CHAPTER 3: ALTERNATIVES

The development of alternatives began with a broad examination of potential solutions to the identified transportation needs. The existing transportation system, existing and projected traffic conditions and the overall cross-river mobility needs in the LMA were examined in the development of the Purpose and Need. A wide range of potential solutions for addressing those needs was then developed. Potential alternatives included: No-Action Alternative, Travel Demand Management (TDM) Alternatives, Transportation System Management (TSM) Alternatives, Mass Transit Alternatives and various bridge/highway alternatives. The bridge/highway alternatives included: reconstruction of the Kennedy Interchange, one and two new bridges across the Ohio River, a tunnel underneath the Ohio River and a combination of these improvements. The preferred alternative is shown in boldface throughout the FEIS.

Based on the screening conducted on the broad range of alternatives, a set of alternatives to be evaluated in the DEIS was selected. These alternatives included:

- A No-Action Alternative;
- A Transportation Management Alternative (a combination of TDM, TSM and Mass Transit improvements);
- A One Bridge/Highway Alternative (in either the East End or Downtown); and
- A Two Bridges/Highway Alternative (with one bridge Downtown and a second bridge in the East End).

The Transportation Management (TM) Alternative included a combination of TDM, TSM and Mass Transit alternatives that would not be effective as stand alone options, but offered benefits relative to the needs identified in the project area. The improvements that comprised the TM Alternative were also included with the bridge/highway alternatives evaluated in the DEIS. These improvements included:

- **TDM**: non-motorized facility enhancements and employer-based trip reduction programs
- **TSM**: expanded Intelligent Transportation System applications and incident management
- **Mass Transit**: enhanced bus service

The bridge/highway alternatives included reconstruction of the Kennedy Interchange (both at its existing location and relocated south) and different alternatives to cross the Ohio River in both the Downtown and the East End.

This chapter describes the alternatives considered, the screening process and rationale for selecting the alternatives evaluated in the DEIS, and the Preferred Alternative selected for the project. The chapter is organized as follows:

3.1 Alternatives Evaluation Process and Methodology

A two-step process was used to evaluate alternatives considered and to determine those reasonable alternatives to be carried forward for evaluation in the EIS. Information on environmental resources was an integral part of this process and more detail was developed as needed in the screening process to assist in those determinations. Throughout the development and screening of alternatives, opportunities were available for the public to obtain information and to provide comments. As a result, the alternatives reflect desires of a broad base of area residents. Input was received at public meetings, stakeholder meetings, public involvement group meetings and through the project's web site. Meetings occurred in neighborhoods near alternatives on both sides of the river. Widespread media attention and public meetings were timed so that the public could provide input before key decisions, such as, the determination of which alternatives to carry forward for detailed analysis. This process is described in Chapter 7.

3.1.1 Evaluation Criteria

Two main evaluation criteria were considered during the alternatives screening and evaluation process: Purpose and Need and fatal flaws.

To determine if an alternative was reasonable, it was first evaluated to determine if it had the potential to meet the Purpose and Need of the project. The purpose of the project is to improve cross-river mobility between Jefferson County, Kentucky and Clark County, Indiana. Several specific factors demonstrate the need for action, including: (1) inefficient cross-river mobility for existing and planned growth in population and employment in the Downtown area and in eastern Jefferson and southeastern Clark Counties, (2) traffic congestion on the existing cross-river transportation system, (3) traffic safety problems in the Kennedy Interchange and on the Kennedy Bridge and its approach roadways, (4) inadequate cross-river system linkage and freeway rerouting alternatives and (5) consistency with local transportation plans that call for two new bridges across the Ohio River and reconstruction of the Kennedy Interchange.

If it were determined that an alternative would clearly not satisfy the Purpose and Need of the project, it was not recommended to be studied further as a distinct "stand alone" alternative. Actions that would clearly not meet the Purpose and Need as stand alone alternatives, but may contribute substantially to the solution when combined with one or more other alternatives, were considered in conjunction with (and as a complement to) such alternative(s).

Alternatives were also evaluated to determine if they had a fatal flaw. A fatal flaw is a significant deficiency or major impact that precludes further consideration of an alternative. As part of each alternative's evaluation, two fatal flaw criteria were applied.

Engineering Feasibility

If an alternative could not be developed to meet acceptable engineering design standards (including operations), it was determined to be infeasible and was eliminated from further consideration.

Impacts/Costs of Extraordinary Magnitude

If an alternative would result in substantially greater social, economic or environmental impacts, or costs of extraordinary magnitude, as compared to another similar alternative being considered, then it was eliminated from further consideration.

3.1.2 Evaluation Process

Step 1 – Screening of Alternatives

All of the alternatives developed for this project went through an initial evaluation to determine whether they should be advanced further in the evaluation process. A description of the alternatives considered is provided in Section 3.2; the results of Step 1 of the evaluation process are provided in Section 3.3.

During this first step, alternatives were evaluated at a conceptual level. The evaluation consisted of determining whether the alternative may be capable of meeting the project's Purpose and Need and whether any fatal flaws were evident. If it was determined that an alternative had a good potential to meet the project Purpose and Need and no fatal flaws were identified, the alternative was advanced to Step 2. For the bridge/highway alternatives, the initial evaluation screened river-crossing corridors (i.e. Far East, Near East, Downtown, Oldham County and West). These corridors are described in greater detail in Section 3.2.5.

Step 2 – Screening of Alignment Alternatives

In this step, alignment alternatives were developed and evaluated within each of the bridge and highway corridors advanced from Step 1 to determine which should be carried forward for evaluation in the EIS. Early in project development, all previously known environmental resources and sensitive land features were identified and placed on an environmental resources map. This map was initially used as a tool to assist in identifying potential river crossing corridors. In Step 2, as alternatives were developed, the environmental resources map, as well as information gathered from agency coordination and public comments, was used to determine where and how alternatives should be refined to avoid or minimize impacts. This process was repeated, as alternatives were modified and new alternatives were considered. The results of the Step 2 evaluation process are provided in Section 3.4.

3.2 Alternatives Considered

3.2.1 No-Action Alternative

The No-Action Alternative assumes that all of the projects in the current KIPDA Regional Mobility Plan (RMP) will be implemented, except for the reconstruction of the Kennedy Interchange and the addition of two new bridges over the Ohio River. The INDOT 2025 Statewide Transportation Plan and the KIPDA 2025 RMP both include an illustrative project for the future widening of the existing four lane I-265 between S.R. 62 and I-64 in Indiana to six lanes beyond 2025 or when financing becomes available. This illustrative project is not included in the No-Action alternative because it has not been formally included in the fiscally constrained conforming KIPDA RMP. Figure 3.2-1 shows major projects planned in the vicinity of the project study area. The major improvements planned include:

- **I-65**: add lanes between the Ohio River and S.R. 311 (Indiana) - 1*
- **I-65**: reconfigure ramp to Brook Street in Medical Center area (Kentucky) - 2
- **I-65**: construct a new southbound exit to Liberty Street (Kentucky) - 3
- **I-64**: add high occupancy vehicle (HOV) lane in each direction between the Kennedy Interchange and I-264 (Kentucky) - 4
- **I-64**: designate one lane in each direction as an HOV lane between I-264 and I-265 (Kentucky) - 5
- **I-71**: add lanes between I-64 and I-265 (Kentucky) - 6
- **S.R. 62**: add lanes between S.R. 131 and I-65 (Indiana) -7
- **S.R. 62**: add continuous center left-turn lane between I-65 - Reeds Lane (Indiana) - 8
- **Intercity Highway**: new roadway and overpass across I-65 between Giltner Lane and Charlestown-New Albany Pike (Indiana) - 9
- **T^2 Light Rail Line**: new light rail line running from downtown Louisville south to approximately I-65 and Outer Loop. (Kentucky) - 10

* Refers to Projects identified in Figure 3.2-1

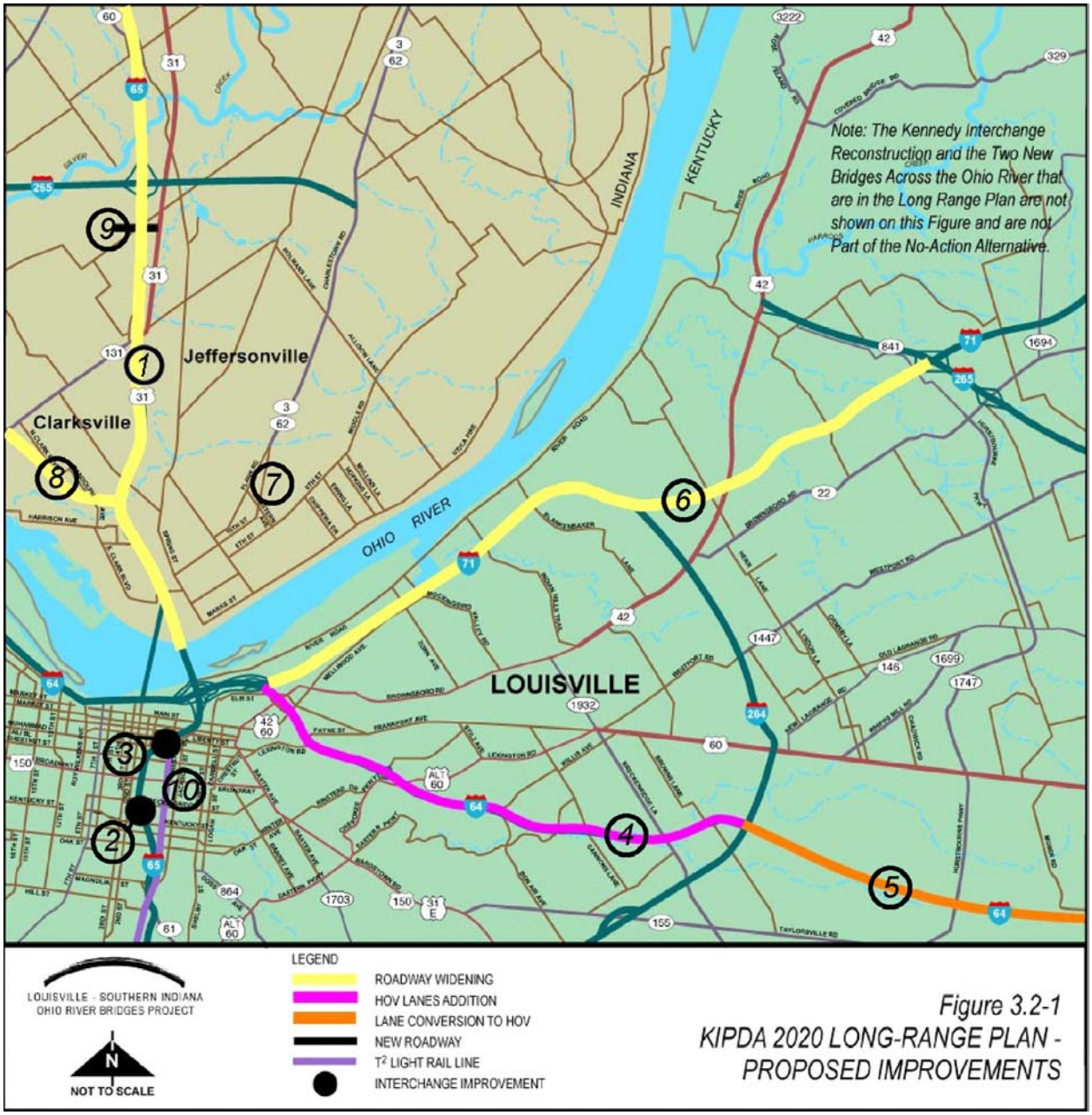


Figure 3.2-1
KIPDA 2020 LONG-RANGE PLAN - PROPOSED IMPROVEMENTS

The INDOT 2025 Statewide Transportation Plan and the KIPDA 2025 RMP both include an illustrative project for the future widening of the existing 4-lane I-265/S.R. 62 between S.R. 62 and I-64 in Indiana to 6-lanes beyond 2025 for when financing comes available. This illustrative project is not included in the No-Action Alternative because it has not been formally included in the fiscally constrained conforming KIPDA RMP.

In addition to major planned projects, the plan also includes a series of TDM and TSM programs and policies intended to reduce travel demand and increase the efficiency of the transportation system. These are included in the regional travel demand model for future years.

The No-Action Alternative will serve as a baseline when comparing the effectiveness and potential impacts of the other alternatives.

3.2.2 TDM Alternatives

TDM alternatives are relatively low-cost ways of reducing travel demand and improving traffic flow. TDM alternatives consist of programs or policies focused on either reducing the number of vehicles on the highway or distributing trips to less congested periods of the day. The goal is to relieve peak hour traffic congestion.

Vanpooling/Carpooling

Vanpooling and/or carpooling programs are typically implemented to increase vehicle occupancy and reduce the total number of auto trips. These programs primarily target work trips. KIPDA currently operates vanpooling and carpooling programs for the LMA. KIPDA's "Ticket-to-Ride" program provides a regional commuter match list service to help individuals find other carpoolers. KIPDA also works directly with individual employers to improve mobility options for employees. Ridesharing programs are currently included in KIPDA's RMP. Expansion of the existing program is assumed within the current KIPDA travel demand-forecasting model and, therefore, is included in the No-Action Alternative.

For this project, this TDM alternative includes enhancing the existing KIPDA Ticket-to-Ride car and vanpool program to further encourage individuals to share trips.

Non-motorized Facility Enhancements

Walking and bicycling are the two primary non-motorized modes with the potential to reduce automobile trips by offering a travel alternative for a variety of trip purposes throughout the day. However, these modes are only effective for short trips (approximately one mile for pedestrian trips and six miles for bicycle trips). Currently, only the Clark Memorial Bridge provides non-motorized access across the Ohio River.

New, and improvements to existing, pedestrian and bicycle paths are included in KIPDA's Regional Bicycle and Pedestrian Plan within their RMP. Over $35 million in proposed improvements are identified in the plan, which includes dedicated bikeways adjacent to the Ohio River in both Kentucky and Indiana but does not identify any cross-river improvements to the non-motorized network.

Under this alternative, additional non-motorized facilities would connect to existing bridges crossing the Ohio River or new bridge facilities that would be constructed across the river. Also, under this alternative, general infrastructure improvements and supportive facilities, such as pedestrian walkways, bicycle lanes, and bicycle racks, would be provided.

Congestion Pricing

Congestion pricing is a user fee program where users of the roadway system pay tolls. The toll rates vary throughout the day based on traffic congestion levels. As congestion increases, the toll rates increase. This increase encourages users of the roadway to shift travel behavior to a different time period, route, or mode. It also provides a revenue source for improvements in the respective travel corridor. Tolls are set at levels that reduce or alleviate congestion by reducing traffic demand. Under this alternative, a toll collection system would be implemented on each of the Ohio River crossings in the LMA.

Employer-Based Trip Reduction Programs

An employer-based trip reduction strategy would combine various programs with the potential to reduce travel demand, particularly among work trips. Currently, some employer outreach programs exist in the LMA, but a wide-scale employer based trip reduction program has not been implemented. Specifically, this proposed alternative would combine several elements common in employer-based trip reduction programs. These include:

Parking Management

Parking management programs are considered among the more effective programs for reducing commuting by single occupant automobiles. Strategies may include providing limited parking relative to total employees, charging employees for parking or designating the most desirable spaces for carpools or vanpools. Parking management programs benefit from being combined with other transportation management programs, such as an employer supported carpool program or transit service.

Financial Incentives

Employers may provide tax-free subsidies to encourage employees to take transit or other modes to work. A key element to the success of this program is the availability of transit or other modes that provide a competitive travel option to employees.

Flexible Work Schedules

Employers may provide flexibility to employees in their work schedules to reduce auto trips during peak periods. Alternative work schedules may include allowing employees to begin or end the workday outside of traditional working hours (resulting in a decrease in total work

trips occurring during peak travel time) or compressed workweeks to reduce the total number of work trips during the week.

Telecommuting

Telecommuting is a program that allows employees to work at home one or more days during the week. The results are a reduction in the total number of work trips. The effectiveness of such programs depends largely on the participation rate among area employers.

3.2.3 TSM Alternatives

TSM alternatives are low-cost ways of reducing traffic congestion and improving traffic flow. TSM alternatives consist of techniques or applications focused on improving the transportation network's ability to handle traffic volumes by increasing its travel efficiency.

Transportation alternatives, including TDM and TSM, were the focus of two public meetings held in October 1999. One was a special meeting of the project's Regional Advisory Council (RAC) and the other was a public workshop. Members of the RAC commented that they wanted pedestrian and bicycle paths and that without an alternative to cars, many elderly and poor residents are excluded from economic opportunity. In addition, these alternatives and other non-highway options were discussed at public meetings throughout the development of alternatives. Public comment on these alternatives was solicited through the project newsletter and on the project web site.

Expanded ITS Applications

Intelligent Transportation System (ITS) applications include a variety of technology-based programs intended to actively manage the transportation system. Many systems are designed to improve the accessibility of travel information. Travelers can access this information and adjust their travel routes in response to changing traffic and transit travel conditions. Specifically, many implemented systems provide travelers with travel times, crash locations, and transit service interruptions. The means of providing congestion information to travelers may include: signage on affected facilities; web sites with congestion maps and/or real time pictures; and broadcasts on dedicated radio stations.

Currently, FHWA, KYTC and INDOT operate an ITS known as Traffic Response and Incident Management Assisting the River Cities (TRIMARC). It is designed to provide travelers with information for the interstate highway system within the greater LMA. The program has been implemented on I-65 in Kentucky, with more limited coverage on I-64 and I-71. TRIMARC monitors traffic and incidents and provides updates to motorists by radio or roadway message signs. Additionally, TRIMARC also operates Freeway Service Patrols in Kentucky to provide roadside assistance to stranded motorists.

For this project, this TSM alternative includes the full expansion of TRIMARC onto all of the area interstate highways in the LMA.

Incident Management Program

Incident management is designed to reduce the effect of incidents, such as accidents or vehicle breakdowns, on travel delays by rapidly responding to correct a specific incident affecting traffic flow. This type of program is particularly successful in locations where traffic congestion is primarily incident driven and does not occur on a regular basis. This can be integrated with ITS applications to divert traffic from places of incident occurrences.

As mentioned above, TRIMARC operates an incident management program in Kentucky that includes the operation of two road-assist vans. In Indiana, INDOT also operates a similar program in southern Indiana known as Hoosier Helper with vans.

This TSM alternative includes the full expansion of these operations onto all of the area interstates. KIPDA has included incident management in its RMP for I-65 in Indiana and unspecified interstate highways in Kentucky.

Signal Coordination and Timing

Signal timing programs can improve traffic flow and increase the efficiency of a corridor. Some of the more sophisticated signal timing programs allow signals to respond to changes in traffic conditions, including adjusting green times throughout the day depending on the demand on each of the intersection's approaches.

The city of Louisville has recently implemented an improved signal coordination system in the immediate downtown area. This system coordinates signals in downtown Louisville to enhance the capacity and flow of traffic both in the east west and the north-south directions. Shortly after implementing this program, the city increased the green time provided for the southbound Clark Memorial Bridge and Second Street traffic. Although this change permitted an increase in flow off the bridge, it had an adverse effect on the overall traffic flow downtown.
For this project, improvements that would be part of this alternative are most applicable on the arterial streets that connect to the Clark Memorial Bridge, such as Second Street.

Reversible Lanes

Reversible traffic lanes provide the flexibility for the transportation system to respond to variations in traffic demand. If traffic flow is higher in one direction during certain hours of the day, reversing lanes provides the opportunity for capacity to more closely match demand. For example, lanes may operate inbound toward the central business district in the morning peak and outbound during the evening peak, as is the case on Bardstown Road.

This alternative includes reversible lanes on the existing Ohio River bridges. However, KIPDA recently removed a proposal to install a reversible lane on the Clark Memorial Bridge from its short-range TIP. The reasons for this removal were inadequate lane widths on the bridge for safe operations and traffic operations considerations on the Louisville approaches to the bridge.

HOV Lanes

High Occupancy Vehicle (HOV) lanes are implemented with the goal of increasing vehicle occupancy rates. One or two lanes on a roadway are restricted to vehicles with a minimum number of occupants, usually two or more. Those able to use the HOV lanes normally receive a travel time advantage over the adjacent general-purpose lanes, thus providing an incentive to carpool. HOV lanes are often used by buses, providing a travel time advantage for transit.

Currently, there are no HOV lanes in the LMA. The KIPDA RMP includes the addition of an HOV lane on I-64 between the Kennedy Interchange and I-264 and for the conversion of a general-purpose lane to HOV use on I-64 between I-264 and I-265. Availability of roadway and/or right-of-way on these facilities is the reason for these proposals. Conversely, no HOV facilities have been included by KIPDA for either I-65 or I-71.

This alternative includes implementing and expanding the HOV program to some or all area interstate highways.

3.2.4 Mass Transit Alternatives

Transit service in the project area consists of a network of bus routes operated by the Transit Authority of River City (TARC). The TARC system provides comprehensive bus service throughout the LMA from approximately 5:00 A.M. to 12:00 A.M. (see Figure 3.2-2). The bus system includes a mix of routes intended to serve local travel as well as express service into downtown Louisville. Park and ride facilities are provided throughout the LMA. In total, TARC operates 60 routes (18 express, 11 shuttle, 27 local and 4 circulator). Currently, six bus routes cross the Ohio River, using either the Clark Memorial or the Sherman Minton bridges.

Travel times by bus are typically substantially higher than drive times for similar trips due to frequent stops to pick up patrons. As an example, travel time by bus from near Clarksville Town Hall to downtown Louisville, a distance of just over three miles, is approximately 40 minutes. Travel from the city of Prospect in Kentucky to the Capitol Hills area of northeast Jeffersonville in Indiana requires a transfer in downtown Louisville. Total travel time for this trip by bus is more than an hour, excluding any time required to transfer between buses. All travel from Indiana to locations in Louisville outside of downtown requires a transfer.

Rail connections, including light rail and commuter rail, between Indiana and downtown Louisville were previously considered during the ORMIS study and have also been studied

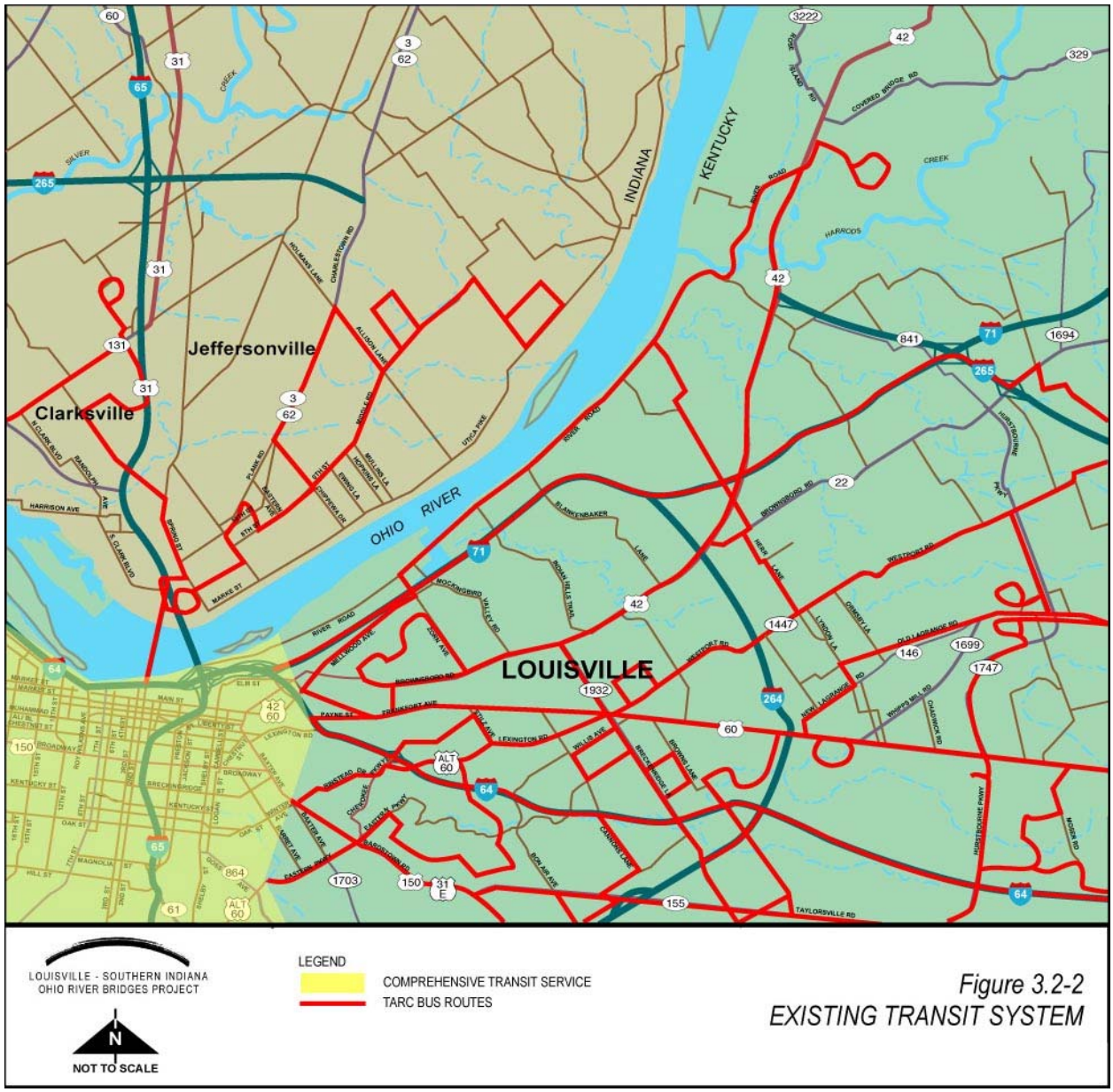


Figure 3.2-2
EXISTING TRANSIT SYSTEM

by TARC. In 1999, TARC completed a Major Investment Study (MIS) that evaluated various transit alternatives, including express bus service, light or heavy rail, and commuter rail. Based on that study, TARC is now studying light rail transit in the south central corridor, which begins in downtown Louisville and extends to the Louisville International Airport and points beyond. This light rail line, known as T^2, is included in KIPDA's RMP. This project is in the FTA review of the DEIS with public review to follow in May-July 2003. The FEIS is expected in August 2003. The FTA "Record of Decision" is due in October 2003. A request for Final Design is anticipated to be submitted in winter 2003-

2004. T^2 is not a part of this project because it does not adequately address cross-river mobility.

Three transit service alternatives – two rail transit and an enhanced bus service – were considered. A separate report, entitled "Analysis of Coalition for Advancement of Regional Transportation's Cross-River Transportation Plan" (November 2000), was prepared that analyzed these alternatives. The results from this report are summarized throughout this chapter where the mass transit alternatives are discussed.

Rail Transit

Two light rail transit alternatives were considered for this project: one with a single line, the other with three lines. In both alternatives, the light rail lines run from north of I-265 in Indiana, to downtown Jeffersonville and across the river into downtown Louisville (Figure 3.2-3). An extensive network of feeder buses is included for each alternative. In addition, the light rail lines connect to the proposed TARC light rail service in the I-65 corridor in the city of Louisville.

Single Line Alternative

For the single-line LRT alternative, two potential routes were considered. Both follow a similar alternative in Indiana, just to the east of I-65, but cross the Ohio River at different locations. The first route connects downtown Louisville to Sellersburg, Indiana, approximately ten miles to the north, using the L&I Railroad Bridge. This line enters Louisville at approximately 15th Street. The second route crosses over the Clark Memorial Bridge, providing a more direct route into downtown Louisville. Table 3.2-1 provides specific operating information for bus service added as a part of this alternative.

Three Line Alternative

In response to a request from representatives of the Coalition for Advancement of Regional Transportation (CART), an expanded light rail alternative consisting of three lines in Indiana was developed. In this alternative, light rail lines begin at the following locations: 1) Indiana University SE Campus north of New Albany, 2) Sellersburg north of Jeffersonville and 3) Charlestown northeast of Jeffersonville. All three lines continue southbound, merge to the north of the L&I Bridge and cross the Ohio River into downtown Louisville on a new bridge (Figure 3.2-3). Table 3.2-2 summarizes corresponding feeder bus service provided with this alternative.

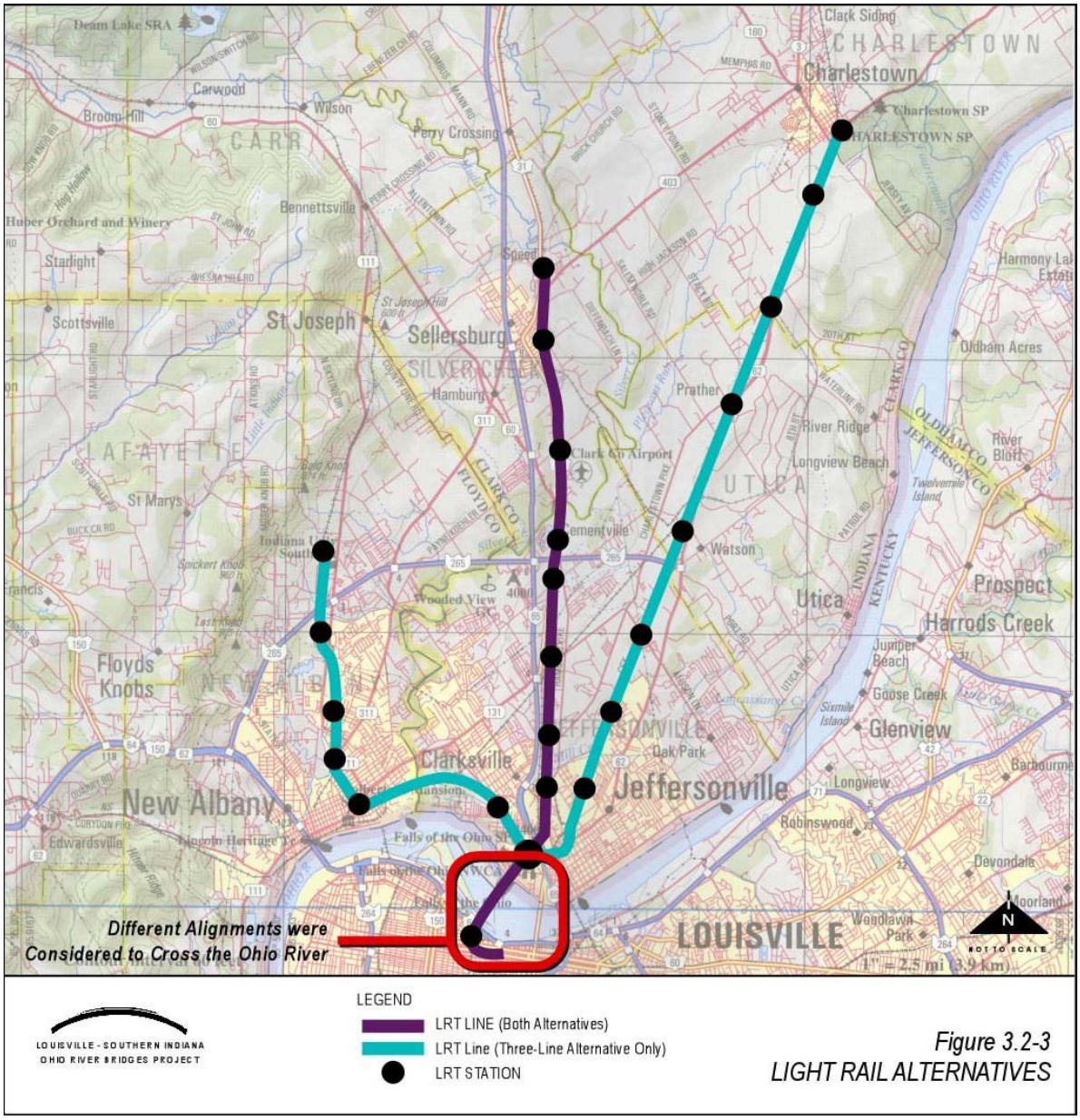

Different Alignments were
Considered to Cross the Ohio River
LEGEND
LRT LINE (Both Alternatives)
LRT Line (Three-Line Alternative Only)
LRT STATION
LOUISVILLE - SOUTHERN INDIANA
OHIO RIVER BRIDGES PROJECT
Figure 3.2-3
LIGHT RAIL ALTERNATIVES

TABLE 3.2-1
FEEDER BUS SERVICE FOR SINGLE-LINE LRT ALTERNATIVE

			Headway		
Route Number	Description	Hours	Peak	Off-Peak	Proposed Action
MODIFICATIONS TO EXISTING ROUTES					
2	Second Street				Eliminate
70	Clarksville Express				Eliminate
71	Jeffersonville Express				Eliminate
73	Charlestown Road Express				Eliminate
282	New Albany Shuttle (View Point-New Albany-River Falls Mall-Charlestown Pike-LRT Station)	5:30am-10:30pm	15	30	Extend to Charlestown Station
NEW ROUTES					
300	Memphis Shuttle	5:30am-10:30pm	15	30	New service
301	Bennettsville Shuttle	5:30am-10:30pm	15	30	New service
302	Charlestown Shuttle	5:30am-10:30pm	15	30	New service
303	St. Joseph Shuttle	5:30am-10:30pm	15	30	New service
304	Arsenal Shuttle	5:30am-10:30pm	15	30	New service
305	Indiana University Shuttle	5:30am-10:30pm	15	30	New service
306	Watson Shuttle	5:30am-10:30pm	15	30	New service
307	North New Albany Shuttle	5:30am-10:30pm	15	30	New service
308	North Jeffersonville Shuttle	5:30am-10:30pm	15	30	New service
309	Spring St.-Charlestown Shuttle	5:30am-10:30pm	15	30	(Extension of 282)
310	10th Street-Charlestown Road	5:30am-10:30pm	15	30	New service
311	Clarksville Shuttle	5:30am-10:30pm	15	30	New service
312	Jeffersonville Shuttle	5:30am-10:30pm	15	30	New service
313	Harrison-Clark Shuttle	5:30am-10:30pm	15	30	New service

TABLE 3.2-2
FEEDER BUS SERVICE FOR THREE-LINE LRT ALTERNATIVE

			Headway		
Route Number	Description	Hours of Operation	Peak	Off-Peak	Proposed Action
MODIFICATIONS TO EXISTING ROUTES					
2	Second Street				Eliminate
69	New Albany Express (View Point-New Albany- Louisville via I-64)	5:45am-8:00am 5:20pm-6:00pm	30	-	Increase frequency
70	Clarksville Express				Eliminate
71	Jeffersonville Express				Eliminate
73	Charlestown Road Express				Eliminate
262	New Albany/Louisville Shuttle (Indiana Univ to NAI Ctr via I-64)	5:30am-10:30pm	-	-	Expand to full service (Route 25)
282	New Albany Shuttle (View Point-New Albany-River Falls Mall-Charlestown Pike-LRT Station)	5:30am-10:30pm	-	-	Expand to full service (Routes 4 and 12)
NEW ROUTES					
1	Rt 111/Cherokee Heights-Poplar St/New Albany	5:30am-10:30pm	15	30	New service
2	Corydon Pike/Edwardsville-New Albany	5:30am-10:30pm	15	30	New service
3	Woodland Hills-New Albany	5:30am-10:30pm	15	30	New service
4	Floyd Knobs/State-Spring St- Charlestown Pike	5:30am-10:30pm	15	30	New service
5	St. Joseph-Indiana Univ SE	5:30am-10:30pm	15	30	New service
6	Jacobs Creek-Indiana Univ SE	5:30am-10:30pm	15	30	New service
7	Tabor Road	5:30am-10:30pm	15	30	New service
8	Daisy Ln-McDonald Ave	5:30am-10:30pm	15	30	New service
9	Grant Line-8th Street	5:30am-10:30pm	15	30	New service
10	Charlestown Road	5:30am-10:30pm	15	30	New service
11	Slate Run Road	5:30am-10:30pm	15	30	New service
12	Blackiston Mill Road	5:30am-10:30pm	15	30	New service
13	Greentree Ln-Applegate-Eastern	5:30am-10:30pm	15	30	New service
14	Blackiston Mill Rd-Potters Ln	5:30am-10:30pm	15	30	New service
15	US 31/Memphis Shuttle	5:30am-10:30pm	15	30	New service
16	Rt 60-Bean Rd-St. Joe Rd	5:30am-10:30pm	15	30	New service
17	Charlestown Circulator	5:30am-10:30pm	15	30	New service
18	Potter Rd-Charlestown Pike	5:30am-10:30pm	15	30	New service
19	Utica-Sellersburg Road	5:30am-10:30pm	15	30	New service
20	Charlestown/New Albany Pike- Holemans Ln-Allison Ln	5:30am-10:30pm	15	30	New service
21	Dutch Ln-Hamburg Pike-Charlestown Pike	5:30am-10:30pm	15	30	New service
22	Plank Rd-Charlestown Road	5:30am-10:30pm	15	30	New service
23	Montgomery-Court-Plank-8th-Middle Rd	5:30am-10:30pm	15	30	New service
24	Montgomery-Chestnut-Utica Pk	5:30am-10:30pm	15	30	New service
25	Indiana Univ/Grant Line-State- I-64-34th-Broadway/NIA Ctr.	5:30am-10:30pm	15	30	New service

Enhanced Bus Service

Potential options for Enhanced Bus Service Alternative included adding new service, increasing the frequency of existing service and providing travel time advantages for transit. New service would provide an alternative for trips where transit is currently not an option. Increasing the frequency of service and providing travel time advantages would improve the competitiveness of transit by reducing waiting time and travel time. Travel time advantages may be provided by signal preemption, priority for transit vehicles, or dedicated travel lanes for transit vehicles.

The Enhanced Bus Service Alternative builds on the existing bus service and adds new routes to serve projected new development. All six existing routes currently crossing the Ohio River would be retained and improved. In addition, eight new regular routes and one new express route would be added, resulting in an expansion of the TARC service area. (See Figure 3.2-4.)

Finally, a number of existing express routes, currently providing only limited peak hour service, would be converted into regular full service routes. Thirty-minute peak and 40-minute off-peak service would be provided on all regular routes, except Route 403 in New Albany and Route 405 in the I-65 corridor, where 20 minute headways would be provided during peak periods. Detailed operating information for this alternative is provided in Table 3.2-3.

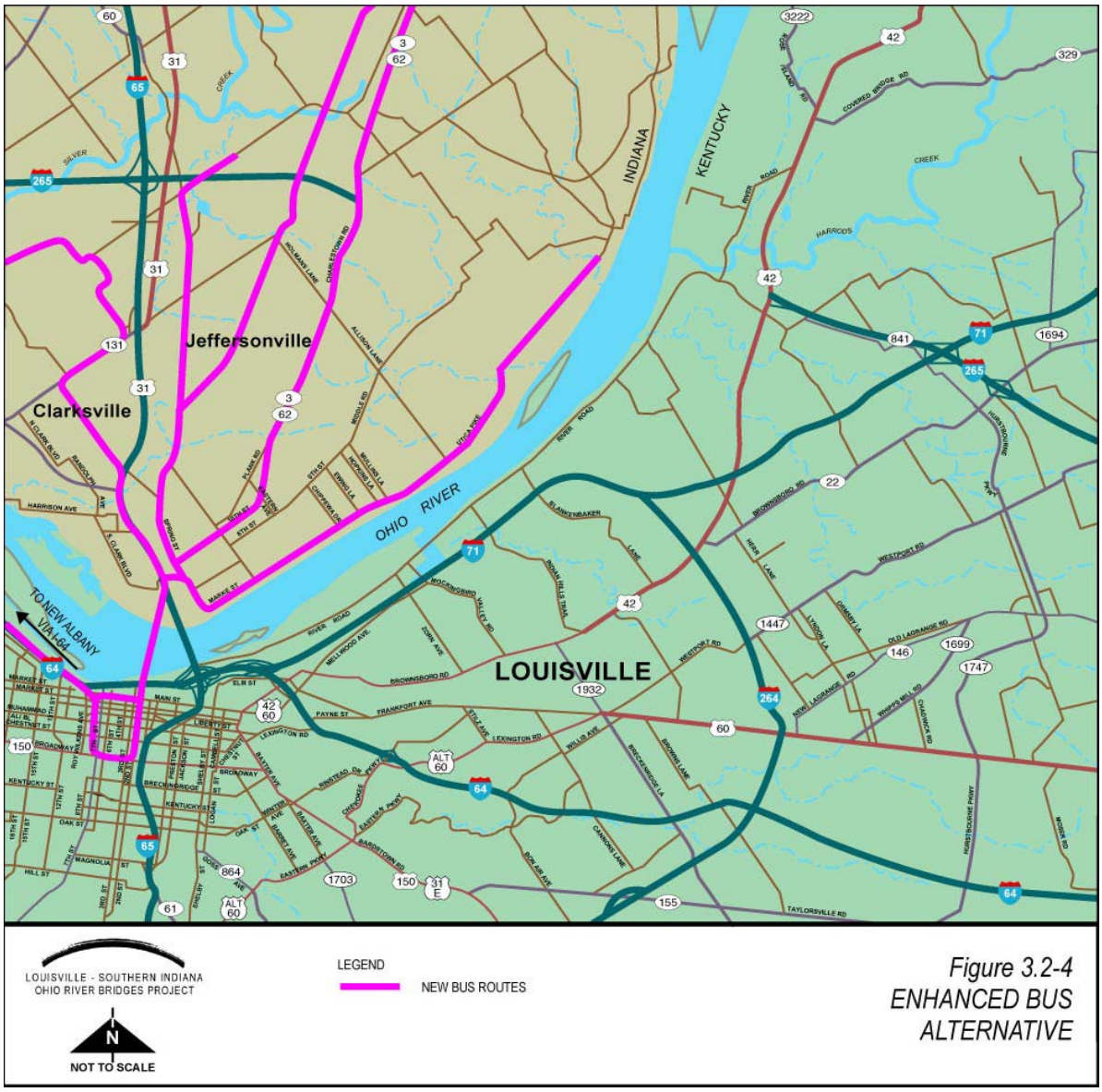

Jeffersonville
Clarksville
LOUISVILLE
INDIANA
KENTUCKY
OHIO RIVER
TO NEW ALBANY VIA I-64
LOUISVILLE - SOUTHERN INDIANA
OHIO RIVER BRIDGES PROJECT
N
NOT TO SCALE
LEGEND
NEW BUS ROUTES
Figure 3.2-4
ENHANCED BUS
ALTERNATIVE

TABLE 3.2-3
ENHANCED BUS SERVICE ALTERNATIVE

			Headway		
Route Number	Description	Hours	Peak	Off-Peak	Proposed Action
MODIFICATIONS TO EXISTING ROUTES					
2	Second Street	5:00am–11:30pm	20	30	Increase Frequency
69	New Albany Express (View Point-New Albany- Louisville via I-64)	5:30am-8:00pm	30	40	Convert to regular service
70	Clarksville Express (Greentree North-Louisville via Clark Br)	7:00 am-9:00am 4:30pm-6:30pm	30	-	Continue as peak period express, expand hours
71	Jeffersonville Express (Clark Maritime-Jeffersonville-Louisville via Clark Br)	5:30am-10:30pm	20	40	Increase Frequency
73	Charlestown Road Express (Indiana Univ.- New Albany- Louisville via I-64)	5:30am-10:30pm	30	40	Convert to regular service
262	New Albany/Louisville Shuttle (Indiana Univ to NAI Ctr via I-64)	5:30am-10:30pm	30	40	Increase Frequency
282	New Albany Shuttle (View Point-New Albany-River Falls Mall)	5:30am-10:30pm	20	30	Extend route & Increase frequency
284	Sellersburg Shuttle (Ivy Tech to Greentree Mall)	5:30am-10:30pm	30	40	Reinstitute with increased frequency
NEW ROUTES					
401	Lower Albany – Route 111 to New Albany- Louisville via I-64	5:30am-10:30pm	30	40	New service
402	Edwardsville- Corydon Pike to New Albany- Louisville via I-64	5:30am-10:30pm	30	40	New service
403	Charlestown Road from Sellersburg to New Albany- Louisville via I-64	5:30am-10:30pm	20	40	New service
404	Blackiston's Mill Road to Malls – Eastern Boulevard to Route 31 – Louisville via Clark Bridge	5:30am-10:30pm	30	40	New service
405	Cementville-Hamburg Pike to Jeff.-Louisville via Clark Bridge	5:30am-10:30pm	20	40	New service
406	Prather- Charlestown Road to Jeffersonville- Louisville via Clark Bridge	5:30am-10:30pm	30	40	New service
407	U.S. Arsenal- Route 62 to Watson to Jeffersonville- Louisville via Clark Bridge	5:30am-10:30pm	30	40	New service
408	Clark Maritime Center- Utica Pike to Jeffersonville- Louisville via Clark Bridge	5:30am-10:30pm	30	40	New service
501	U.S. Arsenal- Route 62 to Watson – US Census – Jeffersonville-Louisville via Clark Bridge	7:00 am-9:00am 4:30pm-6:30pm	30	-	Four express runs during peak periods

3.2.5 Bridge/Highway Alternatives

A wide range of bridge and highway alternatives was considered as part of this project. These alternatives consist of: existing system improvements with a Kennedy Interchange reconstruction, bridge/highway alternatives across the Ohio River and an Ohio River tunnel. Reconstruction of the Kennedy Interchange and the addition of two new bridges across the Ohio River are included in KIPDA's RMP, but were not included as part of the No-Action Alternative for this project.

Existing System Improvements/Kennedy Interchange Reconstruction

This alternative includes the reconstruction of the Kennedy Interchange to address traffic congestion and safety needs identified in the Purpose and Need Statement, Chapter 2. Two options have been considered for reconstruction. In the first, the interchange would be rebuilt in approximately the same location. In the second, a new interchange would be constructed south of the existing one.

Additionally, this alternative originally consisted of expanding the programs and improvements in the current TIP for the Louisville and southern Indiana urbanized area. Such improvements included new roadway lanes, intersection/interchange improvements, pavement rehabilitation and roadway realignment. Reconstruction of the approach ramps to the existing Kennedy Bridge and Clark Memorial Bridge was also included as part of this alternative. This alternative is depicted in Appendix A.4. See the Alternative C-2 option figure. Two sets of improvements are proposed, Reconstruction In-Place and Reconstruction to the south. The improvements depicted in these graphics, with the exception of those proposed for the Kennedy Bridge, are those that would be included in the Kennedy Interchange Reconstruction Alternatives.

Bridge/Highway Alternatives

This alternative includes the construction of one or two new bridges, with associated highway approaches, across the Ohio River. In developing this alternative, five potential river crossing corridors were identified. (See Figure 3.2-5.)

In ORMIS, three potential cross-river corridors were identified. These corridors were evaluated and modified as part of this project. A brief description of these corridors is provided below.

Far East Corridor

This corridor was derived from the ORMIS East Bridge route. It connects I-265/KY 841 (Gene Snyder Freeway) in Kentucky with S.R. 265 at its interchange with S.R. 62 in Indiana.

Near East Corridor

This corridor is similar to the ORMIS Near East Bridge route, except that it is located slightly south to avoid the Six Mile Island Nature Preserve. It connects to I-71 near its interchange with I-264 in Kentucky, and ties into the same S.R. 265/S.R. 62 interchange in Indiana as the Far East corridor. Although, ORMIS recommended an (Far) East Bridge Route, the Near East corridor was still reconsidered as part of this project to address public comments and to ensure that all potentially reasonable river crossings were considered.

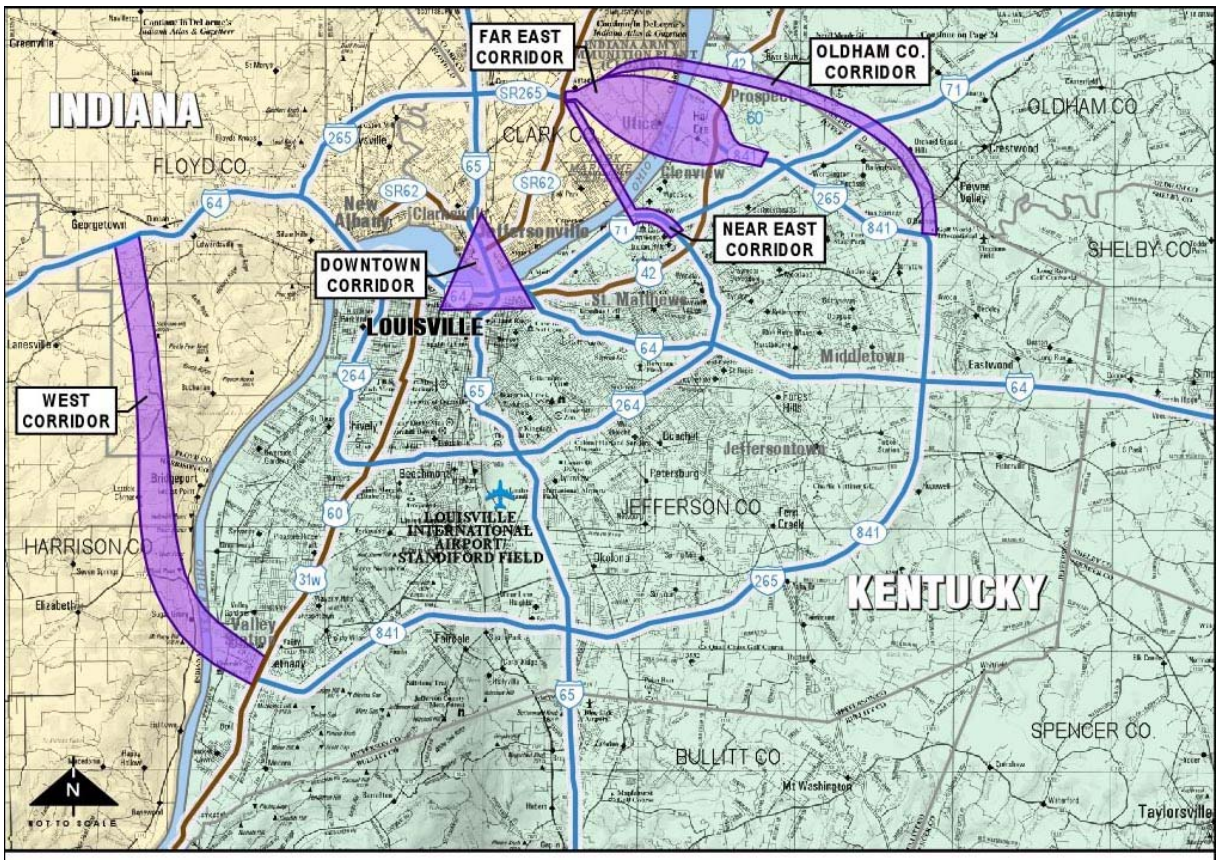


Figure 3.2-5
PRELIMINARY BRIDGE/HIGHWAY ALTERNATIVE CORRIDORS

Downtown Corridor

As in the ORMIS, this corridor provides a crossing of the Ohio River in the general Downtown Louisville/Jeffersonville area.

Additional evaluation, public comments and stakeholder involvement led to the identification of two additional cross-river corridors.

Oldham County Corridor

This corridor connects with I-265 in Jefferson County near the LaGrange Road interchange and travels north/northwest through Oldham County, crossing the Ohio River near Belknap Beach. After crossing near Twelve Mile Island, it enters Indiana and proceeds through the former Indiana Army Ammunition Plant (INAAP) before tying into the existing S.R. 265/S.R. 62 interchange in Indiana.

West Corridor

This corridor connects the present western terminus of KY 841 (Gene Snyder Freeway) near Bethany, Kentucky with I-64 near Lanesville, Indiana. It generally travels north through Harrison and Floyd Counties in Indiana.

Other Ohio River crossing locations between the Downtown corridor and the Oldham County corridor were not considered prudent in large part because of the density of existing residential and commercial development in those areas, the presence of sensitive resources, and the lack of existing freeway corridors. Crossing the Ohio River outside of one of the corridors identified above, displaces a substantially higher number of residents in the city of Jeffersonville, Indian Hills and Glenview and adversely impacts historic, recreational or wildlife refuge resources in both states. Protected resources that could be impacted between the Downtown and the Near East corridors include the Eva Bandman Park, Louisville Water Pumping Station and Twin Park in Kentucky, the Old Jeffersonville Historic District and Wathen Park in Indiana. The potential designation of Towhead Island as a Kentucky Nature Preserve also limits crossing touchdown points in Kentucky between I-264 and downtown Louisville. Similarly, the designation of Six Mile Island as a Kentucky Nature Preserve and the location of the Clark Maritime Center in Indiana limits crossing touchdown points between I-264 and I-265 to those identified in the Far East corridor. Figure 3.2-6 shows the major constraints in siting a new river crossing in the project area.

River Tunnel/Highway Alternative

As an option to building a new bridge in the LMA, this alternative includes the construction of a tunnel, with associated highway approaches, under the Ohio River. Potential locations were evaluated east of downtown Louisville, connecting KY 841 in Kentucky with S.R. 265 in Indiana.

3.3 Screening of Alternatives – Step 1

Each of the alternatives described in Section 3.2 was evaluated on a conceptual level to determine its potential to meet the Purpose and Need for this project and if it had a fatal flaw. Bridge/highway alternatives that passed this screening process were advanced to Step 2 of the evaluation process. Non-bridge/highway alternatives that passed Step 1 were advanced

to the EIS. Some alternatives that did not pass the screening test as stand alone alternatives, but that may contribute substantially to the solution when combined with one or more other alternatives, were recommended in conjunction with those other alternatives.

Table 3.3-1 summarizes the results of Step 1 of the evaluation process. Section 3.3.1 evaluates each alternative on a conceptual level. For example, in terms of how effectively an alternative would have addressed each of the five needs identified for this project: efficient cross-river mobility for population and employment growth; traffic congestion; traffic safety; cross-river system linkage and freeway routing opportunities; and consistency with local transportation plans.

Table 3.3-1
Alternatives Evaluation Process
Results of Step 1 - Initial Screening

	Alternative	Population and Employment Growth	Traffic Congestion	Traffic Safety	Improved System Linkage	Local Plan Compatibility	Fatal Flaw	Advance to Step 2	Comment
	No-Build	No	No	No	No	No	No	Yes	Serves as baseline, required as part of NEPA
TDM	Vanpooling/Carpooling	No	No	No	No	No	No	No	Included in long range plan
TDM	Non-motorized Facility Enhancements	Low	Low	No	No	No	No	Yes	As part of TM and Bridge/Highway Alternatives
TDM	Congestion Pricing	No	Low	No	No	No	No	No	
TDM	Employer-Based Trip Reduction Programs	Low	Low	No	No	No	No	Yes	As part of TM and Bridge/Highway Alternatives
TSM	Expanded ITS Applications	Low	Low	No	No	No	No	Yes	As part of TM and Bridge/Highway Alternatives
TSM	Incident Management Program	Low	Low	Low	No	No	No	Yes	As part of TM and Bridge/Highway Alternatives
TSM	Signal Coordination and Timing	Low	No	No	No	No	No	No	
TSM	Reversible Lanes	Low	Low	No	No	No	Yes	No	
TSM	HOV Lanes	Low	Low	No	No	No	No	No	Not travel efficient with projected low demand
Transit	Single-Line LRT	Low	Low	No	No	No	No	No	Not as cost-effective as enhanced bus service
Transit	Three-Line LRT	Low	Low	No	No	No	No	No	Not as cost-effective as enhanced bus service
Transit	Enhanced Bus Service	Low	Low	No	No	No	No	Yes	As part of TM and Bridge/Highway Alternatives
Bridge/Highway	Kennedy Interchange	Low	Medium	Medium	No	No	No	Yes	As part of TM and Bridge/Highway Alternatives
Bridge/Highway	Far East	High	High	No	Yes	Yes	No	Yes	When combined with Kennedy Interchange, traffic safety and congestion improves
Bridge/Highway	Near East	High	High	No	Yes	Yes	No	Yes	When combined with Kennedy Interchange, traffic safety and congestion improves
Bridge/Highway	Downtown	Medium	Medium	Medium	No	Yes	No	Yes	When combined with Kennedy Interchange, traffic safety and congestion improves
Bridge/Highway	Oldham County	Low	Low	No	Yes	Yes	Yes	No	Relatively low travel demand projected and would not improve Kennedy Interchange operations
Bridge/Highway	West	Low	Low	No	No	No	No	No	Relatively low travel demand projected and would not improve Kennedy Interchange operations
Bridge/Highway	River Tunnel	High	High	No	Yes	Yes	Yes	No	Cost-prohibitive
	Transportation Management	Low	Low	Low	No	No	No	Yes	As a stand-alone alternative and as part of Bridge/Highway Alternatives

Notes:

Population and Employment Growth Measure: Reduce regional VMT, VHT and VHD
- No
- Low
- Medium
- High

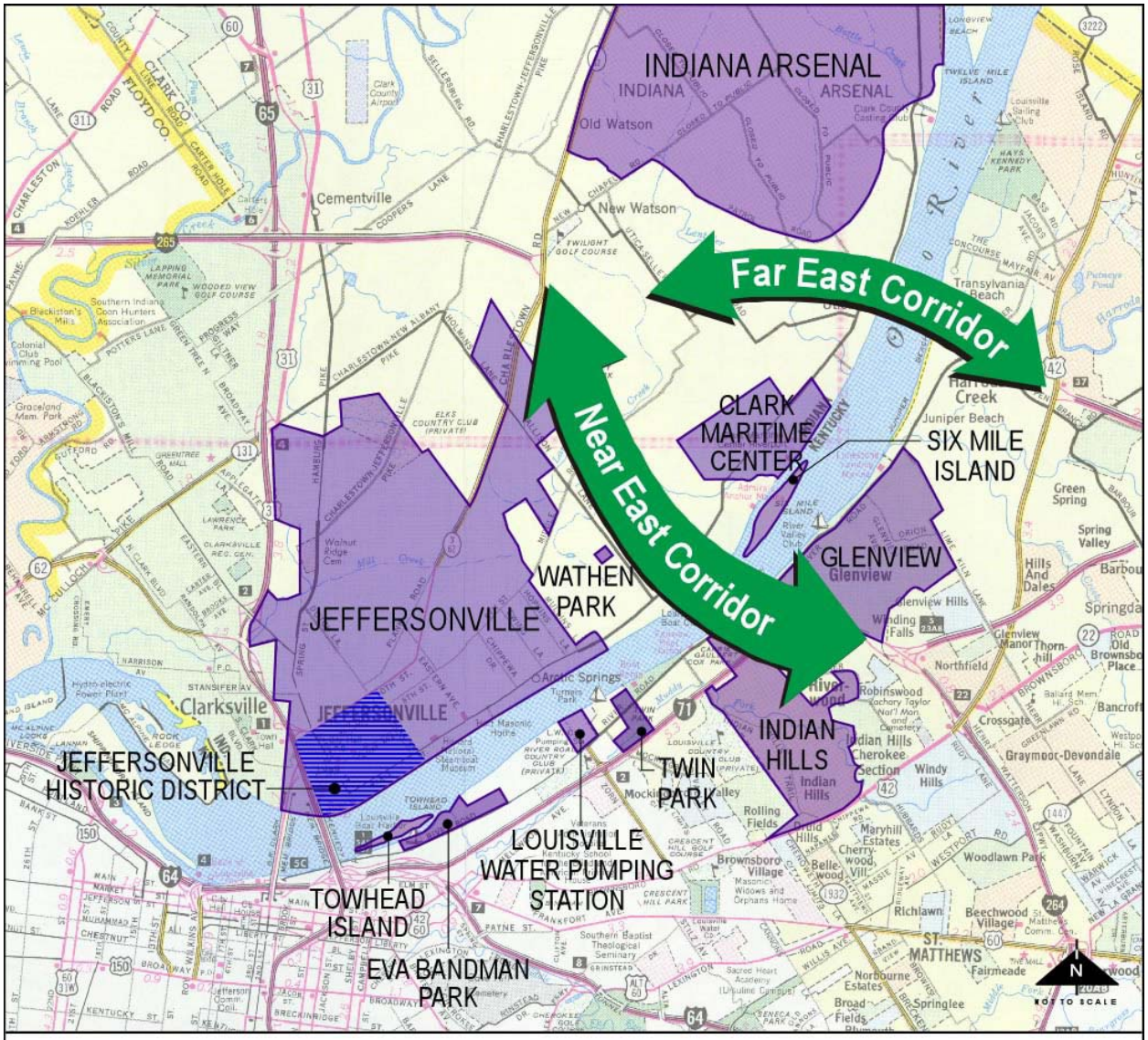
Traffic Congestion Measure: Reduce congestion on the Kennedy Bridge and in the Kennedy Interchange
- No
- Low
- Medium
- High

Traffic Safety Measure: Conform to roadway design standards
- No
- Low
- Medium
- High

Syetem Linkage Measure: Connects I-264 or I-265 (Kentucky) with IN SR 265
- Yes
- No

Local Plan Compatibility Measure: Consistent with local transportation plans
- Yes
- No

Fatal Flaw
- Yes
- No



LOUISVILLE - SOUTHERN INDIANA OHIO RIVER BRIDGES PROJECT

Figure 3.2-6
MAJOR CONSTRAINTS IN SITING A NEW RIVER CROSSING

3.3.1 No-Action Alternative

Efficient Cross-River Mobility for Population and Employment Growth

As discussed in Chapter 2, vehicle miles of travel (VMT) and vehicle hours of travel (VHT) are projected to increase by 57 and 74 percent, respectively, under the No-Action Alternative between 1990 and 2025. As a result, the increase in vehicle hours of delay (VHD) will be even more dramatic, 225 percent. Under the No-Action Alternative, no improvements would have been made to address these problems. This alternative would not provide additional mobility needed in high growth areas.

Traffic Congestion

Currently, the daily volume exceeds the minimal acceptable daily capacity on the Kennedy Bridge. Based on interpolation of 2000 and 2025 travel projections, daily volume will exceed daily capacity on the Sherman Minton and Clark Memorial bridges by the year 2015. The year 2025 prediction of the volume-to-capacity ratios on the three downtown bridges is estimated to range from 1.12 (on the Clark Memorial Bridge) to 1.42 (on the Kennedy Bridge). Projected LOS under the No-Action Alternative is D (on the Clark Memorial Bridge) and E (on the Kennedy and Sherman Minton bridges). In the Kennedy Interchange, average speeds and throughput are projected to decrease during the A.M. and P.M. peak hours between 1999 and 2025 under the No-Action Alternative. Additionally, total VHD is projected to increase dramatically.

Traffic Safety

Improvements included with the No-Action Alternative do not address the geometric deficiencies identified in the Kennedy Interchange and on the Kennedy Bridge. This likely results in increased crashes and continues the inability to provide timely response to address traffic incidents.

Inadequate Cross-River System Linkage

This alternate does not connect I-264 or I-265 in Kentucky with S.R. 265 in Indiana nor does it provide any additional cross-river freeway routing opportunities. It does not alleviate the "funneling" effect of routing eastern area oriented cross-river traffic through downtown Louisville.

Consistency with Local Transportation Plans

This alternative is not consistent with locally approved transportation plans. It does not provide the additional cross-river bridges or improvements to the Kennedy Interchange in the KIPDA RMP.

Recommendation

As discussed above, the No-Action Alternative would not address the identified Purpose and Need. In addition, no strong public support was expressed for this alternative. However, evaluation of the No-Action Alternative in the EIS is a requirement of the NEPA. Therefore, it was evaluated and has served as a useful baseline for the comparison of the effectiveness and potential impacts of the other alternatives.

3.3.2 TDM Alternatives

Vanpooling/Carpooling

Efficient Cross-River Mobility for Population and Employment Growth

Since expansion of vanpool/carpool programs is included in the KIPDA RMP, it is unrealistic to assume that enhancing these programs further would have a noticeable effect on projected travel demand. This alternative would provide only nominal cross-river mobility improvement or provide additional service in high growth areas. Therefore, VMT, VHT and VHD would not be reduced significantly under this alternative.

Traffic Congestion

Since this alternative is not expected to change travel demand significantly as compared to the No-Action Alternative, congestion on the Ohio River bridges and in the Kennedy Interchange would not noticeably improve over the No-Action Alternative.

Traffic Safety

This alternative would not address the geometric deficiencies identified in the Kennedy Interchange and on the Kennedy Bridge. Nor would it significantly reduce crash rates. Therefore, this alternative is not likely to improve traffic safety, a component of the Purpose and Need.

Inadequate Cross-River System Linkage

This alternative would not connect I-264 or I-265 in Kentucky with S.R. 265 in Indiana nor would it provide any additional cross-river freeway routing opportunities. It would not alleviate the "funneling" effect of routing eastern area oriented cross-river traffic through downtown Louisville.

Consistency with Local Transportation Plans

This alternative is not consistent with locally approved transportation plans. It does not provide the additional cross-river bridges or improvements to the Kennedy Interchange in the KIPDA RMP.

Recommendation

Expansion of vanpool/carpool programs is already included in KIPDA RMP. Further expansion does not appropriately address the identified Purpose and Need. Therefore, it was not carried forward for evaluation in the EIS.

Non-motorized Facility Enhancements

Efficient Cross-River Mobility for Population and Employment Growth

Enhancing non-motorized facilities would reduce automobile trips to some extent. However, this mode of travel is limited to short trips and, therefore, was not determined a viable option for most cross-river travel. Therefore, the reduction in automobile trips would not have a noticeable effect on VMT, VHT and VHD in the LMA. Nor would it provide a significant improvement in cross-river mobility for high growth areas.

Traffic Congestion

Although it might reduce the number of automobile trips slightly, this alternative would not appreciably reduce congestion on the Ohio River bridges or in the Kennedy Interchange.

Traffic Safety

This alternative would not address the geometric deficiencies identified in the Kennedy Interchange and on the Kennedy Bridge. Nor would it significantly reduce crash rates. Therefore, this alternative would not likely improve traffic safety.

Inadequate Cross-River System Linkage

This alternate does not connect I-264 or I-265 in Kentucky with S.R. 265 in Indiana. It also does not provide additional cross-river freeway routing opportunities. It would not alleviate the “funneling” effect of routing eastern area oriented cross-river traffic through downtown Louisville.

Consistency with Local Transportation Plans

This alternative is not consistent with locally approved transportation plans. It does not provide the additional cross-river bridges or improvements to the Kennedy Interchange in the KIPDA RMP.

Recommendation

This alternative would have only partially addressed the Purpose and Need and was not considered reasonable as a distinct, "stand alone" alternative. However, many residents commented that bicycle paths and pedestrian walkways should be incorporated into the design of cross-river alternatives. Because this alternative had considerable public support and would contribute to a possible solution to the LMA's cross-river transportation needs, it was included in combination with other alternatives evaluated in the EIS.

Congestion Pricing

To date, congestion pricing has had limited success nationally, and congestion pricing proposals have often met significant opposition from motorists and public officials. A congestion-pricing program targeted at trips across the Ohio River would require the implementation of tolls on roadways that cross the Ohio River. If a toll facility is added to only one of the existing river crossings, travelers will likely divert to other non-tolled bridges. To successfully implement a congestion-pricing program, it would require tolls for all roadways crossing the Ohio River. This type of program would likely result in a dramatic change in the region's transportation system.

Efficient Cross-River Mobility for Population and Employment Growth

Implementation of this alternative would reduce travel demand to some extent. However, travelers would also have diverted to non-toll roadways, likely resulting in an increase in VMT, VHT and VHD in the LMA. It would not have significantly improved cross-river mobility relative to high growth areas especially in the eastern portion of the project area.

Traffic Congestion

This alternative would reduce congestion on the roadway(s) on which it was implemented, but it would likely increase the traffic congestion on adjacent non-tolled roadways. As a result, there could have been reduction in congestion on the Ohio River bridges, and possibly in the Kennedy Interchange, but that reduction would have been offset by the increased congestion levels elsewhere on adjacent roadways.

Traffic Safety

This alternative did not address the geometric deficiencies identified in the Kennedy Interchange and on the Kennedy Bridge. Nor was it likely to significantly reduce crash rates. Reduced travel on tolled facilities might have resulted in a reduced number of crashes, but those would have been offset by the increased crashes on non-tolled roadways, which would have experienced increased traffic levels. Therefore, this alternative was not determined to likely to improve traffic safety.

Inadequate Cross-River System Linkage

This alternate does not connect I-264 or I-265 in Kentucky with S.R. 265 in Indiana. It also does not provide additional cross-river freeway routing opportunities. It does not alleviate the "funneling" effect of routing eastern area oriented cross-river traffic through downtown Louisville.

Consistency with Local Transportation Plans

This alternative is not consistent with locally approved transportation plans. It also does not provide the additional cross-river bridges or improvements to the Kennedy Interchange as outlined in the KIPDA RMP.

Recommendation

This alternative only minimally addresses the Purpose and Need of the project. Because of the potential adverse effects on the non-tolled portion of the roadway systems in terms of increased traffic and congestion levels, it was not carried forward for evaluation in the EIS either as a distinct, "stand alone" alternative or as part of another alternative.

Employer-Based Trip Reduction Programs

Efficient Cross-River Mobility for Population and Employment Growth

Implementation of employer-based trip reduction programs would reduce travel demand to some extent. As a result, VMT, VHT and VHD would decrease as compared to the No-Action Alternative. However, this reduction was not expected to be substantial. It would not have provided much additional cross-river mobility for high growth areas, especially in the eastern portion of Jefferson and Clark Counties.

Traffic Congestion

Implementation of these programs would also help to reduce congestion and improve traffic flow, particularly during peak travel demand periods, although significant improvements in LOS on the Ohio River bridges and in the Kennedy Interchange would have not been expected.

Traffic Safety

This alternative does not address the geometric deficiencies identified in the Kennedy Interchange and on the Kennedy Bridge. Nor was it likely to significantly reduce the frequency of crash rates. Therefore, this alternative was determined unlikely to improve traffic safety.

Inadequate Cross-River System Linkage

This alternate does not connect I-264 or I-265 in Kentucky with S.R. 265 in Indiana. It also does not provide additional cross-river freeway routing opportunities. It would not alleviate the "funneling" effect of routing eastern area oriented cross-river traffic through downtown Louisville.

Consistency with Local Transportation Plans

This alternative is not consistent with locally approved transportation plans. It does not provide the additional cross-river bridges or improvements to the Kennedy Interchange in the KIPDA RMP.

Recommendation

This alternative only minimally addressed the identified Purpose and Need and was, therefore, determined not reasonable as a distinct, "stand alone" alternative. However, because this alternative would have contributed to addressing the purpose of the project and does not have significant adverse side effects, it was included with other alternatives evaluated in the EIS.

3.3.3 TSM Alternatives

Expanded ITS Applications

Efficient Cross-River Mobility for Population and Employment Growth

Expanding ITS applications in the project area would improve the efficiency of the transportation system as travelers adjust routes in response to changing traffic and transit

travel conditions. As a result, VMT, VHT and VHD would decrease compared to the No-Action Alternative. However, this reduction would not have been substantial. It would not provide much additional cross-river mobility for high growth areas especially in the eastern portion of Jefferson and Clark Counties.

Traffic Congestion

Improving the efficiency of the system would help to reduce traffic congestion during peak travel demand periods although significant improvements in levels of service on the Ohio River bridges and in the Kennedy Interchange would not be expected to occur.

Traffic Safety

This alternative doe not address the geometric deficiencies identified in the Kennedy Interchange and on the Kennedy Bridge. Nor would it be likely to significantly reduce crash rates. Therefore, this alternative was not determined to likely improve traffic safety.

Inadequate Cross-River System Linkage

This alternative does not connect I-264 or I-265 in Kentucky with S.R. 265 in Indiana. It does not provide additional cross-river freeway routing opportunities. It would not alleviate the "funneling" effect of routing eastern area oriented cross-river traffic through downtown Louisville.

Consistency with Local Transportation Plans

This alternative is not consistent with locally approved transportation plans. It does not provide the additional cross-river bridges or improvements to the Kennedy Interchange in the KIPDA RMP.

Recommendation

This alternative only minimally addressed Purpose and Need and was, therefore, not reasonable as a distinct, "stand alone" alternative. However, because this alternative would contribute to addressing the purpose of the project, it was included in combination with other alternatives evaluated in the EIS.

Incident Management Program

Efficient Cross-River Mobility for Population and Employment Growth

Expanding TRIMARC and Hoosier Helper onto all of the area interstate highways would improve the efficiency of the transportation system as incidents are responded to more rapidly. It would not provide much additional cross-river mobility for high growth areas especially in the eastern portion of Jefferson and Clark Counties.

Traffic Congestion

Improving the efficiency of the system would also help to reduce traffic congestion during peak travel demand periods, although significant improvements in LOS on the Ohio River bridges and in the Kennedy Interchange likely would not occur.

Traffic Safety

This alternative does not address the geometric deficiencies identified in the Kennedy Interchange and on the Kennedy Bridge. However, responding to incidents more rapidly would lead to an improvement of overall traffic safety.

Inadequate Cross-River System Linkage

This alternate will not connect I-264 or I-265 in Kentucky with S.R. 265 in Indiana. It will not provide additional cross-river freeway routing opportunities. It will not alleviate the "funneling" effect of routing eastern area oriented cross-river traffic through downtown Louisville.

Consistency with Local Transportation Plans

This alternative is consistent with locally approved transportation plans. However, it does not provide the additional cross-river bridges or improvements to the Kennedy Interchange in the KIPDA RMP.

Recommendation

This alternative only partially addressed Purpose and Need and was, therefore, not reasonable as a distinct, "stand alone" alternative. However, incorporation of incident management program elements into bridge/highway alternatives supports system continuity because "real time" diversion from "incident" points to other roadways would be provided. Therefore, it was included in combination with other alternatives evaluated in the EIS.

Signal Coordination and Timing

Efficient Cross-River Mobility for Population and Employment Growth

Implementation of signal coordination and timing projects would improve the efficiency of the transportation system, as delays at signalized intersections would be reduced. As a result, VHT and VHD would decrease compared to the No-Action Alternative. However, this reduction would not be substantial. Nor would it provide a significant improvement in cross-river mobility for high growth areas.

Traffic Congestion

Improvements to the transportation system as a result of this alternative would be on the surface street network. Therefore, traffic congestion on the Ohio River Bridges and in the Kennedy Interchange would not be reduced.

Traffic Safety

This alternative does not address the geometric deficiencies identified in the Kennedy Interchange and on the Kennedy Bridge. Nor was it likely to significantly reduce crash rates. Therefore, this alternative is not likely to improve traffic safety.

Inadequate Cross-River System Linkage

This alternate does not connect I-264 or I-265 in Kentucky with S.R. 265 in Indiana. As such, it does not provide additional cross-river freeway routing opportunities. It will not alleviate the "funneling" effect of routing eastern area oriented cross-river traffic through downtown Louisville.

Consistency with Local Transportation Plans

This alternative is not consistent with locally approved transportation plans, and it does not provide the additional cross-river bridges or improvements to the Kennedy Interchange recommended in the KIPDA RMP.

Recommendation

This alternative had the potential to only minimally address Purpose and Need. Therefore, it was not carried forward for evaluation in the EIS. Signal coordination and timing projects are already included in KIPDA's RMP and will be pursued by local jurisdictions, as needed.

Reversible Lanes

Efficient Cross-River Mobility for Population and Employment Growth

Provision of reversible lanes on the Ohio River bridges would result in reduced VHT and VHD to some extent. However, this reduction would not be substantial. This alternative does not provide additional mobility in high growth areas.

Traffic Congestion

This alternative would also help reduce congestion on the Ohio River bridges and in the Kennedy Interchange during the peak travel periods. However, this would not be to the degree that significant improvements in levels of service would result.

Traffic Safety

This alternative does not address the geometric deficiencies identified in the Kennedy Interchange and on the Kennedy Bridge. Therefore, this alternative does not comply with all current roadway standards. In fact, reversible lanes could negatively affect safety depending on the final configuration of the system.

Inadequate Cross-River System Linkage

This alternate does not connect I-264 or I-265 in Kentucky with S.R. 265 in Indiana. As such, it will not provide additional cross-river freeway routing opportunities, and it will not alleviate the "funneling" effect of routing eastern area oriented cross-river traffic through downtown Louisville.

Consistency with Local Transportation Plans

This alternative is not consistent with locally approved transportation plans. However, it does not provide the additional cross-river bridges or improvements to the Kennedy Interchange in the KIPDA RMP.

Recommendation

This alternative has the potential to only minimally address Purpose and Need. Additionally, this alternative was determined to have a fatal flaw. The addition of reversible lanes would not be feasible on the existing Ohio River bridges because of narrow lane widths and approach constraints on the Clark Memorial Bridge and operational constraints on the interstate roadways. Therefore, it was not carried forward for evaluation in the EIS. The exception was Alternative C-2 where the reversible lane concept was incorporated to determine projected LOS at the Kennedy Bridge.

HOV Lanes

Efficient Cross-River Mobility for Population and Employment Growth

HOV lanes on I-64 are included in the KIPDA RMP between the Gene Snyder Freeway and the Kennedy Interchange. There are no plans currently for HOV lanes along I-65 or I-71. Studies have shown that the time incurred in forming or assembling car pools is not offset by the reduced travel time afforded by use of HOV lanes. Without this timesavings, travelers will not likely shift from driving alone to carpooling. As a result, this alternative is not expected to substantially reduce VMT, VHT or VHD. However, this reduction would not be substantial. This alternative does not provide additional mobility in high growth areas.

Traffic Congestion

This alternative would also not appreciably reduce congestion on the Ohio River bridges or in the Kennedy Interchange.

Traffic Safety

This alternative does not address the geometric deficiencies identified in the Kennedy Interchange and on the Kennedy Bridge. Nor is it likely to significantly reduce crash rates. Therefore, this alternative is not likely to improve traffic safety.

Inadequate Cross-River System Linkage

This alternate does not connect I-264 or I-265 in Kentucky with S.R. 265 in Indiana. It also does not provide additional cross-river freeway routing opportunities. It would not alleviate the "funneling" effect of routing eastern area oriented cross-river traffic through downtown Louisville.

Consistency with Local Transportation Plans

This alternative is not consistent with locally approved transportation plans. Without an improvement addressing the continuity of the circumferential freeway system, the inefficiency of the system will increase.

Recommendation

This alternative had the potential to only minimally address Purpose and Need. Currently, there are no HOV facilities in place on the transportation system and physical constraints on I-65 at Hospital Curve preclude HOV lanes on I-65. Therefore, it was not carried forward for evaluation in the EIS.

3.3.4 Mass Transit Alternatives

Rail Transit

When light rail transit was studied in ORMIS as a possible solution to cross-river mobility, it was concluded that "…a light rail line would not have the ridership to support such a system", and that a light rail line across the Ohio River is not currently feasible. Additionally, TARC recently completed an MIS that evaluated various transit alternatives in the region. The MIS did not recommend a rail line across the Ohio River as a part of the initial system but rather recommended a line in the south central corridor. In terms of a line across the Ohio River, the TARC report concluded that a rail line across the river should be considered as a potential future extension, with the most feasible crossing at either the Clark Memorial Bridge or the L&I Railroad Bridge.

For this project, single- and three- line LRT alternatives were evaluated. Ridership forecasts were developed by modeling the proposed LRT improvements in combination with the elements included in the No-Action Alternative developed for this project.

Ridership projections for the Single Line LRT Alternative indicate that the proposed line would attract approximately 1,700 riders per day, diverting an estimated 500 to 600 vehicles per day from the Kennedy Bridge. This represents approximately 0.2 percent of the more than 340,000 vehicles projected to cross the river per day in the year 2025. The Three Line LRT Alternative would result in almost double the transit ridership projected for the single line alternative. For the three-line alternative, projected daily ridership is 3,200. Approximately 2,000 of these trips are identified as cross-river trips. This translates to approximately 1,000 to 1,100 vehicle trips diverted from the Kennedy Bridge, or 0.3 percent of the trans-river vehicle trips projected in 2025. For the Enhanced Bus Service Alternative, ridership projections indicate that this alternative would attract approximately 1,000 additional transit trips per day than the No-Action Alternative. Approximately 700 of these trips would cross the Ohio River.

Efficient Cross-River Mobility for Population and Employment Growth

As travelers divert to mass transit, reductions in regional VMT, VHT and VHD would result. However, based on the ridership projections provided above, these reductions would not be substantial. This alternative does not provide additional mobility in high growth areas.

Traffic Congestion

Additionally, based on the limited projected ridership, these alternatives would not appreciably reduce congestion on the Ohio River bridges or in the Kennedy Interchange.

Traffic Safety

These alternatives will not address the geometric deficiencies identified in the Kennedy Interchange and on the Kennedy Bridge.

Inadequate Cross-River System Linkage

This alternate does not connect I-264 or I-265 in Kentucky with S.R. 265 in Indiana. It also does not provide additional cross-river freeway routing opportunities. It would not alleviate the "funneling" effect of routing eastern area oriented cross-river traffic through downtown Louisville.

Consistency with Local Transportation Plans

This alternative is not consistent with locally approved transportation plans. It does not provide the additional cross-river bridges or improvements to the Kennedy Interchange in the KIPDA RMP.

Recommendation

This alternative only partially addressed Purpose and Need and was, therefore, not reasonable as a distinct, "stand alone" alternative. However, improvements in mass transit would contribute to addressing the purpose of the project.

Estimated capital cost estimates for these alternatives range from $25 million (enhanced bus service) to $329 to $379 million (Single Line LRT) to $823 to $948 million (Three Line LRT). All three of these alternatives are estimated to attract a similar number of new transit riders. Therefore, it was determined that the Enhanced Bus Service Alternative would be the most cost-effective mass transit alternative, and should be included with other alternatives evaluated in the EIS.

The ratio of capital costs divided by the number of year 2025 daily cross-river users would range from $25,000 for the enhanced bus alternative to $220,000 for the Single Line LRT Alternative to $274,000 for the Three Line LRT Alternative. This compares to a similar ratio derived from projected 2025 daily highway river crossings of 340,000 with a $1.5 billion capital cost (described below) of $4,400.

Although the LRT alternatives were not recommended for continued consideration, potential LRT river crossings will not be affected by implementation of the Preferred Alternative. The Clark Memorial Bridge has been identified by TARC as the preferred location to cross the Ohio River if, in the future, light rail transit is extended into Indiana. Enhanced cross-river mobility via new interstate bridges will result in a desirable level of service on the Clark Memorial Bridge and would thus maintain the bridge as a viable conduit for future light rail. No modifications to the Clark Memorial Bridge or its environs will be made as part of this project that would preclude the development of an LRT line across the river at this location.

3.3.5 Bridge/Highway Alternatives

Existing System Improvements/Kennedy Interchange Reconstruction

After an initial evaluation of this alternative, it was determined that outside of the reconstruction of the Kennedy Interchange, expanding the programs and improvements in the TIP, including ride-share or extension of the ITS system, would only minimally address the Purpose and Need for the project. Such improvements would not significantly reduce congestion, improve traffic flow, improve safety, support recent and planned growth or improve system continuity. Moreover, due to the age and condition of the existing Kennedy and Clark Memorial bridges and the construction involved in adding travel capacity to these facilities, little improvement would be realized relative to the substantial investment required.

Based on this determination, this alternative was modified to include only the reconstruction of the Kennedy Interchange. Numerous comments from the public expressed a strong desire for improvement of traffic flow and safety in the Kennedy Interchange. The city of Louisville and downtown civic and development representatives expressed a need for better access to downtown as well. Representatives of nearby businesses, civic and business groups, and neighborhoods, had strong and sometimes differing views on how the interchange should be reconstructed. As described in Section 3.2.5, two options were developed for the proposed reconstruction.

The first option would address some of the traffic capacity and weaving deficiencies of the current interchange by rebuilding the interchange in approximately the same location. Lots of adequate lanes for exist and entrance ramps from the Kennedy Interchange onto and off of the Kennedy Bridge would continue to be a source of congestion. Managing existing traffic during construction would be challenging under this option. It would leave the Kennedy Interchange basically where it is. Mainline curves in or approaching the interchange would

be improved to meet present design standards, high volume weaving would be eliminated and replaced with more directional movements, left-hand entries to the mainline would be eliminated, ramp laneage and radii would be increased to improve each ramp's performance, and full shoulders would be added or restored to both the mainlines and ramps to increase safety. This alternative still retains the bifurcating of I-64 through the interchange and the left lane exits from I-64 east to I-65 and to I-71 and from I-64 west to I-65. Because the retrofitting placed some limitations on what can be achieved, the goals of this option were to have all mainline geometry meet the standards for 60 mph, typical for urban interstate highways, and to have all interstate to interstate freeway ramps meet the design criteria for 35 mph. This is 10 mph lower than desirable.

The improvements in design and efficiency of the Kennedy Interchange will increase the traffic volumes using it, thereby placing more demand on the interchanges that immediately surround it. Therefore, as a portion of the entire reconstruction, modifications would be made to the Third Street exit ramps from westbound I-64 and a full collector-distributor system (CD) would be placed on each side of I-65 from Brook Street northward. Because the construction of the CD system would fall within a portion of the area of the reverse curve known locally as "Hospital Curve," the northernmost of the two curves would be increased to meet 60 mph design standards.

The second option would provide for the construction of a new interchange south of its current location. This option would reconstruct the Kennedy Interchange within the junkyards and storage areas that lay to the south of the interchange's present location. The objectives would be to have mainline geometries through the interchange meet the criteria for 60 mph operation and interstate-to-interstate ramp designs match the requirements for 40 mph. East and westbound I-64, instead of bifurcating as they currently do, (and as they do under the In-Place option) would be carried through the interchange as a single mainline roadway. All entrance and exit ramps would be on the right-hand side of I-64 and several of the movements would be combined and reduced to single access points to minimize the potential for interference with through traffic. An example is the elimination of Story Avenue's current direct merge with I-64 and its conversion to a feeder to the directional ramp network. This option creates a CD system for I-64 through the interchange and would improve its performance.

As with the In-Place option, I-65 would have a CD system added to it because of increased traffic and number of service lanes. This is critical in this option because the movement of the entire complex to the south shortens the length available for traffic weave movements between the Kennedy Interchange and the interchanges immediately to the south. The introduction of the CD system will allow for the curvature increase on the I-65 mainline alternative between Jefferson Street and Main Street (the northern most curve of "Hospital Curve").

With this option, reconfigurations of the I-64 E to I-65 ramps and the on-ramp from Third Street would afford the motorists entering at Third Street the option of going either north- or southbound on I-65. This movement is not currently available because of conflicts of the right-handed entrance traffic from Third Street with left-handed exiting traffic from I-64 E to I-65. Lack of adequate lanes for exit and entrance ramps from the Kennedy Interchange onto and off of the Kennedy Bridge would continue to be a source of congestion.

In addition to facilitating traffic flow during construction, this option would allow for the redevelopment of about 33 acres of riverfront property currently occupied by the existing interchange. Reconstructing the interchange to the south would cost more. The public also expressed concerns that this option would result in unacceptable noise, air quality, and aesthetic impacts on adjacent neighborhoods.

Efficient Cross-River Mobility for Population and Employment Growth

Improving the capacity of the Kennedy Interchange without a new downtown bridge would result in a reduction in regional VHT and VHD. However, this reduction would not be substantial. It would address the high-growth area of downtown Louisville.

Traffic Congestion

This alternative would also reduce congestion within the interchange. However, without capacity improvements to the Kennedy Bridge, traffic congestion on the bridge would "spill over" into the interchange. This alternative would also not reduce congestion on the Ohio River bridges.

Traffic Safety

This alternative would address some of the geometric deficiencies identified in the Kennedy Interchange, but not on the Kennedy Bridge. This alternative will not completely comply with current roadway design standards. It would likely reduce crash rates in the Kennedy Interchange.

Inadequate Cross-River System Linkage

This alternative does not connect I-264 or I-265 in Kentucky with S.R. 265 in Indiana. It would not provide additional cross-river freeway routing opportunities. It does not alleviate the "funneling" effect of routing eastern area oriented cross-river traffic through downtown Louisville.

Consistency with Local Transportation Plans

This alternative is not entirely consistent with locally approved transportation plans. It would not provide the two additional cross-river bridges contained in the LRP. It would provide improvements to the Kennedy Interchange as contained in the KIPDA RMP.

Recommendation

This alternative only partially addressed Purpose and Need and was, therefore, not reasonable as a distinct, "stand alone" alternative. However, because this alternative would appear to meaningfully contribute to addressing the purpose of the project, it was included in combination with the bridge/highway alternatives evaluated in the EIS.

Bridge/Highways Alternatives on New Alignment

As described in Section 3.2.5, five potential cross-river corridors were identified. Preliminary traffic projections for each of the four non-downtown corridors were developed for the year 2025. The preliminary average daily bridge traffic projected for each of these corridors is presented below.

Far East:	72,100
Near East:	81,000
Oldham County:	39,600
West:	14,200

Given their closer proximity to the Downtown area, the Far East and Near East corridors would likely attract a greater amount of traffic that would divert from the existing Ohio River bridges. Those corridors show a significantly greater overall travel demand.

As with the other alternatives evaluated, a general assessment on each corridor's ability to meet the Purpose and Need is provided below.

Efficient Cross-River Mobility for Population and Employment Growth

The addition of a new bridge over the Ohio River would result in a reduction in VHT and VHD. Based on the traffic projections discussed above, the Far East, Near East and Downtown corridors would be more effective in reducing VHT and VHD than the Oldham County and West corridors. Also, the former set of corridors has closer proximity to high growth areas than the latter corridors, especially the West corridor.

Traffic Congestion

If additional capacity across of the Ohio River were provided, congestion on the Ohio River bridges would be reduced. However, a new river crossing alone would not address the congestion problems in the Kennedy Interchange. The non-downtown corridors would be more effective than the Downtown corridor at diverting traffic from the Kennedy Interchange because some of the traffic diverted from the Kennedy Bridge would avoid the Kennedy Interchange.

Overall, as with population and employment growth measures, the Far East, Near East and Downtown corridors would likely be the most effective corridors at reducing congestion because of their close proximity to the Downtown area.

Traffic Safety

This alternative would not address the geometric deficiencies identified in the Kennedy Interchange. Some alternatives developed in the Downtown corridor (see Section 3.4.3) would improve the geometry of the Kennedy Bridge. Therefore, this alternative, without reconstruction of the Kennedy Interchange, will not completely comply with current roadway standards.

Inadequate Cross-River System Linkage

The Far East and Oldham County corridors would provide direct connections to I-265 in Kentucky to S.R. 265 in Indiana. Similarly, the Near East corridor would provide a direct connection between I-264 in Kentucky and S.R. 265 in Indiana. Thus, these corridors improve system linkage in eastern Jefferson and Clark Counties and provide traffic rerouting opportunities.

Consistency with Local Transportation Plans

A new river crossing in the Far East and Downtown corridors is consistent with locally approved transportation plans. The Near East, Oldham County and West corridors are not included in the KIPDA RMP.

Recommendation

Based on initial evaluation, the Far East, Near East and Downtown corridors were recommended for evaluation in the EIS. When combined with the Kennedy Interchange Reconstruction, these alternatives have a strong potential to meet the Purpose and Need for the project. Additionally, alternatives in the Far East and Near East corridors would provide more cross-river freeway rerouting opportunities than currently exists and, coupled with an incident management program, would likely result in enhanced system operations

capabilities. (Section 3.4 discusses the screening of alignment alternatives in each of the corridors retained.)

Neither the Oldham County corridor nor the West corridor was recommended for evaluation in the EIS. In addition to having less potential for meeting the Purpose and Need, other problems with providing a new river crossing in these corridors were identified. Both corridors are approximately 10 miles longer than the Far East corridor (which is the longest of the three corridors recommended to be carried forward). As a result, provision of a new freeway in either of these corridors would be substantially more expensive and would involve more environmental impacts. The West corridor was also evaluated in the Metropolitan Louisville Ohio River Bridge Study conducted in the early 1990s. At the end of that study, the same conclusion was reached—improvements in the West corridor are not needed because of insufficient cross-river travel demand.
In addition to cost, the Oldham County corridor also has several other potential fatal flaws. While potential impacts to environmental and man-made resources in this corridor would be similar to those in the Far East corridor, it is not possible to avoid impacts to parks and historic resources. Additionally, residential and commercial displacements and relocation impacts would be substantially greater than in the Far East corridor. A route in the Oldham County corridor would also impact active ammunition bunker areas and encroach on blast restriction zones in the INAAP. Even though the plant is now closed, the bunkers are still being used and will continue to be active for the foreseeable future. Ordnance stored at this site is being disarmed and neutralized and reconstituted as dynamite. This dynamite is stored at the INAAP complex. The Oldham County corridor also would cross a large state park (a Section 4(f) resource) on the INAAP property.

In sum, the combination of higher costs, environmental impacts, site use complications, Section 4(f) impacts and lower travel demand make the Oldham County corridor an unreasonable alternative, and it was dropped from consideration.

River Tunnel/Highway Alternative

A full tunnel underneath the Ohio River was suggested by the public as a potential alternative to a new bridge in the Far East corridor. This alternative was investigated as a result of these comments. Possible route locations and a preliminary cost estimate for constructing a tunnel were developed. Preliminary estimates indicate that a tunnel alone would cost at least $1.2 billion to construct. Additional costs would be incurred to construct the necessary highway approaches on both sides of the river and for the additional operating and maintenance expenses associated with a tunnel.

A construction cost of $1.2 billion would be up to three times greater than the estimated cost of other bridge/highway alternatives in the Near East and Far East corridors. In terms of meeting the Purpose and Need for the project, this alternative is similar to the

bridge/highway alternatives in the East End. The cost of this alternative was considered to be a fatal flaw. Therefore, this alternative was not carried forward for evaluation in the EIS.

3.3.6 Transportation Management Alternative

Several of the TDM, TSM and Transit alternatives considered offer some potential to improve the existing transportation system. Although individually these alternatives provide a negligible effect on congestion and traffic flow, together some of these have the potential to improve the transportation system. An alternative consisting of several of these elements was evaluated to determine if such an alternative might better address Purpose and Need. This alternative is comprised of the following improvements:

- **TDM**: non-motorized facility enhancements and employer-based trip reduction programs
- **TSM**: expanded Intelligent Transportation System applications and incident management
- **Mass Transit**: enhanced bus service

This alternative provides an option for improvement if highway/bridge alternatives are determined not to be prudent. Therefore, the Transportation Management Alternative was recommended for evaluation in the EIS, and these improvements are included in the bridge/highway alternatives as well.

3.4 Screening of Alternative Alignments – Step 2

Three bridge/highway corridors: Far East, Near East and Downtown – were recommended for continued evaluation. Throughout the alternatives evaluation process, numerous alternatives were developed and analyzed in each of these corridors to determine if they were reasonable. For identification purposes, each alternative was designated with a letter and a number (e.g, A-1). The letter refers to the corridor in which the alternative is located (A – Far East, B – Near East, C – Downtown). Within each corridor, alternatives were numbered sequentially, starting with 1, as they were developed. Each alternative includes reconstruction of the Kennedy Interchange.

There were numerous venues for the public to comment on the alternative alignments as they were developed. Neighborhood meetings, RAC meetings, Area Work Group meetings and large, public meetings were held to preview alternatives and to get comment. Detailed maps of preliminary alternatives were presented at public meetings and in a series of meetings with the project's Public Involvement groups to get specific feedback. Additionally, extensive media coverage, brochures, materials distributed to libraries, web site displays, newsletters and notifications to a mailing database informed area residents of the alternative alignments and various ways they could provide comments. As a result of these efforts, public comments led to major changes such as the development of new alternatives as well as other

small refinements to various project elements. Interchange options that are of great concern were also changed to reflect public desires. (See Chapter 7.)

In addition to public input, an environmental screening was conducted to determine where alternatives should be modified to avoid or minimize adverse impacts to existing resources. As alternatives were refined to avoid an environmental resource, the new alternatives were assigned different numbers to distinguish them from the originals. The potential impacts of each alternative were evaluated and categorized depending upon the significance of the impact as defined by the President's Council on Environmental Quality (CEQ) regulations, 40 C.F.R. § 1508.27.

As part of the preliminary environmental screening, potential impacts were classified for eight different resource categories: water resources (wetlands, streams and floodplains); biological resources (vegetation, woodlands and important or critical habitat); historic/cultural resources (historic structures, districts and archaeological sites); federally protected recreational resources (parklands, recreational areas, nature preserves and wildlife refuges); land use (residential and business displacements); social/community resources (neighborhood impacts, community cohesion, changes in access and environmental justice issues); economic resources (impacts to commercial development and access to recent and planned growth) and hazardous/contaminated materials sites (leaking underground storage tanks). The results of this screening process were used to determine which alternatives should be eliminated from further consideration.

In this section, the alternatives developed within each corridor are described, and the impacts and public opinions associated with each are summarized. At the end of the description of each corridor, the alternatives recommended for detailed evaluation in the EIS are identified. In some cases, a single alternative was recommended within a corridor, while in other corridors several alternatives were recommended for detailed consideration. The screening was intended to narrow each corridor to a specific alternative, but in cases where several distinct choices appeared, more than one alternative was retained for full evaluation in the EIS.

3.4.1 Far East Corridor

The Far East corridor was divided into four sub-corridors that share similar characteristics: North, Harrods Creek, Middle and South. Each sub-corridor consists of alternatives that follow routes relatively close to each other. In most cases, these alternatives demonstrate a pattern of evolution as environmental resources were identified. The alternatives identified in each sub-corridor are shown on Figure 3.4-1.

North Sub-Corridor

The North sub-corridor covers the same general area as the East Bridge-North corridor in ORMIS. Two alternatives (Alternatives A-1 and A-2) were identified through this area.

Alternative A-1 would have directly impacted the Fincastle historic property—a NRHP listed property (see Section 5.3) and a newly constructed shopping center on U.S 42 anchored by a Kroger store. Alternative A-2 was a modification of Alternative A-1 to minimize impacts to these properties by shifting the alternative to the south.

Both of these North sub-corridor alternatives cross Harrods Creek and are located closer to residential areas in the city of Prospect than other Far East alternatives. Community impacts would have occurred in downtown Prospect, Transylvania Beach and Harrods Creek. Community impacts would have also occurred in Indiana in the development of the area between the town of Utica and S.R. 62.

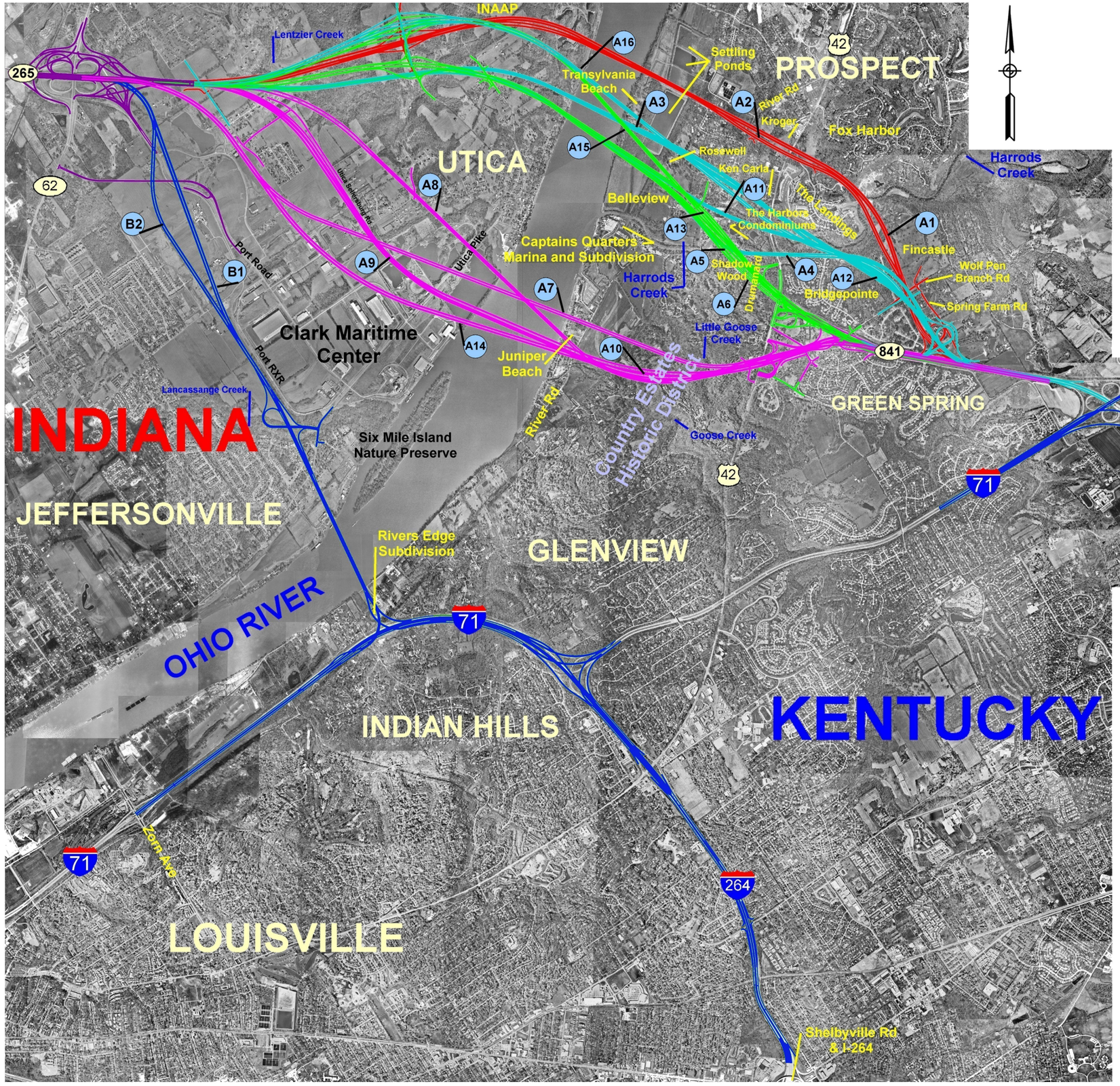
In general, directly affected Kentucky residents were opposed to alternatives in this sub-corridor, while residents in Indiana found them preferable. Residential and community impacts were key concerns for Kentucky residents who said these alternatives would bisect the city of Prospect and its quiet streets. Residents of Transylvania Beach are also concerned because alternatives in this sub-corridor and in the Harrods Creek and Middle sub-corridors (described below) would be elevated 70 to 100 feet over their homes. They also want to protect a large old tree near Mayfair Avenue and the Louisville Water Company plant that might have to be removed. Unwanted noise, lighting and vibration would result, they said. However, some residents liked these alternatives compared to alternatives farther south because they would avoid impacts near Wolf Pen Branch Road. Others said these alternatives would have the least impact on historic properties in Kentucky. Indiana residents liked the fact that this corridor would not significantly impact the town of Utica. The farther north, they said, is better because there would be less impact on residents and access could be achieved for major commercial development, especially development planned at INAAP.

Interchange options are a key concern in eastern Clark and Jefferson Counties regardless of the corridor or alternative option. In Kentucky, residents expressed a strong desire to maintain existing access at U.S. 42 and I-265 and to prohibit access from the north if a bridge is built. They do not want increased traffic that additional access would bring. In Indiana, the public expressed disagreement on whether an interchange is needed at Salem Road. Some residents said it would bring too much traffic into Utica, that blasting would be required and that the road is too narrow for an interchange. The Clark County Commission requested an interchange option in this vicinity for better access to the INAAP property and to areas between that property and the Clark Maritime Center.

Recommendation

Impacts to the Fincastle and Kroger properties are minimized with Alternative A-2. There are no other notable differences in terms of impacts between the two alternatives. Therefore, Alternative A-2 was recommended for evaluation in the EIS. Alternative A-1 was eliminated from further consideration.

LOUISVILLE SOUTHERN INDIANA
OHIO RIVER BRIDGES PROJECT
Environmental Impact Statement/Preliminary Design



- Far East (North)
- Far East (Harrod's Creek)
- Far East (Middle)
- Far East (South)
- Near East

SCALE IN FEET
0 5000
0 2000
SCALE IN METERS

Preliminary Alignments
Near East and Far East Corridor

Figure 3.4-1

Harrods Creek Sub-Corridor

The Harrods Creek sub-corridor and the Middle sub-corridor (described below) identified cover the same general area as the East Bridge-Middle corridor in ORMIS. All of the alternatives in this sub-corridor would cross Harrods Creek in Kentucky, travel through residential areas, impact historic resources and cross Lentzier Creek in Indiana. The major difference between the alternatives in this sub-corridor and the Middle sub-corridor is at the eastern terminus in Kentucky. The Harrods Creek alternatives join existing KY 841 at the same point as the North alternatives (A-1 and A-2), while the Middle alternatives join KY 841 west of this point. (See Figure 3.4-1.) Five alternatives (Alternatives A-3, A-4, A-11, A-12 and A-16) were developed in the Harrods Creek sub-corridor.

Alternatives in this corridor generally received negative comments from both Indiana and Kentucky residents because of potential impacts to residential areas. The city of Prospect, Transylvania Beach, Ken Carla and the Harbors condominiums in Kentucky, as well as homes in the town of Utica in Indiana, would be impacted. In Kentucky, the impacts on Harrods Creek were frequently cited. Although Alternative A-16 is considered the alternative with the least environmental impact in this corridor, residents noted that it crosses Harrods Creek three times. They expressed concern that this alternative would severely change the character of the city of Prospect. For example, they said, it would have a significant impact on viewsheds in an area where housing, particularly in The Landings subdivision and The Harbors condominiums, was both of which are designed to take advantage of the creek view. In all these areas, residents said, lighting, noise and vibration would be major detriments that would change the quiet, secluded environment. Those issues were also cited by Indiana residents who said alternatives in this corridor would have a detrimental impact on recent new homes that have been built in the aftermath of recent flooding in the area.

The first alternative, Alternative A-3, was developed to minimize impacts to the Fincastle historic property by shifting the proposed roadway south of the North sub-corridor alternatives. As a result, Alternative A-3 would have avoided most of the Fincastle property. However, this alternative would have displaced homes in the Ken Carla subdivision, Transylvania Beach and in the town of Utica. This alternative would also have had negative impacts on Harrods Creek and associated water quality, wetlands and floodplains.

Alternative A-4 was developed next to try to minimize the impacts to Harrods Creek and to avoid impacts to the Ken Carla subdivision. This alternative is located south of Alternative A-3. Alternative A-4 would have lessened impacts to Harrods Creek and avoided the Ken Carla subdivision. However, the alternative would have impacted the Drumanard Estate (part of the Country Estates Historic District) and the Belleview Estate. It would also have displaced homes in the Bridgepointe and Shadow Wood subdivisions. Impacts to Transylvania Beach and the town of Utica are similar to those discussed for Alternative A-3.

Alternative A-11 was developed in an attempt to minimize impacts associated with Alternative A-4. In Kentucky, Alternative A-11 is generally located between Alternatives A-3 and A-4; in Indiana, this alternative is identical to Alternative A-4. Relative to Alternative A-4, this alternative avoided impacts to the Drumanard Estate and the Bridgepointe subdivision. It also minimized impacts to the Belleview Estate. This alternative would have resulted in greater impacts to Harrods Creek and would have directly impacted the Harbors condominium complex.

Alternative A-12 was developed by shifting Alternative A-3 slightly. In doing so, impacts to the Ken Carla subdivision were minimized and the Fincastle property was avoided. However, greater impacts to Harrods Creek would have resulted. This alternative was also located closer to the Landings Subdivision and the Harbors condominium complex.

Alternative A-16 was the final alternative developed in this sub-corridor. This alternative is located south of Alternative A-12 in Kentucky, avoiding the Ken Carla subdivision and minimizing impacts to the Harbors condominium complex. In Indiana, this alternative is located farther north than the other alternative in this sub-corridor, matching **Alternative A-15** (described in the Middle sub-corridor). By shifting the alternative north in Indiana, some residential displacements in a recently redeveloped area of Utica were avoided.

Recommendation

Alternative A-16 is generally considered to have the fewest impacts of the alternatives developed in this sub-corridor. It would have no direct impact on the cultural/historic resources in this area and minimal residential displacements. Therefore, Alternative A-16 was recommended to be carried forward for evaluation in the EIS. Alternatives A-3, A-4, A-11 and A-12 were eliminated from further consideration.

Middle Sub-Corridor

Four alternatives (Alternatives A-5, A-6, A-13 and **A-15**) were developed in this sub-corridor. With the exception of the Indiana portion of **Alternative A-15**, the Middle sub-corridor alternatives are located south of the Harrods Creek sub-corridor alternatives. As stated above, a major difference between alternatives in the Harrods Creek and Middle sub-corridors is at the eastern terminus where the alternatives join KY 841. Additionally, Alternatives A-6, A-13 and **A-15** included a tunnel underneath the Drumanard Estate to avoid direct impacts to this historic resource. Similar to the Harrods Creek sub-corridor, all of the alternatives in this sub-corridor would cross Harrods Creek, travel through residential areas, impact historic resources, and cross Lentzier Creek in Indiana.

Alternative A-5 was the initial alternative developed in this sub-corridor. It follows the original ORMIS East Bridge-Middle corridor, which was selected as the preferred alternative at the end of that study. Alternative A-5 would have impacted Harrods Creek, the

Drumanard and Belleview Estates (historic properties) and the marina at Harrods Creek. It would have had potentially negative impacts on downtown Prospect and Utica. This alternative would have also displaced homes in the Shadow Wood subdivision, at Transylvania Beach and a recently redeveloped area in Utica.

Alternative A-6 was developed by modifying Alternative A-5 to include a tunnel underneath the Drumanard Estate and avoid direct impacts to this property. Additionally, this alternative is located slightly south of Alternative A-5, minimizing impacts to the Bridgepointe subdivision, while resulted in greater impacts to the Shadow Wood subdivision and Belleview Estates.

Alternative A-13 was developed as a variation of Alternative A-6, including the tunnel underneath the Drumanard Estate, and shifted slightly north near the Belleview Estates to avoid impacting this property. **Alternative A-15** was developed to avoid a recently redeveloped area in Utica by shifting Alternative A-13 to the north of River Road. This alternative includes the tunnel under the Drumanard Estate and matches Alternative A-16 (from the Harrods Creek sub-corridor) in Indiana.

Residents in the city of Prospect expressed greater approval for alternatives in this corridor particularly the ones with the tunnel options, than for the options located farther north. By putting the road underground, it would minimize visual impacts, they said, and the location would be at the edge instead of near the center of the town. Residents of the Bridgepointe subdivision in Prospect, the Harbors condominium complex and Shadow Wood expressed concern about property value impacts and construction impacts particularly if there was blasting done to create a tunnel. Transylvania Beach residents have expressed concern that their quiet, secluded community would suffer severe impacts by either **Alternative A-15** or Alternative A-16, which would cross through their community on a structure 70 to 100 feet in the air. Noise from the tunnel also was a concern. Safety was another issue, particularly relating to access for emergency vehicles. An emergency access roadway would be constructed off of Mason Boulevard to provide access to the north or west side of the tunnel. Access to the south or east side, as well as all access for the non-tunnel alternatives, would be from the U.S. 42 interchange.

Interchanges associated with these options were a key concern. Green Spring residents have voiced criticism of the tunnel options if they include a full-diamond interchange at Wolf Pen Branch Road. This would require closing Old Springdale Road, which would put more traffic through the community of Green Spring. Residents of Bridgepointe and other residential areas near Wolf Pen Branch Road also criticized this full-diamond option.

Input from the public, including representatives on Public Involvement groups and through public meetings, showed general support for Alternative A-13 amongst many Kentucky residents. Indiana residents expressed dislike for that alternative and wanted an alternative farther north. Members of the Utica/Eastern Clark County Area Work Group specifically

asked that a new alternative be developed that would retain the features of Alternative A-13 on the Kentucky side but located farther north on the Indiana side. As a result, **Alternative A-15** was developed. Many residents of Kentucky and Indiana said this was their most desirable option if an East End bridge had to be built. Concerns remain with residents regarding impacts to historic landscapes, noise and property values, particularly in Bridgepointe, Shadow Wood and The Harbors.

Recommendation

Alternative A-13 and **Alternative A-15** reduce impacts of Alternatives A-5 and A-6 to the Drumanard and Belleview Estates. Additionally, **Alternative A-15** avoids a recently redeveloped area in the town of Utica. Both of these alternatives include a tunnel underneath the Drumanard Estate to avoid direct impacts to the estate. Therefore, Alternatives A-13 and **A-15** were recommended for evaluation in the EIS. Alternatives A-5 and A-6 were eliminated from further consideration.

South Sub-Corridor

Alternatives developed in the South sub-corridor are located in the general vicinity of the ORMIS East Bridge-South corridor. Five alternatives (Alternatives A-7, A-8, A-9, A-10, and A-14) were developed. They cross the Ohio River approximately one mile south of the Middle sub-corridor alternatives. All of the alternatives in this sub-corridor would impact the Country Estates Historic District and would cross through the eastern portion of the designated buffer area surrounding Six Mile Island Nature Preserve.

Alternative A-7 is within the original ORMIS East Bridge-South corridor. In Kentucky, this alternative would have impacted the Country Estates Historic District, Goose Creek and associated wetlands and the Juniper Beach Historic District. In Indiana, this alternative would impact the Clark Maritime Center, a significant employment base and a residential development along Lentzier Creek. This alternative would have also affected forested areas in Kentucky and important wildlife habitats associated with Goose Creek. Additionally, since this alternative crossed a quarry and affected buildings in the Clark Maritime Center, the alternative may have involved hazardous materials.

Alternative A-8 is also within the original ORMIS East Bridge-South corridor and in Indiana is located north of Alternative A-7. This alternative minimized impacts to the Clark Maritime Center. However, potential impacts to Goose Creek, Utica and historic, cultural and archaeological sites in Indiana were greater.

Alternative A-9 was developed to minimize some of the impacts associated with Alternative A-8. In Kentucky, the two alternatives are similar. In Indiana, much of this alternative was located along Utica Sellersburg Road. As a result, impacts to the Clark Maritime Center were minimized. The alternative generally followed property lines and did not affect the

North Port Business Center. As with other alternatives in this sub-corridor, Alternative A-9 would have impacted several historic or archaeological sites. Additionally, this alternative had fewer impacts when crossing Goose Creek near the Ohio River.

Alternative A-10 was developed as another variation in this sub-corridor. This alternative followed a path similar to Alternative A-9. It would have resulted in greater impacts to the Clark Maritime Center and fewer impacts to residential development.

Alternative A-14 is the southernmost alternative developed in this sub-corridor. This alternative would have had the greatest impact on the Clark Maritime Center and would have also impacted the North Port Business Center. This alternative would have also impacted the Country Estates Historic District and Goose Creek, like the other alternatives.

Reaction to alternatives in this corridor was mixed. Some Prospect residents said they liked these alternatives because they were less intrusive for the most populated areas compared with other options. Some noted that alternatives in this corridor provided a more direct link to major thoroughfares on each side of the river than some other alternatives. However, others said these alternatives would negatively impact more historic properties and would change the picturesque landscape and character of the area, especially a portion of River Road, a state designated scenic byway. Juniper Beach residents said they are concerned about noise, vibration and visual impacts to their quiet, secluded neighborhood. Residents of the Woodstone neighborhood off U.S. 42 said they were concerned about visual impacts, noise and disruption to a private neighborhood preserve. Indiana residents also expressed concerns that these alternatives impacted the Clark Maritime Center more than necessary and that putting the route over a sand quarry in Indiana would add expense. Native Americans expressed concern about potential impacts to archaeological sites.

Recommendation

In the South sub-corridor, Alternatives A-7 and A-10 would have had the most direct impacts to the Country Estates Historic District. Alternative A-8 would have had the greatest impact on archaeological sites in Indiana, while Alternative A-14 would have had the greatest impacts to the Clark Maritime Center. Alternative A-9 would have the fewest impacts of any of the alternatives considered in this sub-corridor. Alternative A-9 was recommended for evaluation in the EIS. Alternatives A-7, A-8, A-10, and A-14 were eliminated from further consideration.

Additional Alternative Evaluation in the Far East Corridor

In addition to the sixteen alternatives evaluated in the Far East corridor, an alternative located straight across the river was also evaluated early in the alternative development process. This alternative would utilize the shortest, most direct route to link I-265 in Kentucky with S.R. 265 in Indiana. Throughout the development of alternatives, a common request from

the public was for the development of "the most direct route." This "straight across the river" alternative would impact the largest number of residential and commercial properties of any of the Far East corridor alternatives. It would also cause both direct and indirect impacts to historic and archaeological sites in both Indiana and Kentucky. Since other alternatives in this corridor were developed to reduce residential and cultural resources impacts, this alternative was eliminated from further consideration.

3.4.2 Near East Corridor

This corridor is in the general vicinity of the Near East bridge route identified in ORMIS. The proposed Ohio River bridge location was shifted downstream (south) from its location in ORMIS to avoid the Six Mile Island Nature Preserve. (See Figure 3.4-1.)

Provision of a bridge in this corridor would require improvements to I-71 between Zorn Avenue and I-264 and to I-264 between I-71 and Shelbyville Road to accommodate projected traffic. These improvements would result in 276 displacements along I-264.

Two alternatives (Alternatives B-1 and B-2) were developed in this corridor. In Kentucky, Alternative B-1 would have impacted the River's Edge subdivision and wetlands and floodplains near the Ohio River. In Indiana, Alternative B-1 would have impacted wetlands and floodplains associated with Lancassage Creek, a marina, a residential development, farmland and the Clark Maritime Center.

Alternative B-2 is a modification of Alternative B-1, developed to minimize impacts to the Clark Maritime Center. The only change from Alternative B-1 is at the north end, where Alternative B-2 was shifted west. This change moved the alternative closer to a residential subdivision in Indiana.

Both Near East corridor alternatives would have bisected the residential community on the northwest side of the Ohio River, in Indiana. As a result, changes in access and impacts to community cohesion would have resulted. Based on preliminary field investigations, such impacts raised environmental justice concerns because this area consists of a predominantly low-income and elderly population. Additionally, both alternatives would have impacted several historic properties in Kentucky near I-71. Alternative B-2 would also have displaced an historic farmstead in Indiana.

The alternatives in this corridor would have created a slight economic benefit, as new and improved access would have been provided to areas planned for development near the Clark Maritime Center. Generally no parklands, recreation areas or wildlife refugees would have been directly affected in this corridor, even though the alternatives would cross the Ohio River just west of the Six Mile Island Nature Preserve.

A double-decked roadway option was considered for the Near East corridor alternatives but was not considered feasible and prudent because of traffic safety issues, constructibility and operational and maintenance concerns. Therefore, a traditional at-grade roadway system was recommended for further consideration.

Alternatives in this corridor received positive and negative comments from the public. Generally, positive reaction was that these alternatives would provide the best option for traffic relief downtown, would preserve the Eastern Jefferson County historic areas, and would have little impact on residents there. Also, the alternatives in this corridor are relatively short compared to those in the Far East corridor. But the public also expressed negative comments. Many believe alternatives in this corridor would not solve the cross-river transportation problems and would instead create a bottleneck at I-71 and I-264 similar to the traffic problems that occur at the Kennedy Interchange. This corridor also does not provide the best cross-river access for existing and planned development in eastern Clark and Jefferson Counties, they said. Other criticisms were that these alternatives would take more homes than other options. Some said this corridor also was not ideal for transporting hazardous materials. Concern was also expressed for the potential contamination from automobiles or a chemical spill to the nearby Southern Indiana water wells. Some thought an alternative in this corridor would be too expensive because I-71 and I-264 also would need to be widened.

Recommendation

Alternative B-1 would have impacted wetlands, floodplains and historic properties and would have caused significant residential displacements and community impacts. However, these impacts needed to be quantified to determine their severity relative to alternatives in the Far East and Downtown corridors. Since Alternative B-2 would have potentially impacted more historic and residential properties, it was eliminated from further consideration. Therefore, Alternative B-1 was recommended for evaluation in the EIS.

3.4.3 Downtown Corridor

There are a number of physical and environmental constraints in the Downtown corridor that limit potential locations for a new bridge. The most obvious locations for a new bridge are adjacent to the Kennedy Bridge. Three alternatives (Alternatives **C-1**, C-2, and C-3) were eventually developed in this corridor (Figure 3.4-2.). Alternatives **C-1** and C-3 would parallel the Kennedy Bridge on either side and connect with either of the proposed Kennedy Interchange reconstruction options considered. Alternative C-2 would connect with the I-64/Ninth Street interchange in Kentucky.

Alternative C-1 is located east of the Kennedy Bridge. In Kentucky, this alternative would pass through property presently owned by the Waterfront Development Corporation and designated for inclusion in the existing Waterfront Park. This property was recently used for

industrial purposes. The usage ceased in early 2003. In Indiana, the alternative passes through a Jeffersonville City Park that will be a portion of the ongoing USACE Greenways project. It would also pass through the edge of the Old Jeffersonville Historic District and require the acquisition of most of the commercial property that immediately abuts the east side of I-65.

Alternative C-2 would have been located west of the Clark Memorial Bridge (U.S. 31) and is referred to as the Ninth Street alternative. It was developed in response to public and stakeholder comments received during this study. In Kentucky, this alternative would have connected with the existing Ninth Street interchange with I-64. Lack of adequate lanes for exit and entrance ramps from the Kennedy Interchange onto and off of the Kennedy Bridge would continue to be a source of congestion.

As part of this alternative, the Ninth Street interchange would have been reconstructed and other improvements would have been necessary to Ninth Street (Roy Wilkins Boulevard). Two options were developed for this potential interchange reconstruction, one option included ramps that would extend over the Ohio River.

This alternative would have crossed the Ohio River just east of the Falls of the Ohio River; entered Indiana within the boundary of Ashland Park; continued northeast adjacent to the Ashland Oil Company storage tanks and passed through two historic homes on Woerner Avenue. It then would have turned slightly east, passing between two historic districts (the Colgate and the Ohio Falls Car and Locomotive Company), and then merging into I-65 in the vicinity of Tenth Street.

Alternative C-3 would have been located on the west side of the Kennedy Bridge. In Kentucky, this alternative would have crossed over developed recreational areas in the Waterfront Park. In Indiana, after entering across the Greenway park area, this alternative would have impacted the Harbors condominium apartment complex and the edge of the newly developed Jeffersonville commercial center being constructed at the site of the old railroad piggyback yard.

With regard to water resources, Alternative C-2 would have created more floodplain impacts than either Alternative **C-1** or C-3 and would have been closer to the Falls of the Ohio River State Park. Generally, only minor impacts to biological resources would occur with any of these alternatives. All three alternatives would potentially impact historic buildings and parklands along the Ohio River. Alternatives C-2 and C-3 would have potentially had greater negative impacts on parkland in both Indiana and Kentucky. Alternative C-2 would have impacted historic sites in Kentucky. Alternative C-3 had more commercial impacts in Indiana and Kentucky. Alternative C-3 would also have been close to the new Louisville Slugger Field baseball stadium in downtown Louisville and would have impacted more of its adjacent parking lot.

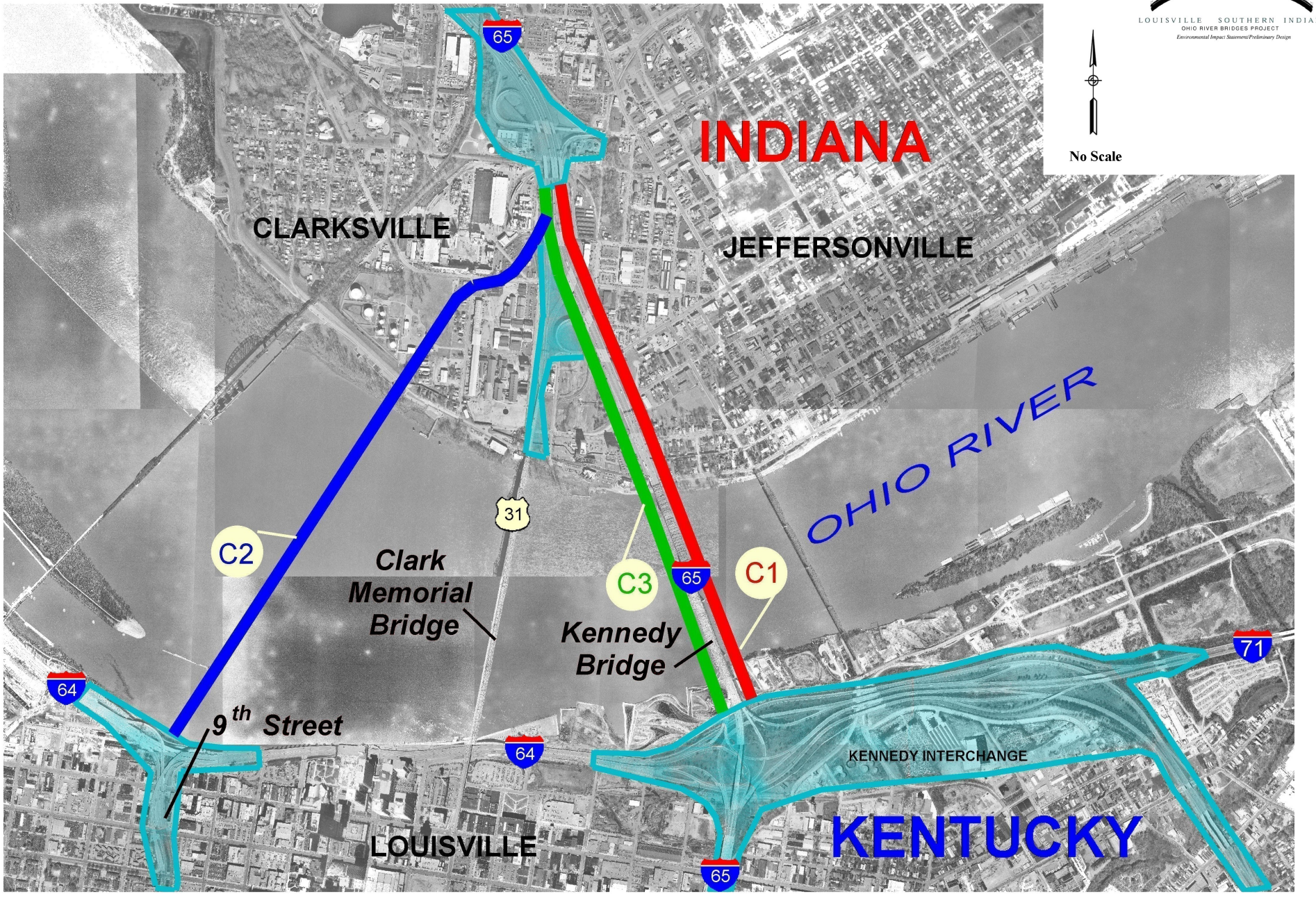


Figure 3.4-2

Preliminary Alignments
Downtown Corridor

Some residential and business displacements would have occurred as part of all three alternatives. However, Alternative C-2 would have had significantly more community impacts since it would have impacted the neighborhoods along Ninth Street in downtown Louisville, created changes in access and affected community cohesion. Alternative C-2 would also have had significant environmental justice concerns with regard to both lower income and minority populations. Risk of discovering contaminated materials on Alternatives **C-1**, C-2 and C-3 is high due to documented past industrial uses that existed, or continue to exist, in downtown Louisville and Jeffersonville, Indiana.

The public expressed a variety of opinions about the alternatives in the Downtown corridor. Louisville civic leaders and those affiliated with the developing Waterfront Park said they preferred **Alternative C-1**. This option would keep noise concentrated and would do the least damage to the park. Residents and city officials in Jeffersonville, however, think this option will impact businesses and a historic residential area of Jeffersonville along the riverfront where this alternative is proposed. They are especially concerned about residences and businesses just east of the bridge and along I-65, including the Clark Memorial Hospital. Many believed Alternative C-3 was not desirable because it would destroy recent new residential and commercial development.

Alternative C-2 received mixed reviews. This alternative was developed at the suggestion of Jeffersonville Mayor Tom Galligan who said he wanted to provide a solution that would minimize impacts to Jeffersonville residences and businesses. Clarksville residents and city officials, however, stated they were concerned about the damage this option would do to residential areas in their town and to parks along the river. In Louisville, residents near Ninth Street said they were concerned about an increase in traffic on Ninth Street, which they said is already congested and poses a danger for the neighborhood. Noise and visual impacts also were a concern. Another issue is the symbolic nature of Ninth Street, which they said has been a racial divide between white and black communities. They believe that more traffic on the street would make this more of a dividing line. Other concerns are that Ninth Street would pose navigational problems, and that construction would be difficult. Ramp height was also an issue because ramps would have to be built high into the air to meet standards.

Recommendation

Preliminary screening in this corridor was not sufficient to eliminate any of the alternatives from consideration. Given the complexity of potential impacts in this corridor, Alternatives **C-1**, C-2, and C-3 were recommended for evaluation in the EIS. Potential impacts are quantified in Chapter 5 to assist in determining the relative merits of each alternative

3.5 Alternatives Selected for Evaluation in the EIS

Based on the initial screening conducted on the broad range of alternatives, the set of alternatives to be evaluated in the EIS was selected. These alternatives are described in this section.

3.5.1 No-Action Alternative

The No-Action Alternative assumes that all of the projects in the current KIPDA RMP will be implemented, except for the reconstruction of the Kennedy Interchange and the addition of two new bridges over the Ohio River. In addition to major planned projects, the plan also includes a series of TDM and TSM programs and policies intended to reduce travel demand and increase the efficiency of the transportation system. This alternative will not meet the Purpose and Need for the project but serves as a baseline when comparing the effectiveness and potential impacts of the other alternatives.

3.5.2 Transportation Management Alternative

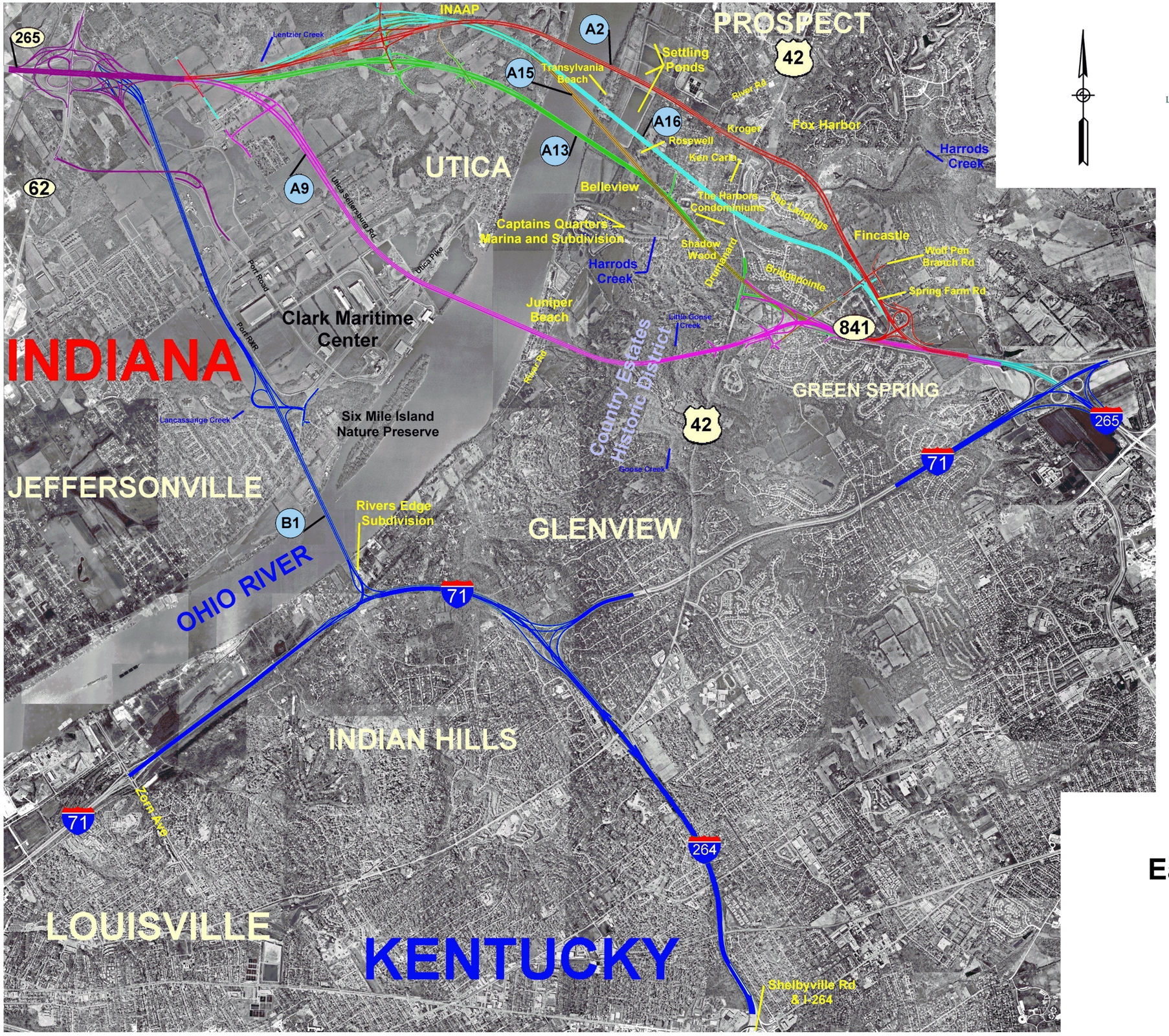
The TM Alternative includes a combination of TDM, TSM and Mass Transit improvements that would not be effective as stand alone alternatives, but that offer benefits relative to the needs identified in the project area.

- **TDM**: non-motorized facility enhancements and employer-based trip reduction programs
- **TSM**: expanded Intelligent Transportation System applications and incident management
- **Mass Transit**: enhanced bus service

A more detailed description of the improvements included in this alternative is provided in Section 3.2.

3.5.3 One Bridge/Highway Alternative

The One Bridge/Highway Alternative included reconstruction of the Kennedy Interchange and the addition of a new river crossing in either the Far East, Near East or Downtown corridors. In addition, this alternative included the TDM, TSM and Mass Transit components of the TM Alternative. Different alternatives within the three corridors were also evaluated in this EIS. A summary of the improvements for each alternative is provided below. The alternatives retained for evaluation are shown on Figures 3.5-1 and 3.5-2. Detailed plans and typical sections of these alternatives are shown in Appendix A. In addition, the reconstruction of the Kennedy Interchange with no new Ohio River bridge was included with the single bridge Near East and Far East alternatives.



LOUISVILLE SOUTHERN INDIANA
OHIO RIVER BRIDGES PROJECT
Environmental Impact Statement/Preliminary Design

SCALE IN FEET
0 5000

0 2000
SCALE IN METERS

East End Alignments Carried Forward

Figure 3.5-1

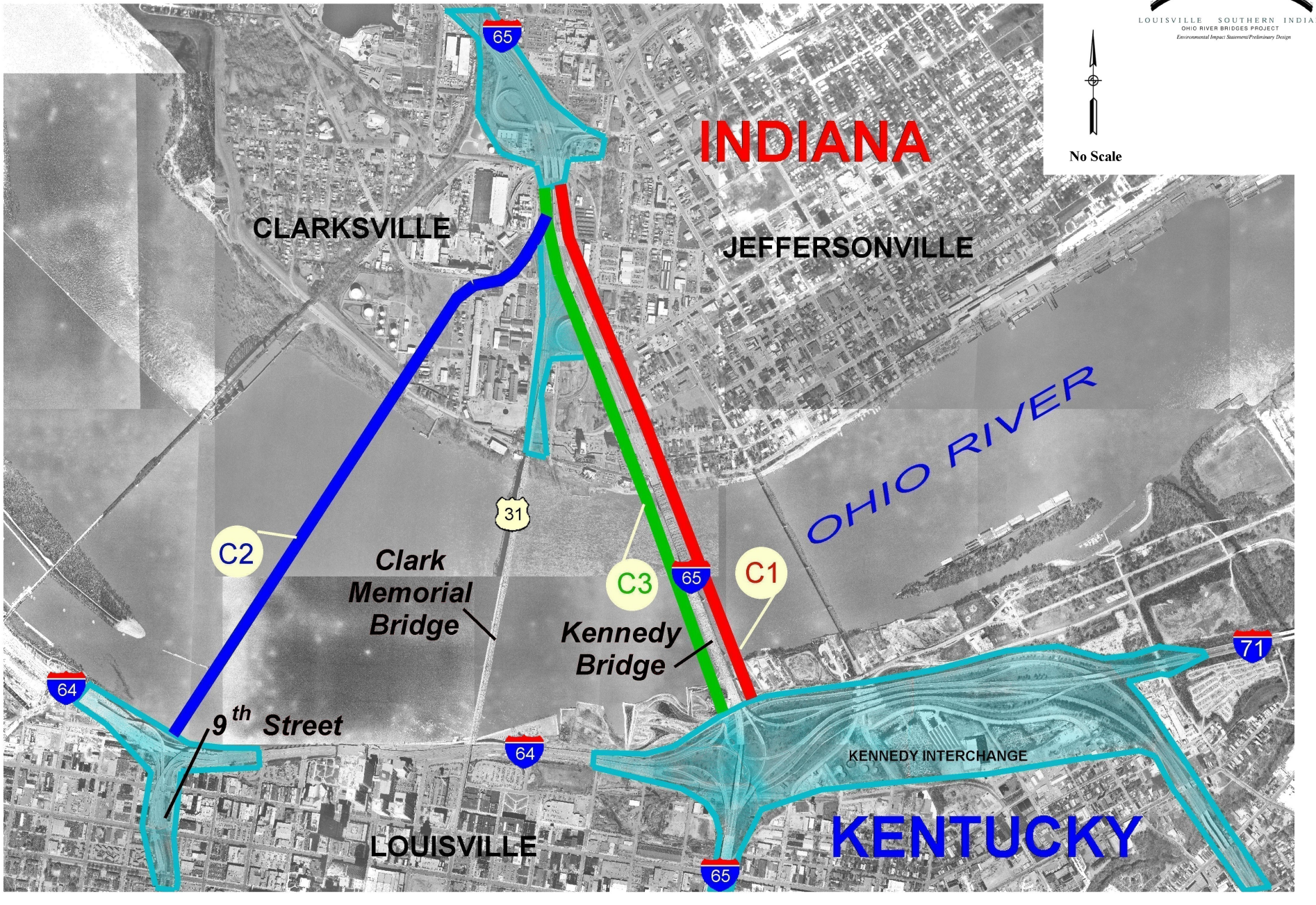


Figure 3.5-2

Downtown Alignments Carried Forward

Far East Corridor

Alternative A-2

- Six-lane freeway on new alignment (including a six-lane bridge at milepost (MP) 594.8 across the Ohio River)
- Minimum right-of-way: 200 feet in Kentucky; 260 feet in Indiana
- New interchanges at:
  - U.S. 42 Area (trumpet interchange at Spring Farm Road)
  - Salem Road
  - S.R. 265/S.R. 62 (three options)
- Kennedy Interchange Reconstruction (two options – rebuild In-Place and rebuild to the south)

Alternative A-9

- Six-lane freeway on new alignment (including a six-lane bridge at milepost MP 596.8 across the Ohio River)
- Minimum right-of-way: 200 feet in Kentucky; 260 feet in Indiana
- Interchanges at:
  - U.S. 42 Area (braided diamond at Wolf Pen Branch Road)
  - S.R. 265/S.R. 62 (three options)
- Kennedy Interchange Reconstruction (two options – rebuild In-Place and rebuild to the south)

Alternative A-13

- Six-lane freeway on new alignment (including a six-lane bridge at milepost MP 595.4 across the Ohio River)
- A portion of the new alignment would be a six lane tunnel underneath the Drumanard Property
- Minimum right-of-way: 200 feet in Kentucky; 260 feet in Indiana
- Interchanges at:
  - U.S. 42 Area (full diamond at Wolf Pen Branch Road or half diamond at U.S. 42)
  - Salem Road
  - S.R. 265/S.R. 62 (three options)
- Kennedy Interchange Reconstruction (two options – rebuild In-Place and rebuild to the south)

Alternative A-15 (See Sheets 1 through 6 of Appendix A.1)
Six-lane freeway on new alignment (including a six-lane bridge at milepost MP 595.1 across the Ohio River)

- A portion of the new alignment would be a six lane tunnel underneath the Drumanard Property
- Minimum right-of-way: 200 feet in Kentucky; 260 feet in Indiana
- Interchanges at:

  - U.S. 42 Area (full diamond at Wolf Pen Branch Road or **half diamond at U.S. 42**): See Appendix A.3)
  - Salem Road
  - S.R. 265/S.R. 62 (**Option 1**, Option 2, Option 3: See Appendix A.2
- Kennedy Interchange Reconstruction (two options – rebuild In-Place and **rebuild to the south**)

Alternative A-16 (See Sheets 1 through 6 of Appendix A.1)

- Six-lane freeway on new alignment (including a six-lane bridge at milepost MP 595.1 across the Ohio River)
- Minimum right-of-way: 200 feet in Kentucky; 260 feet in Indiana
- Interchanges at:
  - U.S. 42 Area (trumpet interchange at Spring Farm Road)
  - Salem Road
  - S.R. 265/S.R. 62 (three options)
- Kennedy Interchange Reconstruction (two options – rebuild In-Place and rebuild to the south)

Near East Corridor

Alternative B-1 (See Sheets 1, and 9 through 15 of Appendix A.1)

- Six-lane freeway on new alignment (including a six-lane bridge at milepost MP 598.5 across the Ohio River)
- Minimum right-of-way: 200 feet in Kentucky; 260 feet in Indiana
- Addition of one lane in each direction on I-71 between Zorn Avenue and I-264 and on I-264 between I-71 and Shelbyville Road
- Interchanges at:
  - I-71
  - Utica Pike
  - S.R. 265/S.R. 62 (three options)
- Kennedy Interchange Reconstruction (two options – rebuild In-Place and rebuild to the south)

Downtown Corridor

Alternative C-1 (See Appendix A.4)

- Reconfiguration of the existing seven-lane Kennedy Bridge to a six-lane bridge to accommodate I-65 southbound traffic
- Addition of a new six-lane bridge at MP 603.1 over the Ohio River, just east of the Kennedy Bridge to accommodate I-65 northbound traffic
- Provides for six I-65 through lanes in Kentucky and eight I-65 through lanes in Indiana. The other lanes are required for exit and entrance ramps.
- I-65 and U.S. 31 reconfiguration in Indiana

- Kennedy Interchange Reconstruction (two options – rebuild In-Place and **rebuild to the south**)

Alternative C-2 (See Appendix A.4)

- New six-lane bridge at MP 604.1 over the Ohio River
- Conversion of the inside northbound lane on the Kennedy Bridge to a reversible lane (i.e., southbound in the morning and northbound in the evening)
- Reconfiguration of I-64 and 9th Street to provide access to new bridge
- I-65 and U.S. 31 reconfiguration in Indiana
- New interchange at Clark Boulevard
- Kennedy Interchange Reconstruction (two options – rebuild In-Place and rebuild to the south)

Alternative C-3 (See Appendix A.4)

- Reconfiguration of the existing seven-lane Kennedy Bridge to a six-lane bridge
- Addition of a new six-lane bridge at MP 603.2 over the Ohio River, just west of the Kennedy Bridge
- Provides for six I-65 through lanes in Kentucky and eight I-65 through lanes in Indiana. The other lanes are required for exit and entrance ramps.
- I-65 and U.S. 31 reconfiguration in Indiana
- Kennedy Interchange Reconstruction (two options – rebuild In-Place and rebuild to the south)

As mentioned above, Appendix A provides more detailed drawings of the Bridge/Highway Alternatives. This appendix is organized as follows:

A.1 East End Alternatives (Far East and Near East corridors)
A.2 S.R. 265/S.R. 62 Interchange Options (Far East and Near East alternatives)
A.3 Interchange Options in U.S. 42 Area (Far East alternatives)
A.4 Kennedy Interchange Reconstruction (All alternatives, including Near East and Far East single bridge alternatives)
A.5 Reconfiguration of the Ninth Street Area (Alternative C-2)
A.6 Interstate Reconfiguration in Indiana (Downtown alternatives)
A.7 I-71 Frankfort Avenue/Ohio Street
A.8 I-64 Mellwood/Story Avenues
A.9 Typical Sections

3.5.4 Two Bridges/Highway Alternative

The Two Bridges/Highway Alternative includes reconstruction of the Kennedy Interchange and the addition of two new river crossings, with one in the Downtown corridor and one in either the Far East or Near East corridor. The Kennedy Interchange includes modifications to I-71 at Frankfort Avenue and I-64 at Mellwood and Story Avenues. These modifications are depicted in Appendices A.7 and A.8. The same alternatives described with the One

Bridge/Highway Alternative are options for the Two Bridges/Highway Alternative. In addition, the bridge/highway alternatives include the TDM, TSM and Mass Transit components of the TM Alternative.

3.6 Analysis of EIS Alternatives

In Section 3.3, four alternatives were recommended for further evaluation: No-Action, Transportation Management, One Bridge/Highway and Two Bridges/Highway. The bridge/highway alternatives include associated highway approaches and reconstruction of the Kennedy Interchange. The Two Bridges/Highway Alternative includes a new river crossing in the Downtown corridor and a new river crossing in either the Far East or Near East corridor.

To conduct a more detailed evaluation of each alternative in terms of the performance measures outlined in the Purpose and Need Statement in Chapter 2, year 2025 traffic forecasts were generated for the alternatives retained for further study. Four sets of forecasts were developed for both the One Bridge/Highway and Two Bridges/Highway alternatives as follows:

One Bridge/Highway Alternative

- Far East (A alternatives)
- Near East (Alternative B-1)
- Downtown (Alternatives **C-1** or C-3)
- Downtown (Alternative C-2)

Two Bridges/Highway Alternative

- Far East and Downtown (Alternatives **C-1** or C-3)
- Far East and Downtown (Alternative C-2)
- Near East and Downtown (Alternatives **C-1** or C-3)
- Near East and Downtown (Alternative C-2)

Different traffic forecasts were developed in the Downtown corridor (Alternatives **C-1** or C-3 versus Alternative C-2) because these alternatives have different termini in Kentucky.

(The impacts or summaries of the Preferred Alternative comprised of **Alternatives A-15** and **C-1** described below in Section 3.7 are presented in bold type in this section.)

3.6.1 Efficient Cross-River Mobility for Population and Employment Growth

Table 3.6-1 lists the projected daily VMT, VHT and VHD for the LMA. As identified in Chapter 2, these measures will increase substantially between 1990 and 2025 for the No-Action Alternative, particularly VHD, which is projected to increase 225 percent during this period. The one percent reduction in VMT for the two bridge alternative constitutes a significant reduction in the VMT for the five county area. For the Transportation Management and Bridge/Highway alternatives, however, both VHT and VHD are projected to decrease relative to the No-Action Alternative. VHT is projected to decrease one to six

percent, with the greatest decrease projected for the Two Bridges/Highway Alternative. VHD is projected to decrease six to 22 percent, again with the greatest decrease projected for the Two Bridges/Highway Alternative.

The travel distance and time savings of each alternative, compared to the No-Action Alternative, were converted to monetary values using unit cost estimates developed by the FHWA. (See "Highway Economic Requirements System – HGRS," December 2000). Unit cost values of 20 cents per vehicle mile and $18.00 per vehicle hour were used.

The year 2000 value, using a discount rate of five percent, of the projected 20 year post-opening travel distance and travel time savings are summarized in Table 3.6-1. These range from $0.4 billion for the Transportation Management Alternative, between $0.5 and $0.6 billion for the Single Bridge Downtown Alternatives, between $0.9 to $1.0 billion for the Single Bridge Eastern Bridge Alternatives to $1.4 to $1.7 billion for the Two Bridge Alternatives. For the Two Bridge Alternatives, those with a Far East Bridge are projected to have approximately $0.2 billion greater savings than those with a Near East bridge.

TABLE 3.6-1
WEEKDAY 2025 TRAVEL SUMMARIES

Alternative	VMT	Percent Change	VHT	Percent Change	VHD	Percent Change	20 Yr. User Benefits ($ Billions)
No-Action	31,731,000		923,000		208,000		
Transp. Management	31,745,000	0	910,000	-1	195,000	-6	0.40
One Bridge/Highway							
Far East	31,735,000	0	891,000	-3	178,000	-14	0.98
Near East	31,697,000	0	893,000	-3	181,000	-13	0.93
Downtown (C-1/C-3)	31,766,000	0	903,000	-2	189,000	-9	0.60
Downtown (C-2)	31,752,000	0	906,000	-2	192,000	-8	0.52
Two Bridges/Highway							
Far East and C-1/C-3	**31,542,000**	**-1**	**872,000**	**-6**	**163,000**	**-22**	**1.63**
Far East and C-2	31,518,000	-1	871,000	-6	163,000	-22	1.67
Near East and C-1/C-3	31,576,000	0	878,000	-5	170,000	-18	1.44
Near East and C-2	31,515,000	-1	876,000	-5	168,000	-19	1.52

Percent change is relative to the No-Action Alternative. Bold Row is for Preferred Alternative.

3.6.2 Traffic Congestion

Bridge Demand as Percent of Capacity

Under the No-Action Alternative, daily capacity would have been exceeded on each of the three Ohio River crossings in the LMA. Absent additional cross-river capacity, total daily

cross-river traffic volumes would have exceeded total capacity by 30 percent under the No-Action Alternative in 2025. The Kennedy Bridge is already over capacity. The Sherman Minton and Clark Memorial Bridges are projected to exceed capacity by 2015. By 2025, excess demand will range from 12 percent on the Clark Memorial Bridge to over 40 percent on the Kennedy Memorial Bridge.

Each alternative was evaluated to determine whether it would improve or resolve these capacity deficiencies. The projected weekday Ohio River vehicle crossings and demand as a proportion of capacity are presented in Table 3.6-2. Volume/capacity ratios of greater than one indicates that peak hour operations will be at LOS values lower than D – the minimally acceptable service level. Unsatisfactory peak hour operating conditions would be associated with the v/c ratios higher than 1. See below for further discussion of LOS.

Transportation Management Alternative

Total weekday traffic volumes on the Ohio River bridges are projected to remain the same as the No-Action Alternative. Therefore, this alternative would not have improved the capacity deficiencies projected for the Ohio River Crossings.

One Bridge/Highway Alternative

For these alternatives, weekday volumes across the Ohio River were projected to increase by 10,000 and 20,000 vehicles. The combined total Ohio River volume-capacity ratio for the single bridge alternative would have reduced the deficiency ratio from 1.3 to approximately 1.0 with the East End alternatives having a slightly lower value than the Downtown alternatives.

Daily demand would have been met on the Clark Memorial Bridge by all single bridge alternatives. All would also have reduced projected demand deficiencies on the Sherman Minton Bridge but not to desirable levels. Daily demand would have been met on the Kennedy Bridge only if a parallel bridge were constructed (Alternatives **C-1** or C-3). Additionally, daily demand would be met on all proposed new crossings.

Two Bridges/Highway Alternatives

For these alternatives, projected weekday volumes across the Ohio River would increase by between 18,000 and 25,000 vehicles. However, the addition of 10 or 12 new lanes across the Ohio River would accommodate the projected resultant daily demand.

TABLE 3.6-2
DAILY OHIO RIVER VEHICLE CROSSINGS AND DEMAND/CAPACITY RATIOS

Year/ Alternative	Kennedy Memorial Bridge	Sherman Minton Bridge	Clark Memorial Bridge	Far East Bridge	Near East Bridge	Ninth Street Bridge	New Lanes	TOTAL River Crossings
1990	96,000 0.89	51,400 0.48	19,000 0.63	-	-	-	-	166,400 0.68
2000	133,000 1.06	85,000 0.79	26,000 0.87	-	-	-	-	244,000 0.92
2025								
No-Action	178,600 1.42	129,700 1.20	33,700 1.12	-	-	-	-	342,000 1.30
TM	179,700 1.43	129,800 1.20	32,500 1.08	-	-	-	-	342,000 1.30
One Bridge/Highway								
Far East	146,100 1.16	117,400 1.09	27,600 0.92	72,100 0.67	-	-	+6	363,200 0.98
Near East	135,200 1.07	122,300 1.13	25,200 0.84	-	81,000 0.75	-	+6	363,700 0.98
Downtown (C-1/C-3)	204,900 0.95	124,500 1.15	23,100 0.77	-	-	-	+6	352,500 1.00
Downtown (C-2)	156,800 1.24	128,000 1.19	25,500 0.85	-	-	46,300 0.64	+4	356,600 1.06
Two Bridges/Highway								
Far East + C-1/C-3	**160,800 0.74**	**111,600 1.03**	**20,500 0.68**	**70,000 0.65**	**-**	**-**	**+12**	**362,900 0.78**
Far East + C-2	122,100 0.97	110,500 1.02	21,100 0.70	71,000 0.66	-	37,100 0.52	+10	361,800 0.81
Near East + C-1/C-3	150,900 0.70	119,400 1.11	19,800 0.66	-	76,900 0.71	-	+12	367,000 0.79
Near East + C-2	112,100 0.89	111,600 1.03	20,400 0.68	-	80,300 0.74	36,000 0.50	+12	360,400 0.81

Note: In each row, the top number is the projected average daily traffic; the bottom number is the volume-to-capacity ratio. The "New Lanes" column indicates the number of new through lanes that would be provided across the Ohio River for each alternative. Bold Rows are for Preferred Alternative.

Projected demand on both the Kennedy Memorial and Clark Memorial Bridges would be met, while demand on the Sherman Minton Bridge would not. Daily demand would be met on each of the proposed new crossings.

Bridge Levels of Service

As described in Section 2.2-4, LOS values provide a measure of congestion on a particular roadway segment. Levels of service range from A to F, with LOS A indicating the least congestion and best traffic flow, and LOS F indicating the most congestion and worst flow. LOS C is considered acceptable for peak travel periods in urban areas. Congestion levels are

nominal and minimal at LOS C. Drivers can operate at desirable speeds and can safely maneuver in the traffic stream. Provision of LOS C is used as the criterion for design of new facilities or rehabilitation of existing roadways. LOS D operation in urban areas is considered minimally acceptable for existing urban highways. Indiana's highway design policy is that LOS C is the 20-year design criterion for both new and reconstructed facilities.

Projected levels of service under the No-Action Alternative are LOS E on the Kennedy Memorial and Sherman Minton bridges and LOS D on the Clark Memorial Bridge. Projected LOS on the Ohio River crossings are shown in Table 3.6-3.

TABLE 3.6-3
PROJECTED 2025 BRIDGE LEVELS OF SERVICE

Alternative	Kennedy Memorial Bridge	Sherman Minton Bridge	Clark Memorial Bridge	Far East Bridge	Near East Bridge	Ninth Street Bridge
No-Action	E	E	D	-	-	-
Transportation Management	E	E	D	-	-	-
One Bridge/Highway						
Far East	E	E	C	C	-	-
Near East	D	E	C	-	C	-
Downtown (C-1/C-3)	D	E	C	-	-	-
Downtown (C-2)	E	E	C	-	-	C
Two Bridges/Highway						
Far East and C-1/C-3	**C**	**E**	**B**	**C**	**-**	**-**
Far East and C-2	D	E	B	C	-	C
Near East and C-1/C-3	C	E	B	-	C	-
Near East and C-2	D	E	B	-	C	C

Transportation Management Alternative

Under the Transportation Management Alternative, projected levels of service on the Ohio River crossings would not have improved relative to the No-Action Alternative.

One Bridge/Highway Alternatives

On the Clark Memorial Bridge, the LOS was projected to improve to LOS C if a single new bridge were constructed in any of the three corridors. Provision of a Near East or Downtown (Alternatives C-1 or C-3) bridge would improve the LOS on the Kennedy Memorial Bridge to LOS D. Otherwise, it is projected to remain LOS E. The LOS on the Sherman Minton

Bridge was projected to remain LOS E with this alternative, regardless of which option is considered.

Two Bridges/Highway Alternatives

Projected level of service improvements from E to C on the Kennedy Memorial Bridge is projected for both Alternatives **C-1** and C-3. This compares to the LOS improvements on the Kennedy Bridge from E to D projected with Alternative C-2 (Ninth Street). Clark Memorial Bridge LOS improvements from D to B were projected for all two bridge alternatives. The LOS on the Sherman Minton Bridge, however, is projected to remain LOS E.

Kennedy Interchange Operations

Three performance measures were identified relative to traffic operations in the Kennedy Interchange: peak hour speed, peak hour throughput, and link density. Under the No-Action Alternative, average peak hour speed in the Kennedy Interchange is below 20 mph and throughput is 84 and 91 percent, respectively for the A.M. and P.M. peak hours. This lack of 100 percent throughput of projected peak hour travel indicates that all projected demand would not have been accommodated during the peak hours. Unmet demand would either have to be served at other times including extending the peak period of travel, or by diversion to non-freeway facilities or other modes of travel. Without improvements, the Kennedy Interchange will be severely congested during the peak travel periods.

Link densities for existing (2000) and future No-Action (2025) conditions are shown on Figure 3.6-1. On this figure, the Measure of Effectiveness (MOE) is defined as link density (average vehicles/mile). They are divided into six ranges that have LOS equivalents. These ranges and LOS equivalents are listed below:

Less than 10:	A
10 to 16:	B (shown as light green)
16 to 24:	C (shown as dark green)
24 to 32:	D (shown as yellow)
32 to 45:	E (shown as orange)
45 or above:	F (shown as red)

Figure 3.6-1 shows that much of the Kennedy Interchange will operate at LOS F in 2025 under the No-Action Alternative, particularly in the P.M. peak hour. Very few segments will operate at LOS C or better.

Transportation Management Alternative

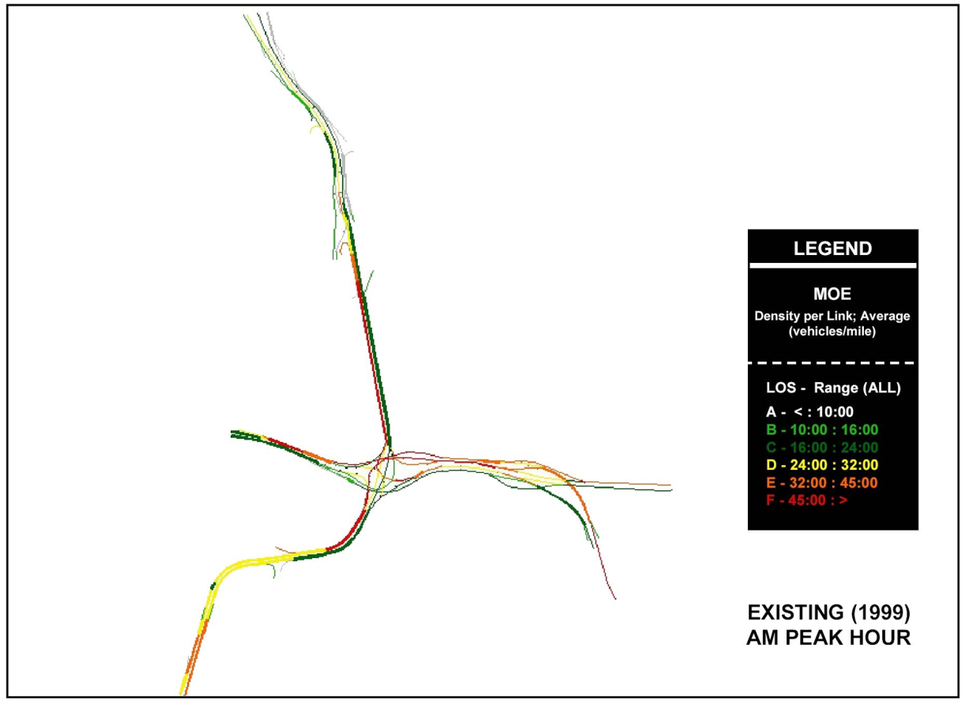
This alternative did not include any improvements to the Kennedy Interchange. As a result, congestion would not have been reduced in the Kennedy Interchange.

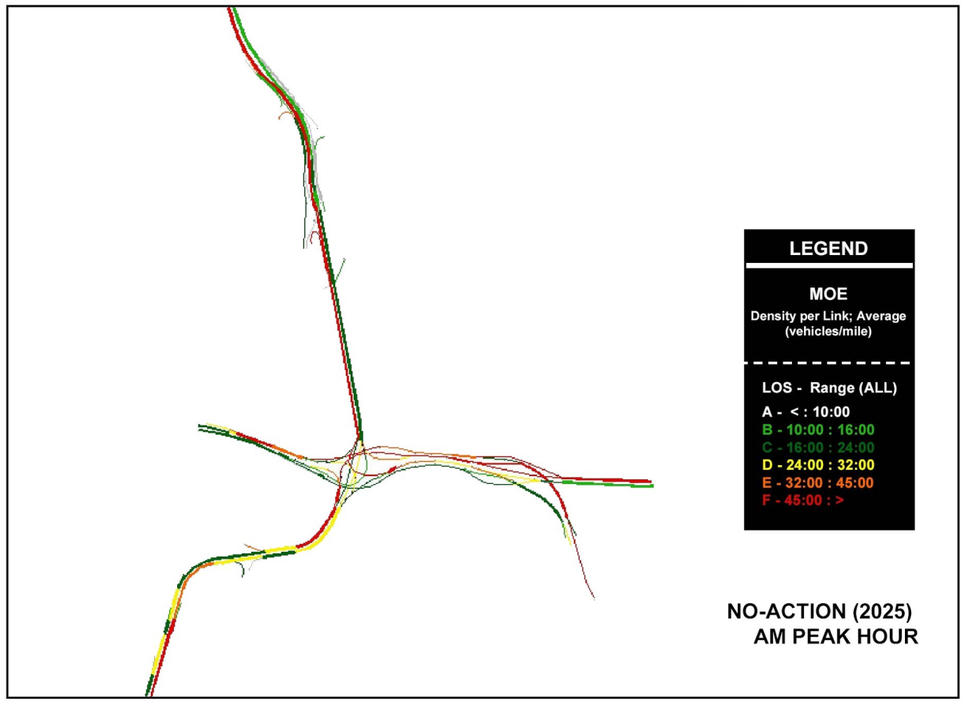
Bridge/Highway Alternatives

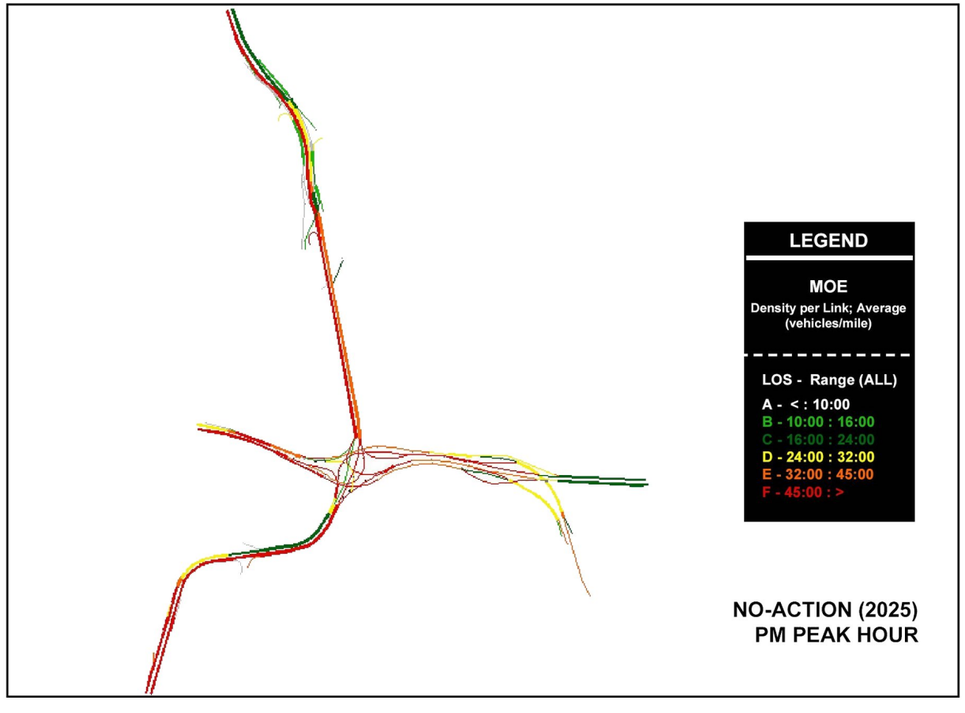
Table 3.6-4 lists average speed, VHD and throughput projected for the Kennedy Interchange area under the bridge/highway alternatives. Kennedy Interchange link densities for these alternatives are shown on Figures 3.6-2 and 3.6-3. The link density figures showed that these alternatives would result in improved operations in the Kennedy Interchange. Very few segments are projected to operate at LOS E or F.

The data presented in Table 3.6-4 indicates that traffic operations would be substantially improved in the Kennedy Interchange if one of the bridge/highway alternatives were implemented. Projected average speeds exceed 45 mph for most of the alternatives. Additionally, throughput is 100 percent. Differences in A.M. peak period travel speeds and VHD were noted when single bridge and two bridge alternatives were compared. Travel speeds in the 47-49 mph range are projected for the two bridge and single parallel Kennedy Bridge. Similarly, projected VHD in the A.M. peak period for the two bridge alternatives were approximately one-fifth those projected for the East End and downtown Ninth Street single bridge alternatives.

This compares to 31 and 33 mph projected for the Downtown Ninth Street (Alternative C-2) and East End single bridge alternatives. Only the C-1/C-3 Downtown alternatives provides adequate I-65 exit and entrance lanes/ramps for the Kennedy Interchange onto and off of the Kennedy Bridge for proper operation of the Kennedy Interchange to eliminate existing back-ups and congestion. Alternative C-2 and other East End single bridge alternatives do not provide adequate I-65 lanes for exit and entrance ramps from the Kennedy Interchange onto and off of the Kennedy Bridge to eliminate existing back-ups and congestion.







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OHIO RIVER BRIDGES PROJECT

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Figure 3.6-1
KENNEDY INTERCHANGE DENSITY MAPS
EXISTING AND NO-ACTION ALTERNATIVE

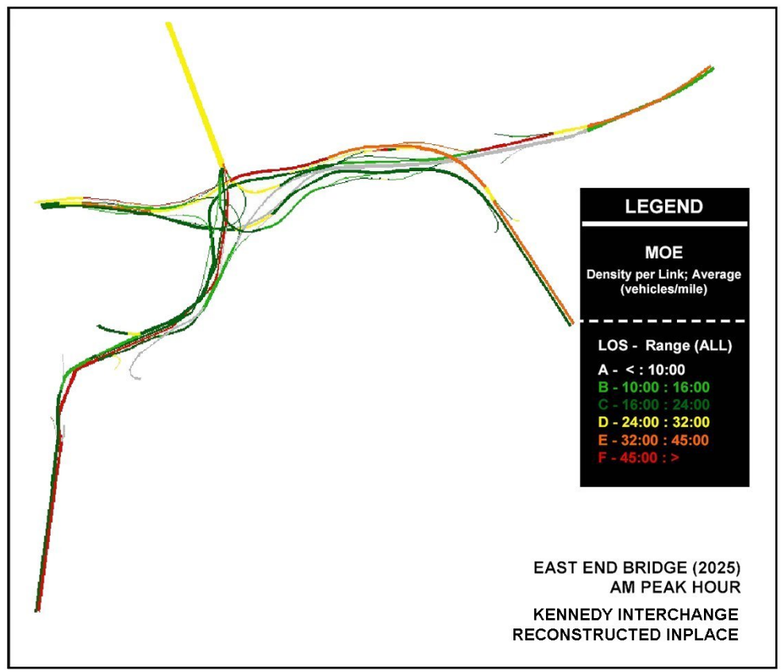
TABLE 3.6-4
KENNEDY INTERCHANGE AREA WEEKDAY OPERATIONS

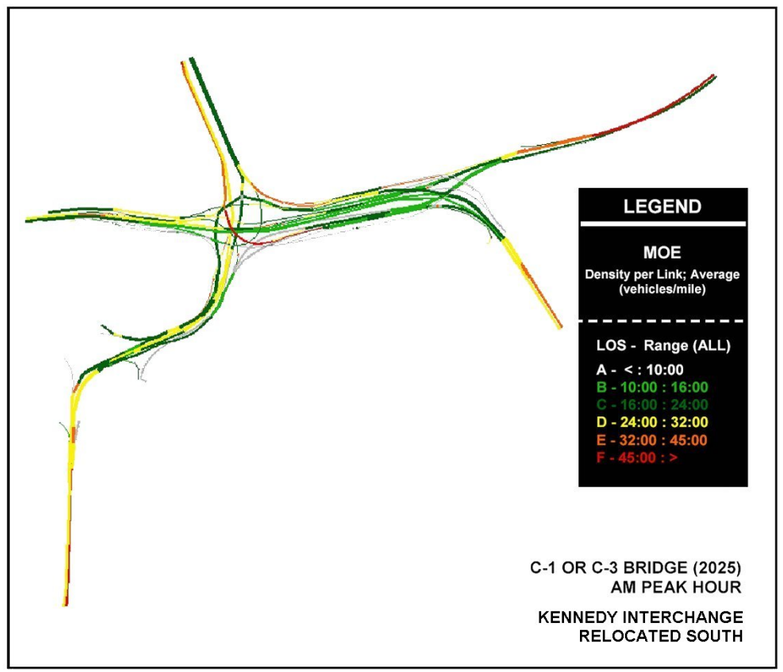
	Average Speed		Vehicle Hours Delay		Throughput	
Alternative	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**
No-Action	17 mph	16 mph	1,581	1,841	84%	91%
One Bridge/Highway						
East End Bridge (A or B)	33 mph	49 mph	600	110	100%	100%
Downtown Bridge (C-1/C-3)	47 mph	47 mph	210	210	100%	100%
Downtown Bridge (C-2)	31 mph	48 mph	680	160	99%	100%
Two Bridges/Highway						
East End (A or B) and Downtown (C-1/C-3)	**49 mph**	**48 mph**	**120**	**160**	**100%**	**100%**
East End (A or B) and Downtown (C-2)	49 mph	50 mph	120	90	100%	100%

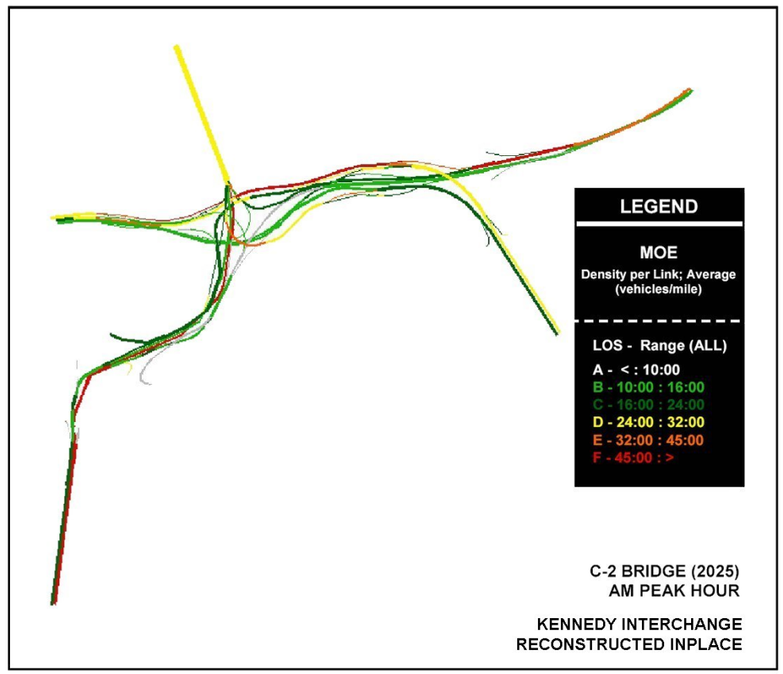
Bold Row is the Preferred Alternative.

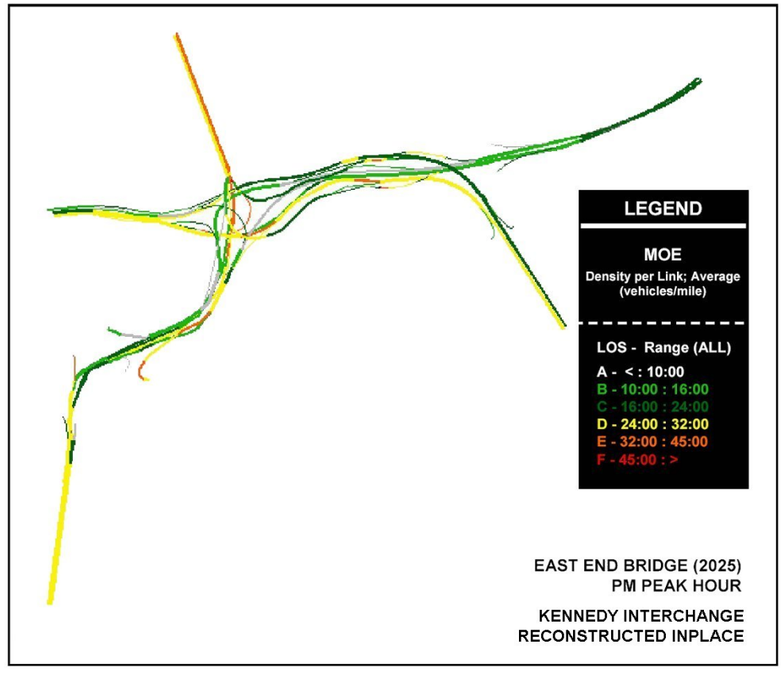
3.6.3 Traffic Safety

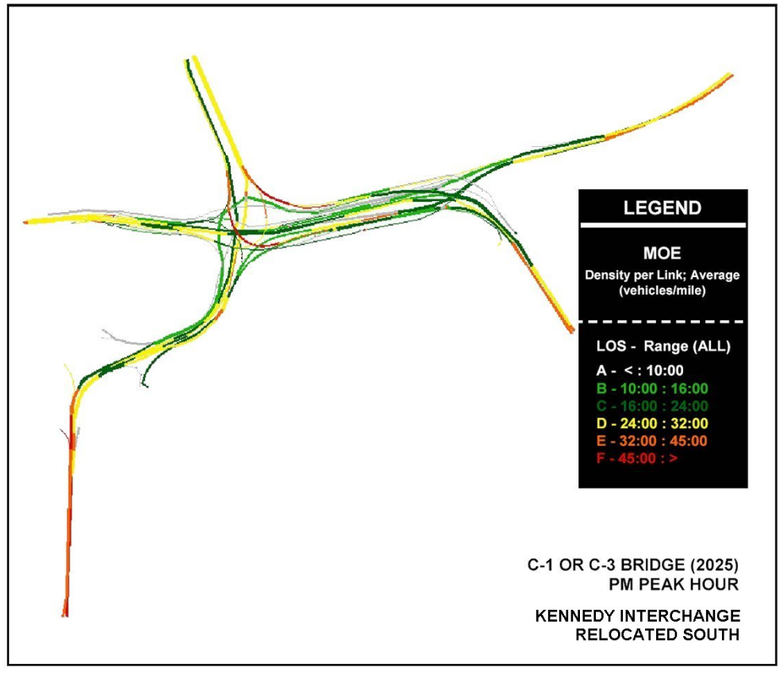
As described in Chapter 2, the Kennedy Interchange and the Kennedy Bridge have a history of high crash rates. The design geometry of the Kennedy Interchange and substantially reduced shoulder widths on the Kennedy Bridge contribute to these high crash rates. To address these problems, redesign of these facilities to current roadway design standards would be required. Neither the No-Action nor the Transportation Management Alternative would have addressed this traffic safety problem. The bridge/highway alternatives included reconstruction of the Kennedy Interchange to current roadway design standards. Improvements to the Kennedy Bridge will occur if either Alternative **C-1** or C-3 is constructed.











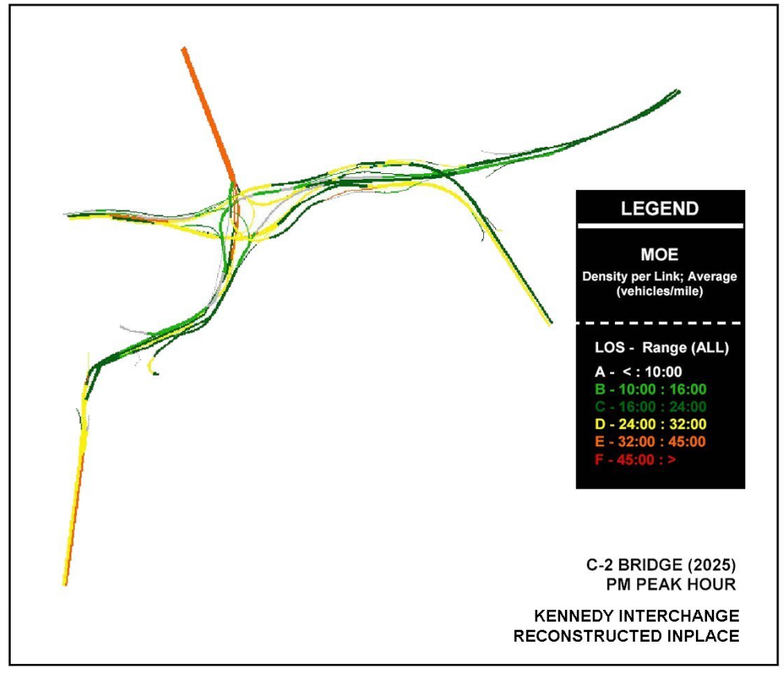


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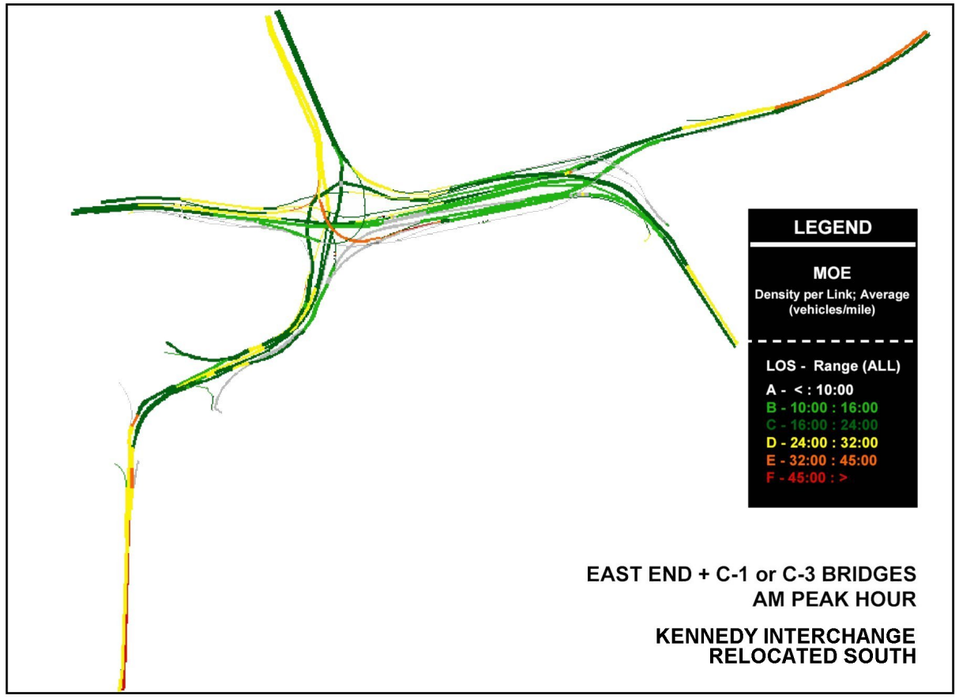
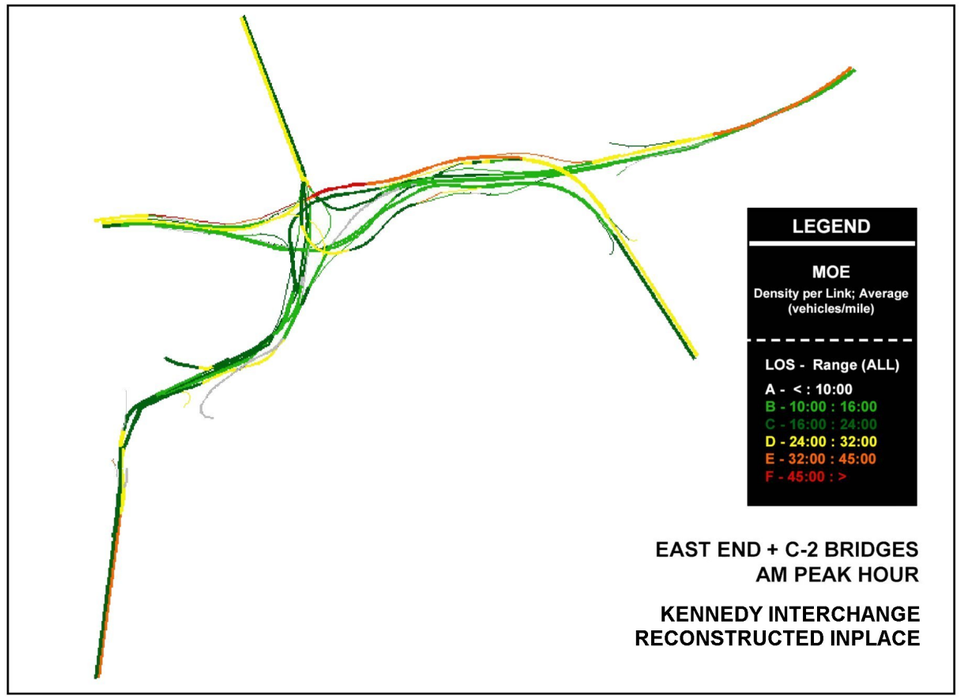
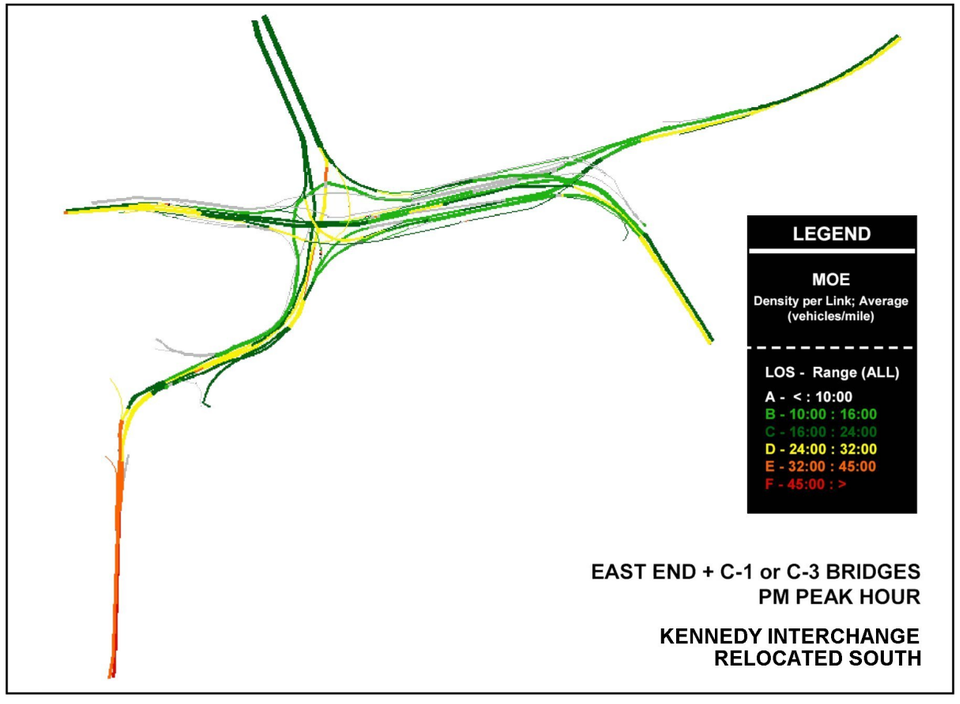
Figure 3.6-2
KENNEDY INTERCHANGE DENSITY MAPS
ONE BRIDGE/HIGHWAY ALTERNATIVE







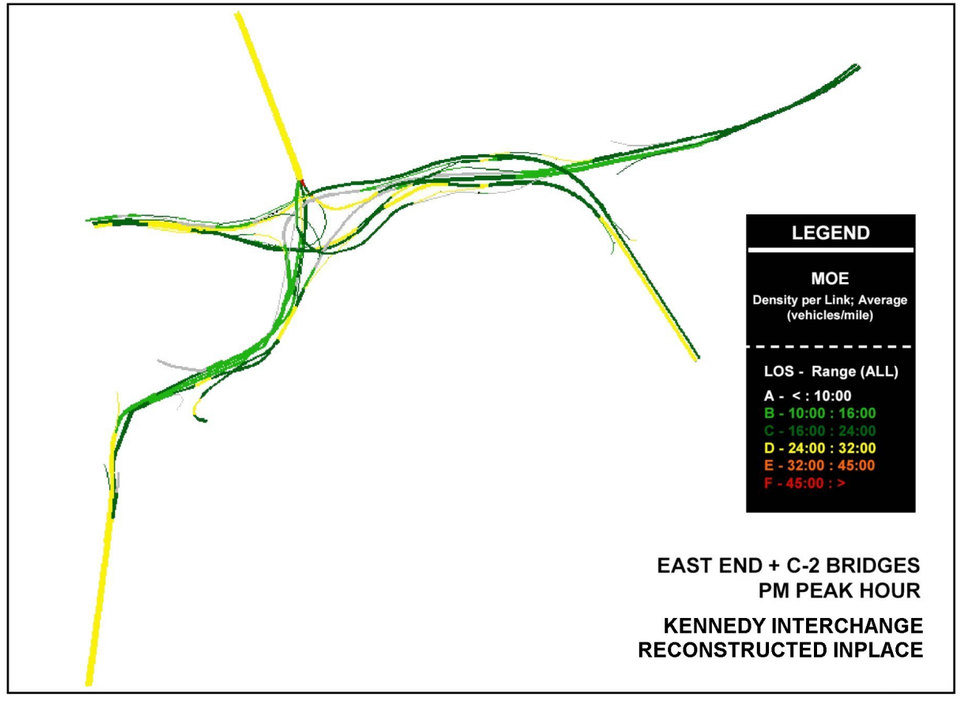


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Figure 3.6-3
KENNEDY INTERCHANGE DENSITY MAPS
TWO BRIDGES/HIGHWAY ALTERNATIVE

The reconstruction of the Kennedy Interchange will result in the removal of left hand entrances and exits. Based upon experiences of U.S. metropolitan areas where similar changes were made to eliminate left hand entrance and exit ramps, drastic reduction in crash rates of one-third to one-half of existing rates can be expected*. If a 50 percent reduction in crash rates was realized with the reconstruction of the Kennedy Interchange, a resultant crash rate equal to the average Kentucky urban freeway crash rate would be achieved.

3.6.4 Inadequate Cross-River System Linkage

All of the proposed Near East and Far East alternatives would close the existing three to five (3 – 5) mile gap of the eastern circumferential freeway. No other alternatives would do this. Some of the efficiencies introduced by this "gap closure" are discussed in the following Section 3.6.5.

The East End alternatives would provide additional cross-river system linkage and freeway rerouting alternatives. The No-Action, Transportation Management and Downtown Bridge Alternatives would not have provided enhanced linkage or traffic rerouting capabilities.

3.6.5 Consistency with Local Transportation Plans

A new bridge in the Far East or Near East corridor completing the eastern portion cross-river transportation system would also be consistent with locally approved transportation plans. Alone, it would not have resolved Kennedy Interchange congestion/safety problems. A new bridge in the Downtown corridor is consistent with locally approved transportation plans but would not complete the eastern portion of the circumferential highway transportation system. Both bridges, as well as the reconstruction of the Kennedy Interchange, are included in the KIPDA RMP. Neither the No-Action nor the Transportation Management Alternatives are consistent with the RMP.

Also, the two bridges will provide service to the fastest growing areas in the region, eastern Jefferson and Clark Counties, experiencing rapid population growth and downtown Louisville with a resurgence of employment.

Completion of the eastern portion of the circumferential highway transportation system will make travel between eastern Clark County and eastern Jefferson County/Oldham County more efficient. These areas are projected to grow substantially in both population and employment over the next 25 years. Table 3.6-5 summarizes travel projections between these two areas for the different alternatives. Under the No-Action Alternative, daily traffic crossing the Ohio River with origins and destinations in eastern Clark and Jefferson Counties is projected to increase by about 25,000 trips, or a 125 percent increase, between 1990 and 2025. The VMT associated with those trips would increase by about 781,000 miles per day,

* "Safety Effectiveness of Highway Design Features Volume IV Interchanges--FHWA-RD-91-047," November 1992

or a nearly 150 percent increase. Similarly, the VHT associated with those trips would increase by about 16,000 hours per day, or about 145 percent. The number of such trips and associated VMT and VHT under any of the downtown Single Bridge/Highway alternatives would have been essentially the same as under the No-Action Alternative. This results in network inefficiencies and longer trip distances and times.

With the provision of a new eastern bridge (whether alone or in combination with a Downtown bridge), the number of trips with an east-east orientation is projected to increase by an additional 11,000 trips per day, or about a 25 percent increase over the No-Action levels. Thus, the construction of an East End bridge would result in more cross-river trips with an east-east orientation. However, VMT and VHT associated with such trips would only increase by eight to nine percent over the No-Action levels. Moreover, the average east-east trip length would decrease by about 13 percent from the No-Action scenario to the Preferred Alternative (Far East and Downtown Alternative C-1 bridges). Similarly, the average east-east trip duration also would decrease by about 13 percent. This indicates transportation efficiencies attributable to the new bridges.

TABLE 3.6-5
DAILY VEHICLE TRAVEL SUMMARY BETWEEN EASTERN CLARK COUNTY AND EASTERN JEFFERSON COUNTY/OLDHAM COUNTY

Alternative	Daily Trips	VMT	VHT
1990	20,400	522,000	11,200
No-Action	45,600	1,303,800	27,400
Transportation Management	45,600	1,303,400	27,400
One Bridge/Highway			
Far East	57,600	1,434,200	30,000
Near East	56,800	1,419,000	29,600
Downtown (C-1/C-3)	46,600	1,328,400	27,800
Downtown (C-2)	45,400	1,308,200	27,400
Two Bridges/Highway			
Far East and C-1/C-3	**57,000**	**1,416,800**	**29,600**
Far East and C-2	56,600	1,412,000	29,600
Near East and C-1/C-3	56,400	1,414,000	29,200
Near East and C-2	56,600	1,412,800	29,600

Bold Row is Preferred Alternative

3.6.6 Summary

Table 3.6-6 summarizes the Purpose and Need measures of effectiveness for each alternative discussed in this section.

TABLE 3.6-6
MEASURES OF EFFECTIVENESS SUMMARY

Alternative	System Efficiency* Percent Change			User Benefits $(Billion)	Traffic Congestion					Traffic Safety	System Linkage	Local Plan Compatibility
					Total Cross-River Demand as Percent of Capacity	Bridge Levels of Service						
	VMT	VHT	VHD			Sherman Minton	Clark Memorial	Kennedy Memorial	East End			
No-Action				-	130	E	D	E	-	No	No	No
Transportation Management	0	-1	-6	0.40	130	E	D	E	-	No	No	No
One Bridge/Highway												
Far East	0	-3	-14	0.98	98	E	C	E	C	No	Yes	Partial
Near East	0	-3	-13	0.93	98	E	C	D	C	No	Yes	Partial
Downtown (C-1/C-3)	0	-2	-9	0.60	100	E	C	D	-	Yes	No	Partial
Downtown (C-2)	0	-2	-8	0.52	106	E	C	E	-	No	No	Partial
Two Bridges/Highway												
Far East and C-1/C-3	**-1**	**-6**	**-22**	**1.63**	**78**	**E**	**B**	**C**	**C**	**Yes**	**Yes**	**Yes**
Far East and C-2	-1	-6	-22	1.67	81	E	B	D	C	No	Yes	Yes
Near East and C-1/C-3	0	-5	-18	1.44	79	E	B	C	C	Yes	Yes	Yes
Near East and C-2	-1	-5	-19	1.52	81	E	B	D	C	No	Yes	Yes

* These numbers are a measure of the efficiency of the LMA network. Negative numbers represent an increase in the LMA efficiency.

Note: Percent change is relative to the No-Action Alternative. Population and Employment Growth and Traffic Congestion Measures are for a Year 2025 weekday.

Traffic Safety: Relocation of the Kennedy Interchange results in a high level of safety ranking or rated Yes. Reconstruction of the Kennedy Interchange in-place does not separate I-64 through movement traffic and has a lower design geometry than the relocated interchange and as such its safety level aspects are ranked low or No.

Bold Row is Preferred Alternative.

3.6.7 Environmental Impact Summary

The analyses of the environmental impacts of the alternatives are presented in Chapter 5. The results are summarized below and in Table 3.6-7.

Far East Corridor

Alternative A-2

This alternative would have had the highest number of floodplains crossed (4) of all of the East End alternatives evaluated. In spite of the number of floodplains crossed, this option had the least encroachment on floodplains (16 acres). Alternative A-2 ranked second in the greatest amount of impact to wildlife habitat and wetlands and in its disturbance of in situ soils. Alternative A-2 had the second least number of noise receptors sites impacted. It would have used property from three Section 4(f) resources. For the remainder of the quantifiable elements of this investigation, its impacts fell in the middle range for all of the East End alternatives. The length of this alternative was 7.5 miles and its total cost was estimated at $377 million.

Alternative A-9

Of the East End alternatives, Alternative A-9 would have had the second greatest impact to the East End historic districts (5) and the third lowest impact to wetlands (4.66 acres). It would have required the use of property from three Section 4(f) resources. It would have impacted 151 acres of wildlife habitat and 204 acres of in situ soils. It would have required the displacement of the lowest number of total structures (79). It had the highest amount of farmland impacts (160 acres). For other issues, its impacts were in the middle range among the East End alternatives. This alternative was nine miles long with an estimated cost of $534 million.

Alternative A-13

This alternative would have impacted the largest number of archaeological sites (9) and the most noise receptor sites. This alternative had the lowest impact to farmland. It would have required the acquisition of the second highest number of structures for the East End alternatives. It would have required the use of property from one Section 4(f) resource. It ranked second highest in the number of impacts to historic sites. For the remainder of the quantifiable data categories, it was in the middle of the range for the East End alternatives. This alternative was 7.6 miles long and would have cost $441 million.

Alternative A-15

This alternative will use property from one Section 4(f) resource and would impact the second greatest number of historic sites (12). It ranks first in the number of noise receptor sites impacted and impacts five archaeological sites. This alternative had the second lowest farmland impacts. For other resources, it ranks low, having less impact than most other East End alternatives. The length of this alternative is 7.9 miles, and its total cost is estimated at $465 million.

Alternative A-16

The alternative had the highest amount of impact to in situ soils (299 acres), wildlife habitat (194 acres), number of streams crossed (13 crossings) and encroachment on floodplains (39 acres) of the East End alternatives. It would have used property from one Section 4(f) resource. Alternative A-16 ranked third in impacts to historic sites. It would have displaced the third highest amount of farmland (139 acres) and ranked third lowest in noise receptor sites impacted. Alternative A-16 ranked in the middle area for other resources. Alternative A-16 was 7.7 miles long and would have cost $439 million.

Near East Corridor

Alternative B-1

Of the East End alternatives, Alternative B-1 would have had the largest number of displacements (282). It was the only East End alternative to require displacement of community resources (5), a church, three Metropolitan Sewer District (MSD) monitoring sites and a water pumping station. It required the use of property from four (4) Section 4(f) resources and impacted 15 historic sites. It ranked second highest in the area of farmland displaced and floodplain encroachment. It had the least impact to streams (six crossed) and wetlands (2.7 acres). For the other resources, it ranked in the middle for the East End alternatives. This alternative had a mainline length of 9.4 miles and would have cost $648 million.

Downtown Corridor

Alternative C-1

Alternative C-1 (new Kennedy Bridge upstream) has the highest impact to the floodplains (13 acres) and (0 acres) of wildlife habitat impact. It impacts five historic districts and three Section 4(f) properties, ranking it second highest in these categories. It is second lowest in the number of residential displacements and ranks in the middle in terms of noise receptor sites impacted. **Alternative C-1** ranks third in commercial property acquisition. This alternative would impact (2) historic sites. The cost of this alternative is estimated to be $296 million.

Table 3.6-7
Summary of Impacts

Quantitative Impacts To	Alternatives											Preferred Alternative
	Far East					Near East	Kennedy Interchange		Downtown			
	A-2	A-9	A-13	A-15	A-16	B-1	In-Place	Relocated	C-1	C-2	C-3	Total
Agricultural Resources												
Acres of prime farmland converted	137	160	112	**136**	139	148	N/A	**N/A**	**N/A**	N/A	N/A	**136**
Section 4(f) Properties used	3	3	1	**1**	1	4	4	**4**	**3**	5	2	**8**
Cultural Resources												
Number of historic districts impacted	3	5	6	**6**	4	4	2**	**2****	**5**	7	5	**11**
Number of historic sites impacted	6	12	12	**12**	10	15	0	**0**	**2**	7	2	**14**
Number of archaeological sites impacted	2	8	9	**5**	7	3	0	**0**	**0**	0	0	**5**
Air Quality												
Number of sites exceeding NAAQS (1 hr/8 hr)	0/0	0/0	0/0	**0/0**	0/0	0/0	0/0	**0/0**	**0/0**	0/0	0/0	**0/0**
Noise - Number of impacted receptor sites[3]	19	26	33/32 (1)	**33/29 (1)**	23	16	8/8/7 (2)	**7/8/7 (2)**	**6**	9	5	**46**
Noise - Number of impacted Historic Properties	6	6	8/8 (1)	**7/7(1)**	5	11	8/9/10 (2)	**6/9/10 (2)**	**9**	17	6	**22**
Natural Resources												
Acres of soil impacted	279	204	205	**210**	299	224	0	**0**	**0**	0	0	**210**
Acres of terrestrial wildlife/habitat impacted*	178	151	124	**153**	194	154	0	**1**	**0**	0	0	**154**
Wetlands												
Acres of wetlands impacted	5.51	4.66	4.79	**3.86**	6.14	2.74	0	**0.25**	**0**	0	0	**4.11**
Water Resources												
Number of stream impacts (including Ohio River)	9	12	9	**12**	13	6	0	**1**	**1**	1	1	**14**
Floodplains												
Number of floodplains crossed	4	3	3	**2**	2	2	0	**1**	**1**	1	1	**4**
Total acres of encroachment	16	26	21	**19**	39	37	23	**53**	**13**	12	9	**85**
Number of Residential Displacements	64	67	73	**63**	62	252	2	**4**	**23**	21	180	**90**
Number of Commercial Displacements	0	2	0	**0**	0	24	30	**50**	**30**	40	75	**80**
Number of Agricultural Properties Impacted	18	10	20	**18**	18	1	0	**0**	**0**	0	0	**18**
Number of Community Resources Displaced	0	0	0	**0**	0	5	0	**0**	**0**	0	0	**0**

*Riparian Forest, Upland Fields, Upland Forest and Wetland/Streams

**There are two historic districts (Phoenix Hill and Butchertown) that are also impacted by Alternatives C-1, C-2 and C-3.

(1) Designates a/b Alternatives half diamond at US 42 and full diamond at Wolf Pen Brand Road, respectively.

(2) Designates Noise impact for the Kennedy Interchange options associated with Alignments C1/ (Single Bridge A or B)(C2) / C3

(3) Number of impacted receptor sites, excluding impacted Historic Properties

Alternative C-2

This alternative would have impacted the most historic sites (7), the most historic districts (7), and the most Section 4(f) properties (5). It also has the most noise receptor site impacts and ranked second in floodplain encroachment. This alternative would have had no (0 acres) wildlife habitat impact, and ranked lowest in the Downtown corridor in total residential and commercial displacements. The cost of this alternative would have been $481 million.

Alternative C-3

Alternative C-3 would have had the greatest number of residential displacements (180 units), commercial displacements (75 businesses) and, as with **Alternative C-1** and Alternative C-2, no impacts (0 acres) to wildlife habitat. It was equal to **Alternative C-1** for impacts to historic sites (2). It had the lowest number noise receptor site impacts of the Downtown alternatives. It would have required the use of two (2) Section 4(f) properties. Alternative C-3 would have impacted five (5) historic districts and nine acres of floodplain. The cost of this alternative would have been $304 million.

Kennedy Interchange

Improvements to the Kennedy Interchange are included with each bridge/highway alternative. The impacts for both interchange improvement options (rebuild in-place and relocate to the south) are listed separately in Table S.3-1. Each alternative's total impact would include the impacts from one of these options.

Kennedy Interchange In-Place

Reconstructing the Kennedy Interchange In-place would have created the same impacts to Section 4(f) properties (4) and greater noise receptor site impacts than the relocated option. It would have impacted two historic districts, the same as the Kennedy Interchange relocated option, acres of wildlife habitat (0), acres of wetland impacted (0), stream impacts (0), floodplain impacts (0), floodplain encroachment (23 acres) and had two residential and 30 commercial displacements. The cost of replacing the Kennedy Interchange in its present location would have been $306 million.

Kennedy Interchange Relocated

Moving the Kennedy Interchange south of its present location will impact the same number of Section 4(f) properties (4) and lesser noise receptor sites as the in-place option. It will also impact two historic districts. The reconstruction of the Kennedy Interchange will impact wildlife habitat (1 acre), wetlands (0.25 acres), stream crossings (1), floodplains (1), floodplain encroachment (53 acres), four residential displacements and 50 commercial displacements. The cost of relocating the Kennedy Interchange to the south is estimated to be $639 million.

3.6.8 Costs

Cost estimates for the bridge/highway alternatives were developed. These costs are shown in Table 3.6.8. The cost estimate for each alternative was developed using a common methodology in order to distinguish between alternatives for alternatives analysis purposes. A "Cost Estimate Review" of the Preferred Alternative was accomplished on March 18-19, 2003 to refine the final cost estimate for the Preferred Alternative, and build in costs for contingencies, mitigation, and risks/unknowns based on experience from other major projects from around the country. The refined baseline cost estimate for the Preferred Alternative is $1.936 billion in 2003 dollars ($1,312,239,342 from KY, $623,433,806 from IN). This equates to a **$2,494,000,000** total project cost in year of expenditure dollars over a 2004-2020 design and construction period, assuming a 4% inflation rate.

The refined baseline cost estimate, and the associated assumptions and project staging are presented in the "Financing Options" document, which can be viewed at the local project office. Transportation revenues (both state and federal) that have come to Indiana and Kentucky over the life of ISTEA and TEA-21 (FY 1992-2003) were used to project future revenues available to the respective states over the 2004-2020 design and construction period. Strategies such as new revenue sources and bonding are discussed. Bonding would spread the year-to-year costs more evenly over the construction period, or over a longer period. This report details one reasonable financing strategy to construct the project. This strategy will need to be refined over time to support development of the Finance Plan.

It should be noted that INDOT and KYTC are required to prepare a Finance Plan in accordance with the FHWA Finance Plan Guidance (May 23, 2000) and it needs to be found acceptable to FHWA before the Louisville Bridges Project can be advanced to construction in 2007. This Finance Plan will identify specific committed revenue sources that will be used to fund the Louisville Bridges Project. Final Design and ROW acquisition can proceed during the first couple years after the ROD is issued until the respective States identify the specific revenue streams that will be committed to advance the project. Final Design will also allow the estimated project costs to be refined before construction begins.

TABLE 3.6-8
CAPITAL COST ESTIMATE OF BRIDGE/HIGHWAY ALTERNATIVES ($M IN 2000 DOLLARS)

Alternative	Indiana Cost	Kentucky Cost		Total
		East End	Downtown	
A-2				
In-Place	178.8	198.1	305.6	682.5
Relocated	178.8	198.1	639.2	1,016.1
A-9				
In-Place	285.8	248.2	305.6	839.6
Relocated	285.8	248.2	639.2	1,173.2
A-13				
In-Place	194.7	246.6	305.6	746.9
Relocated	194.7	246.6	639.2	1,080.5
A-15				
In-Place	199.7	265.1	305.6	770.4
Relocated	**199.7**	**265.1**	639.2	1,104.0
A-16				
In-Place	182.8	255.9	305.6	744.3
Relocated	182.8	255.9	639.2	1,077.9
B-1				
In-Place	262.5	385.0	305.6	953.1
Relocated	262.5	385.0	639.2	1,286.7
C-1				
In-Place	218.1	N/A	383.2	601.3
Relocated	**218.1**	**N/A**	**716.8**	934.9
C-2				
In-Place	318.1	N/A	545.6	863.7
Relocated	318.1	N/A	879.2	1,197.3
C-3				
In-Place	226.2	N/A	383.2	609.4
Relocated	226.2	N/A	716.8	943.0
Preferred Alternative*	**417.8**	**265.1**	**716.8**	**1,399.7**

Note: The two rows for each alternative are for the Kennedy Interchange Rebuild In Place and the Relocation to the South options, respectively. Highlighted information is for Preferred Alternative (Two Bridges **A-15** and **C-1** with Relocated Kennedy Interchange.)

3.7 Preferred Alternative

The Preferred Alternative for the Ohio River Bridges Project is the Two Bridges/Highway Alternative consisting of **Alternative A-15** in the Far East corridor (see Figure 3.7-1 and Appendix A.2 and A.3; with the **Option 1** S.R. 62 Interchange and the **half diamond at U.S. 42**) and **Alternative C-1** in the Downtown corridor, along with the **Kennedy Interchange Reconstruction to the south** (see Figure 3.7-2 and Appendix A.4). The Preferred Alternative also includes non-motorized facility enhancements (pedestrian and bicycle paths will be included on both the **C-1** and **A-15** bridges), expanded employer-based trip reduction programs, expanded Intelligent Transportation System (ITS) applications, expanded incident management programs, and enhanced cross-river bus service. (All of the foregoing non-bridge/highway elements, which also were included in the Transportation Management Alternative, are described in detail in Sections 3.2.2 through 3.2.4 and Section 3.3.6 and were included in each of the Bridge/Highway Alternatives.) This section describes the basis for the selection of the Two Bridges/Highway Alternative and the specific alternatives selected in the Far East and Downtown corridors, as well as the Kennedy Interchange Reconstruction option.

3.7.1 Two Bridges/Highway Alternative

The Two Bridges/Highway Alternative provides the greatest improvement to cross-river mobility and best satisfies the needs identified in Chapter 2. None of the other alternatives (Single Bridge/Highway, Transportation Management or No-Action) sufficiently meet all of the needs identified in Chapter 2 so as to constitute a feasible and prudent long-term solution to the region's cross-river mobility needs. The Two Bridges/Highway Alternative provides the greatest improvements in the efficiency of the transportation system, as measured by total vehicle hours of travel, miles of travel, and hours of delay. The Two Bridges/Highway Alternative is the only option that provides sufficient cross-river capacity to meet the region's long-term needs. With any of the Single Bridge/Highway Alternatives, the total cross-river demand-to-capacity ratio – based on LOS D service level volumes - will once again be near or above 100 percent by 2025, meaning that the capacity of the Ohio River bridges to handle cross-river travel demand will have been met and additional improvements will once again be necessary just 5-10 years after the new Downtown bridge opens. In contrast, the Two Bridges/Highway Alternatives reduce that ratio to between 78 percent and 81 percent, providing additional capacity and a longer-term solution to the area's cross-river mobility needs. The Two Bridges/Highway Alternative also provides the greatest improvements to the Kennedy Bridge and the Kennedy Interchange. The performance of the Kennedy Bridge (I-65 crossing), as measured by demand-to-capacity ratios and levels of service (LOS), would be improved the most by the Two Bridges/Highway Alternatives. For example, none of the single bridge options would reduce the 2025 demand-to-capacity ratio on the Kennedy Bridge significantly below 100 percent, meaning that recent levels of congestion would be expected to return in that time. Desirable service rates associated with LOS C peak period operations are only achieved with Alternative **C1**/C3-East End two

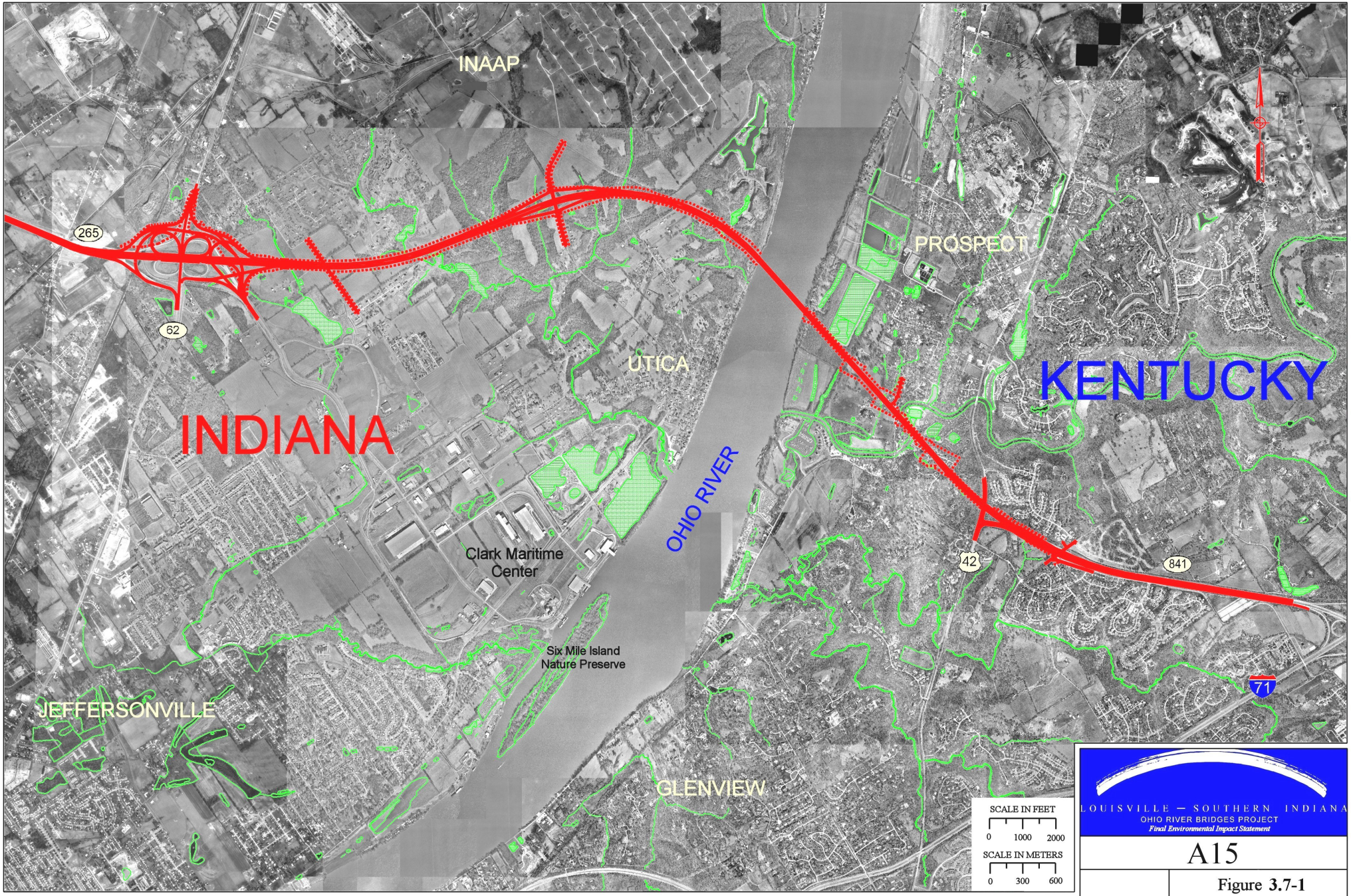
bridge alternatives. Similarly, average peak hour speeds and hours of delay in the Kennedy Interchange would be improved the most under the two-bridge options. The Downtown bridge is expected to be completed and open to traffic in 2020. It is critical that this bridge solution provide sufficient LOS for an adequate period of time.

System Efficiency

The Two Bridges/Highway Alternative generally provides the greatest improvements in cross-river transportation efficiency. For example, as compared to the No-Action Alternative, the two bridge solution with bridges in the Downtown and Far East corridors will produce the greatest decrease in daily VHT in the LMA: a decrease of 51,000 to 52,000 hours per weekday, or approximately 6 percent of total vehicle hours of travel in the LMA (See Figure 1.1-1). In contrast, a single bridge downtown would result in about one-third as much reduction, or 17,000 to 20,000 hours per day (approximately 2 percent), and a single eastern bridge would reduce VHT by 30,000 to 32,000 hours per day (approximately 3 percent). Similarly, the two-bridge options would result in the greatest reduction in total VMT in the LMA: a reduction of approximately 155,000 to 216,000 miles per day, or approximately 1 percent of total VMT. This constitutes a significant increase in the efficiency of the overall five county transportation network. In contrast, a single bridge in the Downtown or Far East corridor would result in a slight increase in VMT (4,000 to 35,000, or less than 1 percent).

The value of these travel time and distance savings, compared to the No-Action Alternative, that would accrue to Louisville travelers over a project post-opening 20 year time period, would be $1.6 billion. Similar savings of $0.5 to $1.0 billion are projected for a Single Bridge Alternatives, and $0.4 billion for the Transportation Management Alternative. Notably, while all of the "build" options would reduce the total hours of congestion in the LMA—measured as VHD—a two-bridge combination with bridges in the Downtown and Far East corridors would result in the greatest reduction in delays: 45,000 VHD, or approximately 22 percent of total delay. In contrast, a single bridge downtown would be less than half as effective, reducing delays by only 16,000 to 19,000 hours per day (approximately eight percent to nine percent). A single eastern bridge would only reduce delays by 27,000 to 30,000 hours (approximately 13 percent to 14 percent).

The Transportation Management Alternative would produce even fewer reductions in VHT and VHD, and a comparable increase in VMT, as compared to the single-bridge alternatives. This alternative would not substantially address or improve transportation system efficiency.



LOUISVILLE – SOUTHERN INDIANA
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A15

Figure 3.7-1

INDIANA

CLARKSVILLE

JEFFERSONVILLE

OHIO RIVER

KENTUCKY

LOUISVILLE

65

31

64

65

71

64

SCALE IN FEET

0 500 1000

SCALE IN METERS

0 300 600

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C1

Figure 3.7-2

Total Cross-River Capacity

Only a Two Bridges/Highway Alternative would reduce the total cross-river demand-to-capacity ratio in 2025 substantially below 100 percent. (Capacity is defined using minimally accepted LOS D service rates and not those of desired design rates associated with LOS C.) This measure predicts total cross-river demand in the LMA as a percentage of total cross-river capacity (i.e., all Ohio River bridges in the LMA). A single bridge in either the Far East or Near East corridor would reduce this percentage to 98 percent in 2025, while a single bridge downtown would result in total cross-river demand at 100-106 percent of capacity, just five to ten years after the new Downtown bridge is opened. This means that with one new bridge, the capacity of the Ohio River bridges in the LMA would once again be met or exceeded by 2025, likely requiring additional improvements in the cross-river transportation system to avoid increasingly worse congestion and delays. In contrast, each of the two-bridge alternatives would reduce total cross-river demand as a percentage of capacity to 78-81 percent, allowing the cross-river transportation system to function more efficiently and avoiding the need for additional improvements in just over 20 years.

The Transportation Management Alternative would result in no improvement in total cross-river capacity as compared to the No-Action Alternative, and thus would not constitute a reasonable solution to the region's cross-river mobility needs.

Kennedy Bridge Capacity

The Kennedy Bridge is already over capacity by about 6 percent as defined by LOS D flow rates (see Table 3.6-2). It is expected to be at 142 percent of capacity by 2025. The most significant improvement to traffic on the Kennedy Bridge would be provided by a combination of a new downtown bridge and an eastern bridge. Under this scenario, the Kennedy Bridge (including the new companion span) would operate at 70-74 percent of capacity in 2025. Specifically, the combination of new bridges in the Downtown and Far East corridors would result in the Kennedy Bridge operating at 74 percent of capacity in 2025. In contrast, the most effective single-bridge option—downtown Alternative **C-1**/C-3—would result in the Kennedy Bridge operating at 95 percent of capacity in 2025, just five to 10 years after being opened to traffic. All of the other single bridge alternatives (Far East, Near East and Downtown Alternative C-2) would result in the Kennedy Bridge being over capacity by 7-24 percent in 2025. Thus, all of the single bridge options would result in the downtown I-65 crossing operating near or above its capacity by 2025, effectively returning that crossing to the congested travel conditions that have prevailed in recent years. The combination of a Far East bridge with a new bridge on the downtown Alternative **C-1**/C-3 would free up an additional 21 percent of the Kennedy Bridge (I-65 crossing) capacity, as compared to the most effective single bridge option (Alternative **C-1**/C-3 alone).

Similarly, an evaluation of LOS on the Kennedy Bridge—a measure of congestion that ranges from LOS A for the least congestion and best traffic flow to LOS F for the most

congestion and worst flow—shows that only the combination of a new bridge in the downtown Alternative **C-1**/C-3 and a bridge in either the Far East or Near East corridor would result in a LOS C on the Kennedy Bridge in 2025 (see Table 3.6-3). LOS C operations are desired when new or rehabilitated roadway facilities are considered. LOS D is minimally acceptable when existing roadway facilities are analyzed. LOS D operations are considered a precursor to unacceptable operating conditions. All of the other bridge/highway alternatives, both single bridge and two bridges, would result in LOS D or LOS E on the Kennedy Bridge (I-65 crossing). The No-Action and Transportation Management Alternatives both would provide LOS E on the Kennedy Bridge. The two bridge alternatives also provide the best levels of service on the Clark Bridge, LOS B, compared to LOS C for the single bridge options and LOS D for the No-Action and Transportation Management Alternatives.

Kennedy Interchange Operations

While all of the "build" alternatives show significant improvements over the No-Action Alternative, the Two Bridges/Highway Alternatives show the greatest improvements in weekday traffic operations in the Kennedy Interchange area. With no new bridges, average morning and evening peak hour speeds are forecast to be less than 20 mph in 2025. Under the Two Bridges/Highway Alternatives, 2025 peak hour speeds are forecast to range from 48-50 mph in the Kennedy Interchange (see Table 3.6-4).

Similarly, the Two Bridges/Highway Alternatives would show the greatest improvements in VHD in the Kennedy Interchange in 2025, followed by the downtown single bridge option along Alternative **C-1**/C-3. A single eastern bridge or the other downtown single bridge option (Alternative C-2) would have comparable afternoon speeds, but would have considerably lower morning peak hour speeds (31-33 mph).

Average peak hour speeds for the Single Bridge/Highway Alternative in Alternative **C-1**/C-3 would be slightly lower, at about 47 mph. Only the C-1/C-3 Downtown alternatives provides adequate I-65 exit and entrance lanes/ramps for the Kennedy Interchange onto and off of the Kennedy Bridge for proper operation of the Kennedy Interchange to eliminate existing back-ups and congestion. Alternative C-2 and other East End single bridge alternatives do not provide adequate I-65 lanes for exit and entrance ramps from the Kennedy Interchange onto and off of the Kennedy Bridge to eliminate existing back-ups and congestion.

Inadequate Cross-River System Linkage

The Near East and Far East single highway bridge alternative, or as an element of the Two Bridges Alternatives, address the inadequate cross-river system linkage issue. The gap in the eastern circumferential freeway system would be closed. Alternative cross-river freeway routing opportunities would be provided.

The East End bridge will serve the highest population growth areas in LMA. The Downtown bridge will serve the area of largest employment, downtown Louisville.

Local Transportation Plans

As noted in Chapter 2, the construction of a new downtown bridge parallel to the Kennedy Bridge and a new eastern bridge connecting KY 841 in Kentucky and S.R. 265 in Indiana, along with a reconstruction of the Kennedy Interchange, is included as part of the RMP for the LMA adopted by KIPDA. This plan element is based on years of study of the region's cross-river mobility needs and extensive prior public involvement, culminating in the ORMIS two-bridge recommendation. Following the conclusion of ORMIS, KIPDA officially incorporated that two-bridge recommendation into the RMP. As such, the two bridge recommendation included in the RMP reflects the studied judgment of the local government jurisdictions, acting through the federally prescribed transportation planning process conducted under the auspices of KIPDA. The Preferred Alternative is consistent with the long-term vision of local governments and transportation planners of the best solution for the LMA's cross-river mobility needs.

Single bridge alternatives would only be partially supportive of the KIPDA RMP, which calls for new cross-river bridges in both the Downtown and Far East areas. The No-Action and Transportation Management Alternatives do not support the RMP.

3.7.2 Eastern Alternative

Selection of Alternative A-15

Alternative A-15 provides for a six lane I-265 Freeway from I-71 in Kentucky to S.R. 62 in Indiana (see Appendix A.9 Typical Sections). **Alternative A-15** also includes a 17 foot bicycle and pedestrian path on the downstream side of the bridge and terminates at River Road in Kentucky and Utica-Charlestown Road in Indiana.

Alternative A-15 was selected as the eastern bridge component of the Preferred Alternative based on a number of considerations. Among the eastern bridge options, **Alternative A-15** will have the least overall harm to important natural and community resources in Indiana and Kentucky. This alternative follows the existing right-of-way of KY 841 from I-71 to U.S. 42 in Kentucky, helping to minimize impacts to existing land uses. As a result, **Alternative A-15** has the second lowest number of residential displacements (63) among the eastern options, with only one more displacement than Alternative A-16 (62). This alternative also has no commercial displacements.

The construction of a tunnel under the Drumanard property would help to minimize or avoid negative impacts on the community of Prospect and on important historic properties in the area. Construction of the proposed 2,000 foot tunnel would minimize impacts to the historic

Drumanard estate, which is listed on the NRHP, and would reduce visual and noise impacts for residents and visitors to the area. Because the freeway would enter the tunnel before KY 841 reaches U.S. 42, the freeway would pass under U.S. 42, the primary surface route through the area, thereby eliminating the visual effects that would be associated with an aboveground freeway structure at that location. An access route to the mainline will be constructed west of River Road at the west end of the bridge over Harrods Creek. This route will connect the mainline to Transylvania Avenue for emergency (vehicular) access to the tunnel, which is approximately 2,500 feet to the east. **Alternative A-15** is preferable to Alternatives A-16 and A-2, which are located farther upstream, because those alternatives both pass closer to the center of the city of Prospect; in fact, Alternative A-2 would pass through the heart of the city and has been opposed vigorously by representatives of Prospect city government and numerous citizens.

Alternative A-15 is largely similar to Alternative A-13 on the Kentucky side of the Ohio River (including the Drumanard tunnel), but is preferable to Alternative A-13 on the Indiana side. In fact, **Alternative A-15** was created in response to a suggestion from a member of the Utica area work group. By shifting the alternative further upstream on the Indiana side of the river, **Alternative A-15** minimizes impacts to the town of Utica and to the area just to the northeast in which a large portion of the ongoing growth in Utica is occurring. This combination of the minimization of harm on both sides of the Ohio River makes **Alternative A-15** the most preferable eastern alternative for minimizing harm to community resources.

Alternative A-15, on balance, also provides the best minimization of impacts to the natural environment of the eastern bridge alternatives. It would impact the second lowest amount of wetland acreage (3.86 acres), approximately one acre more than Alternative B-1 (which is not preferable overall, as discussed in greater detail below). Alternatives A-2, A-9 and A-16 all would have greater wetlands impacts (5.51, 4.66 and 6.14 acres, respectively).

The combination of wetlands and stream impacts associated with Alternatives A-9 and A-16 prompted the U.S. Environmental Protection Agency (USEPA) in part to rate those alternatives as having Environmental Objections (EO). (USEPA rated the other alternatives in the Far East corridor (Alternatives A-2, A-13, and **A-15**) as having Environmental Concerns.) Alternative A-9 would impact Goose Creek and Little Goose Creek in Kentucky, and would directly impact the upstream buffer area included in the Six Mile Island Nature Preserve, which is protected from highway takings under Kentucky state law. Alternative A-16 would require extensive impacts to Harrods Creek in Kentucky, including three separate crossings, and would impact Lentzier Creek in Indiana. Environmental objections, as defined by the USEPA, indicate that significant environmental impacts have been identified and those impacts must be avoided to adequately protect the environment. An EO rating would require that substantial changes be made to an alignment, if selected as the Preferred Alternative. Environmental Concerns (EC) indicates that the USEPA has identified environmental impacts that should be avoided in order to protect the environment.

Corrective measures and mitigation, developed in consultation with the USEPA, is required to reduce the identified impacts to the environment.

Alternative A-15 would have the second lowest impact on floodplain acreage (19 acres); only Alternative A-9 would have lower floodplain impacts (16 acres). While **Alternative A-15** would impact eighteen agricultural properties, compared to 10 properties for Alternative A-9, 18 properties for Alternatives A-2 and A-16, and 20 properties for Alternative A-13, it would directly impact fewer acres of prime farmland (136 acres) than Alternatives A-2, A-9 and A-16. Alternatives A-2 and A-16 both would have considerably higher soil impact acreage and terrestrial wildlife habitat impact acreage than **Alternative A-15**, which in turn would have somewhat higher impacts to those resources than Alternatives A-9 and A-13.

Although **Alternative A-15** would cause the largest number of noise receptor impacts, about 1.3 to 2 times as many as the other eastern alternatives, except Alternative A-13—**Alternative A-15** would have the second lowest number of substantial noise impacts (i.e., those with the largest noise increases). Only Alternative A-9 would have fewer substantial noise impacts. The inclusion of the Drumanard tunnel will help to minimize noise impacts for many of the sensitive historic properties in the vicinity of U.S. 42 and Wolf Pen Branch Road in Kentucky.

Although all of the eastern alternative options would have impacts to historic properties, **Alternative A-15** would help to minimize those impacts, particularly through the construction of the Drumanard tunnel. Tunnel construction that utilizes tunnel-boring methods as opposed to a "cut and cover" methodology will avoid the use of Section 4 (f) land from the Drumanard Historic District.

Notably, **Alternative A-15** would directly affect (through property taking) only one historic property, the Swartz Farm Rural Historic District in Indiana, which lies immediately adjacent to the S.R. 265/S.R. 62 interchange and consequently directly in the path of all of the eastern alternatives. Although Alternative A-9, which has less physical takings to soils and wildlife habitat resources than **Alternative A-15**, it causes similar impacts to **Alternative A-15** with respect to historic properties. Alternative A-9 passes directly through the Country Estates Historic District and therefore would involve a direct use of a historic property.

Based on the foregoing considerations, **Alternative A-15** provides the overall best balance in avoiding and minimizing harm to community, natural, and historic resources among the eastern bridge options. Although **Alternative A-15** is not necessarily the least harmful option with respect to each and every resource category, it provides that best overall balance and opportunity to minimize harm. In particular, the incorporation of a tunnel under the Drumanard estate helps to reduce community disruption and visual, noise, and historic property impacts. This conclusion is largely supported by extensive public input received prior to publication of the DEIS, and in the formal public comment period on the DEIS, which concluded on February 25, 2002. While many local residents in the immediate

vicinity of the eastern alternatives expressed opposition to any eastern bridge whatsoever, many also expressed opinions concerning the most desirable eastern alternative in the event that an eastern bridge is to be constructed. A large majority of those comments expressed support for the so-called "Drumanard tunnel alternatives," Alternatives A-13 and **A-15**. For example, in Kentucky, representatives of the city of Prospect expressed strong opposition to Alternatives A-2 and A-16, which would have more severe impacts on that community. Many commenters expressed support for the "out of sight, out of mind" nature of the tunnel on Alternatives A-13 and **A-15**, even though that option still will have substantial effects on neighborhoods such as the Shadow Wood subdivision in Kentucky. Little support was stated for Alternative A-9, which would have adverse effects on historic properties and also would have similar impacts on streams, wetlands, and wildlife habitat. Between the two "tunnel" alternatives, residents in Indiana clearly prefer **Alternative A-15**, which minimizes harm to the town of Utica and avoids the area northeast of the town of Utica that is experiencing considerable residential and commercial development. This public input corroborates and supports the determination that **Alternative A-15** is the most preferable option for an eastern bridge route.

Rejection of Alternative B-1

Alternative B-1 was carried forward for evaluation in the DEIS despite considerable early indications that it suffered from such serious flaws that it may not be a reasonable alternative for an eastern Ohio River bridge. The information presented in the DEIS confirmed that this alternative is not preferable, and that a bridge in the Near East corridor is not a desirable or appropriate component of a Two Bridge/Highway solution. Most notably, the improvements to I-264 and I-71 necessary to construct an Ohio River bridge in the Near East corridor would have required approximately 252 residential displacements, approximately 3.5 times as many displacements as the highest Far East alternative. Alternative B-1 also would have required approximately 24 commercial displacements, compared with none for **Alternative A-15** and three of the other four Far East alternatives. (Alternative A-9 would require two commercial displacements.) Alternative B-1 also would have displaced five community resources (e.g., churches, schools, etc.), whereas none of the Far East alternatives would have displaced any community resources. This alternative also raised environmental justice concerns because the residential area in Indiana on the northwest side of the Ohio River, through which Alternative B-1 would have passed, consists of a predominantly low-income and elderly population.

The substantial adverse community impacts of Alternative B-1 were of such a significant magnitude as to outweigh any potential advantages this alternative might have had with respect to impacts to the natural environment (such as the lowest wetland and stream impacts). Moreover, Alternative B-1 actually had higher impacts than most of the Far East alternatives with respect to acreage of floodplain encroachment and acreage of prime farmland conversion. Noise impacts were comparable to the other eastern alternatives. The

conclusion that Alternative B-1 is not an appropriate solution is reinforced by the Environmental Objection rating given to Alternative B-1 by the USEPA.

Alternative B-1 also posed significant engineering and traffic challenges. Although it could have been constructed, the complex interchange required at the junction of I-264, I-71 and the new bridge would pose the risk of a new "Spaghetti Junction" in the LMA. This alternative also would have posed difficult maintenance problems for the KYTC. Representative of local emergency response agencies, including the Harrods Creek Fire Department, expressed strong opposition to this option because of the complex curves and movements associated with the interchange. They stated that this is already a high accident location, and that the construction of an Alternative B-1 bridge would only exacerbate the problem.

Interchange Options

Interchanges are proposed at three points for the eastern alternative: at U.S. 42 in Kentucky, and at both S.R. 62 and Salem Road in Indiana. Partial interchanges currently exist at U.S. 42 and at S.R. 62, at the current termini of KY 841 and S.R. 265, respectively.

U.S. 42

The Preferred Alternative includes a partial interchange at KY 841 and U.S. 42. The proposed partial diamond interchange at U.S. 42 will allow for the continuation of the movements currently provided at this location (access to and from KY 841 in the direction of I-71), but would not provide access to and from the new bridge/highway in the direction of Indiana. A full interchange (i.e., with movements to/from both Indiana and Kentucky) also was considered at this location in association with **Alternative A-15**. However, construction of that interchange would require a connection at Wolf Pen Branch Road southeast of U.S. 42 and the improvement of Wolf Pen Branch Road to five lanes (from its current two lanes) from the interchange to its intersection with U.S. 42. The expansion of Wolf Pen Branch Road in this location would have substantial impacts on adjoining residential areas and would cause a dramatic increase in traffic on this stretch of road. It also likely would increase development pressure on the undeveloped land along Wolf Pen Branch Road between the new interchange and U.S. 42. Public input from area residents overwhelmingly opposed this full interchange option and supported construction of a partial interchange that would maintain the existing access. Thus, the partial diamond interchange at U.S. 42 has been included in the Preferred Alternative.

Salem Road

The Salem Road interchange option evaluated in the DEIS has been included in the Preferred Alternative. This interchange would serve the west side of the INAAP, which is planned for redevelopment, and also would provide access to the proximate rapidly developing

residential area. While this interchange may increase development pressure on adjacent undeveloped properties, it is expected to provide significant benefits in assisting with the redevelopment of the INAAP. A full diamond interchange is proposed at Salem Road.

S.R. 62

The Preferred Alternative includes reconstruction of the S.R. 265/S.R. 62 interchange to connect to the new Ohio River bridge/highway. This interchange will retain the existing direct freeway access to the Clark Maritime Center, which is depicted as **Option 1** in Appendix A.2. The DEIS also evaluated the option of discontinuing direct access to the Clark Maritime Center from this interchange, instead providing access via S.R. 62 southwest of the S.R. 265/S.R. 62 interchange. Maintaining direct access to the Clark Maritime Center is preferable to avoid driver confusion, to minimize additional commercial traffic impacts to S.R. 62, and to maximize access to the growing facilities at the maritime center. This interchange reconstruction will include construction of an additional loop ramp in the northwest quadrant of the existing interchange, reconstruction of the northeast quadrant loop ramp, and provision of direct ramps to Port Road immediately east of the loop ramps.

3.7.3 Downtown Alternative

Selection of Alternative C-1

Alternative C-1 provides for construction of a new six lane I-65 bridge to accommodate the I-65 northbound movement. **Alternative C-1** also includes a bicycle and pedestrian path on the upstream side of the bridge and terminates at River Road in Kentucky and Court Avenue in Indiana. The existing I-65 Bridge will be used to accommodate the six lane I-65 southbound movement. Thus, the I-65 Preferred Alternative will result in 12 lanes of I-65 capacity over the Ohio River in Downtown Louisville.

In Indiana, the Preferred Alternative provides eight lanes of through-movement capacity: four northbound and four southbound. The four lane I-65 southbound picks up two lanes at 10th Street to carry a total of six lanes onto the bridge from Indiana. Likewise, the six lane northbound **C-1** section coming off the bridge into Indiana drops two lanes at 10th Street.

In Kentucky, I-65 provides six lanes of through-movement south of the Kennedy Interchange; three lanes northbound, and three lanes southbound, to match the existing I-65 six lane section to the south. The six lane I-65 southbound lanes coming off the bridge drop one lane for the I-64 westbound exit, and two lanes for the I-64 eastbound exit. Likewise, the I-65 three lane northbound section picks up one lane from the I-64 westbound entrance, and two lanes from the I-64 eastbound entrance to northbound I-65, to carry a total of six lanes northbound onto the new **C-1** bridge. **Alternative C-1** also includes a 17 foot bicycle and pedestrian path on the upstream side of the bridge and terminates at River Road in Kentucky and Court Avenue in Indiana.

Alternative C-1 was selected as the downtown bridge component of the Preferred Alternative based on a number of considerations. The primary considerations in the selection of **Alternative C-1** were traffic impacts, residential displacements, costs, environmental justice concerns and minimization of impacts to public parklands and historic properties.

Alternative C-1 is preferable to Alternative C-2 (the "Ninth Street alternative") for several reasons. Although the combination of a Ninth Street bridge with a bridge in the Far East corridor would have resulted in a slightly better improvement in total weekday VMT and VHT as compared to a combination of **Alternative C-1** or C-3 with a Far East bridge, construction of Alternative C-2 bridge would have resulted in significantly less improvement in Kennedy Bridge traffic by 2025. For example, the Alternative C-2 and Far East combination would have resulted in a demand-to-capacity ratio of 97 percent in 2025, meaning that the Kennedy Bridge would have been near capacity again functioning at LOS D in the peak period as it currently is with attendant increased congestion just 5-10 years after the new Downtown bridge opens. Meanwhile, the new Ninth Street (Alternative C-2) bridge would have operated at 52 percent of capacity, suggesting that this bridge would not have been an attractive alternative for much of the traffic crossing the Kennedy Bridge. In contrast, the combination of Alternative **C-1**/C-3 and a Far East bridge results in the Kennedy Bridge (including the new span) performing at 74 percent of capacity in 2025—an improvement of 22 percent of capacity over Alternative C-2 and Far East combination. Similarly, the Alternative C-2 and Far East combination would have resulted in LOS D on the Kennedy Bridge in 2025, while the Alternative **C-1**/C-3 and Far East combination would result in LOS C. Thus, **Alternative C-1** or C-3 is clearly preferable for providing a long-term solution to capacity and congestion problems on the Kennedy Bridge.

Alternative C-2 was also problematic because of the large increase in traffic on Ninth Street (Roy Wilkins Boulevard) in Louisville that would have occurred with this option. Such a connection would have diverted a large percentage of the traffic desiring access to downtown Louisville from I-65 southbound onto Ninth Street, resulting in negative community impacts. Ninth Street already serves as a barrier to mobility between the Louisville central business district and low-income and minority residential areas immediately to the west. Any alternative that would substantially increase traffic on Ninth Street would pose major environmental justice concerns with respect to increased safety risks for pedestrians, increased noise and visual impacts, further division and disruption to the community and other potential adverse effects on adjacent residential areas. Serious concerns about the environmental justice impacts of Alternative C-2 were expressed during the public comment period on the DEIS. Because Alternatives **C-1** and C-3 would not provide a new connection to Ninth Street, they avoid these environmental justice concerns.

Alternative C-2 would have had greater impacts to historic properties and publicly owned parks and recreation areas than either Alternative **C-1** or C-3. Alternative C-2 also raised greater Ohio River navigation clearance issues associated with bridge construction than

either Alternative **C-1** or C-3. Alternative C-2 also would have cost approximately $180 million more than either Alternative **C-1** or C-3. For the foregoing reasons, especially related to traffic impacts, environmental justice concerns, historic property and parkland impacts, and costs, either a bridge in Alternative **C-1** or C-3 is preferable to Alternative C-2.

The primary differentiating elements between Alternatives **C-1** and C-3 are residential and commercial property displacements. Both perform comparably with respect to traffic operations, and generally have comparable, and relatively limited, impacts with respect to the natural environment. **Alternative C-1** requires the taking of relatively few residences (23), 157 fewer than required for Alternative C-3 (180), primarily as a result of the requirement to take the Harbors condominium building along Alternative C-3. **Alternative C-1** also requires 45 fewer commercial takings than Alternative C-3 (30 vs. 75). These significant differences in impacts demonstrate that **Alternative C-1** overall would have significantly fewer adverse community impacts than Alternative C-3.

Alternative C-1 would have a greater impact on historic properties than Alternative C-3, as a result of the use of approximately 3.0 acres from the Old Jeffersonville Historic District, including the taking of five contributing structures. Alternative C-3 would not require any taking from the Old Jeffersonville Historic District. On the other hand, Alternative C-3 would have a greater impact on public parklands, requiring the taking of 2.8 acres from Waterfront Park in Kentucky. This alternative, with a bridge immediately downstream of the existing Kennedy Bridge, would affect actively used portions of the existing park, displacing the lowland picnic area and portions of the "linear park" element already in place. It also would move the freeway ramps and structures significantly closer to the children's play area, restrooms, and parking facilities at Waterfront Park. While **Alternative C-1** requires the taking of 1.2 acres from Waterfront Park, the area affected by this alternative was leased for use as an asphalt distribution facility. These terminal operations ceased in December 2002; the Waterfront Development Corporation has acquired the property. With the decommissioning of the facility, the development of this area as parkland will not occur until environmental investigation and remediation of the site has taken place (likely requiring at least 18 months). Moreover, the Waterfront Development Corporation, the public agency that oversees the Waterfront Park, has indicated that it prefers that any new bridge be located in Alternative **C-1**, as opposed to Alternative C-3, and has planned to construct any new park facilities immediately upstream of the existing Kennedy Bridge to accommodate the construction of a new Ohio River bridge.

Based on the foregoing, **Alternative C-1** has been selected as the Downtown corridor component of the Preferred Alternative. **Alternative C-1** is preferable to Alternative C-2 with respect to traffic, environmental justice concerns, historic property and parkland impacts and costs. **Alternative C-1** also is preferable to Alternative C-3. On balance, the impacts of these two alternatives on historic properties and public parklands and recreation areas generally offset each other. In that case, the dramatic differences in residential and

commercial displacements, and the consequent community impacts, make **Alternative C-1** preferable to Alternative C-3.

3.7.4 Kennedy Interchange Reconstruction

The Preferred Alternative includes the relocation of the Kennedy Interchange just to the south of its existing location. This alternative was selected over the option of In-Place reconstruction of the Kennedy Interchange. The Preferred Alternative also includes the reconstruction of the Mellwood/Story Avenue interchange on I-64, and construction of a partial interchange at Frankfort Avenue/Ohio Street on I-71. Connection to the existing city street network is provided through the reconstruction of Witherspoon at Preston Street and continuing to Frankfort Avenue/Ohio Street opposite the partial interchange at I-71.

Selection of the Kennedy Interchange Relocation

Kennedy Interchange Relocation

The relocation of the Kennedy Interchange to the south of its current location (referred to here as the "Kennedy Interchange Relocation") was selected as part of the Preferred Alternative primarily based on its ability to provide better traffic operations than the In-Place reconstruction option. Relocation of the interchange would allow for elimination of the numerous left-hand entrances and exits, difficult weaves, and conflict points that are part of the current Kennedy Interchange, and which have led the interchange to be known commonly as "Spaghetti Junction." Currently, I-64 through traffic—which is not destined for downtown Louisville—must merge and weave with downtown oriented I-65 and I-71 traffic. The Kennedy Interchange Relocation would allow I-64 through-traffic to pass through the interchange without encountering the numerous difficult merge and conflict points in the current interchange. All merging and diverging activities would take place on collector-distributor roads, away from mainline traffic, where they would not interfere with the smooth flow of traffic through the interchange. These improvements will help to reduce congestion and improve safety in the Kennedy Interchange, by reducing the number of "conflict points" where crashes are more likely to occur. As indicated in Section 3.6.3 a reduction of crash rates of one third to one half could reasonably be expected because of the reduction of left hand entrances and exits in the interchange. The Relocation Option would provide for the direct routing of I-64 through-traffic and have better geometric design features than the In-place option, (although the In-place option would meet current design standards). The Relocated Option interchange would have a longer functional service life than the In-place option because of better design geometric features.

The In-Place reconstruction of the Kennedy Interchange would require maintenance of traffic operations while construction proceeded, a complete reconstruction of the Kennedy Interchange in-place would not be feasible. This would adversely affect route continuity for I-64 through-traffic and contribute to additional congestion and safety problems throughout

the construction period. As a result, by 2025, average peak hour speeds in the Kennedy Interchange would be less than under the Kennedy Interchange Relocation option. This significant decrease in the efficiency of the Kennedy Interchange would result in significantly greater congestion and delays, which would likely spill over onto adjacent roadways, including the Kennedy Bridge. Thus, while providing some short-term benefit, the In-Place reconstruction of the Kennedy Interchange would not provide for a long-term solution such as that with the Relocated Interchange Option.

Relocation of the Kennedy Interchange would move the interchange closer to the Butchertown neighborhood, which is a historic district listed on the NRHP. Plans for the Kennedy Interchange Relocation included in the DEIS indicated that this option would take approximately 1.3 acres from the Butchertown Historic District, including six contributing structures in the northeast corner of the District. However, additional refinements made during the preparation of the FEIS eliminated the taking these six structures. Thus, the impacts of the two Kennedy Interchange reconstruction options on the Butchertown Historic District would be very similar, with only an additional 0.06 acre of impact for the Kennedy Interchange Relocation option in a junkyard area with no contributing resources. Nevertheless, the Kennedy Interchange Relocation option would bring the interchange closer to and encroach on the Butchertown neighborhood. It would require 20 more commercial displacements (50) than the In-Place reconstruction option (30). However, the existing Kennedy Interchange already impacts the Butchertown neighborhood with visual, noise and lighting effects, and the effects from the relocated interchange would not be significantly different. The design of the relocated interchange, through the use of fills for outer roadways in the interchange may serve as berms to buffer adjoining areas. Moreover, the Kennedy Interchange Relocation would free 40 to 45 acres of land along the riverfront (the Kennedy Interchange's current location). This land will be conveyed to the Louisville Metro Government by the Commonwealth of Kentucky for public use in accordance with 23 CFR 710.403 and 23 CFR 710.409.

Interchange Options

Two new or reconstructed interchanges in the downtown LMA are included in the Preferred Alternative as part of the Kennedy Interchange Reconstruction. A new partial interchange at Frankfort Avenue/Ohio Street on I-71 would provide for better access to eastern portions of downtown Louisville and would serve as an additional diversion point in the event of congestion or incidents. A reconstructed Mellwood/Story Avenue interchange on I-64 would provide better access for traffic exiting from I-64 westbound onto Mellwood Avenue.

(I-71) Frankfort Avenue/Ohio Street

The Preferred Alternative also includes a partial interchange at I-71 where it crosses Frankfort Avenue/Ohio Street. This partial diamond interchange would include an off-ramp for I-71 southbound traffic and an on-ramp for I-71 northbound traffic. The ramps would be

coupled to the west with an easterly one-mile extension of Witherspoon Street from its current terminus to Frankfort Avenue/Ohio Street. A four-lane divided roadway would be placed along the southern edge of the relocated Kennedy Interchange, with north-south street connections to River Road at Shelby Street and Campbell Street. Traffic oriented toward the Medical Center Complex, Butchertown, or other eastern portions of downtown Louisville currently must proceed to downtown Louisville on I-71. There are no interchanges on I-71 between Zorn Avenue and I-64 or I-65 in the Kennedy Interchange in downtown Louisville—a distance of 2.7 miles. Construction of a partial interchange on I-71 at Frankfort Avenue/Ohio Street and the extension of Witherspoon Street would provide an alternate access route to and from these eastern portions of downtown Louisville. It also would provide an additional point of diversion from I-71 in the event of congestion or incidents on I-71 or in the Kennedy Interchange. (See Appendix A.7.)

(I-64) Mellwood/Story Avenue

As part of the Preferred Alternative, a new roadway would be constructed between Mellwood and Story Avenues along the northeast side of I-64. This roadway, which would bridge Beargrass Creek, would allow westbound I-64 traffic exiting at Mellwood Avenue to access Story Avenue more directly, in order to reach destinations in Butchertown or the Medical Center Complex environs. Currently, this traffic must travel a circuitous route, via Frankfort Avenue, to reach Story Avenue. This new roadway, which would not require any residential or commercial displacements or have any other significant effects on the environment, would eliminate this undesirable traffic movement and reduce demand on Frankfort Avenue between Mellwood and Story Avenues. (See Appendix A.8.)