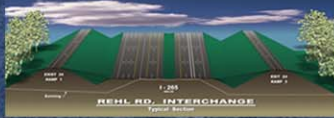


# Interchange Feasibility Study



KENTUCKY  
TRANSPORTATION  
CABINET

Prepared for:

KENTUCKY TRANSPORTATION CABINET  
DIVISION OF PLANNING



Prepared by:



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## Rehl Road / I-265 Interchange Feasibility Study

Gene Snyder Freeway (I-265/KY 841), I-64, Taylorsville Road (KY 155) / Blankenbaker Parkway (KY 913) / Rehl Road

Jefferson County, Kentucky

Item No.: N/A

## Final Report

October 2009



*Prepared for:*

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



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Louisville Metro has identified the interchange as a top priority and outlined the anticipated economic benefit from the proposed improved access. The following is excerpted from the letter of support for the interchange:

*This proposed development would have an annual net new impact of:*

- *\$1.9 million in Kentucky state property tax revenues*
- *\$74.9 million in Kentucky State individual income tax revenues*
- *\$64.1 million in Kentucky State sales tax revenues*
- *\$12.5 million in local occupational tax revenues*
- *\$3.4 million in local property tax revenues*
- *an additional 49,000 jobs in our 25-county economic area*

Three interstate interchanges exist in the area—Blankenbaker Parkway at I-64, I-64 at I-265, and Taylorsville Road (KY 155) at I-265, and the traffic operates at or above capacity. Likewise, existing traffic volumes and congestion on the two interstates and the I-64/I-265 interchange are substantial. Therefore, the primary objective of this feasibility study is to identify a design concept that would address the traffic needs of the proposed developments without worsening traffic flow on the interstate network.

### **Study Process**

A project study team approach was used, consisting of representatives from the KYTC Central Office, KYTC District 5, the Kentuckiana Regional Planning and Development Agency (KIPDA), Louisville Metro, and Qk4. (The FHWA elected to reserve involvement until the Cabinet begins to prepare a full IJS and NEPA document.)

Two alternatives were considered in this planning study: No-Build Alternative and a new I-265 interchange at Rehl Road and associated improvements to I-265

Traffic forecasts were provided by KIPDA, the Metropolitan Planning Organization (MPO), using the traffic model for the Metro Area. The traffic model incorporated the planned and programmed improvements to the network, including a rebuilt I-64/I-265 interchange and a widened I-265. The preliminary layout of the interchange concept is in concert with these proposed improvements. The traffic merge/diverge/weave analysis for the proposed interchange concept was conducted by Qk4. The future traffic was projected and analyzed for years 2020 and 2038 for both Build and No-Build scenarios. Year 2020 traffic assumed a limited number of the planned roadway improvements would be in place, while year 2038 traffic assumed all planned roadway improvements would be in place. Because the planning-level purpose and need is to accommodate future development, the 2038 No-Build scenario is based on a partial build out of the planned land uses, while the 2038 Build scenario is based on a full build-out of the proposed land uses.

After the traffic projections were developed, Qk4 developed the design concept with the merge/diverge/weave analysis to provide a design that would accommodate the various movements. The resulting design concept includes a compressed diamond interchange with collector/distributor (c/d) lanes. The c/d lanes begin in the south inside the KY 155/I-265 interchange, north of the southern ramps and south of the northern ramps, and extend north to connect with the c/d lanes associated with the proposed long-term redevelopment of the I-64/I-265 interchange. The anticipated

cost estimate of this design concept, in 2008 dollars, is as follows: Design, \$4.0M; Right-of-Way, \$2.0M; Utilities, \$2.0M; Construction \$47.0M<sup>1</sup>; Total, \$55.0M.

## Conclusion

Based on the review of the existing conditions, the cost, the traffic forecasts and analyses, and the planning-level purpose and need for the project, the Project Team concurred that a new interchange with c/d lanes, as described above, would be feasible.

## Next Steps

The advancement of the interchange will require 1) inclusion of the project into the KIPDA TIP (Transportation Improvement Plan) and the KYTC Six-Year Highway Plan, 2) further detailed design, and 3) an Interchange Justification Study (IJS), and a National Environmental Policy Act (NEPA) analysis and document, both of which will need to be coordinated with and approved by FHWA.

The IJS will require the development of a detailed sub area traffic model for the study area. The traffic study for this feasibility report is based on the multi-county model developed by KIPDA and does not afford the detail to satisfy each element of an IJS. The IJS will require a comparison of two options—a new interchange versus rebuilding the existing roads—as a way to meet the project purpose and need. The sub area traffic analysis would be the basis for that analysis.

The NEPA analysis would include public involvement and some level of indirect and cumulative impact analysis for the induced growth. Because of the lack of known environmental impacts and public controversy, it is anticipated the level of documentation could be a CE-Level 3 or an EA/FONSI rather than an EIS.<sup>2</sup>

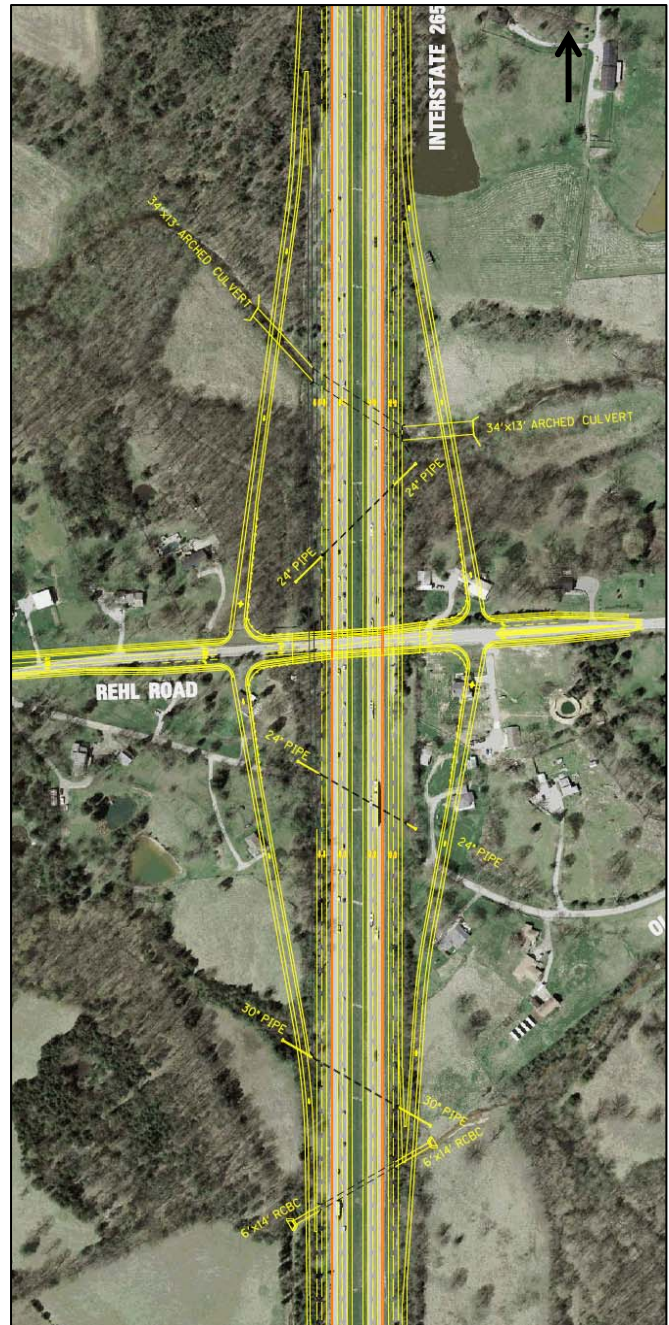


Figure ES-2: Design Concept (See Exhibit 6)

<sup>1</sup> The cost estimate is based on a c/d system the terminates inside the KY 155 interchange—between the northern and southern ramps. It was requested that cost estimates be generated for extending the c/d lanes south of the southern KY 155 interchange. The construction cost for such a design is estimated to be \$60.5M, in total.

<sup>2</sup> CE = Categorical Exclusion (KYTC offers 3 levels, with a Level-3 being the most involved); EA/FONSI = Environmental Assessment/Finding Of No Significant Impact; EIS = Environmental Impact Assessment.





# 1.0 INTRODUCTION

## 1.1 Purpose of the Study

This project is a planning study to evaluate the feasibility of constructing an interchange linking I-265 and Rehl Road in eastern Louisville Metro (see Figure 1). The area is west of I-265 and south of I-64 and has been identified for a future employment center in the *Jefferson County Comprehensive Plan: Cornerstone 2020*. It has been rezoned for industrial use, and utilities, including sewers, have been installed. This area for future development is just east of and adjacent to the Bluegrass Industrial Park which surrounds Blankenbaker Parkway (KY 913). The resulting traffic from this development is a top concern for Louisville Metro, the Kentucky Transportation Cabinet (KYTC), and the neighboring public.

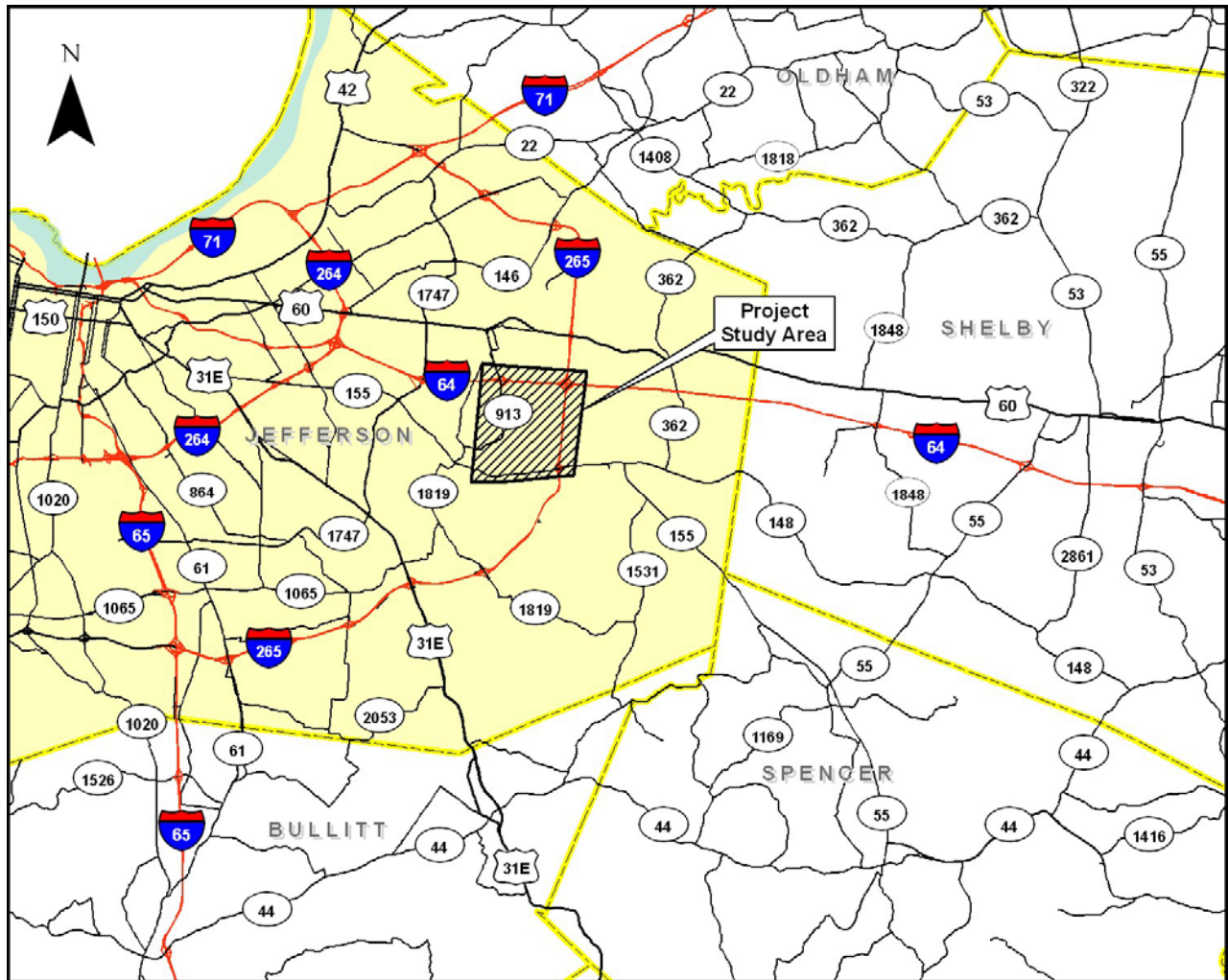


Figure 1: Project Location Area

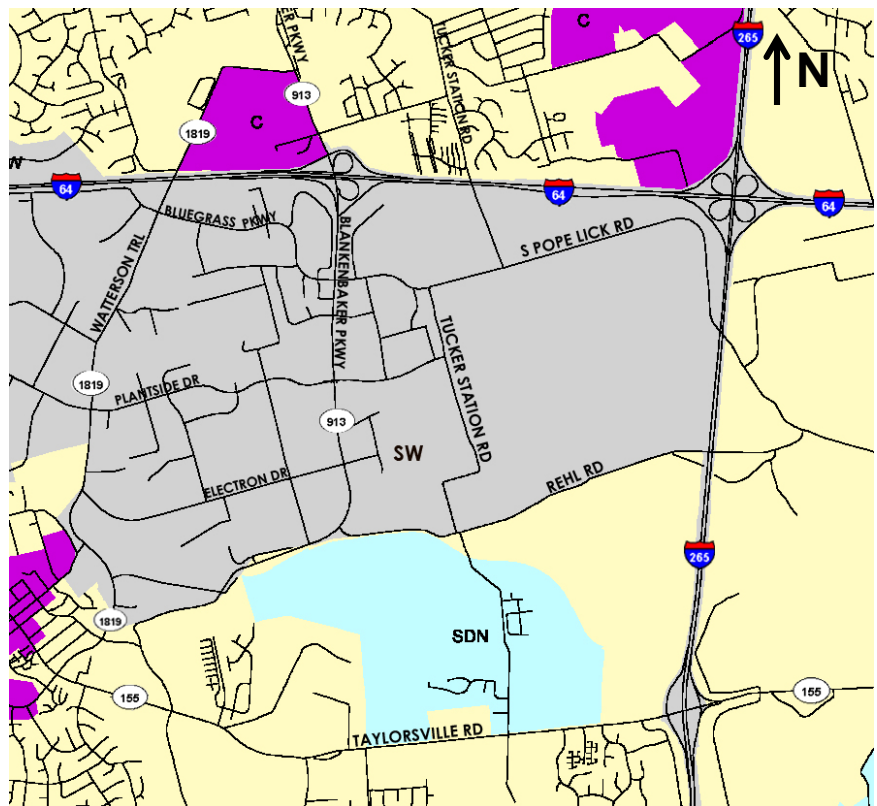
## 1.2 Project Background

In 2000 the then-Louisville and Jefferson County (now Louisville Metro) Planning Commission adopted a comprehensive land use plan: *Cornerstone 2020*. One of the key elements of the plan is Form Districts. Form Districts provide general direction for future land use decisions. In the study area, the Form District is Suburban Workplace (SW), which is described as “large scale industrial and employment centers buffered from surrounding uses.” In eastern Louisville Metro there are three SW Form Districts, the other two are to the north along I-265: the Ford Plant and surrounding land uses off Chamberlain Lane, and the Eastpoint Business center off KY 146.

Since that time, numerous development activities have occurred in the study area including the amassing of land into large (over 200-acre) tracts; the rezoning of these tracts from residential to more intensive industrial uses; and the installation of sanitary sewers. Although the rezoning has been approved, full build-out is conditioned upon improvements to the transportation network.

Louisville Metro has identified the need for new interchanges in Jefferson County in several planning documents, and has identified an interchange of Rehl Road and I-265 as the top new interchange priority.

The development activities, coupled with the identification of the need for new interchanges, have led to the advancement of this interchange feasibility study.



**Figure 2: Cornerstone 2020 Form District Map**

SW = Suburban Workforce Form District  
SDN = Special District Neighborhood (i.e., Historic District)  
C = Campus Form  
Yellow is Neighborhood Form

## 1.3 Purpose and Need

The planning-level purpose and need for the project is to accommodate the safe and efficient movement of traffic to and from the future development and the interstate network. The project should accommodate traffic from the future development of the area and, thereby, mitigate traffic impacts on other roads in the study area to aid in the area’s economic viability. Louisville Metro has approved the rezoning for industrial land use, but with a condition that only certain percentages of the proposed developments can be realized until improvements to the capacity of the road network are made to ensure adequate traffic movement. In Appendix B, there is a letter from Louisville

Metro Economic Development Authority identifying the anticipated economic benefit from the proposed improved access. The following is excerpted from the letter:

*This proposed development would have an annual net new impact of:*

- *\$1.9 million in Kentucky state property tax revenues*
- *\$74.9 million in Kentucky State individual income tax revenues*
- *\$64.1 million in Kentucky State sales tax revenues*
- *\$12.5 million in local occupational tax revenues*
- *\$3.4 million in local property tax revenues*
- *an additional 49,000 jobs in our 25-county economic area*

While Louisville Metro has long planned the Rehl Road interchange, it is not included in KIPDA's Transportation Improvement Plan (TIP) for future funding, nor is it in KYTC's current Highway Plan (Kentucky's 2008 Highway Plan As Approved by the 2009 General Assembly); however, it is included in KIPDA's Long-Range Transportation Plan, Horizon 2030.

## **2.0 EXISTING CONDITIONS**

### **2.1 Roadway Characteristics**

Data on the state-maintained streets in the study area is included in Appendix C, and a Photo Log of the study area is included as Appendix D. 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:

- I-64: Urban Interstate—eight 12-foot-wide lanes, four in each direction, between Blankenbaker Parkway and I-265. The current ADT for this section of I-64 is 92,200.
- I-265: Urban Interstate—four lanes, two in each direction, between KY 155 and I-64. The current ADT for this section of I-265 is 64,700.
- Blankenbaker Parkway (KY 913): Urban Principal Arterial—between four and six lanes from Blankenbaker Access Road north to I-64. Blankenbaker Parkway is programmed to be extended south to KY 155 in 2009-10. The current ADT for Blankenbaker Parkway is 36,600.
- Taylorville Road (KY 155): Urban Principal Arterial—four lanes at the I-265 interchange, and two lanes west to the future Blankenbaker Parkway extension. The current ADT for this section of KY 155 is 17,900.
- Plantside Drive, Bluegrass Parkway/S. Pope Lick Road, and Rehl Road: Each are 2-lane Metro Collector Roads that run east-west through the study area linking the future development area with Blankenbaker Parkway.
- Tucker Station Road: Local collector—two lane north south road that runs through the study area east of Blankenbaker Parkway. Tucker Station Road has narrow pavement, little to no shoulders, substandard geometrics (including four 90-degree curves, and one

off-set intersection) and an at-grade crossing of the Norfolk Southern railroad track. South of the Norfolk Southern railroad track, Tucker Station Road runs adjacent to the Black Acre State Nature Preserve and Historic Site and bisects the Tyler Settlement Historic District.

## 2.2 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. 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 CCRF for each state road in the study area is located in Appendix C. Table 1, *Crash Analysis Summary*, lists the high crash locations for the project area.

**Table 1: Crash Analysis Summary**

Route	Begin Milepoint	End Milepoint	Location Description	CCRF
I-64	18.9	19.6	From I-265 Underpass to 0.8 mile East	1.36
KY 913	2.1	2.3	Commonwealth Drive to Bluegrass Parkway	1.96

## 2.3 Existing and Future No-Build Traffic Characteristics

For the traffic modeling purposes the existing traffic volumes are for the year 2007, and were obtained from KIPDA. The forecasting model was used to develop year 2020 forecasts, and then the model was run to generate year 2030 forecasts. Because the model only predicts to 2030, the 2030 volumes were extended to the year 2038 based on average annual growth rates generated from the model. The traffic analyses and forecasts are included in Appendix E. The projections take into account planned highway projects in the Horizon 2030 Long-Range Transportation Plan. For the year 2020, it was assumed that the following roadway capacity improvements would be in place:

- A new flyover ramp from I-265 northbound to I-64 westbound with collector/distributor lanes on I-265 north and south of I-64
- The extension of Blankenbaker Parkway south to KY 155 as a four-lane road
- I-64 east of I-265 widened to six lanes

For the year 2038, each of the following KIPDA LRTP planned projects were assumed to be constructed:

- I-265 widened to six lanes
- A full flyover ramp system for the I-64/I-265 interchange
- The construction of Urton Lane—a new three-lane road from north of I-64 south to KY 155, west of and parallel to I-265
- KY 155 widened from I-265 north to Blankenbaker Parkway from two lanes to five lanes
- New I-64 interchange east of I-265 in the vicinity of Gilliland Road overpass.

Table 2 provides the years 2007, 2020, and 2038 average daily traffic (ADT) and Level of Service<sup>3</sup> (LOS) data for the existing conditions and the No-Build scenario.

**Table 2: 2007, 2020, and 2038 Traffic Conditions—Current and No-Build**

Route Link	2007 ADT	No-Build*		2007 LOS	No-Build 2038 LOS
		2020 ADT	2038 ADT		
<b>I-64</b>					
West of Blankenbaker Pkwy.	107,000	125,800	155,300	E	E
West of I-265	92,200	124,200	161,500	D	E
East of I-265	53,800	91,600	116,600	C	F
<b>Gene Snyder Freeway (I-265)</b>					
North of I-64 – Main	64,700	59,200	65,600	D	D
North of I-64 – C/D	n/a	52,800	79,700	D	F
From I-64 to KY 155 – Main	64,700	98,900	120,200	D	E
From I-64 to near Rehl Rd. – C/D	n/a	39,800	55,300	C	D
From KY 155 to KY 1819 – Main	57,500	90,700	113,100	D	E
<b>Taylorsville Road (KY 155)</b>					
North of Blankenbaker Pkwy.	14,100	19,900	27,300	D	D
South of Blankenbaker Pkwy.	13,700	19,000	27,000	D	D
North of Old Heady Rd.	13,700	15,300	21,700	D	C
South of Old Heady Rd.	13,700	15,700	22,400	D	C
South of Tucker Station Rd.	18,300	21,300	24,300	F	C
North of Stone Lakes Dr.	18,300	22,000	24,100	D	C
North of I-265	18,300	22,800	26,200	C	D
<b>Blankenbaker Parkway (KY 913)</b>					
North of I-64	30,500	32,800	39,800	D	F
South of I-64	36,400	37,000	50,800	C	E
South of Bluegrass Pkwy	25,100	33,500	44,300	C	D
South of Plantside Dr.	15,800	19,400	28,800	C	D
South of Rehl Rd.	11,000	16,800	26,300	C	D
North of Blankenbaker Access	11,000	18,800	29,100	C	D
North of Chenoweth Run Rd.	N/A	14,700	23,300	N/A	C
North of KY 155	N/A	7,700	14,000	N/A	C

\* The No-Build scenario assumes less overall socioeconomic activity (i.e., jobs and residents) than the build alternatives; therefore, under these assumptions the No-Build scenario would result in less traffic on the study area roads.

<sup>3</sup> 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.

### **3.0 PROJECT TEAM MEETINGS**

The full project team met twice during this study, with one additional meeting with select members to review and discuss traffic assumptions. These meetings were documented with meeting minutes (see Appendix F). A brief summary of the major topics discussed at each meeting follows:

- May 15, 2007, Louisville Metro. This pre-scoping meeting was to identify key issues with Louisville Metro and the project scope and schedule.
- July 12, 2007, KIPDA. The purpose of this meeting was to identify traffic issues associated with the proposed interchange study.
- May 5, 2008, KYTC District-5, Project Team Meeting #1. The team's kick-off meeting at which members were introduced, the type of study was discussed, and the study's scope and schedule were reviewed. Major topics of discussion included: the existing conditions, issues and potential problems, and the project purpose and need. Issues associated with the proposed interchanges that were discussed include the merge/diverge/weave analysis in the south, and the close spacing of the existing interchanges.
- July 18, 2008, KYTC District 5. This was a follow-up meeting to re-address traffic concerns and design issues. At this meeting it was decided that different socioeconomic variables would be required for the build as compared to the No-Build alternative, whereas the build analysis would have approximately 10,000 more jobs, and therefore more traffic, than the No-Build option.
- July 8, 2009, KYTC District 5, Project Team Meeting #2. Team members reviewed updated designs, cost estimates, and additional traffic analysis for the preliminary design concept. The team concluded that while a significant amount of work and analysis remains, based on the planning level effort an interchange at Rehl Road and I-265 appears feasible from both a constructability and federal IJS criteria perspective.

### **4.0 STUDY ALTERNATIVES CONSIDERED**

Two alternative concepts were considered in this planning study:

- No-Build Alternative
- Install a new I-265 interchange at Rehl Road and associated improvements to I-265

#### **4.1 No-Build Alternative**

The No-Build Alternative involves improvements that are already planned and illustrated in the MPO Long-Range Plan, except for the Rehl Road/I-265 interchange. (The project description for the KIPDA Long-Range Plan projects in the study area included in Appendix G.) The No-Build option will be referred to as appropriate for baseline comparisons throughout the future decision-making process.

The No-Build Alternative for this study, it has been assumed, will result in approximately 10,000 fewer jobs in the study area than either the Build option, or an alternative to rebuild the existing road network to manage and distribute growth-included traffic as effectively as the Build Alternative. This significant difference illustrates that No-Build alternative would not meet the planning-level purpose and need for the project and would not be in concert with the long-planned and long-term economic development plans for Louisville Metro. From a traffic perspective, the No-Build alternative would result in less traffic to and from the study area, including several segments of the adjacent interstates.

#### 4.2 New I-265 Interchange at Rehl Road

This alternative would involve the construction of an interchange with I-265 in the vicinity of the current Rehl Road overpass. Because the programmed construction of a flyover ramp from I-265 northbound to I-64 westbound will include two-lane collector/distributor lanes on both sides of I-265, this alternative will require the extension of the collector/distributor lanes south into the I-265/KY 155 interchange. Because of the proximity of the southern ramps of the proposed Rehl Road interchange and the northern ramps of the KY 155 interchange, it is proposed to extend the ramp termini as auxiliary lanes on the outsides of both the northbound and southbound two-lane collector/distributor lanes. This will result in a three-lane section for the collector/distributor lanes between KY 155 and Rehl Road entrance/exit ramps. This concept is illustrated on Exhibit 6. A detailed signage plan will need to be created to guide travelers into the appropriate mainline, c/d and auxiliary lanes.

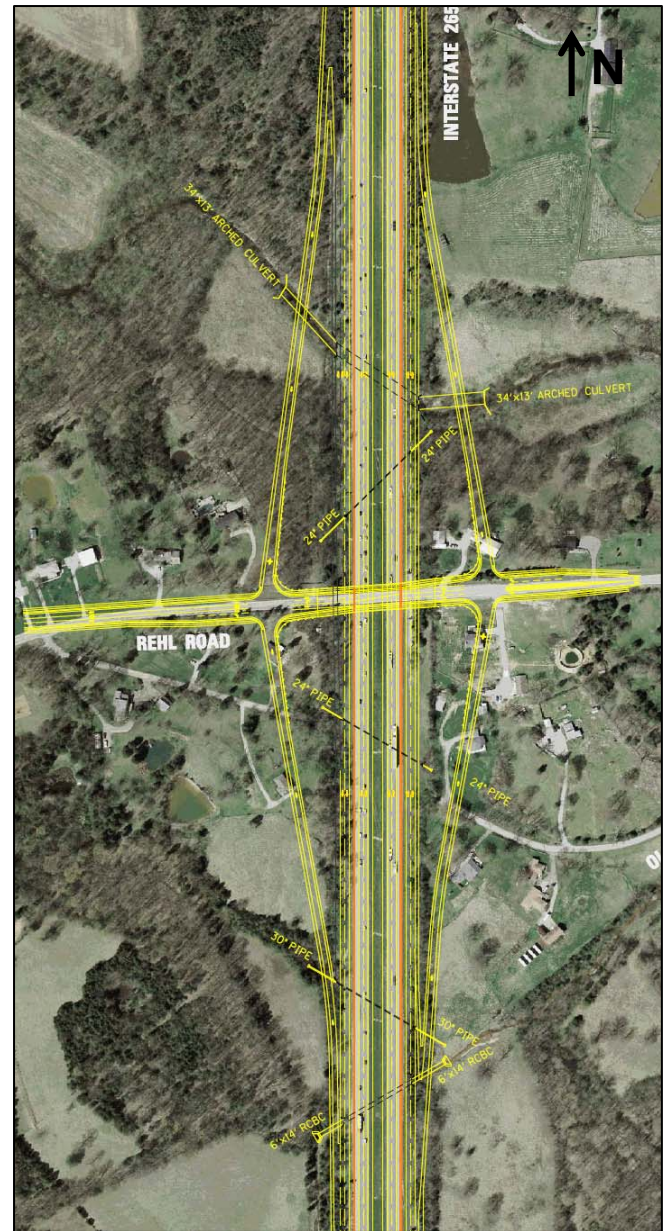


Figure 3: Design Concept (See Exhibit 6)

At the beginning of this study several conceptual design options were considered, such as a flop diamond interchange and a clover leaf design, but because of the need for the c/d lanes, the topography, and the objective to minimize right-of-way acquisition and construction costs, a compressed diamond was identified as the most prudent preliminary design concept.

The traffic volumes and forecast for this alternative are illustrated on Exhibit 4, Appendix A. The peak hour levels of service for the merge/diverge/weave analysis are illustrated on Exhibit 5, Appendix A. Table 3 compares ADT and LOS data for the future Build and No-Build Alternatives.



The anticipated cost estimate in 2008 dollars for this alternative is as follows:

Design:	\$4.0M
Right-of-Way:	\$2.0M
Utilities:	\$2.0M
<u>Construction:</u>	<u>\$47.0M<sup>4</sup></u>
Total:	\$55.0M

The cost estimate worksheets for the construction costs are included in Appendix H. 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 Louisville and Jefferson County Information Consortium (LOJIC) mapping; and the design costs were estimated to be 10% of the construction costs.

While the purpose and need for this project includes economic development for the greater Louisville Metro area, it should be noted that the interchange would serve many existing and proposed land uses in this area of Jefferson County, rather than a single development. Such land uses included the future Floyds Fork Park system and several existing residential developments east of I-265. While much of the area east of I-265 is rural in nature, it is all currently zoned R-4, which allows for approximately 4 single family units per acre. Based on input from Louisville Metro for this planning study, minimal residential (rather than a build out for the R-4 zoned land) was assumed for the KIPDA traffic model for this area.

The traffic model for the Build Alternative is based on a full build-out of the study area, which includes 10,000 more jobs than the No-Build Alternative, as illustrated below.

**Rehl Road Interchange Study Area  
Total Projected Employment**

	2020 No-Build	2020 Build	2030 No-Build	2030 Build
KIPDA TAZ 421	6,309	12,970	7,474	17,474

District = Collection of several Traffic Analysis Zones from KIPDA Traffic Model, see Appendix E.

Consequently, the Build Alternative results in more overall traffic than the No-Build Alternative on the study area roadways. The higher volumes result in lower LOS in some places. The data in Table 3 shows two areas where the 2038 LOS is expected to be worse for the Build than for the No-Build Alternative: I-265 North of I-64 on the main line only (even though the difference in traffic is only 1,200 ADT, or 2%), and on Blankenbaker Parkway south of I-64, where the traffic is anticipated to be 5,200 to 6,800 ADT (or 9 to 13%) higher for the Build Alternative. These values are to expected since the traffic model anticipates that much of the new employment would travel to/from the west, from Louisville proper, to the new jobs in the east, and therefore exit at Blankenbaker rather than travel via I-265 to Rehl Road. The Project Team noted that this assumption may or may not prove

<sup>4</sup> The cost estimate is based on a c/d system the terminates inside the KY 155 interchange—between the northern and southern ramps. It was requested that cost estimates be generated for extending the c/d lanes south of the southern KY 155 interchange. The construction cost for such a design is estimated to be \$60.5M, in total.

correct, depending on the development patterns to the east of I-265. Should the eastern area develop as zoned, the trips to/from the east of the study area would be expected to increase, and those using the Blankenbaker Parkway/I-64 interchange decrease. For this reason, and others, it is recommended that a small area traffic model be developed for this project as it advances into future stages. In the section below, the interchange concept is analyzed in comparison to FHWA eight policy points for an IJS.

**Table 3: 2020, 2038 Traffic Conditions—No-Build Scenario and New Interchange**

Route Link	Build		No-Build	No-Build	Build
	2020 ADT	2038 ADT	2038 ADT	2038 LOS	2038 LOS
<b>I-64</b>					
West of Blankenbaker Pkwy.	128,400	160,700	155,300	E	E
West of I-265	118,500	155,200	161,500	E	E
East of I-265	91,400	117,600	116,600	F	F
<b>Gene Snyder Freeway (I-265)</b>					
North of I-64 – Main	58,500	67,000	65,600	D	E
North of I-64 – C/D	56,400	78,200	79,900	F	F
From I-64 to Rehl Rd. – Main	58,500	67,000	65,600	D	D
From I-64 to Rehl Rd. – C/D	46,400	59,600	55,300	D	D
From Rehl Rd. to KY 155 – Main	114,100	93,400	74,800	D	D
From Rehl Rd. to KY 155 – C/D	n/a	50,500	n/a	n/a	D
South of KY 155 South	94,300	113,100	117,700	E	F
<b>Taylorsville Road (KY 155)</b>					
North of Blankenbaker Pkwy.	19,900	29,200	27,300	D	D
South of Blankenbaker Pkwy.	19,900	27,700	27,000	D	D
North of Old Heady Rd.	16,800	23,800	21,700	C	C
South of Old Heady Rd.	17,300	24,900	22,400	C	C
South of Tucker Station Rd.	17,600	21,700	24,300	C	C
North of Stone Lakes Dr.	19,000	22,600	24,100	C	C
North of I-265	20,000	28,900	26,200	D	D
<b>Blankenbaker Parkway (KY 913)</b>					
North of I-64	32,700	39,700	39,800	F	F
South of I-64	40,600	56,000	50,800	E	F
South of Bluegrass Pkwy	37,700	51,100	44,300	D	E
South of Plantside Dr.	21,100	30,600	28,800	D	D
South of Rehl Rd.	17,100	27,000	26,300	D	D
North of Blankenbaker Access	19,000	29,700	29,100	D	D
North of Chenoweth Run Rd.	14,500	24,600	23,300	C	C
North of KY 155	8,500	14,400	14,000	C	C

## 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 as it relates to the proposed Rehl Road/I-265 interchange.

### **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 roads and interchanges cannot provide the adequate access intended by the proposal. This statement is validated by the fact that Louisville Metro has, based on the traffic impact study prepared for the proposed developments, limited development in the area until the transportation network is improved. There are two general concepts considered for such improvements: rebuilding the existing roads and interchanges or adding a new interchange. Although it is likely that rebuilding the existing roads to accommodate traffic to serve the study area would have significant right-of-way and construction impacts, and prove much more costly, this alternative has not been examined in detail in this planning study. This alternative concept would likely include rebuilding the following 4 roadway elements: 1) The two-lane east-west collector roads leading into the development area: Rehl Road, Plantside Drive, and Bluegrass Parkway/S. Pope Lick Road, each of which would be expected to have major right-of-way impacts. 2) The north-south Tucker Station Road from Bluegrass Parkway south to Taylorsville Road, which would have involvement with the Norfolk Southern railroad crossing and impact both the Blackacre State Nature Preserve and Historic Site, and the Taylor Rural Settlement Historic District. 3) The two roads leading to the interstates: Blankenbaker Parkway to I-64 and Taylorsville Road to I-265, would need additional capacity. 4) The Blankenbaker Parkway/I-64 interchange and the Taylorsville Road/I-265 interchange would need added capacity.

The exact roads and the type of improvements to each would be determined during a future detailed traffic analysis generated to study the traffic impacts on each of the streets in the study area for the Build and No-Build scenario. This detailed analysis will be necessary task for the required full IJS.

It should be noted that, because the traffic forecasts prepared for this study indicate that traffic volumes on the existing roads for the build alternative are in many locations higher than the No-Build volumes. Consequently, it is likely that improvements to the existing road network will not be unnecessary even with the proposed interchange.

## **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.”*

Transportation System Management (TSM) and Spot Improvements alternatives involve relatively low-cost options. TSM options generally refer to such activities/features as signing, striping, traffic lights, and simple roadway improvements such as removing vegetation to improve visibility or improving the radius of a street corner. Spot Improvements include concepts such as reconstructing relatively short substandard curves, hills, intersections, etc., to address a safety concern, and then reconnecting with the existing roadway. Transit options could include higher cost activities/features ranging from the addition of High Occupancy Vehicle (HOV) lanes and park-and-ride lots to the construction of light rail/commuter train facilities.

Although such alternative concepts could be implemented on study area roadways, none would significantly address the issues of mitigating congestion, connectivity of the road and interstate network, and safety. Therefore, the low-cost TSM and Spot Improvement options were not studied in detail as part of this planning effort.

Bus transit is provided for in the western portion of the study area, but not on I-265 or in the vicinity of the interchange under study. Neither meter ramps nor HOV lanes are provided in any Louisville area interstates.

## **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.”*

On I-265 the spacing of the center of the interchanges with KY 155 and I-64 is 2.0 miles, which leaves 1.0 mile in either direction of the proposed interchange. The spacing on I-265 between the northern termini of KY 155 ramps and the southern termini of the I-64 ramps is 9,961 feet on the west side and 10,015 feet on the east side. The traffic operational analysis has been performed for the proposed interchange, and it included the interchanges to the north (I-64), to the south (KY 155), and the I-64 / Blankenbaker interchange to the west and the surface streets within the study area. The operational analysis illustrates that the proposed interchange would not have an adverse effect on the safety and operation of the interstate weaving movement for future traffic as compared to the No-Build Alternative. This conclusion was reached after adjustments to the alternative were made; specifically, the collector/distributor lanes were extended south into the I-265/KY 155 interchange, auxiliary lanes were added between Rehl Road and KY 155, and for northbound traffic entering the c/d system, two lanes were provided instead of the initially estimated one lane. Without these

elements added to the c/d lanes the traffic merging and diverging would have resulted in a substandard LOS E or F for those movements. The merge, diverge, and weave analysis is illustrated on Exhibit 5 in Appendix A. As illustrated in Table 3, two sections of the mainline of I-265—south of KY 155 and north of I-64—are anticipated to experience worsened LOS, from E to F, and from D to E, respectively.

#### **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, Rehl Road, and provide for all directional movements, designed to meet or exceed current standards for Federal-aid projects.

West of I-265, Rehl Road is proposed to be upgraded in the KIPDA Long-Range Plan as a rebuilt two-lane road, and it is proposed to be widened and redesigned as part of the proposed developments. East of I-265, the design of the interchange will need to provide an acceptable connection to the current Louisville Metro maintained Rehl Road. At present, neither Louisville Metro or KIPDA have identified the reconstruction of Rehl Road east of I-265 as a project, and no proposed extensions further east onto new alignment to the proposed I-64 interchange near Gilliland Road have been proposed.

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

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

The proposed interchange is included in the KIPDA Long-Range Plan, the Louisville Metro Comprehensive Plan, Cornerstone 2020, and is a top priority for Louisville Metro. In the recent past land use rezoning and other infrastructure improvement, including sanitary sewer lines and expanded capacity at the treatment plant, have been advanced in this area, each with the understanding that an interchange is planned and desired by the local government.

#### **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.”*

There are several planned new interchanges in Jefferson County, but none other than Rehl Road are proposed on I-265. The only one in proximity to the study area is a proposed interchange on I-64 approximately 2 miles east of I-265 in the vicinity of Gilliland Road. Although a planning study

was completed by KYTC in 2008 for this interchange, this project is illustrative, only, and has not been advanced by KYTC to the preliminary engineering and environmental documentation phase. It should be noted that each project has independent utility. However, should either of these new interchanges be advanced, the future sub-area traffic studies for each project should take the other proposed interchange into consideration. Both interchanges are included in KIPDA's Long-Range Transportation Plan, and therefore both are included in the regional traffic model that was used for this Rehl Road/I-265 interchange feasibility study.

#### **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 throughout the planning study, and in Policy Statement No. 5, the interchange has been taken into consideration by the local and regional planning agencies and is supported by the planned land use developments within the study area. The interchange is viewed by the Louisville Metro planners as an asset to the development goals for the area that are supported by the comprehensive land use plan. Other transportation system improvements in the Long-Range plan and considered by Louisville Metro have been coordinated with the proposed Rehl Road/I-265 interchange.

#### **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 provide a basis for scoping and advancing the subsequent decision-making stages for approving or rejecting a new interstate interchange. Therefore, much of the process and information considered and documented herein for this interchanges is in concert with the process and information required by the National Environmental Policy Act (NEPA) and Interchange Justification Study (IJS) requirements. Regarding the NEPA process, based on the preliminary literature research and the Environmental Overview map, Exhibit 3 in Appendix A, no significant impacts or public controversy are anticipated with the proposed interchange; therefore, it is anticipated the project could be advanced as an EA/FONSI or CE-Level 3 rather than an EIS. Regarding the IJS, a sub-area traffic model will need to be developed to further analyze design details and operational issues.

## **6.0 CONCLUSIONS AND RECOMMENDATIONS**

Based on the planning analysis herein, the Project Team anticipates the interchange with c/d lanes, as described above, would 1) be feasible in regards to constructability and federal IJS and NEPA policy requirements, 2) be beneficial to Louisville Metro by meeting the planning-level purpose and need, 3) although it is recognized the further work is required, it appears the based on the work conducted herein, the interchange can be designed to not be harmful to the interstate network, and 4) cost approximately \$55.0M in 2008 dollars: Design, \$4.0M; Right-of-Way, \$2.0M; Utilities, \$2.0M;

Construction \$47.0M. this fee estimate is based on the assumption that the c/d lanes will taper to the mainline between the north and south ramps to/from KY 155. Should the c/d lanes be extended south past the southern ramps to/from KY 155, the construction cost alone is estimated to increase to \$60.5M.

The Project Team also notes that a significant amount of work and analysis remains prior to final approval, as described throughout this report and below.

### **Next Steps**

The advancement of the interchange will require 1) inclusion of the project into the KIPDA TIP (Transportation Improvement Plan) and the KYTC Six-Year Highway Plan, 2) further detailed design, including continued coordination with the redesign of the I-265/I-64 interchange and a detailed signage plan, and 3) an IJS and a NEPA analysis and document, both of which will need to be coordinated with and approved by FHWA.

- The IJS will require the development of a detailed sub area traffic model for the study area, based on specific developments in the future Suburban Workplace Form District. (The traffic study for this feasibility report is based on currently anticipated future conditions the multi-county model developed by KIPDA and does not afford the detail to satisfy each element of an IJS.) The IJS will require a comparison of two options—a new interchange verses rebuilding the existing roads—as a way to meet the project purpose and need. The more detailed sub area traffic analysis would be the basis for that analysis.
- The NEPA analysis would include public involvement and disclosure of some level of indirect and cumulative impact analysis for the induced growth. Because of the lack of known environmental impacts and public controversy, it is anticipated the level of documentation could be a CE-Level 3 or an EA/FONSI rather than an EIS.