rural two-lane road level of service analysis, the 2025 analysis also examined new four-lane arterials. Levels of service for these facilities are defined in Table 9.1.

Table 9.1: LOS Criteria for Multilane Highways

		LOS				
Free-Flow Speed	Criteria	A	B	C	D	E
60 mi/h	Maximum density (pc/mi/ln)	11	18	26	35	40
	Average speed (mi/h)	60.0	60.0	59.4	56.7	55.0
	Maximum volume to capacity ratio (v/c)	0.30	0.49	0.70	0.90	1.00
	Maximum service flow rate (pc/h/ln)	660	1080	1550	1980	2200
55 mi/h	Maximum density (pc/mi/ln)	11	18	26	35	41
	Average speed (mi/h)	55.0	55.0	54.9	52.9	51.2
	Maximum volume to capacity ratio (v/c)	0.29	0.47	0.68	0.88	1.00
	Maximum service flow rate (pc/h/ln)	600	990	1430	1850	2100
50 mi/h	Maximum density (pc/mi/ln)	11	18	26	35	43
	Average speed (mi/h)	50.0	50.0	50.0	48.9	47.5
	Maximum volume to capacity ratio (v/c)	0.28	0.45	0.65	0.86	1.00
	Maximum service flow rate (pc/h/ln)	550	900	1300	1710	2000
45 mi/h	Maximum density (pc/mi/ln)	11	18	26	35	45
	Average speed (mi/h)	45.0	45.0	45.0	44.4	42.2
	Maximum volume to capacity ratio (v/c)	0.26	0.43	0.62	0.82	1.00
	Maximum service flow rate (pc/h/ln)	490	810	1170	1550	1900

Source: Highway Capacity Manual (2000)
Note: pc=passenger car, mi=mile(s), ln=lane, h=hour

Access, Circulation, and Safety

The third transportation performance measure is part qualitative and part quantitative. It takes into account access, circulation, safety and the alternate's contribution to the transportation system as a whole. These measures was examined system-wide and not for a specific location. "Access" describes how well the alternate affords different options / routes for traveling to various destinations including the business park, shopping areas along KY 53 south, the hospital, proposed school complex off KY 22, etc. In terms of "circulation", a main emphasis was on finding an unimpeded alternative route (one that goes under or over the railroad tracks) primarily for KY 53 through downtown LaGrange affording access to I-71 and other destinations. Other measures used to assess "access" and "circulation" were system wide travel time and travel distance estimates. "Safety" as a measure was primarily aimed at vehicles, although other users (bicycles, pedestrians, etc.) were also taken into account.

9.4.2.1 2025 Traffic Forecasts

To quantify the traffic and transportation performance measures, two distinct traffic analyses were required:

1. Preparation of 2025 traffic forecasts for the study area and
2. A traffic operations analysis for the study area.

2025 Traffic Forecasts and Model Assumptions

The LaGrange sub-area model was the primary traffic-forecasting tool and was prepared using a three-step process: (1) traffic generation, (2) traffic distribution, and (3) traffic assignment. The model was designed to generate and allocate new trips in a manner similar to a traffic impact study for a proposed development. Originally, it had been envisioned that the new trips would be manually assigned to the study area, however, the extent of the new development projected for the area, combined with the complexity of the new roadway network proposed in the high build alternates, made that impractical.

Study Scenarios

The six previously described traffic study scenarios included:

1. 2025 No-Build Scenario
2. 2025 Low-Build Scenario
3. 2025 Medium-Build Scenario
4. 2025 High-Build Scenario 1 (North Bypass Option D)
5. 2025 High-Build Scenario 2 (North Bypass Option B)
6. 2025 High-Build Scenario 3 (North Bypass Option A)

Traffic Generation

The traffic generation step employed a 2025 land-use forecast for the study area based on KIPDA's 2025 model assumptions. Specifically, the assumed study area population and employment growth included in KIPDA's model was allocated in a parcel specific fashion. Large boundary zones were developed and used to model new development on the edge of the study area and external zones were used to model new through traffic and traffic that had an origin or destination outside of the study area. Over 100 zones were created to handle the projected new development and through trips.

The allocation of the development was based on existing knowledge of proposed developments and current zoning and land use patterns. For example, the currently proposed Wal-Mart expansion was included in the projections as were future phases of current residential developments. Likewise, other projects affecting trip making and origins and destinations, such as the new school complex proposed by the Oldham County Board of Education in the southern portion of the study area off KY 22, were also included in the model.

To ensure that the 2025 land use scenario was valid, a meeting was held with the Oldham County Planning and Zoning Department to review the projected development for each zone. This meeting resulted in slight modifications to the allocation of the development, but overall, the magnitude of the new development was maintained.

Two land-use scenarios were used in the analysis. The first was the baseline land use scenario. It was used for the No-Build, Low-Build, and Medium-Build scenarios. The second land use scenario was used for the High-Build scenarios. It assumed construction of a new connector roadway in the north between KY 53 and KY 146. It assumed that 200 new single-family homes projected for the southern portion of the study area would instead be constructed in the vicinity of the new connector roadway. The total amount of new development was the same for the two scenarios. The only difference was the reallocation of 200 homes from the south study area to the north study area. Figures 9.2 and 9.3 illustrate the allocation of the proposed new residential and commercial development within the LaGrange Study Area for the two land use scenarios.

The traffic generated by the projected new development was estimated using modified Institute of Traffic Engineers (ITE) trip generation rates. Model runs were first completed using the unmodified rates and then comparisons were made to the KIPDA modeled trip generation estimates for the sub-area. Manual adjustments were made to bring the sub-area model new trip generation estimates to within approximately 5-6 percent of the KIPDA estimates. Even with the adjustments, the sub-area modeled trip generation numbers were still higher than the KIPDA numbers. The result is a conservative, yet reasonable estimate of new traffic on the study area roadways.

Table 9.2 shows the total new trips generated in the two land use scenarios. It also compares the new trips used for the LaGrange Bypass Study compared to the estimated new trips in the study area forecasted by the current KIPDA travel demand model.

Traffic Distribution

A roadway network must be defined before the traffic distribution step can be completed. The roadway network was developed using GIS data provided by Oldham County. The network included all major interstate, arterial, and collector facilities in the study area. Attributes such as the number of lanes, estimated travel speeds, and link capacities were assigned to each roadway link.

The traffic generated by the projected new development was then distributed to other zones and external nodes in the study area model. This distribution process was accomplished through the use of a simple gravity model. The gravity model uses the roadway network to estimate travel times between zones. Traffic flows are then assigned between zone pairs based on a mathematical relationship. This relationship takes into account the traffic generated by each zone and the travel times between zone pairs. The end result is an origin-destination matrix for all trips.

Figure 9.2: 2025 Baseline Land Use Scenario

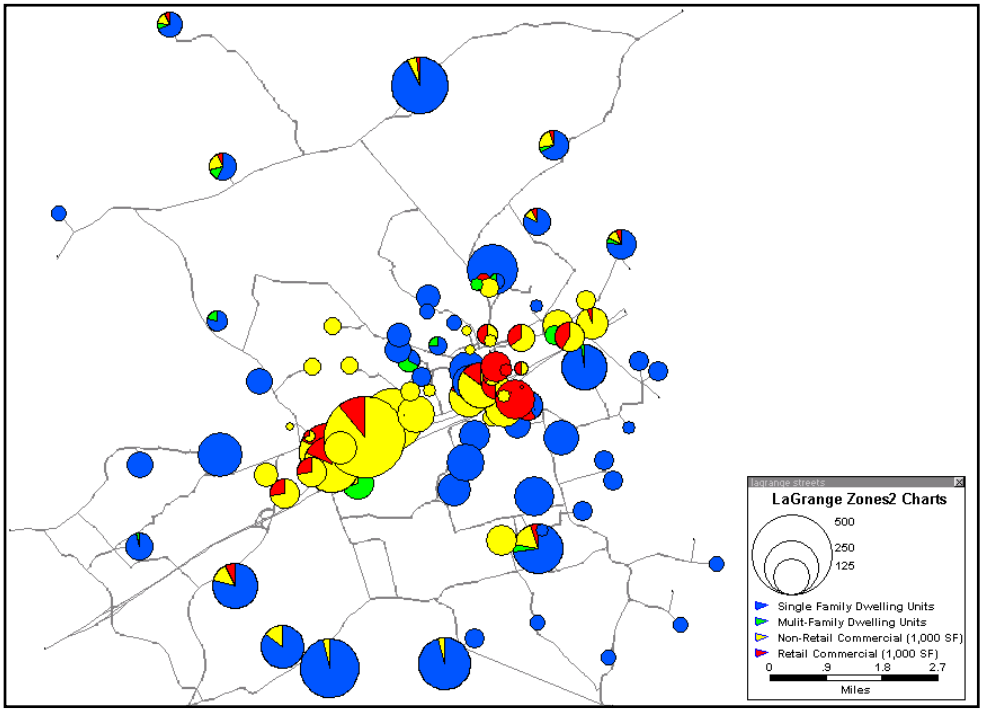


Figure 9.3: 2025 High-Build (Highway) Land Use Scenario

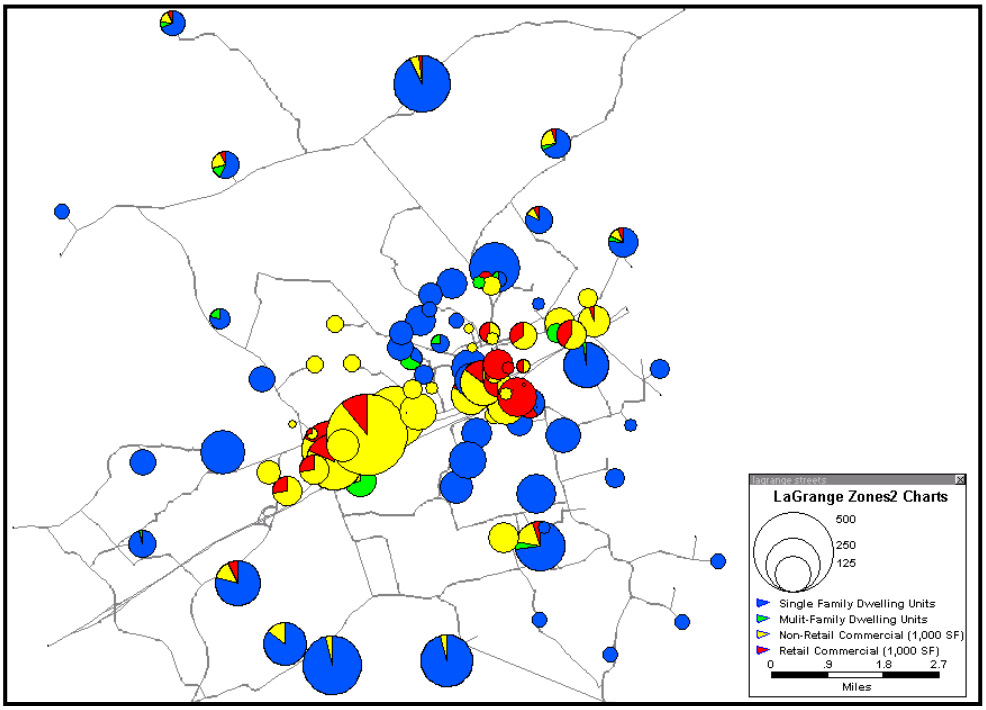


Table 9.2: 2025 Land Use Scenario and Trip Generation

Land-Use Category	Units	Quantity of New Units (2001 – 2025)	Daily Trips per Unit	ITE Code Used*	Trips Generated
Single Family	DU	4,205	8	210	33,640
Multi-Family	DU	245	5.86	230	1,436
Non-Retail Commercial	1,000 SF	3,149	6	130	18,894
Retail Commercial	1,000 SF	833	40	813	33,320
Elementary / Middle School	Students	1,400	1.09	520	1,526
High School	Students	1,000	1.38	530	1,380
Total Trip Ends in Model Area					90,196

E-I / I-E Trip Ends	41,965
E-E Trip Ends	33,790
Total Trip Ends	165,951
Total Trips	**82,975**

Estimated KIPDA Trips for the Subarea	78,854
Difference	4,121
Percent Difference	5.2%

Notes:

DU = Dwelling Unit

SF = Square Feet

The ITE trip rates were modified slightly to better match the trip generation / attraction characteristics of the KIPDA model.

Traffic Assignment

Once the origin-destination matrix had been developed, the next step was to assign trips to the network. This step used the link information to determine possible paths between zone pairs. Trips were assigned, with most (but not all) of the traffic between zone pairs using the route with the shortest travel time. As in real routing decisions, some traffic does in fact use a longer route (to avoid a congested intersection, for example). The end result of this step is an allocation of the new traffic to individual network links. This traffic was then combined with existing traffic to provide an estimate of the total 2025 average daily traffic volumes on the critical study area roadways.

9.4.2.2 Traffic Operations Analysis

The traffic operations analysis evaluates how well the future transportation system will function given traffic projections and the six alternative roadway scenarios. The 2025 average peak and design hour traffic volumes for each scenario were estimated from the 2025 average daily traffic volumes, based on current average daily, average peak, and design hour traffic volume relationships. Based on the 2025 average peak and design hour volumes, 2025 levels of service were determined for critical study area intersections and roadways. This addresses factors such as delay and travel speed. Other operational factors such as access, circulation, and safety were also examined as discussed previously.

9.4.3 Costs

Planning level estimates of capital costs for design, utilities and construction were developed for the Level 3 alternates and for the Recommended Package of Alternates. These costs are estimated in current year (2002) dollars and have not been inflated to any future year. The cost estimates reflect known physical features, design element inputs, and other known information pertinent about each alternate at the time the study was completed.

Design estimates reflect the costs of a private or public agency taking conceptual level planning information about an alternate and developing a functional and workable design. Costs for utilities include relocation or upgrading of existing facilities or the provision of new utilities where applicable such as to connect new traffic signals. Costs were developed on a build-up basis (i.e. X number of units needed times a price per unit) and include the physical construction costs of all identified project elements such as signs, pavement markings, concrete, asphalt, steel, earth moving, curb and gutter, landscaping, lighting, aesthetic treatments, and mitigation measures. Contingencies were added and are inherent in the construction costs to allow for unforeseen circumstances.

Total capital cost estimates are derived from adding costs for design, utilities and construction. They are expressed as a range from a “low” end – a cost with minimal

anticipated total costs and contingencies to a “high” end – a cost with maximum anticipated total costs and contingencies.

Construction cost estimates presented here are exclusive of right-of-way. Although right-of-way costs will ultimately be important, they were not calculated for this project. This is a planning level study and no right-of-way data tied to geophysical or point survey data were available to determine physical needs. Likewise, due to locational differences and market forces, there is not an adequate method to estimate right-of-way costs reliably even at a very gross level of planning accuracy.

9.4.4 Impacts

Impacts include those to the natural environment as well as those to the human environment. The likely impacts to the natural environment appear to be minimal throughout the study area for all analyzed and recommended projects. There are no site-specific data, nor indications that threatened, rare or endangered species exist near the proposed improvements. Although there are eight instances of such species occurring, the likelihood that the species would be in the project area of one of the recommended options is deemed low because in most cases, the proposed project areas are already either highly developed or disturbed.

Two measures were chosen to address likely impacts for the human environment. Those measures are Community Impacts and Environmental Impacts. Community Impacts addresses primary or direct effects to nearby businesses, residences, neighborhoods, etc. These might include disruptions and/or noise, vibration, change in access, increased traffic, etc. This category also accounts for the potential need for additional right-of-way (property) via the number and type of adjacent impacts anticipated. This measure was derived from the examination of aerial photographs depicting the location of the alternates relative to existing or planned homes, subdivisions, neighborhoods, businesses, institutional uses, etc.

The second measure, Environmental Impacts, addresses potential effects on known or potential cultural / historic and archaeological sites. The latter measure was derived from the examination of historic and archaeological databases as well as the examination of historic files; including maps and other documents. Field investigation(s) will be needed in order to fully determine the potential affects on a project-by-project basis once planning, design, and/or environmental documentation advances. At this point, no anticipated impacts were identified that would preclude the options from advancing.

For this analysis, a review of existing data records maintained by the respective state offices responsible for archaeology or cultural / historic resources was conducted to determine if known sites were located in the study area. Likewise, a review of available historic maps of the study area was performed to identify any structures or other

information within the study area that would indicate the location of potential historic or archaeological sites.

Although an overview, this environmental analysis did not identify any unusual, unique, or uncommon features within the study area. A total of eight occurrences of five species monitored by the Kentucky State Nature Preserves Commission were identified as having the potential of occurring in or near the study area. The study area also includes portions of the Harrods Creek, Brush Creek, North Fork, South Fork, and Cedar Creek 100-year floodplains and numerous national wetland inventory resources occur within the study area. No hydric soils occur within Oldham County, and there were 29 site-specific hazardous materials sites of concern identified within the study area. The presence of archaeological / historic resources or potential resources has been confirmed in numerous locations throughout the study area. The are a large concentration of these resources in downtown LaGrange, most notably in the downtown historic district. Other resources and potential resources are scattered throughout the study area. Essentially, all of the identified resources should be avoided or impacts to them mitigated as a secondary alternative. In all cases, a closer inspection of potential impacts of one or more of the proposed alternatives and recommendations will be needed as projects are proposed and further analyzed or advanced.

9.4.5 Execution

For this qualitative measure, Feasibility / Meets Goals and Objectives, the first step was to quickly review the alternate for its ability to effectively be planned, designed and constructed. The second stage was to review how well, and to what degree the alternate met one or more of the project's goals and objectives.

Priority and phasing were not a factor in the initial analysis. Rather, they were considered later to determine when a potential or recommended project should proceed with further planning, environmental documentation, and/or design in the context of the overall plans.

10.0 SCREENING AND ANALYSIS RESULTS

10.1 Level 1 Screening Results

The Project Work Group, along with Consultant staff participated in a workshop format exercise to perform the Level 1 screening analysis. The goal of the Level 1 screening was to eliminate alternates that were clearly flawed and should not be carried forward.

Completion of evaluation sheets in matrix format for all alternates was performed to facilitate the analysis. As previously described, alternates were broken down by implementation category (low, medium, high) as well as geographically in order to facilitate the evaluation. Information depicted on the evaluation sheets included:

- Alternate Number
- Brief description, including the proposed scope and limits of the improvement
- Recommendation regarding further consideration or elimination (i.e. yes, advance to Level 2 or no, do not advance)
- Reason for recommendation

In Level 1 screening, a total of 22 alternates were identified as being “fatally flawed” and were eliminated from further consideration. The remaining alternates were refined and recommended for advancement to Level 2 per the recommendations of the Project Work Group. Table 10.1 present the results of the Level 1 screening including the reasons for not advancing specific alternates.

10.2 Level 2 Screening Results

Following the Level 1 screening, the alternates were refined and examined further in Level 2 screening. Level 2 screening examined the remaining alternates in more detail and applied performance measures to produce practical comparisons between them. The goal of Level 2 was to develop a short list of the most promising alternates for more detailed evaluation in Level 3.

The Level 2 screening was based on a mixture of qualitative and quantitative evaluation information, again presented in a matrix format.

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Level 1 Screening Results

ENTIRE STUDY AREA / POLICY OPTIONS			
Alt. No.	**Description**	**Advance to Level 2**	**Reason**
ENTIRE AREA			
13	Work with City, County, state police, Fire / EMS and dispatch to enhance incident management and traffic rerouting	Yes	Improve safety, access and capacity on roadways in study area
23	Widen shoulders on all roads	Yes	Improve safety
24	Develop in-town local transit service	Yes	Offer wider range of travel options, air quality benefits
25	Provide area-wide pedestrian and bicycle amenities	Yes	Improve safety and quality of life
60	Develop fixed guideway rail transit service	Yes	Offer wider range of travel options, air quality benefits
POLICY			
14	Investigate and implement access management policy especially along major thoroughfares (KY 22, KY 53, KY 146, KY 393 and US 42)	Yes	potential congestion, access , and safety benefits
34	Investigate and implement developer impact fees to pay for new infrastructure (roads)	Yes	Leverage funds to pay for needed improvements
35	Discontinue / curb business tax exemptions and incentives	**No - Fatal Flaw**	Not a local tax issue, the city and county do no provide dev. tax exemptions
36	KY 393 / KY 146 and Vicinity - encourage neighborhood commercial development	Yes	Improve land use transportation connection
1	Allow / promote high density (high-rise) office development	**No - Fatal Flaw**	High rise dev. is out of character with current developed landscape

Shaded alternates indicate those that were eliminated from further consideration.

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Level 1 Screening Results

DOWNTOWN LAGRANGE			
Alt. No.	**Description**	**Advance to Level 2**	**Reason**
LOW-BUILD (TSM)			
41	KY 53 / KY 146 - install traffic signal	Yes	Low cost improvement, High potential safety and traffic operations benefits
54	KY 53 / Main St - install traffic signal	Yes	Low cost improvement, potential safety and traffic operations benefits
19	KY 146 / 4th. St. - install traffic signal	Yes	Low cost improvement, potential safety, access and traffic operations benefits
20	KY 146 / 5th. St. - install traffic signal (Only One)	Yes	Low cost improvement, potential safety, access and traffic operations benefits
21	KY 146 / 6th. St. - install traffic signal	Yes	Low cost improvement, potential safety, access and traffic operations benefits
16A	Downtown LaGrange - coordinate proposed traffic signals	Yes	Low cost improvement, potential traffic operations benefits
12	KY 53 - Lee St to KY 146 - restrict parking, restripe as 4-lanes	Yes	Low cost improvement, potential traffic operations benefits
43	Downtown at-grade RR crossings - install lights and audible warnings	Yes	Low cost improvement, potential safety benefits
40	KY 53 - train approaching warning signal / dynamic message sign	**No - Fatal Flaw**	Capital cost unreasonable compared to expected benefits. Not needed.
56	Madison St - restrict parking	Yes	Low cost improvement, potential safety and traffic operations benefits
59	Main St / 2nd St - convert to 4-way stop	Yes	Low cost improvement, potential safety benefits
11A	Main St / Walnut St - convert to 4-way stop	Yes	Low cost improvement, potential safety benefits
44	Downtown railroad line - work with CSX to improve operations	**No - Fatal Flaw**	Do not want to promote higher train speeds, improved railroad operations expected to come at expense of community character and mobility
51	KY 53 / KY 146 - install signage directing trucks to use KY 146 to reach I-71	**No - Fatal Flaw**	Unreasonable to expect trucks to use KY 146 instead of KY 53, will cause higher truck traffic on a longer stretch of road with schools and homes on it
3	2nd St and Walnut St - make 2nd one-way south, Walnut one-way north	**No - Fatal Flaw**	Impacts to residences, increases travel times, limited improvement to capacity on KY 53, better option available, decreases safety
MEDIUM-BUILD			
52	Madison St / Dawkins Rd - Improve sight distance	Yes	Moderate cost, potential safety benefits
53A	Madison St. - improve, install curb and gutter, restripe?, limit parking?	Yes	Moderate cost, potential safety and traffic flow benefits
53B	5th St - improve, install curb and gutter, restripe?, limit parking?	Yes	Moderate cost, potential safety and traffic flow benefits
41A	KY 53 / KY 146 - widen intersection approaches, signalize, add lanes	Yes	Moderate cost, potential safety and traffic flow benefits
11	Main St - at Walnut/Cedar - address RR tracks and run off road issue	Yes	Moderate cost, potential safety benefits
HIGH-BUILD			
38A	KY 53 - KY 146 to Waterworks - widen to three lanes (center turn lanes & median w/ parking)	Yes	High cost, potential traffic operations, capacity, and access benefits
38B	KY 53 - KY 146 to Waterworks - widen to four lanes (with parking)	Yes	High cost, potential traffic operations, capacity, and access benefits
A2	KY 53 - KY 146 to Washington St - add turn lanes (fifth lane)	Yes	High cost, potential traffic operations, capacity, and access benefits
5	Relocate the railroad	**No - Fatal Flaw**	LaGrange was built on the railroad and desires to capitalize economically on the presence of the railroad in tourism and retail business, moving the railroad would be very costly, it would involve new grade separated crossings of KY 393 and KY 53, spur lines may have to be relocated, it would require railroad agreement

Shaded alternates indicate those that were eliminated from further consideration.

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Level 1 Screening Results

KY 53 CORRIDOR (WASHINGTON TO NEW MOODY)			
Alt. No.	**Description**	**Advance to Level 2**	**Reason**
LOW-BUILD (TSM)			
57	KY 53 / I-71 Interchange - add protected left turn phases at ramps	Yes	Low cost improvement, potential safety and traffic operations benefits
16B	KY 53 from Washington to Kroger Driveway - coordinate traffic signals	Yes	Low cost improvement, potential access and traffic operations benefits
58	KY 53 / Parker Dr - install traffic signal	Yes	Low cost improvement, potential safety, access and traffic operations benefits
MEDIUM-BUILD			
61	KY 53 / Yager Ave - realign off-set intersection @ Yager Avenue	Yes	Moderate cost, potential traffic operations, capacity, and safety benefits
37	Connector Road B - construct roadway behind Oldham Plaza	**No - Fatal Flaw**	High cost for small benefit, few users, sig. envir. impacts, do with devel. if needed
4	6th St - widen and extend south to Commerce Pkwy	**No - Fatal Flaw**	Does not add significant capacity, promotes cut-through traffic, could be constructed with future development
HIGH-BUILD			
64A	KY 53 - Washington to I-71 SB Ramp - add median with left turn lanes at major intersections only	Yes	High cost, potential traffic operations, capacity, and safety benefits
8	KY 53 - Crystal Drive to New Moody Ln - widen to 6 lanes w/ a bike/ped way (including new bridge)	**No - Fatal Flaw**	High cost, potential traffic operations, capacity, and safety benefits
63A	KY 53 - Washington to I-71 SB Ramp - add center turn lane (two-way left turn lane)	**No - Fatal Flaw**	Uncontrolled two-way left turn lane has safety / access issues, median with turn lanes pref.
7	KY 53 - KY 146 to Crystal Drive - add turn lanes at critical intersections only (I.e. flare intersections)	**No - Fatal Flaw**	Turn pockets would be too long and too frequent

Shaded alternates indicate those that were eliminated from further consideration.

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Level 1 Screening Results

Alt. No.	Description	Advance to Level 2	Reason
SOUTH STUDY AREA			
LOW-BUILD (TSM)			
New	KY 53 - Zhale Smith to Blakemore - install traffic signals at critical locations	**No - Fatal Flaw**	Would create numerous signalized intersections, incorporate into larger plan
MEDIUM-BUILD			
New	KY 53 - New Moody Ln to KY 22 - widen shoulders	Yes	Moderate cost, potential safety benefits
26A	KY 53 - New Moody Ln to KY 22 - add turn lanes at critical intersections only	Yes	Moderate cost, potential safety, access, traffic operations benefits
65	Add turn lanes and signals on KY 53 from New Moody Lane to Moody Lane	Yes	Moderate cost, potential safety, access, traffic operations benefits
15, 62	Connector Roadway - Wal-Mart parking lot to Kroger parking lot - two lanes	**No - Fatal Flaw**	Being implemented
HIGH-BUILD			
26A	KY 53 - New Moody Ln to KY 22 - improve horizontal & vertical sight distance	Yes	High cost, potential safety, access, traffic operations benefits
26B	KY 53 - New Moody Ln to KY 22 - widen to three lanes (center turn lanes & median)	Yes	High cost, potential safety, access, traffic operations benefits
63	Add center turn lane (free L turns) on KY 53 from KY 146 to KY 22	**No - Fatal Flaw**	High cost, uncontrolled center turn lane can have safety / access issues
64	Add center turn lane (restrict L turns) on KY 53 from KY 146 to KY 22	Yes	High cost, potential safety, access, traffic operations benefits
27	KY 53 - New Moody Lane to KY 22 - widen to four lanes	Yes	High cost, potential safety, access, traffic operations benefits
27A	KY 53 - New Moody Lane to KY 22 - widen to five lanes	Yes	High cost, potential safety, access, traffic operations benefits
29	South Bypass Option A - New Moody to KY 53 near Peak Rd	Yes	High cost, potential access, circulation, and traffic operations benefits
30	South Bypass Option B - New Moody to KY 53 near Blakemore Ln	Yes	High cost, potential access, circulation, and traffic operations benefits
31	South Bypass Option C - New Moody to KY 22 near Fible Ln	Yes	High cost, potential access, circulation, and traffic operations benefits
32	South Bypass Option D - Moody to KY 22 near Oakridge Dr	Yes	High cost, potential access, circulation, and traffic operations benefits
33	South Bypass Option E	Yes	High cost, potential access, circulation, and traffic operations benefits

Shaded alternates indicate those that were eliminated from further consideration.

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Level 1 Screening Results

NORTH STUDY AREA			
Alt. No.	**Description**	**Advance (Y/N) To Level 2**	**Reason**
LOW-BUILD (TSM)			
39	US 42 - protect as a scenic byway (previously designated as a scenic byway)	Yes	Continue to enhance the existing corridor
36	KY 393 / KY 146 and Vicinity - encourage neighborhood commercial development	Yes - Move to Policy	Improve land use transportation connection
6	KY 146 / Allen Lane - add turn lanes	**No - Fatal Flaw**	Limited ability to improve traffic with single improvement; combine with bypass option
MEDIUM-BUILD			
42	KY 146 - KY 393 to KY 53 - add shoulders	Yes	Moderate cost improvement with potential safety benefits
17	KY 146 - KY 393 to KY 53 - add turn lanes at critical locations	Yes	Moderate cost, potential traffic, access, and safety improvements
10	Allen Lane - widen (no underpass)	**No - Fatal Flaw**	Limited traffic or safety benefits given current use; combine with bypass option
2	KY 146 / Colonels Dr - add turn lanes, traffic signal	**No - Fatal Flaw**	Outside study area, already being worked on locally
HIGH-BUILD			
55	KY 146 - KY 393 to KY 53 - widen to four lanes	Yes	Potential traffic, access, and safety improvements
38	KY 53 - Lee to Old Sligo - widen to three lanes (center turn lanes & median)	**No - Fatal Flaw**	High cost, and high impact despite potential traffic, access, and safety improvements
22	Allen Lane - construct railroad underpass	Yes	High cost, traffic, emergency access, circulation, and safety benefits
28	Provide I-71 overpass (bridge) from Allen Lane to New Moody	Yes	High cost, traffic, emergency access, circulation, and safety benefits
45	North Bypass Option A - Commerce Pkwy to KY 53 - via relocated Allen Ln, Springhouse Pike, to Old Sligo	Yes	High cost, traffic, access, and circulation benefits
46	North Bypass Option B - Commerce Pkwy to KY 53 - via Button Ln, Fairgrounds, to Old Sligo	Yes	High cost, traffic, access, and circulation benefits
47	North Bypass Option C - Commerce Pkwy to KY 53 - via Button Ln, East of Fairgrounds, to Old Sligo	Yes	High cost, traffic, access, and circulation benefits
48	North Bypass Option D - Commerce Pkwy to KY 53 - via relocated Button Ln, West of Fairgrounds, to Old Sligo	Yes	High cost, traffic, access, and circulation benefits
49	North Bypass Option E - Commerce Parkway to KY 53 - via Relocated Button Ln, on east side of prison property, to north of Old Sligo	Yes	High cost, traffic, access, and circulation benefits
49A, 49B, 49C	North Bypass Options F-H	Yes	High cost, traffic, access, and circulation benefits
18	Connector Road A - KY 146 to Dawkins Rd - along east edge of prison property	Yes	High cost, traffic, access, and circulation benefits
New	Connector Road B - north of prison property	Yes	High cost, traffic, access, and circulation benefits
55A	KY 146 - KY 393 to KY 53 - widen to three lanes (center turn lanes & median)	**No - Fatal Flaw**	Unlikely to need median and strict access control as dev. land is limited (RR, reformatory)
9	North Bypass Option - use utility easements for bypass alignment (gas and/or electric lines)	**No - Fatal Flaw**	Encumbered ROW, potentially high capital costs, ROW not wide enough, conflict between users

Shaded alternates indicate those that were eliminated from further consideration.

The performance measures included in the matrix for Level 2 were:

- Traffic operations and level of service
- Traffic and pedestrian safety
- Number of users
- Support for new development
- Community impacts
- Property impacts
- Environmental impacts
- Capital and operating costs / User benefit

Both the Project Work Group and the public participated in Level 2 screening. The Work Group performed Level 2 screening on April 15, 2002 and the public participated in a Level 2 screening workshop on April 30, 2002.

In all, 29 alternates were recommended for elimination as a result of the Level 2 screening. Table 10.2 presents the information and results for the Level 2 screening. Highlighted alternates on the following table indicate those that were eliminated from further consideration. The alternates remaining after Level 2 were grouped into scenarios or packages of projects for evaluation in Level 3.

10.3 Level 3 Screening Results

The Level 3 Screening was the final and most detailed level of technical analysis. Detailed information was gathered for each study scenario using the performance measures discussed in Section 9.0. Data was also collected and examined for specific projects within each scenario.

For reference, the study scenarios and performance measures were as follows:

Study Scenarios

0. 2025 No-Build Scenario (Future Baseline)
1. 2025 Low-Build Scenario
2. 2025 Medium-Build Scenario
3. 2025 High-Build Scenario 1 (North Bypass Option D)
4. 2025 High-Build Scenario 2 (North Bypass Option B)
5. 2025 High-Build Scenario 3 (North Bypass Option A)

Performance Measures

- **Traffic and Transportation**
  1. 2025 Average Daily Traffic
  2. 2025 Levels of Service
  3. Access, Circulation, and Safety

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Level 2 Screening Results

ENTIRE STUDY AREA / POLICY OPTIONS											
Alt. No.	**Description**	**Advance to Level 3 (Y/N)**	Traffic Operations & LOS	Traffic & Pedestrian Safety	Number of Users	Support of New Development	Community Impacts	Property Impacts	Environmental Impacts	Capital & Operating Costs / User Benefits	**Total Score (Weighted)**
ENTIRE AREA											
13	Work with City, County, state police, Fire / EMS and dispatch to enhance incident management and traffic rerouting	Yes	1	0	1	0	0	0	0	1	**3**
23	Widen shoulders on all roads	Yes	1	1	1	0	0	0	0	-1	**2**
24	Develop in-town local transit service	No	0	1	0	0	0	0	0	-1	**0**
25	Provide area-wide pedestrian and bicycle amenities	Yes	0	1	0	0	0	0	0	0	**1**
60	Develop fixed guideway rail transit service	No	0	1	0	1	0	-1	0	-1	0
POLICY											
14	Investigate and implement access management policy especially along major thoroughfares (KY 22, KY 53, KY 146, KY 393 and US 42)	Yes	1	1	1	0	0	-1	0	1	**3**
34	Investigate and implement developer impact fees to pay for new infrastructure (roads)	No	0	0	1	-1	0	-1	0	0	**-1**
36	KY 393 / KY 146 and Vicinity - encourage neighborhood commercial development	Yes	0	0	1	1	0	0	0	0	**2**

Look-Up Table	
Negative	-1
Neutral	0
Positive	1

Shaded alternates indicate those that were eliminated from further consideration.

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Level 2 Screening Results

Alt. No.	Description	Advance to Level 3 (Y/N)	Traffic Operations & LOS	Traffic & Pedestrian Safety	Number of Users	Support of New Development	Community Impacts	Property Impacts	Environmental Impacts	Capital & Operating Costs / User Benefits	Total Score (Weighted)
DOWNTOWN LAGRANGE											
LOW-BUILD (TSM)											
41	KY 53 / KY 146 - install traffic signal	Yes	1	1	1	0	0	0	0	0	**3**
54	KY 53 / Main St - install traffic signal	Yes	1	1	1	0	0	0	0	0	**3**
19	KY 146 / 4th. St. - install traffic signal	Yes	1	1	0	0	0	0	0	0	**2**
20	KY 146 / 5th. St. - install traffic signal (Only One)	No	0	0	0	0	0	0	0	0	**0**
21	KY 146 / 6th. St. - install traffic signal	No	0	0	0	0	0	0	0	0	**0**
16A	Downtown LaGrange - coordinate proposed traffic signals	Yes	1	1	1	0	0	0	0	1	**4**
12	KY 53 - Lee St to KY 146 - restrict parking, restripe as 4-lanes	No	0	0	1	0	0	0	0	-1	**0**
43	Downtown at-grade RR crossings - install lights and audible warnings includes improvements on south side of Main St.	Yes	0	0	0	0	0	0	0	1	**1**
56	Madison St - restrict parking	No	0	0	0	0	-1	0	0	0	**-1**
59	Main St / 2nd St - convert to 4-way stop	Yes	1	1	0	0	0	0	0	1	**3**
A1	Main St / Walnut St - convert to 4-way stop	Yes	1	1	0	0	0	0	0	1	**3**
MEDIUM-BUILD											
52	Madison St / Dawkins Rd - Improve intersection sight distance and realign Madison from Dawkins to 6th St.	Yes	1	1	-1	0	0	0	0	0	**1**
53A	Madison St. - improve, install curb and gutter, restripe?, limit parking?	No	0	0	-1	0	0	-1	0	0	**-2**
53B	5th St - improve, install curb and gutter, restripe?, limit parking?	No	0	0	-1	0	0	-1	0	0	**-2**
A3	KY 53 / KY 146 - widen intersection approaches, signalize, add lanes	Yes	0	1	1	0	0	-1	0	1	**2**
11	Main St - at Walnut/Cedar - address RR tracks and run off road issue	Yes	1	1	0	0	0	-1	0	1	**2**
12A	KY 53 - KY 146 to Woodcreek - restripe and add ROW to maintain 4 through lanes 11 feet wide	Yes	1	1	0	0	0	-1	0	1	**2**
HIGH-BUILD											
38A	KY 53 - KY 146 to Waterworks - widen to three lanes (center turn lanes & median w/ parking)	No	0	0	0	0	0	-1	0	0	**-1**
38B	KY 53 - KY 146 to Waterworks - widen to four lanes (with parking)	No	1	1	0	0	0	-1	0	-1	**0**
A2	KY 53 - KY 146 to Washington St - add turn lanes (fifth lane)	No	1	0	0	0	0	-1	-1	0	**-1**

Look-Up Table	
Negative	-1
Neutral	0
Positive	1

Shaded alternates indicate those that were eliminated from further consideration.

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Level 2 Screening Results

KY 53 CORRIDOR (WASHINGTON TO NEW MOODY)											
Alt. No.	**Description**	**Advance to Level 3 (Y/N)**	Traffic Operations & LOS	Traffic & Pedestrian Safety	Number of Users	Support of New Development	Community Impacts	Property Impacts	Environmental Impacts	Capital & Operating Costs / User Benefits	**Total Score (Weighted)**
LOW-BUILD (TSM)											
57	KY 53 / I-71 Interchange - add protected left turn phases at ramps	**Yes**	1	1	1	0	0	0	0	1	**4**
16B	KY 53 from Washington to Kroger Driveway - coordinate traffic signals	**Yes**	1	1	1	0	0	0	0	1	**4**
58	KY 53 / Parker Dr - install traffic signal	**Yes**	0	0	0	1	0	0	0	0	**1**
MEDIUM-BUILD											
A15	KY 53 / Yager Ave. - realign off-set intersection @ Yager Avenue	**Yes**	1	1	0	0	0	-1	0	0	**1**
HIGH-BUILD											
64A	KY 53 - Washington to I-71 SB Ramp - add median with left turn lanes at major intersections only	**Yes**	1	0	1	0	0	-1	0	0	**1**

Look-Up Table	
Negative	-1
Neutral	0
Positive	1

Shaded alternates indicate those that were eliminated from further consideration.

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Level 2 Screening Results

Alt. No.	Description	Advance to Level 3 (Y/N)	Traffic Operations & LOS	Traffic & Pedestrian Safety	Number of Users	Support of New Development	Community Impacts	Property Impacts	Environmental Impacts	Capital & Operating Costs / User Benefits	Total Score (Weighted)
SOUTH STUDY AREA											
LOW-BUILD (TSM)											
NEW	Install traffic signal at KY 53 and entrance to Prestwick Estates / Eagle Creek Golf Course	No	-1	0	-1	1	0	0	0	0	-1
NEW	Recommend / explore lowering current 55 MPH speed limit to 45 MPH	No	-1	0	0	0	0	0	0	0	-1
MEDIUM-BUILD											
A8	KY 53 - New Moody Ln to KY 22 - widen shoulders	Yes	0	1	1	0	0	-1	0	1	2
NEW	Build a sidewalk from Moody Lane to I-71	No	0	1	0	0		-1	0	-1	-1
NEW	Build a multiuse trail on KY 53 from I-71 to proposed school complex on KY 22	No	0	1	0	0		-1	0	-1	-1
26A	KY 53 - New Moody Ln to KY 22 - add turn lanes at critical intersections only	No	0	0	1	0	0	-1	0	0	0
65	Add turn lanes and signals on KY 53 from New Moody Lane to Moody Lane	No	0	0	1	0	0	-1	0	0	0
HIGH-BUILD											
A5	KY 53 - New Moody Ln to KY 22 (Ballardsville) - improve horizontal & vertical sight distance	Yes	1	0	1	0	0	-1	0	0	1
26B	KY 53 - New Moody Ln to KY 22 (Ballardsville) - widen to three lanes (center turn lanes & median)	Yes	1	0	1	0	0	-1	0	0	1
64	Add center turn lane (restrict L turns) on KY 53 from KY 146 to KY 22	Yes	1	0	1	0	0	-1	0	0	1
27	KY 53 - New Moody Lane to KY 22 - widen to four lanes	Yes	1	0	1	0	0	-1	0	0	1
A6	KY 53 - New Moody Lane to KY 22 - widen to five lanes	Yes	1	0	1	0	0	-1	0	0	1
29	South Bypass Option A - New Moody to KY 53 near Peak Rd	No	1	0	1	0	0	-1	-1		0
30	South Bypass Option B - New Moody to KY 53 near Blakemore Ln	Yes	1	0	1	1	0	-1	0		2
31	South Bypass Option C - New Moody to KY 22 near Fible Ln	Yes	-1	0	1	1	0				1
32	South Bypass Option D -New Moody to KY 22 near Oakridge Dr	No	1	0	1	0	-1	-1			0
33	South Bypass Option E -New Moody Lane to S KY 53	No	0	0	1	0	0		-1		0
	South Bypass Option F- New Moody Lane to Moody Lane (New)	No	-1	0	1	1	-1	-1			-1
	South Bypass Option G - New Moody Lane to Moody Lane (Realignment)	No	0	-1	1	0	-1	-1			-2

Look-Up Table	
Negative	-1
Neutral	0
Positive	1

Shaded alternates indicate those that were eliminated from further consideration.

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Level 2 Screening Results

Alt. No.	Description	Advance to Level 3 (Y/N)	Traffic Operations & LOS	Traffic & Pedestrian Safety	Number of Users	Support of New Development	Community Impacts	Property Impacts	Environmental Impacts	Capital & Operating Costs / User Benefits	Total Score (Weighted)
NORTH STUDY AREA											
LOW-BUILD (TSM)											
39	US 42 - protect as a scenic byway (previously designated as a scenic byway)	Yes	0	0	0	0	1	0	0	0	1
MEDIUM-BUILD											
42	KY 146 - KY 393 to KY 53 - add shoulders (incorporate into larger project - No. 55)	No	0	1	0	0	0	-1	0	-1	-1
17	KY 146 - KY 393 to KY 53 - add turn lanes at critical locations	No	1	1	0	0	0	-1	0	-1	0
HIGH-BUILD											
55	KY 146 - KY 393 to KY 53 - widen to four lanes with median	Yes	1	0	1	0	0	-1	0	0	1
22	Allen Lane - construct railroad underpass (combine with larger project Nos. 45-49)	No	1	0	-1	0	0	-1	0	-1	-2
28	Provide I-71 overpass (bridge) from Allen Lane to New Moody (combine with larger project Nos. 45-49)	No	0	0	0	0	0	0	-1	-1	-2
45	North Bypass Option A - New Moody Lane to KY 53 - via I-71 overpass, relocated Allen Ln, Springhouse Pike, new road to Old Sligo	Yes	1	0	1	1	-1	0	0	0	2
46	North Bypass Option B - New Moody Lane to KY 53 - via I-71, Commerce Parkway, new road west of Button Lane, west of Fairgrounds, new bypass to Old Sligo	Yes	1	0	1	1	0	0	0	-1	2
47	North Bypass Option C - Commerce Pkwy to KY 53 - via I-71 overpass, Commerce Parkway, Button Ln, East of Fairgrounds, new bypass to Old Sligo	No	-1	0	0	1	-1	-1	0	0	-2
48	North Bypass Option D - New Moody Lane to KY 53 - via I-71, Commerce Parkway, new connector road A west of Fairgrounds, new bypass to Old Sligo	Yes	0	0	1	1	0	0	0	-1	1
49	North Bypass Option E - New Moody Lane to KY 53 - via I-71 overpass, new Allen Ln, west of Springhouse Pike, new road to Old Sligo	Yes	0	0	0	1	0	0	0	0	1
A12	North Bypass Option F - New Moody Lane to KY 53 - via I-71 overpass, Allen Ln, west of Springhouse Pike by Fairgrounds, new road to Old Sligo	No	-1	0	0	1	-1	0	0	0	-1
18	Connector Road A - KY 146 to Dawkins Rd - along east edge of prison property	Yes	0	0	-1	1	1	0	0	0	1

Look-Up Table	
Negative	-1
Neutral	0
Positive	1

Shaded alternates indicate those that were eliminated from further consideration.

- **Costs**
  1. Capital Costs

- **Impacts**
  1. Community Impacts
  2. Environmental Impacts

- **Execution**
  1. Feasibility / Meets Goals and Objectives
  2. Priority / Phasing

The following sections present the analysis results for the Level 3 screening for each study scenario. A project level matrix is also presented showing the summary analysis results for each project. The projects screened out at this stage are discussed individually with the reasons for eliminating them. The remaining projects form the recommended improvement plan and are discussed in more detail in Chapter 11.

10.3.1 2025 No-Build Scenario

10.3.1.1 Traffic and Transportation

2025 Average Daily Traffic

Figure 10.1 illustrates the estimated 2025 No-Build Average Daily Traffic (ADT) volumes on the study area roadways. When compared to the 2001 traffic volumes, it is clear that there will be significant future traffic growth throughout the study area. Traffic volumes on KY 53 will grow by 50 to more than 100 percent depending on the location of the roadway segment. Volumes on KY 22 will grow substantially, with increases of well over 100 percent. Traffic on KY 393 will grow as well, with the highest increase occurring at the I-71 interchange. The traffic growth in the study area will degrade operating conditions at many critical locations, as discussed in the next section.

2025 Levels of Service

Year 2025 No-Build levels of service were estimated for critical intersections and highway segments based on the projections developed for the study. (See Chapters 4.0 and 9.0.) The intersection results are shown in Table 10.3 and illustrated in Figure 10.2. In the 2025 No-Build Scenario, all of the major intersections on KY 53 from KY 146 to New Moody Lane will operate at LOS F during both the Average Peak Hour and Design Peak Hour periods if no improvements are made in the corridor. This is a significant decline in operating conditions from the current 2001 operating conditions. In addition, portions of the two-lane sections of KY 53 and KY 22 will begin to experience degraded operations through lower speeds and more time spent following slower moving vehicles. KY 146 will continue to operate at LOS D, which is below the acceptable threshold set for the study area (LOS C).

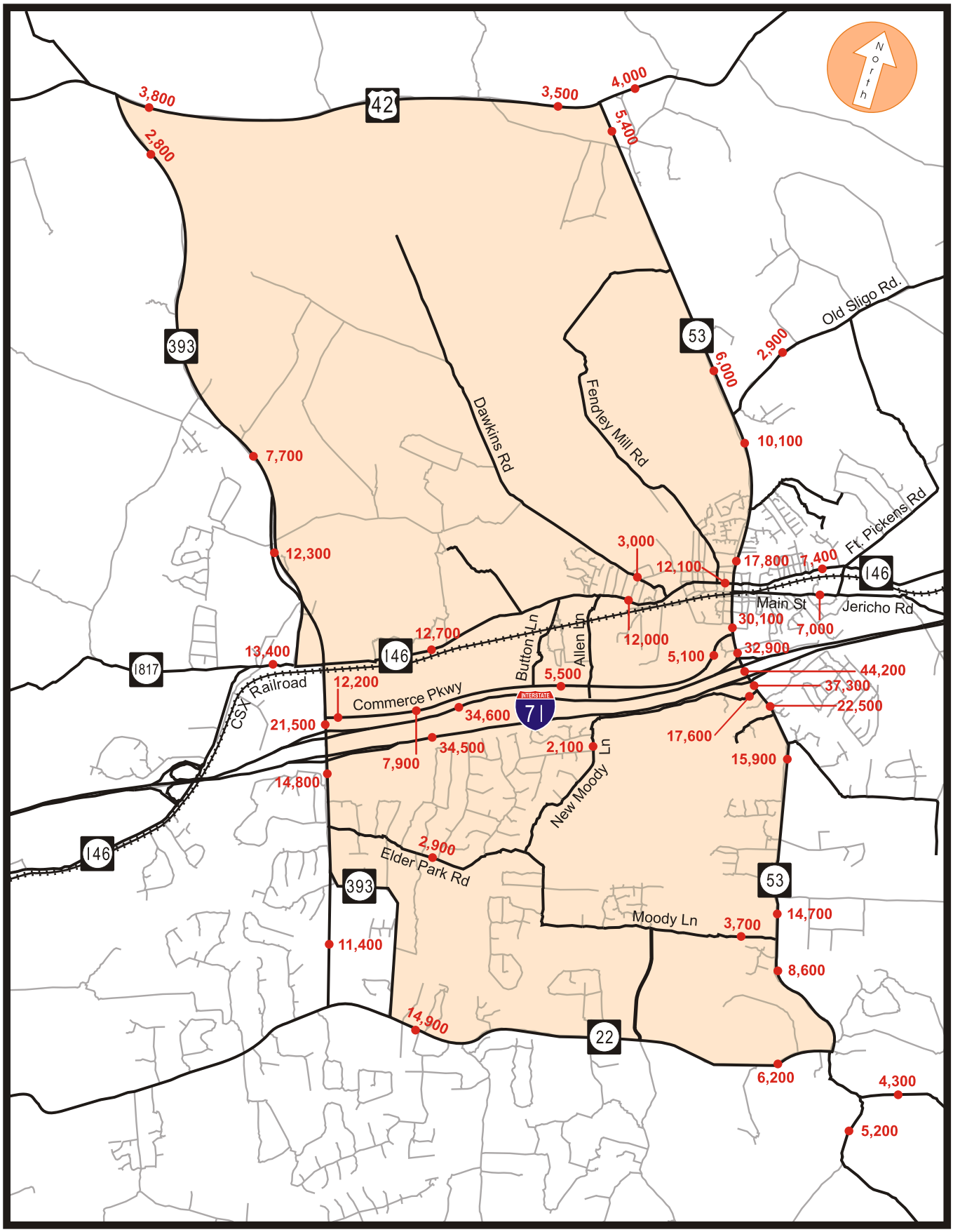

North
42
393
53
146
1817
71
INTERSTATE
3,800
2,800
3,500
4,000
5,400
7,700
12,300
6,000
2,900
Old Sligo Rd.
Dawkins Rd
Fendley Mill Rd
10,100
Ft. Pickens Rd
3,000
12,100
17,800
7,400
Main St
Jericho Rd
30,100
7,000
12,000
5,100
32,900
44,200
37,300
22,500
17,600
15,900
12,700
13,400
12,200
Commerce Pkwy
CSX Railroad
Button Ln
Allen Ln
5,500
34,600
21,500
34,500
7,900
2,100
New Moody Ln
14,800
2,900
Elder Park Rd
Moody Ln
3,700
14,700
8,600
11,400
14,900
6,200
4,300
5,200

Figure 10.1

Table 10.3: Intersection Level of Service Summary

Location	Scenario															
	2025 No-Build				2025 Low-Build				Medium Build				High Build			
	AVE PEAK		*DHV*		*AVE PEAK*		*DHV*		*AVE PEAK*		*DHV*		*AVE PEAK*		*DHV*	
	Delay	*LOS*	*Delay*	*LOS*	*Delay*	*LOS*	*Delay*	*LOS*	*Delay*	*LOS*	*Delay*	*LOS*	*Delay*	*LOS*	*Delay*	*LOS*
KY 53 / KY 146	154	F (Unsig)	>250	F (Unsig)	41	D	190	F	35	C	180	F	28	C	69	E
KY 53 / Main	164	F (Unsig)	>250	F (Unsig)	39	D	187	F	40	D	190	F	25	C	116	F
KY 53 / Yeager	174	F	>250	F	123	F	>250	F	20	B	216	F	11	B	14	B
KY 53 / Parker	>250	F (Unsig)*	>250	F (Unsig)*	83	F	215	F	59	E	226	F	14	B	36	D
KY 53 / Crystal	182	F	>250	F	182	F	>250	F	182	F	>250	F	29	C	53	D
KY 53 / I-71 SB	133	F	>250	F	40	D	119	F	40	D	118	E	16	B	55	D
KY 53 / I-71 NB	151	F	211	F	84	F	204	F	90	F	218	E	35	C	32	C
KY 53 / New Moody	94	F	240	F	94	F	204	F	84	F	209	F	24	C	36	D
KY 146 / 4th St	>250	F (Unsig)	>250	F (Unsig)	12	B	26	C	11	B	25	C	12	B	19	B
KY 53 / Blakemore Ext.													6	A	7	A
KY 53 / Moody Ln	>250	F (Unsig)*	>250	F (Unsig)*	>250	F (Unsig)*	>250	F (Unsig)*	14	B	41	D	4	A	5	A
KY 146 / North Bypass													11	B	21	C
KY 53 / North Bypass													9	A	9	A

* Two-way STOP Controlled intersection. Delay and LOS apply to most congested minor street left turns.

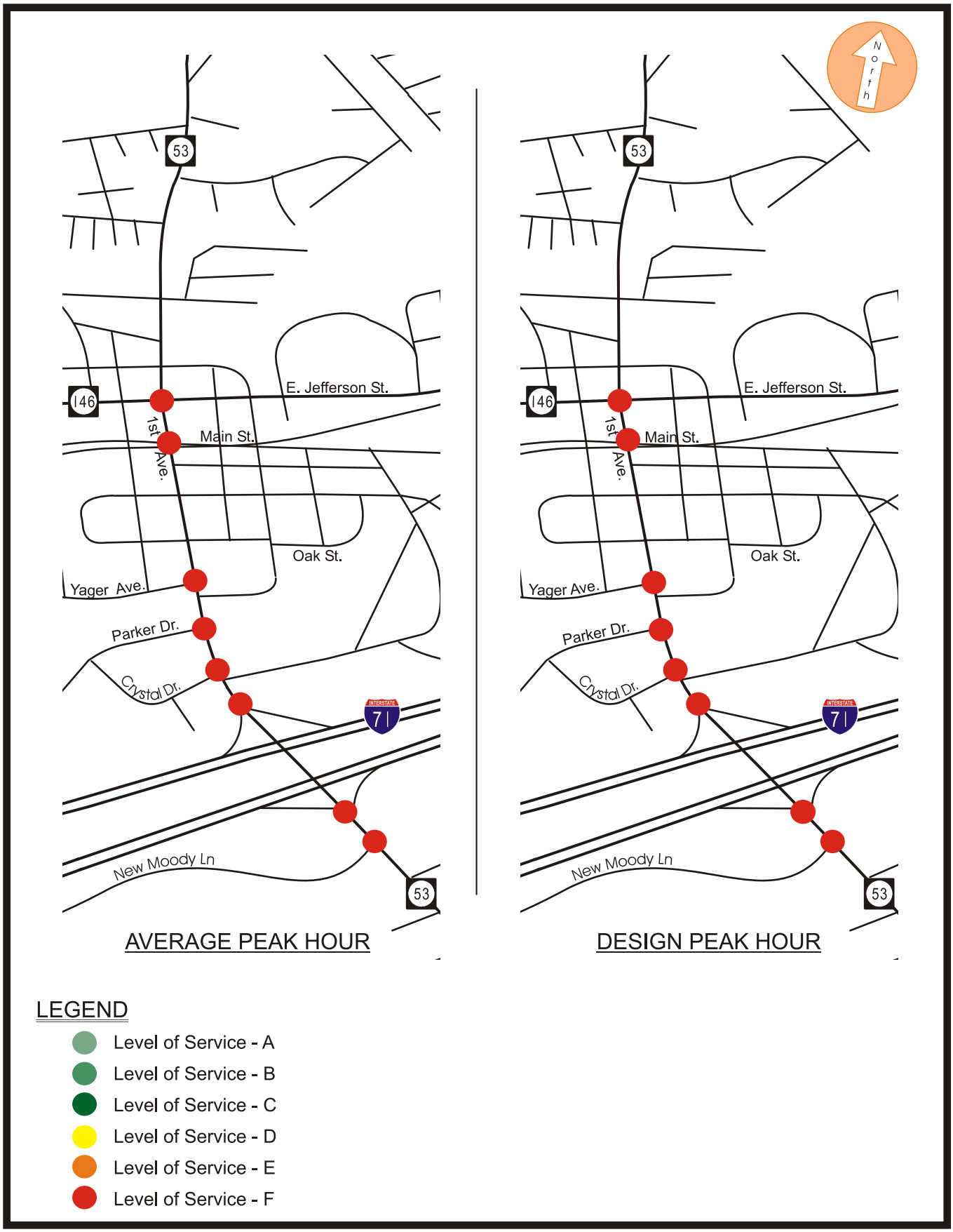

North
53
146
E. Jefferson St.
1st Ave.
Main St.
Oak St.
Yager Ave.
Parker Dr.
Crystal Dr.
INTERSTATE
71
New Moody Ln
53
AVERAGE PEAK HOUR
DESIGN PEAK HOUR
LEGEND
Level of Service - A
Level of Service - B
Level of Service - C
Level of Service - D
Level of Service - E
Level of Service - F

Figure 10.2

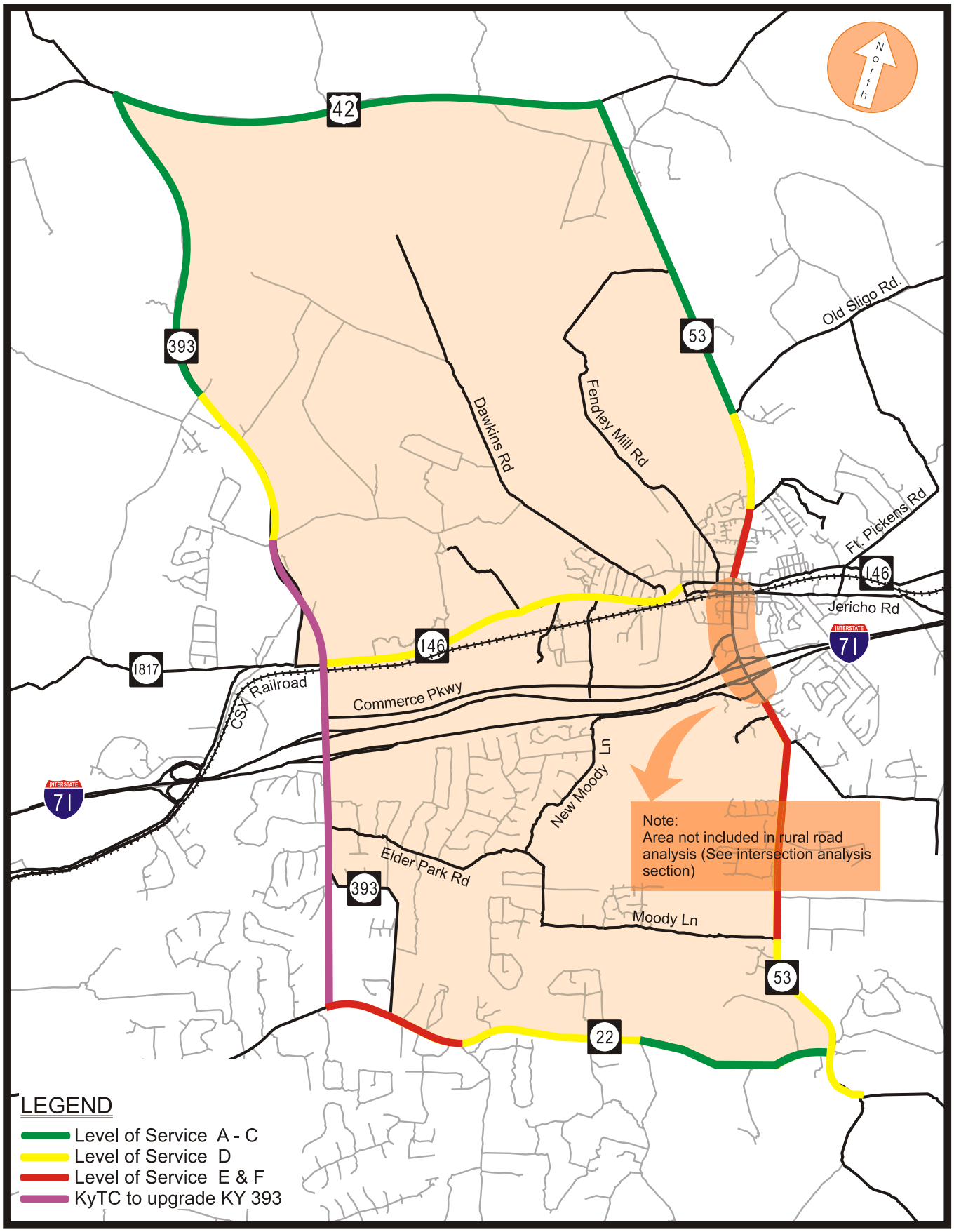

North
42
393
53
Old Sligo Rd.
Dawkins Rd
Fendley Mill Rd
Ft. Pickens Rd
146
Jericho Rd
INTERSTATE
71
1817
CSX Railroad
Commerce Pkwy
New Moody Ln
Note:
Area not included in rural road analysis (See intersection analysis section)
Elder Park Rd
Moody Ln
22
LEGEND
Level of Service A - C
Level of Service D
Level of Service E & F
KyTC to upgrade KY 393

Figure 10.3

Access, Circulation, and Safety

There are no direct changes to access in the No-Build scenario beyond the changes resulting from the KY 393 project. However, both access and circulation will become more difficult as traffic operations begin to degrade across the study area. Safety will also be affected as traffic congestion increases, without any corresponding highway or traffic control improvements.

10.3.1.2 Impacts

Community Impacts

The No-Build Scenario has no direct community impacts. The indirect impacts of the No-Build scenario include negative community and quality-of-life impacts for nearly all residents of the study area as traffic operations degrade to unacceptable conditions on KY 53, KY 146, and other study area roadways.

Environmental Impacts

Environmental impacts of doing nothing would likely include those associated with high levels of traffic congestion and delay, including potential negative air quality impacts.

10.3.1.3 Execution

The No-Build scenario does not meet the study's goals and objectives. Instead it would result in traffic congestion, more delay, reduced safety, and a lower quality of life for study area residents.

10.3.1.4 2025 No-Build Scenario Conclusions

The No-Build scenario results in unacceptable transportation system operations and significant impacts to the community and even the region. It clearly demonstrates the need for new transportation investments in the study area.

10.3.1.5 No-Build Scenario – Screened Projects

There were no specific No-Build projects to be evaluated, however, the 2025 traffic volumes on KY 393 confirmed the importance of proposed improvement projects in that corridor.

10.3.2 2025 Low-Build (TSM) Scenario

10.3.2.1 Traffic and Transportation

2025 Average Daily Traffic

The year 2025 ADT volumes for the Low-Build or Transportation Systems Management (TSM) Scenario were essentially the same as for the No-Build Scenario because no new links or major capacity projects were included. Therefore, the traffic volume and growth discussion for the No-Build Scenario also applies to the TSM Scenario.

2025 Levels of Service

Future levels of service were estimated for critical intersections based on the projected 2025 TSM Scenario traffic volumes using the methods presented in Chapters 4.0 and 9.0. Table 10.3 presents the results. While, some improvement is shown from the No-Build Scenario, nearly all of the study intersections still operate at unacceptable levels of service during both analysis periods. Due to the low cost nature of the TSM improvements, the segment levels of service will be the same as for the No-Build Scenario. Therefore, the TSM improvements will not adequately address the traffic operations deficiencies in the study area.

Access, Circulation, and Safety

The TSM improvements provide modest access and circulation improvements, as vehicles can reach their destinations and travel through the system somewhat more efficiently than in the No-Build Scenario. This is demonstrated through the slightly improved levels of service, which translate into a lower system-wide travel time for new vehicles, compared to the No-Build Scenario.

Table 10.4 presents the estimated total 2025 system-wide vehicle travel times and travel distances for new vehicles on the study area roadways (per year for new vehicles only). Although travel time and speed are improved, access and circulation will be poor compared to current conditions. Safety will also degrade from current conditions as traffic volumes and congestion increase, without substantial corresponding highway improvements.

Table 10.4: Estimated System-Wide Travel Time and Distance for New Vehicles

	Scenarios					
	No-Build	**TSM**	**Medium-Build**	**High-Build 1**	**High-Build 2**	**High Build 3**
System Wide Travel Time for New Vehicles Only (Hrs/Day)	30,900	30,400	30,350	29,600	29,600	29,600
System Wide Travel Distance for New Vehicles Only (Miles/Day)	1,365,000	1,365,000	1,365,000	1,371,000	1,368,000	1,367,000
Average Speed (mph)	44.17	44.9	44.98	46.32	46.22	46.18

Notes: Consistent with the LOS analysis, scenarios 1-3 include additional delay time due to congestion on KY 53 and other study area roadways.

10.3.2.2 Impacts

Community Impacts

The TSM Scenario provides some traffic relief over the 2025 No-Build baseline conditions; however, increased traffic congestion in this scenario will still have negative community and quality-of-life impacts for nearly all residents of the study area. Traffic operations will degrade to unacceptable conditions on KY 53, KY 146, and other study area roadways.

Environmental Impacts

There will not be any significant new impacts to the natural or human environments due to projects included in the TSM Scenario. However, there may be air quality impacts due to the increased traffic congestion.

10.3.2.3 Execution

By itself, the Low-Build Scenario does not fully address the study's goals and objectives. It provides some limited benefits, but it will still result in traffic congestion, lowered safety, and a reduced quality of life for study area residents.

10.3.2.4 2025 Low-Build Scenario Conclusions

The Low-Build scenario provides modest improvements at specific locations. Therefore, some of the specific projects included in this scenario should be advanced, but overall a higher level of transportation system improvement and investment is required in the study area.

10.3.2.5 Low-Build Scenario – Screened Projects

The projects included with the TSM scenario are relatively small, lower cost projects. A summary evaluation of each project is presented in Table 10.5. As shown, six projects were eliminated from the Low-Build Scenario during the Level 3 screening. The remaining projects were included in the recommended program of improvements.

The six eliminated projects and the reasons for their elimination are discussed below.

- Alternate number 23 - Make roadway safety improvements at key locations. Originally, this was proposed as a project to widen highway shoulders throughout the study area. However, based on further evaluation and discussions with KYTC District 5 staff, it was decided that shoulder improvements alone would not be cost-effective compared to other improvements. Shoulder widening should be included as a part of larger highway improvement projects. The concept then changed to making 5 to 6 spot safety improvements at roughly $50,000 each. Again, although beneficial, minor spot improvements at specific locations do not fully address the main problems or issues, which tend to be more widespread throughout the system and not concentrated at one or a few locations.

- Alternate number 24 – Perform advanced studies for in-town transit options. This assumed the continual study of some type of fixed-route transit option, most likely bus. Given the low residential densities and dispersed destinations in the area, and the high costs and likely low ridership, it was felt that further study would not be effective. Therefore, this alternate was eliminated from further consideration. Other options in the recommended package address the need for multimodal solutions.

- Alternate number 41- KY 53 / KY 146 install traffic signal. This alternate would upgrade the current 4-way stop with flashing red overhead signal to a full traffic signal. With the traffic signal, the intersection will operate at LOS D/F in 2025. However, minor reconstruction of the intersection to add a westbound lane and the re-stripe the approaches (Alternative A3 in the Medium-Build Scenario) will further enhance operations and is recommended. Therefore, this low-cost TSM improvement, with its limited effectiveness, was eliminated from further consideration.

- Alternate number 54 - install traffic signal at KY 53 and Main Street. This alternate would upgrade the current 4-way stop condition at KY 53 and Main Street to a full signal. With this improvement, the intersection would operate at LOS D/F in 2025 during the peak period. This is an improvement over the No-Build Scenario. However, the signal upgrade would be more efficient if its operation were coordinated with the signal upgrade project at KY 53 and KY 146. Therefore, this discreet stand-alone project was eliminated from consideration and was combined with the signal addition at KY 53 and KY 146 (Project A3).

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Level 3 Screening Summary

Alt. No.	Description	Traffic / Transportation			Costs	Impacts		Execution
		2025 Level of Service (LOS) (Ave Peak/DHV Peak)	Average Daily Traffic (ADT) - 2020	Access / Circulation / Safety	Capital Costs*	Community Impacts	Environmental Impacts**	Feasibility / Meets Goals and Objectives
LOW-BUILD (TSM)								
13	Continue to work with City, County, state police, Fire / EMS and dispatch to enhance incident management and traffic rerouting	N/A	N/A	Improves circ. and safety	Nominal	None	None	High
23	Make roadway safety improvements at key locations (was widen shoulders on all roads)	N/A	Varies	Minor safety improvements	$250,000 - $300,000	Minimal	Minimal	Medium
24	Continue to investigate in-town transit options	N/A	N/A	N/A	$25,000 - $30,000	None	None	Low
25	Provide area-wide pedestrian and bicycle amenities (signs, pavement markings, signals, etc.)	N/A	N/A	Improves safety	$250,000 - $300,000	None	None	Medium
14	Investigate and implement access management policy especially along major thoroughfares (KY 22, KY 53, KY 146, KY 393 and US 42)	N/A	Varies	Improves Safety / Traffic Flow	Nominal	Low	Minimal	Medium
36	KY 393 / KY 146 and Vicinity - encourage neighborhood commercial development	N/A	N/A	Improves local circulation	Nominal	None	None	Medium
41	KY 53 / KY 146 - install traffic signal	D / F	30,000 +	Modest circ. & safety imp.	$125, 000 - $250,000	None	None	High
54	KY 53 / Main St - install traffic signal	D / F	30,000 +	Modest circ. & safety imp.	$125, 000 - $250,000	None	None	High
19	KY 146 / 4th. St. - install traffic signal	B / C	13,000 - 14,000	Improves safety and circulation	$125, 000 - $250,000	None	None	High
16A	Downtown LaGrange - coordinate proposed traffic signals	D / F	30,000 +	Improves circulation	$30, 000 - $40,000	None	None	High
43	Downtown at-grade RR crossings - install lights, audible warnings.	N/A	3,000 - 8,000	Improves safety	$150,000 $300,000	None	None	Medium
59	Main St / 2nd St - convert to 4-way stop	safety	3,000 - 6,000	Improves safety	$1,000 - $2,000	None	None	High
A1	Main St / Walnut St - convert to 4-way stop	safety	7,000 - 8,000	Improves safety	$1,000 - $2,000	None	None	High
57	KY 53 / I-71 Interchange - add protected left turn phases at ramps	D-F / F	33,000 - 45,000	Improves safety	$50,000 - $75,000	None	None	High
16B	KY 53 from Washington to Kroger Driveway - coordinate traffic signals	D-F / F	20,000 - 45,000	Minimal	$30, 000 - $40,000	None	None	High
58	KY 53 / Parker Dr - install traffic signal	F / F	30,000 +	Improves circulation	$125, 000 - $250,000	Minor	None	Medium
39	US 42 - protect as a scenic byway (previously designated as a scenic byway)	N/A	3,000 - 4,000	N/A	Nominal	None	None	High

Shaded alternates indicate those that were eliminated from further consideraiton.

* - Excludes right-of-way (ROW)
** - All alternates have potential affects on Archaeological Sites

- Alternate number 16A - Downtown LaGrange – coordinate proposed traffic signals. Again, this type of improvement is warranted and will have a positive affect. However, it is better to combine it with the other traffic signal installation projects and the widening of the intersection approaches at KY 53 and KY 146. Therefore, as a separate project, it was eliminated. However, traffic signal coordination is a part of the Medium Build alternate Number A3 in the Recommended Package.

- Alternate number 16B - KY 53 from Washington Street to Kroger Driveway – coordinate traffic signals. Coordinating the traffic signals along KY 53 (without any physical or capacity improvements) does not significantly improve the levels of service in the corridor. All of the intersections will continue to operate at LOS D or worse with most operating at LOS F during both analysis periods. This does not meet the desired LOS standard of C. The analysis indicated that traffic signal coordination in conjunction with additional capacity (lanes) is a better option. Therefore this alternate was eliminated as a stand-alone project.

10.3.3 2025 Medium-Build Scenario

10.3.3.1 Traffic and Transportation

2025 Average Daily Traffic

The year 2025 ADT volumes for the Medium Build Scenario were very similar to those for No-Build and TSM Scenarios (refer to Figure 10.1). Again, because there are no new links or major capacity projects (with the exception of widening KY 53 north of KY 146), the traffic flows follow the same pattern.

2025 Levels of Service

As shown in Table 10.3, the Medium Build Scenario intersection levels of service do show some improvement over the baseline No-Build conditions. Specifically, the KY 53 / Yager and KY 53 / KY 146 intersections improve to an acceptable level of service during the average peak hour conditions. However, most of the other intersections continue to operate unacceptably during both analysis periods and all of them operate at LOS E or F during the design hour peak. With regards to roadway segments, the widening of KY 53 to four lanes north of KY 146 improves the level of service on that segment. The other roadway segments continue to operate at the No-Build levels of service shown in Figure 10.3.

Access, Circulation, and Safety

The Medium-Build projects improve access to areas in the vicinity of the specific improvements. Overall circulation is also enhanced. System-wide delay is expected to decrease slightly due to improved traffic operations as shown in Table 10.4. The Medium-Build projects will also improve safety at specific locations such as at the Main St. / Walnut St. and Madison St. / Dawkins Rd. intersections. While, safety at certain

locations will be improved, system congestion will still exceed acceptable levels, and overall transportation system safety is expected to decline.

10.3.3.2 Impacts

Community Impacts

As with the TSM Scenario, the Medium-Build Scenario provides some traffic relief over the 2025 No-Build baseline conditions. However, increased traffic congestion in this scenario will still have negative community and quality-of-life impacts for nearly all residents of the study area. Traffic operations will degrade to unacceptable conditions on KY 53 and other study area roadways.

Environmental Impacts

Only minor impacts to the natural or human environments are anticipated due to projects included in Medium-Build Scenario. However, there may be air quality impacts due to the increased traffic congestion.

10.3.3.3 Execution

The Medium-Build Scenario does not fully address the study's goals and objectives. It provides some limited benefits, but it will still result in unacceptable levels of traffic congestion, lowered safety, and a reduced quality of life for study area residents.

10.3.3.4 2025 Medium-Build Scenario Conclusions

The Medium-Build Scenario alone will not provide the level of improvements necessary to provide safe and efficient transportation system operations in the year 2025. Numerous locations will continue to operate at unacceptable levels of traffic congestion and delay. Certain projects from the scenario should instead be combined with other more extensive (High-Build type) improvement options.

10.3.3.5 Scenario 2 – Medium-Build – Screened Projects

A summary evaluation of each Medium-Build project is presented in Table 10.6. Two Medium-Build alternates were eliminated during the Level 3 Screening. The reasons for their elimination are described below. The remaining Medium-Build projects were included in the recommended program of improvements.

- Alternate number A8 - KY 53 from New Moody Lane to KY 22 widen shoulders (add 2 feet on both sides). Widening deficient shoulders can provide a better operating condition, but the resulting change in level of service is minimal. Instead, the main benefit of such an improvement would be increased safety, especially for run off road, sideswipe, and head-on crash types. However, as was discussed for Alternate 23, it is more cost effective, given the comparative costs and impacts to add capacity (additional travel lanes) in addition to

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Level 3 Screening Summary

Alt. No.	Description	Traffic / Transportation			Costs	Impacts		Execution
		2025 Level of Service (LOS) (Ave Peak/DHV Peak)	Average Daily Traffic (ADT) - 2020	Access / Circulation / Safety	Capital Costs*	Community Impacts	Environmental Impacts**	Feasibility / Meets Goals and Objectives
MEDIUM-BUILD								
52	Madison St / Dawkins Rd - Improve sight distance, include realignment from Dawkins to 6th St.	N/A	2,000 - 4,000	Improves safety	$1 - $2 M	1-2 Homes	Few if any	High
A3	KY 53 / KY 146 - widen intersection approaches, signalize, restripe/add lanes	C / F	30,000 +	Improves safety and circulation	$500,000 - $900,000	Construction only	LaGrange historic district	High
11	Main St - at Walnut/Cedar - address RR tracks and run off road issue	N/A	7,000 - 8,000	Improves safety	$300,000 - $500,000	Minor	Few if any	High
12A	KY 53 - KY 146 to Woodcreek - restripe and add ROW to maintain 4 through lanes 11 feet wide	B	12,000 - 14,000	Improves capacity	$300,000 - $500,000	Minor, Right of Way	LaGrange historic district	High
A15	KY 53 / Yager Ave. - realign off-set intersection @ Yager Avenue	B / F	25,000 - 30000	Improves safety, circ. and capacity	$1.5 - $3 M	2 - 5 businesses, Right of Way	Few if any	High
A8	KY 53 - New Moody Ln to KY 22 - widen shoulders (add 2 feet on both sides)	N/A	8,000 - 23,000	Minimal safety	$1.2 - $1.5 M	Right of Way, access	4 cultural / historic resources	Medium
42	KY 146 - KY 393 to KY 53 - add shoulders (add 2 feet on both sides)	N/A	12,000 - 13,000	Minimal safety	$6 - $10 M	Right of Way, access	1 cultural / historic resource	Medium

Shaded alternates indicate those that were eliminated from further consideraiton.

* - Excludes right-of-way (ROW)
** - All alternates have potential affects on Archaeological Sites

upgrading shoulders. Therefore, the shoulder widening alone was not deemed as effective as adding shoulders AND lanes. This alternate was eliminated and Alternate A6 was recommended for the High Build Option.

- Alternate number 42 - KY 146 from KY 393 to KY 53 widen shoulders (add 2 feet on both sides). Again, this option could marginally improve traffic operations, but not to the extent that it would significantly change the level of service. Although it may improve safety, a better solution is to add capacity (additional travel lanes) in addition to upgrading shoulders. Therefore, this alternate was eliminated and Alternate 55 was recommended for the High Build Option instead.

10.3.4 Scenarios 3-5 – High-Build Scenarios

10.3.4.1 Traffic and Transportation

2025 Average Daily Traffic

The year 2025 ADT volumes for the three High-Build Scenarios were similar throughout much of the study area. Figure 10.4 presents the estimated future High-Build traffic volumes in the study area. Traffic patterns shift with the introduction of the new high-Build roadway links. Traffic moves from KY 53 to both the northern and southern connector roadways.

2025 Levels of Service

As shown in Table 10.3 the High-Build Scenario levels of service show considerable improvement over the baseline No-Build condition. (As with the traffic volumes, the High-Build levels of service are very similar throughout the study area.) This includes better levels of service in the KY 53 corridor as well as on the widened segments of KY 146 and KY 53. As shown in Table 10.3 and Figure 10.5, some intersections will still operate at poor levels of service during the design hour, but all of the intersections will operate at LOS C or better during the average or typical peak period. Figure 10.6 illustrates the benefits of the high build scenario in terms of highway segment levels of service. Both KY 53 and KY 146 will operate at improved levels of service (LOS C or better) for most of their length. (It is useful to note that KY 22 in the southwest corner of the study may require upgrading by 2025. Improvements in this area would extend the currently planned KY 22 improvements.)

Access, Circulation, and Safety

The High-Build projects improve access and circulation throughout the study area. System-wide delay is expected to decrease from the baseline condition due to improved traffic operations. Safety at specific locations will also improve as roadways and intersections are upgraded

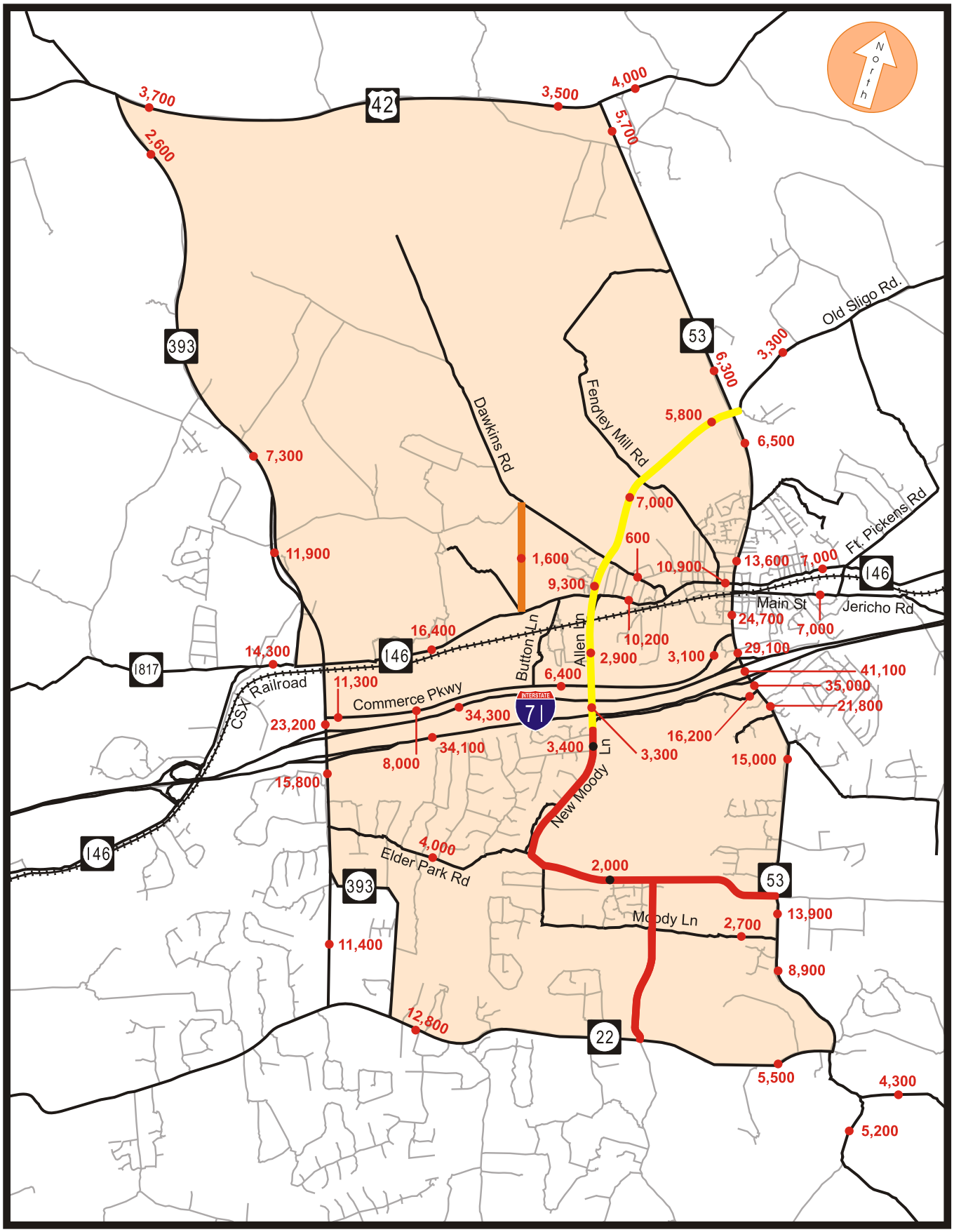


Figure 10.4

2025 High-Build Average Daily Traffic Volumes

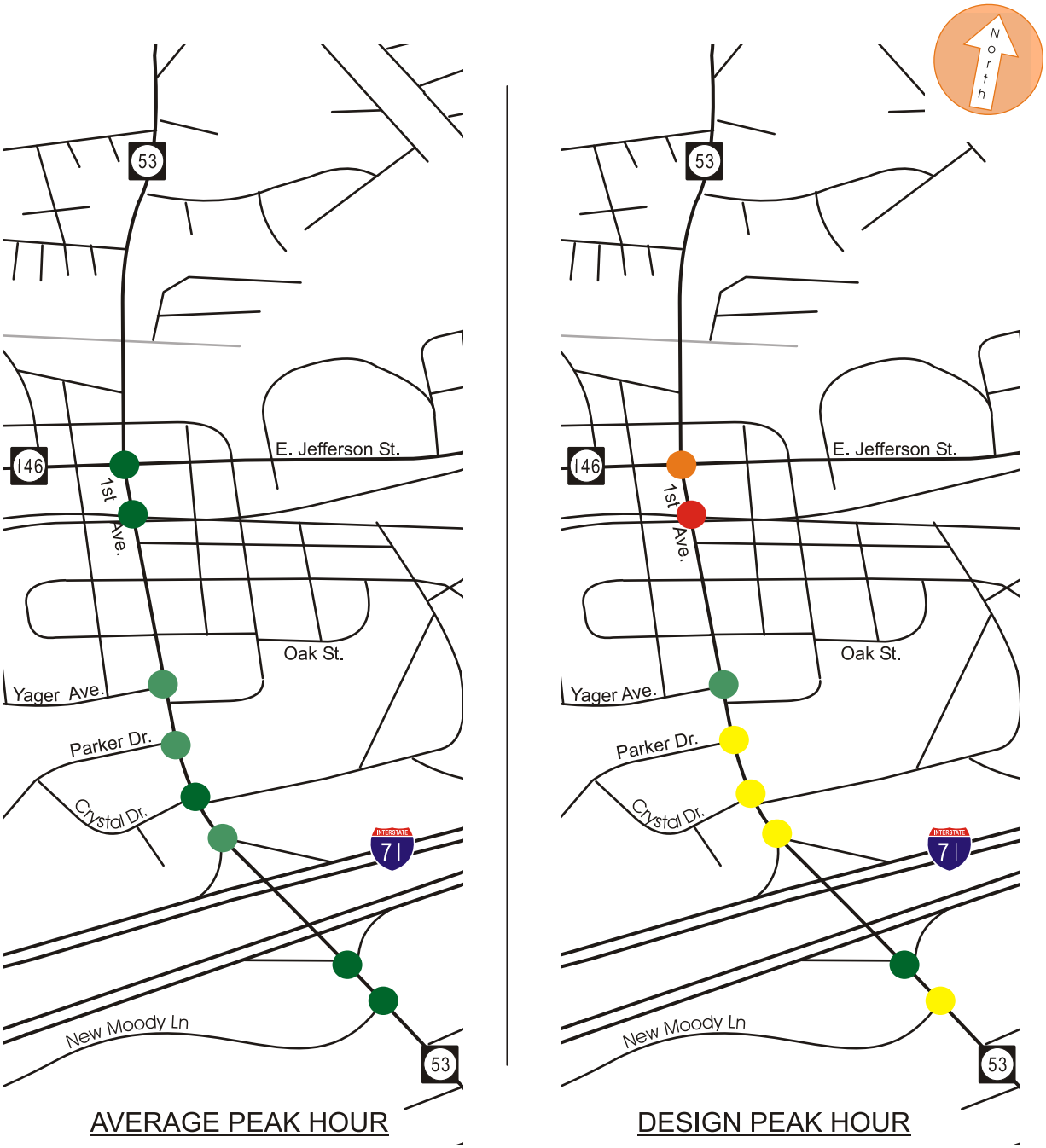


Figure 10.5

2025 High-Build PM Peak Hour Levels of Service

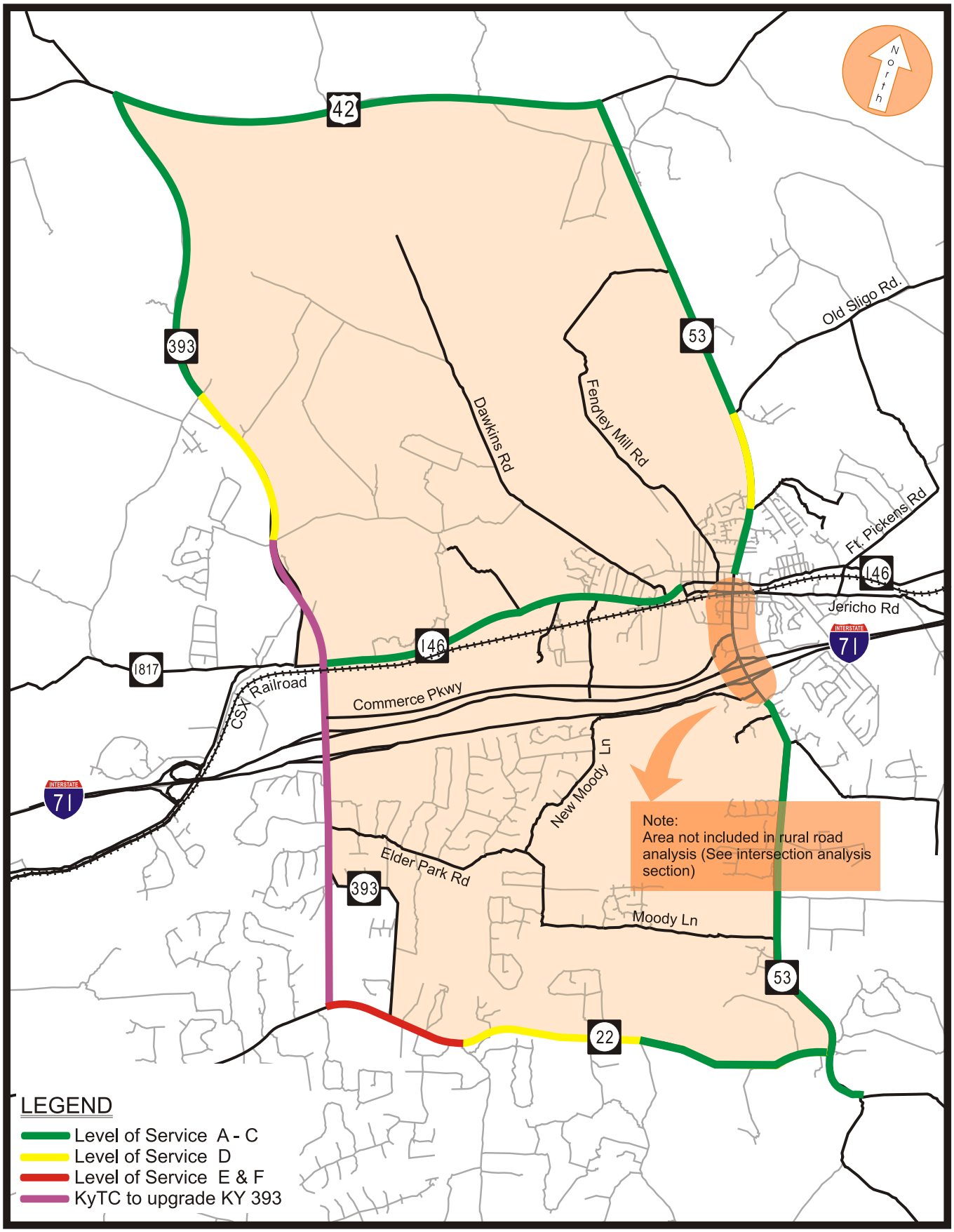

North
42
393
53
Old Sligo Rd.
Dawkins Rd
Fendley Mill Rd
Ft. Pickens Rd
146
Jericho Rd
INTERSTATE
71
1817
CSX Railroad
Commerce Pkwy
New Moody Ln
Note:
Area not included in rural road analysis (See intersection analysis section)
Elder Park Rd
Moody Ln
22
LEGEND
Level of Service A - C
Level of Service D
Level of Service E & F
KyTC to upgrade KY 393

Figure 10.6

10.3.4.2 Impacts

Community Impacts

Impacts to the community from the High-Build Scenario include positive transportation system and traffic flow benefits, but they also include property acquisition impacts. The impacts of the various projects are discussed in more detail with each of the specific projects.

Environmental Impacts

The environmental impacts of this scenario include potential natural and human resource impacts. No major specific impacts were identified. However, additional studies will have to be completed for each project that moves forward. The downtown LaGrange historic district was specifically avoided in the High-Build Scenario to limit major impacts to known historic resources. Again, more detail is given with each specific project.

10.3.4.3 Execution

High-Build Scenarios 1-3 address many of the study's goals and objectives, though each alternative does so to a greater or lesser degree as discussed below.

10.3.4.4 2025 High-Build Scenario Conclusions

The first level of analysis for the high-build options focused on whether or not a bypass was needed. The following critical question was posed: "If significant improvements were made to KY 53, would it be possible to accommodate the projected 2025 traffic volumes at the desired LOS C without constructing a bypass?"

Based on the traffic analysis and consideration of traffic operations issues the answer was no. It is not possible to accommodate all of the future traffic without a new connection between KY 53 and KY 146 – essentially a bypass. Without this new connection the majority of the traffic from development north of LaGrange will funnel down to the KY 53 / KY 146 intersection. A significant portion of this traffic will then proceed south on KY 53 toward the I-71 interchange.

Currently, KY 53 already experiences delays and congestion from downtown LaGrange south past the I-71 interchange. Expected traffic growth in this corridor is significant as previously discussed. Even with major improvements to the KY 53 corridor from LaGrange south, it will not be possible to attain the desired LOS C. Even with the proposed new connection, which will draw approximately 4,000 to 5,000 vehicles from KY 53, it is not possible to attain LOS C at all intersections in the corridor during the design hour. (LOS C is attained at all of the intersections in the corridor during the average peak hour with the KY 53 improvements and the new connection in place.) It is also important to note that restrictions on improvements to the KY 53 / KY 146 and KY

53 / Main St. intersections due to the presence of the historic district limit the ultimate capacity of these intersections.

In addition to the level of service analysis, other factors point to the need for a new bypass facility. First, trains running along the CSX mainline through downtown LaGrange exacerbate the current congestion problems, especially during AM and PM peak hours. It often takes the transportation system an extended period of time to recover from passing trains. The trains also limit emergency vehicle access through LaGrange. A new connector with a grade separated railroad crossing will help relieve these conditions and will provide an alternative route. Second, incidents on I-71 often cause traffic to be re-routed on major east west highways such as US 42, KY 146 and KY 22. A main access route to these facilities is KY 53. A new connector will provide local traffic with an alternative to KY 53 in these conditions. Third, the transportation system currently has only two north-south routes, KY 53 on the east and KY 393 on the west. From a system perspective, it is important to provide additional collector type facilities connecting these and the other arterial highways (i.e. KY 146) in the study area.

Once it was determined that a bypass was necessary the next issue was where was the most appropriate location. This issue is addressed in detail at the end of this Chapter.

10.3.4.5 Scenario 3-5 – High-Build – Screened Projects

Six alternates were eliminated during the Level 3 screening. Four alternates were eliminated from all three Options, and two were eliminated from High-Build Option 1 and High-Build Option 2 respectively. This is because, essentially, the High-Build Options were all the same except for the north bypass options. High Build Option 1 had the north bypass Option D, High Build Option 2 had the north bypass Option B, while High-Build Option 3 had the north bypass Option A. The High-Build evaluation matrices are presented in Table 10.7. The alternates and reasons for elimination included:

<u>High Build Options 1, 2 and 3</u>

- Alternate number A5 - New Moody Lane to KY 22 (Ballardsville) improve horizontal and vertical sight distance. This improvement is largely for safety and would not have a substantial impact on level of service. It has a relatively high cost (between $8 M and $13 M) due to extensive cut and fill required to correct substandard horizontal and vertical curves. A better investment would be to reconstruct the roadway to address horizontal and vertical sight distance / curves AND to add capacity. The incremental investment to add capacity justifies the additional cost. Therefore, this alternate was eliminated in favor of one that address safety issues AND added capacity (lanes).

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Level 3 Screening Summary

Alt. No.	Description	Traffic / Transportation			Costs	Impacts		Execution
		2025 Level of Service (LOS) (Ave Peak/DHV Peak)	Average Daily Traffic (ADT) - 2020	Access / Circulation / Safety	Capital Costs*	Community Impacts	Environmental Impacts**	Feasibility / Meets Goals and Objectives
HIGH-BUILD 1								
64A	KY 53 - Washington to I-71 SB Ramp - add median with left turn lanes at major intersections only	B-C / B-D	24,000 - 42,000	Improves safety, access, circ, capacity	$1 - $2 M	12 - 16 businesses	None anticipated	High
A5	KY 53 - New Moody Ln to KY 22 (Ballardsville) - improve horizontal & vertical sight distance	N/A	8,000 - 22,000	Improves safety	$8 - $13 M	5 - 8 homes	4 cultural / historic resources	Medium / High
26B	KY 53 - New Moody Ln to KY 22 (Ballardsville) - widen to three lanes (center turn lanes & median)	D-E	8,000 - 22,000	Improves circ. and safety	$9 - $14 M	15 - 20 homes	4 cultural / historic resources	Medium / High
64	Add center turn lane (restrict L turns) on KY 53 from KY 146 to KY 22	Int. B-D / Seg. D-E	8,000 - 42,000	Improves safety, circ. capacity	$6 - $9 M	12 - 16 business, 15 to 20 homes	4 cultural / historic resources	Medium / High
27	KY 53 - New Moody Lane to KY 22 - widen to four lanes	A-C	8,000 - 22,000	Improves circ. and safety	$11 - $18 M	15 - 20 homes	4 cultural / historic resources	Medium / High
A6	KY 53 - New Moody Lane to KY 22 - widen to five lanes	A-C	8,000 - 22,000	Improves access, circulation and safety	$13 - $22 M	15 - 20 homes	22 potential historic archaeological sites, 4 cultural / historic sites	High
NEW	Elder Park Road Extension - from KY 53 to KY 393	A-C	3,000 - 5,000	Improves safety and circulation	$11 - $13 M	12 - 15 homes	3 potential historic archaeological sites, 6 - 8 cultural / historic sites	Medium
31	South Bypass Option C - New Moody to KY 22 near Fible Ln	A-C	2,000 - 5,000	Improves access and circulation	$16 - $19 M	12 - 15 homes	None anticipated	Medium
55	KY 146 - KY 393 to KY 53 - widen to four lanes	B	10,000 - 17,000	Improves circulation	$11 - $13 M	8 - 12 homes	11 potential historic archaeological sites, 4 cultural / historic sites	High
48	North Bypass Option D - New Moody Lane to KY 53 - via I-71, Commerce Parkway, new connector road A west of Fairgrounds, new bypass to Old Sligo	C-D	1,800 - 8,300	Improves access, circulation and safety	$20.6 - $25.1 M	8 - 10 homes, Fairgrounds, plus 12 properties in Majestic Woods	7 potential historic archaeological sites, 1 cultural / historic site	Low

Shaded alternates indicate those that were eliminated from further consideraiton.

* - Excludes right-of-way (ROW)
** - All alternates have potential affects on Archaeological Sites

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Level 3 Screening Summary

Alt. No.	Description	Traffic / Transportation			Costs	Impacts		Execution
		2025 Level of Service (LOS) (Ave Peak/DHV Peak)	Average Daily Traffic (ADT) - 2020	Access / Circulation / Safety	Capital Costs*	Community Impacts	Environmental Impacts**	Feasibility / Meets Goals and Objectives
HIGH-BUILD 2								
64A	KY 53 - Washington to I-71 SB Ramp - add median with turn lanes at major intersections only	B-C / B-D	24,000 - 42,000	Improves safety, access, circ, capacity	$1 - $2 M	12 - 16 businesses	None anticipated	High
A5	KY 53 - New Moody Ln to KY 22 (Ballardsville) - improve horizontal & vertical sight distance	N/A	8,000 - 22,000	Improves safety	$8 - $13 M	5 - 8 homes	4 cultural / historic resources	Medium / High
26B	KY 53 - New Moody Ln to KY 22 (Ballardsville) - widen to three lanes (center turn lanes & median)	D-E	8,000 - 22,000	Improves circ. and safety	$9 - $14 M	15 - 20 homes	4 cultural / historic resources	Medium / High
64	Add center turn lane (restrict L turns) on KY 53 from KY 146 to KY 22	Int. B-D / Seg. D-E	8,000 - 42,000	Improves safety, circ. capacity	$6 - $9 M	12 - 16 business, 15 to 20 homes	4 cultural / historic resources	Medium / High
27	KY 53 - New Moody Lane to KY 22 - widen to four lanes	A-C	8,000 - 22,000	Improves circ. and safety	$11 - $18 M	15 - 20 homes	4 cultural / historic resources	Medium / High
A6	KY 53 - New Moody Lane to KY 22 - widen to five lanes	A-C	8,000 - 22,000	Improves access, circulation and safety	$13 - $22 M	15 - 20 homes	22 potential historic archaeological sites, 4 cultural / historic sites	High
NEW	Elder Park Road Extension - from KY 53 to KY 393	A-C	3,000 - 5,000	Improves safety and circulation	$11 - $13 M	12 - 15 homes	3 potential historic archaeological sites, 6 - 8 cultural / historic sites	Medium
31	South Bypass Option C - New Moody to KY 22 near Fible Ln	A-C	2,000 - 5,000	Improves access and circulation	$16 - $19 M	12 - 15 homes	None anticipated	Medium
55	KY 146 - KY 393 to KY 53 - widen to four lanes	B	10,000 - 17,000	Improves circulation	$11 - $13 M	8 - 12 homes	11 potential historic archaeological sites, 4 cultural / historic sites	High
46	North Bypass Option B - New Moody Lane to KY 53 - via I-71, Commerce Parkway, new road west of Button Lane, west of Fairgrounds, new bypass to Old Sligo	C-D	2,600 - 8,200	Improves access, circulation and safety	$18.0 - $22.3 M	8 - 10 homes, Fairgrounds, plus 12 properties in Majestic Woods	5 potential historic archaeological sites, 1 cultural / historic site	Medium

Shaded alternates indicate those that were eliminated from further consideraiton.

* - Excludes right-of-way (ROW)
** - All alternates have potential affects on Archaeological Sites

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Level 3 Screening Summary

Alt. No.	Description	Traffic / Transportation			Costs	Impacts		Execution
		2025 Level of Service (LOS) (Ave Peak/DHV Peak)	Average Daily Traffic (ADT) - 2020	Access / Circulation / Safety	Capital Costs*	Community Impacts	Environmental Impacts**	Feasibility / Meets Goals and Objectives
HIGH-BUILD 3								
64A	KY 53 - Washington to I-71 SB Ramp - add median with left turn lanes at major intersections only	B-C / B-D	24,000 - 42,000	Improves safety, access, circ, capacity	$1 - $2 M	12 - 16 businesses	None anticipated	High
A5	KY 53 - New Moody Ln to KY 22 (Ballardsville) - improve horizontal & vertical sight distance	N/A	8,000 - 22,000	Improves safety	$8 - $13 M	5 - 8 homes	4 cultural / historic resources	Medium / High
26B	KY 53 - New Moody Ln to KY 22 (Ballardsville) - widen to three lanes (center turn lanes & median)	D-E	8,000 - 22,000	Improves circ. and safety	$9 - $14 M	15 - 20 homes	4 cultural / historic resources	Medium / High
64	Add center turn lane (restrict L turns) on KY 53 from KY 146 to KY 22	Int. B-D / Seg. D-E	8,000 - 42,000	Improves safety, circ. capacity	$6 - $9 M	12 - 16 business, 15 to 20 homes	4 cultural / historic resources	Medium / High
27	KY 53 - New Moody Lane to KY 22 - widen to four lanes	A-C	8,000 - 22,000	Improves circ. and safety	$11 - $18 M	15 - 20 homes	4 cultural / historic resources	Medium / High
A6	KY 53 - New Moody Lane to KY 22 - widen to five lanes	A-C	8,000 - 22,000	Improves access, circulation and safety	$13 - $22 M	15 - 20 homes	22 potential historic archaeological sites, 4 cultural / historic sites	High
NEW	Elder Park Road Extension - from KY 53 to KY 393	A-C	3,000 - 5,000	Improves safety and circulation	$11 - $13 M	12 - 15 homes	3 potential historic archaeological sites, 6 - 8 cultural / historic sites	Medium
31	South Bypass Option C - New Moody to KY 22 near Fible Ln	A-C	2,000 - 5,000	Improves access and circulation	$16 - $19 M	12 - 15 homes	None anticipated	Medium
55	KY 146 - KY 393 to KY 53 - widen to four lanes	B	10,000 - 17,000	Improves circulation	$11 - $13 M	8 - 12 homes	11 potential historic archaeological sites, 4 cultural / historic sites	High
45	North Bypass Option A - New Moody Lane to KY 53 - via I-71 overpass, relocated Allen Ln, Springhouse Pike, new road to Old Sligo	C-D	2,700 - 9,300	Greatly improves access, circulation and safety	$15.1 - $18.8 M	0 - 5 homes in Springhouse Estates	7 potential historic archaeological sites	High

Shaded alternates indicate those that were eliminated from further consideraiton.

* - Excludes right-of-way (ROW)
** - All alternates have potential affects on Archaeological Sites

- Alternate number 26B - New Moody Lane to KY 22 (Ballardsville) widen to three lanes (center turn lanes and median). This improvement addressed the safety issues and added a center turn lane with a median. The predicted LOS is D-E in 2025, depending upon segment, and is below the target of C. It has a high relative cost (between $9 M and $14 M), largely due to the cut and fill necessary to correct horizontal and vertical curves (similar to A5). A better investment would be to reconstruct the roadway to address horizontal and vertical sight distance / curves AND to add capacity. The incremental investment to add capacity and turn lanes justifies the additional cost. Therefore, this alternate was eliminated in favor of one that address safety issues AND adds additional capacity (lanes) and a turn lane.

- Alternate number 64 - Add center turn lane (allowing left turns at major intersections) on KY 53 from KY 146 to KY 22. This would essentially allow left turns at major intersections along KY 53 north of I-71 and would create turn lanes along KY 53 south of I-71. It is similar to 26B above, although it combines the treatments north and south of I-71 along KY 53 into one potential project. The predicted 2025 segment levels of service range from D to E (as with 26B). The intersection levels of service range from B to D. Again, this is below the target of C. It has a cost of between $6 M and $9 M. Although the restriction of left turns north of I-71 is an adequate solution, the addition of turn lanes in the south along KY 53 is not adequate. A better investment would be to separate the two sections of KY 53 and create the same 5-lane profile (2 travel lanes north and south with center turn lanes and restricted left turns) for BOTH the north and south sections of KY 53. The incremental investment to add capacity AND turn lanes is a more complete and better solution.

- Alternate number 27 - KY 53 from New Moody Lane to KY 22 widen to four lanes. This improvement addressed capacity with the addition of two travel lanes. It did not however address some of the safety issues, as it did not include a turning lane. The predicted LOS is A-C in 2025, but it leaves the corridor in the same condition as the current KY 53 north of I-71 (four lanes without turn lanes). It has a relatively high cost of $11 M to $18 M, due to the significant amount of reconstruction that would be required to add two travel lanes. A better investment would be to reconstruct the roadway for two new travel lanes AND add turn lanes. The incremental investment to add capacity AND the turn lanes is the optimal solution. Essentially, this creates a five-lane section for KY 53. As this alternate falls short of that, it was eliminated.

High Build Option 1

- Alternate number 48 - North Bypass Option D - New Moody Lane to KY 53 - via I-71, Commerce Parkway, new connector road A west of Fairgrounds, new bypass to Old Sligo Road. Alternate number 48 was adequate to address most of the issues and concerns. However, it did not fully address access, connectivity issues, and the need for a better alternative route to KY 53. It also had a fairly high capital cost and does not allow for optimal connections for facilitating access. Option A was deemed better for the north bypass analysis. (See below for further discussion.)

High Build Option 2

- Alternate number 46 - North Bypass Option B - New Moody Lane to KY 53 - via I-71, Commerce Parkway, new road west of Button Lane, west of Fairgrounds, new bypass to Old Sligo Road. Alternate number 48 was also not adequate in fully addressing most of the issues and concerns of the project, especially those that deal with the need for an alternative route to KY 53. It had the highest capital costs and does not allow for optimal connections for facilitating access. Option A was deemed better for the north bypass analysis. (See below for further discussion.)

10.4 Comparisons of North Bypass Alternates

The final analysis and recommendation of bypass Option A as the preferred alternate in the north for the bypass / collector road was determined after careful scrutiny of all criteria at the conclusion of the Level 3 screening. As stated before, the first level of analysis for the high build options focused on whether or not a bypass was needed. This question was centered on the fact that if KY 53 was improved to such as degree that it was able to accommodate traffic predicted for 2025 at the desired LOS C, would the need for a bypass still exist? The answer was yes, a new connection or bypass from KY 53 to KY 146 is warranted and will provide a very important future link for the LaGrange area transportation system.

During the alternatives development process, many different bypass concepts were put forward. Eight alternates were initially examined during the Level 2 screening, with three remaining for detailed evaluation in the final Level 3 technical analysis. Each of the three alternates was studied in detail and performance measures were examined for each alternate. In the end, it was not one specific criteria or performance measure that placed one of the bypass alternates ahead of the others. Instead, it was a consideration of the results across the spectrum of measures, including the relative satisfaction of the project's goals and objectives that led to the recommended alternate. The following discussion presents a detailed description, measure by measure, of the analysis and conclusions that emerged from the Level 3 analysis for the north bypass alternates. Table 10.8 presents a summary of the comparative analysis.

Alt. No.	Description	Traffic / Transportation			Capital Costs*						Impacts		Execution	
		2025 Level of Service (LOS) (Ave Peak/DHV Peak)	Average Daily Traffic (ADT) - 2025	Access / Circulation / Safety	Design	Utilities	Construction Low	Construction High	Total Low	Total High	Community Impacts	Environmental Impacts**	Feasibility / Meets Goals and Objectives	Priority / Phasing
NORTH BYPASS OPTIONS COMPARISON														
46	North Bypass Option B - New Moody Lane (KY 2857) to KY 53 - via I-71, Commerce Parkway, new road west of Button Lane, west of Fairgrounds, to Old Sligo Road (2 lanes)	C - D	2,600 - 8,200	Improves access, circulation and safety	$2,015,000	$513,900	$15,471,100	$19,771,100	$18,000,000	$22,300,000	8 - 10 homes, Fairgrounds, plus 12 properties in Majestic Woods	7 potential historic archaeological sites, 1 cultural / historic site	Medium	Not Recommended
48	North Bypass Option D - New Moody Lane (KY 2857) to KY 53 - via I-71, Commerce Parkway, new connector road west of Fairgrounds, new bypass to Old Sligo Road (2 lanes)	C - D	1,800 - 8,300	Improves access, circulation and safety	$2,285,000	$318,400	$17,996,600	$22,496,600	$20,600,000	$25,100,000	8 - 10 homes, Fairgrounds, plus 12 properties in Majestic Woods	5 potential historic archaeological sites, 1 cultural / historic site	Low	Not Recommended
45	North Bypass Option A - New Moody Lane (KY 2857) to KY 53 - via I-71 overpass, relocated Allen Lane, extended Springhouse Pike, new road to Old Sligo Road (2 lanes)	C - D	2,700 - 9,300	Greatly improves access, circulation and safety	$1,695,000	$420,800	$12,984,200	$16,684,200	$15,100,000	$18,800,000	0 - 5 homes in Springhouse Estates	7 potential historic archaeological sites	High	Phased - Short to Long

* - Excludes right-of-way (ROW)
** - All alternates have potential affects on Archaeological Sites

LaGrange Bypass

Scoping Study

OLDHAM COUNTY
KENTUCKY

PROPOSED NORTH BYPASS ALTERNATES

Prepared by:

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Level of Service (LOS) 2025

For segment level of service, there was essentially no difference among the three north bypass options. All three had a level of service ranging from C to D depending upon segment for the year 2025. This is due to their similar traffic volumes. Essentially, all of the alternatives performed the same in this area.

Average Daily Traffic (ADT) 2025

In terms of ADT, the model runs revealed that bypass Option A attracted between 2,700 and 9,300 vehicles per day depending on the segment. Bypass Option B attracted 2,600 to 8,200 vehicles per day. Bypass Option D attracted between 1,800 and 8,300 vehicles per day. The three alternatives attract roughly similar traffic volumes, though Option D, as the longer alternate, attracts the fewest vehicles from KY 53.

Access / Circulation / Safety

All three options improve access, circulation and safety in the immediate area and provide important new network connections benefiting the entire study area transportation system. They also afford better access to various destinations such as the Business Park, I-71, shopping areas along KY 53, and the proposed school complex along KY 22, because they provide a safe and efficient alternate route.

However, it was determined that Option A greatly improved access to these above mentioned areas and afforded improved circulation within the study area, in a safe and efficient manner that is superior to options B and D. Option A provides a geometrically straight roadway connection from Dawkins Road to KY 146, under the CSX railroad tracks at Allen Lane and over I-71 via a new bridge. Options B and D which are slightly to the west of the location for A, involve an interchange complex due to the location of KY 146 and the railroad tracks.

Essentially, there is not enough physical distance from KY 146 to the tracks to allow for an at-grade 90-degree crossing through modern design standards of KY 146 and bypass Options B or D, and a grade separated crossing with the railroad without a major intersection improvement; i.e. an new interchange. The location of B and D to the west also causes the location of the connection to the new bridge over I-71 to be offset. This is the same condition that is being reworked by the KYTC at KY 393 and KY 146 intersection near Buckner. Option A's direct connection provides the most efficient local connection for traffic traveling between the northern and southern portions of the LaGrange area. (It has the fewest turns, one central intersection, and no off-set between the roadways) Because of these factors, A was deemed better in this category.

Costs

For costs, the measure is total capital costs or all costs to design and construct a given alternate. Option A is the cheapest at between $15.1 and $18.8 million dollars. Option

B is the next most expensive at between $18.0 and $22.3 million dollars. Option B is on average 19% more expensive that Option A. Option D is the most expensive at between $20.6 to $25.1 million dollars. Option D is on average 35% more expensive than Option A and 13% more expensive on average than Option B.

The major differences in cost between A and either B or D is the interchange complex that is needed at KY 146 with Options B and D. As previously explained, the ideal way to have an at-grade 90-degree modern intersection of the bypass (B or D) and KY 146 while having a grade separated under or overpass of the CSX railroad is through the use of the interchange. This interchange complex, its additional earthwork, steel for bridges, concrete for earth walls, traffic signals, etc., is essentially the difference. With regard to capital costs, Option A was deemed better in this category.

Community Impacts

For the north bypass alternates, aerial photography, subdivision plat maps, and field investigations were utilized to determine the nature and extent of the likely impacts. For Options B and D similar impacts are anticipated. Those direct impacts include 8 – 10 homes mainly in the area from Old Sligo Road south west towards Dawkins Road and through to KY 146. This is mainly due to the new right-of-way that would be required and the fact that some of it is near existing residences. With Options B and D, the Oldham County Fairgrounds would also be impacted, as the southern portion of the fairgrounds nearest to KY 146 would need to be acquired to site the interchange that is necessary with these options. Additionally, there are impacts to approximately 12 undeveloped, but plan certain parcels along the east side of the proposed Majestic Woods subdivision.

For bypass Option A, there are potential direct impacts to no existing single family residences because of the presence of the existing 60 foot dedicated right-of-way. This would be a minimum number of properties that would be directly impacted. However, if further engineering or mitigation measures were needed, the number of direct impacts would be 5 residences. These home would be eligible for Federal relocation assistance funding. Full mitigation factors above the 5 properties directly impacted could be as high as 22 residences. The 22 houses represent an ultimate mitigation scenario and effectively relocates the entire eastern side of the subdivision – all of the houses to the east of Spring House Pike. This mitigation measure would represent a significant cost and would be necessary only if future analysis or project development issues warranted maximum mitigation measures.

It should again be noted, that there is the potential to have virtually no disruptions, nor the requirement for additional right-of-way (property) through Spring House Estates as there is an existing sixty (60) foot right-of-way dedicated through the subdivision devoted to accommodating the bypass. This right-of-way was part of the original subdivision plat.

With regard to community impacts, Option A was deemed better in this category because it has the potential to have fewer direct impacts.

Environmental Impacts

For all alternates under consideration, including all three of the north bypass options, there is the potential to impact either known or potential archaeological sites. Because of the nature and location of these sites, further field investigation will be needed in order to fully determine the potential affects on a project-by-project basis once planning, deign, and/or environmental documentation advances.

It is anticipated however that all three north bypass options will have similar affects on known or potential archaeological sites. Options A and B have similar potential affects on 7 sites, while Option D has potential affects on only 5 sites. For known or potential cultural / historic sites, both Options B and D have potential affects on one known site.

There are virtually no differences in terms of the number of sites impacted although perhaps Option D could be judged to be just slightly better if the gross number of sites were to be added.

Feasibility / Meets Goals and Objectives

For the three north bypass options, Option D was deemed to have a low ranking. This is mainly because Option D is the most expensive, has potential impacts to the community and the environment, and does not fully meet the goals and objectives, especially Goal 1- “Reduce Existing and Future Traffic Congestion and Improve Vehicle and Pedestrian Mobility” and its objective – “Propose cost-effective operational and/or physical improvements that will facilitate traffic flows, improve connectivity, and reduce delay, congestion and travel time on study area roadways”; Goal 2 “Enhance Vehicular and Pedestrian Safety” and its objective “Propose improvements that will help the transportation system operate more safely and efficiently and respond to and recover from incidents in a timely manner; and also Goal 3 – “Support Future Development and Community Growth” and its objective – “Develop improvements that will enhance access to development sites targeted for future growth in the study area”. Option D is also the furthest west and would create a skewed alignment from the bypass and KY 146 to the Commerce Parkway / new bridge over I-71 along the extension of Allen Lane. A similar condition is being remedied by the KYTC’s project at KY 393 and KY 146.

Option B was deemed to have a medium ranking. It was in the middle in terms capital costs, it had roughly the same amount of community impacts as Option D, but less environmental impacts than either of the other options. Like Option D, Option B does not fully meet the goals and objectives, especially those highlighted above. Option B, although slightly east of Option B physically, also has the potential to create a similar skewed intersection at the bypass, Commerce Parkway and the I-71 bridge along the extension of Allen Lane.

Option A was deemed to have the highest ranking in this category. It is the cheapest in terms of capital costs, has the potential to have some of the fewest impacts, especially to residences, and may in fact have no impacts to the community, and has the same

number of environmental impacts as Option B. In terms of goals and objectives, Option A meets many, if not all of the goals and objectives and does so more completely than the others. In terms of a system, Option A lends itself well to working with the proposed Allen Lane underpass and the proposed I-71 bridge as it is more geometrically aligned with these other facilities. Because of this, it creates a maximum benefit in terms of the overall transportation system.

Priority / Phasing

Per the introductory discussion on Priority and Phasing, this factor was not critical to the initial analysis. Rather, priority and phasing is used to determine when a potential or recommended project should proceed with further planning, environmental documentation, and/or design. Since Options B and D were not recommended, no priority or phasing information was included about them.

For Option A, the recommended option, the priority and phasing spans from short to medium depending upon segment. This is largely due to the fact that there are segments of the proposed bypass Option A that would have usefulness as small stand-alone projects, such as the Spring House Pike extension to Dawkins Road, the Allen Lane underpass, and/or the I-71 bridge at Allen Lane south of Commerce Parkway.

As mentioned before, the final analysis and recommendation of bypass Option A as the recommended alternate in the north was determined after careful scrutiny of all criteria at the conclusion of the Level 3 screening. There was not one criterion that stood out to show that Option A was better than the rest in any one category. Rather, it was the performance of Option A across the board when all the analysis was examined, including meeting the project's goals and objectives. In the end, the technical analysis and conclusions clearly pointed to Option A as the best choice for providing the most benefit to the transportation system throughout the study area, the City of LaGrange and Oldham County.

11.0 RECOMMENDED PLAN

This chapter presents the recommended program of improvement projects for the LaGrange study area. These recommendations are made by the Consultant, based on the results of the detailed Level 3 technical analysis, input from stakeholders and the general public, and consultation with the Project Work Group and Project Team. These recommendations cover a broad range of projects, both large and small, located throughout the study area. This package of alternates forms the Recommended Plan for future implementation over the short, medium and long-term time frames by one or more local sponsoring agencies. Short term is defined as 0 to 12 years, Medium term is defined as 13 to 20 years and Long term is defined as 20 + years. Figure 11.1 shows the recommended improvement projects.

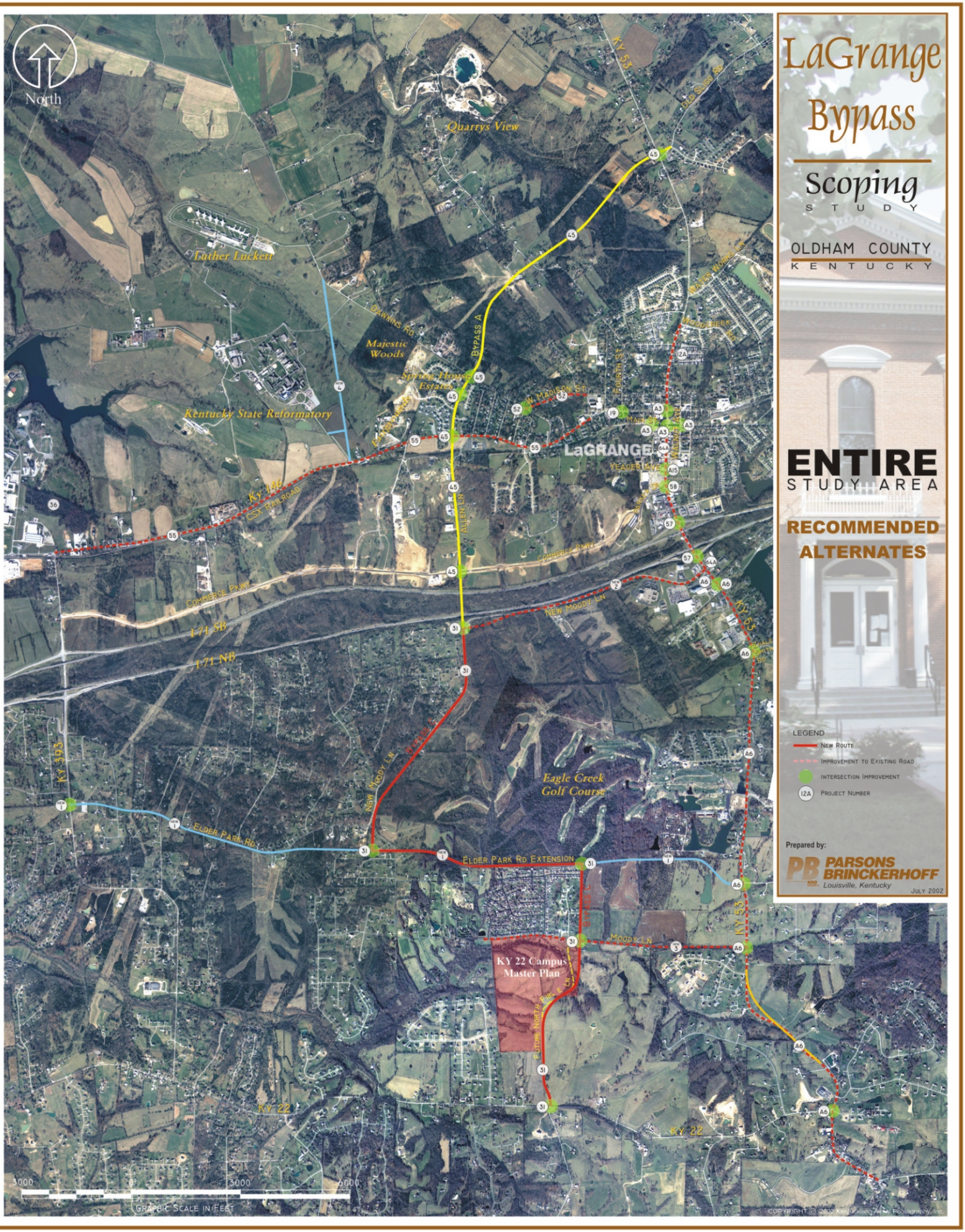
11.1 Low- Build / Transportation Systems Management (TSM) Options

The Level 3 analysis concluded that lower cost transportation systems management (TSM) type improvements would provide benefits in certain locations. However, the impacts of these low-type improvements are limited when the system as a whole is taken into account.

The alternates in this category are a mixture of policy recommendations and lower-cost projects. The policy alternates are expected to have minimal adverse affects and minimal costs. They would yield benefits that although positive, are hard to quantify given the analysis tools available for the study. This however, should not detract from their implementation, as they are important tools for building a long-term sustainable, safe, and high-quality transportation system. Other alternates in this category seek to develop lower-cost build improvements that are multimodal in nature, encompassing pedestrian, bicycle and automobile modes. The recommended TSM projects are shown in Table 11.1 and are discussed below.

Alternate number 13

- Design - work with the City of LaGrange, County, local police, state police, fire, etc., to enhance incident management (traffic re-routing) plans
- Purpose - this will continually enhance the existing incident management and traffic rerouting that is currently in place.
- Traffic / Transportation - N/A
- Cost - nominal if any
- Impacts - nominal if any
- Execution - Project execution is deemed to be high and this project can be implemented in the short time frame



LaGrange Bypass

Scoping STUDY

OLDHAM COUNTY
KENTUCKY

ENTIRE STUDY AREA

RECOMMENDED ALTERNATES

LEGEND
- NEW ROUTE
- IMPROVEMENT TO EXISTING ROAD
- INTERSECTION IMPROVEMENT
- I2A PROJECT NUMBER

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JULY 2002

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Recommended Projects

Alt. No.	Description	Traffic / Transportation			Capital Costs*						Impacts		Execution	
		2025 Level of Service (LOS) (Ave Peak/DHV Peak)	Average Daily Traffic (ADT) - 2025	Access / Circulation / Safety	Design	Utilities	Construction Low	Construction High	Total Low	Total High	Community Impacts	Environmental Impacts**	Feasibility / Meets Goals and Objectives	Priority / Phasing
LOW-BUILD (Transportation Systems Management - TSM)														
13	Work with City, County, state police, Fire / EMS and dispatch to enhance incident management and traffic rerouting	N/A	N/A	Improves circulation and safety	Nominal						None	None	High	Short
25	Provide area-wide pedestrian and bicycle amenities (signs, pavement markings, signals, etc.) to fill in "gaps" or in concert with County Greenways Project	N/A	N/A	Improves safety	$50,000	$0	$200,000	$250,000	$250,000	$300,000	None	None	Medium	Short / On-going
14	Investigate and implement access management policy especially along major thoroughfares (KY 22, KY 53, KY 146, KY 393 and US 42) as part of adequate facilities ordinance, traffic impact studies requirements or incorporate into thoroughfare plans	N/A	varies	Improves safety and traffic flow	Nominal						Low	Minimal	Medium	Immediate
36	KY 393 / KY 146 / I-71 and Vicinity - encourage neighborhood commercial development	N/A	N/A	Improves local circulation	Nominal						None	None	Medium	Short
19	KY 146 / 4th. St. - install traffic signal	B / C	13,000 - 14,000	Improves safety and circulation	$10,000	$20,000	$95,000	$220,000	$125,000	$250,000	None	None	High	Short
43	Downtown at-grade RR crossings - install lights, audible warnings (Main St. / 2nd St., Main St. / Walnut St.)	N/A	> 5,000 each	Improves safety	$30,000	$40,000	$80,000	$230,000	$150,000	$300,000	None	None	Medium	Short
59	Main St / 2nd St - convert to 4-way stop	Safety	3,000 - 6,000	Improves safety	Nominal	Nominal	$1,000	$2,000	$1,000	$2,000	None	None	High	Immediate
A1	Main St / Walnut St - convert to 4-way stop	Safety	7,000 - 8,000	Improves safety	Nominal	Nominal	$1,000	$2,000	$1,000	$2,000	None	None	High	Immediate
57	KY 53 / I-71 Interchange - add protected left turn phases at south / north bound I-71 ramps	D-F / F	33,000 - 45,000	Improves safety	$3,000	$5,000	$42,000	$67,000	$50,000	$75,000	None	None	High	Short
58	KY 53 / Parker Dr - install traffic signal	F / F	30,000 +	Improves circulation	$10,000	$20,000	$95,000	$220,000	$125,000	$250,000	Minor	None	Medium	Short / Medium
39	US 42 - protect as a scenic byway (previously designated as a scenic byway)	N/A	3,000 - 4,000	N/A	Nominal						None	None	High	Short / Ongoing
			Category Subtotal	**Category Subtotal**	**$103,000**	**$85,000**	**$514,000**	**$991,000**	**$702,000**	**$1,179,000**				
			Cumulative Total	**Cumulative Total**	**$103,000**	**$85,000**	**$514,000**	**$991,000**	**$702,000**	**$1,179,000**				

* - Excludes right-of-way (ROW)
** - All alternates have potential affects on Archaeological Sites

Alternate number 25

- Design - provide a set aside for area-wide pedestrian and bicycle amenities (signs, pavement markings, signals, etc.) to fill-in "gaps" or in concert with the County Greenways Project. The locations for these projects would need to be identified with further study. Possible locations could include those near schools, shopping centers and recreations corridors.
- Purpose - This alternate would provide for multimodal alternatives specifically for pedestrians and bicycles and leverage funds for the Greenways Project.
- Costs - This alternate would cost between $250,000 and $300,000, roughly $50,000 each for six (6) spot / location improvements.
- Impacts - No adverse impacts are anticipated.
- Execution - Project execution is deemed to be medium given the undefined nature of the recommendations. This project can be implemented in the short term and can be on-going while new locations for improvements are identified.

Alternate number 14

- Design - implement an access management policy especially along major thoroughfares such as KY 22, KY 53, KY 146, KY 393 and US 42 as part of an adequate facilities ordinance, traffic impact studies requirement, and/or incorporated into future thoroughfare plans.
- Purpose - this type of policy would help the City of LaGrange and Oldham County better plan for and finance needed infrastructure, especially additional transportation infrastructure, that may be needed through increased development
- Costs - nominal if any
- Impacts - nominal if any
- Execution - low due to the fact that much policy consideration must be given to the implementation / regulatory tools and the fact that they would be new and need necessary local government approval

Alternate number 36

- Design - encourage neighborhood commercial development near the vicinity of the KY 393 / KY 146 / I-71 interchange.
- Purpose - this would help distribute trips to other parts of the transportation system or network that may otherwise be destined for the KY 53 commercial corridor near the I-71 interchange / Kroger shopping center area.
- Traffic / Transportation - N/A, although improvements would be made to access, circulation and safety
- Impacts - none
- Execution - this is a project with medium feasibility that would seek to reduce travel demand to other shopping areas

Alternate number 19

- Design - install a traffic signal at KY 146 and 4th Street.
- Purpose - improve safety
- Traffic / Transportation - the intersection of KY 146 and 4th Street is expected to have between 13,000 and 14,000 vehicles per day in 2025.

- Cost - the improvement (signal) would cost between $125,000 for a basic signal installation to $250,000 if more complex factors are involved.
- Impacts - impacts are anticipated to be minimal.
- Execution - this is a project with high feasibility that would enhance safety and can be implemented in the short time frame.

Alternate number 43

- Design - install lights and audible warnings at downtown railroad crossings (Main Street and 2nd Street and Main Street and Walnut Street).
- Purpose - this is a lower cost improvement that will enhance safety at these key intersections. The installation of new flashing lights, bells, and cross buck signs is proposed. The improvement does not include gates and coordination with CSX and the City of LaGrange will be needed.
- Traffic / Transportation - although the local streets have low volumes of traffic, this alternate would improve safety.
- Costs - the costs would be $150,000 to $300,000 depending upon complexities encountered in the field.
- Impacts - there are no adverse impacts anticipated.
- Execution - the project is deemed to be medium for feasibility / meets goals and objectives. As for priority, this is a project than can be implemented in the short time frame.

Alternate number 59

- Design - convert Main Street and 2nd Street existing 3-way stop to a 4-way stop.
- Purpose - this recommendation is being made to increase safety at this location. A 4-way stop sign will increase safety by (1) reducing speed at the intersection, (2) increasing driver expectation and awareness, and (3) requiring all vehicles on all approaches to stop.
- Traffic / Transportation - volumes are expected to between 3,000 and 6,000 ADT in 2025
- Costs - costs are very low as they include one new post and sign only.
- Impacts - there are virtually no impacts.
- Execution - this project could be implemented immediately.

Alternate number A1

- Design - convert Main Street and Walnut Street existing 3-way stop to a 4-way stop.
- Purpose - this recommendation is being made to increase safety at this location. A 4-way stop sign will increase safety by (1) reducing speed at the intersection, (2) increasing driver expectation and awareness, and (3) requiring all vehicles on all approaches to stop.
- Traffic / Transportation - volumes are expected to be between 7,000 and 8,000 ADT in 2025
- Costs -costs are very low as they include one new post and signs only.
- Impacts - there are virtually no impacts.
- Execution - This project could be implemented immediately.

Alternate number 57

- Design - install protected left turn phases at southbound and northbound I-71 ramps from KY 53. This involves saw cutting loop detectors into the existing pavement, providing a green arrow signal head, and rewiring the nearby controller unit.
- Purpose - such a solution will provide for safe turning movements of vehicles onto the northbound and southbound I-71 ramps from KY 53. This is a safer situation than the yield on solid green condition that now exists. The loop detector will sense that a vehicle wants to make the movement and change the intersection timing to safely accommodate the turn.
- Traffic / Transportation - these intersections already have a high volume of traffic and it will grow substantially by 2025. The SB I-71 intersection already exceeds the threshold for considering protected left-turn phasing. (Implementation of such phasing should however be based on a specific traffic investigation.)
- Costs - costs would be between $50,000 and $75,000.
- Impacts - impacts are minor.
- Execution - the project can be executed in the short time frame.

Alternate number 58

- Design - install traffic signal at KY 53 and Parker Drive.
- Purpose - traffic flow and access. The installation of this signal becomes especially critical in outlying years, especially once the Oldham County Business Park develops. This location is the east terminal of Commerce Parkway with KY 53 and will likely become congested in the future. The current unsignalized intersection will not be adequate in the future.
- Traffic / Transportation – 2025 traffic projections for the intersection are approximately 30,000 ADT
- Cost - a signal could cost between $125,000 and $250,000 dollars.
- Impacts - the impacts would be minor
- Execution - the feasibility / meets goals and objective is medium largely because of the uncertainty associated with the long-term development of the business park. Similarly, the phasing is short to medium depending upon when the business park traffic becomes significant, causing congestion on Crystal Drive.

11.2 Medium Build Options

As was shown in Chapter 10, the Low-Build TSM improvements alone are not adequate to handle the projected 2025 traffic volumes in the study area. Therefore, a number of Medium-Build alternatives were considered in addition to the TSM projects. While these projects combined still did not provide the needed capacity and safety improvements, a number of them did provide important localized benefits and should be pursued. The following discussion and Table 11.2 present the recommended medium build options:

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Recommended Projects

Alt. No.	Description	Traffic / Transportation			Capital Costs*						Impacts		Execution	
		2025 Level of Service (LOS) (Ave Peak/DHV Peak)	Average Daily Traffic (ADT) - 2025	Access / Circulation / Safety	Design	Utilities	Construction Low	Construction High	Total Low	Total High	Community Impacts	Environmental Impacts**	Feasibility / Meets Goals and Objectives	Priority / Phasing
MEDIUM-BUILD														
52	Madison St from Dawkins Rd (KY 2854) to 6th St. - Realign and improve sight distance at Dawkins (1 lane)	N/A	2,000 - 4,000	Improves safety	$25,000	$25,000	$950,000	$1,950,000	$1,000,000	$2,000,000	1 - 2 homes	Few if any	High	Immediate
A3	Downtown signal / intersection improvements: (1) KY 53 / KY 146 - widen intersection approaches, signalize, add lanes, (2) KY 53 / Main St. - install traffic signal, (3) coordinate new signals, (4) RR sign, flasher and audible warning at KY 53 and Main St. - all using "context sensitive design"	C / F	30,000 +	Improves safety and circulation	$50,000	$25,000	$430,000	$815,000	$505,000	$890,000	Construction only	LaGrange historic district	High	Short
11	Main St - between Walnut St. and Cedar St. - address RR tracks and run off road issue	N/A	7,000 - 8,000	Improves safety	$10,000	$15,000	$275,000	$475,000	$300,000	$500,000	Minor	Few if any	High	Immediate
12A	KY 53 - KY 146 to Woodcreek - restripe and add right-of-way for 4 through lanes 11 feet wide	B	12,000 - 14,000	Improves capacity	$25,000	$10,000	$265,000	$465,000	$300,000	$500,000	Minor, Right of Way	LaGrange historic district	High	Short
A15	KY 53 / Yager Ave - realign off-set intersection @ Yager Ave	B / F	25,000 - 30,000	Improves safety and circulation	$30,000	$25,000	$1,445,000	$2,945,000	$1,500,000	$3,000,000	2 - 5 businesses, Right of Way	Few if any	High	Short / Medium
			Category Subtotal	**Category Subtotal**	**$140,000**	**$100,000**	**$3,365,000**	**$6,650,000**	**$3,605,000**	**$6,890,000**				
			Cumulative Total	**Cumulative Total**	**$243,000**	**$185,000**	**$3,879,000**	**$7,641,000**	**$4,307,000**	**$8,069,000**				

* - Excludes right-of-way (ROW)
** - All alternates have potential affects on Archaeological Sites

Alternate number 52

- Design - realign Madison Street from Dawkins Road to 6th Street. This alternate includes improving sight distance the Madison Street and Dawkins Road intersection.
- Purpose - the improvement will make Dawkins Road safer by adding curb and gutter and improving the Madison Street / Dawkins Road, intersection especially for westbound traffic on Madison Street turning south onto Dawkins Road.
- Cost - the total construction costs are anticipated to be between $1 and $2 M depending upon complexity and conditions encountered in the field.
- Impacts - the likely impacts to residences are nearest the Madison Street / Dawkins Road intersection as new right-of-way to realign the intersection will likely be needed. There are few if any environmental impacts
- Execution - the project highly meets feasibility / goals and objectives and contributes to improved conditions especially with regard to safety. It is programmed for the immediate time frame.

Alternate number A3

- Design - downtown signal intersection improvements: (1) KY 53 / and KY 146 - widen intersection approaches, signalize, and add lanes as shown in Figure 11.2, (2) KY 53 / Main Street – install traffic signal, (3) coordinate signals (1 and 2), (4) railroad sign, flasher and audible warning at KY 53 / Main Street; all using context sensitive design. Both signals would be coordinated / tied together along with the new train warning signs, flashers and audible warnings to make sure that the traffic signals and train warning system are interconnected to ensure safe operations. Additionally, all fixtures such as light poles, signal masts, etc., would be designed and constructed so they would blend into the surrounding environment in the downtown LaGrange historic district.
- Purpose - these projects would coordinate the intersection improvements slated for KY 53 / KY 146 and KY 53 / Main Street. The analysis proved that it is not enough to simply add a signal at KY 53 / KY 146. An improvement that allows uninterrupted traffic flows through the addition of left turn lanes; right through lanes and an additional westbound right lane along KY 146 is better.
- Traffic / Transportation – this improvement will yield level of service benefits (it is C during a typical peak and will degrade to E during the design hour). The full signalization and addition of lanes will also improve vehicle and pedestrian safety. The signal at KY 53 and Main Street will improves safety in a similar manner.
- Cost - all three aspects of the project would cost between $505,000 and $890,000.
- Impacts - impacts would be minimal and would be during construction only. There would be minor impacts to the LaGrange historic district – mainly noise and some visual intrusion of the new infrastructure.
- Execution - the project is highly feasible and meets the goals and objectives well, especially the ones that address safety and can be implemented in the short time frame.

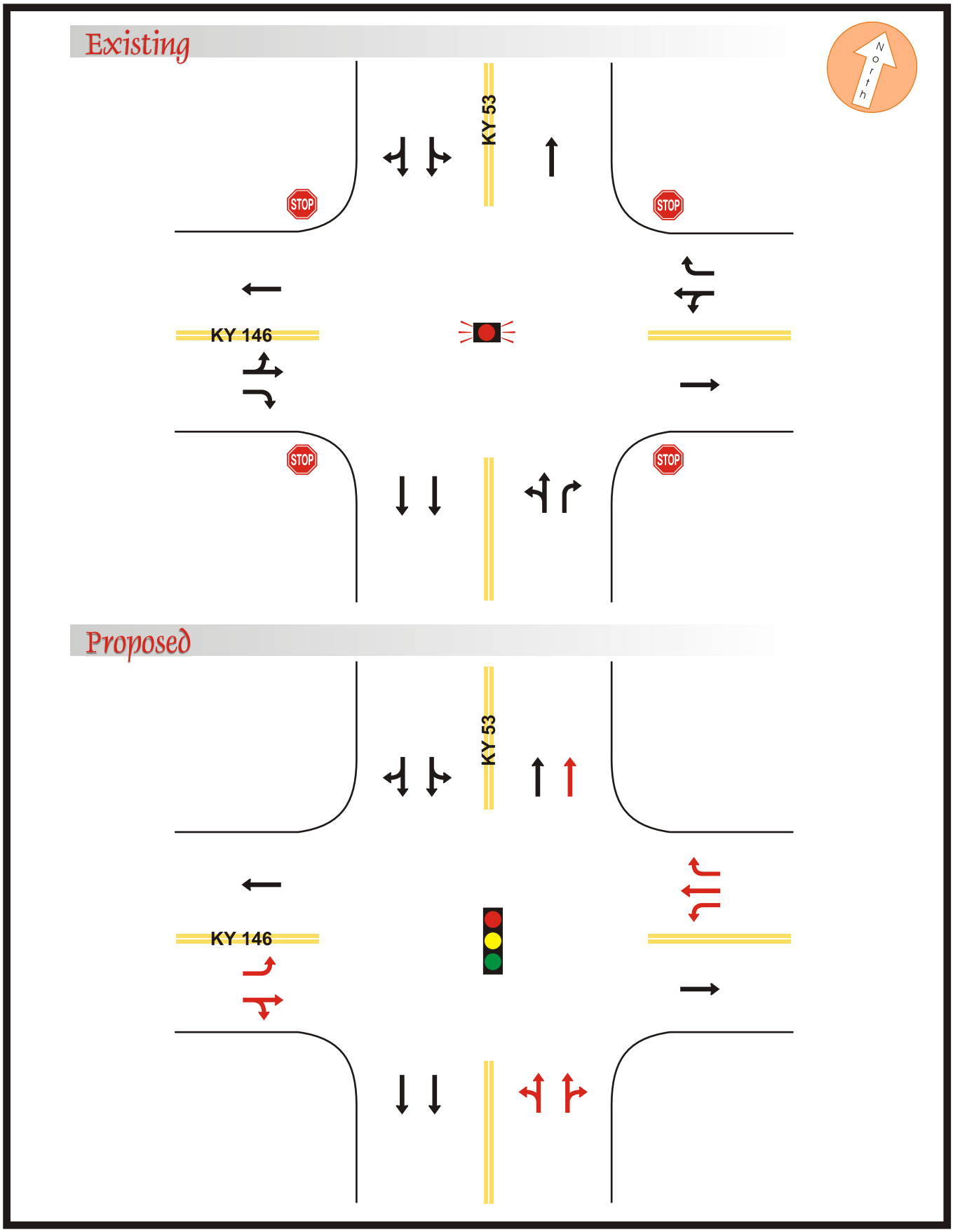

Existing
North
KY 53
STOP
STOP
KY 146
STOP
STOP
Proposed
KY 53
KY 146

Figure 11.2

Alternate number 11

- Design - Main Street between Walnut Street and Cedar Street address railroad tracks and run off road issue. The fundamental problem lies in the offset / jogged intersection at Walnut Street and Main Street (Photo 1 below). This intersection is difficult to navigate especially for vehicles traveling eastbound on Main Street as they cross Walnut Street and proceed to Cedar Street. The offset intersection and skew alignment of Main Street as it proceeds eastbound across Cedar St. (left photo below) causes run-off road issues. Motorists who run off the pavement often get stuck on the railroad tracks (right photo below). These events cause severe safety hazards for motorists and train operations.

Main St. looking east at Walnut St.

Gap in tracks east of Walnut St. along Main St.

The existing markings, barriers, etc., that are installed are inadequate for the situation. After a field review, discussion and analysis of multiple options, the following recommendations are offered:

1. Light the intersection with new overhead streetlights, retro reflective pavement markings and improved retro reflective signs
2. Channelize the east approach along Main Street at Walnut Street to eliminate offset / skewed intersection and to realign traffic eastbound across the railroad tracks. On the north side of Main Street, this may require the loss of one or two existing 45-degree angle parking spaces. On south side of Main Street, this will include installing a curb “bulb out” to realign the eastbound travel lanes and the taking of one or two 90-degree angle parking spaces. (See Figure 11.3)
3. Install “new” flexible crash barrier(s) on the railroad tracks
4. Fill in “gap” in tracks with new side and center pads, new side and center shims, and new flange way filler strip(s); replacing the existing railroad ties and extending the new pads, shims and filler strips approximately 25 feet beyond the edge of the existing pavement. (See Figure 11.4)

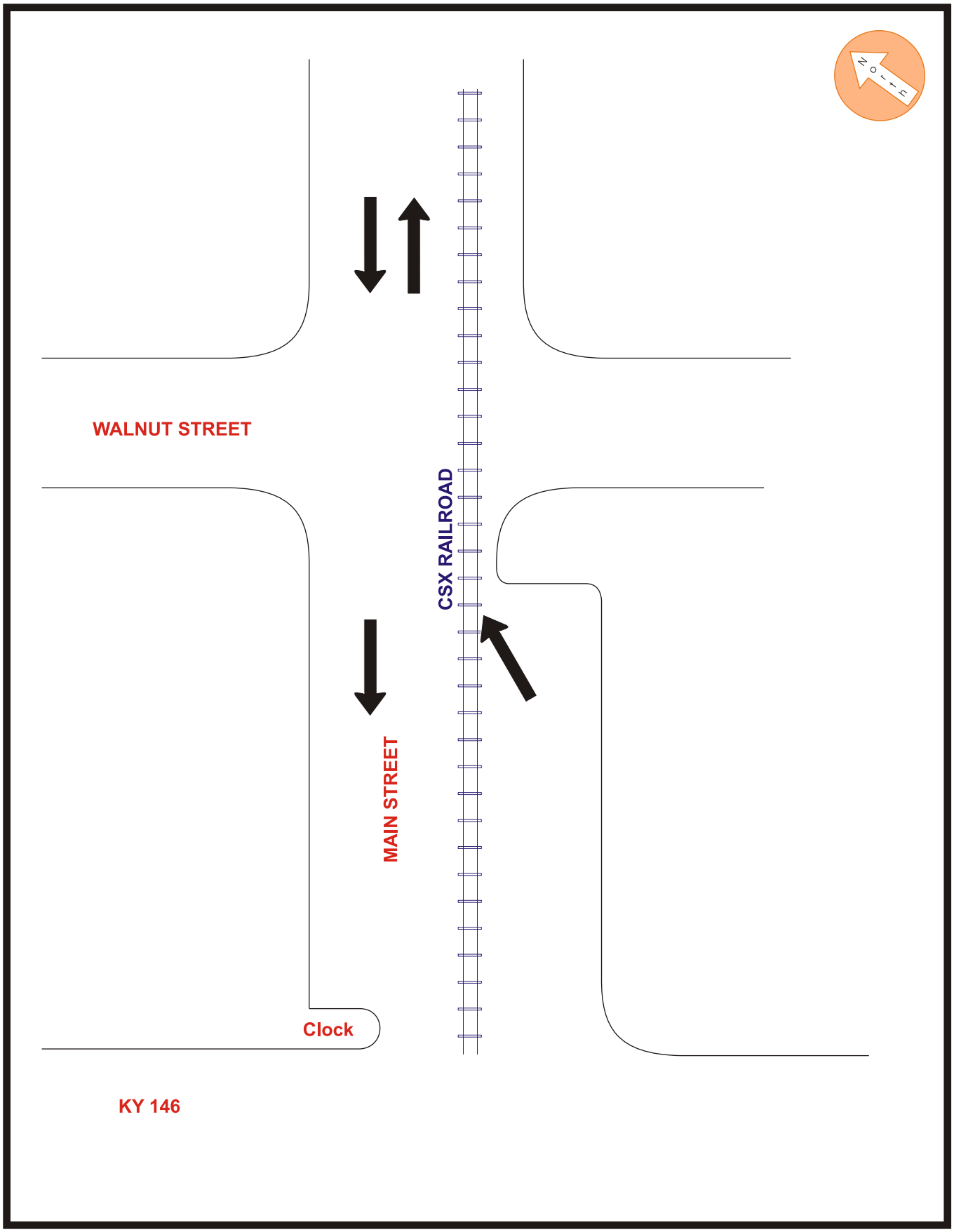
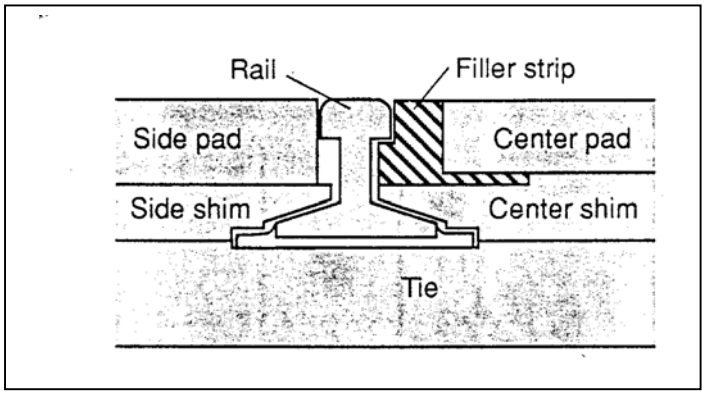


Figure 11.3

Proposed "Bulb Out" at Main St. & Walnut St.

Figure 11.4: Side / Center Pads, Shims and Flange Way Filler Strip



- Purpose - this alternate would greatly enhance safety at this location
- Traffic / Transportation - the projected 2025 volume at the intersection ranges from 7,000 to 8,000 ADT.
- Costs - costs are expected to be between $300,000 to $500,000.
- Impacts - community impacts are anticipated to be minor; perhaps on minimal disruptions during construction and the loss of 2 to 4 parking spaces in the shopping areas. Environmental impacts would also be minor in the historic district.
- Execution - the fact that this improvement is for safety and that one or more aspects of the recommendation can be done virtually immediately gives it a high feasibility rating.

Alternate number 12A

- Design - KY 53 from KY 146 to Woodcreek Drive re-stripe to add right-of-way for four (4) through lanes that are 11 feet wide. This improvement would eliminate the on-street parking on KY 53 north of KY 146 on the east and west sides. Currently, there are two 11-foot travel lanes and two 10-foot parking lanes both north and south bound along KY 53. This alternate would effectively take off all the existing parking from KY 146 to Woodcreek Drive and move the existing curbs out one additional foot in each direction so the 10 foot parking lanes can become two 11 foot travel lanes. A field review revealed that many of the existing residential dwellings already have adjacent parking between the houses in private driveways or in alleys behind the homes. This is true for all but one or two homes on the west side of the street. Alternate arrangements would need to be made for these residences.
- Traffic / Transportation - in the design year 2025, the 4 lanes would be able to adequately handle the expected High-Build scenario volumes of 12,000 to 14,000 vehicles at LOS B.
- Costs - the total construction costs would be anticipated to be between $300,000 and $500,000.
- Impacts - in terms of impacts, only minor ones are anticipated due to new right-of-way and the displacement of parking for two existing residences. The

southern portion of the project touches the LaGrange historic district, but again the impacts would be minor.

- Execution - because the project adds significant capacity; it doubles the throughput of KY 53 from KY 146 to Woodcreek Road, and the fact that the project can be implement in the short time frame, the feasibility is high.

Alternate number A15

- Design - KY 53 at Yager Ave. realign off-set intersection with Yager Ave. and the shopping center. This involves closing the existing entrance to the Shopping Center along the east side of KY 53. This would eliminate the north leg of the off-set intersection and consolidate traffic to a modified full (four-way) intersection to the south. Figure 11.5 illustrates the proposed improvement.
- Purpose - this solution would consolidate traffic to one 90-degree intersection greatly improving safety and circulation in the area.
- Traffic / Transportation - the intersection of KY 53 and Yager is expected to experience 25,000 to 30,000 ADT by 2025. The improvement would yield a LOS of B during the average peak. During the design hour, a left turn lane is required on KY 53 to achieve an acceptable level of service (this is included in the High-Build Scenario recommendations).
- Costs - construction costs (exclusive of right-of-way) are anticipated to be between $1.5 M and $3.0 M.
- Impacts – minor right-of-way or access impacts to two-five businesses, including the reconfiguration of access to the pick up window for the Dairy Queen. There are few anticipated environmental impacts
- Execution - the fact that the project can improve safety and capacity and be implemented in the short / medium time frame depending on coordination with adjacent property owners lends to the high feasibility for the project. Note that is this project is undertaken in conjunction with High build option Alternate number 64A, explained in the next section, cost savings may be able to be achieved due to economies of scale for the larger, more complex project.

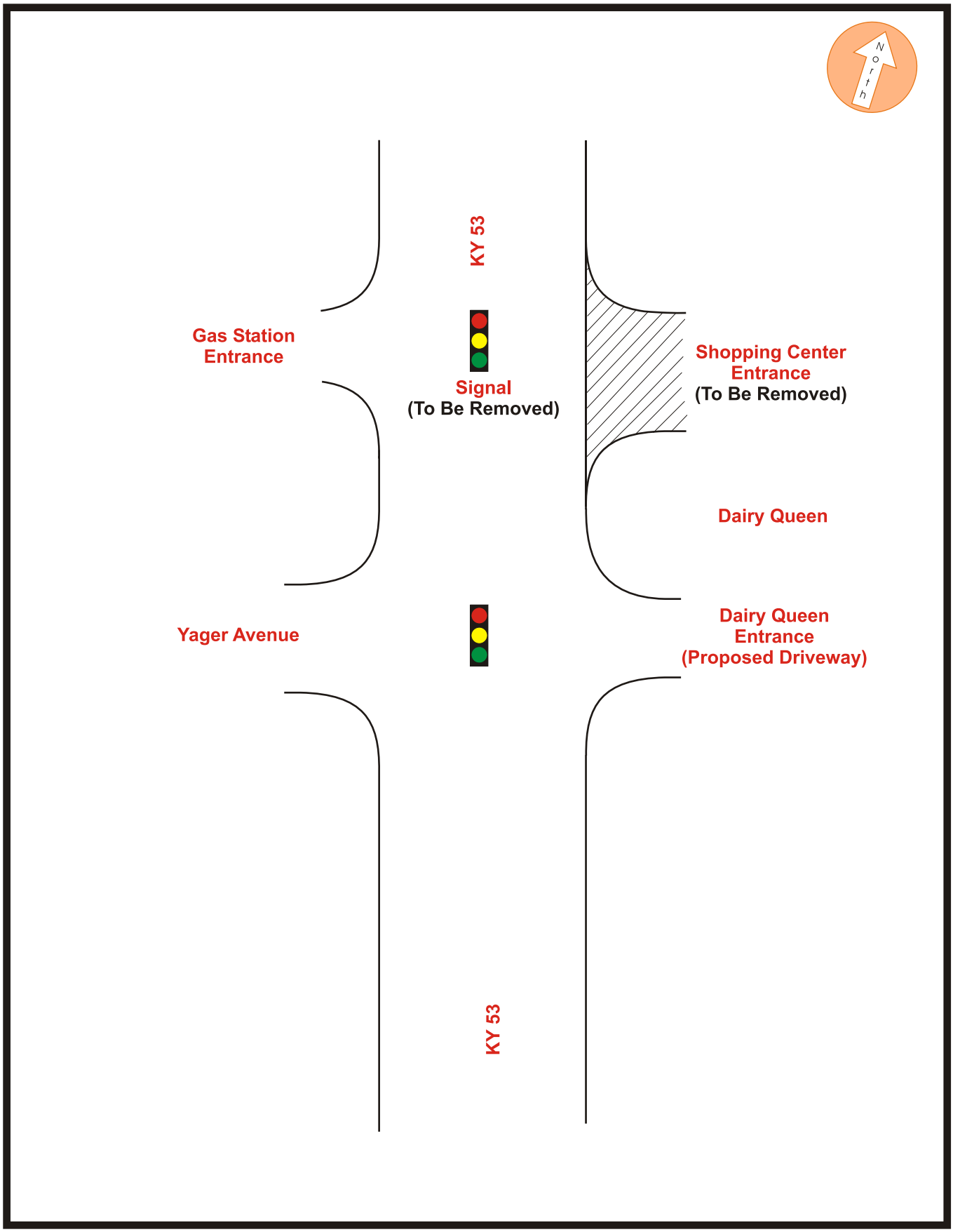


Figure 11.5

Recommended Intersection Improvement - Yager Ave.

11.3 High Build Options

As was presented in Chapter 10, only the High-Build scenarios provided the level of improvement necessary to accommodate the projected 2025 traffic volumes at reasonable levels of service. In addition, only the High-Build scenarios provided substantial access and circulation benefits. The High-Build scenarios also provided critical safety improvements in important corridors such as KY 53. The recommended High-Build projects included a range of new highways and upgrades to existing highways. Each of the recommended projects is discussed below.

Alternate number 64A

- Design - KY 53 from Washington Street to I-71south bound ramp add median with permitted left turn lanes at major intersections only, and coordinate traffic signals from Washington Street to Kroger. Since a major scale project in the LaGrange historic district is probably impractical, the most logical place to begin an improvement to KY 53 is Washington Street. This project involves the acquisition of additional right-of-way on the east and/or west sides of the existing KY 53 alignment to accommodate intermittent center turn lanes with non-mountable curbs at select locations.
- Purpose - this alternate will greatly enhance safety as it will provide left turn storage and allow for left turns to be made safely into adjacent businesses from KY 53.
- Traffic / Transportation – the intersections in the corridor will operate at LOS B to D in 2025 depending on the location and analysis period. The volumes range from 24,000 ADT to 42,000 ADT. The recommended option will enhance safety and reduce congestion and delay in the corridor.
- Costs - the anticipated costs are between $1.1M and $2.1 M.
- Impacts - the impacts to adjacent businesses that are near KY 53 in this section are estimated at between 12 and 15, mostly affecting their front yard setbacks and access points. There are no anticipated environmental impacts.
- Execution – although this project directly addresses safety concerns and allows traffic to flow more freely thus reducing congestion and delay, and receives a high rating for feasibility / meets goals and objectives, it is programmed for the long term priority and phasing because the Project Work Group and others felt that there are more pressing needs evident south of I-71 along KY 53

Alternate number A6

- Design - KY 53 from New Moody Lane (KY 2857) to KY 22 / KY 53 split in Ballardsville - widen to five lanes. This improvement includes widening the existing two-lane KY 53 to accommodate one additional travel lane north and south bound, plus an addition of a center turn lane to facilitate left turns at certain locations.

LaGrange Bypass Scoping Study Summary of Findings and Recommendations
Recommended Projects

Alt. No.	Description	Traffic / Transportation			Capital Costs*						Impacts		Execution	
		2025 Level of Service (LOS) (Ave Peak/DHV Peak)	Average Daily Traffic (ADT) - 2025	Access / Circulation / Safety	Design	Utilities	Construction Low	Construction High	Total Low	Total High	Community Impacts	Environmental Impacts**	Feasibility / Meets Goals and Objectives	Priority / Phasing
HIGH-BUILD														
64A	KY 53 - Washington St. to I-71 SB Ramp - add median with left turn lanes at major intersections only and coordinate traffic signals from Washington St. to Kroger	B-C / B-D	24,000 - 42,000	Improves safety and access	$160,000	$326,040	$613,960	$1,613,960	$1,100,000	$2,100,000	12 - 16 businesses	None anticipated	High	Long
A6	KY 53 - New Moody Lane (KY 2857) to KY 22 / KY 53 split in Ballardsville- widen to five lanes	A-C	8,000 - 22,000	Improves access, circulation and safety	$1,750,000	$3,277,000	$7,973,000	$16,973,000	$13,000,000	$22,000,000	15 - 20 homes	22 potential historic archaeological sites, 4 cultural / historic sites	High	Phased - Short to Long
NEW 1	Elder Park Road Extension (KY 2856) - from KY 53 to KY 393 (2 lanes)	A-C	3,000 - 5,000	Improves safety and circulation	$1,200,000	$296,400	$9,503,600	$11,503,600	$11,000,000	$13,000,000	12 - 15 homes	3 potential historic archaeological sites, 6 - 8 cultural / historic sites	Medium	Long
NEW 2	New Moody Lane (KY 2857) - Improve to 2-lane facility from KY 53 to new overpass road south of I-71	C - E	3,000 - 16,000	Improves access and circulation	$420,000	$142,000	$3,138,000	$4,138,000	$3,700,000	$4,700,000	5 - 7 business, 1- 2 institutional impacts	7 potential historic archaeological sites	Medium	Long
31	South Collector Option C - New Moody Lane (KY 2857) to KY 22 near Fible Lane (KY 2859) (2 lanes)	A-C	2,000 - 5,000	Improves access and circulation	$1,750,000	$250,000	$14,000,000	$17,000,000	$16,000,000	$19,000,000	12 - 15 homes	None anticipated	Medium	Phased - Short and Long
NEW 3	Moody Lane (KY 2856) - KY 53 to west of KY 22 Campus Master Plan widen to two lanes	C	2,000 - 4,500	Improves safety and circulation	$1,221,000	$276,000	$6,700,000	$14,280,000	$8,200,000	$15,785,000	12 - 15 homes	2 potential historic archaeological sites	High	Short
NEW 4	New Correction's Access Roadway (Luther Luckett Collector) - new connector road along Corrections Department property from vicinity of existing reformatory entrance / KY 146 to Dawkins Road	B	1,000 - 3,000	Improves access and circulation	$151,748	$45,000	$1,603,252	$2,003,252	$1,800,000	$2,200,000	None	1 cultural historic site	High	Short
55	KY 146 - KY 393 to 6th Street and - widen to four lanes	B	10,000 - 17,000	Improves circulation	$1,200,000	$2,100,000	$7,700,000	$9,700,000	$11,000,000	$13,000,000	8 - 12 homes	11 potential historic archaeological sites, 4 cultural / historic sites	High	Long
45	North Bypass Option A - New collector / connector road from New Moody Lane (KY 2857) to KY 53 - via I-71 overpass, relocated Allen Lane, extended Springhouse Pike, new road to Old Sligo (2 lanes)	C - D	2,700 - 9,300	Greatly improves access, circulation and safety	$1,695,000	$420,800	$12,984,200	$16,684,200	$15,100,000	$18,800,000	0 - 5 homes in Springhouse Estates	7 potential historic archaeological sites	High	Phased - Short to Long
			Category Subtotal	**Category Subtotal**	**$7,637,748**	**$3,530,200**	**$55,629,052**	**$75,309,052**	**$80,900,000**	**$110,585,000**				
			Cumulative Total	**Cumulative Total**	**$7,880,748**	**$3,715,200**	**$59,508,052**	**$82,950,052**	**$85,207,000**	**$118,654,000**				

* - Excludes right-of-way (ROW)
** - All alternates have potential affects on Archaeological Sites

- Purpose - this option helps to give existing KY 53 more traffic carrying capacity. The new 5-lane profile will mirror that proposed for KY 53 north of the I-71 interchange. The project will also address the existing deficiencies in horizontal and vertical curvature. This project also includes the addition of traffic signals / intersection improvements at (1) KY 53 and Grange Drive, (2) KY 53 and Zhale Smith Road, (3) KY 53 and Elder Park Extension (Alternate number NEW 1), (4) KY 53 and Moody Lane, and (5) KY 53 and KY 22.
- Traffic / Transportation - this section of KY will function at a LOS between A to C given the segment in 2025. The volumes range from 8,000 ADT to 22,000 ADT with higher volumes occurring in the northern section closer to the shopping areas and I-71. The recommended options will increase safety and roadway capacity, reduce congestion and delay in the KY 53 corridor. Costs - the anticipated costs are anticipated to be between $13 M and $22 M.
- Impacts - the impacts to adjacent homes that are within the needed right-of-way are between 15 and 20 homes. There are potentially 22 known or potential historic archaeological sites affected and 4 known or potential cultural / historic sites affected.
- Execution - since this project directly addressed safety concerns and allows traffic to flow more freely thus reducing congestion and delay, it receives a high rating for feasibility / meets goals and objectives. For priority and phasing, the project is recommended for phasing over the short to long time frames. Sections nearer to shopping areas south of I-71 to approximately Zhale Smith Road should be in the short time frame, the improvements from Zhale Smith Road to Blakemore Lane should be in the medium time frame, and improvements from Blakemore Lane southward to Ballardsville should be in the long time frame.

  Note: Alternates 64A and A6 effectively create a five lane profile (2 lanes in each direction north and south with a center turn lane) from Washington Street to KY 22 / KY 53 split in Ballardsville. These projects do not involve the widening of the bridge over the interstate. Thusly, no additional accommodations for pedestrians in this section are presently accommodated. A planning level analysis / cost estimate for an adjacent, but separate structure to accommodate pedestrians and other users over I-71 is between $1 M and $2 M dollars.

Alternate NEW 1

- Design - Elder Park Road extension from KY 53 to KY 393. This option involves the construction of a new east west connector road south of Moody Lane.
- Purpose - this new roadway would provide a parallel connection to KY 22 from KY 53 through to KY 393. It would bring a balance to the network in the south and act in conjunction with KY 22 to form two parallel east – west routes much like Commerce Parkway and KY 146 in the north. The roadway would relieve traffic from existing KY 22 and provide for increased safety, access, and circulation, especially in the southern portion of the study area by forming a grided street pattern for local access along with Options A6, 31 and New 3.
- Traffic / Transportation - the two-lane facility would achieve a LOS of C or better in 2025 with a volume of between 3,000 to 5,000 ADT.

- Cost - the total costs are anticipated to be between $11 M and $13 M.
- Impacts - there are impacts to adjacent homes that are within the needed new right-of-way (between 12 and 15 homes) with most of them near KY 393. There are potentially 3 known or potential historic archaeological sites affected and 6 to 8 known or potential cultural / historic sites affected.
  Execution – since this project directly addressed safety concerns and allows traffic to flow more freely thus reducing congestion and delay, and provides a needed parallel route (although perhaps with a lower than expected volume), it receives a medium rating for feasibility / meets goals and objectives. For priority and phasing, the project is recommended for phasing over the short to long time frames because pieces of the roadway are potentially needed before others, especially the segment north of the KY 22 school campus. For the segment from KY 53 to the north leg of the south Bypass Option C, this segment is recommended to be implement in the short-term time frame. From this point, westward, the roadway should be implemented in the long-term time frame. If KY 22 becomes congested sooner than expected or the construction of the KY 22 campus advances, the execution / phasing time frame could be adjusted.

Alternate NEW 2

- Design - New Moody Lane (KY 2857) improve to better 2-lane facility from KY 53 to new overpass road south of I-71. This option upgrades the existing 2-lane New Moody Lane roadway to accommodate 2 wider lanes with full shoulders making the segment safer and accommodating future traffic volumes in 2025.
- Purpose - this upgrade will provide a northern connection to the bypass road/I-71 bridge at Allen Lane and serve as an alternate link to provide access to the Business Park.
- Traffic / Transportation - the upgrade provides an appropriate LOS of C to E (with E occurring at the intersection during the highest segments of the peak hour) with 2025 volumes of between 3,000 and 16,000 ADT.
- Cost - costs range from $3.7 M to $4.7 M.
- Impacts - in terms of impacts, there are 5 to 7 anticipated business impacts; mainly front yards, reconfiguration of access points, and 1 to 2 institutional impacts of similar nature for the hospital and wastewater treatment plan. There are no anticipated environmental impacts.
- Execution - although the project directly addresses safety concerns and allows traffic to flow more freely thus reducing congestion and delay, and provides a needed alternative route to the business park, the roadway is predicated on the need for and implementation of other investments, namely the I-71 bridge at Allen Lane and south Bypass Option C, both of which may or may not be implemented in the short to medium time frames. Because of this interaction and staging, the project is recommended for implementation in the long term time frame and receives a medium rating for feasibility / meets goals and objectives.

Alternate 31

- Design - new South Collector Option C from New Moody Lane (KY 2857) to KY 22 near Fible Lane (KY 2859) 2–lane collector (south bypass) roadway. The

roadway would begin at the intersection of Moody Lane and the end of the I-71 bridge / Allen Lane extension, travel southward along a portion of existing Moody Lane and then follow a new route east of existing Moody Lane to the proposed Elder Park Road Extension. Once on Elder Park Road, the route travels eastward past the existing subdivision before turning southward parallel to the Future North Fible Lane extension proposed as part of the KY 22 Campus Master Plan as being developed by the Oldham County School Board, before connecting with the existing Fible Lane south of KY 22. The project also includes intersection improvements at South Collector Option C and (1) New Moody Lane, (2) - east and (3) - west Elder Park Road Extension, (4) Moody Lane, and (5) North Fible Lane.

- Purpose - this new roadway would serve as a new north – south collector / bypass road and in conjunction with the north bypass Option A, would provide a continuous through route from KY 53 near Old Sligo Road southward to KY 22 at Fible Lane.
- Traffic / Transportation - this project would have LOS C or better in the design year 2025 carrying between 2,000 and 5,000 ADT. The roadway helps form a grid pattern of local collector streets in conjunction with Options A6, NEW 1, and NEW 3.
- Cost - the total cost is expected to be between $16 M and $19 M.
- Impacts - total impacts are roughly 12 to 15 homes. There are no environmental impacts anticipated.
- Execution - although the project directly addresses access and circulation concerns and allows traffic to flow more freely thus reducing congestion and delay, and provides a needed grided local street system, the roadway is predicated on the need for and implementation of other investments, namely the north bypass Option A and the development of the KY 22 school campus. Because of this interaction and staging, and the fact that the project attracts a lower volume of traffic, the project is recommended for implementation in the phased short to long time frame and receives a Medium rating for feasibility / meets goals and objectives. The surrounding development in the area and the advancement timeline of other recommended projects should indicate when this project is needed, i.e. when Option A is being designed in the north, planning and design for Option 31 should begin. When the school campus is developed, the segment from Fible Lane to Moody Lane should be in place. Therefore, this segment is recommended for the short-term time frame. Likewise the east-west segment along the Elder Park Road extensions is also programmed for the short-term time frame.

Alternate NEW 3

- Design - Moody Lane (KY 2856) from KY 53 to west of KY 22 Campus Master Plan parcel – widen existing narrow road to 2 full lanes.
- Purpose - this option would upgrade the existing Moody Lane from the existing one lane profile (in some sections) to 2 full lanes to handle anticipated traffic volumes in 20205. This newly upgraded roadway along with Option NEW 1, Option NEW 2, and Option 31 forms a grided roadway system in the south and

serves to facilitate traffic flow and access to existing residential areas and to the proposed KY 22 Campus Master Plan proposed by the Oldham County School Board.

- Traffic / Transportation - the predicted LOS is adequate at C for 2025 accommodating an ADT of 2,00 to 4,500. The new roadway will improve access and circulation especially in the south between KY 22 and the proposed Elder Park Road Extension.
- Costs - the upgraded facility is expected to cost between $8.2 M and $15.7 M.
- Impacts - there are community impacts anticipated with the project, mainly to 12 to 15 existing homes that front along the current roadway. Portions of front yards, driveways and local drainage may be affected by the expansion. There are 2 potential historic archaeological sites in terms of environmental impacts.
- Execution - although the project directly addresses access and circulation concerns and allows traffic to flow more freely thus reducing congestion and delay, and provides a needed grided local street system, the roadway is tied to the need for and implementation of other investments, namely the south bypass Option C and the development of the KY 22 school campus. Because of this interaction and staging, and the fact that the project may attract a moderate volume of traffic; especially if the school campus is built, the project is recommended for implementation in the short term time frame The surrounding development in the area and the advancement timeline of other recommended projects should indicate the advanced need for this project, i.e. when Option C is being designed, further planning and design for Option NEW 3 should already be underway.

Alternate NEW 4

- Design - new Correction's Access Road (Luther Luckett Collector) – new connector road along Corrections Department Property from vicinity of existing reformatory entrance / KY 146 to Dawkins Road.
- Purpose - to alleviate through traffic along Spring House Pike and provide a new route for commercial / truck traffic going to the correction's facilities at the KSR and Luther Luckett.
- Traffic / Transportation - the route would attract between 1,000 and 3,000 ADT in 2025 and operate at LOS B or better
- Cost - costs are anticipated to be $1.8 M to $2.2M
- Impacts - there are no community impacts anticipated and only one cultural / historic impact
- Execution - the new roadway adds an alternative route for commercial vehicles bound for the corrections complex and would divert a significant volume of traffic bound for the KSR and Luther Luckett that would otherwise use portions of recommended Bypass Option A. It would be part of a package of mitigation measures that would be implemented and is highly effective as a stand-alone project. It could be implemented in the short time frame.

  NOTE: The idea of an alternate means of access to the KSR and Luther Luckett facility, with Alternate NEW 4 should be implemented as a stand-alone project

that would be necessary and beneficial for local residents and for the Department of Corrections.

Alternate 55

- Design - KY 146 from KY 393 to 6th Street - widen to four lanes. This is an upgrade of the existing KY 146 from 2-lanes to 4-lanes with shoulders. The widening would run from approximately 6th Street, so as to not affect the downtown LaGrange historic district, westward to the intersection with KY 393.
- Purpose - the upgrade would handle the anticipated volume of traffic in 2025 at LOS B and would improve circulation on the main east – west route in the north study area.
- Traffic / Transportation - anticipated volumes are between 10,000 and 17,000 ADT.
- Cost - the improvement would be anticipated to cost between $11 M to $13 M.
- Impacts - the upgrade would impact between 8 to 12 existing residences, mainly those that have driveways and/or yard frontage along existing KY 146. Also, there are anticipated to be 11 potential historic archaeological sties impacted and 4 cultural / historic sites impacts.
- Execution - the project directly addresses access and circulation concerns and would allow greater volumes of traffic to flow more freely thus reducing congestion and delay, and provide a higher capacity alternative east – west route to Commerce Parkway. The high volumes though are predicted for the outlying years of the study, and the predicted LOS is better than the C threshold at B. Therefore, the project is recommended for implementation in the long time frame although it receives a high rating for feasibility / meets goals and objectives

Alternate 45

- Design - North Bypass Option A – New Moody Lane (KY 2857) to KY 53 via I-71 overpass, relocated Allen Lane, extended Spring House Pike, new road to Old Sligo Road. The bypass is envisioned to be 2-lanes either in an urban cross section with curb and gutter, having two 12-foot travel lanes, a 20-foot median and left turn lane, and a multi-use trail (through Spring House Estates), or a rural 2-lane section with open ditches for other parts of the alignment. Traffic signals are planned for the bypass at (1) KY 53 / Old Sligo Road, (2) Fendley Mill Road, (3) Dawkins Road, (4) KY 146, and (5) Commerce Parkway. Although the recommended lanes are only 2, consideration of additional future right-of-way should be exercised. It may necessary at some point in the future to consider widening the bypass to 4-lanes depending upon access and development that may or may not occur. This issue should be revisited during final design for the roadway and through the impending Oldham County Thoroughfare Plan.
- Purpose - this is the recommended 2-lane bypass option for the north portion of the study area that basically functions as a collector and provides an alternate / relief route for KY 53 especially through downtown LaGrange. The route also provides direct access from KY 53 and KY 146 to the Oldham County Business Park, a streamlined connection to I-71 at the KY 146 / KY 393 interchange, and unimpeded access under the CSX railroad tracks at Allen Lane.

- Traffic / Transportation - after careful consideration of all factors and a complete analysis by the study, it was concluded that Option A is the best choice for contributing improvements to the entire transportation system in the study area. (See further discussion in Section 10.5.) This roadway functions at LOS C to D depending upon segment and attracts 2,700 to 9,300 ADT in 2025. The option greatly improves access and circulation in the study area and does so in a safe and efficient manner.
- Cost - the costs of the roadway are anticipated to be between $15.1 M and $18.8 M and include mitigation and extra aesthetic design treatments (multi use path, new access, landscaping treatments, etc.) for the urban section through Spring House Estates. (See further discussion on mitigation measures in Chapter 12.)
- Impacts - the alignment would impact between 0 and 5 homes, all of them in the Spring House Estates subdivision. Zero residences could potentially be affected because there is an existing 60-foot dedicated right-of-way for the bypass along Spring House Pike from KY 146 to Dawkins Road. Therefore, potential impacts to Spring House Estates could be reduced to affect no existing homes in the subdivision. If some additional impacts arise due to design details, mitigation measures, etc., the direct number of impacts to residences would be as few as 5. These properties would be the only ones foreseeably eligible for Federal relocation assistance under current guidelines. Additionally, there are 7 potential historic archaeological sites that may be affected. There are no anticipated environmental impacts.
- Execution - in terms of priority / phasing, portions of the project could be implemented in the short, medium and long-term time frames. For example, the segment that encompasses the Allen Lane underpass of the CSX railroad and the extension over I-71 via a new bridge could begin designed and constructed in the short-term time frame. Likewise, the extension of Spring House Pike through to Dawkins Road could also begin in the short term and would be contingent upon the development of Majestic Woods. For example, once a residence in Majestic Woods is issued a certificate of occupancy (CO), the extension of Spring House Pike north of Manning Place to Dawkins Road should be immediately completed. The other sections of the collector, those north and northeast of Dawkins Road, would be programmed for the medium to long-term time frame.

  NOTE: Along with Option A, the idea of an alternate means of access to the Luckett facility, along a new roadway to the west of Majestic Woods from KY 146 to Dawkins Road as outlined in Alternate NEW 4 (above) should be implemented as a necessary stand alone project that would be necessary and beneficial for local residents, especially those in Spring House Estates and the KSR.

12.0 PROPOSED DESIGN / MITIGATION AND NEXT STEPS

12.1.1 Overall Design Elements

All future improvements, including new facilities, additional lanes, etc., should include adequate right-of-way and design measures to accommodate side walks and paved shoulders for enhanced vehicular safety as well as the accommodation of pedestrians and cyclists. Where feasible, separate facilities for pedestrians and cyclists should also be accommodated.

12.1.2 Number of Lanes

Many of the new projects recommended as part of the preferred package of alternates are programmed to be two (2) lanes. Care should be exercised with further planning and design so that these new roadways blend into the existing community taking into account context sensitive design (CSD) aspects. Consideration should also be given to the requirement for additional right-of-way should predicted traffic volumes exceed those anticipated for 2025. This can be done once preliminary and/or final engineering begins or when Oldham County implements its Thoroughfare Plan. Adequate setbacks, side, rear and / or front yard restrictions as well as easements, and other active physical development controls should be considered or established near these facilities to make future right-of-way acquisition more streamlined.

12.1.3 Mitigation Measures

Several mitigation factors were assumed during the various stages of analysis and ultimately in scoping the recommended package of alternates. These mitigation measures, although largely determined in later stages of planning or design are being recommended to minimize the impacts of the proposed roadway through the Spring House Estates subdivision and to ensure that the roadway fits within the designated / dedicated 60 foot right-of-way. Details of these measures included:

Typical Sections – the typical section for the recommended bypass Option A in the north is a two lane typical section resembling an urban parkway. This section can be accommodated in the existing 60-foot right-of-way - the dedicated width along the existing Spring House Pike. Through Spring House Estates, the 60-foot right-of-way would accommodate a closed or urban section with curb and gutter, two (2) 12-foot travel lanes, a 14-foot center turn lane and 6-foot tree-lined median, along with an 8-foot multi-use trail, and adequate clear zones (refer to Figure 12.1).

Note that the designed and recommended two (2) lanes are adequate given the projected 2025 traffic volumes. However, should the desired LOS change, or the anticipated volumes exceed those expected, thought should be given to measures to facilitate the expedient acquisition of additional right-of-way. This could be done through preliminary and/or final engineering or through the impending Oldham County Thoroughfare Plan.

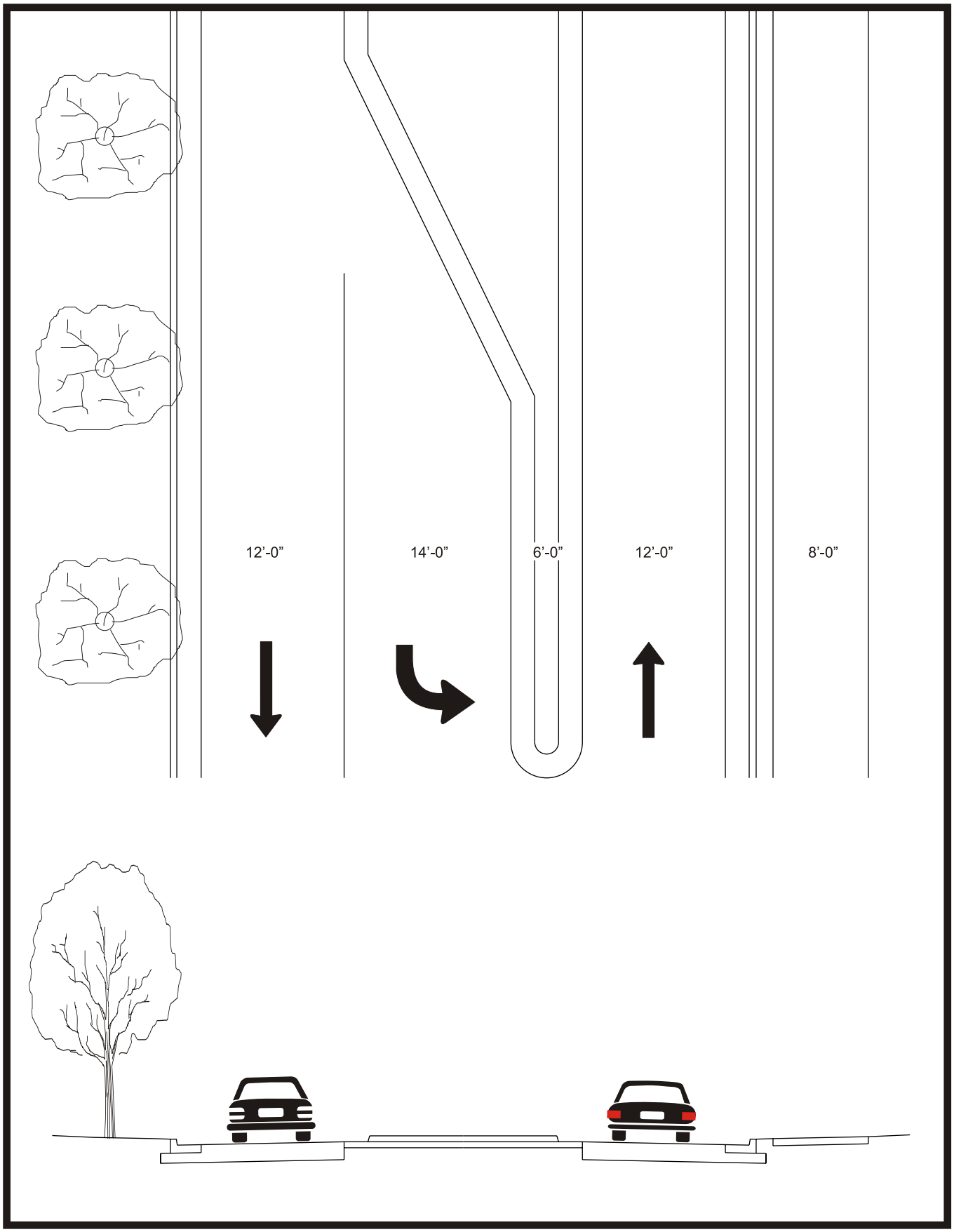


Figure 12.1

Proposed Typical Section

Speed – speed is an issue often dictated by a mixture of physical design and policy. The physical design of the urban two-lane section through Springhouse Estates is one of a parkway, which is designed to funnel or channelize traffic. This design effectively has the ability to physically slow traffic down because the roadway feels more narrow and constrained. More importantly, the posted speed can be lowered along Spring House Pike from Dawkins to KY 146 to 35 MPH or even lower. Other measures such as traffic calming will also effectively help to reduce the speed on this section of roadway.

Access – access is an issue to be addressed in order to improve safety and to provide motorists, cyclists and pedestrians regularity of movements at predictable locations. Since the volume of vehicles that travel Spring House Pike between Dawkins Road and KY 146 is likely to increase in the future, reductions in the number of access points for the adjacent local streets; Weeping Willow, Hamlet Forest, Manning Place, Sugarmaple Drive, Hardin Holly and Pittypat Way, onto Spring House Pike is desirable. Currently, there are three (3) primary access points in the existing Spring House Estates subdivision along Spring House Pike; one each at Manning Place, Sugarmaple Drive, and Pittypat Way.

The subdivision is beginning to be built out and is constrained by adjacent institutional uses such as the church and fairgrounds and a wide easement for a Texas Gas transmission line. Given the constraints, the most feasible and recommended option for improving access is to consolidate the entrance / exit points to one location along Spring House Pike at Manning Place. This would involve closing existing entrances / exits from Spring House Pike to both Sugarmaple Drive to the west and Pittypat Way to the east both with a new cul-de-sac. This would also involve extending Hardin Holly southward through the existing cul-de-sac to connect to Pittypat Way. Likewise, an extension southward from Manning Place to Sugarmaple Drive would also be needed.

These improvements would create a single, safer, entrance and exit point at Manning Place and Spring House Pike and eliminate the existing intersections respectively of Pittypat Way and Sugarmaple Drive with Spring House Pike (refer to Figure 12.2).

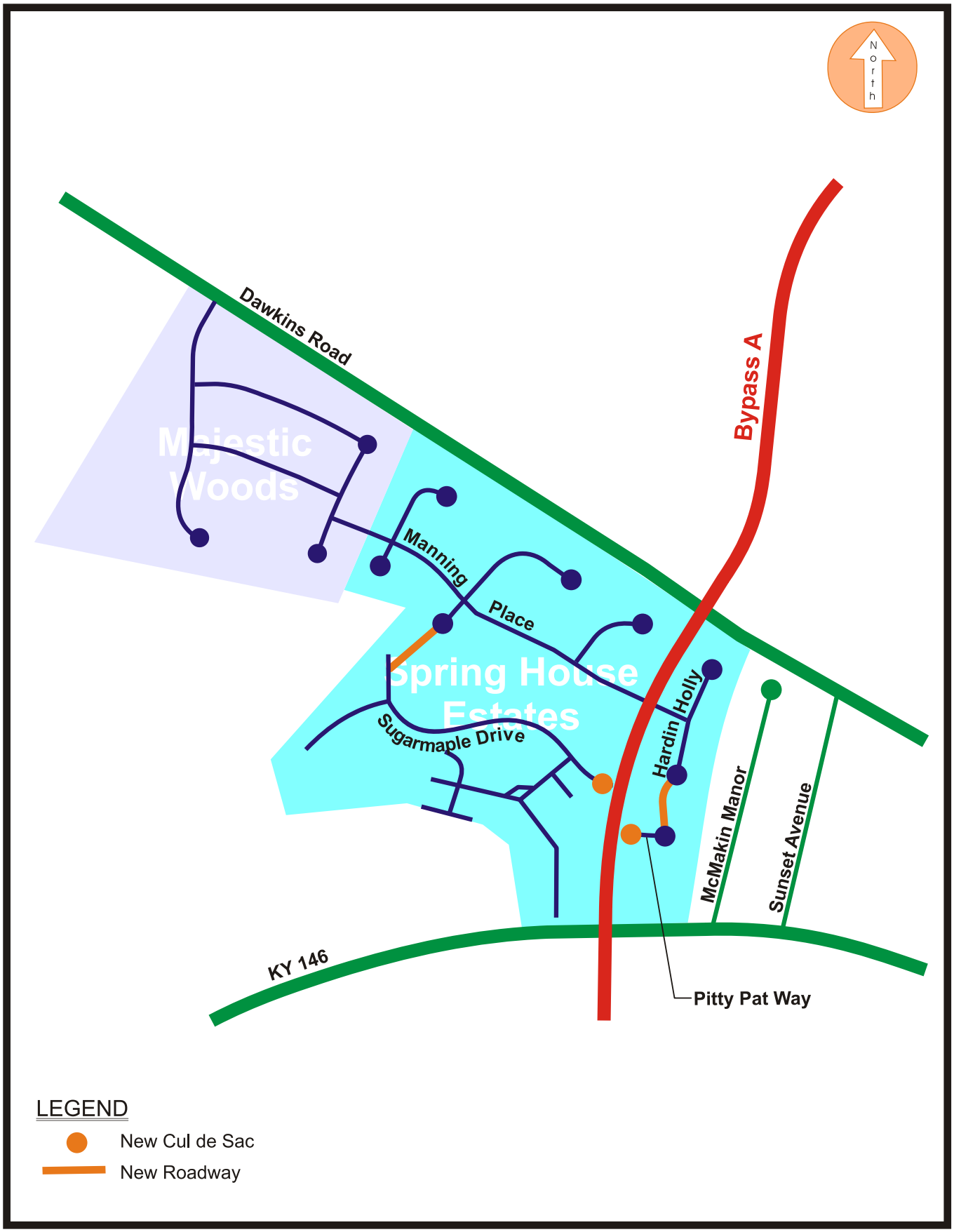
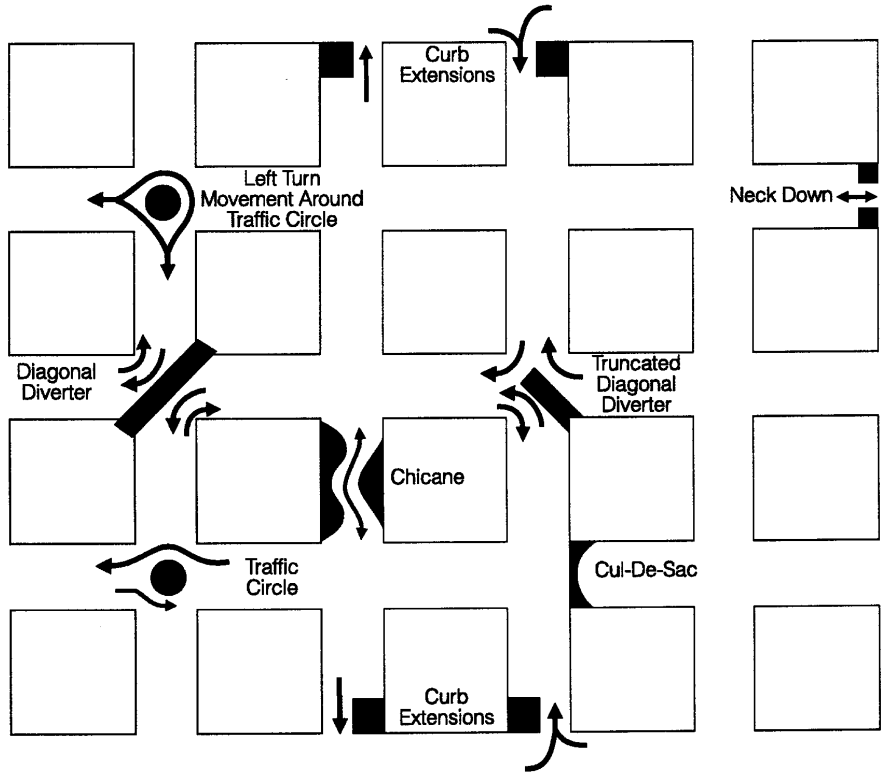

North
Dawkins Road
Bypass A
Majestic Woods
Manning
Place
Spring House Estates
Sugarmaple Drive
Hardin Holly
McMakin Manor
Sunset Avenue
KY 146
Pitty Pat Way
LEGEND
New Cul de Sac
New Roadway

Figure 12.2

Traffic Calming – traffic calming aims to reduce the dominance and speed of motor vehicles. It employs a variety of techniques to cut vehicle speeds and to channelize vehicle movements. Normally traffic-calming is applied on an area-wide basis. However, spot traffic specific calming is appropriate in one location, such as in a specific residential area.

For the section through Spring House Estates, the design of the roadway itself with a closed section with curb and gutter, a raised median, trees and other landscaping as well as the proposed multiuse trail are all part of traffic calming techniques. Likewise the use of a bulb out and/or speed table at Spring House Pike and Manning Place and traffic calming devices such as chicanes, speed humps / tables or neck downs along Spring House Pike and Manning Place are both recommended. The following illustration shows an array of typical traffic-calming devices installed in the US.

Figure 12.3: Typical Traffic Calming Devices



Additionally, the recommended traffic calming options at Spring House Pike and Manning Place would also include retro reflective pedestrian warning signs (perhaps fluorescent yellow green) and retro reflective crosswalk pavement markings. Exact types and locations of the traffic calming devises should be determined in later stages of project development with proper stakeholder and community input.

Work with Kentucky Department of Corrections to address

specific traffic issues - dialogue with the Department of Corrections and the Kentucky State Reformatory (KSR) and the Luther Luckett facility should continue with regard to traffic accessing the correctional facilities from KY 146 and Dawkins Road. Officials from KSR, KY Department of Corrections, the City of LaGrange, Oldham County, the KYTC and local residents should continuously discuss ways to decrease the amount of traffic along local streets. The idea of an alternate means of access to the KSR and the Luckett facility, perhaps along a new roadway to the west of Majestic Woods from KY 146 to Dawkins Road, should be implemented as a necessary stand alone project. (See discussion of Alternate NEW 4 in Section 11.)

Truck Prohibitions – measures to ensure that trucks do not use the segment of Spring House Pike from KY 146 to Dawkins Road can also be employed. Drivers of trucks will often use the fastest possible route possible that will accommodate their vehicles. The physical design elements of the roadway such as narrow lanes, neck downs, small speed tables, traffic circles / roundabouts and other traffic calming elements may effectively discourage trucks from using the route. However, other more policy type measures such as a lower speed limit and/or a ban on through trucks can in combination with physical elements, curtail likely truck traffic. The last two measures need enforcement in order to be most effective. However, a new route to the prison facilities coupled with design treatments and a truck prohibition would be most worthwhile.

Relocate East Side of Spring House Estates Subdivision – although the real affects of bypass Option A along Spring House Pike could be minimal effectively have an impact on no homes in the area, a full mitigation measure could be implemented. This would involve the relocation of up to 22 homes; representing all of the existing platted lots on the east side of Spring House Pike. This includes homes on Spring House Pike, Manning Place (east of Spring House Pike), Pittypat Way, and Hardin Holly. Since Federal Funds would be used to relocate only those property owners who are directly affected by the new roadway, probably a maximum of 5 properties, the additional 17 properties would need to be acquired with non-federal funds if this scenario is desired. Care and coordination with KYTC and FHWA would need to be exercised during property acquisition to fully comply with Federal guidelines.

12.2 Phasing and Funding

The recommended alternates are programmed for various implementation time frames; from short, (1 to 12 years) to medium, (13 to 20 years) to long (20 years plus). The recommendations for phasing that have been made take into account anticipated improvement needs over the time horizon set for the project. Some projects are linked together as explained in previous sections and decisions will ultimately need to be made by local project sponsors when to implement them. Projects along KY 53 south of the I-71 interchange designed to improve safety and stem the rise of congestion and delay at

the shopping center areas are programmed accordingly in the short-term time frame. Likewise, new roadways recommended throughout the study area are also phased over all three time frames.

Due to the lead-time for project development, phasing and funding of projects are often inextricably tied together. For instance, during further planning of a project, it is wise to begin securing funding for design, utilities, right-of-way and eventually construction. Because of this fact, projects may be moved from one implementation time frame to another not by needs or actual traffic conditions, but by the availability of funding.

The study identified 24 project recommendations, all with planning level cost estimates. These 24 recommended projects have a total estimated combined cost of between $85.2 M and $118.6 M in current (2002) dollars. Of these projects, fifteen (15) are programmed for, or have a component that would be in the short-term time frame at a cost of between $28.1 M to $43 M. Five (5) projects are programmed for, or have a component that would be in the medium term time frame and cost between $18 M and $24 M. Finally, there are six (6) projects programmed for, or have a component that would be in the long-term time frame at a cost of between $39 M and $50.8 M.

To date, funding has been secured only for one portion of a recommended project – Allen Lane underpass of the North Bypass Option A has been earmarked for roughly $5 M for design and some construction. Funds have been set aside for the project and it is currently in KIPDA's Long Range Transportation Plan. Therefore, all other projects are unplanned and more importantly unfounded.

Careful decision making and planning will need to exercised to take into account all future needs and reconcile those with available funding opportunities at the federal, local, regional and state levels. Combinations of using federal, state, regional, and local funds are probably the most likely. Costs sharing opportunities, such as sharing the costs of bypass Option C in the south, at least the portion from Fible Lane northward to Moody Lane, between Oldham County and the Oldham County School Board should be explored. Also, the new corrections access road from KY 146 to Dawkins Road (NEW 4) could be financed from the budget of the Department of Corrections.

12.3 Next Steps / Implementation

This report represents an objective unbiased examination of project opportunities in the study area that would contribute to solving identified problems. Its purpose and value lies in the fact that it provides an on-going medium for public discussion and decision making, and implementation with regard to strategic investment decisions related to the local transportation infrastructure.

Although this report makes recommendations regarding projects, it may or may not actually cause a project to be further studied, designed or ultimately built, nor is any agency, including the project sponsor KIPDA, obligated to implement any of the recommendations. In fact, KIPDA does not implement individual projects. Rather,

KIPDA acts as the conduit for programming projects, requested and sponsored by local jurisdictions (typically cities and counties), into various regional transportation planning and programming documents, namely the Transportation Improvement Program (TIP) and the Long Range Transportation Plan (LRTP). KIPDA also facilitates the development of various state-level transportation programming documents.

In order for a project to successfully transition from conceptual planning to actual construction, it must pass through a series of steps at three basic levels:

- Locally
- Regionally
- Statewide

Locally

Projects are initially conceived by various mechanisms, including public input, project planning studies (such as this LaGrange Bypass Scoping Study), requests from elected officials, etc. In all cases, any project recommendation that is made most likely would succeed only if it is embraced by a local agency and taken further into the project development process by that sponsor. Such a local sponsor would adopt a project and perhaps perform additional planning or study before taking their project request further. In the case of this study, either the City of LaGrange or Oldham County would need to sponsor an identified project and advocate that it be adopted as part of one or more regional transportation planning and programming documents. This could be as simple as the City of LaGrange and/or Oldham County adopting a recommendation of a project; or, it could be more complicated, necessitating additional study such as by a countywide thoroughfare plan or through adoption by regulatory agencies such as Oldham County Planning Commission. In either case, local sponsorship is essential before a project advances for scrutiny at the regional level. Ultimately, locally elected officials must weigh the quantifiable and non-quantifiable costs and benefits of projects and determine appropriate priorities and implement them. In addition, local project sponsors should also engage other interested parties such as the Oldham County School Board and the Kentucky Department of Corrections in an on-going dialogue about the joint development of specific improvements that can be mutually beneficial.

Regionally

Once a local sponsor brings a project forth, KIPDA would hear the request and proceed to adopt the project, programming it into the TIP and the LRTP. Most likely, the project would first come before KIPDA's Transportation Technical Coordination Committee (TTCC) where initial details of the physical nature of the project, its design elements, costs, impacts and benefits would be detailed. The TTCC would then recommend that the project be brought forth to the Transportation Policy Committee (TPC) for formal endorsement and adoption by KIPDA as part of the TIP or LRTP. The TPC directs the transportation planning process for the entire MPO area, including Oldham County. The TPC consists of chief elected city and county government officials who represent their respective political jurisdictions, along with representatives from the Kentucky Transportation Cabinet, the Indiana Department of Transportation, the Transit Authority

of River City (TARC), the Regional Airport Authority, the Federal Highway Administration, and the Federal Transit Administration. The TPC is a forum for developing consensus on policy actions and priority of projects among the various jurisdictions. Once the project is in at the regional level, it can begin the process at the statewide level.

Statewide

At the statewide level there are two stages for a project to go through. First, the project would most likely come from the TIP and/or LRTP and initially appear on the KYTC District 5's unscheduled needs list. This is a list of projects that are emerging into the pipeline for implementation at the state level. Although these projects lack proper funding, the list serves as an early indication of the type and nature of projects that are pending recommendation at the state level. Many projects are initially unfunded and appear on the list because there are simply more projects and needs in the region than there are programmed funds available for development and implementation. After appearing on the unscheduled needs list, a project can begin to generate more support and move from that list onto a funded list of projects at the state level.

The following sheet presents the "typical" project development process at the state level. It represents the "typical" project and actual timelines may vary from project to project.

Long-Range Planning
- Identify needs
- Prioritize needs for Statewide Transportation Plan (Six Year Highway Plan and 14-Year Long Range Element).

Project Planning
- Verify project need, determine project limits, identify project goals, identify public concerns, address public concerns, select strategy, verify funding needs

Preliminary Design & Environmental Studies
- Conduct field surveys, inventory environmental resources, identify and address public concerns, develop alternative corridors, prepare environmental documentation, hold public hearings

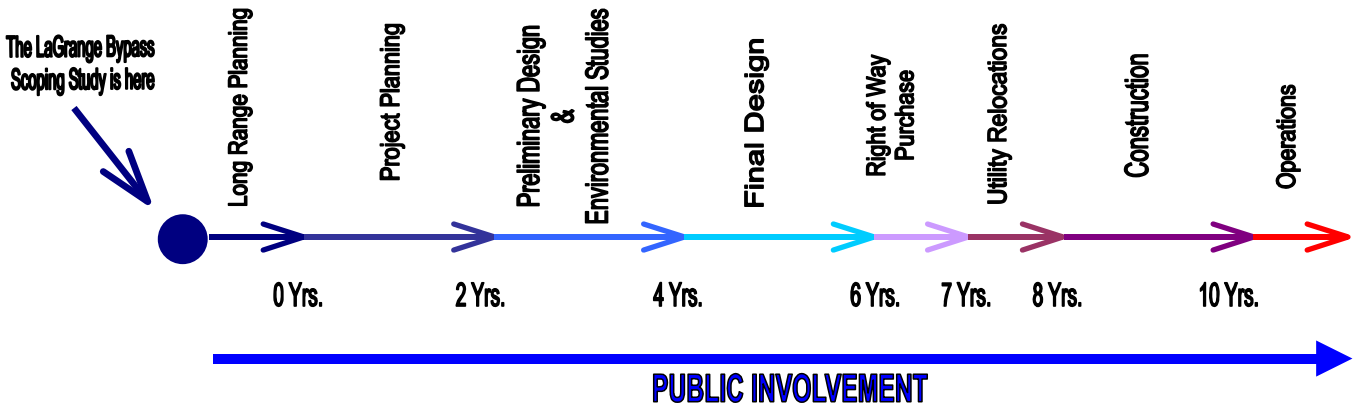
Final Design
- Develop final alignments, develop right of way requirements, conduct core drilling, identify and address public comments, review plans for environmental commitments, develop construction plans

Right of Way Purchase
- Determine property values, meet with property owners, address property owner concerns, make offers, pay for property, sign deeds, assist with relocations

Utility Relocations
- Move utilities out of the construction zone, compensate utility companies for relocations

Construction
- Construct roadway, address public concerns, follow through on environmental commitments, maintain traffic

Operations
- Maintain roadway and right of way, repair problems

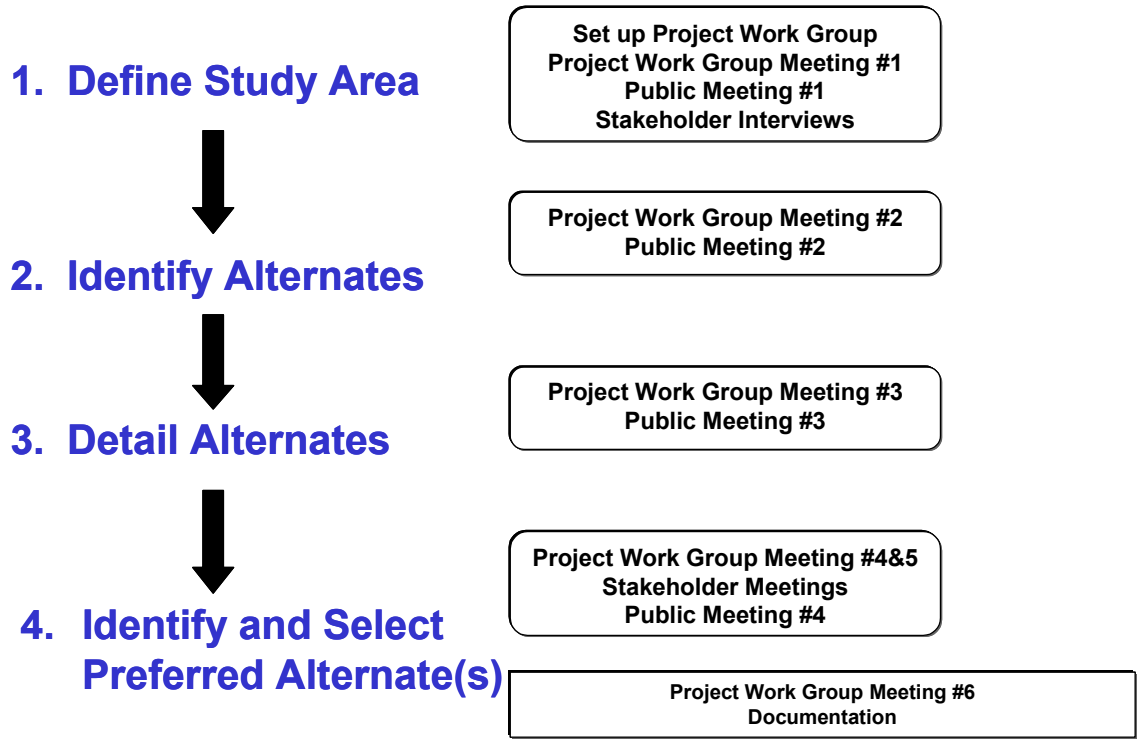


13.0 SUMMARY OF STAKEHOLDER INVOLVEMENT

13.1 Outline of Process

The stakeholder involvement process for the LaGrange Bypass Scoping Study was comprehensive and inclusive, lasting for the duration of the project. The process sought to actively engage all local stakeholders in a variety of methods and settings in order to maximize involvement and dialogue during each of the four basic parts or milestones of the study. The graphic below outlines the four phases and details the involvement opportunities that were afforded stakeholders during the project.

Figure 13.1: Public Involvement Opportunities During Study Process



The stakeholder involvement program specifically sought to:

- Provide a high degree of public involvement, minimize controversy and avoid "public burnout";
- Gain public support and understanding at the outset of the study, and retain it throughout the study; building public support for the best alternate(s);
- Be proactive and reach out to the broader general public, including those who do not usually attend public meetings;
- Be innovative and creative, setting a positive tone for the project;

- Keep project concepts, techniques, methods of analysis, etc., understandable, so that complex questions could be translated into easy choices at key decision points.

Overall, the public involvement process was broken down into various components such as:

- Creating a study advisory body called the Project Work Group
- Conducting stakeholder interviews with various local groups and entities
- Conducting Public Meetings in open-house, workshop styles

More details of individual public involvement elements are found below along with appropriate documentation.

13.2 Project Work Group

The Project Work Group acted as a decision-making body and helped guide certain technical and policy decisions during the course of the project. As such, this group had a material affect on the outcome of the study. Both the Oldham County Fiscal Court and the City of LaGrange appointed members to serve on the Project Work Group. In addition, representatives of local and state agencies were also appointed to the Project Work Group to provide technical oversight.

Members of the Project Work Group included:

Judge Executive John W. Black
Oldham County Fiscal Court

Magistrate Wayne Theiss
Oldham County Fiscal Court

Magistrate Mary Ellen Kinser
Oldham County Fiscal Court

Magistrate Bill Tucker
Oldham County Fiscal Court

Jim Urban, Administrator
Oldham County Planning Commission

Richard Benton
Oldham County Engineer

Mayor Nancy Steele
City of LaGrange

Beverly McCombs
LaGrange City Council

Lucy Rickets
LaGrange City Council

Kevin Woosley
LaGrange City Council

Elsie Carter
LaGrange City Council

Kirby Miller, Director
City of LaGrange Public Works

John Callihan, Branch Manager - Planning
Kentucky Transportation Cabinet District 5

Harold Tull, Transportation Director
KIPDA

Six meetings of the Project Work Group were held during the study. The meetings corresponded largely to project milestones and were held prior to all public meetings so that members of the group could provide input and have the opportunity to review all materials prior to the meetings. Members received Project Work Group notebooks which served as study documentation and working notes. Work Group meeting topics mirrored those of the public workshops and generally included:

1. Define Study Area – Meeting 1
2. Identify Alternates – Meeting 2
3. Detail Alternates – Meetings 3 and 4
4. Identify, Select and Prioritize Preferred Alternates – Meetings 5 and 6

13.3 Stakeholder Interviews

In order to obtain a clearer picture of concerns related to existing transportation issues and problems, and to begin discussing a preliminary list of possible alternate solutions, a series of stakeholder interviews were conducted during the early phases of the project. Participants who were interviewed from LaGrange and the surrounding Oldham County area included the following agencies / groups:

- Kentucky State Reformatory (KSR)
- Downtown LaGrange Business Owners
- Oldham County Judge/Executive
- Oldham County Magistrates
- Oldham County School Superintendent
- Residents from Spring House Estates subdivision
- Tri County Baptist Hospital
- Oldham County Dispatch

In communicating with these groups, it was determined that transportation is one of the top priorities for the LaGrange area and for Oldham County. However, transportation competes with schools and other forms of infrastructure, especially sewer and water, in terms of attention and funding. It was also pointed out that Oldham County needs an improved transportation system to help expand its tax base.

Many of those interviewed identified issues of safety, congestion, mobility, and access including:

- Sight distance problems
- Lack of shoulders, narrow lanes, and disregarding of traffic signs
- Cut through traffic, and speed through neighborhoods
- Large volumes of trucks
- Noise pollution from loud cars and trucks.
- The lack of handicap parking/access.

The individuals/groups engaged in discussions made the following comments specific to the major transportation facilities in the LaGrange Study Area:

KY 53

- Traffic flow and congestion, especially during AM and PM peak hours
- The intersection with KY 146 needs to be upgraded, perhaps with a signal
- Truck traffic through downtown
- Synchronization of traffic signals
- The need for an alternative route to I-71 for north county residents
- A center turn lane on KY 53 from LaGrange (KY 146) to I-71 might be warranted
- The interference of EMS, Police, and Fire Department access and increases in response time when trains block KY 53, or when traffic is congested during peak hours
- Railroad/train safety at KY 53 and downtown LaGrange (lack of audible warning, gates, lights, etc.,) and trains are very close to vehicles in the downtown area
- Pedestrian safety, especially along KY 53 over I-71

KY 146

- Traffic generated by KSR
- Truck traffic between the KSR and I-71 (sometime through adjacent residential areas)
- Peak hour congestion AM and PM on weekdays.
- Through traffic on KY 146 is a concern when there is an accident on I-71 as traffic is routinely routed through LaGrange.
- Consideration of a traffic light at Spring House Pike and KY 146
- Number of accidents on the KY 393/KY 146 corridors, especially towards schools.

US 42

- US 42 as a scenic byway needs to be protected.
- The question of whether the proposed bypass would or would not connect to it.

KY 393

- KY 393 and KY 146 by schools, intersection is congested during the peak AM hours.
- The number of accidents on the KY 393/KY 146 corridors, especially towards schools.
- The accident rate is higher in this area.

In addition, the following general recommendations were made by stakeholders to spur the development of the range of transportation alternates:

- The examination of other intermodal options including transit, bicycle and pedestrian access, and light rail.
- The banning of truck traffic on KY 53 in the downtown area.
- 10 minute parking on Walnut Street and Main Street for people to conduct brief business.
- Intersection upgrades, from a 3-way to 4-way stop, should be considered at Walnut and Main and Walnut and Second Streets.
- Straighten/realign Allen Lane to go under the railroad tracks and over I-71 with a connection to Spring House Pike.
- The creation of additional handicapped parking, and pedestrian/bike facilities, especially in the downtown area.

While each group acknowledged the importance of transportation in achieving balanced growth, there was some voiced opposition with regard to specific transportation options, especially the proposed bypass / extension of Spring House Pike. As might be expected, the residents of Spring House Estates were especially vocal against this option.

13.4 Summary of Public Workshop Comments

The following presents a summary of the four (4) public open-house style workshops held during the project.

Workshop 1

The first workshop was held at LaGrange Elementary School on Tuesday, December 4, 2001 from 6:30 p.m. to 8:30 p.m. It was an open-house style “blank slate” meeting designed to illicit input from the public about study issues, goals and subjects to address. There was no formal presentation. Rather, participants were engaged at various stations depicting among other things, study area, potential issues, potential goals, and finally potential solutions.

Participants at this first public open house meeting overwhelmingly indicated that there were traffic problems in the study area. Most notably, congestion at various locations, particularly intersections garnered the most attention, with a need for roadway improvements, train back ups, and safety coming all tied for second.

Possible solutions identified included new roadways, turning lanes, and road widening(s). Most participants felt that transportation was very important, to very strongly important. They also felt that transportation competes with other priorities such as schools and other infrastructure (water and sewer) in the County. Most participants

expressed a need for solutions to current and future problems giving a range of potential solutions.

Overall, the comments from the public mirror those received during stakeholder interviews – that there is a need to do something and that transportation is important to the continued health and vitality of the study area, the City of LaGrange and Oldham County. Participants were asked to return a survey form comment card.

Workshop 2

Workshop number 2 was held at the Oldham County Convention Center in Buckner on Tuesday, January 29, 2002 from 6:30 p.m. to 8:30 p.m. The workshop was held to review information gathered at the first workshop and to begin the development of all possible alternates. Participants watched a brief slide show presentation conducted by the Consultant staff and then were invited to visit various stations that depicted aerial photographs of segments of the study area displaying various physical features of the roadway and surrounding area. Participants were invited to examine the photos and draw any transportation improvement option(s) / alternatives (new roadways, improvements projects, etc.) on tracing papers that were overlayed on the aerial photos. Participants were also asked to fill out and return a comment form indicating the types of improvements that were needed and where such improvements might be located.

Workshop 3

Workshop number 3 was also held at the Oldham County Convention Center in Bucker. This workshop was held on Tuesday, April 30, 2002 from 6:30 p.m. to 8:30 p.m. The purpose of this meeting was to refine the universe of alternates as developed to date from all sources; including the previous workshop meeting. Participants observed a slide show presentation highlighting work to date and future work, and then were invited to again visit various stations that displayed an aerial photograph with the more workable solutions that emerged from Level 1 screening portrayed. Participants were asked to engage the Consultant staff to discuss these solutions offering ideas for Level 2 screening. Specifically, participants were asked to offer comments and suggestions which alternates should be eliminated and to likewise recommend which alternates would be carried forward into Level 3 screening. Participants were also asked to fill out and return a comment form.

Workshop 4

The fourth and final public workshop was help at the Oldham County Middle School in Buckner on Tuesday, June 4, 2002 from 6:30 p.m. to 8:30 p.m. The purpose of the meeting was to review the conclusion of the Level 3 screening and to review the recommended program of projects as developed by the Consultant. Again, participants

viewed a short slide presentation that reviewed work to date and next steps. Then, the list of recommended alternates was discussed in detail. Finally, a question and answer session was initiated where members of the audience could ask questions regarding the recommended alternates. Like all meetings before, participants were also asked to fill out and return a comment form.

A technical appendix containing all respective copies of meeting sign in sheets, slides and visuals, comment forms, and other materials corresponding to each of the four public workshops, including submitted written comments from all participants, are available from KIPDA, Oldham County or the City of LaGrange. Interested parties should contact those agencies to review these materials.

13.5 Environmental Justice

In 1994, President Clinton issued Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”. The Executive Order focused attention on Title VI by providing that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." In support of Executive Order 12898, the United States Department of Transportation (DOT) issued an Order on Environmental Justice (DOT Order 5610.2) in 1997, followed by a Federal Highway Administration (FHWA) Order on Environmental Justice (FHWA Order 6640.23) in 1998.

Subsequently, U.S. DOT, FHWA and local MPOs, including KIPDA, have encouraged a proactive approach to the implementation of Title VI, and Environmental Justice aimed at preventing discrimination in its programs, policies, and activities. This proactive approach reduces conflicts and also reinforces compliance with other related requirements; such as, the National Environmental Policy Act (NEPA) of 1969, 23 U.S.C. 109(h) (which addresses social and economic impacts), and public involvement in statewide and metropolitan planning and project development. By being proactive, Federal, State, local, and tribal agencies can better serve all of the public, who rely on transportation systems and services to enhance their quality of life.

There are three fundamental Environmental Justice principles:

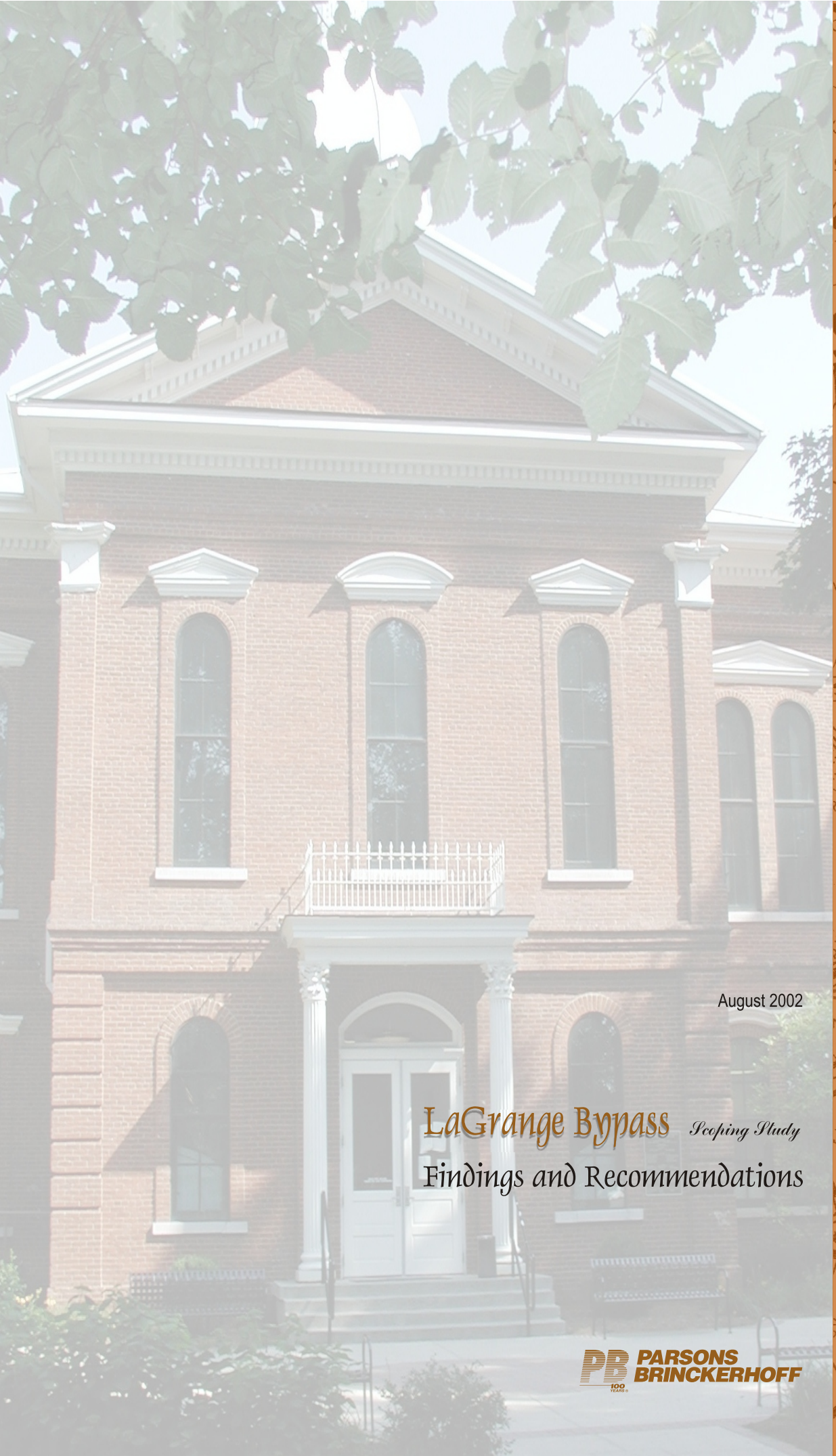
1. To avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority populations and low-income populations.

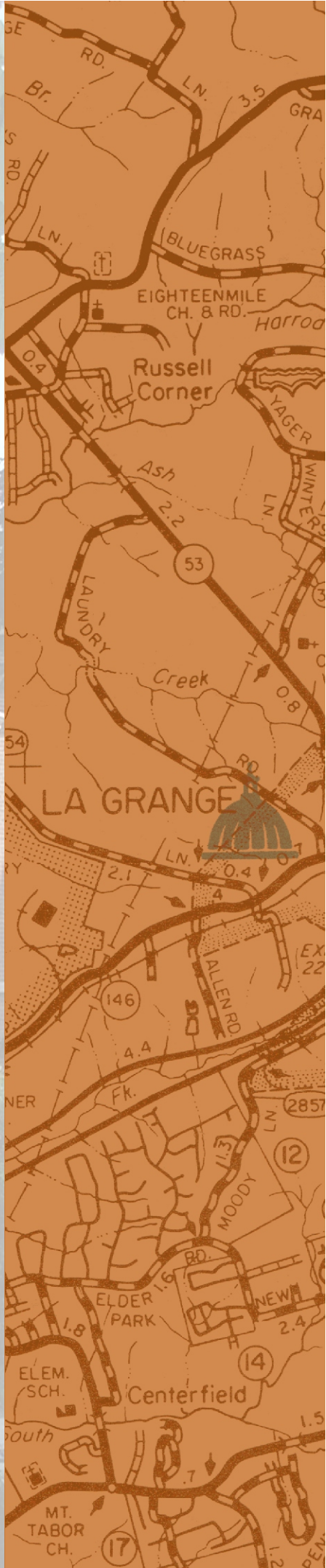
2. To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.

3. To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority populations and low-income populations.

During initial phases of the study, it became evident that there were no environmental justice groups in the study area as there were no evident concentrations of either low income or minority individuals.

For many transportation projects, Federal agencies, State DOTs, Metropolitan Planning Organizations (MPOs), and transit providers advance Title VI and environmental justice by actively engaging the public in transportation decisions. Effective public involvement programs enable transportation professionals to develop systems, services, and solutions that meet the needs of the public, including minority and low-income communities. If there had been environmental justice groups identified by the LaGrange Bypass Scoping Study, the public involvement program would have actively sought their participation and input during the study and would have detailed the affects of the study recommendations on these individuals.





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LaGrange Bypass *Scoping Study*

Findings and Recommendations

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