

# I-264 / Manslick Road Interchange **FEASIBILITY STUDY**

I-264 between Dixie Highway and Taylor Boulevard  
Jefferson County, Kentucky  
Item No.: 05-436.00

**Final Report**  
December 2007



*Prepared for:*

**Kentucky Transportation Cabinet:  
Division Of Planning and  
District-5, Louisville, Kentucky**



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## 1.0 INTRODUCTION

### 1.1 Purpose of the Study

This study evaluates the feasibility of providing a new interchange on I-264 (Watterson Expressway) at KY 1931 (Manslick Road), and examines four possible alternatives for the interchange configuration.

### 1.2 Project Background

In 1973, when the Kentucky Department of Transportation completed an Environmental Impact Statement (EIS) regarding the widening of the Watterson Expressway, part of the planned improvements evaluated was the construction of a partial interchange at Manslick Road. However, when the Watterson Expressway was widened, this interchange was not included.

The interchange concept has re-emerged in recent years as congestion problems at the Watterson Expressway / US 31W interchange have worsened, see Figure 1.

An interchange at Manslick Road was a high priority to the former City of Louisville. In 2001, the Louisville Development Authority published a report entitled *Seventh Street Road and Manslick Road Redevelopment Land Use Study*, focusing on the area of Manslick and Seventh Street. One of the study's recommendations was the construction of a partial interchange. Selected pages of the 2001 *Redevelopment Land Use Study* is included as Appendix B. (It should be noted that the specific alignment shown in the 2001 study would not be feasible because of Section 4(f) impacts to the Watterson Park and Manslick Cemetery.) Today, the project is still considered necessary by Louisville Metro, the Kentuckiana Regional Planning and Development Agency (KIPDA) and other stakeholders.



Figure 1 – Project Area

### 1.3 Corridor Issues

Discussions with KYTC and local officials, comments from stakeholders and citizens, on-site visits, and project team meetings identified corridor issues that centered on safety, congestion, and community resources.

- Safety concerns focused on the high volume of school buses and other traffic (including commercial trucks) traveling through residential neighborhoods to access the Watterson Expressway or avoid congestion on Taylor Boulevard and Dixie Highway.
- Traffic congestion in the area is also a major issue. Traffic regularly backs up on Taylor Boulevard and Dixie Highway, as well as their respective interchanges with the Watterson Expressway. Backups also occur frequently on the westbound Watterson Expressway to southbound Dixie Highway. South of the Watterson Expressway, Manslick Road and Dixie Highway are each congested. The intersection of Dixie Highway, KY 2049 (Crums Lane), and US 60A (Seventh Street Road) has also been identified as a problem spot for traffic congestion.
- Community resource issues identified include environmental justice, recreation facilities, and economic development concerns. Minority, low-income, disabled, and elderly population concentrations, as well as a public park and walking path, exist in the study area. The area has been identified as a potential growth corridor for commercial development.

#### **1.4 Project Purpose, Need, and Goals**

The purpose of the project is to provide a safe roadway, to alleviate traffic congestion in the project area, and to improve connectivity to the interstate network.

The need for the project is supported by the following facts:

- Over 2,000 vehicles per day (VPD) travel through the residential area around Jacob Elementary School.
- High crash rates occur along Dixie Highway, 7<sup>th</sup> St. /Berry Boulevard and I-264 in the project area.
- Level of Service (LOS) in the project area is C or worse on all but two of the major roads in the project area (Berry Boulevard. and 7<sup>th</sup> St.).
- Traffic backups occur frequently along the Watterson Expressway, Taylor Boulevard, and Dixie Highway.

#### **Project Goals**

The project goals were identified through discussions with KYTC staff, local officials and other project stakeholders. Congestion and safety issues are paramount, especially bottlenecks at the existing Dixie Highway and Taylor Boulevard interchanges with I-264.

The project study team developed the following project goals:

- Improve traffic operations and safety within the study area, including Taylor Boulevard and Dixie Highway and their respective interchanges with I-264
- Reduce congestion and congestion-induced crashes
- Improve connectivity with the Watterson Expressway

- Improve access to stakeholders that are heavily dependent on traffic circulation and interstate connectivity, including:
  - Sts. Mary and Elizabeth Hospital and their ambulance service response times
  - Jacob Elementary School and the Jefferson County Public Schools' Nicholas Bus Compound, the latter of which generates over 1,000 bus-trips per day during the school year using neighboring streets to access the Watterson Expressway
  - Louisville Metro Fire Station Engine #12, located on Manslick Road south of the Watterson Expressway, and their response times
  - Park Hill Industrial area located north of the study area that has no direct interstate access
  - Residential areas including Hazelwood, Cloverleaf, and Iroquois neighborhood

## **2.0 EXISTING CONDITIONS**

### **2.1 Project Location**

The project is located in southwestern Louisville, in Jefferson County, Kentucky. The project area centers on Manslick Road and is roughly bounded by Dixie Highway on the west, Taylor Boulevard on the east, Berry Boulevard on the north, and Bluegrass Avenue on the south (see Exhibit 1, *Project Location*, in Appendix A).

### **2.2 Roadway Characteristics**

The number of lanes and functional classification of the roadways in the project area are illustrated on Exhibit 2; the key roads are summarized as follows:

- Manslick Road: Urban Major Arterial; two lanes from Bluegrass Avenue to just south of I-264, and four lanes from south of I-264 to Berry Boulevard
- Taylor Boulevard: Urban Principal Arterial; four lanes throughout the project area
- US 31W (Dixie Highway): Urban Principal Arterial; six lanes south of I-264, and four lanes north of I-264
- I-264: Urban Interstate; six lanes throughout the project area

### **2.3 Traffic Conditions**

Existing traffic volumes (year 2006) were obtained from the KYTC Highway Information System (HIS) database. Traffic analyses were prepared by KIPDA for a base year of 2009 and a horizon year of 2030. The traffic analyses and forecasts are included in Appendices C and D, respectively.



Traffic volume/roadway capacity (V/C) analyses were then developed. V/C ratios near or over 1.00 indicate that traffic is or will be over the roadway's intended capacity, which can lead to congestion and delay problems.

- Manslick Road currently has traffic volumes averaging 13,700 vehicles per day (vpd) in the project area, which are projected to increase to 39,400 vpd by the year 2030 (see Exhibit 8, *No Build Traffic 2009/2030 ADT and 2030 LOS*, in Appendix A). The volume/capacity (V/C) ratio is both currently and projected to be 1.3 to 1.4. It should be noted that these projections take into account the planned widening of Manslick Road from two to four lanes south of I-264 (see Appendix E, KIPDA Long-Range projects).
- Traffic volumes on Dixie Highway average 60,900 vpd south of the Watterson Expressway but only 31,500 vpd north of that point. These traffic volumes are projected to increase to 65,050 vpd and 33,050 vpd respectively by the year 2030. This small growth in forecasted traffic volumes, only 7 and 5 percent, respectively, reflects the fact that Dixie Highway is already operating over capacity, and can grow relatively little.
- Taylor Boulevard currently has traffic volumes averaging 24,100 and 22,800 vpd south and north of the Watterson Expressway, respectively. Traffic volumes are projected to increase about 53 and 50 percent, respectively, to 36,900 vpd south of the Watterson Expressway, and 34,100 vpd north of that point by the year 2030.
- Traffic volumes on the Watterson Expressway currently average 95,700 vpd in the project area, and are projected to increase to 107,500 vpd by the year 2030. This represents a projected traffic volume increase of about 12 percent. The current V/C ratio between Taylor Boulevard and Dixie Highway is 0.9 to 1.0; while the future ratios are projected to range from 1.0 to 1.1.

Vehicle Mile Traveled (VMT) and Vehicles Hours Traveled (VHT) are two performance measures used to assess changes resulting from a proposed project. KIPDA prepared these numbers, as shown in Table 1, for the 2009 base year and 2030 horizon year for the existing plus committed highway network.

**Table 1                    2009 and 2030 VHT and VMT**

<b>Do-Nothing Scenario</b>	<b>Vehicle Hours Traveled (VHT)</b>	<b>Vehicle Miles Traveled (VMT)</b>
2009 Base Year	1,319,766	32,664,105
2030 Horizon Year	2,848,994	42,839,874

## **2.4    Level of Service**

“Level of service” (LOS), as defined in the *2000 Highway Capacity Manual* published by the Transportation Research Board, is a qualitative measure of operational conditions, and the motorists’ perception of those conditions. The conditions are usually defined in terms such as speed, travel time, maneuverability, delay, and comfort and convenience. The letters “A” through “F” designate the six levels of service. LOS A represents the best operating conditions (*i.e.*, free flow conditions), while LOS F defines the worst (*i.e.*, severe congestion). According to the national standards, the lower levels of

service (*i.e.*, D, E, and F) are unacceptable for safe and efficient operation since they generally reflect unstable traffic flows, and drivers have little freedom to maneuver.

Traffic conditions on study area roadways were examined to determine the existing and projected LOS. This analysis indicates the 2009 LOS ranges from A to E (see Table 2, *2009 and 2030 Traffic Conditions*). By the year 2030, LOS is predicted to generally decrease, resulting in a range from A to F. The increasing traffic volumes would eventually cause regularly occurring peak hour congestion and associated delays in accessing businesses, along with increased driver frustration and the likelihood for higher crash rates. Typically, LOS D is considered the minimum acceptable in urban areas. LOS E and F are, therefore highlighted yellow and orange, respectively.

## **2.5 Crash Analysis**

Crash report data in the project study area from the five-year period January 2001 – December 2005 was examined to identify roadway sections with abnormally high crash rates. This analysis indicates four roadway sections in the project study area are experiencing high crash rates. Table 3, *Crash Analysis Summary*, lists the high crash locations for the project area. A critical crash rate factor (CCRF) greater than 1.0 indicates that the high rate of crashes is statistically significant, *i.e.* this high crash rate is not occurring randomly. The complete analysis is shown in Appendix F.



**Table 2 2009 and 2030 Traffic Conditions**

Route	Begin Point	End Point	2009 ADT	2030 ADT	2009 V/C Ratio	2030 V/C Ratio	2009 LOS	2030 LOS
I-264	Cane Run Rd.	US 31 W	57,900	74,900	0.5	0.7	C	D
	US 31 W	Taylor Blvd.	103,600	107,500	0.9 – 1.0	1.0	E	F
	Taylor Blvd.	KY 1020	117,300	122,000	1.2	1.2	D	E
US 31 W	Brick Kiln Ln.	Gagel Ave.	65,350	65,100	1.5 – 1.6	1.5 – 1.6	D	D
	Gagel Ave.	Kendall Ln.	65,700	65,000			D	D
	Kendall Ln.	I-264	64,700	65,000			D	D
	I-264	Garrs Ln.	35,600	35,700	1.2 – 1.3	1.1 – 1.3	C	C
	Garrs Ln.	Crums Ln.	33,500	33,100			C	C
	Crums Ln.	Luken Dr.	20,900	22,800			B	B
Manslick Rd.	Tunisian Way	Gagel Ave.	20,600	44,300	1.4	1.4 – 1.5	E	D
	Gagel Ave.	Knight Rd.	14,900	38,200			D	D
	Knight Rd.	Bluegrass Ave	19,900	50,500			E	E
	Bluegrass Ave.	Lance Dr.	19,400	39,400			D	C
	Lance Dr.	I-264	19,300	39,200			B	D
	I-264	Crums Ln.	19,300	39,200	1.4	1.4 – 1.5	B	C
	Crums Ln.	March Blvd.	14,400	25,800			B	C
	March Blvd.	Berry Blvd.	14,000	19,200			A	B
Taylor Blvd.	Southern Pkwy.	Bluegrass Ave.	25,100	26,700	n/a	n/a	C	C
	Bluegrass Ave.	Bicknell Ave.	25,500	26,100			C	C
	Bicknell Ave.	I-264 EB Ramp	35,600	36,000			D	D
	I-264 EB Ramp	I-264 WB Ramp	33,100	33,500			C	C
	I-264 WB Ramp	Camden Ave.	32,900	34,100			C	C
	Camden Ave.	Berry Blvd.	24,700	26,900			B	C
	Berry Blvd.	Clara Ave.	15,700	18,600			B	B
7th St.	US 31 W	Leroy Ave.			n/a	n/a	B	A
	Leroy Ave.	Manslick Rd.					B	A
	Manslick Rd.	Powell Ave.	17,100	14,300			B	C
Berry Blvd.	Manslick Rd.	Powell Ave.	14,300	15,900	0.8	0.9	A	B
	Powell Ave.	Taylor Blvd.	14,300	16,400			A	B
Crums Ln.	North Ln.	US 31 W	6,700	7,800	0.8 – 0.9	1.0	D	D
	US 31 W	Manslick Rd.	12,900	14,000			D	D
Bluegrass Ave.	Manslick Rd.	Hazelwood Ave.	17,700	19,300	0.7	0.8	D	D
	Hazelwood Ave.	Taylor Blvd.	24,400	22,800			E	E
	Taylor Blvd.	Henry Ave.	17,800	21,600			D	E
Gagel Ave.	US 31 W	Sanders Ln.	11,400	10,500	0.8 – 0.9	0.7	C	C
	Sanders Ln.	Manslick Rd.	11,100	11,100			C	C

**Table 3 Crash Analysis Summary**

Route	Begin Milepoint	End Milepoint	Location Description	CCRF
I-264	7.0	7.8	Dixie Hwy. interchange to west of Manslick Rd.	1.3 – 6.0
I-264	8.8	9.3	West of Taylor Blvd. interchange to Taylor Blvd. interchange	1.1 – 1.5
US 31W	13.6	16.7	South of Gagel Ave. to north of Crums Ln., which is through the I-264 interchange	1.0 – 4.0
Berry Blvd.	0.0	0.6	Dixie Hwy. to Manslick Rd.	1.5 – 2.2

## 2.6 Environmental Overview

This environmental overview identifies issues in the project study area likely to require consideration during this and future stages of project development. It is based upon literature, archival, known database, and map research and limited amounts of fieldwork. Refer to Exhibit 3 in Appendix A for the locations of these resources.

### Historic, Archaeological, and Cultural Resources

The study area contains no sites currently listed on the National Register of Historic Places (NRHP). The Manslick Cemetery is a known old pauper's cemetery that, today, includes very few headstones although it covers a large area. It would most likely be eligible, but a survey of this site (or any site) is beyond the scope of this study.

### Aquatic Resources

Mill Creek and two tributaries serve as drainage channels cross the project area, parallel and in the right-of-way of the north side of the Watterson Expressway.

Watterson Lake is located adjacent to the Watterson Expressway on the north side, and east of Manslick Road.

Hydric soils are prevalent in the study area; therefore, impacts to wetlands are anticipated.

### Threatened and Endangered Species

Databases of the US Fish and Wildlife Service (USFWS), the Kentucky State Nature Preserves Commission (KSNPC), and the Kentucky Department of Fish and Wildlife Resources. (KDFWR) were researched to identify protected species potentially present in the study area. Table 4, *Protected Species in Jefferson County, Kentucky*, lists the protected species identified for Jefferson County. The list includes fourteen endangered, threatened, or candidate species: one plant, eight mussels, two insects, one bird, and two mammals. During future stages detailed field surveys may be required to determine the presence or absence of protected species and habitat in the study area.

**Table 4 Protected Species in Jefferson County, Kentucky**

Common Name	Scientific Name	Federal Status <sup>1</sup>	State Status <sup>1</sup>
<b>Vascular Plants</b>			
Running Buffalo Clover	<i>Trifolium stoloniferum</i>	E	T
<b>Freshwater Mussels</b>			
Clubshell	<i>Pleurobema clava</i>	E	E
Fanshell	<i>Cyprogenia stegaria</i>	E	E
Fat Pocketbook	<i>Potamilus capax</i>	E	E
Orangefoot Pimpleback	<i>Plethobasus cooperianus</i>	E	E
Pink Mucket	<i>Lampsilis abrupta</i>	E	E
Ring Pink	<i>Obovaria retusa</i>	E	E
Sheepnose	<i>Plethobasus cyphus</i>	C	E
Spectaclecase	<i>Cumberlandia monodonta</i>	C	E
<b>Insects</b>			
American Burying Beetle	<i>Nicrophorus americanus</i>	E	H
Louisville Cave Beetle	<i>Pseudanophthalmus troglodytes</i>	C	T
<b>Birds</b>			
Interior Least Tern	<i>Sterna antillarum athalassos</i>	E	E
<b>Mammals</b>			
Gray Bat	<i>Myotis grisescens</i>	E	T
Indiana Bat	<i>Myotis sodalis</i>	E	E

1 - Status: E=endangered; T=threatened; C=candidate; H=historic

## Hazardous Materials Concerns

Land use in the study area is predominantly residential, with some industrial and institutional facilities included. The Kentucky Transportation Cabinet provided a map showing two possible hazardous material contamination sites. Relevant data on these and other sites was collected from federal and state databases and a windshield survey of the study area (see Table 5, *Possible Contamination Sites*). Construction activities in or near these sites would require further investigations to determine the risk and extent of any contamination, and may require special procedures and permits.

**Table 5 Possible Contamination Sites**

Site	Site Name or Description	Area of Concern
1	Frito-Lay, Inc., 1600 Crums Ln.	Food preparation/manufacturing. Onsite treatment of hazardous materials (nitric and phosphoric acid)
2	Bratcher Apollo Lubricants 1508 Crums Ln.	Vehicle refueling; automotive paint, body, and interior repair/maintenance
3	Louisville Metro Animal Clinic	Biological and medical equipment and waste
Not indicated on map	Centeon Bio-Services 1517 Crums Ln.	Biological product manufacturing
Not indicated on map	Louisville Fire Department, Engine Co. 12 4535 Manslick Rd.	RCRA Conditionally Exempt Small-Quantity Generator

## **Air Quality**

Jefferson County is located within the Louisville Interstate Air Quality Control Region. The study area is designated as a Maintenance Area for 8-hour Ozone and a Non-attainment Area for fine particulate matter (PM<sub>2.5</sub>), as per the 1990 Clean Air Act Amendments. A detailed air quality analysis will be required if a build alternative is advanced in future project development phases.

## **Traffic Noise**

Highway noise is a concern in the area due to the proximity of residences and Watterson Park to the Watterson Expressway. At present, there is a concrete noise barrier along the south side of the Watterson Expressway from Manslick Road west to Dixie Highway providing noise relief to Cloverleaf Subdivision. (See pictures 36 and 37 in Appendix G.) If a new interchange were constructed, a detailed traffic noise analysis would be required to determine what, if any, incremental additional impacts would occur to nearby noise-sensitive land uses from the interchange itself. As a matter of policy, the KYTC and FHWA do not mitigate for noise on an existing highway (known as Type II noise mitigation), but do mitigate for new roadway construction, which would include the interchange ramps (known as Type I noise mitigation).

## **Community Facilities**

This study identified the following culturally sensitive locations in the immediate project area:

- Manslick Cemetery located off Manslick Road north of I-264
- Cloverleaf Christian Church located off Manslick Road south of I-264
- Three public schools: Jacob Elementary School, Hazelwood Elementary School, and the Hazelwood Educational Facility
- The Hazelwood Medical Facility is located adjacent to the educational facility
- Two public parks: Watterson Lake, located adjacent to the Watterson Expressway east of Manslick Road; and Dumeyer Park, located south of the Watterson Expressway and west of Taylor Boulevard
- A walking path and pedestrian bridge linking the neighborhoods on the south side of the Watterson Expressway with Watterson Lake on the north side (See Pictures 20 and 21 in Appendix G.)

## **Environmental Justice**

KIPDA prepared an *Environmental Justice Community Impact Assessment* (Appendix H). It focused on minority, low-income, elderly, and disabled population areas, and made efforts to identify any high concentrations of any of these specific population groups.

The environmental justice assessment concluded that minority, low-income, elderly, and disabled population concentrations each exist in the study area, concentrated along and east of Manslick Road and north of the Watterson Expressway, and in the vicinity of Iroquois Homes and the Hazelwood

Subdivision. It states “project-level impact determination, mitigation measures, and public involvement activities should be tailored to be most inclusive of such persons,” should this project be advanced.

### **3.0 CABINET, STAKEHOLDER, AND PUBLIC INPUT**

#### **3.1 Project Team Meetings**

The Manslick Road Interchange Study project team met three times during this study. These meetings were documented with meeting minutes (see Appendix I). A brief summary of the major topics discussed at each meeting follows:

- May 17, 2006, at KYTC District 5. This was the team’s kick-off meeting where members were introduced, the type of study discussed, and the study’s scope and schedule reviewed. Major topics of discussion included: the existing conditions; issues, problems, needs, and goals. Additional topics addressed included data collection, local officials and stakeholders meetings, and resource agency coordination.
- October 3, 2006, at KYTC District 5. Summaries of the minutes of the two stakeholders meetings were reviewed. Team members also reviewed the environmental footprint/overview, traffic data, and preliminary concepts for the improvement alternatives.
- April 24, 2007 at KYTC District 5. Team members reviewed updated designs and cost estimates for the improvement alternatives, the characteristics of existing roads in the area, and traffic information. The team identified a preferred alternative, but no decisions were to be made until a meeting was held with other stakeholders and local officials.

#### **3.2 Local Officials / Stakeholders Meetings**

Stakeholders meetings were held on September 6 and 13, 2006 to discuss issues surrounding the feasibility of a new interchange. Issues, problems, and needs identified in those meetings closely paralleled those previously identified by the project team.

A meeting was held on May 15, 2007 with local officials to present project information and the preliminary recommendation from the last Project Team Meeting. Information discussed in the meeting included traffic volumes, level of service, and crash data for the area; detailed descriptions of and initial construction cost estimates for each alternative; and other road projects being planned for the area. On August 2, 2007, a meeting was held with the City of Shivley to discuss the project and proposed recommendations.

The above meetings were documented with meeting minutes (see Appendix I).

## 4.0 STUDY ALTERNATIVES CONSIDERED

Transportation System Management (TSM) involves relatively low-cost improvements, but effective in nature, that can be quickly implemented through roadway maintenance activities. TSM improvements generally refer to such things as signing at critical locations, traffic lights at intersections, lighting, and simple roadway improvements such as pavement striping, removing vegetation to improve visibility, or improving the radius of a street corner. No TSM options are prudent to improve the interstate connectivity in the study area. However, because of the lack of access management on US 31W, TSM improvements should be investigated as possible short-term safety projects.

### 4.1 Spot Improvements

During the course of the study two spot improvements were identified that could be implemented to improve traffic flow and safety (see Figure 2, below). These would not meet the goals of the project but could provide some isolated relief and safety improvement. Two spot improvements that are recommended to be studied in further detail are as follows:

- Spot 1: Extend merge lane from I-264 westbound to US 31W northbound. At present, this ramp ends abruptly onto US 31W and causes one of the highest crash spots in the area according to comments from local officials and residents. Existing traffic must come to a complete stop after negotiating a sharp curve on the ramp. On coming traffic from I-264 cannot see around the sharp curve nor the vehicles stopped to merge onto US 31W. The proposed spot improvement would be to extend the merge ramp north along US 31W to Crums Lane. This would require closing the Herbert Avenue entrance to Dixie and utility relocations. See photos 5 and 6 in Appendix G.
- Spot 2: Replace I-264 westbound flyover to US 31W southbound with a triple-left turn. The ramp could be replaced with a triple-left turn onto US 31W. This would remove the current bottle neck at the southern end of this ramp which currently accommodates both this movement and the movement from eastbound I-264 to southbound US31W. At present, four lanes merge into two in a distance of about 200 feet. Congestion occurs daily and crashes are higher than average—many locals identified this as the top safety concern in the area.. The triple-left would be at a T-intersection with US 31W and appears to provide an option to improve flow through the area. See photos 8 and 11 in Appendix G.

Both of these spot improvement options are illustrated on the image below, which is copied from Exhibits 6 and 7 in Appendix A.

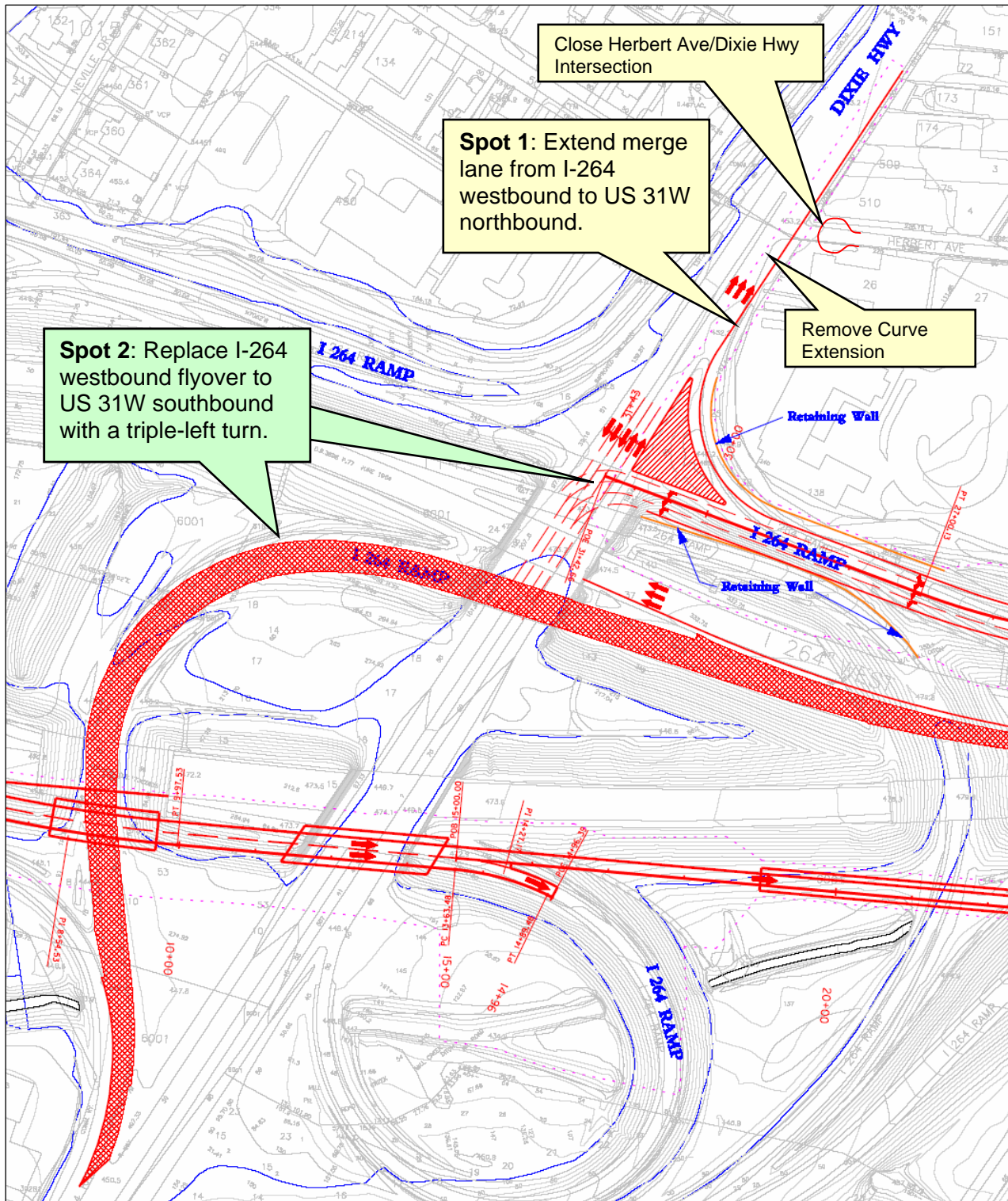


Figure 2 – Spot Improvements



## 4.2 Access Connections and Design

A do-nothing and four ramp configuration alternatives were evaluated for this Feasibility Study. The five alternatives are described below.

**Do-Nothing Alternative.** The Do-Nothing Alternative involves only routine roadway maintenance and improvements that are already planned (such as widening Manslick Road south of I-264 to four lanes). No action will be taken to construct a new interchange. This option will be referred to as appropriate for baseline comparisons throughout the decision making process.

**Interchange Design Alternatives.** The following alternatives for the interchange configuration were evaluated:

- **Alternative 1** – construct a full interchange with Manslick Road, with traffic coming from Manslick Road going west only able to access Dixie Highway, not I-264 westbound. The construction, design, right-of-way, and utility cost estimates for this alternative is \$32,500,000. See Exhibit 5.
- **Alternative 2** – construct a full interchange with Manslick Road, with traffic coming from Manslick Road going west able to access Dixie Highway and I-264 westbound. The construction, design, right-of-way, and utility cost estimates for this alternative is \$40,300,000. See Exhibit 6.
- **Alternative 3** – construct a half interchange with Manslick Road, with traffic allowed only to and from the east on I-264. The construction, design, right-of-way, and utility cost estimates for this alternative is \$4,600,000. See Exhibit 7.
- **Alternative 4** – construct a full interchange with Manslick Road, with traffic coming from Manslick going west only able to access I-264 westbound, not Dixie Highway. This alternative was developed for traffic analysis comparisons, only. No designs were created for it; therefore, the costs estimates for this alternative will be estimated if it is advanced for further consideration, but are expected to be similar to those of Alternative 1.

## 4.3 Alternative Comparison

The alternative comparison is focused on the relative issues and differences between these options, which include construction, right-of-way, utility, and design cost estimates; residential and commercial relocations and property impacts; impacts to Mills Creek; project goals (Table 6); and LOS operations (Table 7). (LOS is described in Section 2.4, above.)

The cost estimate worksheets are included in Appendix J. The construction and utility costs were based on recently completed projects; the right-of-way costs were based on Property Valuation Administration (PVA) records available from LOJIC mapping and include relocation expenses; and the design costs were determined to be 10 percent of the construction costs.

**Table 6 Comparative Matrix of Alternatives**

Alternative	Meets Project Goals	Total Costs (Millions)	Residential Relocations	Impacts to Mill Creek (Linear Feet)
Do-Nothing	○	\$0	0	0
TSM improvements	○	\$0.5	0	0
Alternative 1	◐	\$32.5	15	500
Alternative 2	◐	\$40.3	17	600
Alternative 3	◐	\$4.6	1	0
Alternative 4	◐	\$32.5	15	500

○ = does not meet project goals

◐ = partially meets project goals

**Table 7 Level of Service Comparison**

Route	Begin Point	End Point	2009 LOS	2030 No-Build LOS	2030 Alt.1 LOS	2030 Alt.2 LOS	2030 Alt.3 LOS	2030 Alt.4 LOS
I-264	Cane Run Rd.	US 31 W	C	D	D	D	D	D
	US 31 W	Manslick Rd.	E	F	E	D	E	D
	Manslick Rd.	Taylor Blvd.	E	F	F	F	F	F
	Taylor Blvd.	KY 1020	D	E	E	E	E	E
US 31 W	Brick Kiln Ln	Gagel Ln.	D	D	D	D	D	D
	Gagel Ln.	Kendall Ln.	D	D	D	D	D	D
	Kendall Ln.	I-264	D	D	D	D	D	D
	I-264	Garrs Ln.	C	C	C	C	C	C
	Garrs Ln.	Crums Ln.	C	C	C	C	C	C
	Crums Ln.	Luken Dr.	B	B	B	B	B	B
Manslick Rd.	Tunisian Way	Gagel Ave.	E	D	D	D	D	D
	Gagel Ave.	Knight Rd.	D	D	D	D	D	D
	Knight Rd.	Bluegrass Ave.	E	E	E	E	E	E
	Bluegrass Ave.	Lance Dr.	D	C	C	C	C	C
	Lance Dr.	I-264	B	D	D	D	D	D
	I-264	Crums Ln.	B	C	C	C	C	C
	Crums Ln.	March Blvd.	B	C	B	B	B	B
	March Blvd.	Berry Blvd.	A	B	A	A	A	A
Taylor Blvd.	Southern Pkwy.	Bluegrass Ave.	C	C	C	C	C	C
	Bluegrass Ave.	Bicknell Ave.	C	C	C	C	C	C
	Bicknell Ave.	I-264 EB Ramp	D	D	D	D	D	D
	I-264 EB Ramp	I-264 WB Ramp	C	C	D	C	D	C
	I-264 WB Ramp	Camden Ave.	C	C	D	C	D	C
	Camden Ave.	Berry Blvd.	B	C	C	C	C	C
	Berry Blvd.	Clara Ave.	B	B	B	B	B	B

Route	Begin Point	End Point	2009 LOS	2030 No-Build LOS	2030 Alt.1 LOS	2030 Alt.2 LOS	2030 Alt.3 LOS	2030 Alt.4 LOS
7th St.	US 31 W	Leroy Ave.	B	A	B	B	B	B
	Leroy Ave.	Manslick Rd.	B	A	B	B	B	B
	Manslick Rd.	Powell Ave.	B	C	B	B	C	B
Berry Blvd.	Manslick Rd.	Powell Ave.	A	B	A	A	A	A
	Powell Ave.	Taylor Blvd.	A	B	A	A	A	A
Crums Ln.	North Ln.	US 31 W	D	D	D	D	D	D
	US 31 W	???	D	D	D	D	D	D
	???	Manslick Rd.	B	B	B	B	B	B
Bluegrass Ave.	Manslick Rd.	Hazelwood Ave.	D	D	C	D	C	D
	Hazelwood Ave.	Taylor Blvd.	E	E	E	E	E	E
	Taylor Blvd.	Henry Ave.	D	E	E	E	E	E
Gagel Ave.	US 31 W	Sanders Ln.	C	C	C	C	C	C
	Sanders Ln.	Manslick Rd.	C	C	C	D	D	D

After a careful review and consideration of the existing conditions, the cost and benefits, and constraints of constructing either a full or partial interchange, the Project Team recognizes that none of the alternatives completely fulfill the project goals. **The Project Team recommends that Alternative 3, a partial interchange, that would allow access to and from the east be advanced only after widening Manslick Road (KY 1931) to the south.** At this time, the Do-Nothing alternative is prudent. The reasons to advance Alternative 3 rather than Alternatives 1, 2, and 4, are as follows:

- Between 70 and 80 percent of existing and future traffic travels to/from the east on I-264 from the Dixie Highway, Taylor Boulevard, and the proposed Manslick Road interchanges
- The full interchange options, as compared to the partial interchange option, would have no appreciable benefit to traffic operations on the interstate and surface streets. The partial interchange would provide congestion relief to the same level as the full interchange options.
- The cost of constructing a full interchange are 7 to 9 times more than the partial interchange (\$32.5 and \$40.3, versus \$4.6 million)
- The partial interchange would have only one right-of-way relocation and no anticipated environmental impacts
- A partial interchange has long been recognized and included in plans prepared by the City of Louisville

Should Alternative 3 be advanced it will require further detailed design and analysis, including a full Interchange Justification Study (IJS) and National Environmental Policy Act (NEPA) analysis and documentation, in addition to detail engineering and design and coordination and approval by FHWA.

In the following section, Alternative 3 is analyzed in comparison to FHWA eight policy points for an IJS.

## 5.0 INTERCHANGE JUSTIFICATION STUDY ANALYSIS

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) contains requirements for planning a proposed interchange to the existing Interstate Highway system. These requirements are implemented in FHWA policy and through Federal regulation located in 23 CFR part 450. The policy for *Additional Interchanges to the Interstate System* contains eight points that must be taken into consideration. This section discusses each policy point in detail.

### **Policy Statement No. 1: Existing Facilities Capability**

*"It is demonstrated that the existing interchanges and/or local roads and streets in the corridor can neither provide the necessary access, nor be improved to satisfactorily accommodate the design-year traffic demands while at the same time providing the access intended by the proposal. "*

The existing interchanges in the area, I-264/US 31W and I-264/Taylor Boulevard could most likely be improved to handle more capacity; they could not, however, provide the access intended by the proposal. Specifically, one of the goals of the project is to improve access to stakeholders that are heavily dependent on traffic circulation and interstate connectivity, including: St. Mary and Elizabeth Hospital, Jacob Elementary School and the Jefferson County Public Schools' Bus Compound, Louisville Metro Fire Station Engine #12, Park Hill Industrial area, and residential areas including Hazelwood, Cloverleaf, and Iroquois neighborhoods. Access to and from the interstate network is currently through a complex routing through heavily congested commercial and residential areas. Only a new interchange at Manslick Road, including a partial interchange, would provide an improved and more direct access to the interstate network.

### **Policy Statement No. 2: Transportation System Management**

*"All reasonable alternatives for design options, location and transportation system management type improvements (such as ramp metering, mass transit, and HOV facilities) have been assessed and provided for, if currently justified, or provisions are included for accommodating such facilities if a future need is identified."*

In Section 4.0, above, the various design options, including TSM and Spot Improvements, are described. Mass transit is provided for in the study area, and improved access to I-264 with a full or partial interchange would improve the transit service routes and options, including school bus routes. HOV lanes are not provided in any Louisville area interstates, but the inside lane of I-264 when reconstructed in the 1990s did provide extra spacing on the inside travel lane and shoulder in case HOV lanes were implemented in the future. The proposed interchange at Manslick Road would not affect that condition.

### **Policy Statement No. 3: Operational Analysis**

*"The proposed access point does not have a significant adverse impact on the safety and operation of the Interstate facility based on an analysis of current and future traffic. The operational analysis for existing conditions shall, particularly in urbanized areas, include an analysis of sections of Interstate to and including at least the first interchange on either side. Crossroads and other roads and streets shall be included in the analysis to the extent necessary to assure their ability to collect and distribute traffic to and from the interchange with new or revised access point."*

The traffic operational analysis has been performed for the proposed full or partial interchange, and it included the interchange to the east (Taylor Boulevard), to the west (Dixie Highway) and the surface

within the study area. The operational analysis illustrates that the proposed half interchange Alternative 3 would not have an adverse effect on the safety and operation of the interstate facility for current or future traffic. The merge, diverge, and weave analysis is illustrated on Exhibit 13 in Appendix A.

The KIPDA long-range plan includes the widening of Manslick Road from two lanes to four, from I-264 south approximately two miles to St. Andrews Church Road as Item #446, and as Item #447, the continued widening of Manslick Road another two miles to US 31W. The estimated open date for both projects is 2020. Because of the amount of traffic volume that is projected to use Manslick Road after it is widened, with and without a full or partial interchange, it is recommended that these two long-range plan projects be realized before an interchange is constructed. (2009 traffic volumes on Manslick Road range from 14,900 to 20,600 ADT; 2030 Do-Nothing volumes range from 38,200 to 50,500 ADT, respectively)

The operational analysis shows that other surface streets would be able to effectively collect and distribute traffic to and from the interchange.

#### **Policy Statement No. 4: Access Connections and Design**

*"The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" for special purposes access for transit vehicles, for HOVs or into park and ride lots may be considered on a case-by-case basis. The proposed access will be designed to meet or exceed standards for Federal-aid projects on the Interstate system."*

The proposed interchange will connect to a public road, KY 1931, (Manslick Road).

The recommended Build Alternative 3 is "a less than full interchange" as it will allow traffic movements to and from I-264 to the east, only. A partial interchange is recommended for this connection rather than a full interchange because the traffic analysis illustrates that a partial interchange provides the same relief to the currently congested interchanges as does the full interchanges. Between 70 and 80 percent of existing and future traffic travels to/from the east on I-264 from the Dixie Highway, Taylor Boulevard, and the proposed Manslick Road interchanges. Further, because of the proximity of the US 31W interchange and the proximity of the Cloverleaf Neighborhood to the south and Mill Creek to the north, the cost and impacts of the full interchange are significantly more than the partial interchange, as illustrated in Table 6, above.

The design of the recommended partial interchange would meet or exceed current design standards for Federal-aid projects on the Interstate System.

#### **Policy Statement No. 5: Transportation and Land Use Plans**

*"The proposal considers and is consistent with local and regional land use and transportation plans."*

In 1973, The Kentucky Department of Transportation published an EIS for I-264. A part of the planned improvements was the construction of a partial interchange at Manslick Road, providing access from Manslick Road to and from the east via frontage roads. When the improvements were built, however, this interchange was not included in the design. In 2001, the Louisville Development Authority published a report entitled *Seventh Street Road and Manslick Road Redevelopment Land Use Study*, focusing on the area of Manslick Road and Seventh Street. One of the study's recommendations was the construction of a partial interchange between I-264 and Manslick Road. The goal of the study, an one of the key initiatives of Louisville Metro is to provide infrastructure improvements to aged

industrial facilities located in southwest Louisville, where there are no direct interstate access points but numerous railroad tracks and brownfields; namely, the Park Hill area. Selected pages from the 2001 *Redevelopment Land Use Study* are included as Appendix B. (It should be noted that the alignment in the 2001 study would not be feasible because of Section 4(f) impacts to the Watterson Park and Manslick Cemetery.)

**Policy Statement No. 6: Comprehensive Interstate Network Study**

*"In areas where the potential exists for future multiple interchange additions, all request for new or revised access are supported by a comprehensive Interstate network study with recommendations that address all proposed and desired access within the context of a long-term plan."*

The only proposed new interchange with I-264 on the local, regional, or state plans is the Manslick Road Interchange proposed herein. Other planned or proposed interchanges in Jefferson County are on different interstates in the eastern portion of the county.

**Policy Statement No. 7: Coordination with Transportation System Improvements**

*"The request for a new or revised access generated by new or expanded development demonstrates appropriate coordination between the development and related or otherwise required transportation system improvements."*

As stated in Policy Statement No. 3, the widening of Manslick Road south of I-264 is recommended before a partial interchange is constructed.

As stated in Policy Statement No. 5, the proposed project would provide benefit to redevelopment and reinvestment plans for aged industrial facilities in Louisville north of the study area, but serving this these initiatives are not the only goals of the proposed project.

**Policy Statement No. 8: Status of Planning and NEPA**

*"The request for new or revised access contains information relative to the planning requirements and the status of the environmental processing of the proposal."*

The planning process and planning objectives, herein, were implemented to advance the National Environmental Policy Act (NEPA) and Interchange Justification Study (IJS) requirements, should a build alternative be advanced. The planning level analysis herein concludes the interchange beneficial to area traffic and not harmful to the interstate network. A design exception for a partial interchange would, however, need to be considered. Regarding the NEPA process, no significant impacts are anticipated with the recommended partial interchange.