U.S. Department of Transportation
Federal Highway Administration

Brent Spence Bridge
Replacement/Rehabilitation Project

Planning Study Report

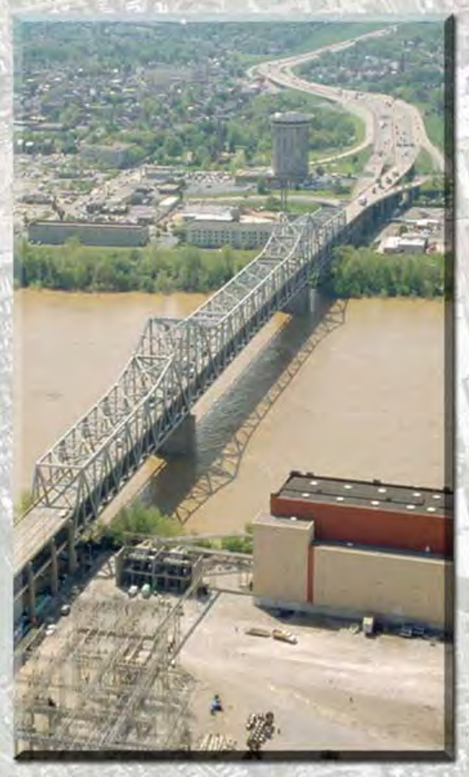
ODOT PID No. 75119
HAM-71/75-0.00/0.22
KYTC Project Item No. 6-17

September 2006







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EXECUTIVE SUMMARY

The Ohio Department of Transportation (ODOT) in a joint effort with the Kentucky Transportation Cabinet (KYTC) has started planning and developing conceptual alternatives for the Brent Spence Bridge Replacement/Rehabilitation Project along the I-71/I-75 corridor in the Greater Cincinnati/Northern Kentucky region. I-75 within the Greater Cincinnati/Northern Kentucky region is a major thoroughfare for local and regional mobility. Locally, it connects to I-71, I-74 and US Route 50. The Brent Spence Bridge provides an interstate connection over the Ohio River and carries both I-71 and I-75 traffic. The bridge also facilitates local travel by providing access to downtown Cincinnati, Ohio and Covington, Kentucky. Safety, congestion and geometric problems exist on the structure and its approaches.

ODOT and KYTC, with the review and approval from the Federal Highway Administration (FHWA), are moving the project forward with four purpose and need goals: 1) improve traffic flow and level of service, 2) improve safety, 3) correct geometric deficiencies, and 4) enhance connection to key regional and national transportation corridors.

The Brent Spence Bridge Replacement/Rehabilitation Project is following ODOT's 14-Step Major Project Development Process (PDP). A major component of the Brent Spence Bridge Replacement/Rehabilitation Project is public involvement. Public involvement was initiated in Step 1 of the PDP. During various steps of the PDP process the public is actively engaged for comment and feedback on the design and placement of the new facility.

The first public meetings were held on May 2 and 4, 2006 in Ohio and Kentucky. Comments received at the public meetings will help direct the project as the recommended conceptual alternatives are carried forward for further development and more detailed engineering documents are produced. As the project moves forward in the PDP process, more public meetings will be held to ensure active engagement of the public and all interested parties in the Greater Cincinnati/Northern Kentucky Area.

As part of the Public Involvement Plan (PIP), an Advisory Committee and Aesthetics Committee were formed to provide interaction between ODOT, KYTC and interested communities, organizations, and government entities. The Advisory Committee provides review for the various components of the project. Feedback from these committees ensures that the views of the community are clearly addressed as the project develops.

The Aesthetics Committee, a subcommittee to the Advisory Committee, was formed to provide a voice concerning aesthetics of the project. The Aesthetic Committee consists of representatives from key organizations and communities and function as reviewers for the various aesthetic components of the project.

Steps 1 through 4 are primarily information gathering and early planning which is documented in technical reports. These reports are summarized in the Planning Study Report.

- *Brent Spence Bridge Replacement/Rehabilitation Project: Red Flag Summary Report* (December 2005)

The *Red Flag Summary Report* identifies "Red Flags" for the Brent Spence Bridge Rehabilitation/Replacement Project. The Red Flags are not intended to identify locations that must be avoided, but to identify locations that may entail further study, creative management or design, or increased costs.

- *Brent Spence Bridge Replacement/Rehabilitation Project: Existing and Future Conditions Report* (February 2006)

  The *Existing and Future Conditions Report* provides details of the existing and future conditions of the project area as they relate to the natural and social environment as well as safety and traffic issues. This report provides information related to the transportation system (including traffic analysis and crash analysis), natural environment, geotechnical conditions, social environment, cultural resources, hazardous materials, and air quality.

- *Brent Spence Bridge Replacement/Rehabilitation Project: Purpose and Need Statement* (May 2006)

  The *Purpose and Need Statement* identifies and describes transportation and socioeconomic needs to be addressed by the proposed project. Transportation and socioeconomic factors addressed include traffic flow and level of service, safety, operational characteristics within the I-71/I-75 corridor for both local and through traffic, congestion and safety–related issues as a result of inadequate capacity to accommodate current traffic demand and maintenance of national, regional, and local highway systems.

- *Brent Spence Bridge Replacement/Rehabilitation Project: Conceptual Alternatives Solutions* (March 2006)

  The *Conceptual Alternatives Solutions* document evaluates 25 conceptual alternatives that were developed, including the No Build alternative. Evaluation criteria included congestion mitigation, safety, engineering, environmental resource impacts, access/accessibility, construction cost, constructability, and subcomponents of each. The alternatives were described using four segments per alternative. All alternatives were presented using a comparison matrix to provide ease of comparing and evaluating by segment and holistically.

A total of six alternatives and twelve sub-alternatives were recommended for further study and include the No Build alternative. The No Build alternative does not meet the requirements of the purpose and need, but is retained as the baseline condition to measure the potential impacts of the other alternatives. The five conceptual build alternatives meet the project Purpose and Need and stakeholders goals and measures of success. They also have good ratings for the evaluation criteria. The five conceptual Build alternatives being carried forward for further study are:

- Alternative 1: Queensgate Alignment I-75. New Queensgate Bridge (2x5 lanes) for I-75 and rehabilitation of existing Brent Spence Bridge (2x2 lanes) for I-71 and local traffic.
- Alternative 2: Queensgate Alignment for I-75 and I-71. New Queensgate Bridge (2x7 lanes) for I-71/I-75 and rehabilitate existing Brent Spence Bridge (2x2 lanes) for local traffic.

- Alternative 3: New bridge just west of the existing bridge for I-75. New double-deck bridge (2x5 lanes) on west side of the existing Brent Spence Bridge for I-75 and new/rehabilitation double-deck bridge (2x2 Lanes) at existing Brent Spence Bridge for I-71 and local traffic.
- Alternative 4: New bridge just west of the existing bridge for all traffic. New double-deck bridge (2x5 lanes each direction on top) for I-75 and (2x3 lanes each direction on bottom) for I-71 and local traffic on west side of the existing Brent Spence Bridge and remove existing Brent Spence Bridge.
- Alternative 5: New bridges for I-75 traffic use on both sides of the existing bridge. New single-deck bridges (2x5 lanes) on each side of the existing Brent Spence Bridge for I-75 and rehabilitation of existing Brent Spence Bridge(2x3 lanes) for I-71 and local traffic.

The sub-alternatives being carried forward for further study include:

- I-75 Northbound KY 12th Street Ramp (2 sub-alternatives)
- I-71/US 50 Interchange (2 sub-alternatives)
- I-71/I-75/US 50 Interchange (3 sub-alternatives)
- I-75 Ohio Collector - Distributor Road/Arterial Improvements (2 sub-alternatives)
- Western Hills Viaduct Interchange (3 sub-alternatives)

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1.0 PROJECT HISTORY AND OVERVIEW

1.1 Introduction

Interstate 75 (I-75) within the Greater Cincinnati/Northern Kentucky region is a major thoroughfare for local and regional mobility. Locally, it connects to I-71, I-74 and US Route 50. The Brent Spence Bridge provides an interstate connection over the Ohio River and carries both I-71 and I-75 traffic (Exhibit 1). The bridge also facilitates local travel by providing access to downtown Cincinnati, Ohio and Covington, Kentucky. Safety, congestion and geometric problems exist on the structure and its approaches. The Brent Spence Bridge, which opened to traffic in 1963, was designed to carry 80,000 vehicles per day. Currently, 150,000 vehicles per day use the Brent Spence Bridge and traffic volumes are projected to increase to 200,000 vehicles per day in 2025.

The I-75 corridor within the Greater Cincinnati/Northern Kentucky region is experiencing problems, which threaten the overall efficiency and flexibility of this vital trade corridor. Areas of concern include, but are not limited to, growing demand and congestion, land use pressures, environmental concerns, adequate safety margins, and maintaining linkage in key mobility, trade, and national defense highways.

The I-75 corridor has been the subject of numerous planning and engineering studies over the years and is a strategic link in the region's and the nation's highway network. As such, the Ohio Department of Transportation (ODOT) and the Kentucky Transportation Cabinet (KYTC), in cooperation with the FHWA, are proposing to improve the operational characteristics of I-75 and the Brent Spence Bridge in the Greater Cincinnati/Northern Kentucky region through a major transportation project.

1.2 Project History

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) identified High Priority Corridors on the National Highway System (NHS). I-75 and I-71 in Ohio are included on the priority list (Table 1-1).

Table 1-1. Interstates 75 and 71 as Listed Under Section 1105(c) ISTEA (P.L.102-240), as amended through P.L. 109-59

Item Number	Corridor	Location
76	Interstate Route 75	Ohio
78	Interstate Route 71	Ohio

More recent federal surface transportation legislation (the 1998 Transportation Equity Act for the 21st Century [TEA-21] and the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users [SAFETEA-LU]), continued funding for the High Priority Corridors. Table 1-2 shows six of the high priority projects listed under SAFETEA-LU that include the Brent Spence Bridge Replacement/Rehabilitation Project and adjacent projects.

Table 1-2. High Priority Projects Listed Under SAFETEA-LU Located in or near the Brent Spence Bridge Replacement/Rehabilitation Project

Item Number	State	Project Description	Amount
685	OH	Study and design of modifications to I-75 interchanges at M.L. King, Jr. Boulevard, Hopple Street, I-74, and Mitchell Avenue in Cincinnati, Ohio	$2.4 million
3385	KY	Replace Brent Spence Bridge, Kenton County, Kentucky	$1.6 million
4217	KY	Transportation improvements to Brent Spence Bridge	$34 million
4621	OH	On I-75 toward Brent Spence Bridge, Cincinnati, OH	$10 million
4623	OH	Reconstruction, widening, and interchange upgrades to I-75 between Cincinnati and Dayton, Ohio	$5 million
4624	OH	Replace the Edward N. Waldvogel Viaduct, Cincinnati, Ohio (US Route 50)	$6 million

In response to ISTEA, ODOT completed a statewide transportation study and strategic plan, *Access Ohio* in 1993, which was updated in 2004. This long-range transportation plan identified "Transportation Efficiency and Economic Advancement Corridors" also known as "macro corridors" throughout the state of Ohio. These corridors are defined as "highways with statewide significance that provide connectivity to population and employment centers in Ohio and the nation by accommodating desired movements of persons and goods". The I-71, I-74, I-75, and US 50 corridors are included in the list of macro corridors.

The Brent Spence Bridge Replacement/Rehabilitation project is included in ODOT's four-year State Transportation Improvement Program (STIP) for Fiscal Years (FY) 2006-2009. The FY 2006-2009 STIP was approved by the US Department of Transportation effective July 1, 2005 and remains in effect through June 30, 2007. This project is listed in the first three years of the STIP, which indicates that it is eligible for federal funding.

In 1999, the KYTC completed its current long-range multimodal transportation plan (Kentucky Transportation Cabinet, *Statewide Transportation Plan FY 1999–2018*, December 1999). The transportation plan is a 20-year plan for all modes of transportation. The plan consists of two phases – the short range element, which is the Six-Year Transportation Plan, and the long-range element, which is a 14-year plan beyond the six year plan. The long-range element is the principal source for new projects added to the Six-Year Transportation Plan.

Kentucky's Recommended Six-Year Transportation Plan FY 2005-2010 lists six "Mega-Projects" (projects that will cost or are in excess of $1 billion). The I-71/I-75 Brent Spence Bridge Project is one of the six "Mega-Projects". The plan notes that I-71/I-75

Brent Spence Bridge "is the focal point for some of the heaviest traffic volumes in Kentucky", which not only provide a link between two major urban centers (Covington, Kentucky and Cincinnati, Ohio) but also connects the region to one of the nation's busiest airports, the Cincinnati/Northern Kentucky International Airport located in Boone County, Kentucky.

Kentucky's STIP covers a three year period, FY 2005-2007. The STIP includes only federally funded projects for non-MPO area counties and only regionally significant state-funded projects. In Kentucky, projects listed on a Metropolitan Planning Organization's Transportation Improvement Programs (TIP) are incorporated into the STIP through the amendment process by reference.

The Ohio-Kentucky-Indiana Regional Council of Governments (OKI), *2030 Regional Transportation Plan 2004 Update*, includes improvements to I-71/75 and the Brent Spence Bridge in Kenton County in the TIP for FY 2006-2009. Funding is committed for additional capacity for I-71/I-75 only for a 2.5 mile section south of the Brent Spence Bridge as well as for replacement of the bridge itself.

The Ohio-Kentucky-Indiana Regional Council of Governments (OKI) and the Miami Valley Regional Planning Commission (MVRPC), the Metropolitan Planning Organizations serving the I-75 corridor, formed a partnership in 2000. This partnership was formed to analyize the section of the I-75 corridor from the I-71/I-75 Interchange in northern Kentucky to Piqua, Ohio to address the current and future transportation issues in the corridor. This analysis, known as the *North-South Transportation Initiative* (2004) was a traditional Major Investment Study (MIS) conducted as part of the merged National Environmental Policy Act (NEPA) process. One goal of this study was to identify strategies to ensure that the I-75 corridor remains effective and efficient at moving people and goods through the region. The study addressed major improvements to all existing modes of transportation and identified appropriate transportation alternatives that need to be incorporated into the Regional Transportation Plans. A preferred program of projects was defined based upon a thorough assessment of transportation needs and consensus of where the region wants to be.

The *North-South Transportation Initiative* recommended a number of capacity and safety improvements for the I-71 and I-75 corridor in Kentucky and I-75 in Ohio. The southern limit of the study area for this project was the I-71/I-75 Interchange in Kentucky. The northern limit was on I-75 north of Piqua, Ohio. A number of major replacements and rehabilitations were recommended for advancement into the NEPA Process as a part of the *North-South Transportation Initiative*. One key recommendation was the the Brent Spence Bridge Replacement/Rehabilitation Project (PID 75119) in order to provide for improved capacity, access, and safety in this portion of the corridor.

KYTC initiated an engineering feasibility study to investigate replacement options for the Brent Spence Bridge in 2003. The results of this study are documented in the *Brent Spence Bridge Feasibility and Constructability Study* (2005). The study area for this analysis began south of Kyles Lane in Kentucky and extended to the Western Hills Viaduct in Ohio. Concurrently, ODOT began evaluating a number of alternatives for improving segments of I-75 in Ohio, from the area north of the Western Hills Viaduct, to a point north of I-275.

Two projects north of the Brent Spence Bridge were also recommended by the *North-South Transportation Initiative,* the Thru-the-Valley project (PID 76256) and the Mill Creek Expressway project (PID 76257). These two ODOT projects are being conducted as part of an overall program to improve I-75. Preservation of right-of-way and assuring that short term improvements made to the corridor build on each other and provide improved capacity are primary goals.

1.3 Study Area

The project study area is located along a 6.5-mile segment of I-75 within the Commonwealth of Kentucky (state line mile 188.0) and the State of Ohio (state line mile 2.7). The study area is shown on Exhibit 2 and is 2.82 square miles in size. The southern limit of the project is 2,800 feet south of the midpoint of the Kyles Lane Interchange on I-71/I-75 in Fort Wright, south of Covington, Kentucky. The northern limit of the project is 1,500 feet north of the midpoint of the Western Hills Viaduct interchange on I-75 in Cincinnati, Ohio.

The eastern and western limits of the study area generally follow the existing alignment of I-75. From the south, the study area is a 1,500-foot wide corridor centered on I-75 northward towards the city of Covington. At Covington, the eastern and western study area boundaries widen and follow city streets as described below:

- Western project limits (from south to north):
    - At 5th Street in the city of Covington, the western boundary extends in the northwesterly direction across the Ohio River to US 50, approximately 1,000 feet west of the Freeman Avenue Interchange.
    - The western limit extends northerly parallel to Dalton Avenue to Hopkins Street.
    - The western limit extends westerly along Hopkins Street to the western limits of Union Terminal, where it then extends northerly along the western limits of Union Terminal to Kenner Street.
    - The western limit follows easterly along Kenner Street to the intersection with Dalton Avenue.
    - The western limit parallels Dalton Avenue to north of Findlay Street, where it follows in the northerly direction with a consistent 750-foot offset from the I-75 centerline.

- Eastern project limits (from south to north):
    - In the city of Covington, the eastern boundary follows Philadelphia Street to its intersection with KY 5th Street.
    - The eastern boundary follows KY 5th Street to its intersection with Main Street and then follows Main Street to the Ohio River.
    - The eastern boundary parallels the Clay Wade Bailey Bridge across the Ohio River to Pete Rose Way in the city of Cincinnati.
    - Through downtown Cincinnati, the eastern boundary follows OH 2nd Street and US 50 eastbound to approximately the I-71/US 50 interchange over Broadway Avenue, north on Broadway Avenue then westerly along

OH 4th Street to Plum Street, then northward until it reaches West Court Street.

- From West Court Street, the eastern boundary extends west to Linn Street, where it follows Linn Street to Central Parkway.
- The eastern boundary extends north paralleling Central Parkway to Linn Street.
- From Linn Street, the eastern boundary extends westerly to Bank Street.
- From Bank Street, the eastern limits extend in the northerly direction with a consistent 750-foot offset from the I-75 centerline.

1.4 Organizational Structure

Federal and state governments in cooperation with local governments are sponsoring the project. Members of the public have been involved with the current and continued development of this project. To coordinate the planning and preliminary design of the Brent Spence Bridge Replacement/Rehabilitation Project, the state of Ohio and commonwealth of Kentucky entered into a Bi-state Agreement on November 23, 2004 (Appendix A).

The Bi-state Agreement defines project responsibilities, environmental process, ownership, and funding. Key components of the agreement are listed below.

- The Bi-state Agreement establishes ODOT as the lead agency for the environmental and preliminary design.
- KYTC and ODOT will jointly manage the environmental and preliminary design phases of the project.
- Ownership is determined by number of interstate lane miles within each state. KYTC is responsible for 28.15 lane miles (45.5 percent) and ODOT is responsible for 33.69 lane miles (54.5 percent).
- The term of this agreement cannot extend beyond the biennial budget year for both Ohio and Kentucky.

1.4.1 Project Sponsor

This project is jointly sponsored by ODOT and KYTC. ODOT and KYTC have provided a project manager to jointly manage and represent each state during all stages of the project. During detailed design and through construction, each state will perform as the lead agency for work in their respective state. Each state will have equal partnership during these stages.

The Brent Spence Bridge Replacement/Rehabilitation project is following ODOT's 14-Step Major Project Development Process. ODOT and KYTC have entered into a Bi-state Agreement, which establishes ODOT as the lead agency in Steps 1 through 8. After Step 8, the project will be divided between the two states and ODOT and KYTC will manage their respective sections of the I-75 corridor. The Major PDP provides for agency and public participation throughout project development.

1.4.2 Review Agencies

Review agencies consist of ODOT's District 8 and Central Office as well as KYTC's District 6 and Central Office. The proposed project, which is a federal action, will involve modification to an Interstate Highway System, thus final review and approval of the project will be provided by the Federal Highway Administration's (FHWA) Ohio and Kentucky (Frankfort, Kentucky) divisions and coordinated by the Ohio Division, located in Columbus, Ohio.

1.4.3 Advisory Committee

An Advisory Committee was created to provide interaction between ODOT/KYTC and interested communities, organizations, and government entities. The committee helps define needs and goals of the project, provides review and comment for research and technical studies, and provides input on conceptual alternative solutions.

The Advisory Committee functions as advisors for the various components of the project and its feedback will ensure that the views of the community are heard as the project develops. The Advisory Committee acts as liaisons between the project sponsors and respective organizations and communities. Advisory Committee members are responsible for disseminating information provided by the project sponsors to their constituency. Advisory Committee representatives and their organizations are shown in Table 1-3.

Table 1-3. Advisory Committee Representatives and Organizations.

Name	Organization
Local Agencies	
Gary Moore, Judge Executive	Boone County Fiscal Court
Steve Pendery, Judge Executive	Campbell County Fiscal Court
William Moller	City of Covington
Tom Logan	City of Covington, Engineer Department
Gene Weaver, Mayor	City of Fort Wright, KY
Mike Hellmann, Mayor	City of Park Hills, KY
Ralph Drees, Judge Executive	Kenton County Fiscal Court
Charles Meyers	Kenton County Engineer
Keith Logsdon	Northern Kentucky Area Planning Commission
Mark Mallory, Mayor	City of Cincinnati, OH
Michael Moore	City of Cincinnati Architect
Chad Munitz	City of Cincinnati Economic Development
Eileen Enabnit	City of Cincinnati Transportation and Engineering Department
Martha Kelly	City of Cincinnati Engineering
Steve Niemeier	City of Cincinnati Engineering
Steve Schuckman	Cincinnati Park Board
Ron Miller	Hamilton County Regional Planning Commission
Phil Heimlich, County Commissioner	Hamilton County Commissioners
Bill Brayshaw	Hamilton County Engineer
Bob Koehler	Ohio Kentucky Indiana Regional Council of Governments (OKI)

Table 1-3. Advisory Committee Representatives and Organizations.

Name	Organization
David Malone	Transit Authority of Northern Kentucky (TANK)
Mike Setzer	Southwest Ohio Regional Transit Authority (SORTA)
State and Federal Agencies	
David Kratt	Kentucky Transportation Cabinet (KYTC) Frankfort
Ken Sperry	KYTC, Frankfort
Robert Hans	KYTC, District 6
Mike Bezold	KYTC, District 6
VACANT	KYTC, District 6
Michael Loyselle	Federal Highway Administration (FHWA), KY
Evan Wisniewski	FHWA, KY
Andy Fluegemann	The Advanced Regional Traffic Interactive Management and Information System (ARTIMIS)
Stefan Spinosa	Ohio Department of Transportation (ODOT) District 8
Diana Martin	ODOT, District 8
Jay Hamilton	ODOT, District 8
Keith Smith	ODOT, District 8
Howard Wood	ODOT Central Office
Mark VonderEmbse	FHWA, OH
Local Community Groups	
Nick Vehr	3CDC
Eric Avner	Cincinnati Business Committee
Doug Moorman	Cincinnati USA Regional Chamber
Steve Johns	Citizens for Civic Renewal
Suzann Gettys	Covington Ombudsman/Neighborhood Services Coordinator
Mike Tucker	Lewisburg Neighborhood Association
Gary Toebben	Northern Kentucky Chamber of Commerce
Nick Vehr	Port of Greater Cincinnati Development Authority
Marilyn Wall	Sierra Club
Douglas W. McDonald	Queensgate Business Alliance, Cincinnati Museum Center
Dale Mallory	West End Community Council
Alan Bernstein	SouthBank Partners
Local Businesses	
Bob Bedinghaus	Cincinnati Bengals
Jack Weiss	Cincinnati Bulk Terminals, LLC
John Allen	Cincinnati Reds
Bill Martin	Cincinnati/Northern Kentucky International Airport
Dick Hoff	Duke Energy (formerly Cinergy Electric)
Tony Taylor	United Parcel Service (UPS), Kentucky District
Spencer Crew	National Underground Freedom Center

To ensure that this project meets local and regional needs, the project sponsors will work closely with the Advisory Committee to understand community problems, define

needs and goals as defined in the PDP, conduct research and technical studies, identify and evaluate conceptual alternative solutions, and develop the Strategic Plan for implementing the project. Three Advisory Committee meetings have been held during Steps 1 through 4 of the PDP. These meetings were held on August 19, October 13, 2005, and March 23, 2006. Meeting minutes and disposition of comments are in Appendix C of this document. The following discussions provide a summary of each meeting.

1.4.3.1 Advisory Committee Meeting Number 1 (August 19, 2005)

The first Advisory Committee meeting was held on August 19, 2005. The purpose of the meeting was to introduce the advisors, agencies, and consultant team and the role of Advisory Committee for the Brent Spence Bridge Replacement/Rehabilitation Project. The Project Management Team (ODOT, KYTC, PB and associates) reviewed the ODOT Project Development Process and outlined specific information necessary to complete Steps 1 through 4 of the PDP. The Advisory Committee members and interested parties were asked to review draft project goals and objectives and provide comments. Comments and discussion provided a basis for the draft project Problem Statement which was developed and approved by the Advisory Committee during future meetings.

1.4.3.2 Advisory Committee Meeting Number 2 (October 13, 2005)

The second Advisory Committee meeting was held on October 13, 2005. The purpose of the meeting was to discuss and review the Problem Statement for the Brent Spence Bridge Replacement/Rehabilitation Project. Additionally, the Committee discussed Goals and Measures of Success that will be used by the Project Management Team (ODOT, KYTC, PB and associates) to create, evaluate, and screen alternatives.

1.4.3.3 Advisory Committee Meeting Number 3 (March 23, 2006)

The third Advisory Committee meeting was held on March 23, 2006. The purpose of this meeting was to update the Advisory Committee on the project status. Step 3 results were presented. The project Purpose and Need was reviewed as well as the evaluation matrix for all alternatives that have been considered. The conceptual alternatives that will be carried forward for further study were presented and comments were requested by March 30, 2006. These comments were incorporated into the meeting minutes and will be addressed in Steps 5. The committee concurred with the conceptual alternatives being carried forward to Step 5.

1.4.4 Aesthetics Committee

An Aesthetics Committee was formed to address the context and design concept of the Brent Spence Bridge. The Advisory Committee and parties interested in this project will be able to voice aesthetic concerns through the Aesthetics Committee, a subcommittee to the Advisory Committee. This committee will make recommendations to the Advisory Committee about bridge and corridor aesthetics. To facilitate this task, the Aesthetic Committee consists of representatives from key organizations and communities. The Aesthetic Committee functions as reviewers for the various aesthetic components of the project and their feedback ensures that the views of the community are addressed as the project develops. The Aesthetic Committee will also act as advisors to the project sponsors and their respective organizations and communities. The Advisory Committee will be responsible for disseminating the aesthetic and urban design information provided by the Aesthetic Committee.

One Aesthetics Committee meeting has been held to date. Aesthetics Committee representatives and their organizations are shown in Table 1-4.

Table 1-4. Aesthetics Committee Representatives and Organizations

Name	Organization
Ron Kull	University of Cincinnati (UC)
Jack Rouse	Rouse & Associates
Vivian Llambi	Vivian Llambi and Associates
Julie Walcoff	ODOT Central Office
Jeff Jasper	KYTC Central Office
John Schneider	Alliance for Regional Transit
Michael Moore, Chairman of Committee	City of Cincinnati, OH
Tom Logan	City of Covington, KY
Patricia Timm	The Ohio River Way, Inc.
Ruby Rogers	Cincinnati Historical Society Library
Tom Brueggeman	Cincinnati Railroad Club
Eric Avner	Cincinnati Business Committee
Steve Schuckman	Cincinnati Park Board
Sherry Carran	Northern Kentucky Urban & Community Forestry Council
Issam E. Harik	University of Kentucky Department of Engineering
Ralph Wolff	Kenton County Historical Society
Roxanne Qualls	Northern Kentucky University
Michael Schuster	Michael Schuster Associates
Kyle Jenkins, Student Member	American Society of Civil Engineers (UC)

1.4.4.1 Aesthetics Committee Meeting Number 1 (December 16, 2005)

The first Aesthetics Committee meeting was held on December 16, 2005. The purpose of the meeting was to introduce the committee members and agencies to the consultant team. The role of the Aesthetics Committee for the Brent Spence Bridge Replacement/Rehabilitation Project was defined and a charter provided. The Project Management Team (ODOT, KYTC, PB and associates) discussed the committee's charter and its key parts. The Aesthetics Committee Charter is presented in Appendix B.

2.0 PURPOSE AND NEED

The Brent Spence Bridge Replacement/Rehabilitation Project is intended to improve the operational characteristics within the I-71/I-75 corridor for both local and through traffic. In the Greater Cincinnati/Northern Kentucky region, the I-71/I-75 corridor suffers from congestion and safety–related issues as a result of inadequate capacity to accommodate current traffic demand. The purpose of this project is to:

- improve traffic flow and level of service,
- improve safety,

- correct geometric deficiencies, and
- enhance connections to key regional and national transportation corridors.

The I-75 corridor is a major north-south transportation corridor through the Midwestern United States and one of the busiest freight movement (trucking) routes. Traffic volumes have increased far beyond what was originally envisioned when it was constructed in the 1950s. As a result, the I-75 corridor is characterized by poor levels of service which threaten the overall efficiency of people and goods movement within the region. The design features of I-71 and I-75 within the study area do not meet current standards for an interstate highway facility. A recent inventory of I-71 and I-75 within the study area, including the Brent Spence Bridge, reports numerous design deficiencies associated with lane widths, shoulder widths, left-hand exits, horizontal and vertical alignments, and horizontal and vertical clearances. Increasing traffic volumes associated with the substandard design features result in deteriorated operations while affecting motorist's safety on the facility. Specific problems of I-71 and I-75 within the study area include, but are not limited to, growing traffic demand and congestion, inadequate safety margins, and design deficiencies. The complete *Brent Spence Bridge Replacement/Rehabilitation Project: Purpose and Need Statement* (May 2006) can be found in Appendix H.

2.1 Traffic Flow and Level of Service

The current and future levels of service (LOS) provided by the I-71/I-75 corridor range from LOS B to F (Exhibit 3). With the anticipated growth in traffic, the level of service through the entire corridor is expected to continue to degrade. During the next 20 years, much of the corridor will operate at LOS D, or worse (Exhibit 4). The major cause of congestion is the inability of the interstate facility to handle current and future travel demand. If capacity improvements are not made to the I-71/I-75 corridor, the existing problems will only worsen resulting in increased travel time delays and transportation costs for motorists traveling the corridor.

2.2 Safety

Accident rates for the corridor exceed the Kentucky and Ohio statewide averages in part because of congested traffic conditions as well as deficient and substandard roadway geometry (Exhibits 5 and 6). As the safety analyses show, the crash rates for some sections of I-71/I-75 significantly exceed the statewide rates. Within Kentucky, the section of I-71/I-75 between Kyles Lane and the State Line has a Critical Rate Factor more than seven times greater than the statewide average. Ohio Department of Transportation (ODOT) safety management databases indicate that the I-71/I-75 corridor has been designated as a corridor with safety concerns with five specific locations listed in ODOT's Highway Crash Location identification System (HCLIS). Both I-71 and I-75 in the study area are designated by ODOT as Safety Hot Spots.

The I-71/I-75 corridor within Kenton County, Kentucky has a crash rate higher than the Kentucky statewide average. The overall crash rate (accidents per 100 million vehicle miles traveled) for this section is 130.36, nearly 1.33 times higher than Kentucky's statewide average crash rate for interstate highways of 93 accidents per 100 million vehicle miles traveled. The overall crash rate for the Ohio section of I-71 in the study area is 5.26 accidents per million vehicle miles traveled, which is nearly four times the Ohio statewide average rate of 1.338 accidents per million vehicle miles traveled. The worst segment (located between SLM 0.22 and SLM 0.27) has a crash rate more than

19 times the statewide average. Overall, I-75 within the study area has a crash rate of 3.54, which is more than two times greater than the statewide average rate.

2.3 Geometric Deficiencies

Design deficiencies include substandard vertical alignments with limited stopping sight distances, acceleration and deceleration lanes of insufficient length for anticipated traffic volumes and movements, and narrow shoulders that present safety hazards, make maintenance of traffic difficult, and contribute to traffic delays when crashes, vehicle breakdowns, or scheduled roadwork result in lane restrictions. These problems will become more pervasive as traffic volumes grow. With higher traffic volumes, the potential for crashes and breakdowns (with associated lane blockages) increases. Higher volumes also increase the amount of delay experienced by drivers during any given period of lane blockage, particularly during rush hours. Traffic volumes will increase to 200,000 vehicles per day within the study area over the next 20 years. A complete list of existing geometric deficiencies is provided in the *Brent Spence Bridge Replacement/Rehabilitation Project Existing and Future Conditions Report* (February 2006).

2.4 National, Regional, and Local System Linkage

The I-71/I-75 corridor in the Greater Cincinnati/Northern Kentucky area is a significant transportation corridor, not only for local access and mobility needs, but also for regional, statewide and national access and mobility needs. This corridor is recognized in county and regional transportation plans, as are the recommendations for needed improvements. In addition, I-71 and I-75 are key links in the national transportation system in terms of people movement (mobility and economic development), freight movement (commerce, economic development and international trade), and national defense. However, transportation plans and recommendations at all levels (local, state and national) recognize that these facilities now operate at or beyond capacity and therefore, need to be upgraded to modern standards to enhance these important transportation links.

3.0 PUBLIC INVOLVEMENT PROCESS

3.1 Public Participation

Public participation for the Brent Spence Bridge Replacement/Rehabilitation Project will be in accordance with Ohio Department of Transportation's (ODOT) Major Project Development Process (PDP). Public involvement is initiated in Step 1 and continues through project development to Step 14 of the process. In Kentucky, public involvement will be in accordance with the Project Delivery Core Process. Public involvement is initiated during the Transportation Decision Making Process and continues through project development.

All public involvement activities will be communicated to, approved by, and coordinated through the project managers for ODOT and Kentucky Transportation Cabinet (KYTC). Table 3-1 presents a summary of the public participation throughout Steps 1 through 14 of ODOT's Major PDP.

Table 3-1. Public Involvement Activities

Project Development Process	Public Involvement Activities
Step 1 Work with Stakeholders to Understand Problems, Needs, and Goals	• Identify and contact stakeholders. • Involve appropriate stakeholders in an initial project meeting ("kick-off" meeting). • Work with stakeholders to develop Public Involvement Plan (PIP). • Work with stakeholders to develop goals and measures of project success.
Step 2 Conduct Research and Technical Studies	• Considering stakeholders definition of the project need, identify data needs. • Use stakeholder resources to help collect data and create base mapping. • Use stakeholder comments in the development of a draft Purpose and Need Statement.
Step 3 Identify and Evaluate Conceptual Alternative Solutions	• Include stakeholder ideas in the development of conceptual alternatives. • Use the stakeholders' measures of project success, the Purpose and Need Statement, and additional stakeholder involvement to establish alternative evaluation criteria.
Step 4 Develop Strategic Plan or Planning Study Report	• All activities in Step 4 include discussions and incremental agreements leading to consensus among and between the stakeholders by completion of Concurrence Point 1. • Involve stakeholders in the recommendation of a design concept and scope. • Involve stakeholders in the recommendation for funding, timetable, and delivery strategy. • Include stakeholder comments and concerns in revising the Purpose and Need Statement. • Inform stakeholders, through issuance of a Notice of Intent, of the level of environmental documentation that will be prepared for the project. • Document the stakeholder and public involvement in the Strategic Plan and in-depth in the Planning Study Report. • Concurrence Point 1, the Planning Study Report or Strategic Plan is made available for review and comment.

Table 3-1. Public Involvement Activities

Project Development Process	Public Involvement Activities
Step 5 Develop Conceptual Alternatives	• Incorporate stakeholder and public comments into Step 5 activities to further refine and analyze the alternatives. • Revise PIP for Steps 5-14. • Select corridors for further study based on stakeholder comments. • Document the corridors for further study in the Conceptual Alternatives Study and obtain stakeholder concurrence of the document during Concurrence Point 2. • Notify property owners, as needed, if field study activities require access to their property. • Work with stakeholders while developing the Relocation Assistance Program Conceptual Survey. • Identify and contact consulting parties in accordance with Section 106 of the National Historic Preservation Act (NHPA). • Notify utility companies to locate underground facilities.
Step 6 Develop Feasible Alternatives	• Use stakeholder and public comments, from Concurrence Point 2 at the end of Step 5, to allow for development of feasible alternatives in Step 6. • Notify property owners, as needed, if field study activities require access to their property. • If necessary, begin coordination with railroad companies. • Use stakeholder involvement and comments to assist with completion of the alternatives evaluation matrix. • Obtain stakeholder concurrence with Assessment of Feasible Alternatives during Concurrence Point 3.
Step 7 Develop Preferred Alternative	• Review stakeholder comments and officially recommend a preferred alternative that will be developed throughout Step 7. • Notify property owners, as needed, if field study activities require access to their property. • Make available the draft environmental document to stakeholders. • Present the recommended preferred alternative to the stakeholders and request comments and concurrence during Concurrence Point 4. • If the project involves an Environmental Impact Statement (EIS), hold a public hearing to solicit comments during Concurrence Point 4.

Table 3-1. Public Involvement Activities

Project Development Process	Public Involvement Activities
Step 8 Prepare Environmental Clearance and Develop Stage 1 Design	• Incorporate public comments into the final environmental document and obtain final approvals. • If the project involves an EIS, seek public concurrence on the Final EIS during Concurrence Point 5. • Address any public comments, as appropriate, in the Stage 1 Design. • Involve public, as necessary, in noise wall details/activities. • Coordinate with railroad companies to determine potential right-of-way acquisitions and complete the preliminary right-of-way plans. • Work with public, as necessary, to develop conceptual mitigation plans (i.e. cultural resources, streams and wetlands). • If there has been a change in the recommended preferred alternative since Step 7, notify the public and seek concurrence.
Step 9 Develop Stage 2 Detailed Design	• Incorporate stakeholder involvement and agreements into the Environmental Commitments Summary. • Work with the public on design aesthetics. • Begin preliminary right-of-way activities which may include, but are not limited to, developing affected property owners list, implementing tasks under 49 CFR 24.205(a), and notifying property owners through letters and meetings. • Continue to involve the public, as necessary, in noise wall details/activities and mitigation for cultural resources, stream and wetlands.
Step 10 Complete Right-of-Way Plan and Begin Acquisition	• Incorporate public comments into final right-of-way plans. • Begin right-of-way acquisition activities which may include, but are not limited to, performing title searches, confirming ownership, completing appraisals, and ultimately purchasing property. • Provide relocation assistance to residents and businesses. • Work with utility companies to prepare final plans to relocate facilities.
Step 11 Develop Stage 3 Design	• Work with the public to coordinate construction timing with other work at the same or an adjacent site. • Ensure public concerns are addressed in the Environmental Consultation Form.
Step 12 Prepare Final Plan Package	• Identify local businesses that might be impacted by construction. • Convey to the public the maintenance of traffic plans.
Step 13 Award Contract	• Work with appropriate stakeholders to advertise the project, respond to pre-bid questions and award the contract.
Step 14 Construct Project	• Prior to construction, publish public notifications. • Work with local governments, and adjacent property owners to implement maintenance of traffic plans. • Inform public throughout construction of activities and schedule.

3.2 Public Involvement Plan

A Public Involvement Plan (PIP) was prepared for the Brent Spence Bridge Replacement/Rehabilitation Project for Steps 1 through 4 of the PDP (Appendix I). ODOT and KYTC recognize that a proactive, effective communications effort will enhance the project's outcome. Soliciting ideas and input from stakeholders and residents will provide the constructive feedback necessary for the successful implementation of needed transportation improvements. A coordinated communications program will also educate the public on the long-term benefits of the infrastructure improvements under consideration, such as increased travel safety and improved mobility.

Currently the PIP addresses activities in Steps 1 through 4 of the PDP and will be updated as the project moves forward. Table 3-2 presents a summary of the public involvement activities that have taken place during Steps 1 through 4. All informational materials will be updated as new information becomes available to keep information accurate and up-to-date communication maintained. As the project progresses towards Steps 5 and beyond, this PIP will be updated to prepare for upcoming public outreach needs.

Table 3-2. Public Involvement Activities for Steps 1 through 4.

Activity	Implementation Details
Establish the Project Identity	To establish an identity for the project, a logo was created to be used throughout the course of the study. It will be used on all collateral materials for the project including letterhead, envelopes and other printed materials, as well as signage for public meetings, exhibits, maps, etc.
Establish an Advisory Committee	Identify individuals representing key local organizations and communities as members of an Advisory Committee. The Advisory Committee meets regularly to review and discuss project information and provide feedback from the community perspective. Committee members act as liaisons between the Project team and their respective organizations and community groups.
Establish an Aesthetic Committee	Identify individuals representing key local organizations and communities to be members of an Aesthetics Committee. The Aesthetics Committee will meet regularly to review and discuss project information and provide feedback from the community perspective. The Aesthetic Committee will provide its recommendations to the Advisory Committee which will review, approve, and disseminate its recommendations.
Advisory Committee Meetings	The Project team meets regularly with the Advisory Committee in an effort to keep them informed about the project, address their concerns and to obtain their input. Four meetings are anticipated. Meetings have occurred on August 19, 2005, October 13, 2005, and March 23, 2006.

Table 3-2. Public Involvement Activities for Steps 1 through 4.

Activity	Implementation Details
Advisory Committee Survey	Using a written survey, the Project team assessed Advisory Committee members' priorities and concerns about the project and identified important considerations. The data obtained was used to develop project goals and measures as well as to begin developing the criteria by which alternatives are evaluated.
Identify and Engage Environmental Justice Populations	The Project team identified and enlisted contacts representing the different organizations to act as liaisons between the Project team and Environmental Justice population members. These contacts received project information from Project team members (such as public meeting schedules, newsletters, etc.) and where asked to distribute information among their communities. A summary of Environmental Justice activities is in Appendix C.
Project Newsletters	The Project team issued the first in a series of project newsletters that summarized key project information (goals, issues, concerns, etc.), the decision-making and alternative evaluation processes, and progress being made. The newsletters highlight answers to frequently asked questions.
Web Site Coordination	The Project team developed an independently hosted project Web site. The Project team prepared content for the site and submitted to ODOT and KYTC for approval. Information will be updated regularly and includes a project summary, projected schedule/timeline, project updates, public meeting schedules, frequently asked questions, copies of fact sheets and newsletters, etc. To maximize awareness of the site, a link to the site has been posted on the ODOT and KYTC homepages and the Project team requested that Advisory Committee members place a link to the project page on each of their Web sites. Also, the Web site address will continue to be included on all collateral materials.
Media Relations	ODOT, KYTC, and the Project Team work together to keep the media well-informed about the project, project-related issues, and public information meeting schedules. ODOT and KYTC take the lead on media relations, the Project team is available to assist in any capacity needed including preparing media kits, writing and distributing news releases and alerts, coordinating interviews, preparing speaking points etc.
Project Fact Sheets	The Project team will create a series of fact sheets to be used throughout the project that explain the various steps of the study, decision-making process, alternatives under consideration, etc. The fact sheets will help to ensure that accurate, consistent information is being disseminated to the Advisory Committee, media and public. The fact sheets will be designed to stand alone, supplement press kits and informational packets, be distributed at public meetings and be posted on the project Web site. They will be updated regularly.

Table 3-2. Public Involvement Activities for Steps 1 through 4.

Activity	Implementation Details
Roving Information Display	The Project team developed a Roving Information Display which summarizes basic project information including the Project Development Process, Purpose and Need information, possible alternatives, and the project schedule. This display will be updated as needed to ensure information presented is current.

3.3 Public Involvement Plan Updates

As the project progresses towards Steps 5 and beyond, the PIP will be updated to prepare for upcoming public outreach needs. Since public involvement is a fluid process, all communication tools used in this plan must remain flexible to meet the changing needs of the Advisory Committee and the general public. Any changes to the PIP activities will be noted and the plan will be revised accordingly.

3.4 Public Involvement Meetings

A series of public involvement meetings for the Brent Spence Bridge Replacement/Rehabilitation Project were held for Concurrence Point #1 to present work completed in Steps 1 through 4 of the ODOT PDP. The purpose of the meetings was to inform the public about the project purpose and need, secondary source data collected, project goals and measures of success, conceptual alternatives recommended for dismissal, and conceptual alternatives recommended for further development and study.

The meetings were held on May 2, 2006 at the Cincinnati Museum Center (Losantiville Café), 1301 Western Avenue, Cincinnati, Ohio and on May 4, 2006 at the Gardens of Park Hills (Vista Room), 1622 Dixie Highway, Park Hills, Kentucky. Both meetings were held from 3:00 pm to 8:00 pm. Letters announcing the public meetings were sent via direct mail to every address in the study area and every address within 250 feet of the project limits. This mailing included approximately 8,000 pieces and reached every address including individual apartments regardless of ownership status. A notification flyer of the public meetings was posted on the project website. Local news programs and newspapers also announced the meetings.

The meetings were conducted in an open house format that allowed participants to review information at their own pace. No formal presentation was given. Project team representatives were available to answer questions and take comments. Approximately 100 people (excluding the project team) attended the first meeting held in Ohio. Approximately 220 people attended the second meeting held in Kentucky.

Exhibits displayed included project background; existing traffic data; environmental resources; the evaluation matrix for all alternatives considered; and conceptual alternative solutions considered and dismissed. Copies of technical studies completed to date (*Purpose and Need Statement, Red Flag Summary, Existing and Future Conditions Report and the Conceptual Alternatives Solutions Report*) were also available for review. Comment sheets, a project informational handout, and the current project newsletter were provided.

A two-week comment period followed the meetings. Comments were submitted either through the project website, electronic mail, in writing or on the project hotline. A total of 58 public comments were received during the comment period. A summary table of Concurrence Point #1 comments and responses is in Appendix C.

Based on the public comments received, there was a general consensus that improvements were needed in the I-71/I-75 corridor. The following summarizes primary public comments from Concurrence Point #1:

- It was suggested that transit alternatives be considered instead of only roadway solutions.
- The potential for displacements and affects on property were expressed concerns.
- The potential of increased traffic noise resulting from the addition of lanes was expressed as a concern.
- All of the alternatives were desirable for various reasons, none were recommended for elimination.
- The project team was praised for the information presented.
- Several questions were raised about the schedule for right-of-way acquisitions and construction.
- It was noted that Alternatives 1 and 2 would disturb several properties due to the new bridge being separate from the existing bridge, which would require more right-of-way (along Western Ave in Covington and the Queensgate community in Cincinnati).
- Alternatives 1 and 2 were preferred by several citizens because they separate through traffic from local traffic and would help solve problems of congestion.
- It was recommended that the project team keep design features in mind as the bridge is an aesthetic feature that has the potential to add benefit to the cities.
- Concern was expressed about the affect of the project on existing exits (i.e. KY 5th Street and KY 12th Street) due to the changes in access associated with Alternatives 1 and 2.
- Quality of life and viewshed issues were raised as the new structure could impact existing neighborhoods in Covington and change the view across the Ohio River from Kentucky.
- Residential and commercial property owners would like to be kept informed of study progress; several people requested that they be added to the mailing list.

4.0 COMPLETED PLANNING STUDIES

4.1 Existing and Future Conditions Report

The *Brent Spence Bridge Replacement/Rehabilitation Project: Existing and Future Conditions Report* (February 2006) provided detailed information related to the transportation system (including traffic analysis and crash analysis), natural environment, geotechnical conditions, social environment, cultural resources, hazardous materials, and air quality (Appendix J). Each topic is discussed as it exists currently (2005-2006) and in the future (2030).

An Origin Destination (OD) Study was completed during December 2005 to document and understand travel patterns and travel times of cars and trucks using the Brent

Spence Bridge during peak periods. Five sites along I-75 (including the Brent Spence Bridge), I-71, US 50, and I-471 were monitored to investigate travel patterns within the Greater Cincinnati area. The OD study determined that approximately 40 percent of the cars using the Brent Spence Bridge were expected to be going to or coming from the other four study sites. The percentage of trucks remaining on the interstate/freeway system was higher than that of passenger vehicles. At least 70 percent of trucks using the Brent Spence Bridge were going to or coming from the other four study sites. The OD study results compared favorably to the Ohio-Kentucky-Indiana Regional Council of Governments (OKI) Travel Demand Forecasting Model.

Specific to the Existing and Future Conditions Report was a traffic analysis conducted for I-75, I-71, US 50, and local street intersections within the study area. In order to obtain a detailed understanding of traffic patterns within the study area, I-75, I-71, and US 50 were divided into mainline segments and interchange ramp merge and diverge points. A total of 47 signalized intersections and eight unsignalized intersections of the local roadway network were studied. The analysis determined AM and PM design hour volumes and levels of service (LOS) for existing (2005) and future conditions (2030).

Traffic counts were collected in the study area during September, October and November 2005. Traffic data for the at-grade intersections were collected using turning movement counts while ramp traffic was collected using portable machine counters. Mainline volumes were determined from the I-75 Thru the Valley study and the I-75 Mill Creek Expressway study and carried through the study area. Select spot counts on the I-75 mainline were also used as check counts. Levels of service were determined for freeway segments, interchange ramp merge and diverge points, 47 signalized intersections and eight unsignalized intersections within the study area using Highway Capacity Software (HCS) version, HCS2000™, version 4.1d.

4.1.1 Existing Traffic Conditions (2005)

4.1.1.1 Mainline Segment Analysis

The following tables present the results of the 2005 existing condition analyses performed on the mainline segments of I-75, I-71, and US 50 within the study area. Locations with a LOS D are likely to degrade to a LOS of E or F in the design year (2030).

The AM design hour traffic on all three freeways in the study area occurs during the 7:30 to 8:30 AM period. The northbound and southbound lanes of I-75 north of the Brent Spence Bridge accommodate the highest volumes of traffic during the AM peak period. The northbound and southbound lanes of I-75 south of the Brent Spence Bridge accommodate more traffic during the PM peak period, 4:30 to 5:30 PM. I-71 northbound and US 50 eastbound carry more traffic during the AM peak period, while I-71 southbound and US 50 westbound are more heavily traveled during the PM peak period. While no segments on I-71 or US 50 operate at LOS E or F, many segments on I-75 operate at LOS E or F, and several segments operate at LOS D.

Table 4-1. 2005 I-75 Northbound Mainline Segments

Segment		AM			PM		
From	To	Volume	LOS[1]	Density (pc/mi/ln)[2]	Volume	LOS[1]	Density (pc/mi/ln)[2]
Kyles Lane Merge	West 12th Street Diverge	5806	E	37.5	5758	E	36.8
West KY 12th Street Diverge	West 5th Street Diverge	5576	D	34.6	5262	D	31.3
West KY 5th Street Diverge	Pike Street Merge	4964	D	28.6	4764	D	27.0
Pike Street Merge	West 4th Street Merge	5866	E	38.3	5130	D	30.0
Brent Spence Bridge South	Brent Spence Bridge North	6964	D	30.9	6074	C	25.5
I-71 Diverge	West 5th Street Diverge	3429	D	30.2	4282	F	*
West OH 5th Street Diverge	US 50 Diverge	2845	C	23.6	4066	E	42.0
US 50 Diverge	I-71 Merge	2182	B	17.9	3437	D	30.3
I-71 Merge	West 9th Street Merge	3862	B	15.9	5750	C	23.9
West OH 9th Street Merge	Freeman Avenue Merge	4046	B	16.6	6621	D	28.6
Freeman Avenue Merge	Ezzard Charles Merge	4599	C	18.9	7230	D	32.9
Ezzard Charles Merge	Western Hills Viaduct Diverge	4689	C	19.3	7550	E	35.6
Western Hills Diverge	Western Hills/ Bank St Merge	4316	B	17.7	6783	D	29.7
North of Western Hills Merge		5273	C	21.7	7611	E	36.2

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane
* Capacity Exceeds HCS calculations

Table 4-2. 2005 I-75 Southbound Mainline Segments

Segment		AM			PM		
From	To	Volume	LOS[1]	Density (pc/mi/ln)[2]	Volume	LOS[1]	Density (pc/mi/ln)[2]
North of Western Hills Viaduct		8304	E	44.3	5846	C	24.4
Western Hills Viaduct Merge	Findlay Street Diverge	9007	D	32.7	5642	C	18.5
Findlay Street Diverge	Ezzard Charles Diverge	8372	F	*	5033	C	20.7
Ezzard Charles Diverge	Freeman Avenue	7871	E	38.9	4842	C	19.9
Ezzard Charles Merge	West OH 7th Street	7314	D	33.6	4660	C	19.1
I-71 Diverge	West OH 9th Street	2959	C	24.7	2115	B	17.4
West OH 9th Street Merge	US 50 Merge	3126	D	26.5	2569	C	21.1
US 50 Merge	I-71 Merge	3673	D	33.8	3230	D	27.7
Brent Spence Bridge North	Brent Spence Bridge	5280	C	21.8	7156	D	32.3
West OH 5th Street Diverge	Pike Street Diverge	4605	C	18.9	6429	D	27.5
Pike Street Diverge	West KY 4th Street	4324	B	17.8	5836	C	24.3
West KY 4th Street Merge	West KY 12th Street	4718	C	19.4	6739	D	29.4
West KY 12th Street Merge	Kyles Lane Diverge	5039	C	20.7	7277	D	33.3

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane
* Capacity Exceeds HCS calculations

Table 4-3. 2005 I-71 Northbound Mainline Segments

Segment		AM			PM		
From	To	Volume	LOS[1]	Density (pc/mi/ln)[2]	Volume	LOS[1]	Density (pc/mi/ln)[2]
South of West OH 2nd Street		3535	D	31.4	1792	B	14.6
West OH 2nd Street Diverge	I-75 SB/US 50	2662	C	21.8	1498	B	12.2
East of I-75 SB/US 50 Merge		5855	C	24.3	4254	B	17.4

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane

Table 4-4. 2005 I-71 Southbound Mainline Segments

Segment		AM			PM		
From	To	Volume	LOS[1]	Density (pc/mi/ln)[2]	Volume	LOS[1]	Density (pc/mi/ln)[2]
East of I-75 Northbound Diverge		3746	B	15.3	5566	C	22.9

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane

Table 4-5. 2005 US 50 Westbound Mainline Segments

Segment		AM			PM		
From	To	Volume	LOS[1]	Density (pc/mi/ln)[2]	Volume	LOS[1]	Density (pc/mi/ln)[2]
I-75 Northbound	West OH 6th Street	1743	A	7.0	2656	A	10.7
Gest Street Diverge	Dalton Avenue Diverge	1249	A	5.0	2454	A	9.9
Dalton Avenue Diverge	Freeman Avenue	773	A	4.2	2246	B	12.1
West of Freeman Avenue		955	A	5.1	2794	B	15.0

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane

Table 4-6. 2005 US 50 Eastbound Mainline Segments

Segment		AM			PM		
From	To	Volume	LOS[1]	Density (pc/mi/ln)[2]	Volume	LOS[1]	Density (pc/mi/ln)[2]
West of Freeman Ave		3544	C	19.0	1115	A	6.0
Freeman Avenue	Freeman Avenue Merge	2851	C	23.2	938	A	7.6
Freeman Avenue Merge	Linn Street Merge	2920	B	15.7	1299	A	7.0
Linn Street Merge	West OH 5th Street	3055	B	12.3	1935	A	7.8
West OH 5th Street	I-75 Southbound Diverge	2548	C	20.6	1815	B	14.6

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane

4.1.1.2 Ramp-Freeway Junctions

Traffic congestion throughout the highway network is also due to the merge and diverge locations at interchanges along I-75, I-71, and US 50. The following tables present the results for the 2005 existing condition analyses performed on interchange ramps of I-75, I-71, and US 50 within the study area. Locations with a LOS D are likely to degrade to a LOS of E or F in the design year (2030).

Traffic analyses determined that numerous interchanges on I-75 in the northbound and southbound directions currently operate at LOS D, E, and F during both the AM and the PM peak hours. Additionally, I-71 interchange ramps in the study area operate at LOS D and E during the AM and PM peak hours. The majority of ramps along US 50 currently operate at LOS A, B, and C in both the AM and PM peak hours.

Table 4-7. 2005 I-75 Northbound Ramps

Ramp	Junction	AM		PM	
		LOS[1]	Density (pc/mi/ln)[2]	LOS[1]	Density (pc/mi/ln)[2]
Kyles Lane Entrance Ramp	Merge	E	36.0	D	33.9
West KY 12th Street Exit Ramp	Diverge	E	36.5	E	36.6
West KY 5th Street Exit Ramp	Diverge	E	35.8	D	34.3
Pike Street Entrance Ramp	Merge	E	35.1	D	29.5
West KY 4th Street Entrance Ramp**	Add Lane	E	38.3 [U]	D	30.0 [U]
I-71 NB Exit Ramp**	Drop Lane	D	33.5 [R]	F	[D]
West OH 5th Street Exit Ramp	Diverge	E	35.4	F*	43.8
US 50 Exit Ramp	Diverge	E	35.6	F*	44.1
I-71 Entrance Ramp**	Add Lane	B	17.9 [U]	D	30.0 [U]
West OH 9th Street Entrance Ramp	Merge	B	14.4	C	20.4
Freeman Avenue Entrance Ramp	Merge	B	16.0	C	21.3
Ezzard Charles Entrance Ramp	Merge	B	16.0	C	23.0
Western Hills Viaduct Exit Ramp	Diverge	C	20.8	E	35.3
Bank Street Entrance Ramp	Merge	B	18.9	C	24.4

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane
* Failed capacity check for ramp or freeway (implies that the density exceeds the capacity of the facility)
** Values represent the result for the worst operating component of the ramp junction
[R] – Ramp operates the worst
[U] – Upstream freeway operates the worst
[D] – Downstream freeway operates the worst

Table 4-8. 2005 I-75 Southbound Ramps

Ramp	Junction	AM		PM	
		LOS[1]	Density (pc/mi/ln)[2]	LOS[1]	Density (pc/mi/ln)[2]
Western Hills Viaduct Exit Ramp	Diverge	F*	37.3	D	28.6
Western Hills Entrance/ Findlay Street Exit	Weave	F*	44.4	C	25.3
Ezzard Charles Exit Ramp	Diverge	F*	38.1	C	22.0
Freeman Avenue Exit Ramp	Diverge	F*	36.9	C	22.6
Ezzard Charles Entrance/ W 7th Street Exit	Weave	E	35.5	B	19.3
I-71/ West OH 5th Street Exit Ramp**	Drop Lane	C	25.8 [R]	C	19.2 [R]
West OH 9th Street Entrance Ramp	Merge	D	30.4	C	25.2
US 50 Entrance Ramp	Merge	F*	35.9	D	31.8
I-71 Entrance Ramp**	Add Lane	D	33.8 [U]	E	39.1 [R]
West KY 5th Street Exit Ramp	Diverge	D	29.5	E	37.8
Pike Street Exit Ramp	Diverge	C	22.9	D	32.4
West KY 4th Street Entrance Ramp	Merge	B	15.8	B	19.5
West KY 12th Street Entrance Ramp	Merge	B	19.8	C	26.4
Kyles Lane Exit Ramp	Diverge	C	26.6	E	38.3

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane
* Failed capacity check for ramp or freeway (implies that the density exceeds the capacity of the facility)
** Values represent the result for the worst operating component of the ramp junction
[R] – Ramp operates the worst
[U] – Upstream freeway operates the worst
[D] – Downstream freeway operates the worst

Table 4-9. 2005 I-71 Northbound Ramps

Ramp	Junction	AM		PM	
		LOS[1]	Density (pc/mi/ln)[2]	LOS[1]	Density (pc/mi/ln)[2]
West OH 2nd Street Exit Ramp	Diverge	E	35.2	B	18.1
I-75 SB Entrance Ramp**	Add Lane	D	26.7 [R]	C	22.4 [R]

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane
** Values represent the result for the worst operating component of the ramp junction
[R] – Ramp operates the worst
[U] – Upstream freeway operates the worst
[D] – Downstream freeway operates the worst

Table 4-10. 2005 I- 71 Southbound Ramps

Ramp	Junction	AM		PM	
		LOS[1]	Density (pc/mi/ln)[2]	LOS[1]	Density (pc/mi/ln)[2]
West OH 3rd Street Entrance Ramp	Merge	B	16.1	E	36.4
I-75 Northbound/ US 50 Exit Ramp**	Drop Lane	C	18.6 [R]	D	26.9 [D]

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane
** Values represent the result for the worst operating component of the ramp junction
[R] – Ramp operates the worst
[U] – Upstream freeway operates the worst
[D] – Downstream freeway operates the worst

Table 4-11. 2005 US 50 Westbound Ramps

Ramp	Junction	AM		PM	
		LOS[1]	Density (pc/mi/ln)[2]	LOS[1]	Density (pc/mi/ln)[2]
I-71/I-75 Entrance Ramp**	Add Lane	B	12.7 [R]	B	14.8 [R]
Gest Street Exit Ramp	Diverge	B	13.3	B	15.8
Dalton Avenue Exit Ramp**	Drop Lane	A	7.8 [R]	B	12.1 [D]
	Merge	A	6.0	B	16.8

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane
** Values represent the result for the worst operating component of the ramp junction
[R] – Ramp operates the worst
[U] – Upstream freeway operates the worst
[D] – Downstream freeway operates the worst

Table 4-12. 2005 US 50 Eastbound Ramps

Ramp	Junction	AM		PM	
		LOS[1]	Density (pc/mi/ln)[2]	LOS[1]	Density (pc/mi/ln)[2]
Freeman Avenue Exit Ramp**	Drop Lane	C	23.2 [D]	A	7.6 [D]
Freeman Avenue Entrance Ramp**	Add Lane	C	23.2 [U]	A	7.6 [U]
West OH 6th Entrance/ West 5th Exit	Weave	B	16.2	B	10.7
I-75 Southbound Exit Ramp**	Drop Lane	D	29.3 [D]	B	17.0 [D]

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane
** Values represent the result for the worst operating component of the ramp junction
[R] – Ramp operates the worst
[U] – Upstream freeway operates the worst
[D] – Downstream freeway operates the worst

4.1.1.3 Local Street At-Grade Intersections

Within the study area 47 signalized and eight unsignalized local street intersections were analyzed. Table 4-13 presents the intersections evaluated and the results obtained for each location. Locations with a LOS D are likely to degrade to a LOS of E or F in the design year (2030). The highlighting reflects the overall intersection level of service and not individual movements.

Table 4-13. 2005 Local Street Intersections

Intersection	Time Period	Eastbound		Westbound		Northbound		Southbound		Overall	
		Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]
West KY 4th Street and Crescent Avenue (Stop Controlled)	AM	-	-	10.8	B	-	-	-	-	-	-
	PM	-	-	13.7	B	-	-	-	-	-	-
West KY 4th Street and Philadelphia Street	AM	-	-	36.8	D	9.5	A	35.5	D	30.6	C
	PM	-	-	40.4	D	18.7	B	42.3	D	36.5	D
West KY 4th Street and Bakewell Street	AM	-	-	14.1	B	14.3	B	14.4	B	14.2	B
	PM	-	-	16.1	B	15.9	B	15.7	B	16.1	B
West KY 4th Street and Main Street	AM	-	-	17.8	B	17.9	B	12.7	B	17.0	B
	PM	-	-	20.9	C	15.3	B	21.1	C	20.5	C
West KY 5th Street and Crescent (Stop Controlled)	AM	-	-	9.7	A	-	-	-	-	-	-
	PM	-	-	11.2	B	-	-	-	-	-	-
West KY 5th Street and Philadelphia Street	AM	18.4	B	-	-	17.8	B	18.3	B	18.3	B
	PM	18.8	B	-	-	16.6	B	18.1	B	18.4	B
West KY 5th Street and Bakewell Street (Stop Controlled)	AM	-	-	-	-	18.9	C	17.4	C	-	-
	PM	-	-	-	-	14.3	B	14.3	B	-	-
West KY 5th Street and Main Street	AM	18.7	B	-	-	18.2	B	18.4	B	18.5	B
	PM	18.9	B	-	-	14.0	B	19.1	B	18.3	B
Pike Street and Bullock Street	AM	35.4	D	9.9	A	-	-	36.5	D	32.0	C
	PM	32.5	C	35.0	C	-	-	34.5	C	34.4	C
Pike Street and Jillians Way	AM	44.1	D	7.5	A	42.9	D	-	-	39.5	D
	PM	21.9	C	21.7	C	21.7	C	-	-	21.8	C
West KY 12th Street and Bullock Street (Stop Controlled)	AM	10.6	B	11.2	B	-	-	10.7	B	10.8	B
	PM	9.6	A	13.0	B	-	-	11.5	B	11.8	B
West KY 12th Street and Jillians Way (Stop Controlled)	AM	20.7	C	25.3	D	13.2	B	-	-	21.4	C
	PM	20.9	C	39.9	E	33.7	D	-	-	32.9	D
Kyles Lane and Dixie Highway	AM	187.6	F	178.5	F	181.8	F	21.0	C	181.4	F
	PM	118.8	F	118.1	F	124.3	F	21.7	C	119.6	F

Table 4-13. 2005 Local Street Intersections

Intersection	Time Period	Eastbound		Westbound		Northbound		Southbound		Overall	
		Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]
I-75 Southbound Ramps and Kyles Lane	AM	-	-	21.9	C	14.0	B	22.0	C	18.7	B
	PM	-	-	52.4	D	44.8	D	56.7	E	50.9	D
I-75 Northbound Ramps and Kyles Lane	AM	71.1	E	-	-	75.4	E	4.1	A	51.5	D
	PM	26.7	C	-	-	26.2	C	16.6	B	22.2	C
Highland Pike and Kyles Lane	AM	22.8	C	205.4	F	197.0	F	31.0	C	146.8	F
	PM	30.5	C	225.0	F	24.4	C	231.7	F	161.6	F
Bank Street and Dalton Avenue	AM	13.5	B	15.9	B	14.0	B	15.1	B	14.8	B
	PM	12.7	B	19.3	B	17.2	B	19.4	B	18.3	B
Bank Street and Winchell Avenue	AM	14.0	B	13.6	B	13.9	B	-	-	13.9	B
	PM	14.8	B	14.7	B	14.5	B	-	-	14.6	B
Central Avenue and Linn Street	AM	25.1	C	14.5	B	16.2	B	25.1	C	22.2	C
	PM	17.4	B	27.5	C	16.5	B	26.7	C	23.6	C
Bank Street and Linn Street (Stop Controlled)	AM	10.8	B	-	-	-	-	-	-	-	-
	PM	12.6	B	-	-	-	-	-	-	-	-
Findlay Street and Dalton Avenue	AM	16.5	B	19.4	B	19.0	B	11.4	B	15.6	B
	PM	19.5	B	21.0	C	20.0	C	10.9	B	16.1	B
Findlay Street and Western Avenue	AM	14.0	B	14.1	B	-	-	14.1	B	14.1	B
	PM	14.3	B	13.5	B	-	-	14.1	B	14.1	B
Findlay Street and Winchell Avenue	AM	14.1	B	13.2	B	13.9	B	-	-	13.9	B
	PM	14.2	B	13.6	B	14.3	B	-	-	14.2	B
West Liberty Street and Dalton Avenue	AM	13.8	B	14.9	B	13.9	B	15.4	B	14.9	B
	PM	14.6	B	16.3	B	14.7	B	16.6	B	15.9	B
West Liberty Street and Western Avenue	AM	14.3	B	14.5	B	-	-	14.2	B	14.3	B
	PM	13.9	B	14.3	B	-	-	14.5	B	14.3	B
West Liberty Street and Winchell Avenue	AM	14.9	B	13.8	B	14.8	B	-	-	14.6	B
	PM	14.0	B	15.3	B	15.0	B	-	-	14.9	B

Table 4-13. 2005 Local Street Intersections

Intersection	Time Period	Eastbound		Westbound		Northbound		Southbound		Overall	
		Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]
West Liberty Street and Linn Street	AM	15.9	B	15.1	B	15.6	B	15.3	B	15.6	B
	PM	15.1	B	17.5	B	16.5	B	16.0	B	16.5	B
Ezzard Charles Drive Westbound and Western Avenue	AM	-	-	13.8	B	-	-	14.1	B	14.1	B
	PM	-	-	14.0	B	-	-	13.9	B	13.9	B
Ezzard Charles Drive Westbound and Winchell Avenue	AM	-	-	14.5	B	14.2	B	-	-	14.3	B
	PM	-	-	17.4	B	17.7	B	-	-	17.6	B
Ezzard Charles Drive Eastbound and Western Avenue	AM	15.7	B	-	-	-	-	15.6	B	15.6	B
	PM	13.9	B	-	-	-	-	14.1	B	14.1	B
Ezzard Charles Drive Eastbound and Winchell Avenue	AM	14.8	B	-	-	14.7	B	-	-	14.8	B
	PM	13.5	B	-	-	13.5	B	-	-	13.5	B
Ezzard Charles Drive and Linn Street	AM	13.6	B	11.8	B	13.3	B	12.9	B	13.2	B
	PM	12.7	B	13.7	B	13.4	B	12.9	B	13.3	B
Gest Street and Dalton Avenue	AM	15.9	B	15.8	B	16.1	B	16.0	B	16.0	B
	PM	17.7	B	17.5	B	13.5	B	17.8	B	17.0	B
Gest Street and Western Avenue	AM	15.0	B	14.9	B	-	-	15.1	B	15.0	B
	PM	15.4	B	14.5	B	-	-	15.0	B	15.1	B
Gest Street and Freeman Avenue	AM	17.5	B	27.6	C	26.9	C	27.0	C	25.8	C
	PM	16.7	B	28.3	C	26.1	C	26.3	C	24.1	C
Linn Street and Gest Street	AM	15.2	B	17.1	B	17.0	B	9.8	A	15.1	B
	PM	16.6	B	16.8	B	17.1	B	10.1	B	15.5	B
West Court Street and Linn Street (Stop Controlled)	AM	11.7	B	12.6	B	-	-	-	-	-	-
	PM	15.7	C	17.7	C	-	-	-	-	-	-
West OH 8th Street and Dalton Avenue	AM	13.9	B	20.5	C	17.8	B	20.2	C	17.2	B
	PM	16.2	B	27.0	C	14.5	B	28.8	C	24.4	C
West OH 8th Street and Freeman Avenue	AM	25.0	C	21.6	C	25.4	C	22.2	C	24.0	C
	PM	24.1	C	23.2	C	22.5	C	24.0	C	23.6	C
West OH 8th Street and Linn Street	AM	22.7	C	19.8	B	21.5	C	20.9	C	22.0	C
	PM	22.8	C	22.7	C	20.0	B	23.2	C	22.4	C

Table 4-13. 2005 Local Street Intersections

Intersection	Time Period	Eastbound		Westbound		Northbound		Southbound		Overall	
		Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]
West OH 6th Street and Linn Street	AM	-	-	-	-	-	-	7.9	A	-	-
	PM	-	-	-	-	-	-	10.7	B	-	-
Dalton Avenue and Linn Street	AM	15.4	B	16.4	B	16.6	B	15.3	B	16.0	B
	PM	21.4	C	13.1	B	20.2	C	18.1	B	18.8	B
Central Avenue and West Court Street	AM	15.2	B	13.1	B	15.2	B	-	-	15.0	B
	PM	12.8	B	13.8	B	13.5	B	-	-	13.4	B
West OH 9th Street and Central Avenue	AM	-	-	13.4	B	13.3	B	12.3	B	13.3	B
	PM	-	-	17.9	B	17.8	B	14.0	B	17.7	B
West OH 7th Street and Central Avenue	AM	17.4	B	-	-	17.6	B	-	-	17.4	B
	PM	13.7	B	-	-	13.5	B	-	-	13.6	B
West OH 6th Street and Central Avenue	AM	-	-	14.3	B	14.1	B	-	-	14.2	B
	PM	-	-	15.2	B	15.5	B	-	-	15.2	B
West OH 5th Street and Central Avenue	AM	26.0	C	-	-	25.3	C	12.7	B	25.4	C
	PM	18.8	B	-	-	19.4	B	8.8	A	17.6	B
West OH 4th Street and Central Avenue	AM	-	-	16.6	B	15.6	B	16.5	B	16.1	B
	PM	-	-	30.0	C	30.4	C	25.6	C	29.9	C
West OH 3rd Street and Central Avenue	AM	37.2	D	38.0	D	30.5	C	36.9	D	37.2	D
	PM	35.4	D	37.4	D	36.5	D	35.4	D	36.6	D
West OH 4th Street and Plum Street	AM	-	-	12.7	B	-	-	12.8	B	12.7	B
	PM	-	-	14.0	B	-	-	14.3	B	14.0	B
West OH 3rd Street and Plum Street	AM	-	-	12.4	B	-	-	12.4	B	12.4	B
	PM	-	-	12.4	B	-	-	12.7	B	12.4	B
West OH 4th Street and Elm Street	AM	-	-	13.9	B	13.9	B	-	-	13.9	B
	PM	-	-	16.2	B	16.5	B	-	-	16.3	B
West OH 3rd Street and Elm Street	AM	-	-	14.1	B	14.2	B	-	-	14.1	B
	PM	-	-	14.4	B	14.5	B	-	-	14.4	B
West OH 2nd Street and Elm Street	AM	14.5	B	-	-	14.8	B	-	-	14.5	B
	PM	13.8	B	-	-	13.5	B	-	-	13.7	B
West OH 3rd Street and Clay Wade Bailey Bridge	AM	20.6	C	11.7	B	19.9	B	-	-	18.0	B
	PM	59.2	E	64.9	E	54.5	D	-	-	60.6	E

[1] LOS = Level of Service

Most of the intersections in the study area currently operate at a LOS B and C. However, intersections adjacent to the Kyles Lane Interchange at the southern end of the study area operate at a LOS F during both the AM and PM peak periods. Several intersections in Kentucky operate at a LOS D. The West 3rd Street and Central Avenue intersection in Cincinnati operates at a LOS D during both AM and PM peak periods. The West 3rd Street and Clay Wade Bailey Bridge intersection in Cincinnati operates at LOS E during the PM peak hour.

4.1.2 Future Traffic Conditions (2030)

Year 2030 volumes were obtained using the OKI regional travel demand model assignments as a basis for applying a hybrid mix of the ratio and additive methods. The 2005 design hour volumes were adjusted to reflect the design hour volumes in Year 2030. For at-grade intersections, these volumes were adjusted to maintain balanced flow through the respective corridors.

4.1.2.1 Mainline Segment Analysis

The following tables present the results of the 2030 future condition analyses performed on the mainline segments of I-75, I-71, and US 50 within the study area.

Table 4-14. 2030 I-75 Northbound Mainline Segments

Segment		AM			PM		
From	To	Volume	LOS[1]	Density (pc/mi/ln)[2]	Volume	LOS[1]	Density (pc/mi/ln)[2]
Kyles Lane Merge	West KY 12th Street Diverge	7736	F	*	7100	F	*
West KY 12th Street Diverge	West KY 5th Street Diverge	7594	F	*	6677	F	*
West KY 5th Street Diverge	Pike Street Merge	7001	F	*	6276	F	*
Pike Street Merge	West KY 4th Street Merge	8008	F	*	6694	F	*
Brent Spence Bridge South	Brent Spence Bridge North	9253	F	*	7550	E	35.6
I-71 Diverge	West OH 5th Street Diverge	5348	F	*	5294	F	*
West OH 5th Street Diverge	US 50 Diverge	4460	F	*	5006	F	*
US 50 Diverge	I-71 Merge	3626	D	33.1	4403	F	*
I-71 Merge	West OH 9th Street Merge	5996	C	25.1	6971	D	30.9
West OH 9th Street Merge	Freeman Avenue Merge	6204	D	26.2	7610	E	36.2
Freeman Ave Merge	Ezzard Charles Merge	6612	D	28.6	8156	E	42.3
Ezzard Charles Merge	Western Hills Viaduct Diverge	6699	D	29.1	8,766	F	*
Western Hills Diverge	Western Hills/ Bank Street Merge	6236	D	26.4	8,134	E	42.0
North of Western Hills Merge		7104	D	31.9	8,850	F	*

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane
*Capacity Exceeds HCS calculations

Table 4-15. 2030 I-75 Southbound Mainline Segments

Segment		AM			PM		
From	To	Volume	LOS[1]	Density (pc/mi/ln)[2]	Volume	LOS[1]	Density (pc/mi/ln)[2]
North of Western Hills Viaduct		9333	F	*	7688	E	36.9
Western Hills Viaduct Merge	Findlay Street Diverge	9985	E	40.2	7662	C	25.8
Findlay Street Diverge	Ezzard Charles Diverge	9345	F	*	7023	D	31.3
Ezzard Charles Diverge	Freeman Avenue Diverge	8934	F	*	6763	D	29.5
Ezzard Charles Merge	West OH 7th Street Diverge	8516	F	*	6750	D	29.5
I-71 Diverge	West OH 9th Street Merge	3951	E	39.2	3526	D	31.5
West OH 9th Street Merge	US 50 Merge	4228	F	*	4124	E	43.5
US 50 Merge	I-71 Merge	4781	F	*	4904	F	*
Brent Spence Bridge North	Brent Spence Bridge South	6636	D	28.7	9114	F	*
West KY 5th Street Diverge	Pike Street Diverge	6158	C	26.0	8641	F	*
Pike Street Diverge	West KY 4th Street Merge	5821	C	24.3	8034	E	40.8
West KY 4th Street Merge	West KY 12th Street Merge	6199	D	26.2	9125	F	*
West KY 12th Street Merge	Kyles Lane Diverge	6505	D	27.9	9671	F	*

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane
* Capacity Exceeds (HCS) calculations

Table 4-16. 2030 I-71 Northbound Mainline Segments

Segment		AM			PM		
From	To	Volume	LOS[1]	Density (pc/mi/ln)[2]	Volume	LOS[1]	Density (pc/mi/ln)[2]
South of West OH 2nd		3905	E	37.8	2256	C	18.4
West OH 2nd Street Diverge	I-75 Southbound/US 50 Merge	3097	D	26.0	1866	B	15.3
East of I-75 Southbound/US 50 Merge		6290	D	26.5	4621	C	18.9

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane

Table 4-17. 2030 I-71 Southbound Mainline Segments

Segment		AM			PM		
From	To	Volume	LOS[1]	Density (pc/mi/ln)[2]	Volume	LOS[1]	Density (pc/mi/ln)[2]
East of I-75 Northbound Diverge		4327	B	17.7	6086	C	25.4

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane

Table 4-18. 2030 US 50 Westbound Mainline Segments

Segment		AM			PM		
From	To	Volume	LOS[1]	Density (pc/mi/ln)[2]	Volume	LOS[1]	Density (pc/mi/ln)[2]
I-75 Northbound	West OH 6th Street	1961	A	7.9	2816	B	11.3
Gest Street Diverge	Dalton Avenue Diverge	1258	A	5.1	2574	A	10.4
Dalton Avenue Diverge	Freeman Avenue	799	A	4.3	2302	B	12.4
West of Freeman		960	A	5.2	2730	B	14.7

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane

Table 4-19. 2030 US 50 Eastbound Mainline Segments

Segment		AM			PM		
From	To	Volume	LOS[1]	Density (pc/mi/ln)[2]	Volume	LOS[1]	Density (pc/mi/ln)[2])
West of Freeman Ave		3462	C	18.6	1110	A	6.0
Freeman Avenue Diverge	Freeman Avenue	2906	C	23.7	972	A	7.8
Freeman Avenue Merge	Linn Street Merge	2965	B	15.9	1329	A	7.1
Linn Street Merge	West OH 5th Street	3112	B	12.5	2088	A	8.4
West OH 5th Street Diverge	I-75 Southbound	2563	C	20.7	1963	B	15.8

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane

It is projected that in 2030 almost all of I-75 within the study area will operate at a LOS D, E or F in the AM and PM peak hours. The northbound lanes of I-71 will operate at LOS D and E during the AM peak. The I-71 southbound lanes during the AM and PM peak hours and the northbound lanes during the PM peak hours will operate at LOS B and C. Design hour volumes estimated for US 50 indicate that it will continue to operate at LOS A, B, and C.

4.1.2.2 Ramp-Freeway Junctions

The following tables present the results for the 2030 future condition analyses performed on interchange ramps of I-75, I-71, and US 50 within the study area.

Table 4-20. 2030 I-75 Northbound Ramps

Ramp	Junction	AM		PM	
		LOS[1]	Density (pc/mi/ln)[2]	LOS[1]	Density (pc/mi/ln)[2]
Kyles Lane Entrance Ramp	Merge	F*	45.9	F*	40.9
West KY 12th Street Exit Ramp	Diverge	F*	43.4	F*	41.6
West KY 5th Street Exit Ramp	Diverge	F*	43.1	F*	39.8
Pike Street Entrance Ramp	Merge	F*	46.9	F*	38.1
West KY 4th Street Entrance Ramp**	Add Lane	F*	[U]	F*	[U]
I-71 Northbound Exit Ramp**	Drop Lane	F*	[U]	F*	[D]
West OH 5th Street Exit Ramp	Diverge	F*	54.3	F*	53.8
US 50 Exit Ramp	Diverge	F*	45.8	F*	51.2
I-71 Entrance Ramp**	Add Lane	D	33.1 [U]	F*	[U]
West OH 9th Street Entrance Ramp	Merge	C	20.4	C	22.9
Freeman Avenue Entrance Ramp	Merge	C	20.4	F*	23.3
Ezzard Charles Entrance Ramp	Merge	C	21.5	F*	24.7
Western Hills Viaduct Exit Ramp	Diverge	D	30.0	F*	39.8
Bank Street Entrance Ramp	Merge	C	23.1	F*	27.9

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane
* Failed capacity check for ramp or freeway (implies that the density exceeds the capacity of the facility)
** Values represent the result for the worst operating component of the ramp junction
[R] – Ramp operates the worst
[U] – Upstream freeway operates the worst
[D] – Downstream freeway operates the worst

Table 4-21. 2030 I-75 Southbound Ramps

Ramp	Junction	AM		PM	
		LOS[1]	Density (pc/mi/ln)[2]	LOS[1]	Density (pc/mi/ln)[2]
Western Hills Viaduct Exit Ramp	Diverge	F*	41.5	E	35.8
Western Hills Entrance/Findlay Street Exit	Weave	F*	51.2	E	36.1
Ezzard Charles Exit Ramp	Diverge	F*	41.8	D	31.0
Freeman Avenue Exit Ramp	Diverge	F*	40.8	D	30.4
Ezzard Charles Entrance/West OH 7th Street Exit	Weave	E	42.3	D	29.7
I-71/ West OH 5th Street Exit Ramp**	Drop Lane	E	39.2 [D]	D	31.5 [D]
West OH 9th Street Entrance Ramp	Merge	F*	40.2	F*	39.0
US 50 Entrance Ramp	Merge	F*	45.8	F*	46.8
I-71 Entrance Ramp**	Add Lane	F*	[D]	F*	[R]
West KY 5th Street Exit Ramp	Diverge	D	34.2	F*	44.9
Pike Street Exit Ramp	Diverge	D	29.9	F*	42.1
West KY 4th Street Entrance Ramp	Merge	B	19.0	F*	22.4
West KY 12th Street Entrance Ramp	Merge	C	24.7	F*	33.6
Kyles Lane Exit Ramp	Diverge	D	32.7	F*	48.6

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane
* Failed capacity check for ramp or freeway (implies that the density exceeds the capacity of the facility)
** Values represent the result for the worst operating component of the ramp junction
[R] – Ramp operates the worst
[U] – Upstream freeway operates the worst
[D] – Downstream freeway operates the worst

Table 4-22. 2030 I-71 Northbound Ramps

Ramp	Junction	AM		PM	
		LOS[1]	Density (pc/mi/ln)[2]	LOS[1]	Density (pc/mi/ln)[2]
West OH 2nd Street Exit Ramp	Diverge	F*	38.9	C	22.6
I-75 Southbound Entrance Ramp**	Add Lane	D	26.7 [R]	C	22.4 [R]

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane
* Failed capacity check for ramp or freeway (implies that the density exceeds the capacity of the facility)
** Values represent the result for the worst operating component of the ramp junction
[R] – Ramp operates the worst
[U] – Upstream freeway operates the worst
[D] – Downstream freeway operates the worst

Table 4-23. 2030 I-71 Southbound Ramps

Ramp	Junction	AM		PM	
		LOS[1]	Density (pc/mi/ln)[2]	LOS[1]	Density (pc/mi/ln)[2]
West OH 3rd Street Entrance Ramp	Merge	B	18.3	F*	39
I-75 Northbound/US 50 Exit Ramp**	Drop Lane	C	21.3 [R]	D	32.5 [D]

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane
* Failed capacity check for ramp or freeway (implies that the density exceeds the capacity of the facility)
** Values represent the result for the worst operating component of the ramp junction
[R] – Ramp operates the worst
[U] – Upstream freeway operates the worst
[D] – Downstream freeway operates the worst

Table 4-24. 2030 US 50 Westbound Ramps

Ramp	Junction	AM		PM	
		LOS[1]	Density (pc/mi/ln)[2]	LOS[1]	Density (pc/mi/ln)[2]
I-71/I-75 Entrance Ramp	Add Lane	B	14.5	B	14.4 [R]
Gest Street Exit Ramp	Diverge	B	15.6	B	16.8
Dalton Avenue Exit Ramp**	Drop Lane	A	7.5 [R]	B	12.4 [D]
Freeman Avenue Entrance Ramp	Merge	A	6.0	B	16.1

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane
** Values represent the result for the worst operating component of the ramp junction
[R] – Ramp operates the worst
[U] – Upstream freeway operates the worst
[D] – Downstream freeway operates the worst

Table 4-25. 2030 US 50 Eastbound Ramps

Ramp	Junction	AM		PM	
		LOS[1]	Density (pc/mi/ln)[2]	LOS[1]	Density (pc/mi/ln)[2]
Freeman Avenue Exit Ramp	Drop Lane	C	23.7 [D]	A	7.8 [D]
Freeman Avenue Entrance Ramp	Add Lane	C	23.7 [U]	A	7.8 [U]
West OH 6th Entrance/West OH 5th Exit	Weave	B	16.7	B	12.0
I-75 Southbound Exit Ramp	Drop Lane	D	29.3 [D]	B	17.0 [D]

[1] LOS = Level of Service
[2] pc/mi/ln = passenger car per mile per lane
** Values represent the result for the worst operating component of the ramp junction
[R] – Ramp operates the worst
[U] – Upstream freeway operates the worst
[D] – Downstream freeway operates the worst

Traffic analyses indicate that most of the ramp junctions on I-75 will degraded to a LOS F in 2030 during both the AM and PM peak hours. The I-71 northbound ramps during the AM peak and southbound ramps during the PM peak will operate at LOS D and F. The majority of design hour volumes estimated for US 50 westbound and eastbound ramps indicate that they will continue to operate at LOS A, B, and C.

4.1.2.3 Local Street At-Grade Intersections

Table 4-26 presents the future 2030 results obtained for each intersection location. Seven intersections in Kentucky will operate at a LOS F in 2030. One intersection in Ohio will operate at a LOS E in 2030.

Table 4-26. 2030 Brent Spence Bridge Study Area Intersections

Intersection	Time Period	Eastbound		Westbound		Northbound		Southbound		Overall	
		Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]
West KY 4th Street and Crescent Avenue (Stop Controlled)	AM	-	-	12.5	B	-	-	-	-	-	-
	PM	-	-	12.9	B	-	-	-	-	-	-
West KY 4th Street and Philadelphia Street	AM	-	-	63.2	E	10.1	B	59.4	E	52.6	D
	PM	-	-	59.0	E	22.4	C	60.1	E	52.4	D
West KY 4th Street and Bakewell Street	AM	-	-	15.5	B	15.6	B	15.7	B	15.5	B
	PM	-	-	17.5	B	17.2	B	17.0	B	17.4	B
West KY 4th Street and Main Street	AM	-	-	134.6	F	129.8	F	27.2	C	111.7	F
	PM	-	-	124.1	F	10.1	B	127.0	F	117.8	F
West KY 5th Street and Crescent Avenue (Stop Controlled)	AM	-	-	9.5	A	-	-	-	-	-	-
	PM	-	-	11.0	B	-	-	-	-	-	-
West KY 5th Street and Philadelphia Street	AM	18.4	B	-	-	18.3	B	19.1	B	18.5	B
	PM	17.5	B	-	-	15.0	B	17.3	B	17.0	B
West KY 5th Street and Bakewell Street (Stop Controlled)	AM	-	-	-	-	22.5	C	34.5	D	-	-
	PM	-	-	-	-	12.6	B	13.4	B	-	-

Table 4-26. 2030 Brent Spence Bridge Study Area Intersections

Intersection	Time Period	Eastbound		Westbound		Northbound		Southbound		Overall	
		Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]
West KY 5th Street and Main Street	AM	32.8	C	-	-	19.2	B	33.7	C	28.1	C
	PM	44.6	D	-	-	5.9	A	44.6	D	39.9	D
Pike Street and Bullock Street	AM	42.5	D	10.1	B	-	-	42.8	D	39.1	D
	PM	54.4	D	54.0	D	-	-	56.2	E	54.9	D
Pike Street and Jillians Way	AM	44.3	D	8.9	A	44.0	D	-	-	41.3	D
	PM	25.0	C	22.1	C	25.0	C	-	-	23.6	C
West KY 12th Street and Bullock Street (Stop Controlled)	AM	125.0	F	18.5	C	-	-	20.3	C	70.0	F
	PM	12.6	B	14.8	B	-	-	16.1	C	15.2	C
West KY 12th Street and Jillians Way (Stop Controlled)	AM	252.0	F	21.5	C	12.0	B	-	-	161.5	F
	PM	66.1	F	74.6	F	31.6	D	-	-	60.0	F
Kyles Lane and Dixie Highway	AM	340.5	F	241.7	F	344.3	F	25.4	C	316.9	F
	PM	214.4	F	215.6	F	212.5	F	24.9	C	212.3	F
I-75 Southbound Ramps and Kyles Lane	AM	-	-	22.1	C	14.2	B	21.8	C	18.6	B
	PM	-	-	62.8	E	38.4	D	57.8	E	52.2	D
I-75 Northbound Ramps and Kyles Lane	AM	65.8	E	-	-	62.2	E	4.3	A	43.2	D
	PM	24.6	C	-	-	25.4	C	17.3	B	21.6	C
Highland Pike and Kyles Lane	AM	24.0	C	208.5	F	207.2	F	85.7	F	163.4	F
	PM	273.0	F	237.9	F	17.7	B	270.0	F	188.3	F
Bank Street and Dalton Avenue	AM	13.5	B	16.1	B	14.0	B	15.9	B	15.3	B
	PM	10.3	B	24.3	C	21.1	C	24.0	C	22.6	C
Bank Street and Winchell Avenue	AM	13.9	B	13.6	B	14.0	B	-	-	13.9	B
	PM	15.0	B	15.1	B	15.1	B	-	-	15.1	B
Central Avenue and Linn Street	AM	28.4	C	13.3	B	20.2	C	27.7	C	24.1	C
	PM	15.7	B	29.7	C	18.8	B	29.9	C	24.9	C
Bank Street and Linn Street (Stop Controlled)	AM	11.8	B	-	-	-	-	-	-	-	-
	PM	14.0	B	-	-	-	-	-	-	-	-
Findlay Street and Dalton Avenue	AM	17.3	B	20.6	C	18.4	B	11.3	B	15.2	B
	PM	19.3	B	20.7	C	20.4	C	11.2	B	16.4	B
Findlay Street and Western Avenue	AM	14.0	B	14.2	B	-	-	13.9	B	14.0	B
	PM	14.4	B	13.5	B	-	-	14.1	B	14.1	B
Findlay Street and Winchell Avenue	AM	14.2	B	13.3	B	14.0	B	-	-	14.0	B
	PM	14.6	B	13.9	B	14.7	B	-	-	14.6	B
West Liberty Street and Dalton Avenue	AM	14.9	B	15.7	B	13.3	B	16.0	B	15.1	B
	PM	14.3	B	16.6	B	14.6	B	16.6	B	15.9	B
West Liberty Street and Western Avenue	AM	14.8	B	14.5	B	-	-	14.7	B	14.7	B
	PM	13.6	B	14.6	B	-	-	14.9	B	14.6	B
West Liberty Street and Winchell Avenue	AM	15.3	B	13.6	B	15.1	B	-	-	14.8	B
	PM	13.3	B	16.4	B	16.0	B	-	-	15.6	B

Table 4-26. 2030 Brent Spence Bridge Study Area Intersections

Intersection	Time Period	Eastbound		Westbound		Northbound		Southbound		Overall	
		Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]
West Liberty Street and Linn Street	AM	16.3	B	15.2	B	16.3	B	15.7	B	16.0	B
	PM	14.5	B	17.6	B	17.4	B	17.3	B	17.0	B
Ezzard Charles Avenue Westbound and Western	AM	-	-	14.0	B	-	-	13.8	B	13.8	B
	PM	-	-	14.4	B	-	-	14.3	B	14.3	B
Ezzard Charles Avenue Westbound and Winchell Avenue	AM	-	-	15.9	B	15.6	B	-	-	15.7	B
	PM	-	-	20.7	C	20.0	B	-	-	20.5	C
Ezzard Charles Avenue Eastbound and Western Avenue	AM	14.6	B	-	-	-	-	14.1	B	14.2	B
	PM	14.4	B	-	-	-	-	14.6	B	14.6	B
Ezzard Charles Avenue Eastbound and Winchell Avenue	AM	14.3	B	-	-	14.6	B	-	-	14.4	B
	PM	13.6	B	-	-	13.8	B	-	-	13.7	B
Ezzard Charles Avenue and Linn Street	AM	13.3	B	12.2	B	13.8	B	12.7	B	13.2	B
	PM	12.8	B	14.4	B	14.7	B	13.2	B	14.0	B
Gest Street and Dalton Avenue	AM	16.8	B	16.4	B	16.3	B	16.3	B	16.4	B
	PM	17.5	B	17.3	B	13.8	B	17.8	B	17.0	B
Gest Street and Western Avenue	AM	15.4	B	15.4	B	-	-	15.3	B	15.3	B
	PM	15.2	B	14.3	B	-	-	15.3	B	15.0	B
Gest Street and Freeman Avenue	AM	23.3	C	40.2	D	36.0	D	40.0	D	37.4	D
	PM	15.3	B	26.6	C	26.5	C	26.2	C	23.2	C
Linn Street and Gest Street	AM	14.5	B	18.3	B	17.9	B	10.7	B	15.7	B
	PM	17.3	B	18.0	B	17.9	B	10.6	B	16.3	B
West Court Street and Linn Street (Stop Controlled)	AM	11.8	B	14.5	B	-	-	-	-	-	-
	PM	17.6	C	19.7	C	-	-	-	-	-	-
West OH 8th Street and Dalton Avenue	AM	15.2	B	21.1	C	17.9	B	20.6	C	17.7	B
	PM	17.3	B	28.0	C	13.6	B	28.0	C	24.3	C
West OH 8th Street and Freeman Avenue	AM	26.1	C	21.3	C	25.2	C	22.6	C	24.4	C
	PM	24.0	C	22.5	C	22.2	C	23.2	C	23.1	C
West OH 8th Street and Linn Street	AM	25.9	C	17.0	B	26.1	C	24.4	C	24.4	C
	PM	22.0	C	22.9	C	21.5	C	22.8	C	22.5	C
West OH 6th Street and Linn Street (Stop Controlled)	AM	-	-	-	-	-	-	8.2	A	-	-
	PM	-	-	-	-	-	-	12.3	B	-	-
Dalton Avenue and Linn Street	AM	16.4	B	17.2	B	17.5	B	14.4	B	16.5	B
	PM	23.4	C	13.9	B	24.0	C	17.9	B	19.8	B
Central Avenue and West Court Street	AM	16.0	B	13.6	B	16.1	B	-	-	15.8	B
	PM	12.9	B	13.7	B	13.7	B	-	-	13.5	B
West OH 9th Street and Central Avenue	AM	-	-	13.9	B	14.1	B	12.3	B	14.0	B
	PM	-	-	18.9	B	18.8	B	14.2	B	18.7	B
West OH 7th Street and Central Avenue	AM	18.4	B	-	-	18.5	B	-	-	18.4	B
	PM	14.5	B	-	-	14.5	B	-	-	14.5	B
West OH 6th Street and Central Avenue	AM	-	-	16.0	B	15.7	B	-	-	15.9	B
	PM	-	-	19.6	B	19.6	B	-	-	19.6	B
West OH 5th Street and Central Avenue	AM	28.9	C	-	-	27.7	C	14.9	B	28.2	C
	PM	25.1	C	-	-	24.3	C	7.1	A	22.5	C

Table 4-26. 2030 Brent Spence Bridge Study Area Intersections

Intersection	Time Period	Eastbound		Westbound		Northbound		Southbound		Overall	
		Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]	Delay	LOS[1]
West OH 4th Street and Central Avenue	AM	-	-	21.0	C	20.8	C	20.7	C	20.9	C
	PM	-	-	33.9	C	36.6	D	35.9	D	35.2	D
West OH 3rd Street and Central Avenue	AM	38.7	D	37.2	D	37.4	D	37.6	D	37.7	D
	PM	68.8	E	67.3	E	62.6	E	68.5	E	66.3	E
West OH 4th Street and Plum Street	AM	-	-	13.1	B	-	-	13.1	B	13.1	B
	PM	-	-	15.2	B	-	-	15.5	B	15.2	B
West OH 3rd Street and Plum Street	AM	-	-	12.6	B	-	-	12.4	B	12.6	B
	PM	-	-	13.6	B	-	-	13.3	B	13.6	B
West OH 4th Street and Elm Street	AM	-	-	15.0	B	15.2	B	-	-	15.2	B
	PM	-	-	15.6	B	15.8	B	-	-	15.7	B
West OH 3rd Street and Elm Street	AM	-	-	15.2	B	14.9	B	-	-	15.1	B
	PM	-	-	17.3	B	17.8	B	-	-	17.4	B
West OH 2nd Street and Elm Street	AM	15.7	B	-	-	15.5	B	-	-	15.7	B
	PM	14.7	B	-	-	14.8	B	-	-	14.7	B
West OH 3rd Street and Clay Wade Bailey Bridge	AM	23.1	C	16.7	B	23.0	C	-	-	21.0	C
	PM	431.5	F	441.6	F	184.2	F	-	-	396.8	F

[1] LOS = Level of Service

4.2 Red Flag Summary Report

The *Brent Spence Bridge Replacement/Rehabilitation Project: Red Flag Summary Report* was prepared in December 2005 (Appendix K). This document identified "Red Flags" within the project study area. Red flags identify locations that may entail further study, creative management or design, or increased costs. Red flags may also affect the anticipated project design, estimated project budget, construction schedule or scope of work for any proposed transportation project associated with this study. In development of the Red Flag Summary Report, two separate project study area site visits were conducted on August 3 and 11, 2005. Project managers from both Ohio Department of Transportation (ODOT) and Kentucky Transportation Cabinet (KYTC) were present, representatives from cities of Covington, Kentucky and Cincinnati, Ohio were also present, as well as members of the project consultant team. The Red Flag Summary Report summarizes geotechnical, environmental, geometric design, hydraulic, pavement, structural, traffic, right-of-way, utility, and permit issues.

4.2.1 Geotechnical Information

A detailed geotechnical report of the study area is included in an appendix of the Red Flag Summary Report. The report summarizes the following information:

- Site topography,
- Geology within the Kentucky corridor,
- Geology within the Ohio corridor,
- United States Department of Agriculture soil survey review,
- Review of soil test borings,
- Geologic/Geotechnical considerations,
  - Bridge structure foundations,

  - Roadway considerations,
  - Excavations,
- Seismic Considerations, and
- Landslide issues.

This report is general in nature and no field exploration, laboratory testing, or analyses were performed. Based on existing published data reviewed, there are seven geotechnical red flag issues, most of which are in regard to soils (Exhibit 7) and the variable and complex geology. Those red flags include soil (composition, drainage, land slides including beneath the Ohio River), construction fill within the roadway bed, and shallow shale along road cuts. Additionally, regional seismology should be considered during design.

4.2.2 Environmental Resources

Environmental Red Flags represent specific community resources that could be affected by any transportation project within the study corridor. A literature and data base review of existing information was performed to identify specific ecological, historic, archaeological, and community resources as well as potential hazardous material locations.

Various agencies were contacted to acquire data pertaining to the human and natural environment of the study area. These data sources are listed below.

- United States Environmental Protection Agency (EPA)
- United States Fish and Wildlife Service (USFWS) Region 3
- United States Army Corps of Engineers (USACE)
- Ohio Environmental Protection Agency (OEPA)
- Ohio Department of Natural Resources (ODNR)
- Ohio Bureau of Underground Storage Tank Regulations (BUSTR)
- Kentucky Department of Fish and Wildlife Resources (KDFWR)
- Kentucky Natural Resources and Environmental Protection Cabinet (KNREPC)
- Kentucky Division of Waste Management (KDWM)

The Red Flag Summary Report provides an overview of this information as it specifically relates to hazardous materials, ecological resources, historic resources, archaeological sites, community impacts, environmental justice, noise impacts and air quality.

4.2.2.1 Hazardous Materials

Results from federal, state, and local agency databases provided the following information regarding hazardous materials:

- EPA Envirofacts Data Warehouse indicated 25 records for hazardous waste generators located in the study area and two sources for Underground Storage Tanks (UST).
- BUSTR identified 121 USTs within the study area (91 in Kentucky and 30 in Ohio).

Hazardous material red flags include dry cleaners, body shops, gas stations, printing and sign companies and an electric sub-station within the study area (Exhibit 8). The study area encompasses a historically industrialized area, therefore hazardous materials are expected.

4.2.2.2 Ecological Resources

Results from federal, state, and local agency databases provided the following information regarding ecological resources (Exhibit 9).

- The majority of wetlands identified on National Wetland Inventory mapping and Ohio Wetland Inventory mapping indicated that wetlands are scattered throughout the Ohio portion of the study area and are classified as open water bodies (i.e. ponds) and palustrine emergent (i.e. shallow marsh wetlands). A preliminary review of aerial mapping and site visits indicate that wetlands are located along the banks of the Ohio River.
- The Ohio River is the major water resource within the study area. Other low-quality streams are likely non-jurisdictional according to agency guidance.
- Approximately 168 acres of the 100-year floodplain are on the north side of the river and 12.5 acres of the 100-year floodplain are on the south side of the river.
- In Ohio, 13 plant and animal species are listed as state endangered (5), threatened or potentially threatened (6), and special interest (2). Three species also receive federal protection.
- In Kentucky, 32 plant and animal species are listed as state endangered (17), threatened (8), and special concern (7). Nine species also receive federal protection.
- Ten federally endangered species, one federally threatened and one federal candidate species have ranges that include the study area.
- Nine of the federally endangered species are mussels whose ranges include the Ohio River and its tributaries in Kentucky.
- There are no documented populations of threatened and endangered species or critical habitat within the study area. However, potential habitat characteristics for the Indiana bat, running buffalo clover, and freshwater mussels may exist within the study area.

4.2.3 Cultural Resources

Historic resources within the study area include individual residential, commercial, institutional, religious, and industrial buildings and districts (Exhibit 10). Results from federal, state, and local agency databases provided the following information regarding cultural resources.

<u>Kentucky</u>

- Two National Register of Historic Places (NRHP) individual properties are within the study area, the Bavarian Brewing Company and Kenny's Crossing.
- Portions of six NRHP districts are located within the study area.
- One recorded archaeological site is listed in Kentucky's Office of State Archaeologist file (15Ke122) as a historic scatter with associated features.

Ohio

- Fifteen individual properties are listed on the NRHP within the study area.
- Two properties, Union Terminal and Plum Street Temple, are also designated National Historic Landmarks.
- The Court Street Firehouse, Saint Peter-in-Chains Cathedral, Plum Street Temple and Cincinnati City Hall are also listed as local landmarks.
- Nine NRHP districts are entirely or partially within the study area.
- Five archaeological sites are listed in the Ohio Archaeological Inventory within the study area. Four of the sites are prehistoric and were disturbed in the historic period. The sites are 33Ha1 Cincinnati Tablet Mound, 33Ha113, 33Ha311 Seventh Street Mound, and 33Ha312 Richmond Street Mound. All of the sites yielded lithics, ceramics, floral and faunal remains.

4.2.4 Community Resources

Many Covington and Cincinnati neighborhoods are cohesive communities with significant history and community infrastructure. There are several residential communities along the interstate corridor in the city of Covington. These include Kenton Hills, Lewisburg, and West Covington located west of I-71/I-75 and Peaselburg, West Side, and Mainstrasse located east of I-71/I-75. In Cincinnati, these neighborhoods include Queensgate, West End, Fairview-Clifton Heights, and Camp Washington. With the exception of the I-71/I-75 Interstate itself and the Ohio River, no physical barriers exist between neighborhoods and the Central Business Districts within Cincinnati and Covington.

The Queensgate neighborhood is not a typical residential community within the study area. Although, the city of Cincinnati recognizes Queensgate as a 'neighborhood,' this designation does not necessarily represent a 'neighborhood' in terms of a cohesive, residential community. The southern portion of Queensgate is sparsely populated, with a density less than 1,000 people per square mile. It is heavily dominated by commercial buildings. The neighborhood of Queensgate is roughly bound by I-75 to the east, the Ohio River to the south, Western Hills Viaduct to the north, and Mill Creek to the west. Queensgate is labeled on exhibits throughout the document.

Community services and facilities within the study area include parks, schools, hospitals, police stations, fire stations, libraries, cemeteries, government buildings, entertainment and religious institutions. These resources are presented and summarized in Table 4-27 and shown on Exhibit 11.

Table 4-27. Community Facilities Within the Study Area

Kentucky		
Attraction	**Location**	**Description**
1. Garden of Hope	699 Edgecliff Road, Covington	Recreation of the Garden Tomb in Jerusalem
Churches/Religious	**Location**	**Description**
2. St. John's Catholic Church	627 Pike Street, Covington	Catholic Church
Nursing Home	**Location**	**Description**
3. Baptist Life Communities	800 Highland Avenue, Covington	Nursing Home
Recreation	**Location**	**Description**
4. Kenney Shields Park	West KY 9th and Philadelphia, Covington	Small neighborhood corner lot with playground equipment - Owned by the city of Covington
5. Neighborhood Pool	West KY 8th and Dalton Avenue, Covington	Neighborhood pool - Owned by the city of Covington
6. Devou Park/Golf Course/Overlook	1344 Audubon Road, Covington	700-acre park and golf course - Owned by the city of Covington
7. Goebel Park/Mainstrasse Village District	KY 6th Street Area of Covington	Park area and surrounding retail and restaurants - Owned by city of Covington
8. Neighborhood Park	West KY 11th and Hermes Avenue, Covington	Owned by the city of Covington
School	**Location**	**Description**
9. Notre Dame Academy	1699 Hilton Drive, Park Hills	Parochial College Prep High School - 594 female students
10. Prince of Peace Catholic School	625 Pike Street, Covington	Parochial Grade School – Grades K - 8
Ohio		
Attraction	**Location**	**Description**
11. Paul Brown Stadium	One Paul Brown Stadium	Pro Football Facility – Home of NFL Cincinnati Bengals
12. National Underground Railroad Freedom Center	50 East Freedom Way, Cincinnati	Museum
13. Great American Ball Park	100 Main Street, Cincinnati	Pro Baseball Facility – Home of Major League Baseball's Cincinnati Reds
14. US Bank Arena	100 Broadway, Cincinnati	Multi-purpose facility
15. Duke Energy Center (formerly Cinergy Center)	525 Elm Street, Cincinnati	Convention and Exhibition Facility
16. Cincinnati Fire Museum	315 West Court Street, Cincinnati	Museum
17. Geier Research and Collections Museum	760 West OH 5th Street, Cincinnati	Museum

Table 4-27. Community Facilities Within the Study Area

Ohio		
18. Union Terminal *	1301 Western Avenue, Cincinnati	Omnimax Theatre, Museum Center, Children's Museum, Natural History Museum, Amtrak
Churches/Religious	**Location**	**Description**
19. York Street United Methodist	816 York Street, Cincinnati	Methodist Church
20. Plum Street Temple*	726 Plum Street, Cincinnati	Jewish Temple
St. Peter in Chains Cathedral *	325 West OH 8th Street, Cincinnati	Catholic Church
22. Jarriel Baptist Church	Wesley and Court Street, Cincinnati	Baptist Church
Fire Station	**Location**	**Description**
23. Fire House - Company 14	OH 5th and Central, Cincinnati	Fire House
24. Fire House - Company 29, Ladder 29	564 West Liberty at Linn Street Cincinnati	Fire House
Government Building	**Location**	**Description**
25. City Hall *	801 Plum Street, Cincinnati	Offices of Mayor, City Manager, City Council, etc.
26. Jail - Hamilton County Queensgate Facility	516 Linn Street, Cincinnati	Correctional Facility
Library	**Location**	**Description**
27. Public Library of Cincinnati and Hamilton County	805 Ezzard Charles Drive, Cincinnati	Public Library
28. Lloyd Library and Museum	917 Plum Street, Cincinnati	Botanical, Medical, Pharmacutical and Scientific books
Utilities	**Location**	**Description**
29. Duke Energy Substation	West Pete Rose Way at Mehring Way, Cincinnati	Utility Station
Public Agency	**Location**	**Description**
30. Cincinnati Job Corp Center	1409 Western Avenue, Cincinnati	Training Facility and Dorms
Post Office	**Location**	**Description**
31. Main Post Office - Dalton Avenue	1623 Dalton Avenue, Cincinnati	Post Office Facility
32. Post Office Branch	Dalton Avenue and Gest Street, Cincinnati	Post Office Facility-Mid City Carrier Unit
Recreation	**Location**	
33. Lincoln Park - Union Terminal	Freeman Avenue and Ezzard Charles Drive, Cincinnati	Owned by the city of Cincinnati - Operated by Cincinnati Park Board - Greenspace
34. Park at Derrick Turnbow and Linn Street	1525 Linn Street, Cincinnati	Behind apartment buildings and a strip shopping center - Owned by the city of Cincinnati

Table 4-27. Community Facilities Within the Study Area

Ohio		
35. Dyer Park	Baymiller Street and Bank Street, Cincinnati	Ball Field, Pool and Playground - Owned by the city of Cincinnati - Operated by Cincinnati Recreation Commission
36. Lincoln Community Center	1027 Linn Street, Cincinnati	Pool, playground, tennis court, basketball courts -Owned by the city of Cincinnati - Operated by Cincinnati Recreation Commission
37. Queensgate Playground and Ballfields	707 West Court Street, Cincinnati	Playground and ballfields – Owned by the city of Cincinnati - Operated by Cincinnati Recreation Commission
School	**Location**	**Description**
38. St. Joseph's Catholic School	805 Ezzard Charles Drive, Cincinnati	Parochial Elementary School
39. Cincinnati Hamilton County Community Action Agency	880 West Court Street, Cincinnati	Theodore M. Berry Head Start Program
40. Lafayette Bloom B-O-T Accelerated Middle	1941 Baymiller Street, Cincinnati	Cincinnati Public School - Grades 6-8
41. Heberle Elementary	2015 Freeman Avenue, Cincinnati	Cincinnati Public School - Preschool - 8
TV/Radio Station	**Location**	**Description**
42. WXIX - TV	635 West 7th Street, Cincinnati	Network TV Station

*Listed on the National Register of Historic Places

4.2.5 Environmental Justice

Low-income and minority populations are found within the study area in both Covington and Cincinnati (Exhibits 12-14). The Kentucky portion of the study area has moderate levels of low-income and minority populations. In general, the population is predominately white, approximately 85 percent, with a median household income range of $19,000 to $47,000. One Census tract 065100, which includes Peaselburg has the largest minority population in this portion of the study area. Census tracts 065100 (Peaselburg) and 060300 (Mainstrasse) have the largest low income populations in the Kentucky portion of the study area.

The city of Cincinnati has several Census tracts of densely populated minority and low-income areas. The areas east of the existing interstate corridor in Cincinnati are diverse relative to both income and ethnicity. Some Census tracts represent poverty levels as high as 70 percent. These areas are located east of the northern part of the study area. Similarly, some tracts in the northeast part of the study area represent minority levels of 90-100 percent. Large minority areas are located immediately adjacent to the existing I-75 corridor in the West End neighborhood of Cincinnati.

Several significant federally assisted Housing and Urban Development (HUD) projects exist in the study area, including the multi-million dollar redevelopment initiative known as HOPE VI located in the West End neighborhood of Cincinnati.

4.2.6 Geometric Design Issues

A number of geometric design issues were identified through a review of existing studies in the area. Additional issues were also identified on field reviews conducted on August 3 and August 17, 2005. These issues include:

- Insufficient roadway lane, bridge and shoulder widths.
- Existing horizontal and vertical curves on mainline ramps do not meet current ODOT *Location and Design Manual* and KYTC *Design Policy* requirements.
- Grade and clearance issues on the existing facility.

Both the Existing and Future Conditions Report and Red Flag Summary Report provide more detailed information, including specific locations, on the geometric design.

4.2.7 Hydraulic Issues

It is anticipated that some additional review and analysis of existing drainage structures will be required if any are to be re-used. At this time, it is anticipated that most of these structures will be replaced by the project. This includes overland flow, curb/gutter, under-drains and culvert structures both on the mainline and existing crossroads. In addition, the age of the current facility suggests that drainage problems could exist with under-drain outlets. Curb heights on many side streets were observed to be inadequate.

4.2.8 Pavement Issues

Existing pavement on I-71/I-75 mainline and ramps is concrete with asphalt overlay. Crossroads within the study area are largely paved with concrete. Joint repairs, pavement repairs and new pressure relief joints will be needed for sections that will remain in the new project. Maintenance of Traffic (MOT) plans will require temporary pavement in various sections in the study corridor.

4.2.9 Structural Issues

Within the Ohio portion of the study area, it is likely that structures in Ohio will need superstructure replacement. Any re-use of substructures will be evaluated on a site-specific basis.

Within the Kentucky portion of the study area, a fatigue analysis on the Brent Spence Bridge structure was conducted as part of the Engineering Feasibility Study. The results of this analysis were that primary truss members have an infinite fatigue life.

4.2.10 Traffic Control Issues/Maintenance of Traffic

Several sections within the project area have no shoulders or very narrow shoulders. Considering the potential for traffic impact during construction, a detailed and thorough MOT Plan will be necessary in order to maintain interstate and local traffic during construction.

Road closures will be necessary for crossroads and mainline traffic. Short durations will need to be specified for any mainline activities. Considerations of local access for business, pedestrians and commuters will be included in MOT plans. Design concepts will also consider MOT and constructability.

4.2.11 Right-of-Way/Survey Issues

Due to the size, scope and urban setting of this project, a significant amount of work beyond the existing right-of-way limits is expected. This may require the acquisition of additional property for the alternatives that go through the Queensgate area.

The need for easements or acquisition of property from business and/or residential property will depend on the preliminary project design. Potential areas of consideration for acquisition activity include those directly adjacent to the structure and approaches on the western portions of downtown Covington, south of KY 12th Street and the southwestern portion of downtown Cincinnati, west of the Clay Wade Bailey Bridge and east of Gest Street.

4.2.12 Utility Issues

The most visible utility issue in the Kentucky portion of the study area is the Willow Run Sewer line, which runs parallel to I-75 on the east between the Cut-in-the-Hill and Covington.

The Ohio portion of the study area contains major utility issues. The most visible of these is the Duke Energy sub-station located south of Pete Rose Way and west of the existing Brent Spence Bridge structure. Duke Energy also operates high pressure gas mains beneath the sub-station and east of the Brent Spence Bridge. An oil-jacketed high voltage electric main that serves both the Queensgate and Uptown areas of Cincinnati, via Central Avenue is in the study area.

Other major utilities include a Combined Sewer Interceptor facility directly beneath the bridge on the Ohio side of OH 3rd Street. This facility is operated by the Metropolitan Sewer District of Greater Cincinnati. Also in the area is a distribution water main operated by Cincinnati Water Works and serving Northern Kentucky exists on Merhing Way. Subway tunnels located just east of I-75 near the Western Hills Viaduct also contain utilities (fiber-optic cables). More investigation will be necessary to determine the impact of any alternatives developed in that specific location.

A utility coordination meeting was held on March 16, 2006. The purpose of the meeting was to coordinate information between the project team and utility companies and to request feedback on security issues related to utility information. A utility coordination team was assembled to give all utilities advanced notice of the project and to request updated utility information.

4.2.13 Railroad Coordination

Rail transportation is an important component to the multimodal transportation system in the study area. Several of the existing rail lines parallel I-75. The existing rail lines in the study area include:

- CSX Transportation

- Norfolk Southern
- Indiana and Ohio (I&O)
- Amtrak (passenger rail)

According to the Ohio Rail Development Commission, more than 250 freight trains per day pass through or have destinations within the study area.

CSX Transportation and Norfolk Southern have classification and intermodal yards in the Queensgate area of Cincinnati. CSX Transportation's Queensgate Yard has the capacity for 4,000 rail cars, and is one of the busiest freight rail yards in the Midwest.

CSX Transportation and Norfolk Southern have lines that parallel I-75. Two other railroads, Amtrak and Indiana and Ohio have "trackage rights" over these rail lines. More than 90 trains per day use the tracks in this corridor. Even though the two major railroads are competitors, they have a special operating agreement that allows each railroad to use the other's tracks due the rail congestion issues in this corridor.

Upon initial contact with railroad companies operating within the study area, the following clearance information was obtained:

- The required minimum overhead clearance is 23 feet.
- The required minimum lateral clearance (from centerline of track) is 25 feet, less would require crash walls.

4.2.14 Permit Issues

A Section 9 permit will be required from the United States Coast Guard (USCG). Coordination with the USCG indicated that greater horizontal clearance may be needed for skewed crossings.

The USACE Section 404 Permit process will also be required for the Ohio River and its associated tributaries and wetlands. Similarly, a state 401 Water Quality Certification will also be required by Ohio and Kentucky. A completed 401 Water Quality Certification is required by the USCG for a Section 9 permit.

4.3 Other Reports Consulted

A number of recently completed study efforts were undertaken within all or portions of the study area for the Brent Spence Bridge Rehabilitation/Reconstruction Project. The following are summaries of these studies.

- *North South Transportation Initiative (2004)*
  In 2000, the Ohio-Kentucky-Indiana Regional Council of Governments (OKI) and the Miami Valley Regional Planning Commission (MVRPC) under took a major planning effort, known as the *North South Transportation Initiative* (2004), to study the multi-modal transportation system of their regions. The Initiative evaluated the transportation system along a 125-mile stretch of I-75 and the surrounding area spanning from Northern Kentucky, through Cincinnati and Dayton to Piqua, Ohio.

  The result of this process is a preferred program of transportation projects to be considered for inclusion in the long-range planning efforts of the ODOT, KYTC,

MVRPC and OKI. Some of the preferred projects from this study are already underway including the Brent Spence Bridge Rehabilitation/Replacement Study (HAM-71/75 0.00/0.22 – KYTC Project Item Number 6-17), Mill Creek Expressway (HAM-75-2.30) and Thru the Valley (HAM-75-10.10) projects.

- *The Feasibility and Constructability Study of the Replacement/Rehabilitation of the Brent Spence Bridge (2005)*
  This study was contracted in 2003 by KYTC and overseen by a Bi-State Management Team that included ODOT, and the Federal Highway Administration (FHWA) offices from both states. The scope of this study included an analysis of restricting trucks on the bridge, analysis of constructing a new crossing near Anderson Ferry, field testing critical truss members to determine fatigue life and developing concepts for five and seven lane Ohio River crossings in the immediate vicinity of the current structure.

  This study recommended a series of potential feasible build alternatives for replacement and/or rehabilitation of the Brent Spence Bridge structure and improvement to its approaches and surrounding transportation system. Neighborhood and environmental impacts, geotechnical reviews and traffic data were all considered in the development of the recommended alternatives.

- *The Mill Creek Expressway Project (current study)*
  ODOT is currently examining transportation options for the improvement of I-75 and its surrounding transportation system north of the Brent Spence Bridge Rehabilitation/Replacement study area.

  The study area for this project includes I-75 interchanges at Hopple Street, I-74, Mitchell Avenue, State Route 562 (The Norwood Lateral) and Towne Street as well as the I-74 Interchange at Colerain Avenue.

  The Mill Creek Expressway project was initiated to evaluate alternatives that will improve traffic flow, enhance safety and minimize impacts to adjacent property owners and communities within the study area.

- *The Central Area Loop Study (1999)*
  The *Central Area Loop Study* was commissioned by OKI in 1999. The study area included the downtown Central Business Districts for the cities of Cincinnati, Covington and Newport. The purpose of this study was to investigate the feasibility of providing a connection between the three cities and to improve the east/west flow of traffic in the KY 4th and KY 5th street corridor between I-71/I-75 and I-471 in Kentucky.

- *The I-71 Corridor Transportation Study (1997)*
  This was a Major Investment Study for the I-71 Corridor Study, which was commissioned by OKI in 1997. As part of this project, a Technical Memorandum was developed (The I-71/I-75 Brent Spence Bridge Traffic Management Plan). This effort identified a series of recommended existing alternate routes for Brent Spence Bridge traffic.

- *The I-71/I-75 Brent Spence Bridge Scoping Study (1998)*
  In 1998, OKI developed the *I-71/I-75 Brent Spence Bridge Scoping Study* as part of the larger I-71/I-75 Corridor Transportation Study. This study looked at several conceptual alternatives, including five build and one no-build alternative for the replacement and rehabilitation of the Brent Spence Bridge structure.

- *MetroMoves Regional Transit Plan/Regional Light Rail Plan (2002)*
  The Regional Light Rail Plan includes several proposed local and commuter passenger corridors within southwestern Ohio and northern Kentucky, including the Brent Spence Bridge Rehabilitation/Replacement study area. Construction of the first operable segment is estimated at approximately $800 million. This plan was completed for $8 million at approximately 30 percent design. It was not completed due to a lack of funding.

- *OKI 2030 Regional Transportation Plan 2004 Update (2004)*
  The *OKI Regional Transportation Plan* is updated approximately every four years. The latest update was completed in 2004. The plan addresses current and future transportation needs through the year 2030. It was developed in response to FHWA and Clean Air Act requirements to mitigate congestion, address air quality, and other environmental, social and financial issues. It is the outline for the region's transportation projects for the next 25 years.

- *Western Hamilton County Corridor Study (current study)*
  This is a Major Investment Study, which shares a border with the Brent Spence Bridge Rehabilitation/Replacement Study. It includes nearly all of Hamilton County west of I-75, and east of the Indiana border. The study will focus on improving mobility and safety for residents, commuters and freight traffic. The study area is purposefully large and will assess many individual corridors.

- *Uptown Transportation Study (current study)*
  This study is examining transportation infrastructure needs within the Cincinnati neighborhoods of Avondale, Clifton, Clifton Heights, Corryville, East Walnut Hills, Evanston, Fairview/University Heights, Mt. Auburn, North Avondale and Walnut Hills. The Uptown area includes the University of Cincinnati, the Cincinnati Zoo and Botanical Garden, USEPA offices and a number of major hospital and medical facilities in the region. A major component of this study is examining access to I-71 and other major roadways within the area.

5.0 ALTERNATIVES ANALYSIS

Twenty five conceptual alternatives, including the No Build alternative were developed for replacement/rehabilitation of the Brent Spence Bridge. The Build alternatives included five lanes, seven lanes, existing alignment, new alignment through Queensgate, and a tunnel. These alternatives included mainline alternatives with sub-alternatives that further examined segments within the mainline corridor. Mainline alternatives were studied and evaluated as a whole and as four separate segments within the corridor. The four segments of the mainline are:

- Segment 1: Kyles Lane to KY 5th Street, Kentucky
- Segment 2: KY 5th Street to OH 3rd Street, Kentucky and Ohio

- Segment 3: OH 3rd Street to north of Ezzard Charles Drive, Ohio
- Segment 4: Ezzard Charles Drive to Western Hills Viaduct, Ohio

The sub-alternatives were developed for five specific locations along the mainline.

- I-75 Northbound at KY 12th Street Ramp
- I-71/US 50 Interchange
- I-71/I-75/US 50 Interchange
- I-75 between Ezzard Charles Drive and Western Hills Viaduct
- Western Hills Viaduct Interchange

A description of the 25 conceptual build alternatives can be found in the Alternatives Comparison Matrix located in Appendix D.

5.1 Alternatives Considered and Dismissed

The 25 conceptual alternatives were evaluated using a two-step screening process based on a comparative analysis. Step one of the analysis was an evaluation of the conceptual alternatives based on the goals of the Purpose and Need and documentation received from ODOT, KYTC, and affected local governments. In step two of the analysis, the conceptual alternatives that were not eliminated in step one were evaluated using stakeholder goals and measures of success and concurrence among government agencies obtained through a series of meetings. Some alternatives were combined into hybrids and then evaluated in step two of the analysis.

The evaluation process is summarized in the Alternatives Comparison Matrix with evaluations performed, comments and recommendations. See Appendix D for a descriptive table and the full evaluation of all 25 conceptual alternatives and additional sub-alternatives. The seven primary areas for evaluation criteria and detailed components are listed in Table 5-1.

Table 5-1. Evaluation Criteria

Primary Area	Detailed Components
Congestion Mitigation	None
Safety	• Geometric Improvement • Separation of Regional and Local Traffic • Simplification of Roadway Rework
Engineering	• Meets Current Design Standards • Sustainability/Flexibility
Environmental Resource Impacts	• Hazardous Materials • Ecological • Historical • Archaeological • Community • Environmental Justice
Access/Accessibility	• Interstate/US routes • Local Roads • Overall
Construction Cost	None
Constructability	None

The evaluation process used ratings of "Good," "Average" and "Poor" which were defined for each criteria component. The criteria definitions are provided in Appendix D. Aesthetics of conceptual alternatives carried forward for further study will be considered by the Aesthetics Committee at a future date.

Brief descriptions of all 25 conceptual alternatives and their sub-alternatives, both considered and dismissed, are provided in the Alternatives Comparison Matrix (Appendix D) and the Alternatives Description Table (Appendix E). The No Build, conceptual alternatives and sub-alternatives were evaluated by six segments:

- I-75 Mainline
- I-75 Northbound at KY 12th Street Ramp
- I-71/US 50 Interchange
- I-71/I-75/US 50 Interchange
- I-75 between Ezzard Charles Drive and Western Hills Viaduct
- Western Hills Viaduct Interchange

Throughout development and evaluation of the conceptual alternatives there was continuous coordination among the project team through a series of project meetings. Stakeholders were given the opportunity to review, evaluate and provide input for the conceptual alternatives. The results of the meetings identified which alternatives best meet the Purpose and Need and the stakeholders' goals and measures of success for the project. The results of the meetings also determined which alternatives would be dismissed from further study. A brief summary of the meetings follows:

- January 30, 2006 – Conceptual Alternative Analysis Review Meeting #1 with ODOT District 8, and KYTC District 6. This meeting addressed step one of the analysis which evaluated the preliminary Conceptual Alternatives.

- February 14, 2006 – Conceptual Alternative Analysis Review Meeting #2 with ODOT District 8, and KYTC District 6. This meeting addressed step two of the analysis which evaluated the Conceptual Alternatives that were not eliminated in step one.

- February 17, 2006 – Initial presentation of Conceptual Alternatives with FHWA, ODOT Central Office and District 8, and KYTC Central Office and District 6. This meeting addressed step two of the analysis which evaluated the Conceptual Alternatives that were not eliminated in step one. A formal review of the received Conceptual Alternatives by FHWA followed this meeting.

- February 27, 2006 – Review of Conceptual Alternatives with Kenton County, City of Covington, ODOT District 8, and KYTC District 6. This meeting addressed step two of the analysis which evaluated the Conceptual Alternatives that were not eliminated in step one.

- March 1, 2006 – Review of Conceptual Alternatives with City of Cincinnati, ODOT District 8, and KYTC District 6. This meeting addressed step two of the analysis which evaluated the Conceptual Alternatives that were not eliminated in step one.

Nineteen of the 25 conceptual alternatives were dismissed from further study and evaluation (Appendices D and E). These 19 conceptual alternatives failed to meet the Purpose and Need of the project and did not adequately address the stakeholder's goals and measures of success. Based on the Joint Technical Memorandum (Appendix D) prepared during the I-75 Mill Creek Expressway project (HAM-75-2.30), a 5-lane configuration was used to eliminate similar alternatives where number of lanes was the basis of difference. Once design year projected traffic and certified traffic has been approved re-evaluation of the total lane configuration will be completed. The following sections summarize the alternatives that were eliminated from further study.

5.1.1 I-75 Mainline Alternatives

Alternatives 6 through 24 were eliminated from further study because they did not meet the Purpose and Need or the evaluation criteria for the stakeholder's goals of success. Several of the alternatives eliminated are the same as those being carried forward with the exception of the number of lanes. Alternatives were eliminated from further study if they did not meet the minimum requirement of five lanes for I-75; and two lanes for I-71 and local traffic through the corridor. The minimum lane requirements stem from I-71 currently having two lanes coming out of the recently reconstructed Fort Washington Way into the corridor. On I-75, the Mill Creek Expressway project to the north established a minimum five lane section entering into the study area for the Brent Spence Bridge Replacement/Rehabilitation Project. Alternatives that did not meet the lane requirements are 6, 7, 9, 11, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23 and 24. Alternatives proposed east of the existing bridge were eliminated from further study since they did not meet the Purpose and Need of improved safety and improvement of geometric deficiencies. Alternatives proposed east of the existing bridge are 8, 12 and

14. Alternative 10 was eliminated due to additional impacts that would be incurred to the study area.

5.1.2 I-71/US 50 Interchange Sub-Alternatives (for I-75 Queensgate Alignment)

Sub-alternative 3 was eliminated from further study because it did not meet the Purpose and Need of the project. The left entrances and exits would remain in place; therefore this sub-alternative did not improve safety or correct geometric deficiencies.

5.1.3 I-71/I-75/US 50 Interchange Sub-Alternatives

Sub-alternatives 4, 5, 6, 7 and 8 for the I-71/I-75/US 50 Interchange were dismissed from further consideration. Sub-alternatives 4 and 5 proposed left exits which do not meet the safety and geometry criteria of the purpose and need. These two sub-alternatives also reduced the number of access points to local roads. Sub-alternatives 6 and 7 do not meet the safety and geometry criteria of the Purpose and Need and limit the possibility of restoring connectivity to I-75. Sub-alternative 8 was developed with an alignment adjustment to minimize impacts to the Longworth Hall, a historic structure. This alignment adjustment was incorporated into the other alternatives for the interchange, which were better design options than sub-alternative 8. Therefore sub-alternative 8 was eliminated from further consideration.

5.1.4 Western Hills Viaduct Interchange Sub-Alternatives

Seven of the 11 sub-alternatives (including the No Build alternative) developed for the Western Hills Viaduct did not provide a full-movement interchange which is necessary for system linkage and local access in this area. Sub-alternatives WHV-4 through WHV-10 were eliminated from further study because they did not meet the Purpose and Need goal of maintaining links in key mobility corridors.

5.2 Alternatives Considered for Further Study

5.2.1 No Build Alternative

The No Build Alternative consists of minor, short-term safety and maintenance improvements to the Brent Spence Bridge and I-75 corridor, which would maintain continuing operations. The No Build Alternative does not meet the Purpose and Need goals; however, this alternative will be carried forward as a baseline for evaluation of the conceptual alternatives.

5.2.2 I-75 Mainline Alternatives

Five mainline alternatives meet the Purpose and Need and evaluation criteria. Alternatives 1 through 5 are being carried forward for further development.

Alternatives 1 and 2 were selected to be carried forward during the Engineering Feasibility Study. Alternatives 3 and 5 utilize existing right of way and the existing bridge. Alternative 4 utilizes existing right of way, proposes new structures and improves horizontal geometry.

5.2.3 I-75 Northbound at KY 12th Street Ramp Sub-Alternatives

Two ramp relocation sub-alternatives from northbound I-75 to Covington were developed and will be carried forward for further study. Both alternatives meet the Purpose and Need for the project.

Sub-alternative 1 maintains ramp access separate from the local street access to Hewson Street. Sub-alternative 2 combines Hewson Street access with the interstate and downtown access and minimizes property impacts.

5.2.4 I-71/US 50 Interchange Sub-Alternatives (for I-75 Queensgate Alignment)

Two of the three sub-alternatives meet the Purpose and Need. Sub-alternatives 1 and 2 will be carried forward for further study.

Sub-alternative 1 minimizes left entrances and exits and improves safety by realigning US 50 to be a parallel roadway. Sub-alternative 2 improves through traffic flow and restores connectivity to the interstate system. This alternative also realigns US 50 to be a parallel roadway with direct access ramps between I-71 and I-75.

5.2.5 I-71/I-75/US 50 Interchange Sub-Alternatives

Eight I-71/I-75/US 50 interchange sub-alternatives were developed where I-75 is proposed to remain along the existing corridor in Ohio. Three of the eight interchange sub-alternatives meet Purpose and Need and will be carried forward for further study.

Sub-alternatives 1 through 3 propose that I-75 northbound and southbound lanes would be parallel roadways and aligned on the west side of the corridor. Sub-alternative 1 improves traffic flow, safety, connectivity, and maintains the flexibility of developing I-75 above or below other roadways. This alternative uses a collector-distributor system for connectivity between the interstate, highway and local roadways. Sub-alternative 2 maintains direct access to and from I-75 with the addition of a collector-distributor roadway system. Sub-alternative 3 consolidates access between the Cincinnati downtown area and interstate/US route systems, thus improving safety and restoring connectivity.

5.2.6 I-75 Ohio C-D Road/Arterial Improvement Sub-Alternatives

Sub-alternatives 1 and 2 meet the Purpose and Need and will be carried forward for further study. Sub-alternative 1 improves safety and traffic flow through improvements to existing I-75 and widening of bridges over local roadways. Improved connectivity to I-75 and local roadways would be provided through a collector-distributor system. Geometric and safety improvements are incorporated in sub-alternative 2 through the elimination of the Ezzard Charles Drive ramp access to I-75. Sub-alternative 2 also improves existing I-75 and local roadways.

5.2.7 Western Hills Viaduct Interchange Sub-Alternatives

Eleven alternatives were developed for the Western Hills Viaduct including a No Build alternative. Evaluation criteria for this interchange include Purpose and Need goals, elimination of the left exit from I-75, compliment other studies completed in the Uptown area and provide the opportunity for a full-movement interchange. Alternatives WHV-1, WHV-2 and WHV-3 meet the evaluation criteria and will be carried forward for further study. These alternatives improve safety and roadway geometry. Also, they reduce the right of way required for the interchange.

The No Build Alternative for the Western Hill Viaduct Interchange does not meet the Purpose and Need goals; however, this alternative will be carried forward as a baseline for evaluation of the conceptual alternatives.

5.3 Conceptual Alternatives

A total of six conceptual alternatives, the No Build and five build alternatives, are being carried forward for further study. The five conceptual build alternatives meet the evaluation criteria of the purpose and need; and stakeholder's goals and measures of success; and have the least amount of impacts as detailed in the Alternatives Comparison Matrix (Appendix D).

Descriptions of the six conceptual Build alternatives retained for further study are discussed in the following sections (Appendix E). Each mainline conceptual alternative is discussed in general followed by discussion of the four segments of the mainline.

5.3.1 Mainline Alternative 1 – Queensgate Alignment for I-75

Mainline Alternative 1 (Appendix E, pages E1 – E4) is a new alignment for I-75 traffic only. A new single-deck bridge or twin bridges with five lanes in each direction (northbound and southbound) would be constructed approximately 800 to 1,000 feet west of the existing bridge for I-75 traffic. North of the Brent Spence Bridge a new alignment for I-75 would be constructed through the Queensgate area of Cincinnati, Ohio. The existing Brent Spence Bridge would be rehabilitated to provide two lanes of traffic in each direction with full shoulders for I-71 and local traffic.

Alternative 1 would separate I-75 traffic from I-71 and local traffic from just south of KY 12th Street in Covington to Ezzard Charles Drive in Ohio. No direct access ramps to and from I-75 would be constructed between these points. All downtown Covington and Cincinnati traffic would be required to use the existing Brent Spence Bridge to gain access to I-75 northbound and southbound in either direction.

5.3.1.1 Segment 1 – Kyles Lane to KY 5th Street, Kentucky (Page E1)

Seven lanes are proposed in each direction between the Kyles Lane Interchange to just south of the access ramps into and out of downtown Covington. I-75 currently has three lanes northbound and four lanes southbound, requiring an additional four lanes northbound and three lanes southbound.

In the northbound direction, four lanes would be added prior to the split of I-75 and I-71/local traffic. At this point, five lanes of I-75 would separate from the existing alignment on the east side and parallel the existing alignment to just north of KY 9th Street, while allowing adequate space for access ramps on and off the existing alignment. I-75 northbound would cross over the existing interstate to align with a new Queensgate bridge(s).

In the southbound direction, five lanes of I-75 would merge with two lanes of I-71/local traffic south of KY 5th Street. Three lanes would be dropped south of the access ramps into and out of downtown Covington. Southbound truck traffic typically uses the outermost lanes, therefore it would be undesirable to drop lanes between Kyles Lane and KY 12th Street in Covington due to the steep uphill grade which is approximately five percent approaching Kyles Lane. During the next phase of the project, the project team

will study additional options that carry seven lanes southbound to Kyles Lane and drop three lanes south of Kyles Lane.

I-71 and local traffic will remain on the existing alignment and use the existing Brent Spence Bridge to cross the Ohio River into downtown Cincinnati. Existing access ramps to and from downtown Covington to the existing alignment will be reconstructed as necessary and improved as required to connect to the existing alignment. No direct access to I-75 northbound will be provided in Kentucky north of Kyles Lane. Motorists leaving downtown Covington with destinations north of Cincinnati will cross the existing Brent Spence Bridge, travel through the I-71/US 50 Interchange, and merge onto I-75 near Ezzard Charles Drive in Cincinnati.

5.3.1.2 Segment 2 – KY 5th Street to OH 3rd Street, Kentucky and Ohio (Page E2)

A new bridge over the Ohio River would be constructed approximately 800 to 1,000 feet west of the existing Brent Spence Bridge for I-75 traffic. I-71 and local traffic would remain on the existing bridge. All traffic with destinations to downtown Covington or Cincinnati, I-71 northbound and southbound, and US 50 eastbound and westbound, would be required to use the existing Brent Spence Bridge. No access to Covington, Cincinnati, or highway facilities would be provided from I-75.

There are two issues regarding the use of the existing Brent Spence Bridge for I-71 and local traffic. Rehabilitation of the bridge to provide full shoulders, only allows two lanes of traffic in each direction. It has not been determined whether or not two lanes would provide adequate capacity for both I-71 and local traffic. This issue will be resolved in the next phase of the project during traffic operations analyses.

The second issue pertains to the northbound KY 4th Street entrance ramp from Covington onto the existing bridge. Currently, this ramp adds a fourth northbound lane that extends across the bridge. With the proposed configuration, the ramp lane would need to drop prior to the existing bridge while allowing an adequate acceleration/merge distance. Additional study in the next phase of the project will be needed to resolve this issue.

The existing ramps to north I-71/east US 50 (Fort Washington Way) would remain with minimal change. It has been discussed that some of the ramp reconstruction that occurred with the construction of Fort Washington Way required design exceptions. It is the intent of the project team that any design to be carried forward will not require further design exceptions. The proposed project will not worsen the situation when a design exception was previously required.

5.3.1.3 Segment 3 – OH 3rd Street to Ezzard Charles Drive, Ohio (Page E3)

A new alignment for I-75 would be constructed to the west of its current location through the Queensgate area of Cincinnati. I-75 would connect to the existing alignment just south of Ezzard Charles Drive. I-75 would be elevated between the new bridge and Ezzard Charles Drive, allowing the existing street grid and roadways to remain as they currently exist underneath the proposed structure. The existing ramps from Gest Street to I-75 northbound and from I-75 southbound to Gest Street would be removed due to conflicts with the vertical alignment of I-75. These ramps currently provide the primary access point for US 50 eastbound to I-75 northbound and I-75 southbound to US 50 westbound. No direct access would be provided to I-75 from the north end of the new

Brent Spence Bridge to just north of Ezzard Charles Drive. Local traffic would use the existing Brent Spence Bridge to access I-75 and I-71.

Construction within the I-71/US 50 Interchange would be minimized to allow for the proposed reconfiguration of the roadway network. Between the I-71 ramps and Ezzard Charles Drive, the mainline would become a local traffic distributor that would provide access to and from the city's street grid and US 50. With this mainline alternative, the number of mainline lanes would be decreased between the diverge of the I-71 ramps and the merge with I-75 near Ezzard Charles Drive. All ramps and existing connections to US 50 and the local city street grid would remain, except for the Gest Street ramps noted above.

In general, the Mainline Alternative 1 identifies the No Build option for the I-71/US 50 Interchange. The presence of left-hand entrances and exits and closely spaced decision points within the interchange justify further study to minimize motorist confusion and provide a system that is easier and safer to navigate and meets driver expectations. Therefore, additional alternatives for the reconstruction of the I-71/US 50 Interchange were developed and are included Section 5.3.7.

5.3.1.4 Segment 4 - Ezzard Charles Drive to Western Hills Viaduct, Ohio (Page E4)

I-75 would merge with the local traffic distributor just south of Ezzard Charles Drive. At this point, seven lanes would be required. In the northbound direction, two lanes would be dropped between Ezzard Charles Drive and the I-75/Western Hills Viaduct Interchange to connect to the proposed five lane section of the Mill Creek Expressway Project.

In the southbound direction, two lanes would be added between the I-75/Western Hills Viaduct Interchange and Ezzard Charles Drive. Five lanes of I-75 and two lanes of the local traffic distributor would diverge just south of Ezzard Charles Drive.

The existing ramps and crossroads would remain with minimal reconstruction.

Alternatives were developed for collector-distributor roads along I-75 and for improvements to the arterial system that parallels I-75 on both sides between Ezzard Charles Drive and Western Hills Viaduct. These alternatives are discussed in Section 5.3.9.

Alternatives were developed for the reconstruction of the I-75/Western Hills Viaduct Interchange and are discussed in Section 5.3.10.

5.3.2 Mainline Alternative 2 – Queensgate Alignment for I-71/I-75

Mainline Alternative 2 (Appendix E, pages E5 – E8) is a new alignment for I-75 and I-71 traffic through the Queensgate community of Cincinnati. A new single-deck bridge or twin bridges with seven lanes in the northbound and southbound directions would be constructed approximately 800 to 1,000 feet west of the existing bridge for I-75 and I-71 traffic. The existing Brent Spence Bridge would be rehabilitated to provide two lanes of traffic in each direction with full shoulders for local traffic only.

I-75 and I-71 traffic would be separated from local traffic from just south of KY 12th Street in Covington to Ezzard Charles Drive in Ohio. No direct access ramps to and from I-75

and I-71 would be constructed between these points. All downtown Covington and Cincinnati traffic would be required to use the existing bridge to gain access to I-75 or I-71 in either direction.

5.3.2.1 Segment 1 – Kyles Lane to KY 5th Street, Kentucky (Page E5)

Nine lanes are proposed in each direction from the Kyles Lane Interchange to just south of the access ramps into and out of downtown Covington. I-75 currently has three lanes northbound and four lanes southbound, requiring an additional six lanes northbound and five lanes southbound. It is anticipated that the number of lanes required between Kyles Lane and KY 12th Street would be similar to those shown and discussed on Mainline Alternative 1 with the two additional lanes being added and/or dropped with ramps into and out of downtown Covington. Further analysis in the next phase of the project will more accurately determine the lane configurations of this alternative in northern Kentucky.

In the northbound direction, five lanes would be added prior to the split of I-71/I-75 and the local traffic roadway. At this point, seven lanes of I-71/I-75 would separate from the existing alignment on the east side and parallel the existing alignment to just north of KY 9th Street. Adequate space for access ramps on and off the existing alignment. I-71/I-75 northbound would cross over the existing interstate to align with a new Queensgate bridge(s).

In the southbound direction, seven lanes of I-71/I-75 would merge with two lanes of local traffic south of KY 5th Street. A minimum of three lanes would be dropped south of the access ramps into and out of downtown Covington. Since southbound truck traffic typically uses the outermost lanes, it would be undesirable to drop lanes between Kyles Lane and KY 12th Street in Covington due to the steep uphill grade which is approximately 5 percent approaching Kyles Lane. During the next phase of the project, the project team will study additional options that carry seven lanes southbound to Kyles Lane and drop three lanes south of Kyles Lane.

Local traffic would remain on the existing interstate alignment and use the existing Brent Spence Bridge to cross the Ohio River into downtown Cincinnati. Existing access ramps to and from downtown Covington to the existing alignment would be reconstructed as necessary and improved as required to connect the existing alignment. No direct access to I-71/I-75 would be provided in Kentucky north of Kyles Lane. Motorists leaving downtown Covington with destinations north of Cincinnati would cross the existing Brent Spence Bridge, travel through the I-71/US 50 Interchange, and merge onto I-75 near Ezzard Charles Drive in Cincinnati.

5.3.2.2 Segment 2 – KY 5th Street to OH 3rd Street, Kentucky and Ohio (Page E6)

A new bridge over the Ohio River would be constructed approximately 800 to 1,000 feet west of the existing Brent Spence Bridge for I-71/I-75 traffic. Local traffic would remain on the existing bridge. All traffic with destinations to downtown Covington or Cincinnati, and US 50 eastbound and westbound would be required to use the existing Brent Spence Bridge. No access to these areas and facilities would be provided from I-71/I-75. Access to I-71 would be available from either bridge.

One issue that exists pertains to the northbound KY 4th Street entrance ramp from Covington onto the existing Brent Spence Bridge. Currently, this ramp adds a

northbound lane that extends across the bridge. With the proposed configuration, the ramp lane would need to drop prior to the existing bridge while allowing an adequate acceleration/merge distance. Additional study in the next phase of the project will resolve this issue.

The existing ramps to Fort Washington Way would be reconstructed to allow I-71 through traffic to cross the new bridge. I-71 southbound traffic going to downtown Covington would have access to the existing bridge. It has been discussed that some of the ramp reconstruction that occurred with the construction of Fort Washington Way required design exceptions. It is the intent of the project team that any design to be carried forward will not require further design exceptions. The proposed project will not worsen the situation when a design exception was previously required.

5.3.2.3 Segment 3 – OH 3rd Street to Ezzard Charles Drive, Ohio (Page E7)

A new alignment for I-71/I-75 would be constructed to the west of its current locations through the Queensgate community of Cincinnati. The new alignment would connect the existing interstate just north of Ezzard Charles Drive. I-71/I-75 would be elevated between the new Brent Spence Bridge and Ezzard Charles Drive, allowing the existing street grid and roadways to remain as they currently exist underneath the proposed structure. The existing ramps from Gest Street to I-75 northbound and from I-75 southbound to Gest Street would remain as they currently exist. No direct access would be provided to I-71/I-75 from the north end of the new Brent Spence Bridge to just north of Ezzard Charles Drive. Local traffic would use the existing Brent Spence Bridge to access I-75 and I-71.

Through the existing I-75 corridor, construction within the I-71/US 50 Interchange would be minimized to allow for the proposed reconfiguration of the roadway network. Between the end of the existing bridge and Ezzard Charles Drive, the mainline would become a local traffic distributor that would provide access to and from the city's street grid and US 50. With this mainline alternative, the number of mainline lanes would be decreased between the end of the existing bridge and the merge with I-75 near Ezzard Charles Drive. All ramps and existing connections to US 50 and the local city street grid would remain.

In general, the Mainline Alternative 2 identifies the No Build option for the I-71/US 50 Interchange. The presence of left-hand entrances and exits and closely spaced decision points within the interchange justify further study to minimize motorist confusion and provide a system that is easier and safer to navigate and meets driver expectations. Therefore, additional alternatives for the reconstruction of the I-71/US 50 Interchange were developed and are discussed in Section 5.3.7.

5.3.2.4 Segment 4 - Ezzard Charles Drive to Western Hills Viaduct, Ohio (Page E8)

I-71/I-75 would merge with the local traffic distributor just north of Ezzard Charles Drive. At this point, seven lanes would be required. In the northbound direction, two lanes would be dropped between Ezzard Charles Drive and the I-75/Western Hills Viaduct Interchange to connect to the proposed five lane section of the Mill Creek Expressway Project.

In the southbound direction, two lanes would be added between the I-75/Western Hills Viaduct Interchange and Ezzard Charles Drive. Five lanes of I-75 and two lanes of the local traffic distributor would diverge just south of Ezzard Charles Drive.

The existing ramps and crossroads would remain with minimal construction.

Alternatives were developed for collector-distributor roads along I-75 and for improvements to the arterial system that parallels I-75 between Ezzard Charles Drive and Western Hills Viaduct. These alternatives are discussed in Section 5.3.9.

Alternatives were developed for the reconstruction of the I-75/Western Hills Viaduct Interchange and are discussed in Section 5.3.10.

5.3.3 Mainline Alternative 3 – New Bridge Just West for I-75

Mainline Alternative 3 (Appendix E, pages E9 – E12) consists of the construction of a new double-deck bridge just to the west of the existing bridge for I-75 traffic only. The existing Brent Spence Bridge would be rehabilitated to provide two lanes of traffic in each direction with full shoulders for I-71 and local traffic.

I-75 traffic would be separated from I-71 and local traffic from just south of KY 12th Street in Covington to Ezzard Charles Drive in Ohio. No direct access ramps to and from I-75 would be constructed between these points. All downtown Covington and Cincinnati traffic would be required to use the existing Brent Spence Bridge to gain access to I-75 northbound and southbound.

5.3.3.1 Segment 1 – Kyles Lane to KY 5th Street, Kentucky (Page E9)

Seven lanes are proposed in each direction from the Kyles Lane Interchange to just south of the access ramps into and out of downtown Covington. I-75 currently has three lanes northbound and four lanes southbound, requiring an additional four lanes northbound and three lanes southbound.

In the northbound direction, four lanes would be added prior to the split of I-75 and I-71/local traffic. At this point, five lanes of I-75 would separate from the existing alignment on the east side and parallel the existing alignment to just north of KY 9th Street while allowing adequate space for access ramps on and off the existing alignment. I-75 northbound would cross over the existing alignment to align with a new double-deck bridge just to the west of the existing Brent Spence Bridge.

In the southbound direction, five lanes of I-75 would merge with two lanes of I-71/local traffic south of KY 5th Street. Three lanes would be dropped south of the access ramps into and out of downtown Covington. Southbound truck traffic typically uses the outermost lanes, therefore it would be undesirable to drop lanes between Kyles Lane and KY 12th Street in Covington due to the steep uphill grade which is approximately five percent approaching Kyles Lane. During the next phase of the project, the Project Team will study additional options that carry seven lanes southbound to Kyles Lane and drop three lanes south of Kyles Lane.

I-71 and local traffic would remain on the existing interstate alignment and use the existing Brent Spence Bridge to cross the Ohio River into downtown Cincinnati. Existing access ramps to and from downtown Covington to the existing alignment would be

reconstructed as necessary and improved as required to tie back to the existing alignment. No direct access to I-75 would be provided in Kentucky north of Kyles Lane. Motorists leaving downtown Covington with destinations north of Cincinnati would cross the existing Brent Spence Bridge, travel through the I-71/I-75/US 50 Interchange, and merge onto I-75 in the vicinity of Ezzard Charles Drive in Cincinnati.

5.3.3.2 Segment 2 – KY 5th Street to OH 3rd Street, Kentucky and Ohio (Page E10)

A new bridge over the Ohio River would be constructed just to the west of the existing Brent Spence Bridge for I-75 traffic. I-71 and local traffic would remain on the existing bridge. All traffic with destinations of downtown Covington or Cincinnati, I-71 northbound and southbound, and US 50 eastbound and westbound would be required to use the existing Brent Spence Bridge. No access to these areas and facilities would be provided from I-75.

There are two issues regarding the use of the existing bridge for I-71 and local traffic. Rehabilitation of the bridge to provide full shoulders only allows two lanes of traffic in each direction. It has not been determined whether or not two lanes would provide adequate capacity for both I-71 and local traffic. This issue will be resolved in the next phase of the project during traffic operations analysis.

The second issue pertains to the northbound KY 4th Street entrance ramp onto the existing bridge. Currently, this ramp adds a fourth northbound lane that extends across the bridge. With the proposed configuration, the ramp lane would be dropped prior to the existing bridge, while allowing an adequate acceleration/merge distance. Additional study in the next phase of the project is necessary to resolve this issue.

The existing ramps to Fort Washington Way would remain with minimal construction. It has been discussed that some of the ramp reconstruction that took place with the construction of Fort Washington Way required design exceptions. It is the intent of the Project Team that any design to be carried forward will not require further design exceptions. The proposed project will not worsen the situation when a design exception was previously required.

The presence of two bridges adjacent to each other complicates the vertical geometry of the bridge approaches on the Ohio side of the river. With this alternative, the alignments of I-75 northbound from the new bridge and I-71/local southbound to the existing bridge cross less than 1,000 feet north of the main span across the Ohio River. Due to the presence of other limiting factors such as clearance over the railroad between Mehring Way, OH 3rd Street and Longworth Hall, it would be difficult to provide an appropriate vertical alignment for I-75 without requiring at least partial reconstruction of the Ohio side approach structure to the existing bridge, resulting in increased construction costs. Vertical alignment issues will be further analyzed in the next phase of the project.

5.3.3.3 Segment 3 – OH 3rd Street to Ezzard Charles Drive, Ohio (Page E11)

I-75 would follow the existing interstate alignment and widen to five lanes in each direction through the I-71/I-75/US 50 Interchange. Construction within the I-75, I-71, US 50 Interchange would be minimized to allow for the proposed reconfiguration of the roadway network. All ramps and existing connections to US 50 and the local city street grid would remain with only minimal reconstruction to connect to the widened mainline alignments.

In general, the Mainline Alternative 3 identifies the No Build option for the I-71/I-75/US 50 Interchange. The presence of left-hand entrances and exits and closely spaced decision points within the interchange justify further study to minimize motorist confusion and provide a system that is easier and safer to navigate and meets driver expectations. Therefore, additional alternatives for the reconstruction of the I-71/I-75/US 50 Interchange were developed and are discussed in Section 5.3.8.

5.3.3.4 Segment 4 - Ezzard Charles Drive to Western Hills Viaduct, Ohio (Page E12)

Five lanes of I-75 in each direction would be carried from Ezzard Charles Drive to the Western Hills Viaduct to tie to the proposed five lane section of the Mill Creek Expressway Project. The existing ramps and crossroads would remain with minimal reconstruction.

Alternatives were developed for collector-distributor roads along I-75 and for improvements to the arterial system that parallels I-75 on both sides between Ezzard Charles Drive and Western Hills Viaduct. These alternatives are discussed in Section 5.3.9.

Alternatives were developed for the reconstruction of the I-75/Western Hills Viaduct Interchange and are discussed in Section 5.3.10.

5.3.4 Mainline Alternative 4 – New Bridge Just West for all Traffic

Mainline Alternative 4 (Appendix E, pages E13 – E16) consists of the construction of a new double-deck bridge just to the west of the existing Brent Spence Bridge. The upper deck of the new bridge would carry I-75 traffic and the lower deck would carry I-71 and local traffic. The existing Brent Spence Bridge would be removed.

I-75 traffic would be separated from I-71 and local traffic from just south of KY 12th Street in Covington to Ezzard Charles Drive in Ohio. No direct access ramps to and from I-75 would be constructed between these points. All downtown Covington and Cincinnati traffic would be required to use the lower deck of the new Brent Spence Bridge to gain access to I-75 northbound and southbound.

5.3.4.1 Segment 1 – Kyles Lane to KY 5th Street, Kentucky (Page E13)

Seven lanes are proposed in each direction from the Kyles Lane Interchange to just south of the access ramps into and out of downtown Covington. I-75 currently has three lanes northbound and four lanes southbound, requiring an additional four lanes northbound and three lanes southbound.

In the northbound direction, four lanes would need to be added prior to the split of I-75 and I-71/local traffic. At this point, three lanes of I-71/local traffic would separate from the existing interstate alignment on the east side and parallel the existing interstate alignment to just north of KY 9th Street. I-71/local traffic would cross under the new I-75 alignment to align with a new double-deck bridge just to the west of the existing Brent Spence Bridge. Three lanes of I-71 and local traffic would cross the Ohio River on the lower deck of the new Brent Spence Bridge and five lanes of I-75 would cross on the upper deck.

In the southbound direction, five lanes of I-75 would merge with three lanes of I-71/local traffic south of KY 5th Street. Four lanes would be dropped south of the access ramps into and out of downtown Covington. Since southbound truck traffic typically uses the outermost lanes, it would be undesirable to drop lanes between Kyles Lane and KY 12th Street in Covington due to the steep uphill grade which is approximately five percent approaching Kyles Lane. During the next phase of the project, the project team will study additional options that carry seven lanes southbound to Kyles Lane and drop three lanes south of Kyles Lane.

Existing access ramps to and from downtown Covington to the existing alignment would be reconstructed as necessary and improved as required to connect to the I-71/local traffic roadway. No direct access to I-75 would be provided in Kentucky north of Kyles Lane. Motorists leaving downtown Covington with destinations north of Cincinnati would cross the new bridge on the lower deck, travel through the I-71/I-75/US 50 Interchange, and merge onto I-75 in the vicinity of Ezzard Charles Drive in Cincinnati.

5.3.4.2 Segment 2 – KY 5th Street to OH 3rd Street, Kentucky and Ohio (Page E14)

A new double-deck bridge would be constructed to the west of the existing Brent Spence Bridge with I-75 traffic on the upper deck and I-71 and local traffic on the lower deck. All traffic with destinations of downtown Covington or Cincinnati, I-71 northbound and southbound, and US 50 eastbound and westbound, would be required to use the lower deck of the new Brent Spence Bridge. No access to these areas and facilities would be provided from I-75.

The existing ramps to Fort Washington Way would remain with minimal construction. It has been discussed that some of the ramp reconstruction that took place with the construction of Fort Washington Way required design exceptions. It is the intent of the project team that any design to be carried forward would not require further design exceptions. The proposed project will not worsen the situation when a design exception was previously required.

5.3.4.3 Segment 3 – OH 3rd Street to Ezzard Charles Drive, Ohio (Page E15)

I-75 would follow the existing interstate alignment and be widened to five lanes in each direction through the I-71/I-75/US 50 Interchange. Construction within the I-71/I-75/US 50 Interchange would be minimized to allow for the proposed reconfiguration of the roadway network. All ramps and existing connections to US 50 and the local city street grid would remain with only minimal reconstruction to connect to the widened mainline alignments.

In general, the Mainline Alternative 4 identifies the No Build option for the I-71/I-75/US 50 Interchange. The presence of left-hand entrances and exits and closely spaced

decision points within the interchange justify further study to minimize motorist confusion and provide a system that is easier and safer to navigate and meets driver expectations. Therefore, additional alternatives for the reconstruction of the I-71/I-75/US 50 Interchange were developed and are discussed in Section 5.3.8.

5.3.4.4 Segment 4 - Ezzard Charles Drive to Western Hills Viaduct, Ohio (Page E16)

Five lanes of I-75 in each direction would be carried from Ezzard Charles Drive to the Western Hills Viaduct to connect to the proposed five lane section of the Mill Creek Expressway Project. The existing ramps and crossroads would remain with minimal reconstruction.

Alternatives were developed for collector-distributor roads along I-75 and for improvements to the arterial system that parallels I-75 on both sides between Ezzard Charles Drive and Western Hills Viaduct. These alternatives are discussed in Section 5.3.9.

Alternatives were developed for the reconstruction of the I-75/Western Hills Viaduct Interchange and are discussed in Section 5.3.10.

5.3.5 Mainline Alternative 5 – Construct New Bridges for I-75

Mainline Alternative 5 (Appendix E, pages E17 – E20) consists of the construction of two new single-deck bridges, one on each side of the existing bridge, for I-75 traffic only. The existing Brent Spence Bridge would be rehabilitated to two lanes in each direction with full shoulders for I-71 and local traffic.

I-75 traffic would be separated from I-71 and local traffic from just south of KY 12th Street in Covington to Ezzard Charles Drive in Ohio. No direct access ramps to and from I-75 would be constructed between these points. All downtown Covington and Cincinnati traffic would be required to use the existing bridge to gain access to I-75 northbound and southbound.

5.3.5.1 Segment 1 – Kyles Lane to KY 5th Street, Kentucky (Page E17)

Seven lanes are proposed in each direction from the Kyles Lane Interchange to just south of the access ramps into and out of downtown Covington. I-75 currently has three lanes northbound and four lanes southbound, requiring an additional four lanes northbound and three lanes southbound.

In the northbound direction, four lanes would need to be added prior to the interchange of I-75 and I-71/local traffic. At this point, five lanes of I-75 traffic would separate from the existing alignment on the east side and parallel the existing alignment all the way to the Ohio River. I-75 northbound would cross the river on a new single-deck bridge just to the east of the existing Brent Spence Bridge. Two lanes of I-71 and local traffic will cross the Ohio River on the lower deck of the existing Brent Spence Bridge.

In the southbound direction, five lanes of I-75 would merge with two lanes of I-71/local traffic south of KY 5th Street. Four lanes would be dropped south of the access ramps into and out of downtown Covington. Since southbound truck traffic typically uses the outermost lanes, it would be undesirable to drop lanes between Kyles Lane and KY 12th Street in Covington due to the steep uphill grade which is approximately five percent

approaching Kyles Lane. During the next phase of the project, the Project Team will study additional options that carry seven lanes southbound to Kyles Lane and drop three lanes south of Kyles Lane.

Existing access ramps to and from downtown Covington to the existing alignment would be reconstructed as necessary and improved as required to connect back to the existing interstate alignment. No direct access to I-75 would be provided in Kentucky north of Kyles Lane. Motorists leaving downtown Covington with destinations north of Cincinnati will cross the existing bridge on the lower deck, travel through the I-71/I-75/US 50 Interchange, and merge onto I-75 in the vicinity of Ezzard Charles Drive in Cincinnati.

5.3.5.2 Segment 2 – KY 5th Street to OH 3rd Street, Kentucky and Ohio (Page E18)

Two new single-deck bridges would be constructed on either side of the existing Brent Spence Bridge with I-75 northbound traffic on the new bridge to the east, I-75 southbound traffic on the new bridge to the west, and I-71 and local traffic on the existing bridge. All traffic with destinations of downtown Covington or Cincinnati, I-71 northbound and southbound, and US 50 eastbound and westbound would be required to use the new Brent Spence Bridge. No access to these areas and facilities would be provided from I-75.

There are two issues regarding the use of the existing bridge for I-71 and local traffic. Rehabilitation of the new bridge providing full shoulders only allows two lanes of traffic in each direction. It has been questioned whether two lanes provide adequate capacity for both I-71 and local traffic. This issue will be resolved in the next phase of the project during traffic operations analyses.

The second issue pertains to the northbound KY 4th Street entrance ramp onto the existing bridge. Currently, this ramp adds a fourth northbound lane that extends across the bridge. With the proposed configuration, the ramp lane would be dropped prior to the existing bridge while allowing an adequate acceleration/merge distance. Additional study in the next phase of the project is necessary to resolve this issue.

The existing ramps to Fort Washington Way would remain with minimal construction. It has been discussed that some of the ramp reconstruction that took place with the construction of Fort Washington Way required design exceptions. It is the intent of the project team that any design to be carried forward will not require further design exceptions. The proposed project will not worsen the situation when a design exception has been previously required.

The presence of three bridges adjacent to each other complicates the vertical geometry of the bridge approaches on the Ohio side of the river. With this alternate, the alignments of I-75 northbound from the new bridge to the east and I-71/local northbound to the existing bridge cross less than 1,000 feet north of the main span across the Ohio River. Due to the presence of other limiting factors such as clearance over the railroad between Mehring Way and OH 3rd Street and Longworth Hall, it would be difficult to provide an appropriate vertical alignment for I-75 without requiring at least partial reconstruction of the Ohio side approach structure to the existing bridge, resulting in increased construction costs. Vertical alignment issues will be further analyzed in the next phase of the project.

5.3.5.3 Segment 3 – OH 3rd Street to Ezzard Charles Drive, Ohio (Page E19)

I-75 would follow the existing alignment and widen to five lanes in each direction through the I-71/I-75/US 50 Interchange. Construction within the I-71/I-75/US 50 Interchange would be minimized to allow for the proposed reconfiguration of the roadway network. All ramps and existing connections to US 50 and the local city street grid would remain with only minimal reconstruction to connect to the widened mainline alignments.

In general, the Mainline Alternative 5 identifies the No Build option for the I-71/I-75/US 50 Interchange. The presence of left-hand entrances and exits and closely spaced decision points within the interchange justify further study to minimize motorist confusion and provide a system that is easier and safer to navigate and meets driver expectations. Therefore, additional alternatives for the reconstruction of the I-71/I-75/US 50 Interchange were developed and are discussed in Section 5.3.8.

5.3.5.4 Segment 4 - Ezzard Charles Drive to Western Hills Viaduct, Ohio (Page E20)

Five lanes of I-75 in each direction would be constructed from Ezzard Charles Drive to the Western Hills Viaduct to connect to the proposed five lane section of the Mill Creek Expressway Project. The existing ramps and crossroads would remain with minimal reconstruction.

Alternatives were developed for collector-distributor roads along I-75 and for improvements to the arterial system that parallels I-75 on both sides between Ezzard Charles Drive and Western Hills Viaduct. These alternatives are discussed in Section 5.3.9.

Alternatives were developed for the reconstruction of the I-75/Western Hills Viaduct Interchange and are discussed in Section 5.3.10.

5.3.6 I-75 Northbound at KY 12th Street Ramp Sub-Alternatives

5.3.6.1 Sub-Alternative 1 (Page E21)

Sub-alternative 1 replaces the proposed access to the future development site located east of I-71/I-75 in the vicinity of Monterey Road and KY 16th Street with a relocated connector street between KY 12th Street and the development site. In the next phase of this project, the project team will further analyze and define the horizontal and vertical geometries of the mainline and ramps, including development of preliminary construction limits. At this time, actual geometrics of the proposed connector street will be developed such that impacts to the residential neighborhood and historic district are minimized.

5.3.6.2 Sub-Alternative 2 (Page E22)

Sub-alternative 2 relocates the terminal of the I-75 northbound ramp to KY 12th Street further south along I-75. Access to the proposed development site located east of I-71/I-75 in the vicinity of Monterey Road and KY 16th Street would be allowed at this point with a three-leg intersection. A two-way street would be provided between the ramp terminal and KY 12th Street to allow access to the development from KY 12th Street and northbound interstate access to KY 12th Street. This sub-alternative could minimize impacts to the residential neighborhood and historic district by reducing the required width of the roadway footprint.

5.3.7 I-71/US 50 Interchange Sub-Alternatives (for I-75 Queensgate Alignment)

5.3.7.1 I-71/US 50 Interchange Sub-Alternative 1 (Page E23)

Sub-alternative 1 proposes to remove I-75 from the existing corridor. Therefore, this sub-alternative is applicable to the Queensgate alignments, Mainline Alternatives 1 and 2.

Sub-alternative 1 would realign the mainline through the interchange and realign US 50 to provide parallel roadways to eliminate left-hand entrances and exits. The proposed alignments of the ramps from the existing bridge to and from I-71/Fort Washington Way would remain similar to the existing alignments. North of the divergence of the I-71 ramps, the mainline local traffic distributor road would progress through the interchange prior to merging with I-75 near Ezzard Charles Drive.

This sub-alternative maintains all existing ramps to I-71, US 50, and downtown Cincinnati. Additional optional ramps are shown for southbound traffic from I-75 to US 50 westbound and for US 50 eastbound to I-75 northbound.

5.3.7.2 I-71/US 50 Interchange Sub-Alternative 2 (Page E24)

Sub-alternative 2 proposes to remove I-75 from the existing corridor. Therefore, this sub-alternative is applicable to the Queensgate alignment, Mainline Alternatives 1 and 2.

Sub-alternative 2 would realign the mainline through the interchange of US 50 to provide parallel roadways to eliminate left-hand entrances and exits. Ramps from the new bridge to and from I-71/Fort Washington Way are required with both I-75 and I-71 relocated on the new alignment and only local traffic remaining on the existing bridge. Ramps from I-71 to the existing bridge are also required to allow traffic to and from downtown Covington access to I-71. The mainline local traffic distributor road would progress through the interchange prior to merging with I-75 near Ezzard Charles Drive.

This sub-alternative maintains all existing ramps to I-71, US 50, and downtown Cincinnati. Additional optional ramps are shown for southbound traffic from I-75 to US 50 westbound and for US 50 eastbound to I-75 northbound.

5.3.8 I-71/I-75/US 50 Interchange Sub-Alternatives

5.3.8.1 I-71/I-75/US 50 Interchange Sub-Alternative 1 (Page E25)

Sub-alternative 1 consists of realignment of I-75 through the interchange and elimination of all access to and from I-75 from the Ohio River to just south of Ezzard Charles Drive. US 50 would also be realigned to provide a parallel roadway to facilitate the elimination of left-hand entrances and exits. A local traffic distributor road would be constructed that would carry local traffic from the existing bridge and provide access ramps to US 50 and local city streets before tying back to I-75 just south of Ezzard Charles Drive.

This sub-alternative maintains all existing ramps to I-71, US 50, and downtown Cincinnati except for the southbound I-75 connection to OH 7th Street. The existing OH 7th Street bridge over I-75 would be utilized to carry the southbound local traffic distributor road over I-75 so that it could be tied to the existing Brent Spence Bridge. The OH 8th-7th Street connection would be replaced with a new bridge over I-75 parallel to the existing OH 9th Street bridge. Additional optional ramps are shown for direct

connections for southbound traffic from I-75 to US 50 westbound and for US 50 eastbound to I-75 northbound.

This sub-alternative provides an I-75 at-grade facility with all crossroads and ramps over I-75. An additional variation to be studied further in the next phase of the project, to determine if it allows any cost savings, will be to elevate I-75 through the interchange and provide at-grade crossroads and ramps under I-75.

5.3.8.2 I-71/I-75/US 50 Interchange Sub-Alternative 2 (Page E26)

Sub-alternative 2 consists of realigning I-75 through the interchange and eliminating all access to and from I-75 from the Ohio River to just south of Ezzard Charles Drive. US 50 would also be realigned to provide a parallel roadway to facilitate the elimination of left-hand entrances and exits. A local traffic distributor road would be constructed to carry local traffic from the existing bridge and provide access ramps to US 50 and local city streets before tying back to I-75 just south of Ezzard Charles Drive.

This sub-alternative provides an extension of the city street grid through the interchange. All existing ramp connections are maintained in addition to a northbound connection to OH 7th Street. Additional optional ramps are shown for direct connection for southbound traffic from I-75 to US 50 westbound and for US 50 eastbound to I-75 northbound. The most significant change is the southbound route to OH 2nd Street. The direct connection would be removed and southbound traffic would exit just north of OH 9th Street and follow the ramp to a new four-leg intersection at OH 3rd Street. Vehicles going to OH 2nd Street would travel through the intersection and turn left onto OH 2nd Street.

This sub-alternative provides an elevated I-75 facility with all crossroads and ramps under I-75. At this time, I-75 elevated appears to be favorable to I-75 at-grade with the layout of this alternative. If the study of Sub-alternative 1 results in an I-75 at-grade facility being less expensive than I-75 elevated, further study of this sub-alternative may be pursued to determine if an I-75 at-grade facility could be constructed while achieving the same goals.

5.3.8.3 I-71/I-75/US 50 Interchange Sub-Alternative 3 (Page E27)

Sub-alternative 3 consists of realigning I-75 through the interchange and eliminating all access to and from I-75 from the Ohio River to just south of Ezzard Charles Drive. US 50 would also be realigned to provide a parallel roadway to facilitate the elimination of left-hand entrances and exits. A local traffic distributor road would be constructed that would carry local traffic from the existing bridge and provide access ramps to US 50 and local city streets before tying back to I-75 just south of Ezzard Charles Drive.

This sub-alternative provides a more-defined extension of the city street grid through the interchange as well as reconfiguration of the provision of access. All existing connections are maintained. Additional optional ramps are shown for direct connection for southbound traffic from I-75 to US 50 westbound and for US 50 eastbound to I-75 northbound. Southbound traffic going to OH 2nd Street would no longer have a direct connection as with Sub-alternative 2. The extension of John Street north to OH 6th Street provides an additional route for OH 3rd Street traffic traveling to I-75 northbound or US 50 westbound.

This sub-alternative provides an elevated I-75 facility with all crossroads and ramps under I-75. At this time, I-75 elevated appears to be favorable to I-75 at-grade with the layout of this sub-alternative. If the study of Sub-alternative 1 results in an I-75 at-grade facility being less expensive than I-75 elevated, further study of this sub-alternative may be pursued to determine if an I-75 at-grade facility could be constructed while achieving the same goals.

5.3.9 I-75 Ohio C-D Road/Arterial Improvement Sub-Alternatives

5.3.9.1 Sub-Alternative 1 (Page E28)

Sub-alternative 1 provides for the construction of collector-distributor (C-D) roads along I-75 from near Ezzard Charles Drive to south of Western Hills Viaduct. On the south end, the C-D roads would become the local traffic distributor route for the I-71/I-75/US 50 Interchange sub-alternative chosen. On the north end, the northbound C-D road could extend through the Western Hills Viaduct Interchange. In the southbound direction, the C-D road could begin at the southbound I-75 ramp from the Western Hills Viaduct.

5.3.9.2 Sub-Alternative 2 (Page E29)

Sub-alternative 2 would improve Western Avenue and Winchell Avenue to improve traffic flow and increase capacity. The ramps to Western Avenue and from Winchell Avenue just north of Ezzard Charles Drive are in close proximity to the Gest Street ramps just south of Ezzard Charles Drive. The ramps just north of Ezzard Charles Drive would be removed. Improvements to Winchell Avenue and Western Avenue to improve the flow of traffic and increase capacity are being considered to mitigate the impacts of removing the ramps.

5.3.10 Western Hills Viaduct Interchange Sub-Alternatives

5.3.10.1 Sub-Alternative WHV-1 (Page E30)

Sub-alternative WHV-1 proposes to construct a modern roundabout intersection on the east side of I-75. The modern roundabout would be located beyond the eastern end of the existing Viaduct bridge and form a single intersection with Central Parkway, McMillan Street, Western Hills Viaduct and the freeway ramps. Southbound I-75 ramps would fly over the freeway to the east side intersecting with the modern roundabout.

5.3.10.2 Sub-Alternative WHV-2 (Page E31)

Sub-alternative WHV-2 is a single roundabout diamond interchange (SRDI). A modern roundabout would be constructed on Western Hills Viaduct over the interstate and straight ramps (as with a standard diamond interchange) would intersect the modern roundabout on either side of the freeway.

5.3.10.3 Sub-Alternative WHV-3 (Page E32)

Sub-alternative WHV-3 proposes a single point urban interchange (SPUI). The basic layout of the SPUI is a diamond-type interchange in which a single intersection is formed with the arterial street and ramps over or under the freeway. The SPUI bridge would be built on the Western Hills Viaduct over I-75. This sub-alternative would require widening on the viaduct for the purpose of adding center left turn lanes thus potentially impacting the historic portion of the viaduct bridge.

6.0 RECOMMENDED DESIGN CONCEPT AND SCOPE

The Ohio Department of Transportation (ODOT), Kentucky Transportation Cabinet (KYTC), and Federal Highway Administration (FHWA) have agreed that five lanes, with appropriate congestion mitigation enhancements in each direction are anticipated for I-75 traffic crossing the Ohio River. Two, three, or four lanes in each direction are anticipated for I-71 and local traffic, for a total of seven, eight, or nine lanes in each direction crossing the Ohio River. In Ohio, the 10 lanes (five lanes in each direction) of I-75 will be carried northward through the Mill Creek Expressway project. In Kentucky, the additional lanes will be dropped as efficiently and safely as possible in the southbound direction and lanes added in the northbound direction as required to tie to the proposed number of lanes.

Additional design objectives for the Brent Spence Bridge Replacement/Rehabilitation Project include:

- Elimination of left exits and entrances,
- Enhance existing connections from interstate and US routes to local roadways,
- Add missing connections from US 50 eastbound to northbound I-75 and southbound I-75 to westbound US 50, and
- No restrictions by proposed access to a proposed development on the empty parcel just south of Linden Grove Cemetery on the east side of and adjacent to I-75 in Covington.

Proposed interchange modification sub-alternatives of the Western Hills Viaduct were developed to accomplish the following design objectives:

- Eliminate left-hand exit ramp in I-75 northbound direction,
- Improve accessibility to/from I-75 from the Uptown area,
- Avoid impacts to the subway tunnels, and
- Provide for a full movement interchange with I-75.

Each of the full movement interchange alternatives for Western Hills Viaduct would require I-75 traffic to use the top level of the Viaduct structure in addition to traffic destined for Central Parkway and the Uptown area. The lower level would continue to provide a connection to Spring Grove Avenue. Additional analysis of the traffic patterns on the west end of the viaduct will be undertaken in subsequent steps of the project development.

Alternatives recommended for further consideration meet the components of the Recommended Design Concept and Scope. Exhibits in Appendix E show mapping of the recommended conceptual alternatives and sub-alternatives. These alternatives will be carried forward for further study with a refined set of criteria.

7.0 STRATEGIC PLAN

7.1 Project Phasing and Funding Recommendation

7.1.1 Project Development Process

The Brent Spence Bridge Replacement/Rehabilitation Project is being implemented using the Ohio Department of Transportation's (ODOT) Project Development Process (PDP). Steps 1 through 4 comprise the planning process. The results of Steps 1 through 4 are described in this Planning Study Report. This report recommends several alternatives for further evaluation. The Strategic Plan describes the implementation plan for the project after Steps 1 through 4, and will be updated following the completion of each subsequent step of the process.

Table 7-1 summarizes ODOT's major PDP steps 5 through14. Steps 5 through 8 develop conceptual alternatives through Stage I design and assess the environmental impact of the alternatives. Environment documentation is completed and a Preferred Alterative is selected during these steps. Steps 9 through 12 include right of way acquisition and final design. Steps 13 and 14 are project construction. The Kentucky Transportation Cabinet (KYTC) will assume management of the Kentucky portion of the Brent Spence Bridge project after completion of Step 8. This includes all improvements from Kyles Lane, the collector-distributor and climbing lanes south of the Brent Spence Bridge, the southern approaches to the Bridge, and the main span of the Bridge. ODOT will follow Steps 9 through 14 for the Ohio approaches, the connections to US 50, the I-71/I-75/US 50 Interchange, the I-75 mainline, and the Western Hills Viaduct. ODOT's and KYTC's responsibilities are defined at approximately N39°05.516'/W85°31.324'.

Table 7-1. ODOT's Major PDP Steps 5 through 14.

PDP Step and Key Engineering Components	Activities Performed During Step
Step 5	
Develop Conceptual Alternatives	• Address Public Involvement issues • Select corridors for further study • Develop preliminary Engineering/Environmental Scope of Services • Perform environmental field studies • Submit Conceptual Alternatives Study • Update cost estimates.
Step 6	
Develop Feasible Alternatives	• Develop feasible alternatives and preliminary construction limits • Perform field refinement environmental studies • Prepare Assessment of Feasible Alternatives • Conduct first Value Engineering Study • Conduct first Constructability Review • Update cost estimates.
Step 7	
Develop Preferred Alternative	• Recommend preferred alternative

Table 7-1. ODOT's Major PDP Steps 5 through 14.

PDP Step and Key Engineering Components	Activities Performed During Step
	• Refine design plans for preferred alternatives • Submit Preferred Alternative Verification • Perform environmental field study/refine impacts • Prepare Waterway Permit Determination • Prepare and Submit Categorical Exclusion, Environmental Assessment or Draft Environmental Impact Statement • Develop Detailed Design Scope of Services • Update cost estimates and milestone dates.
Step 8	
Prepare Environmental Clearance/Develop Stage 1 Design	• Finalize environmental document (CE, EA or EIS) • Request Finding of No Significant Impact/Record of Decision/Categorical Exclusion approval • Develop and Submit Stage 1 Detailed Design • Establish proposed R/W limits • Conduct Second Value Engineering Study • Prepare Final Waterway Permit applications and conceptual Mitigation Plans • Update cost estimates.
Step 9	
Develop Stage 2 Design	• Summarize environmental commitments and prepare necessary environmental plan notes • Prepare Final Mitigation Plans • Develop and Submit Preliminary R/W plans • Develop and Submit Stage 2 Detailed Design • Conduct second Constructability Review • Update cost estimates.
Step 11	
Develop Stage 3 Design	• Develop and Submit State 3 Detailed Design • Prepare Environmental Consultation Form • Update construction cost estimate.
Step 12	
Prepare Final Plan Package	• Prepare and Submit Final Tracings • Prepare and Submit Final Plan Package • Update construction cost estimate.

7.1.2 Project Phasing

7.1.2.1 Alternatives Description

Two primary alignment concepts for the Brent Spence Bridge Replacement/Rehabilitation Project were developed. Both concepts use existing right of way from Kyles Lane to KY 12th Street in Covington, Kentucky and from Ezzard Charles Drive in Cincinnati to the Western Hills Viaduct in Cincinnati, Ohio.

The first concept (Alternatives 1 and 2) requires new right of way for the alignments in Covington and through Queensgate in Cincinnati. The new alignment begins just north of KY 9th Street in Covington and ends at Ezzard Charles Drive in Cincinnati. The Queensgate alignments veer northwest in a straight line from just south of the Brent Spence Bridge approaches to the Union Terminal at Ezzard Charles Drive. They rejoin the existing alignment of I-75 north of Union Terminal.

The second concept (Alternatives 3, 4, and 5) is primarily located within the existing right of way throughout the current I-71/I-75 corridor from Kyles Lane to the Western Hills Viaduct. These alternatives extend through the southern terminus of the Bridge through southwestern Cincinnati connecting to the existing alignment of I-75 and with Fort Washington Way (I-71).

These two primary alignments are divided into four separate segments which contain sub-alternatives. Section 5.0 provides a discussion of the conceptual alternatives and sub-alternatives. Exhibits of the alternatives and sub-alternatives are located in Appendix E. Table 7-2 summarizes the components of the conceptual alternatives.

Table 7-2. Alternatives Recommended for Step 5, and Phasing Strategy as Shown in Appendix F

Alternative	Description	Phase	Proposed Phasing Strategy (Appendix F)
1	New Queensgate Bridge (2x5 Lanes) for I-75 and Rehab Existing Bridge (2x2 Lanes) for I-71 and Local Traffic	Phase I	Sheet Number 1
		Phase II	Sheet Number 2
		Phase III	Sheet Number 3
2	New Queensgate Bridge (2x7 Lanes) for I-71/I-75 and Rehab Existing Bridge (2x2 Lanes) for Local Traffic	Phase I	Sheet Number 4
		Phase II	Sheet Number 5
		Phase III	Sheet Number 6
3	New Double-Deck Bridge (2x5 Lanes) on West Side of the Existing Bridge for I-75 and New/Rehab Double-Deck Bridge (2x2 Lanes) at Existing Bridge for I-71 and Local Traffic	Phase I	Sheet Number 7
		Phase II	Sheet Number 8
		Phase III	Sheet Number 9
4	New Double-Deck Bridge (2x5 Lanes Each Direction on Top)	Phase I	Sheet Number 10

Table 7-2. Alternatives Recommended for Step 5, and Phasing Strategy as Shown in Appendix F

Alternative	Description	Phase	Proposed Phasing Strategy (Appendix F)
	for I-75 and (2x3 Lanes Each Direction on Bottom) for I-71 and Local on West Side of the Existing Bridge and Remove Existing Bridge	Phase II	Sheet Number 11
		Phase III	Sheet Number 12
5	New Single-Deck Bridges (2x5 Lanes) on each side of the Existing Bridge for I-75 and Rehab Existing Bridge(2x2 Lanes) for I-71 and Local Traffic	Phase I	Sheet Number 13
		Phase II	Sheet Number 14
		Phase III	Sheet Number 15

Segment 1 is similar in concept and implementation approach for the conceptual alternatives. Access to Covington and the replacement or rehabilitation of the main spans and approaches of the Brent Spence Bridge constitute Segment 2 of the conceptual alternatives. These vary according to the Queensgate or existing alignment. Segment 3 of the conceptual alternatives includes the I-71/I-75/US 50 Interchange, Cincinnati Central Business District access, and Queensgate access. Segment 4 includes the mainline and collector-distributor north of the I-71/I-75/US 50 Interchange and the Western Hills Viaduct Interchange.

Within each of the four segments, sub-alternatives were developed at specific locations. These sub-alternatives have been evaluated for conceptual sequencing and construction phasing. Maintenance of traffic, constructability, early congestion relief, and funding profiles consistent with available funds and priorities are the basis of these preliminary recommendations. Specific sequencing for these sub-alternatives has not been developed yet, but will be included in future updates to the Strategic Plan.

7.2 Project Phasing Construction Sequencing

The Brent Spence Bridge is part of the larger I-75 Improvement Program which extends from south of Kyles Lane in Kentucky to I-275 in Ohio. This program is subdivided into three major projects; the Brent Spence Bridge corridor, the Mill Creek Expressway corridor, and the Thru the Valley corridor. These Ohio projects are being developed under ODOT's Major PDP and will utilize phased construction. The Thru the Valley project will be constructed first, the Mill Creek Expressway is second, and the Ohio portion of the Brent Spence Bridge project is third. Kentucky may begin its portion of the Brent Spence Bridge corridor earlier, recognizing that connections of the main span with the Kentucky and Ohio approaches must be coordinated between the two states.

The Brent Spence Bridge corridor improvements will be implemented as independent projects as part of a larger, phased program (Appendix F). Creative phasing allows for less complicated maintenance of traffic plans, while improving the interim performance and operational nature of the I-71/I-75 corridor. Building the entire Brent Spence Bridge corridor program in one phase would shorten the amount of time the public is affected;

however, available funds may not permit this approach. Future evaluation will refine the staging of the work and develop details of the phasing and funding plans.

7.2.1 Construction Approach

This section describes potential phasing strategies. These recommendations can be implemented in phases over an extended construction program, or built as part of a continuous construction process. The same general order is recommended irrespective of the extended construction or accelerated construction approach. Continuous operation of the interstate is assumed to be crucial with only short, non-peak hour closures for overpass construction or demolition. These improvements are divided into near term Improvements, and main line/main span Improvements.

7.2.1.1 Near Term Improvements

Near term improvements include:

- Construction of additional southbound truck lanes between KY 12th Street and Kyles Lane in Kentucky.
- Construction of the collector-distributor/local ramp system in Kentucky from Kyles Lane to KY 4th and KY 5th Streets in Covington.
- Construction of the collector-distributor north of the I-71/I-75/US 50 Interchange to Western Hills Viaduct Interchange.
- Construction of the Western Hills Viaduct Interchange.

Near term improvements will provide interim congestion relief, improve safety, and enhance operational performance by removing deficiencies, which cause congestion in the corridor. The construction of the collector-distributors also allows for their use as detours and controlled access points during other main line/main span Improvements or related major mainline components of the work. They are also the least expensive of the components of the improvements, still required as part of the larger program, but provide intermediate improvements to congestion and safety at a lower initial cost. These can be completed while deferring the construction of the approaches and main span of the Brent Spence Bridge until funds become available.

7.2.1.2 Main Line/Main Span Improvements

Main line/main span improvements include all of the main line improvements to the interstate and the overpasses associated with the I-71/I-75/US 50 Interchange. They also include any new main spans over the Ohio River, whether along the Queensgate alignment or the existing corridor alignment.

7.2.1.3 Kentucky Collector-Distributor and Climbing Lanes

The alternatives from Kyles Lane to the south end of the Brent Spence Bridge include a collector-distributor/local ramp system between KY 12th Street and KY 4th and KY 5th Streets and southbound climbing lanes between KY 12th Street to Kyles Lane. Additional climbing lanes on the southbound lanes of I-75, between KY 12th Street and Kyles Lane are recommended to allow for additional truck climbing capacity. Construction of the Kentucky collector-distributor and climbing lanes will reduce congestion on the Brent Spence Bridge and on I-71/I-75 in the near term. The collector-distributor utilizes existing right of way on the east and west of I-75. It provides access to the future development site located east of I-71/I-75 in the vicinity of Monterey Road

and KY 16th Street. The collector-distributor would combine the existing frontage roads that parallel I-75 northbound and southbound between KY 4th and KY 5th Streets and Kyles Lane.

Trucks often occupy three of the four I-71/I-75 southbound lanes between KY 12th Street and Kyles Lane in Kentucky creating a rolling roadblock even during non-rush hour periods. Additional southbound climbing lanes between KY 12th Street and Kyles Lane would ease the rush-hour congestion across the Brent Spence Bridge to the Western Hills Viaduct.

7.2.1.4 Ohio Collector-Distributor and Western Hills Viaduct

The collector-distributor, Western Hills Viaduct, and mainline improvements north of the I-71/I-75/US 50 Interchange to the Western Hills Viaduct should be constructed first in Ohio. The collector-distributor should be constructed first which allows the elimination and consolidation of certain ramps along I-75 between the I-75/US 50 Interchange and the Western Hills Viaduct. The collector-distributor will utilize existing interstate right of way and excess Western and Winchell Avenues rights of way east and west of the I-75 mainline. Widening of I-75 would be feasible by constructing retaining walls at the toe of the existing sloped embankments and the area filled for additional lanes.

The construction of the Western Hills Viaduct improvements should be the second phase of construction. This should occur before the mainline construction of the I-75 improvements at the north end of the Brent Spence Bridge project and the south end of the Mill Creek Expressway project. Bridge piers supporting the Western Hills Viaduct overpass are in the median of the existing alignment and conflict with the proposed new mainline alignment. The existing piers must be removed before the proposed mainline improvements can be made. The left hand exit in this area must be removed to improve safety and ease congestion prior to mainline construction. Detours for short term closures of the mainline will be able to use the collector-distributor.

The interchanges at Western Hills Viaduct, Hopple Street and I-74/I-75 will require a coordinated phasing plan. These deficiencies can be corrected in early phases to provide improved access to Uptown and Western Hills and eliminate congestion related to geometric deficiencies.

7.2.1.5 I-75 Mainline North of the I-71/I-75/US 50 Interchange

The re-alignment and widening of the mainline of I-75 from north of the I-71/I-75/US 50 Interchange to the Western Hills Viaduct can occur any time after the collector-distributor and the Western Hills Viaduct Interchange are constructed. The widened mainline can be constructed in areas vacated by the ramps and in the right of way currently occupied by the sloped embankments east and west of the I-75 mainline. Detours for short term closures of the mainline will utilize the collector-distributor during placement of structural components.

7.2.1.6 I-71/I-75/US 50 Interchange

Construction of the I-71/I-75/US 50 Interchange and local access to downtown Cincinnati should be conducted in a phased approach. Construction of the I-75 mainline in Ohio requires coordination with construction of the main span of the new Ohio River Bridge. This requires that some overpasses and the ramps between US 50 and I-71/I-75 be completed prior to the mainline construction to allow removal of bridge piers out of the

construction zone of the mainline. Due to the complexity of this interchange, phasing must be included in the design of all components. This will ensure that bridge spans and piers for the mainline, interchange ramps, and local access work at each stage of construction.

7.2.1.7 Queensgate Alignments

For the Queensgate alignments, I-71/I-75 mainline and collector-distributor improvements in Kentucky south of the south abutment of the Brent Spence Bridge are similar to those for other alternatives. Improvement to the I-71/I-75/US 50 Interchange would proceed as previously described. Construction of the collector-distributor along I-75 to Western Hills Viaduct could proceed as described previously. Since the Queensgate alignments diverge from existing I-71/I-75 right of way, construction of the mainline through Queensgate would occur without significant interruption to interstate traffic, except where the interchanges and mainline connect.

Construction of the Queensgate alternatives would begin with right-of-way acquisition during design of the mainline improvements. This would include aerial easements because much of this alignment would be on structure. Coordination with the railroad regarding the rail crossings is required for the Queensgate alternatives and would occur before the Record of Decision is signed. Construction of the interstate would begin after design and right of way acquisitions are fully complete. Once required right of way and easements are acquired, demolition of the buildings in the Queensgate alignment would occur, including all utility relocations. Maintenance of traffic will be required at each City street intersection and at the mainline connections south of Brent Spence Bridge and at Ezzard Charles Drive.

7.2.1.8 I-75 Mainline

Construction of the I-75 mainline would proceed in segments once the collector-distributor systems in Kentucky and Ohio are constructed and most of the overpasses' bridge piers have been relocated. The mainline construction near the new main span should be built with the main span as the grades and alignments must meet. While this is a substantial portion of the work, the right of way is wide in most places and provides for ample space for detours, temporary pavements, and lane capacity during construction.

7.2.1.9 Main Span Construction

The construction of the main span of the new Ohio River Bridge a challenging component of the I-75 program, irrespective of which alignment (Queensgate or existing) is chosen. The existing alignment of the Brent Spence Bridge has right of way constraints associated with the Duke Energy power station, utilities under the river, historic structures, and businesses. Maintenance of traffic during the construction of supplemental structures will be complex. The constructability program for the bridge replacement must assume that the existing Brent Spence Bridge will remain operational before, during, and for a short time after, the supplemental replacement capacity is put into service. Alternatives which include rehabilitation of the existing bridge are also complex as the existing bridge must be kept in service during any rehabilitation. The Queensgate main span alignments would provide for easier maintenance of traffic during construction because the new main span will be constructed on a new alignment. Existing capacity would not be impaired.

The Queensgate main span concepts have the complication of skewed alignments across the Ohio River. These create sailing line impacts, sight distance for river traffic, and increased span lengths. The proposed Queensgate alignments are skewed 30 degrees from the sailing axis of the river. The alignments also cross the river at a point where it bends to the north. This further complicates sight distance compliance on the river for commercial traffic. In order to provide for safe commercial shipping through the seven bridge system connecting southwest Ohio with Northern Kentucky, bridge piers will be recommended to be on or near shore. This creates a longer span length for a skewed bridge, increasing its cost and limiting the number of bridge types. These issues are not insurmountable, but simply add cost to the main span of the bridge.

The alignments that utilize all or part of the existing I-71/I-75 Brent Spence Bridge main span corridor have complexities as well. These are related to right of way, maintenance of traffic, and constructability. They arise from construction of major improvements in existing right of way while keeping portions of the interstate operational. The rehabilitation of the existing structure would be retained in some of the alternatives as part of a final build solution. A maintenance of traffic and construction plan that includes a rehabilitated Brent Spence Bridge with new structures or structures with the existing system is complicated by the double decked nature of the existing span. Removal or realignment of existing approaches in Kentucky and in Ohio depending upon the use and lane assignment of the existing bridge has constructability complications.

Bridge alternatives requiring the demolition of the Brent Spence Bridge, have constructability and demolition complexities, river operation constraints, as well as those associated with maintenance of vehicular traffic. If a replacement structure is built close to or within the existing alignment, more complicated staged construction requirements must be met. These include building a portion of the new replacement span; relocating existing traffic onto that replacement span; demolishing the existing Brent Spence Bridge; and construction of that remaining part of the bridge alternative, all within the existing footprint of the existing bridge.

7.2.1.10 Continuous Design Constructability Interface

The development of the alternatives proposed for either the Queensgate alignments or the existing corridor alignments, and their sub-alternatives should incorporate a continuous design constructability plan. This means that the corridor design and bridge types selection (main, approach and interchange spans) are developed with the important consideration for maintenance of traffic and constructability. Construction phasing, technique, and capacity will pose significant constraints on how the program is implemented. Therefore, the construction delivery plan should be integrated continuously into the design. This extends beyond the value engineering process conducted at the 30/60/90 percent design phase.

7.3 Financial Strategy

Funding for the Brent Spence Bridge Replacement/Rehabilitation Project will be provided from federal and state sources. Funding for each phase will use the appropriate Federal Fund Types at 80/20 percent. This project will be subject to FHWA's Mega Project requirements.

The Financial Plan for Brent Spence Bridge Replacement/Rehabilitation Project answers the following questions:

- What funds are realistically available?
- What timeframe restrictions apply?
- What approval process is required?
- What other restrictions apply?

7.3.1 National High Priority Corridor Financial Listings

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) identified High Priority Corridors on the National Highway System (NHS). Among these corridors are I-75 from Toledo to Cincinnati and I-71 between Columbus and Cincinnati. More recent federal surface transportation legislation (the 1998 Transportation Equity Act for the 21st Century [TEA-21] and the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users [SAFETEA-LU]), continued funding for the High Priority Corridors. The Brent Spence Bridge Replacement/Rehabilitation Project is part of several of these corridors, including I-71, I-75, and the new I-74 corridor. It also connects to the Waldvogel Viaduct in Queensgate. Table 7-3 summarizes federal funding identified in SAFETEA-LU for High Priority Corridors in Ohio.

Table 7-3. High Priority Projects in Ohio listed in SAFETEA-LU.

Item Number	State	Project Description	Amount
685	OH	Study and design of modifications to I-75 interchanges at M.L. King, Jr. Boulevard, Hopple Street, I-74, and Mitchell Avenue in Cincinnati, Ohio	$2.4 million
3385	KY	Replace Brent Spence Bridge, Kenton County, Kentucky	$1.6 million
4217	KY	Transportation improvements to Brent Spence Bridge	$34 million
4621	OH	On I-75 toward Brent Spence Bridge, Cincinnati, OH	$10 million
4623	OH	Reconstruction, widening, and interchange upgrades to I-75 between Cincinnati and Dayton, Ohio	$5 million
4624	OH	Replace the Edward N. Waldvogel Viaduct, Cincinnati, Ohio	$6 million

7.3.2 Financial Plan

The Commonwealth of Kentucky and State of Ohio have appropriated money for the preliminary engineering and environmental documentation for the Brent Spence Bridge. Each State is responsible for their portion of the project separated by the State Line (N39° 05.516'/W84° 31.324 +/-). The obligation to pay for the improvements to the Brent Spence Bridge to (N39° 05.516'/W84° 31.324 +/-) is well established. Financial obligations are defined in the Bi-state Agreement authorizing this work (Appendix A). The Bi-state Agreement estimated that the cost of the environmental and preliminary design phase of the project would be $18 million. Additionally, the agreement states that ODOT will pay 54.5 percent of the cost (not to exceed $9.8 million) based on ownership of the project as defined by state lane miles. KYTC has agreed to pay 45.5 percent of the estimated cost (not to exceed $8.18 million). Additional phases of work required during or after the environmental and preliminary design phase, including but not limited to, preliminary design, detailed design, right-of-way acquisition, utility relocation, and construction will be covered under future supplements to the agreement (Appendix A). The Financial Plan for Kentucky and Ohio is presented in the responses to following four questions.

What funds are realistically available?

Kentucky: Kentucky received federal fund earmarks totaling $35.6 million through SAFETEA-LU. These earmarks flow to the Commonwealth in a formula as prescribed by SAFETEA-LU. The rate currently in effect is 20 percent per year from fiscal year (FY)-2005 through FY-2009. According to this formula, 40 percent of the SAFETEA-LU funding (FY 2005/FY 2006) should be available. Prior year, federally earmarked funds are already authorized in the amount of $1.16 million. Supplemental funding authorization in progress added $2.64 million of federally earmarked money. The total amount currently available from Kentucky is $39.4 million. Toll revenue credits will be

used to match these federal funds. The federal appropriation will constitute immediate, short-range commitment to the project for design and acquisition of required right of way in Kentucky.

Ohio: ODOT has been authorized to spend $18 million for preliminary engineering. The funds were made available in January 2005. These funds are already programmed and available.

What time frame restrictions apply?

Kentucky: The available federal funds will be applied to design, right of way acquisition, and utility relocation efforts. Coordination with Ohio's plan to begin design, right of way acquisition, and any near term improvements will be required.

Ohio: TRAC schedules the availability of preliminary development and detailed design funds. Construction is expected to begin after the completion of I-75 construction north of the project area. ODOT has established a plan for upgrading I-75 from the north abutment of the Brent Spence Bridge to north of I-275. This plan has three major components: first, Thru the Valley; second, the Mill Creek Expressway; and third, the Brent Spence Bridge. The schedule for this program of projects identifies 2015 as the start date for construction of Ohio's part of the Brent Spence Bridge.

The Transportation Bill Reauthorization will determine the availability of high priority federal-aid funds for construction. Ohio has appropriated $18 million for preliminary engineering and environmental documentation. These funds are available to the project in 2005 and are intended to be used by 2010.

What approval process is required?

Kentucky: Any funding authorizations, scope changes, change orders, or other cost or schedule adjustments must be approved by the Secretary of Transportation and Commissioner of Highways. Additional state appropriation will require legislative action.

Ohio: TRAC will need to approve all additional Major New commitments.

What other restrictions apply?

Kentucky: Funding availability for KYTC is a function of a legislatively approved Six-Year Transportation Plan. Each even-numbered calendar year, the Kentucky General Assembly approves the upcoming biennial element of the Six-Year Transportation Plan. Kentucky's ability to advance funding from future years to the new biennium is limited. Appropriately timed funding for the Brent Spence Bridge Replacement/Rehabilitation Project will require close coordination with KYTC and may require the use of Grant Anticipation Revenue Bonds (GARVEE) to match the funding stream with right of way and construction schedules. Biennial Six-Year Transportation Plan updates are developed late in odd-numbered years preceding legislative sessions. Coordination requirements with the Metropolitan Planning Organization's Transportation Improvement Programs (TIP) and Long Range Transportation Plan, as well as the Kentucky and ODOT State Transportation Improvement Programs (STIPs) will be required.

Ohio: Following Step 8 of the Major PDP, the administration of design development contracts, acquisition of rights of way, and construction contracts may be held separately by the states. Ohio will complete sections north of (N39° 05.516'/W84° 31.324 +/-). Kentucky will complete sections south of (N39° 05.516'/W84° 31.324 +/-). The programs will be coordinated.

The Financial Plan for Brent Spence Bridge Replacement/Rehabilitation Project is summarized in Table 7-4.

Table 7-4. Financial Plan for Brent Spence Bridge Replacement/Rehabilitation Project.

Project Phase	Funding Source	2005	2006	2007	2008	2009	2010
Ohio							
Preliminary Engineering	TRAC		$1.5 million		$1.9 million		
	SAFETEA-LU $9.1 million	20%	20%	20%	20%	20%	
Final Design	TRAC						$25 million
Right of Way*						Unfunded	Unfunded
Construction**						Unfunded	Unfunded
Kentucky							
Preliminary Engineering	Earmarks $1.16 million $2.64 million SAFETEA-LU $35.6 million	20%	20%	20%	20%	20%	
Final Design		20%	20%	20%	20%	20%	
Right of Way*		20%	20%	20%	20%	20%	Unfunded
Construction**							Unfunded

Notes:
*Right of Way acquisition is currently estimated at $100 million. It is outside of the six year horizon for TRAC commitments. It is assumed that right of way would be funded with a combination of federal earmarks, federal and state funds, following TRAC approval. Acquisition will occur over a two to three year period.
**Construction funds would be necessary 2015 at the earliest. It is assumed that construction would be funded with a combination of federal earmarks, federal and state funds.

7.3.3 Estimated Costs for Conceptual Alternatives

The 2006 construction cost estimates were prepared as outlined by ODOT's Procedure for Construction Budget Estimating, (April 6, 2006) and by use of the Transport Estimator, Version 2.3a, March, 25, 2006 catalogs. Quantities were calculated by performing manual take-off for the various alternatives. Each alternative was reduced into the item numbers and cost item descriptions from the current ODOT Construction Estimator data base. Preliminary quantities or allowances were used to develop the

conceptual cost estimates. The unit prices and quantities for each alternative are shown in Appendix E.

Unit prices in the current ODOT estimating software data base were recently updated (March 2006) based on final bid prices received by ODOT on work completed since the end of the 2004 calendar year. These quantities are based upon a broad average of complex highway projects and use current market unit prices. It should be noted that a substantial rise in the cost of concrete and steel has occurred since the year 2004. Therefore, the costs presented reflect the significant prices seen in the 2005 marketplace. These prices are expected to remain constant in 2006 and 2007.

The estimated quantities were prepared by direct measurement from the 1" = 300' plans and the associated cross sections of each alternative. The number of new lanes and shoulders determined the proposed work limits. In transition areas where the number of lanes changes, the cross sections were averaged and multiplied by the distance between the stations where the cross sections begin and end. The numbers of existing lanes and shoulders were counted to determine the demolition quantities.

7.3.3.1 Real Estate and Relocation Cost Development

Real property values utilized for this cost estimate are those derived using similar methodologies employed during the *Feasibility and Constructability Study of the Replacement/Rehabilitation of the Brent Spence Bridge (EFS) (2005)*. These costs were developed based upon appraised value indications from the Auditor's (Ohio) and Property Valuation Administrator's (Kentucky) records in the appropriate jurisdictions (Appendix E). The procedures utilized by the appraisers in the development of these values are considerably less detailed than those prescribed for appraisals utilized for acquisition by a public agency. Absent the detail and the lack of multiple approaches to valuation found in a tax appraisal, one could logically conclude that the values derived from auditors' records are not reflective of market value. This is particularly true of specialty use properties. These are not detailed cost estimates and should not be used for anything but comparison purposes. They are not of sufficient detail to be used for acquisition estimates, but are simply used as a benchmark to prepare the relative real estate costs between the alternatives. No actual appraisals were conducted and an inflation factor was applied to the EFS estimate. The estimates assume that there is relocation assistance available for residential properties and for relocation of any office buildings or other commercial enterprises. All valuations were created using the external view of the building and readily available tax records. No entry to the property was allowed.

Table 7-5 gives the range of right of way and relocation costs for the areas that are believed to be affected based on the alternatives that are currently generated and being carried forward. These estimated costs are derived from the EFS. Detailed right of way cost estimates have not yet been developed for the current conceptual alternatives; however, the alternatives from the EFS are comparable and are utilized here (Appendix E). They have similar right of way footprints and affect many of the same parcels and structures. However, a parcel by parcel review of the properties affected by the alternatives in this report revealed that several large acquisitions, required by the EFS alternatives, would not be required for the new alternatives. This resulted in a significant decrease in right of way costs from the EFS estimates.

The real estate and relocation costs are assumed to be similar to the related alternatives from the EFS based on the alternative alignments for the bridge. A 10 percent increase has been applied to the estimated costs from the EFS to account for appreciation. This number was recommended by real estate professionals consulted during the study. A five percent yearly increase is also applied to the real estate and relocation costs to obtain a projected cost for when acquisition is to take place in the year 2012.

Table 7-5. Real Estate and Relocation Costs (2012) (in millions)

Mainline Alternative	Ohio	Kentucky
	Valuation with CPI[1]	Valuation with CPI[1]
Alternative 1	$20.05 – 23.05	$11.97 – 13.76
Alternative 2	$14.55 – 16.73	$11.97 – 13.76
Alternative 3	$1.17 – 1.34	$25.85 – 29.72
Alternative 4	$1.17 – 1.34	$25.85 – 29.72
Alternative 5	$1.17 – 1.34	$25.85 – 29.72

1- Consumer Price Index (CPI) factor of 12.9%

7.3.3.2 Project Development Costs

In order to completely include all project costs in the estimates, project development costs which consist of preliminary engineering and environmental documentation, detailed design, and construction management, are included. A 3 percent increase is applied to the project development cost for inflation to obtain an estimate for the year 2010. Table 7-6 below summarizes the project development costs.

Table 7-6. Project Development Costs (in millions)

Mainline Alternative	Preliminary Engineering/ Environmental Documentation	Detailed Design (8% of construction cost)	Construction Management (3% of construction cost)	Total Project Development Costs[1]
Alternative 1	$18.0	$106.70	$62.56	$230.34
Alternative 2	$18.0	$118.06	$69.23	$252.51
Alternative 3	$18.0	$137.70	$80.72	$290.76
Alternative 4	$18.0	$155.18	$90.99	$324.93
Alternative 5	$18.0	$125.27	$73.45	$266.57

1- Includes 3% inflation for the year 2010

7.3.3.3 Contingencies and Reserves

ODOT guidelines require the use of a contingency on construction cost estimates. A contingency of 25 percent was added to the construction costs to reflect the preliminary nature of engineering. The design contingency for each mainline alternative is shown in Tables 7-7 and 7-8. A constructible risk contingency is also placed on individual items of work based on engineering judgment. This risk contingency is included within the construction costs.

7.3.3.4 Complete Project Costs

Included in the total estimated project costs are construction costs, an inflation factor, design contingency, right of way and total project development costs. Tables 7-7, 7-8, and 7-9 below summarize total estimated project costs of mainline and sub-alternatives for Kentucky and Ohio. The sub-alternative costs are additional costs to the mainline alternatives. The sub-alternative costs should be added to the total estimated cost for the mainline alternative as needed.

Table 7-7. Total Cost Estimates for Mainline Alternatives (Ohio) in 2017 dollars

Mainline Alternative	Construction Costs (millions)	Real Estate and Relocation (millions)	Inflation (82.0%) (millions)	Design Contingency (25.0%) (millions)	Project Development Costs (54.5%) (millions)	Total Estimated Cost (billions)
Alternative 1	$257.24	$20.05 – 23.05	$210.94	$117.04	$125.53	$1.26
Alternative 2	$289.76	$14.55 – 16.73	$237.60	$131.84	$137.62	$1.40
Alternative 3	$556.14	$1.17 – 1.34	$456.03	$253.04	$158.46	$1.62
Alternative 4	$483.94	$1.17 – 1.34	$396.83	$220.19	$177.09	$1.83
Alternative 5	$414.21	$1.17 – 1.34	$339.65	$188.47	$145.28	$1.48

Table 7-8. Total Cost Estimates for Mainline Alternatives (Kentucky) in 2017 dollars

Mainline Alternative	Construction Costs (millions)	Real Estate and Relocation (millions)	Inflation (82.0%) (millions)	Design Contingency (25.0%) (millions)	Project Development Costs (45.5%) (millions)	Total Estimated Cost (billions)
Alternative 1	$659.45	$11.97 – 13.76	$540.75	$300.05	$104.80	$1.05
Alternative 2	$742.54	$11.97 – 13.76	$594.12	$329.66	$114.89	$1.16
Alternative 3	$626.59	$25.85 – 29.72	$513.80	$285.10	$132.30	$1.36
Alternative 4	$849.25	$25.85 – 29.72	$696.38	$386.41	$147.84	$1.53
Alternative 5	$661.99	$25.85 – 29.72	$542.83	$301.21	$121.29	$1.24

Table 7-9. Total Cost Estimates for Sub-Alternatives in 2017 dollars (in millions)

Sub-Alternative	Construction Cost		Inflation (82.0%)	Design Contingency (25.0%)	Total Estimated Cost
	Kentucky	Ohio			
I-75 Northbound KY Ramp Alternative 1	$0.88	NA	$0.72	$0.40	$2.00
I-75 Northbound KY Ramp Alternative 2	$0.74	NA	$0.61	$0.38	$1.69
I-71/US 50 Interchange Alternative 1	NA	$242.17	$198.58	$110.19	$550.93
I-71/US 50 Interchange Alternative 2	NA	$242.17	$198.58	$110.19	$550.93
I-71/I-75/US 50 Interchange Alternative 1	NA	$40.15	$32.92	$18.27	$91.33
I-71/I-75/US 50 Interchange Alternative 2	NA	$250.65	$205.53	$114.04	$570.22
I-71/I-75/US 50 Interchange Alternative 3	NA	$249.77	$204.81	$113.64	$568.22
I-75 Northbound/ Southbound OH Alternative 1 (CD system)	NA	$68.62	$56.27	$31.22	$156.10
I-75 Northbound/ Southbound OH Alternative 2 (CD system)	NA	$28.49	$23.36	$12.96	$64.80
Western Hills Viaduct Alternative 1	NA	$39.41	$32.32	$17.93	$89.66
Western Hills Viaduct Alternative 2	NA	$29.21	$23.95	$13.29	$66.44
Western Hills Viaduct Alternative 3	NA	$45.36	$37.20	$20.64	$103.20

7.4 Actions and Next Steps

ODOT and KYTC have entered into a Bi-state Agreement to plan and design the replacement of the Brent Spence Bridge. Due to the complexity of this project, it is recommended that this Bi-state Agreement be extended and modified to include responsibilities of the cities of Covington and Cincinnati, as well as utilities affected by the program. Cooperation between all affected governments and businesses during design and construction is essential. Phasing and sequencing requires coordination between the two states for funding, maintenance of traffic, and construction sequencing. Similarly, coordination with the cities and communities along the interstate will be important. Several of the proposed alternatives will have impacts to city streets in Covington, Cincinnati, and in the smaller communities that abut the right of way. Since the construction of this project may exceed the current right of way limits of I-71/I-75, it is recommended that agreements with the surrounding communities be implemented. Coordination of maintenance of traffic, utility relocations, construction, signal and intersection control, and other interfaces between the city and state system can be

coordinated by this means. These actions will insure that the interstate and local facilities remain integrated as a regional transportation network. It is recommended that an interagency coordination team be created when the project enters final design and construction.

7.4.1 Implementation Team

During Part I of the project, ODOT and KYTC instituted two committees which help provide guidance to the project team. One committee, called the "Advisory Committee," provides input from local community and political leaders in order that the project can provide and have some local community input. This also provides an opportunity for important issues brought up to the Advisory Committee to be communicated back to the contingencies represented by the members of the Advisory Committee. It is recommended that this committee remain active during subsequent phases of the work.

The second committee, a sub-committee of the Advisory Committee, is the Aesthetics Committee. This sub-committee provides local input on the design and aesthetic appearance of the corridor and the main span of the Brent Spence Bridge. As the project evolves, more detail is being provided to and from this Committee in order to give some input on community values with respect to the aesthetics of the bridge. The Charter of this committee is in Appendix B. It is recommended that this committee remain active during subsequent phases of the work.

7.4.2 Public Involvement

Public involvement is a key component of this project. This ensures that the public is aware of the alternatives that may be recommended and has an opportunity to provide input as users of the facility during the design development and environmental process. This project will have an impact on the community in terms of construction as well as economic development and socio-economic impacts. Because of the nature and magnitude of the project, these impacts should afford communities the right to comment and provide input on final implementation strategies and construction impacts.

The public involvement and public education process must provide an effective and efficient means of communicating to the public. Conversely, by giving the public an opportunity to communicate with the transportation agencies, public support will follow. The public involvement process is a requirement of the National Environmental Protection Act (NEPA) and of SAFETEA-LU. Addressing community concerns and incorporating community input into the design and construction of the project is critical. This includes everyone from local residents to the governing councils of the various cities associated and affected by the project. These individuals have a requirement to communicate to the project team as well as to communicate project team information back to the contingencies that they represent.

7.4.2.1 Public Meetings

It is anticipated that a number of public meetings and workshops will be held to give the community an input and understanding about alternatives that are being evaluated. These workshops will be in convenient locations and will be led by the project team. These meetings will be advertised in a variety of ways, including media participation, web site announcements, and direct mail to affected parties in the study area.

7.4.2.2 Project Web Site

A web site has been established for the Brent Spence Bridge Replacement/Rehabilitation Project, www.brentspencebridgecorridor.com. This web site has received a large amount of public notoriety because of the scale and magnitude of the project. The web site has been active and media coverage of alternatives and other elements of the project has generated an increase in web site visits and web comments.

7.4.2.3 Project Newsletters

The project team will continue to provide newsletters to the community. There are several thousand residents within the study area who may be affected by the project, as well as hundreds of thousands of commuters who travel the interstate corridor. The newsletters will continue to keep the public informed about project activities.

7.4.2.4 Media Relations

The media has provided positive support and accurate communication about the Brent Spence Bridge Replacement/Rehabilitation Project. It has been front page news a number of times primarily because of the scale and magnitude of the project. The coverage of the conceptual alternatives and potential design concepts for the project has been moderate. However, the announcement of the recommended conceptual alternatives for the project generated a significant amount of media interest. It is anticipated that when the next phase of the project begins, media relations will be maintained in order to provide information to the media so they can help communicate any messages that are important in eliciting community response. It is recommended that editorial briefings for important media and newspaper outlets in the two states be an important part of the media communications. Daily contact with reporters asking questions can be maintained by ODOT and the Project Team.

7.5 Schedule

The schedule for the Brent Spence Bridge Replacement/Rehabilitation Project was developed. Construction is anticipated to begin in 2015. The schedule through Step 8 of the PDP is provided in Appendix G. This follows construction of the Thru the Valley and Mill Creek Expressway projects.

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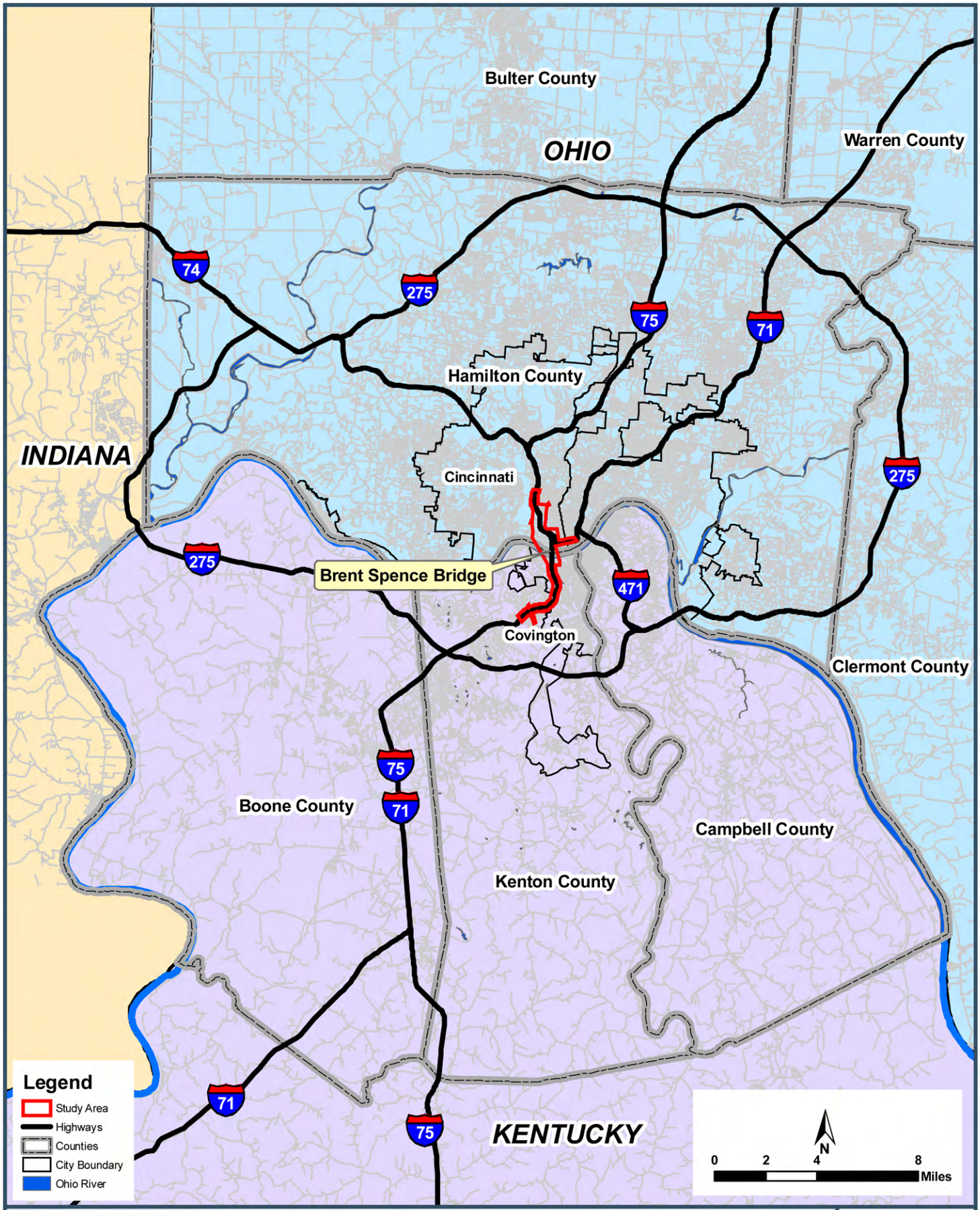
Exhibits



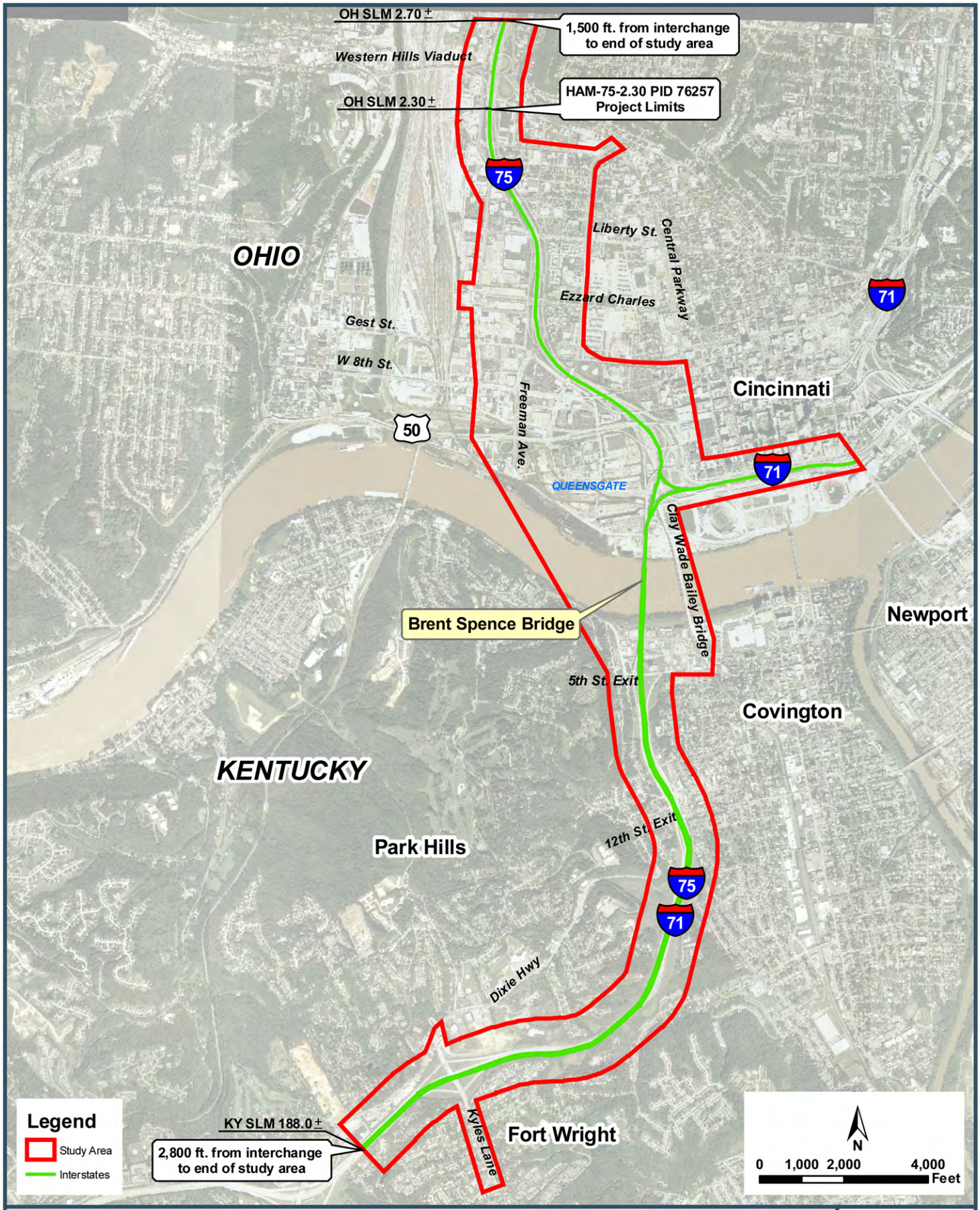
U.S. Department of Transportation
Federal Highway Administration

Kentucky UNBRIDLED SPIRIT

REGIONAL MAP

EXHIBIT
1

Prepared by:
PB PARSONS BRINCKERHOFF



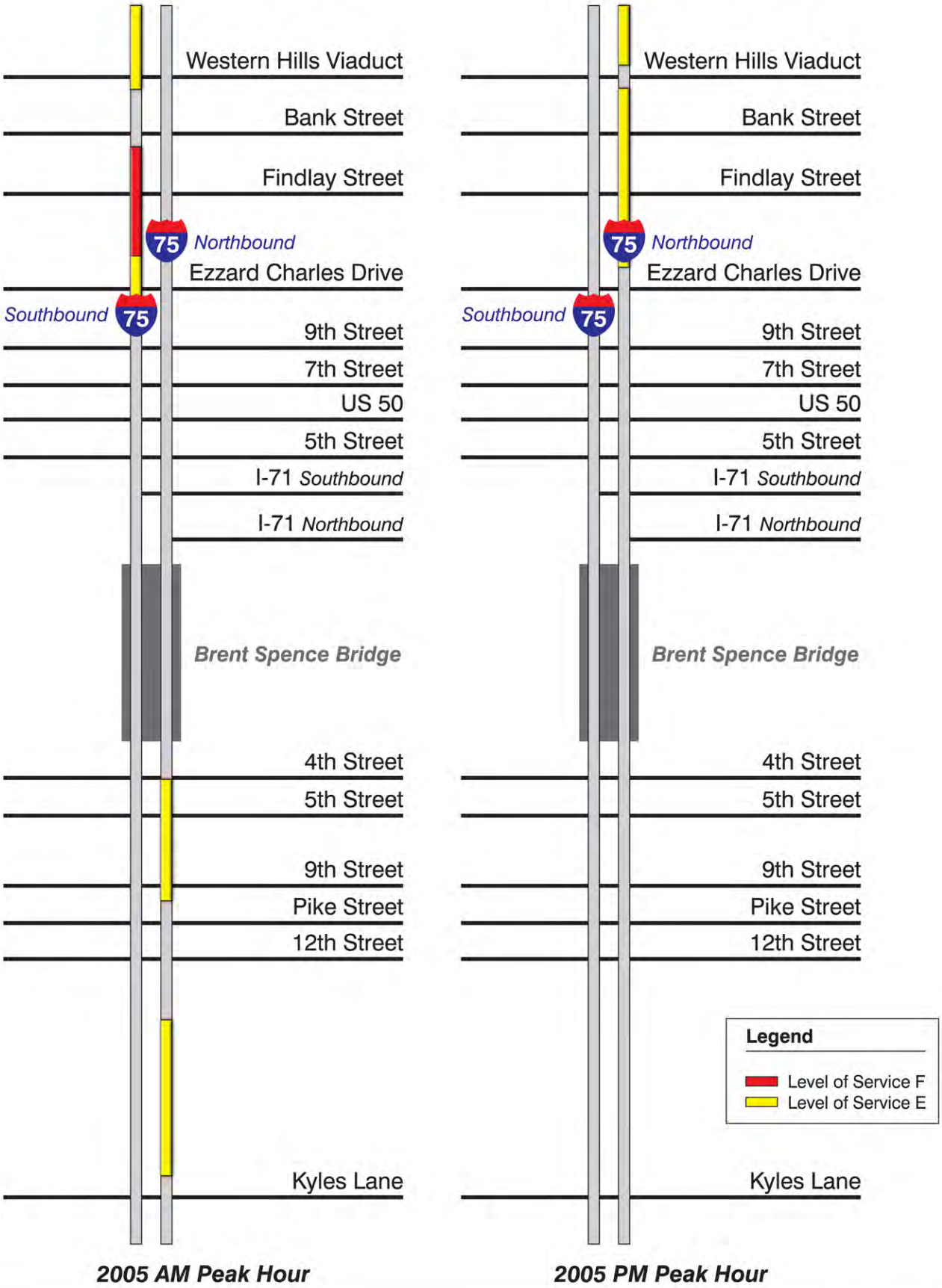
U.S. Department of Transportation
Federal Highway Administration

Kentucky UNBRIDLED SPIRIT

PROJECT STUDY AREA

EXHIBIT
2

Prepared by:
PB PARSONS BRINCKERHOFF



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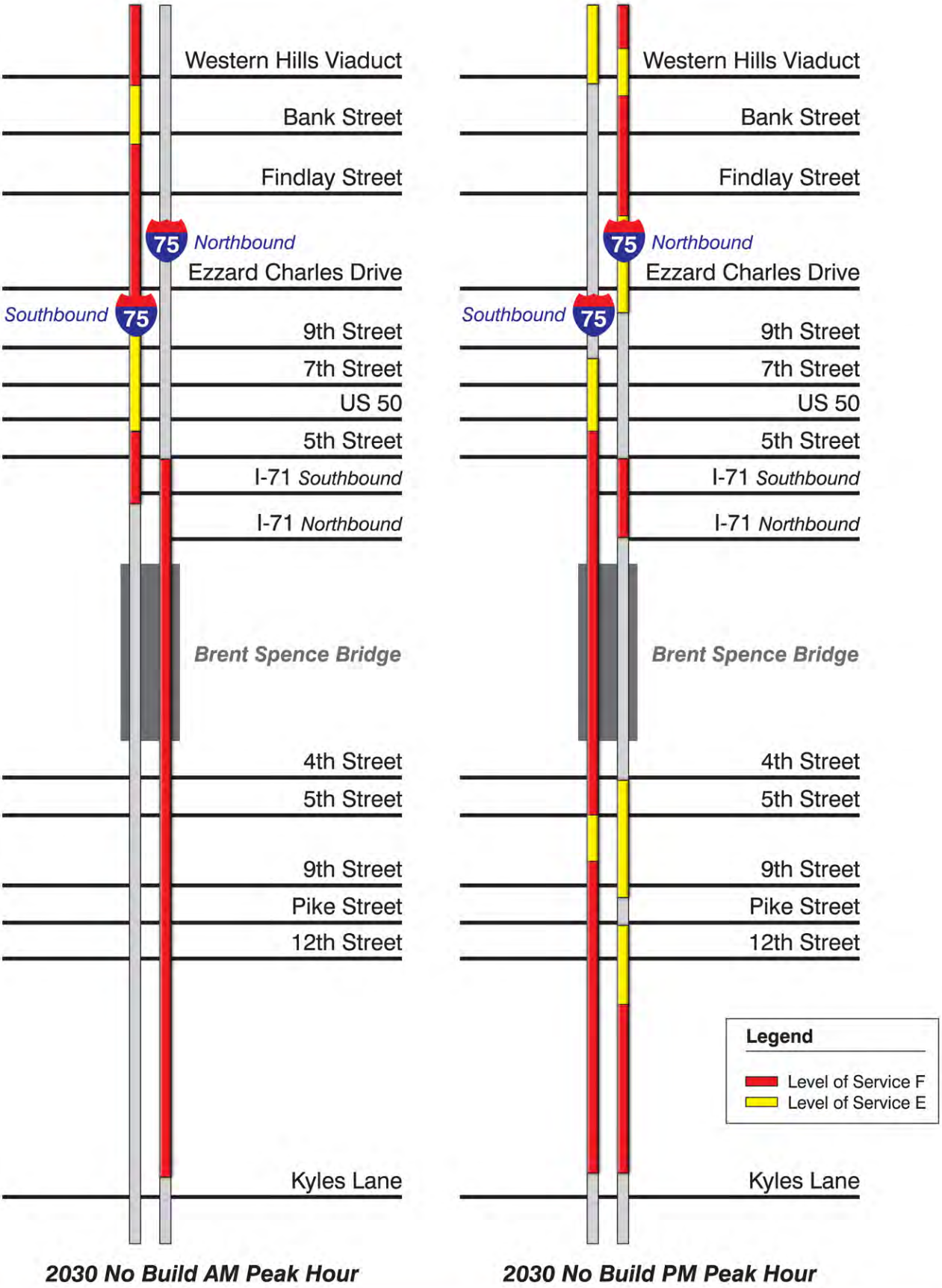
Federal Highway Administration

Kentucky UNBRIDLED SPIRIT

2005 AM & PM PEAK HOUR LEVEL OF SERVICE

EXHIBIT 3

Prepared by:
PB PARSONS BRINCKERHOFF



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Federal Highway Administration

Kentucky UNBRIDLED SPIRIT

2030 AM & PM PEAK HOUR LEVEL OF SERVICE

EXHIBIT 4

Prepared by:
PB PARSONS BRINCKERHOFF

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Federal Highway Administration

Kentucky UNBRIDLED SPIRIT

SAFETY STUDY ANALYSIS
NORTHBOUND ACCIDENTS
(BASED ON CRASH DATA FOR 2000-2003)

EXHIBIT
5

Prepared by:
PB PARSONS BRINCKERHOFF

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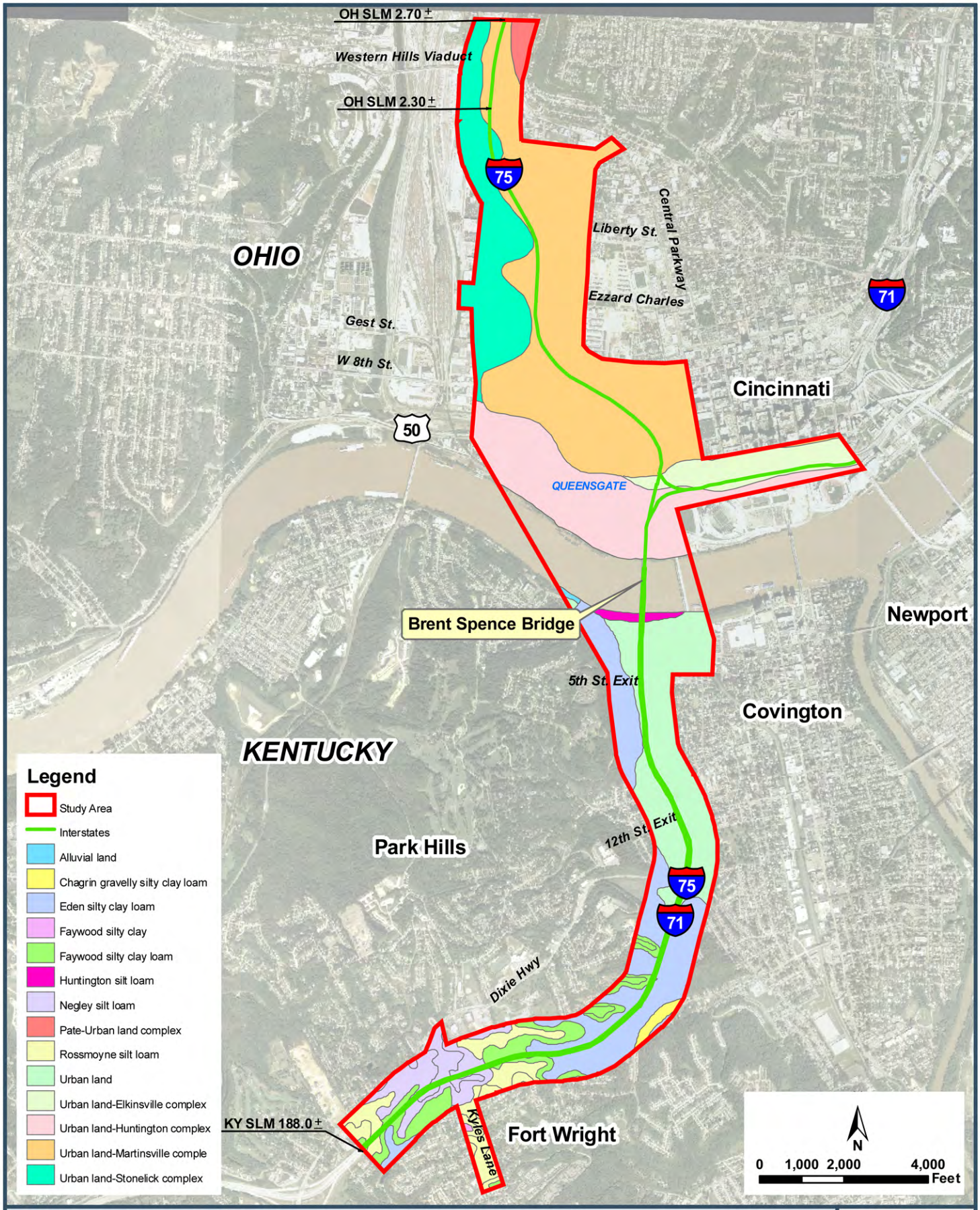
Federal Highway Administration

Kentucky UNBRIDLED SPIRIT

SAFETY STUDY ANALYSIS
SOUTHBOUND ACCIDENTS
(BASED ON CRASH DATA FOR 2000-2003)

EXHIBIT
6

Prepared by:
PB PARSONS BRINCKERHOFF



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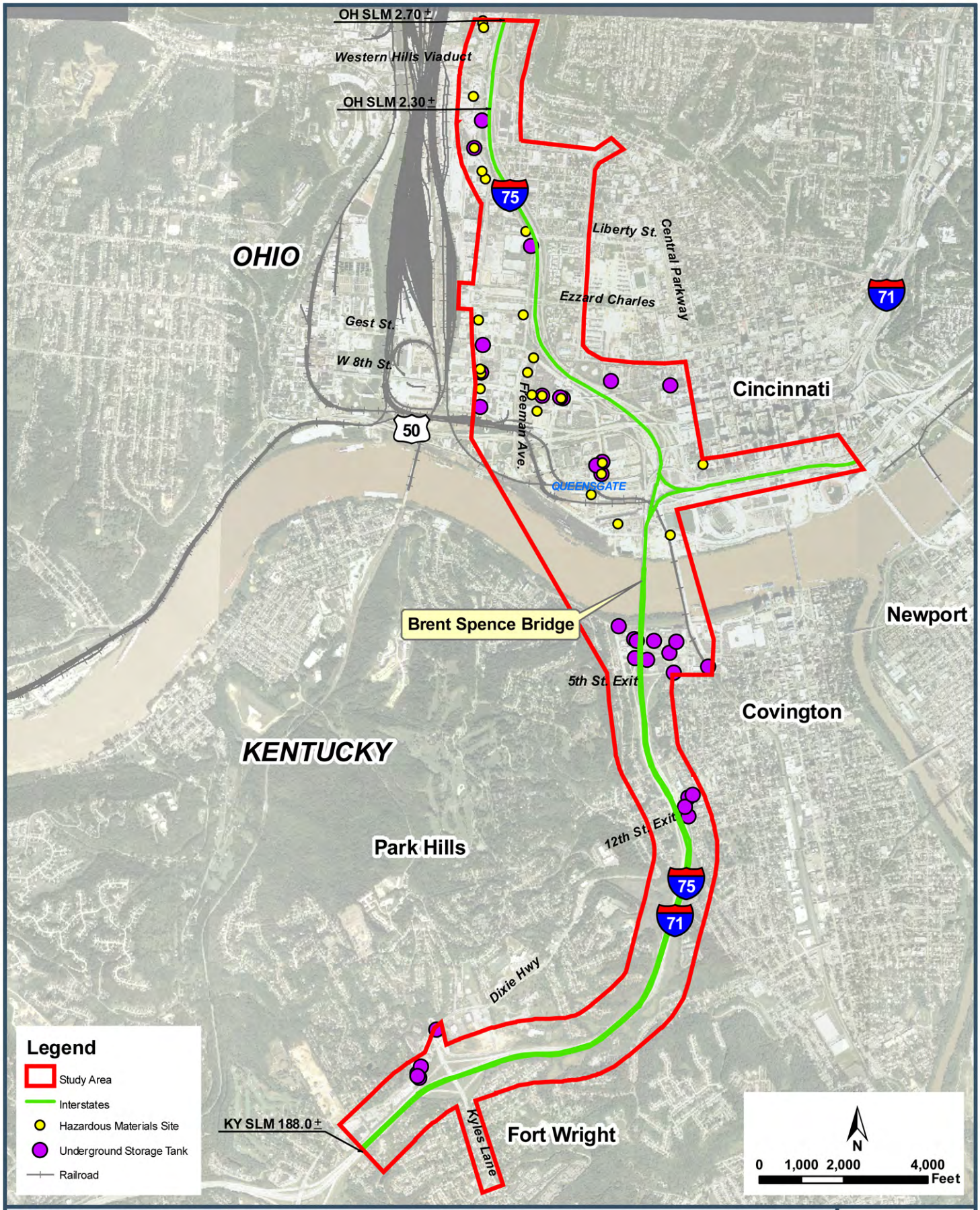
SOILS

EXHIBIT
7

Prepared by:
PB PARSONS BRINCKERHOFF



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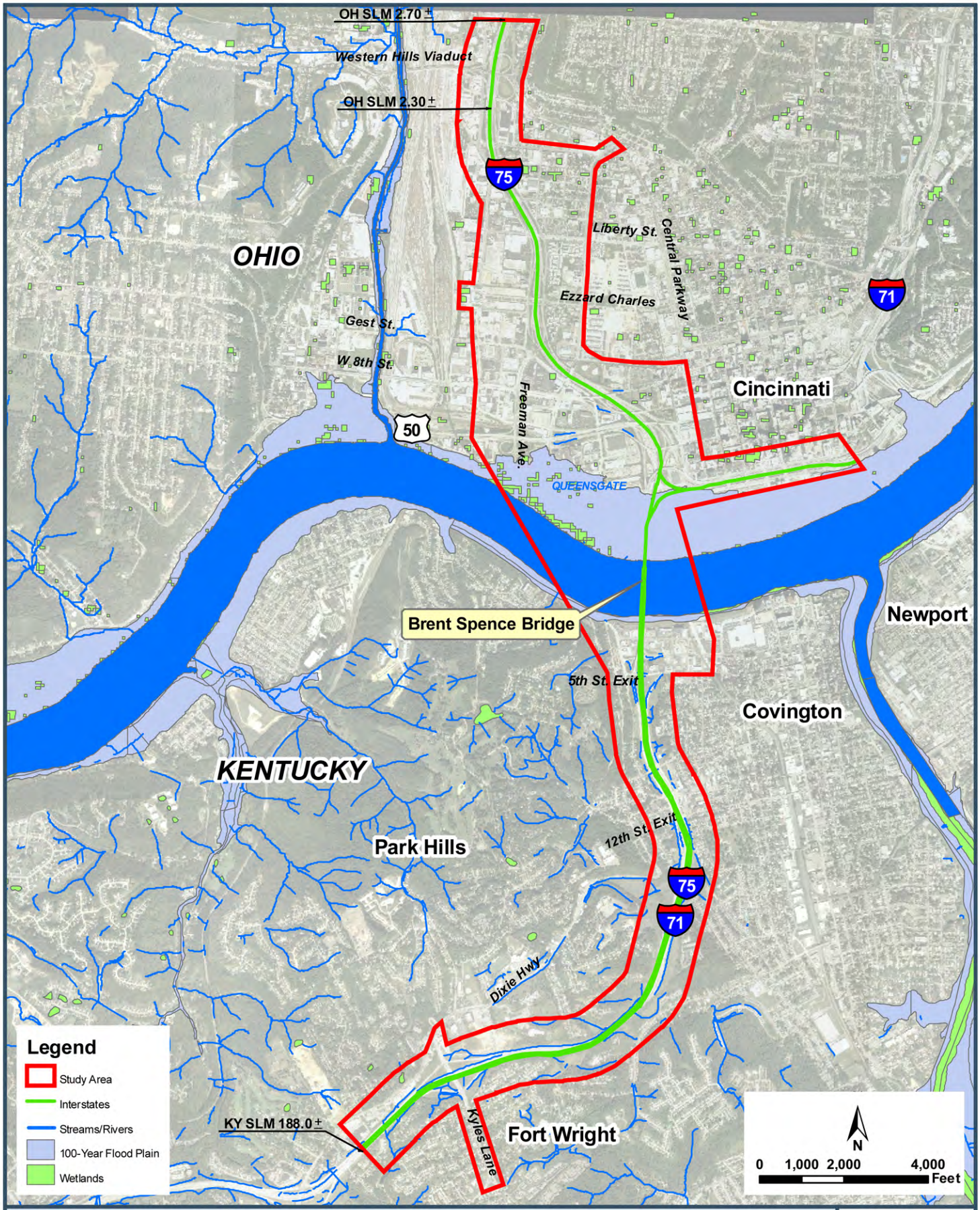
HAZARDOUS MATERIALS

EXHIBIT
8

Prepared by:
PB PARSONS BRINCKERHOFF



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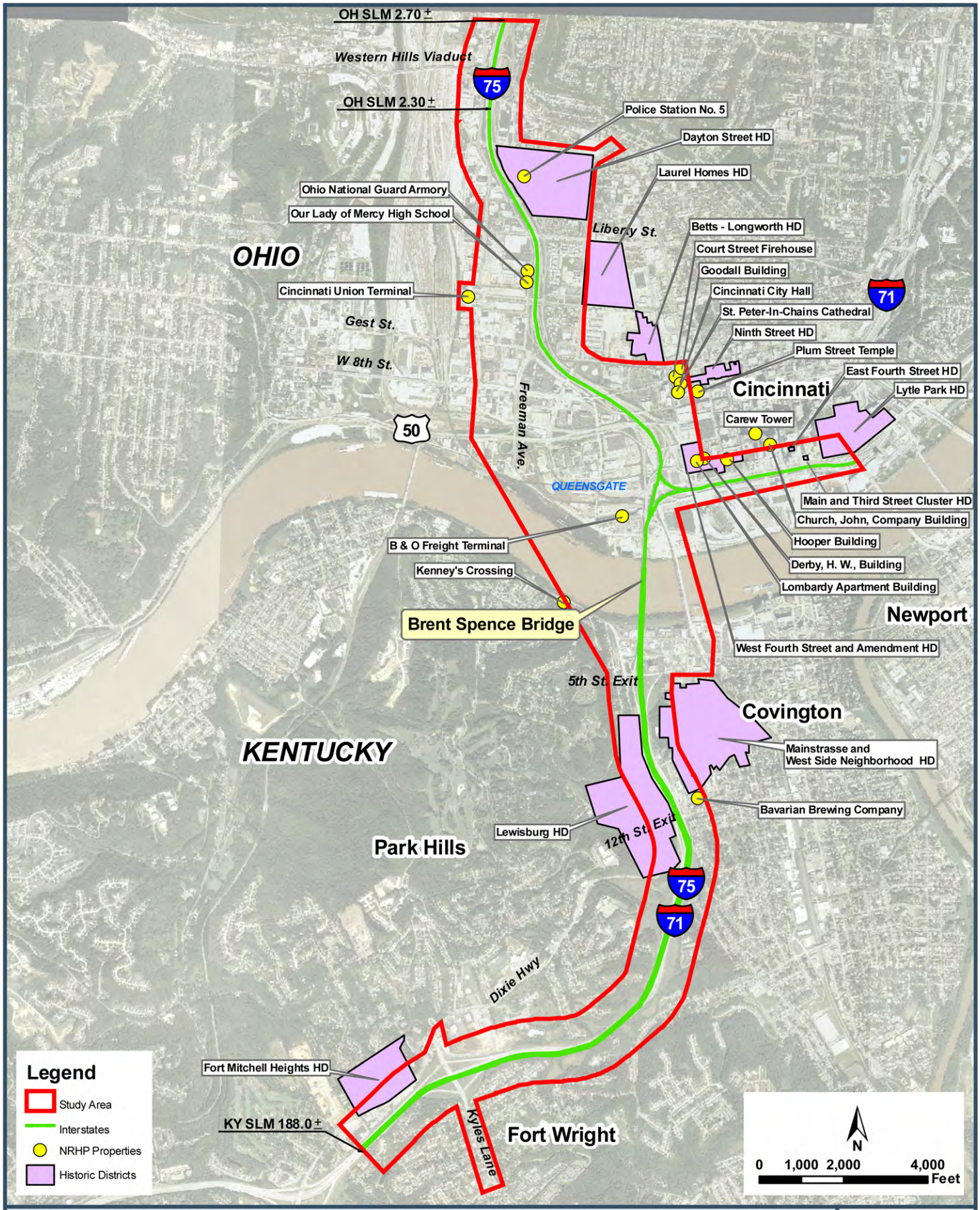
WETLANDS, STREAMS & 100-YEAR FLOOD PLAIN

EXHIBIT
9

Prepared by:
PB PARSONS BRINCKERHOFF



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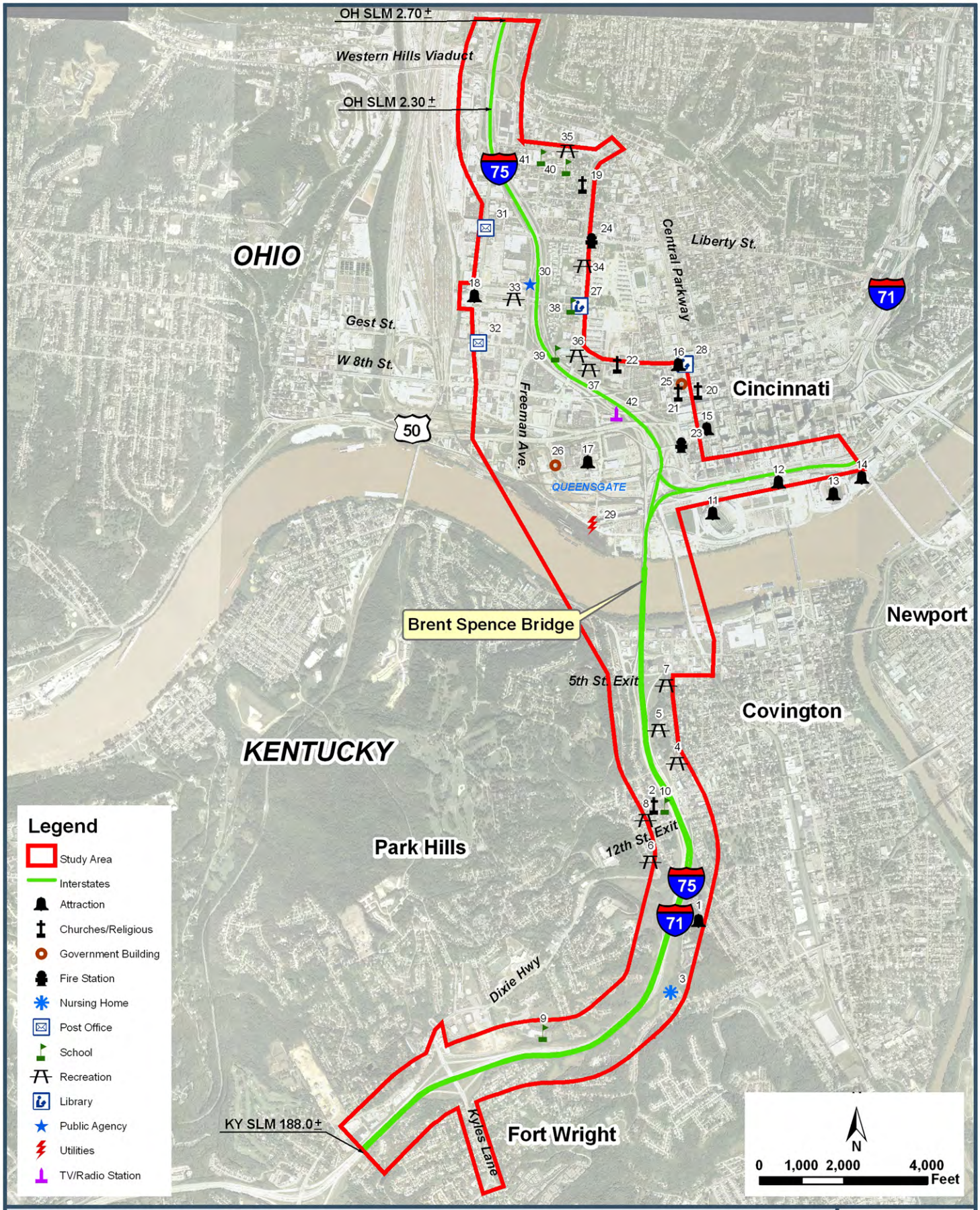
CULTURAL RESOURCES

EXHIBIT
10

Prepared by:
PB PARSONS BRINCKERHOFF



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Kentucky UNBRIDLED SPIRIT

COMMUNITY FACILITIES

EXHIBIT
11

Prepared by:
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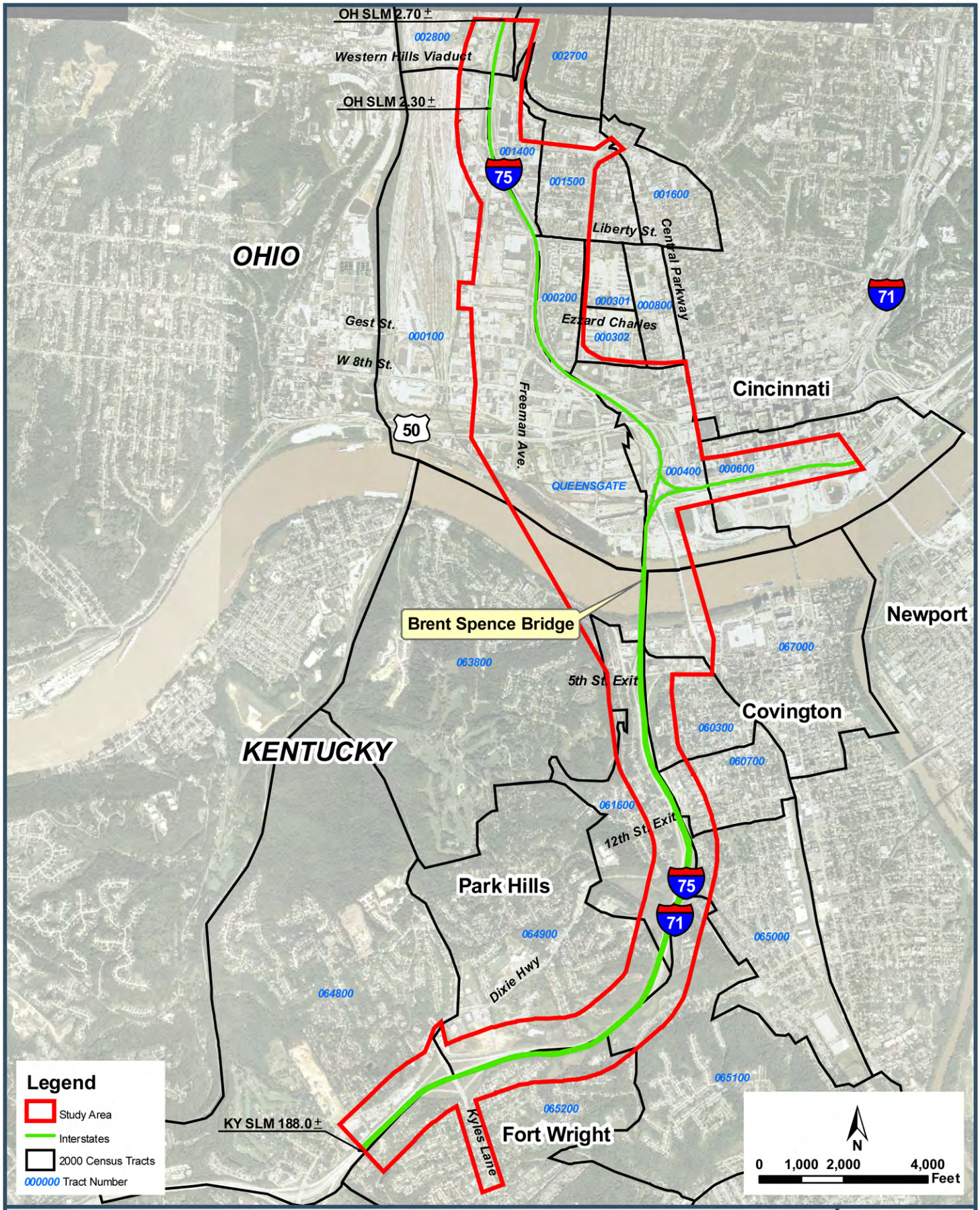

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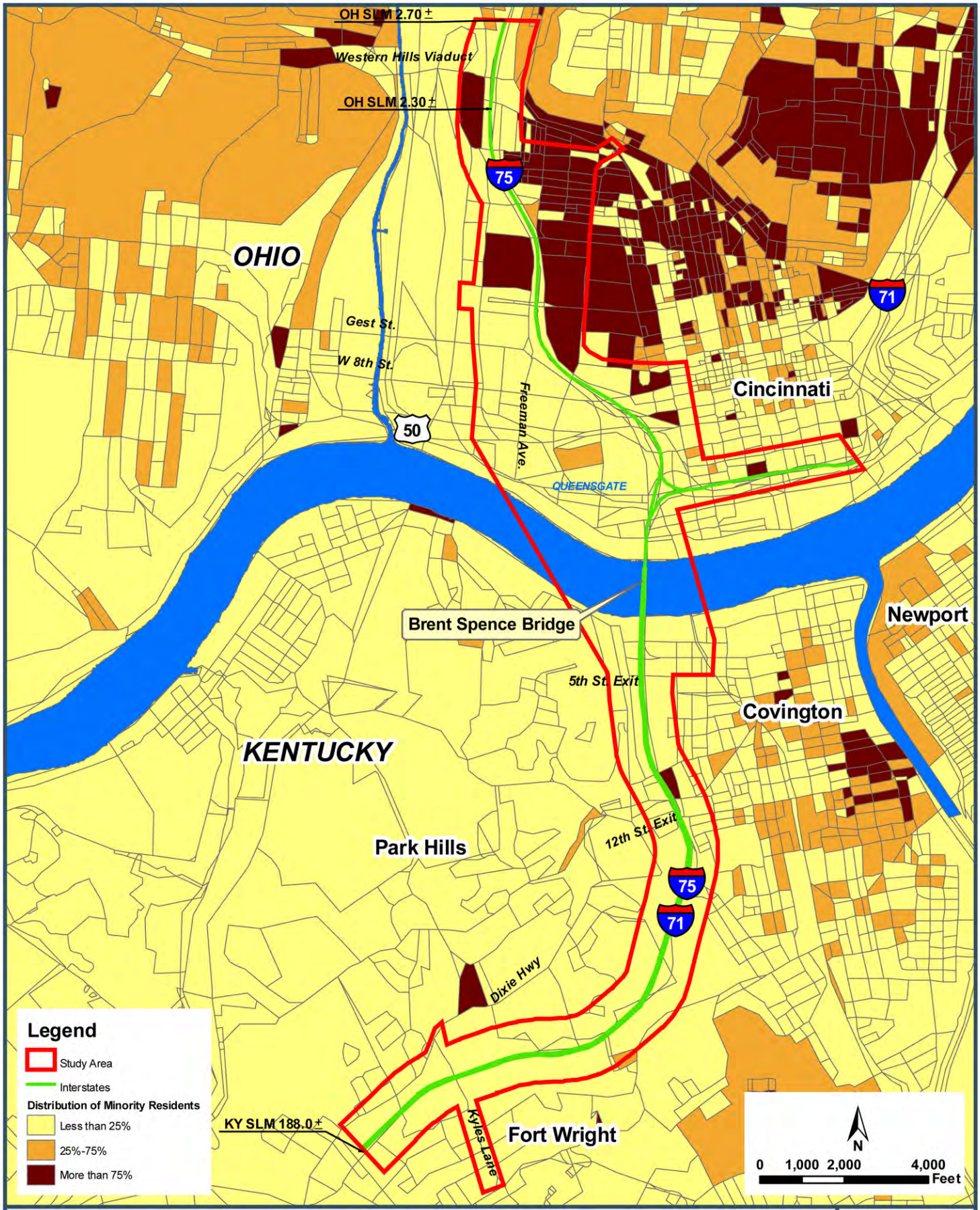
Kentucky UNBRIDLED SPIRIT

2000 CENSUS TRACTS

EXHIBIT
12

Prepared by:
PB PARSONS BRINCKERHOFF



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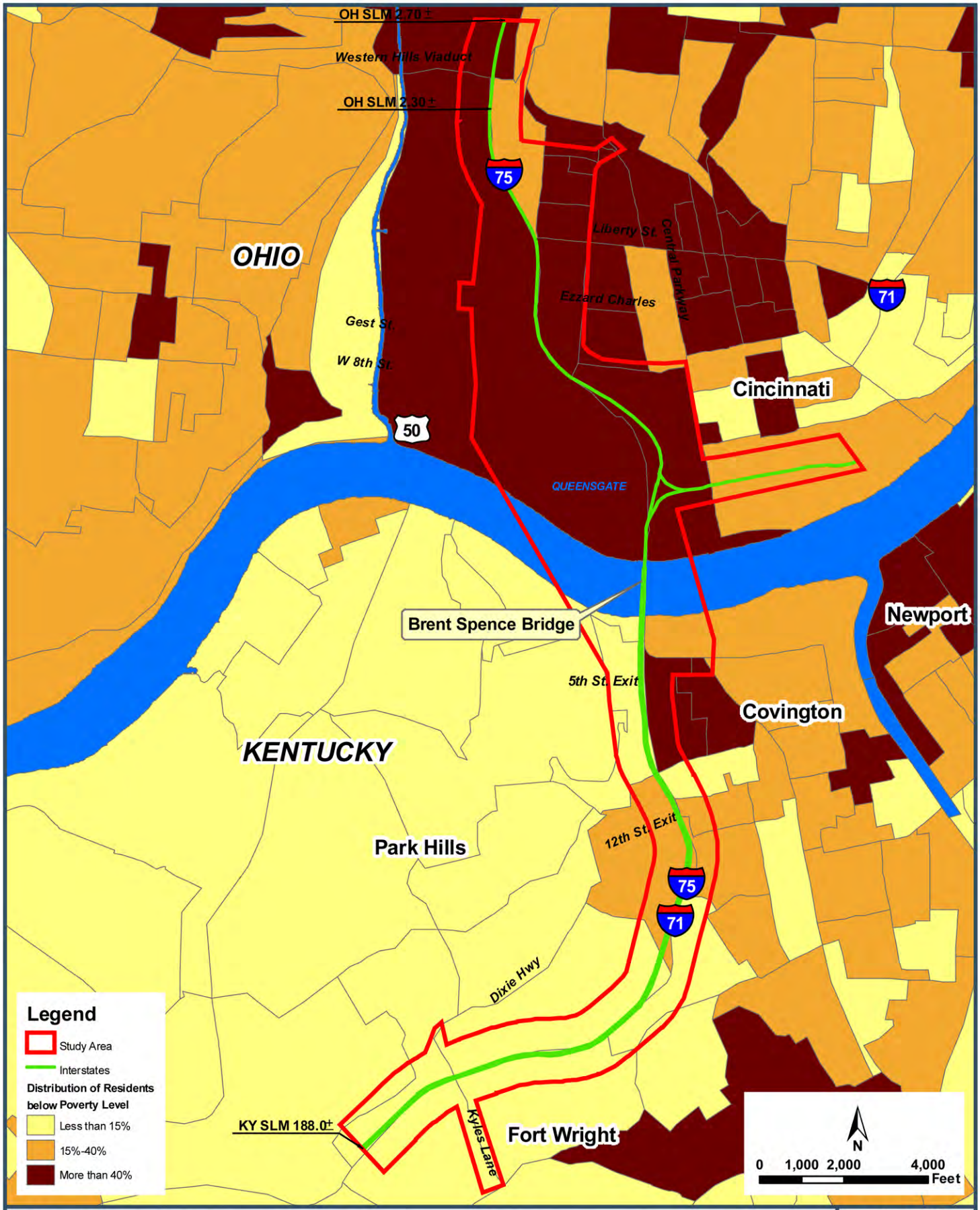
Kentucky UNBRIDLED SPIRIT

MINORITY POPULATIONS

EXHIBIT
13

Prepared by:
PB PARSONS BRINCKERHOFF



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Kentucky UNBRIDLED SPIRIT

LOW INCOME POPULATIONS

EXHIBIT
14

Prepared by:
PB PARSONS BRINCKERHOFF

Appendix A

Agreement between State of Ohio and Commonwealth of Kentucky

FIRST SUPPLEMENT TO AGREEMENT BETWEEN THE STATE OF OHIO AND THE COMMONWEALTH OF KENTUCKY FOR THE REPLACEMENT OF THE BRENT SPENCE BRIDGE CARRYING IR 71/75 OVER THE OHIO RIVER BETWEEN COVINGTON, KENTUCKY AND CINCINNATI, OHIO (Environmental and Preliminary Design Phase)

This Agreement is made and entered into this 23rd day of November, 2004, by and between the Commonwealth of Kentucky (hereinafter referred to as "CWK"), acting by and through the Kentucky Transportation Cabinet (hereinafter referred to as "KYTC") and the State of Ohio (hereinafter referred to as "OHIO"), acting by and through the Director of the Department of Transportation (hereinafter referred to as "ODOT").

RECITALS:

WHEREAS, Pursuant to Ohio Agreement No. 1380, the existing Brent Spence Bridge and its southern approach, which carries IR 71/75 over the Ohio River, is owned and maintained by KYTC; and

WHEREAS, the northern approach to the Brent Spence Bridge beginning at, but not including, Pier 1 [Survey Station 602+10.5], is owned and maintained by ODOT; and

WHEREAS, the Federal Government has committed funding through two separate earmarks for preliminary engineering and environmental studies to evaluate the replacement of the existing Brent Spence Bridge over the Ohio River, hereinafter collectively referred to as the "Project"; and

WHEREAS, Section 5501.44 of the Ohio Revised Code authorizes the Director of the Ohio Department of Transportation to enter into agreements with other states relative to the cooperation in the repair, maintenance, and construction of toll-free bridges crossing the Ohio River; and

WHEREAS, ODOT and KYTC propose to cooperate in the replacement of the Brent Spence Bridge and its approaches and have agreed to enter into this supplemental agreement to establish the duties and responsibilities of each for the environmental and preliminary design phases of the project.

NOW, THEREFORE, for and in consideration of the mutual covenants herein set forth to be kept and performed, it is agreed by the parties hereto as follows:

I. GENERAL PURPOSE

This agreement is entered into by the parties to establish their respective responsibilities with regard to the Project. The foregoing recitals are hereby incorporated as a material part of this Agreement.

II. SCOPE OF WORK

A. The parties agree that ODOT shall be the lead agency for the Environmental and Preliminary Design Phase of the Project, utilizing Steps 1 through 8 of ODOT's Major Project Development Process. However, the selection of a consultant to conduct the environmental and preliminary design work shall be the joint decision of a consultant

selection team consisting of three representatives each from ODOT and KYTC. Each party shall identify their respective members within fifteen (15) calendar days from the execution of this agreement.

B. The parties shall also create a consultant advisory committee to assist in the selection of a qualified consultant. The members of this committee may include interested parties from the surrounding community in both states. The exact composition of the committee shall be by invitation and shall be at the sole discretion of ODOT and KYTC. The final selection of the consultant, however, shall be made jointly by the Secretary of KYTC and the director of ODOT and their decision shall be final.

C. As lead agency, ODOT shall enter into a contract with the selected consultant to conduct all necessary environmental studies, research, and design required to complete any necessary environmental documents as directed by ODOT and KYTC. The selected consultant, its sub consultants and subcontractors, shall collectively or individually hold all necessary pre-qualifications in Ohio and Kentucky.

D. KYTC and ODOT shall jointly manage the environmental and preliminary design phase of the Project. For ODOT, the project manager and point of contact shall be Stefan Spinosa, ODOT District 8 Office. For KYTC, the project manager and point of contact shall be Kevin Rust, KTYC District 6. For Ohio FHWA, the point of contact shall be Mark VonderEmbse. For Kentucky FHWA, the point of contact shall be Evan Wisnieski.

III. FINANCING

A. ODOT will be responsible for the cost of the environmental and preliminary design phase of the Project under its ownership, and KYTC shall be responsible for the cost of environmental phase of the Project under its ownership. Ownership for this phase of the Project shall be determined by the number of interstate lane miles in the study area that will be affected by the Project. The parties agree that KYTC is responsible for 28.15 lane miles or 45.5% of the study area and ODOT is responsible for 33.69 lane miles or 54.5% of the study area.

B. The estimated cost of the environmental and preliminary design phase of the Project is Eighteen Million Dollars ($18,000,000). ODOT agrees to pay 54.5% of the estimated cost of the environmental phase, not to exceed Nine Million Eight Hundred and Ten Thousand Dollars ($9,810,00) and KYTC pay 45.5% of the estimated cost of the environmental phase, not to exceed Eight Million One Hundred and Ninety Thousand ($8,190,000).

C. Additional phases of work, and the costs thereof, required during or after the environmental and preliminary design phase, including but not limited to, additional Preliminary Design, Detailed Design, Right-of-Way Acquisition, Utility Relocation, and Construction, shall be covered under future supplements to this agreement, executed by all parties.

D. Any right, claim, interest, and/or right of action, whether contingent or vested, of ODOT, arising out of or related to any contract entered into by ODOT for the work to be performed hereunder for the portion of the study area located in Kentucky (the "Claim"), shall be subrogated to Kentucky, and Kentucky shall have all of Ohio's rights in and to the Claim and against any other person(s) or entity(ies) against which such subrogation rights may be enforced. Ohio shall immediately notify Kentucky in writing of any Claim. Ohio further authorizes Kentucky to sue, compromise, or settle

any such Claim. It is the intent of the parties that Kentucky be fully substituted for Ohio and subrogated to all Ohio's rights to recover under such Claim(s). Ohio agrees to cooperate with reasonable requests from Kentucky for assistance in pursuing any action on the subrogated Claim including requests for information and/or documents and/or to testify.

E. Upon receipt of consultant's invoices for work performed on the environmental and preliminary design phase, ODOT shall pay such invoices in accordance with the requirements of Section 126.30 of the Ohio Revised Code.

F. ODOT shall then submit copies of the paid invoices to KYTC for the amount of KYTC's share of the invoice. Copies of invoices will be submitted, by certified mail to KYTC project manager Kevin Rust, at P.O. Box 17130, Covington, KY 41017.

G. KYTC agrees to promptly review the paid invoice. If KYTC finds the amount of Kentucky's share to be unacceptable or has an issue with the consultant's invoice, KYTC shall immediately contact ODOT's point of contact to initiate a resolution of either issue.

H. Except in cases where ODOT has received notice of a problem with either Kentucky's share of the consultant's invoice or the invoice itself, KYTC shall pay to ODOT its share within forty-five (45) days of the date of receipt. All payments shall be payable to: Treasurer, State of Ohio, c/o ODOT, District 8, 505 South S.R. 741, Lebanon, OH 45036.

IV. DISPUTE RESOLUTION

In the event a dispute arises regarding any portion of the environmental phase of the Project, notification of such dispute shall first be submitted in writing to each respective project manager for resolution within ninety (90) days of discovery of such dispute. In such notification, the disputing party shall present such evidence as may support its position. Within a reasonable time but not longer than thirty (30) days from the date of receipt, project managers shall review the facts and circumstances surrounding the dispute for the purpose of determination and attempt to resolve the dispute within a reasonable period of time. If the dispute can not be resolved at the project manager's level, the managers shall jointly submit the dispute to their respective district's director or chief district engineer. If the dispute can not be resolved at the district level, such dispute shall be submitted to ODOT's Assistant Director for Planning and Production and KYTC's State Highway Engineer. The resolution of the Assistant Director and the State Highway Engineer shall be final.

V. GENERAL PROVISIONS

A. This agreement constitutes the entire Agreement between the parties. All prior discussions and understanding between the parties are superseded by this Agreement.

B. Neither this Agreement nor any rights, duties, or obligation described herein shall be assigned by either party hereto without the prior express written consent of the other party.

C. Any change to the provision of this agreement must be made in a written amendment executed by both parties.

D. Where work is performed in Ohio pursuant to the terms of this Agreement, the Agreement shall be construed in accordance with and governed by the laws of the State of Ohio and suit, if any shall be brought in Franklin County of the State of Ohio.

E. It is understood by all parties that this Agreement is contingent upon Federal Highway Administration approval of funding and administration of the Project.

F. This Agreement shall be deemed to have been substantially performed only when fully performed according to its terms and conditions and any modification thereof.

G. All provisions of this Agreement shall be binding upon, inure to the benefit of, and be enforceable by and against the respective successors or parties hereto.

H. This Agreement and any renewal thereof are subject to the determination by Ohio that sufficient funds have been appropriated by the Ohio General Assembly to ODOT for the purpose of this Agreement and to the certification of funds by the Office of Budget and Management, as required by Ohio Revised Code Section 126.07. If ODOT determines that sufficient funds have not been appropriated for the purpose of this Agreement or if the Office of Budget and Management fails to certify the availability of funds, this Agreement or any renewal thereof will terminate on the date funding expires. Ohio's current General Assembly cannot commit a future General Assembly to any expenditure; therefore, the term of this agreement cannot extend beyond the biennial budget year.

I. Similarly, pursuant to the Commonwealth of Kentucky Constitution, the Commonwealth cannot enter into any contract or agreement, which would obligate the Commonwealth beyond the current fiscal biennium. Therefore, work to be performed under this contract or agreement is to be continued in succeeding fiscal years for the term of the contract or agreement and any subsequent renewal, contingent upon funds being appropriated by the legislature for this work. In the event of non-appropriation of funds by either ODOT or KYTC, the contract shall be canceled in whole without penalty to either State at the end of the then current fiscal year for such state, with this contract or agreement becoming null and void at the end of said fiscal year. Both ODOT and KYTC will make efforts to obtain the necessary funds to avoid cancellation of the contract or agreement, and both parties agree to provide written notice to the other party in the event of non-appropriation 30 days prior to the end of the fiscal year in which such non-appropriation for the next fiscal year occurs.

J. The terms of this Agreement shall expire on June 30 of each year. This Agreement may be affirmatively renewed by ODOT and KYTC in the next year. Such renewal shall be by letter from the Director of Transportation for the State of Ohio and the Secretary of Transportation for KYTC, or their representatives, affirming their willingness to renew the agreement. The letters shall be received by each party by July 31 of each year. In the event that the parties hereto do agree to renew this agreement, neither party to the Agreement shall have any further obligations hereunder.

K. Any person executing this Agreement in a representative capacity hereby warrants that he/she has been duly authorized by his/her principal to execute this Agreement on such principal's behalf.

IN WITNESS WHEREOF, the State of Ohio and the Commonwealth of Kentucky have caused their names to be signed and their seals to be hereunto affixed by their respective Governors, the

Ohio Department of Transportation has caused its name to be signed by its Director of Transportation, and the Kentucky Transportation Cabinet has caused its name to be signed by it Secretary of Transportation and all thereunto duly authorized.

STATE OF OHIO

Bob Taft
Governor

OHIO DEPARTMENT OF TRANSPORTATION

By: Gordon Proctor /ags
Director

COMMONWEALTH OF KENTUCKY

Ernie Fletcher
Governor

KENTUCKY TRANSPORTATION CABINET

By: Mannfield Bailey
Secretary

****

Approved:

Attorney General (Ohio)

Office of Legal Services (Kentucky)

Appendix B

Aesthetics Committee Charter

BRENT SPENCE BRIDGE PROJECT
AESTHETIC COMMITTEE CHARTER

The Ohio Department of Transportation (ODOT) and the Kentucky Transportation Cabinet (KYTC) are acutely aware of the communities' desire to provide for an aesthetically pleasing corridor through the Cities of Cincinnati, Ohio and Covington, Kentucky. Because ODOT and KYTC also believe that transportation projects can be attractive as well as safe and efficient, the Brent Spence Aesthetic Committee shall be established. The States are looking for a context sensitive solution that involves a collaborative, interdisciplinary approach in which citizens and agencies are part of the planning and design team. Context sensitive solutions ask questions first about the need and purpose of the transportation project, and then address equally: safety, mobility, and preservation of scenic, aesthetic, historic, environmental, and other community values. The Aesthetic Committee is tasked to provide assistance to the transportation agencies and the project Advisory Committee in achieving a desirable result.

The Aesthetic Committee shall provide assistance and input on the project corridor's vision, and shall be guided by the following general tenets:

- The committee shall provide to the advisory committee aesthetic guidelines and recommendations to be incorporated into the project's design. Overall design decisions for the project and design features based upon the aesthetic guidelines and recommendations shall be made by the agencies and advisory committee.
- Decisions need to be, financially feasible, and capable of being implemented.
- Safety shall not be compromised.
- All design standards with regards to lighting, signing, and geometry shall be followed.
- Bridge structure types will be selected in accordance with current ODOT and KYTC requirements. The Aesthetic Committee will provide input on the aesthetic treatments of the selected alternative.
- Aesthetic treatments shall focus on pattern, color, texture, shape, lighting, and landscaping as opposed to adding extraneous elements solely for the sake of appearance.
- Funding considerations shall include initial costs and future maintenance costs.
- Aesthetic improvements can be achieved with minimal increases in anticipated construction cost; typically a cost of 1% of the total construction cost is allowed for aesthetic treatment.
- The state agencies shall have final approval and authority over inclusion of recommended aesthetic treatments and their necessary funding. Additional sources of funding may be identified or developed by the Aesthetic Committee to supplement the funding provided by the state agencies. The States shall approve the use or make stipulations in the use of these additional funding sources.

Committee Membership and Roles:

The committee shall be made up of representatives from various community groups and organizations from both States. In addition, the Transportation agencies and the project consultant (Project Team) shall also be represented. The size of the committee is limited to twenty-five members to facilitate productive meetings. The membership of the committee was developed by the Project Team to insure equal representation from each sate and to provide the necessary expertise. The membership list for this committee is attached. The Aesthetic Committee shall be a sub-committee to the project's Advisory Committee. Because of this structure, the Aesthetic Committee shall be chaired by an individual representing one of the members of the Advisory Committee. The Project Team has selected The City of Cincinnati Architect to chair this committee. The Advisory Committee Membership list is also attached to this charter. The States will have final authority on decisions affecting membership of the committee.

The Aesthetic Committee Members shall be responsible for developing the vision for the project and associated goals, developing methods to reach consensus on the aesthetic vision, provide recommendations to the project team on aesthetic treatments, communicate decisions back to their respective agencies/constituents, and identify project issues and community values. The Project Team shall be responsible for developing the schedule for the project as well as determining specific points for aesthetic committee input. The Project Team is also tasked with insuring communication between the Aesthetic Committee and Advisory Committee is maintained. In addition, the Project Team will be responsible for documentation of meetings, recommendations, and decisions of all issues with respect to the committee and project.

Decision Making Process:

The Aesthetic Committee shall operate by consensus whenever possible. Consensus does not necessarily mean agreement or active support by each member. Those not objecting are not necessarily indicating that they favor a decision, but merely that they can "live with it." In the absence of consensus, a majority of two-thirds of the members present is required for approval of an action/recommendation. A quorum of nine members is required for any decisions to be made. Participation in the aesthetic committee is limited to its members. All meetings are open to the public, and non-members shall attend as observers and may be invited to offer comments, if time allows. All actions and recommendations shall be taken by the Project Team to the Advisory Committee for concurrence. Final decisions on actions and recommendations shall be made by ODOT and KYTC.

Appendix C

Public Involvement Activities

Advisory Committee Meetings Minutes and Disposition of Comments

Brent Spence Bridge Advisory Committee Meeting #1
August 19, 2005
Meeting Minutes

ODOT Project Manager Stefan Spinosa and KYTC Project Manager Kevin Rust began the meeting by introducing team members from their two organizations. Other stakeholders such as representatives from the cities of Covington and Cincinnati were also introduced.

Stefan Spinosa continued by introducing the selected consultant team and its Project Manager Fred Craig, who provided information on the project's starting point, scheduled activities and previous study information.

Fred Craig presented a conceptual meeting schedule for the Advisory Committee and an outline of its roles and responsibilities. Fred Craig also discussed the history and qualifications of the consulting team led by Parsons Brinckerhoff and included TranSystems and Wilbur Smith Associates.

The presentation that followed described the ODOT Project Development Process (PDP) that will be employed and outlined the specific pieces of information necessary at each step of the process. The presentation also included a list of deliverables prescribed by the PDP. A Red Flag Summary, an Existing and Future Conditions Report, Draft Purpose and Need Statement and Planning Study Report were all discussed. A review of alternatives presented by previous studies was also presented.

The first part of this project includes all work contained in Steps 1-4 of the PDP. In these steps, the study area will be defined, a public involvement plan will be adopted and a series of literature reviews will be completed to provide a base of information on the existing conditions of the project area. This portion of the work will also identify preliminary alternatives to be evaluated.

The second part of the project will include Steps 5 and 6 where specific alternatives are evaluated more thoroughly in terms of impacts, geometric and traffic issues. Documentation for required environmental studies will also begin in this portion of the project. The final part of the project will encompass Steps 7 and 8 of the PDP, which selects a preferred alternative for the project, provides for filing an environmental document, and complete preliminary design plans.

Brent Spence Bridge Advisory Committee Meeting #2
October 13, 2005
Meeting Minutes

The meeting began with Project Managers Stefan Spinosa and Kevin Rust providing an introduction of the project team and an overview of the meeting. The purpose of the meeting is to provide an update and to discuss Goals and Objectives for the Brent Spence Bridge project.

Fred Craig, of Parsons Brinckerhoff, followed with a detailed project update of events since the last Advisory Committee meeting in August 2005. His presentation included a summary of the work to be performed in Part 1 of the project – ODOT Project Development Process (PDP) Steps 1 through 4. Since the last meeting, the following items have been completed:

- Aesthetics Committee Charter drafted
- Red flag site visits were conducted
- Traffic counts initiated
- Study area map and logical termini for the project were submitted
- Public Involvement Plan drafted
- Problem Statement/Goals & Objectives drafted
- Crash analysis and geometric analysis initiated

A copy of the Aesthetics Committee Charter was distributed to meeting participants. The Charter includes general guidance on the program as well as roles and responsibilities for the members of the Aesthetics Committee.

The study area was generally defined as including the I-71/75 corridor from the Kyles Lane Interchange in Kentucky to the Western Hills Viaduct in Ohio. In addition, areas east and west of the I-71/75 corridor are included within the study area. The proposed study area map was distributed to meeting participants.

The project team presented a map, which identified the traffic count locations within the study area. Numerous points along the interstate and local roadways were chosen. A conceptual schedule of when data collection would occur at those locations was presented.

Other items included in the project team presentation were a listing of historic properties and historic districts within the study area, preliminary information on the Draft Purpose and Need Statement, and schedule information for project deliverables.

After the presentation, the project team discussed the project's Goals and Objectives Statement that was carried forward from the previously completed Feasibility and Constructability Study of the Replacement/Rehabilitation of the Brent Spence Bridge.

Advisory Committee members and interested parties were asked to review the Goals and Objectives Statement and make comments. Some of the comments received are noted below:

- The project needs to balance the need to serve local and through traffic
- Linking Queensgate with downtown should be considered
- Sustainability and mobility are key issues
- Movement – modal consideration
- The project should consider strategies for incident management and handling event traffic
- The current bridge is " unattractive"
- Consider designing the bridge to accommodate traffic beyond 20-30 years
- Congestion pricing / user costs merit consideration
- HOV, HOT or express lanes should be considered
- Be mindful of air quality and storm water drainage issues
- Homeland security is a factor in designing new facilities
- Maintenance of traffic now and particularly during construction, will be a key issue in the evaluation of alternatives
- This project is not just the Brent Spence Bridge, it includes approaches and interstate mainline throughout the downtown area
- There is limited access to I-75 between downtown Cincinnati and Hopple Street
- Better connections between the 6th Street Expressway and I-75 are necessary
- Adaptability, flexibility, expandability are all key issues to consider
- This project should build on previous improvements within the corridor

The meeting concluded with information about the next steps in project development. The project team indicated that the Red Flag Summary, Existing and Future Conditions Report and Draft Purpose and Need Statement deliverables would be submitted to ODOT and KYTC in the near future.

Preliminary alternatives will also be developed and evaluated within the coming months. A date for the next Advisory Committee meeting was not set, but the project team indicated that it would be held when appropriate to review the preliminary alternatives.

At the end of the meeting, Kevin Rust of KYTC announced that he was leaving his current position for one in the private sector. Kevin introduced Rob Hans, who will be taking over Project Manager responsibilities for KYTC.

Brent Spence Bridge Replacement/Rehabilitation Project
Advisory Committee Meeting #3
March 23, 2006
Meeting Minutes

MATERIALS DISTRIBUTED

- Meeting Agenda
- Study Area exhibit
- Advisory Committee survey
- Evaluation matrix
- Binder for Advisory Committee members
    - Meeting 1 and 2 materials
- Project newsletter

The purpose of the meeting was to provide an update on project status and progress.

Fred Craig opened the meeting with introductions. He reminded everyone the difference between the Advisory Committee and interested parties. The Advisory Committee members are part of the working group. Interested parties are individuals/organizations to be included on Advisory Committee meeting notices, and can ask questions or provide comments at the end of the working session.

Fred Craig gave a brief update on project status. Step 3 has been completed and the project is now in Step 4. The Planning Study Report and Strategic Plan will be submitted in Step 4. Activities that have occurred include Aesthetics Committee meeting, Origin-Destination Study, Red Flag Summary, Existing and Future Conditions Report, Purpose and Need Statement, preliminary VISSIM model, and Conceptual Alternatives Solutions Report. The project website (www.brentspencebridgecorridor.com) will be updated with project documents and information.

Michael Moore reported on activities of the Aesthetics Committee. The first introductory meeting for the Aesthetics Committee was held on December 16, 2005. The next meeting will be held at the end of April to work on an evaluation matrix. The end goal will be the Aesthetics Master Plan.

The project team reviewed the project's Purpose and Need. The goals of the Purpose and Need are: improve operational character for local and through traffic, improve LOS and traffic flow, improve safety, correct geometric deficiencies, and maintain connections to key transportation corridors.

The project team explained the evaluation measures and matrix for the conceptual alternatives considered. A scoring system of "good," "average and "poor" was used in the evaluation of the alternatives. The matrix was provided in the meeting materials.

All alternatives that will be carried forward for further study were presented by the project team. The committee was prompted to provide opinions on these alternatives. This discussion is summarized in the disposition of comments. A suggestion was made to add example pictures of roundabouts and single point urban interchanges (SPUI) linked to the Western Hills Viaduct alternatives on the project website.

An example was shown of the capabilities of the VISSIM model. Data from the I-75 Mill Creek Expressway and Thru the Valley projects were incorporated into this model. A model of the AM peak for 2004 for the project area was presented. The project team also created VISSIM simulations for the 2004 PM peak and 2030 AM and PM peaks, but these were not presented at this meeting.

The Advisory Committee and project team further discussed the conceptual alternatives. At this stage of the PDP, it is not known if the conceptual alternatives are feasible. In Step 5, the project team will answer these questions and in Step 6 the team will determine if the alternatives are feasible.

Questions and concerns were provided by the meeting participants. The comments and responses are in the disposition of comments.

The meeting concluded with a discussion of the next steps in the project which include an operational analysis and impacts analysis of the conceptual alternatives. The project schedule was reviewed and discussed. The goal is to submit the Planning Study Report on April 7. A public involvement meeting will be scheduled during Step 6.

Following this Advisory Committee meeting, a series of public involvement meetings were scheduled for May 2 and 4.

Advisory Committee Disposition of Comments

Table C-1. Comments from Advisory Committee Meeting, October 13, 2005

Number	Comment	Response
1	The project needs to balance the need to serve local and through traffic.	Comment noted
2	Linking Queensgate with downtown should be considered.	Comment noted
3	Sustainability and mobility are key issues.	Comment noted
4	Movement – modal consideration.	Comment noted
5	The project should consider strategies for incident management and handling event traffic.	Comment noted
6	The current bridge is unattractive.	Comment noted
7	Consider designing the bridge to accommodate traffic beyond 20-30 years.	Comment noted
8	Congestion pricing/user costs merit consideration.	Comment noted
9	HOV, HOT or express lanes should be considered.	Comment noted
10	Be mindful of air quality and storm water drainage issues.	Comment noted
11	Homeland security is a factor in designing new facilities.	Comment noted
12	Maintenance of traffic now, and particularly during construction, will be a key issue in the evaluation of alternatives.	Comment noted
13	This project is not just the Brent Spence Bridge, it includes approaches and interstate mainline throughout the downtown area.	Comment noted
14	There is limited access to I-75 between downtown Cincinnati and Hopple Street.	Comment noted
15	Better connections between the 6th Street Expressway and I-75 are necessary.	Comment noted
16	Adaptability, flexibility, expandability are all key issues to consider.	Comment noted
17	This project should build on previous improvements within the corridor.	Comment noted

Table C-2. Comments from Advisory Committee Meeting, March 23, 2006

Number	Comment	Response
1	In the Queensgate area will the structure be on an elevated bridge or fill?	The structure will potentially be an elevated structure.
2	Is the northbound I-75 ramp to 5th Street in Ohio remaining on all conceptual alternatives being carried forward for further study?	In general, this ramp will be maintained.
3	How will US 50 westbound be connected to northbound I-75?	This existing connection will be improved and maintained.
4	What is the capacity on the local end of Clay Wade Bailey Bridge in northern Kentucky?	Operational analysis will be performed during the next phase in Steps 5 and 6.
5	How flexible are the alternatives at this point in the study? Can some of the local access connections be mixed and matched between alternatives or are the alternatives carved in stone?	At this phase of the project, the alternatives are conceptual. Details will be designed in the next phase of the project.
6	The city of Cincinnati would like to receive written responses to comments they provide.	The project team will respond in writing to all Advisory Committee comments received as part of the minutes distribution.
7	The committee asked for time to provide written comments on conceptual alternatives presented at the meeting.	Comments from the committee need to be received by 4/1/06. Responses will be posted on the website as part of meeting minutes.
8	Why are two lanes shown on the existing Brent Spence Bridge?	There are no design exceptions at this stage in the project.
9	How will collector-distributor roads connect to the local road system? Will east-west connections be in place?	East-west access will remain the same as existing connections.
10	Can there be a collector-distributor road off of Brent Spence Bridge?	Operational analysis will be performed during the next phase in Steps 5 and 6 to determine if a collector-distributor road is feasible off the Brent Spence Bridge.
11	Will there be a connection from I-75 northbound to Ezzard Charles Drive?	This connection will be addressed and considered in the next phase of the project.
12	Will there be any conflict with the construction of the 8th Street Viaduct and the Western Hills Viaduct and other aspects of current I-75 projects?	The 8th Street Viaduct project will be complete well before any construction starts for this project. Other I-75 projects (Thru the Valley and I-75 Mill Creek Expressway) are ahead of this project in terms of the Project Development Process and would be constructed first.
13	Concern was voiced about left hand exits off of the alternatives to local streets	There will be no left hand exits off I-75. Existing left hand exits will be corrected.
14	Have costs been developed?	Preliminary costs have been estimated.

Table C-2. Comments from Advisory Committee Meeting, March 23, 2006

Number	Comment	Response
15	Will event traffic (i.e. ball fields, stadium) be planned for?	Improvements can not be designed for specific events, but the project team will consider such traffic in development of the alternatives.
16	Better access is desired to the west side of Cincinnati from I-71 and I-75	Better access to the west side of Cincinnati will be addressed in the next phase of the project.

1 - Sources
CCR = Citizens for Civic Renewal
TANK = Transit Authority of Northern Kentucky
EPHIA = East Price Hill Improvement Association
DOTE = City of Cincinnati Department of Transportation and Engineering
CMC = Cincinnati Museum Center
CURC = Cincinnati USA Regional Chamber

Table C-3. Written Comments from Advisory Committee

Number	Source[1]	Comment	Response
1	CCR	Improve the arterial network to take advantage of excess capacity. Improvements to the approaches on either side of the Clay Wade Bailey Bridge could help take advantage of this underutilized piece of infrastructure and remedy some of the troublesome local access points to I-75. Improvements to the intersections and connectivity in the Queensgate area could help distribute local traffic and minimize the weaving and confusion associated with multiple entry and exit points. An example is to allow Second and Third Street near Fort Washington Way to stay one-way under the Brent Spence Bridge approach and then converge as a two-way Third Street north of Longworth Hall.	Improvements to the arterial network are outside the scope of this project. Arterial improvements necessitated by ramp/interstate route improvements will be investigated in future steps of the project.
2	CCR	Address issue of moving existing bottleneck south.	This will be investigated in future steps of the project.
3	CCR	Is it possible that a southbound I-71 flyover could be proposed to avoid the proposed left side merge?	This can be looked at in future steps of the project. The intent of the project is to correct left hand mainline merges.
4	CCR	Alternative 5 seems to have the most merit from a cost and community impact perspective. Opinion that four lanes of I-75 across the Ohio River is desirable given the constraints both north and south of the bridge. It would be desirable to place both north and southbound through lanes between the ARTIMIS building and John Street to minimize impacts to local community.	Comment noted.
5	CCR	Evaluate a Collection and Distribution road for the I-75, I-71, US 50 Interchange. A southbound collector could start in the vicinity of Ezzard Charles perhaps merging with through traffic at or near the bridge or alternatively north of 12th Street in Covington. Gest Street would become a one-way C-D road from Freeman to US 50. The northbound could start around 12th Street in Covington and terminate around Ezzard Charles.	This is not a viable alternative for the following reasons: 1- Duplicates available movements 2 - Adds extra bridge lanes 3 - Too complicated 4 - C-D's around interchange at: OH 2nd and 3rd Street; North of US 50/I-71/I75 interchange; south of Brent Spence Bridge to KY 12th St

Table C-3. Written Comments from Advisory Committee

Number	Source[1]	Comment	Response
6	CCR	Evaluate alternatives to solve level of service conundrum. Some evaluation must take place of how to make choosing transit an easier decision either through dedicated rights of way, HOV lanes or congestion pricing.	The North South Transportation Initiative established the modal options for the corridor. Transit alignments are east of Brent Spence Bridge on Clay Wade Bailey, OH 2nd and 3rd Street and under Brent Spence Bridge at the transit center/rail alignment. The purpose of the Brent Spence Bridge project is to address roadway aspect of the regional mobility plan for the corridor. All alternatives do not preclude the future plans for the modal alternatives identified for the region. HOV lanes will be investigated in future steps if warranted by the capacity analysis of the alternatives. Congestion pricing is a statewide policy issue that has not been addressed by the agencies and is outside the scope of this project.
7	TANK	None of the proposed alternatives incorporate any provisions for transit, managed lanes or high occupancy vehicle lanes. TANK would prefer that provisions for these types of facilities be incorporated into the alternatives. If it is determined that these facilities are not feasible, it is requested that outside shoulders be designed to support use by transit buses.	The North South Transportation Initiative established the modal options for the corridor. Transit alignments are east of Brent Spence Bridge on Clay Wade Bailey, OH 2nd and 3rd Street and under Brent Spence Bridge at the transit center/rail alignment. The purpose of the Brent Spence Bridge project is to address roadway aspect of the regional mobility plan for the corridor. All alternatives do not preclude the future plans for the modal alternatives identified for the region. HOV lanes will be investigated in future steps if warranted by the capacity analysis of the alternatives. Shoulder design will be consistent with current design standards. Shoulders are designated for incident management purposes and adding buses to the shoulders creates conflicts.
8	EPHIA	All existing ramps that connect to the Sixth Street Viaduct should continue their existence when the new I-75/I-71 bridge is built, including the on-ramp to southbound I-75/I-71 from US 50 and the off-ramp from northbound I-75/I-71 to US 50.	This will be considered in future steps of the project.

Table C-3. Written Comments from Advisory Committee

Number	Source[1]	Comment	Response
9	EPHIA	It is important to add direct access ramps from the Sixth Street Viaduct to Northbound I-75 and from Southbound I-75 to US 50 during reconstruction of the Brent Spence Bridge.	Current alternatives include these potential connections. During Step 5 an origin-destination study will be performed to help determine the need for these connections.
7	CURC	Position the highway in a manner similar to Fort Washington Way – capable of one day being capped – linking downtown to Queensgate	Current alternatives for the I71/I75/US50 area in Ohio have been established to minimize the interstate footprint. Vertical alignment of alternatives will be established in subsequent steps. Project team is aware of community's desire to improve east-west connectivity.
8	CMC	Alternatives 1 and 2 would result in a catastrophic negative impact from an economic standpoint to Queensgate and the Cincinnati Museum Center.	This impact will be included in the evaluation of conceptual alternatives.
9	CMC	Alternatives 3, 4, and 5 warrant closer observation with the following considerations: • View existing and new routes in 3D format for easier viewing than aerial. • Clear exit opportunity from northbound and southbound traffic to Ezzard Charles since this is the main exit for the museum and Music Hall. • Create a second clear exit south of Ezzard Charles Drive to Queensgate; this could be a Freedom Center and Stadium exit and benefit the south end of Queensgate. • Clear access from Queensgate to Fort Washington Way and I-71 north. Traffic must cross four lanes from Ezzard Charles to make this exit.	• Attempts will be made to clarify view of routes in future steps. The use of 3D modeling is one option to achieve this goal. • Comment noted. • Alternatives maintain existing exit to Freeman Avenue./Gest Street. • The redesign of left hand exits to right hand exits will improve the current access.
10	DOTE	All access from the highway system to the CBD local street network should be maintained or improved with this project. Specifically, access from southbound I-75 to Freeman Avenue, Seventh Street, Fifth Street and Second Street and access from northbound I-71/I-75 to Second Street and Fifth Street and Sixth Street should be maintained.	Comment noted. All alternatives provide access to CBD; however, direct local ramp connections may be consolidated in some alternatives. Operational analysis, feasibility, and evaluation of all the alternatives will be performed in subsequent steps with the assistance of the Advisory Committee.

Table C-3. Written Comments from Advisory Committee

Number	Source[1]	Comment	Response
11	DOTE	All access from the CBD local street network to the highway system should be maintained or improved with this project.	Comment noted. All alternatives provide access from CBD; however, direct local ramp connections may be consolidated in some alternatives. Operational analysis, feasibility, and evaluation of all the alternatives will be performed in subsequent steps with the assistance of the Advisory Committee.
12	DOTE	A variety of access points are critical for the successful distribution of traffic during incidents and special events – especially baseball and football games.	Comment noted.
13	DOTE	The separation of movements for northbound and southbound I-75 from I-71 and local access is desirable, regardless of the option for a western bridge or separate bridges at the existing location of the Brent Spence.	Comment noted
14	DOTE	There are intuitive traffic flow issues that appear to be missing.	Without specifics, it is difficult to respond; however, this issue—if present—will be resolved during future steps of the project.
15	DOTE	Existing access from US 50 to Fort Washington Way and I-71/I-75 should be maintained.	Access from US 50 to Fort Washington Way and the Interstate system is provided in all the alternatives; however, some alternatives change the connections. Operational analysis and feasibility will be investigated during further studies of conceptual alternatives.
16	DOTE	Direct access from US 50 west to I-75 north is desirable. However, this connection cannot preclude the connections between I-75 and Freeman.	The goal will be considered in the evaluation of conceptual alternatives.
17	DOTE	Access to and from Freeman and I-75 must be maintained, but the access to and from Ezzard Charles and I-75 can be eliminated, provided alternate, indirect access is provided through improvements to the local street network or a collector/distributor system.	Access to and from Freeman Avenue is maintained. Ezzard Charles has several access routes.
18	DOTE	The “spaghetti” of ramps between Freeman Avenue and the River should be simplified as much as possible to gain additional developable land between Central Avenue and I-75. This goal should not take priority over maintaining the multiple access points to and from the CBD.	Comment noted.
19	DOTE	It is important to keep a direct connection to Second Street for northbound and southbound interstate traffic. Accessing Second Street from the Clay Wade Bailey Bridge is unacceptable.	Operational analysis and feasibility of alternatives will be investigated in future steps of the project.

Table C-3. Written Comments from Advisory Committee

Number	Source[1]	Comment	Response
20	DOTE	Comments specific to Mainline Alternatives Alternative 1 • Five lanes for I-75 seems excessive while two lanes on the existing bridge is inadequate. Alternative 2 • The alternative works well for highway and local traffic but ramps from I-71 to the bridge will disrupt the Queensgate neighborhood and not generally desired. • I-75 should not be elevated at Ezzard Charles as it would detract form the view of the Ezzard Charles corridor. Alternative 3 • Generally acceptable, but believe the number of lanes for local traffic is insufficient. Alternative 4 • Generally acceptable, but believe the number of lanes for local traffic and I-71 is insufficient. Alternative 5 • Seems to require significant crossover of local space instead of keeping I-75 in a distinct corridor.	Alternative 1 • Operational analysis during the next step of project development will confirm capacity requirements. Alternative 2 • Comment noted. • Noted; however, other Advisory Committee members prefer an elevated section here. Alternative 3 • Comment noted. Operational analysis during the next step of project development will confirm capacity requirements. Alternative 4 • Comment noted. Operational analysis during the next step of project development will confirm capacity requirements. Alternative 5 • Comment noted. Feasibility will be evaluated in subsequent steps of the project.

Table C-3. Written Comments from Advisory Committee

Number	Source[1]	Comment	Response
21	DOTE	Comments specific to River to Freeman Alternatives Alternative 1 • Connection from southbound I-75 to Fifth and Second is not clear. Alternative 2 • Connection from I-71 to the west over Queensgate is not clear. Alternative 3 • No southbound ramp to Seventh. • Southbound ramp to Second is unclear. • Weaving of on and off traffic southbound between Fifth and Ninth is confusing. Alternative 4 • No direct connection southbound to Second and unknown connection to Fifth. • The connection northbound to Seventh is a good proposal if traffic flow can work on Seventh. • Additional land available west of Central for development. Alternative 5 • No direct connection southbound to Second and unknown connection to Fifth. The additional street west of Central introduces a traffic signal grid that will make access from the CBD to northbound I-75 more circuitous and lead to additional safety problems and delays with little additional development space.	Alternative 1 • Connections to Fifth and Second Street will remain as currently configured. Alternative 2 • It is the intent to separate I-71 from local traffic in the vicinity just west of the Third Street on-ramp to I-71. Details will be studied in the next phase. Alternative 3 • Correct, there is no southbound ramp to Seventh in Alternate 1 for the I-75/I-71/US50 interchange alternatives. Operational analysis of this alternative will be investigated in subsequent steps. • Connections to Second Street will remain as currently configured. • The weaving in this area will be clarified during the next phase of the project. Alternative 4 • Connection to Second and Fifth is via a new north-south arterial exiting beginning near Ninth. Attempts to clarify movements will be made during subsequent steps. • Operational analysis will determine feasibility during subsequent steps. • Comment noted. Alternative 5 • Connection to Second and Fifth is via a new north-south arterial exiting beginning near Ninth. Attempts to clarify movements will be made during subsequent steps. Operational analysis and feasibility of the extension of John Street. will be conducted in subsequent steps.
22	DOTE	Comments specific to Collector-Distributor Alternatives Alternative 1 • Very close to existing Western/Winchell Avenues system but ramp system and access from arterials is unclear. Alternative 2 • Improvements to Western and Winchell is more desirable than a separate, unsignalized facility as shown in Alternative 1.	Alternative 1 • The intent is to separate I-71 and local traffic from I-75 traffic as much as possible, while preserving the existing Western/Winchell Avenues system. Alternative 2 • Comment noted.

Table C-3. Written Comments from Advisory Committee

Number	Source[1]	Comment	Response
23	DOTE	Comments specific to Western Hills Viaduct Alternatives If a new bridge is designed, a single deck is preferred but will retain connections to Spring Grove. The single deck design is more appropriate if a full interchange is desired at the Viaduct. The City staff has serious concerns about the ability of McMillan Street to accommodate traffic volumes along the hillside and within Clifton Heights.	Comment noted. Operations and feasibility of the Viaduct and McMillan within the study area will be investigated in subsequent steps of the project.
24	DOTE	Comments specific to Western Hills Viaduct Alternatives Alternative 1 • City staff does not believe that a full roundabout will function appropriately if the Viaduct and Central Parkway are combined due to the traffic volumes that would need to be accommodated. Alternative 2 • City staff does not believe that a full roundabout will function appropriately due to the volume of traffic using the roadway system – a three lane roundabout is not acceptable. • The roundabout is too close to the signalized intersection at Central Parkway, leading to potential queuing into the roundabout. Alternative 3 • A SPUI may not function adequately in such close proximity to the intersection at Central Parkway.	Alternative 1 • Operational analysis during the next step of project development will confirm capacity requirements. Alternative 2 • Operational analysis during the next step of project development will confirm capacity requirements and feasibility. • Comment noted; however, operational analysis during the next step of project development will confirm capacity requirements and feasibility Alternative 3 • Comment noted. Operational analysis during the next step of project development will confirm capacity requirements and feasibility.
25	DOTE	Comments specific to Western Hills Viaduct Alternatives City staff considered another option for the intersection of Central Parkway, McMillan and the Western Hills Viaduct. McMillan could be relocated farther to the north of Central Parkway to create a T intersection, leaving Central Parkway and the Western Hills Viaduct as a T intersection. This should be explored as a method of reducing conflicting movements at the redesigned interchange. City staff also considered the alternatives for a partial interchange, since it is not reasonable to assume that the traffic from a full interchange can be accommodated by the arterial network.	This option could warrant investigation if any of the current alternatives prove inadequate in meeting the purpose and need. Alternatives that did not provide full movement to and from the interstate were eliminated due to failure to meet the purpose and need. Operational analysis and feasibility will be investigated in subsequent steps.

Summary of Environmental Justice Activities

Environmental Justice Activities

The following efforts were made to identify and engage Environmental Justice Populations within the study area about the study and potential impacts of the Brent Spence Bridge Replacement / Rehabilitation Project could have on their communities.

Members representing the following groups where asked to represent their constituents at the Advisory Committee Meetings as interested parties:

- Downtown Residents Council
- East Price Hill community Council
- Citizens for Civic Renewal
- Lewisburg Neighborhood Association
- Lower Price Hill Community Council
- Mutter Gottes Neighborhood Association
- Old Seminary Square Neighborhood Association
- Over-the-Rhine Community Council
- Price Hill Civic Club
- West Covington Neighborhood Watch
- West End Community Council
- West McMicken Improvement Association
- Westside Action Coalition

These groups were notified of the Advisory Committee Meetings, received special email notification regarding the public meetings, and copies of all other direct mail sent to the Advisory Committee.

Newsletters announcing the project, providing background, schedule, contact information and the project's purpose and need where send via direct mail to each of the community representatives. Nearly 2,000 newsletters were sent in direct mail to property owners in the study area.

Letters announcing the public meetings which were held at the end of Step 4 of the ODOT Project Development Process were sent via direct mail to every address in the study area and every address within 250 feet of the project limits. This mailing included approximately 8,000 pieces and reached every address including individual apartments regardless of ownership status.

A mobile display providing general project information, including a study area map overlaid on an aerial photograph, was displayed among buildings open to the public including Cincinnati City Hall, Hamilton County Administration Building, Covington City Hall, Newport City Hall, Newport on the Levee, Northern Kentucky Convention Center, and Tower Place Mall.

Organizations Representing Environmental Justice Populations Within the Project Area

50 Plus Magazine
African American Chamber of Commerce
Appalachian Community Development Association
Applause Magazine
Around the Town
Baptist Ministers Conference
Brighton Center Inc.
Chairman of Commission on Hispanic-Latino Community Affairs
Cincinnati Area Senior Services
Cincinnati Herald
Cincinnati Human Relations Commission
Cincinnati Metropolitan Housing Authority Office
Cincinnati NAACP Chapter
Cincinnati Public School District
Commission on Hispanic-Latino Community Affairs
Community Action Agency of Cincinnati – Hamilton County
Consortium of Services of Immigrants & Refugees
Department of Human Services
Department of Social Services
Inclusion Network
Japan Society of Greater Cincinnati
Japanese-American Citizens League
La Jornada Latina
Lower Price Hill - Environmental Leadership Coalition
Lower Price Hill Community Council
Metropolitan Area Religious Coalition
National Council of Negro Women, Cincinnati
Neighborhood Housing
Njema
Northern Kentucky Community Action Commission
Ohio Commission on Hispanic/Latino Affairs
Pan American Society of Greater Cincinnati
Senior Services of Northern Kentucky
Seven Hills Neighborhood House Recreation Center
SU CASA Ministry Center
Talk of the Town
United Way of Hamilton County
Urban Appalachian Council
Urban League of Cincinnati
WAIF-FM
WCET-TV 48
WCIN-AM
WCPO-TV
WDBZ-AM
West End Community Council
West McMicken Improvement Association
WIZF-FM
WLWT-TV
WNOP-AM
WXIX-TV

Concurrence Point #1
Comments and Responses

Public Involvement Meeting Comments Received
May 2, 2006 – Cincinnati Museum Center, Cincinnati, Ohio

Number	Name/Address	Comment
1	James Justin Mercier, PE 518 Academy Drive Austin, Texas 78704 (512) 416-2346 jmercie@dot.state.tx.us	My selections are either Alignment 1 or 2 because either one provides an alternate route for through traffic which will reduce the congestion on the collectors (the old alignment). Reducing the congestion there will reduce crashes and other conflicts. The collectors will also allow traffic to assume the pattern before merging into the main lanes with less or no disturbance. The separate bridges also allow a way for traffic to bypass the scene of an incident (crash, stall) which is more likely to occur on the collector (existing) bridge.
2	Karla Ruth 523 Elizabeth St Cincinnati, OH 45203 (513) 721-3393	Options 1 and 2 are too problematic for communities and low income areas in Cincinnati. Our city cannot rebuild these communities if highways are built through them. Option 3 seems to be the best alternative. Let's not build more bridges away from existing ones. It is worth the money to address hazardous material issues.
3	Sybil Ortego 816 Dayton St Cincinnati, OH 45214 Stortego@fuse.net	Alternatives 1 and 2 disturb too much of West End properties. Alternative 3 seems the least disruptive with Alternative 4 running second. Alternative 5 I don't care for.
4	E. Davis Downtown Cincinnati, OH 45203	The roundabout seems cool conceptually, but I couldn't get my mind around the concept. Taxpayers will be happy with exits and interchanges staying the same, but if you plan around the businesses and keep them here we'll understand. The double-decker is the worst idea, still needs emergency lanes. Moving 75 and leaving 71 seems to work best with improvements to existing structure, but improvements needed for current bridge aesthetically.
5	Eric Alto 5750 Glengate Lane Cincinnati, OH 45212 Eric.alto@ge.com	• Public forum well received and excellent support. • Timing/funding appears to be concern. • What about other loop alternatives for by-passing truck thoroughfare. • Alt 1 and 2 had excellent lay-outs; efficiency looked to be very evident. • Bridges in Cincinnati are aesthetic feature of city that adds benefit; keep design features in mind as project evolves with regard to growing city to businesses, people and transport.

Public Involvement Meeting Comments Received
May 2, 2006 – Cincinnati Museum Center, Cincinnati, Ohio

Number	Name/Address	Comment
6	Joe Vogel City of Cincinnati DOT&E (513) 352-1523	Comments reflect personal views only Consultants, ODOT and KYTC are doing a great job on this difficult project. Keep up the good work. Supportive of current alternatives moving forward. Two specific comments: 1) Western Hills Viaduct modifications should be cautious about affecting anything west of the existing right-of-way of I-75 because the WHV is a historic structure and the arch over Spring Grove Avenue is majestic. 2) Sub-Alt 3 – Street grid extension – strongly favor this but would like to see the exist 75 in a trench with elevated collector-distributors like Fort Washington Way/2nd St/3rd St. I know much effort has gone into this so far but if ramp speeds were lowered and they were looked at more like city streets, I think this would be even better.
7	Mary Jo Bazely P.O. Box 5096 Cincinnati, OH 45205 maryjob@fuse.net Price Hill Civic	• Very concerned about entering and exiting I-75 north and southbound. • Want to improve ease of exiting and entering from US 50. • Likes sub-alternative 2 for US 50.
8	Margo Warminski 342 W. 4th St Cincinnati, OH 45202 (513)721-4506 Cincinnati Preservation Association	Alternatives 1 and 2, the Queensgate Alignments, appear to have the least impact on the B&O Freight Terminal (Longworth Hall), an important cultural resource. They could also provide an additional public benefit by directing more truck traffic out of the downtown core.
9	Chris Moran 2859 Gilna Court Cincinnati, OH 45211 (513)481-6058	Prefer Alternative 3 as being least obstructive and taking a smaller footprint. Maintaining some traffic flow across the river during construction is important and some improvement to approach to the bridge from southbound 71 would help. Please ensure some capacity on bridge across the river for transit, specifically rail.
10	Debbie Reinhart 520 Western Ave Covington, KY 41011 Ray_Reinhart@yahoo.com	We are concerned about being “left” more so than being taken. Because: Noise and increased traffic will impact quality of living…noise already significant with current bridges; View – if bridge elevation is higher, will ruin view and property value; resale opportunities already compromised by speculation. All in all, my preference as well as my neighbor’s would be to take the property so we may move on and the sooner we know this we can begin to make plans.

Public Involvement Meeting Comments Received
May 2, 2006 – Cincinnati Museum Center, Cincinnati, Ohio

Number	Name/Address	Comment
11	Pat O'Callaghan, Jr. 619 Linn St Cincinnati, OH 45203 (513) 721-5503 Queensgate Food Service	Both Alternatives 1 and 2 would be far too disruptive to the longstanding businesses of Queensgate. I really hope you can find a less destructive way of fixing traffic issues.
12	Michael Schweitzer 700 W. Pete Rose Way Cincinnati, OH 45203 (513) 721-6000 Longworth Hall	My primary concern is the impact the construction will have on Longworth Hall. I am worried that such a large project surrounding our building will reduce occupancy to such a degree that our building is no longer commercially viable. Further, if Longworth is "squeezed" between two bridges, our property's value may decrease. Is there a chance federal monies can be made available to purchase Longworth Hall at fair market value?
13	Adrienne Carmichael 1639 Sycamore St. A Cincinnati, OH 45202 ucurchin@hotmail.com	Alternative 3 is the 2nd best alternative in my opinion – a double-decker bridge will take up less space and renovating the existing bridge is better than tearing it down and starting somewhere else. Building a bridge should consider the option which will cause the least amount of destruction of the environment, business and buildings. I am also concerned that bicycles and pedestrian's pathways are improved in the process. Also, all non-local truck and semi traffic should be routed around the city and not through downtown. Of course the #1 option is the No Build alternative. If we can find solutions without building new development, this is best. Development is expensive, destructive to the environment and to the flow already created. Not building at all should be given the most consideration with global warming creating extreme environmental problems people should be driving less. We should not plan for more cars to drive through our area but rather plan for less and create more and more options like light rail and better and more bus and train services so people can drive cars less and yet still get around easily. This should be our concern and the idea of our engineering plans. Use email only – no mail please.

Public Involvement Meeting Comments Received
May 2, 2006 – Cincinnati Museum Center, Cincinnati, Ohio

Number	Name/Address	Comment
14	John Carmichael 1639 Sycamore St Cincinnati, OH 45202	The option for a new bridge should be chosen first and foremost by which option creates the least destruction of environment, infrastructure, businesses, homes to buildings in Ohio to Kentucky. The old bridge should definitely be rehabbed. All possible consideration should be given to maintaining and improving pedestrian and bicycling access and corridors which go through the areas in Cincinnati and Covington. Don't allow this project to end up making things worse. Remember: better, not worse. Also, give great consideration to how this project could be created to improve bus and other mass transit in southwest Ohio/Northern Kentucky. In order to help relieve congestion non-local truck and semi traffic should in the future be re-routed off of this problematic I-75, I-71 corridor and should instead be sent around I-275. I support first the no-build option. Instead, we should be focusing on how to improve the environment, quality of life, car and truck congestion, business, etc. by creating better transportation alternatives – light rail, commuter rail, improved bus systems (especially connecting through Ohio to Kentucky), cycling and pedestrian. Thriving cities such as Portland, OR are more and more using no-build options combined with improved (and much used) alternative transportation options of all of these types. Our future quality of life and future environmental quality depend on getting off of oil dependency and switching to alternatives. In the near future, passenger train service through our region to other destinations should be increased and improved so there would be less need for people to travel so much and so ineffectively by interstate car travel. Likewise for freight – more materials moving by freight rail means fewer 80,000 pound semis damaging our roads and bridges. Fuel wise, freight rail is also about 10 times more efficient than freight on semis. If something ends up being built, option 3 seems at this point to contain the least destruction and damage. Please do not put me on a mailing list.
15	Charles S. Tappan 1150 W. 8th St Cincinnati, OH 45203 chiptappan@aol.com Tappan Properties	After studying all 5 alternatives closely, we would probably favor Alternative 2. • Separates local traffic from through traffic for both I-75 and I-71. • Best preserves access via existing bridge, ramps and U.S. 50 to our buildings at 1150 W. 8th St and 19 Broadcast Plaza. Concerns • Overall impact on Queensgate area once done. • Disruption in Queensgate area during construction.

Public Involvement Meeting Comments Received
May 2, 2006 – Cincinnati Museum Center, Cincinnati, Ohio

Number	Name/Address	Comment
16	Randy Merten 1150 West 8th St Cincinnati, OH 45203 rpmerten@fuse.net Tappan Properties	Would prefer to endure pain up front to reap the benefits for the future. Alternative 2 looks as if it would be more city (CBD) friendly. Regional traffic would flow away from commuters going into downtown and Queensgate, Western Hills, etc. The impact on the community would be the question. Would the elevated ramps from I-71 create needed parking for CBD?
17	Georgia W. Crowell 10001 Brehm Road Cincinnati, OH 45252 aimsbooks@fuse.net	I prefer Alternative 1 since it seemed the simplest and the construction would cause the least disruption with existing traffic. Since I only go downtown or to Kentucky a few times a month, the exits and lane changes are confusing and I am sure they are even more so for anyone coming through for the first time. All the other alternatives seem to make it even more confusing. I strongly suggest that you put in HOV lanes. I asked about this and was given several reasons why it was impractical for Cincinnati, but it should be a requirement for any new construction, especially with so many commuters going back and forth to Kentucky and the necessity of getting good reliable transportation (taxis, shuttles and hopefully, eventually buses) to the airport. Why are you even thinking about light rail when there is not even a bus there now? I was in Boston recently and found HOV lanes convenient. Anyone who is stuck in traffic and looks over to see the HOV lane moving will definitely consider either carpooling or taking public transportation. Anything that encourages saving gasoline should now be essential.
18	Bill Burwinkel, CEO National Marketshare Group, Inc. 2155 West Eighth Street Cincinnati, OH 45204 www.nmsg.com	Alternate 1 and Alternate 2 would result in a catastrophic negative impact from an economic point of view to Queensgate. Situating the bridge as described in either one of these options would precipitate loss of jobs, business opportunity and impact the region with loss of earnings and property taxes. Alternates 3, 4, and 5 warrant closer observation as they are developed and we would like to see the following considerations: • It is difficult to see what is actually happening to US 50. Would it be possible to see existing and new routes in a 3-D format? • We would like to see clear exit opportunity for traffic from northbound and southbound traffic to Ezzard Charles. This is the main exit for the Cincinnati Museum Center and Music Hall. • Create a second clear exit south of Ezzard Charles Drive to Queensgate. This could be a Freedom Center and Stadium exit and benefit the south end of Queensgate. • We also believe it is important for there to be clear access from Queensgate to Fort Washington Way and I-71 North. Presently, traffic must cross four lanes of traffic from Ezzard Charles to make this exit. • We believe consideration should be made to minimize/eliminate truck traffic on State Street.

Public Involvement Meeting Comments Received
May 2, 2006 – Cincinnati Museum Center, Cincinnati, Ohio

Number	Name/Address	Comment
19	Leo Taske 3643 Shortridge Circle Cincinnati, OH 45247 Leotaske1@aol.com	When coming north thru the bridge at night with a truck on both sides, my wife goes crazy. If they need to make it two decks, make sure it is well lighted.
20	Mike Emerine 2535 Spring Grove Avenue Cincinnati, OH 45214 Mike.emerine@kaobrands.com	None of the proposed Western Hills Viaduct sub-alternatives provide for vehicle access to Spring Grove Avenue. Can this be added to a new sub-alternative? Reason: there is significant truck volume to/from our business and other manufacturing sites along Spring Grove Avenue that now exits I-75 at Hopple Street or US 50 W to Dalton Avenue. Access to Spring Grove Avenue at Western Hills Viaduct would alleviate much of this traffic through adjacent neighborhoods.
21	Laura H. Chapman 2159 Colerain Avenue Cincinnati, OH 4521	Extremely helpful in depicting and explaining the options. I had questions about the assumptions – • Increments in our nation's dependency on oil and automotive transport. • Not much progress on public transport by other means. Staff well-prepared to answer questions. Clear visuals at various levels of detail.

Public Involvement Meeting Comments Received
May 4, 2006 – Gardens of Park Hills, Park Hills, Kentucky

Number	Name /Address	Comment
1	Louis Wartman 1572 St. Anthony Circle Ft Wright, KY 41011 (859) 578-9096	My major concern is the noise that will be generated by this project. I realize that noise studies will be conducted. I would like to volunteer my property for one of these studies. I would like to know about property acquisition and noise abatement.
2	Nancy Hampel 1997 Pieck Dr Ft Wright, KY 41011	What about sound barriers on the KY side, like Ohio has done on I-71? It seems that staying as close as possible to the current configuration for the bridges is the least disruptive to areas of Northern Kentucky. I believe the effort to maintain neighborhoods is very important.
3	Marc R Rulli 4551 Elderberry Court Burlington, KY 41005 (859) 743-0477 MRulli@fuse.net Gold Star Chili, Covington, KY	The options that move the thru traffic off of the existing bridge (option 1, 2, 3), I think would negatively impact the traffic flow around the 5th Street exit. I was told there are 155,000 vehicles moving across the current bridge. I was also told 75% of the 155,000 vehicles are thru-traffic. I can not give an exact count of my guests that are thru-traffic guests, but 90,000 less people accessing 5th Street and 12th Street in Covington would be significantly less vehicles in Downtown/Riverfront Covington. The 5th Street exit is the only food and gas exit when traveling south for a significant amount of miles/time. Please understand the value that the 5th Street exit provides to the local community and the people passing thru. I need to be aware and want to be an active participant in the project.
4	Jeffrey Reser 1203 Highway Ave West Covington, KY 41011	West Covington is upwardly mobile on a socio-economic scale. Much is being re-gentrified and there is a growing interest in the picturesque community with beautiful river views/city views. Bridge alternatives 1 and 2 would adversely affect the quality of life in West Covington by placing a larger, noisier bridge twice as close to the residences. Our family and neighbors are in favor of options 3, 4 and 5 which keep the new bridge about where it currently is now. Please consider the opportunity cost to our community.
5	Dora Vorchern 1103 Ridgeway Court Covington, KY 41011 (513) 379-0779	Options 3, 4 and 5 are the best. They will disrupt least number of citizens. From a sustainability point of view, these options also re-use more of the existing infrastructure.
6	Rebecca Weber 730 Lewis St Covington, KY 41011 (859) 491-5073 rweber@huff.com Lewisburg Neighborhood	The Advisory Committee has a city employee listed as a representative for the Lewisburg Neighborhood Association. While I feel city representation is essential to this project, I feel concerned citizens from Lewisburg should be included on the committee. Also there should be representation from the West Covington Neighborhood. I appreciate the opportunity to see the plans and hope that more public forums will continue.

Public Involvement Meeting Comments Received
May 4, 2006 – Gardens of Park Hills, Park Hills, Kentucky

Number	Name /Address	Comment
7	Dawn Ramsey 837 Perry St Covington, KY 41011 (859) 291-2412 Dawn.ramsey@insight.bb.com	• Please add me to the mailing list. • 2 – Please add large portions of city residents to mailing list, i.e. all of Mainstrasse. • 3 – Recognize that hazardous waste removal, while expensive, may be of benefit to the community. How about having a positive impact (beside just improved traffic flow)? • 4 – Engage neighborhood coalitions – the Center for Great Neighborhoods in Covington has an active community organizing program. Most neighborhoods in Covington have a neighborhood association. They will provide major info on what's happening "on the ground." • 5 – Expand project study area (east/west) – it is very unrealistic at the moment. It doesn't even include all of Philadelphia St in Covington. Philadelphia parallels the interstate and all homes will be impacted by any construction. • 6 – Prefer alternative which includes separate (7 lane?) bridge for 71/75 and leaves existing Brent Spence for local traffic only (Alternative 2). • 7 – Prefer alternative which would improve entrance to Clay Wade Bailey Bridge. Bridge very under utilized currently. Good bridge which should be used more.
8	Bernie Wagner 10955 Arcaro Union, KY 41091 (859) 384-0481	There are 3 checkpoints on I-75: the I-74/75 interchange; the bridge itself; I-275 off of I-75/71 south there is not enough distance for trucks to get out of the far right lane before the I-275 exit comes. Also, the trucks can't get over from I-71, drivers won't allow them. Consequently, the trucks heading south going up the hill in the far left lane – this is slowing all traffic. As to the 5 alternatives: The politicians will most likely support #5 because it looks to be the least costly and disruptive. However, in my opinion Alternative 2 appears to be the best long-term solution. Alternatives 2, 3, 4 don't appear to solve the main problem – but they do get rid of left-hand exits. I go for Alternative 2 – separate I-75 and I-71 traffic.

Public Involvement Meeting Comments Received
May 4, 2006 – Gardens of Park Hills, Park Hills, Kentucky

Number	Name /Address	Comment
9	David Vorherr 1103 Ridgeway Court/421 Western Ave Covington, KY 41011 (513) 385-2411	I prefer options 3 and 5. I do not want to see Crescent Ave. cut up by option 4 if that is the case. The Western Ave. neighborhood has seen a dramatic increase in property value and desirability over the last twenty years. No neighborhoods have been improved by being cut up or seen their proximity to an enlarge highway make them more desirable. Look at what Cincinnati did to protect and preserve Mt. Adams with the highway threatened that hillside and its desirable homes and businesses. I drive I-75 every day to go to and from work and I would rather find an alternative route for several years to allow the Brent Spence Bridge to stay more or less in the same place. It would be bad to loose the Kentucky businesses on either side of the bridge but it would be worse and expensive to loose the homes and people. Once gone they are gone forever! No property taxes, no income taxes and no patrons to the business in Mainstrasse, Covington, etc.
10	Leslie Hendricks 512 Western Ave Covington, KY 41011 Leslie.hendricks@cbre.com	I live at 512 Western Ave and love it. Please don't do Alternative 1 or 2.
11	Jeff Hendricks 512 Western Ave Covington, KY 41011 Jeff.hendricks@fuse.net	1 and 2 take our place. I think I prefer 3, 4 or 5.
12	Steve Morrison 666 W. 3rd Street Covington, KY 41011 (859) 431-4040 Smorrison@docrusk.com	I am concerned about the property that I own and operate my business Rusk Heating and Cooling, Inc. from. Please keep me informed of all plans that would effect me and my business. This includes: 1 - Will I have to relocate with one or all five plans? No one can tell me how I will be affected with either plan. 2 – If I am able to stay will I be able to work during construction. 3 – If I stay will it effect my property value and if so how will I be compensated? 4 – Do I need a lawyer? 5 – Option 3 concerns me if all traffic directed away from downtown, this will effect all property value around me.

Public Involvement Meeting Comments Received
May 4, 2006 – Gardens of Park Hills, Park Hills, Kentucky

Number	Name /Address	Comment
13	Richard B.L. Fowler 13 Observatory Point Drive Wilder, KY 41076 (859) 441-5348 OASIS, Inc.	In my judgment, Alternate 2 seems the most workable in spite of the industrial impact in Cincinnati and the residential impact in Covington. The wetland study is of concern south of 12th Street in Covington. Drainage from the west is worse by experience. Keeping the current bridge with reduced traffic yet maintaining 3 to 4 lanes is a must. This is especially important during the construction phase of the new bridge. Diverting I-75 traffic as a "bypass" looks good. Having I-71 provide local traffic looks workable if the interchanges have enough distance for thinking and planning while driving. How about the light rail corridor and planning for the rapid transit system?
14	Charles D. King Box 852 Covington, KY 41012 (859) 491-3608 Covington Urban Design Review Board	Alternate 3 – least disruptive to Covington and its businesses 12th ramp alternative 2 – most interesting but one probably needed earlier
15	Joe Stratman 3 Highview Dr Ft. Wright, KY 41011 (859)344-1434 Strats10@fuse.net	Are there plans to erect sound barriers as far south as River Drive in Fort Wright. Sound is annoying now and will only get worse with increased traffic. This has been very informative. The representatives were very well versed and were extremely helpful and professional.
16	James Lewis Vaughan Sr. 647 Dalton St Covington, KY 41011 (859) 431-5613 Puff_1964@yahoo.com	Are there going to be noise barriers installed to keep noise and dust down to a minimum? Will home owners be notified before plans are initiated? Will home owners be kept up to date on future meetings?
17	Gayle and Ray Laible 913 Highway Ave Covington, KY 41017 laible@fuse.net	Prefer Alternatives 3, 4 or 5 on Interstate 71/75
18	Kathy Rowland 1509 Kavanaugh Street Covington, KY 41011 581-3036	Worried about noise level behind my home. Already get the noise but will this make it greater. Barriers would be nice.

Public Involvement Meeting Comments Received
May 4, 2006 – Gardens of Park Hills, Park Hills, Kentucky

Number	Name /Address	Comment
19	Edwin E. Bales 906 Highland Ave Ft. Wright, KY 41011 (513) 226-0349	When the present 75/71/Cut in the Hill the water runs off in to houses and it destroys the street or avenue. Water comes into houses.
20	Bob Beatrice 211 Grandview Dr. Ft. Mitchell, KY 41017 331-3232 Gold Star Chili, Covington	As a property owner at 4th and Bakewell in Covington, Kentucky this project will have tremendous impact on my business. Options 1-3 appear to have the greatest impact in this area. It will have impact not only on by business but all businesses in that area. Any option that directs a significant flow of traffic away or prohibits the ease of access to the area will be devastating. All the options require decisions to be made to stop at the 5th Street exit in Covington well in advance to approaching the area. Adequate signage along the interstate to both sides of the river will be important to the business community.
21	Michael A Thornton 9268 Tranquility Drive Florence, KY 41042 253-0974	Logically, Alternative 1 seems the most likely solution, facilitating a quicker north-south transition of I-75 traffic, as well as providing a secondary means of transit over the refurbished Brent Spence/I-71 bridge. P.S. Skip the environmental studies; there's already a bridge there! The catfish(??) won't mind another.
22	Mr. and Mrs. Phillip Landwehr 3061 Winding Trails Dr Edgewood, KY 41017 (859) 331-3498	Thanks for very good, informative and well put on sessions. We appreciate everything you all have and are doing in this project. Comments: No particular preference as to alternates.

Public Involvement Meeting Comments Received
May 4, 2006 – Gardens of Park Hills, Park Hills, Kentucky

Number	Name /Address	Comment
23	Jeff Perholtz 333 Western Ave Covington, KY 41011 jperholtz@insight.bb.com	Strongly oppose to Alternatives 1 and 2 As a small business owner and proud resident of Western Avenue I am deeply concerned about several of the proposed plans. Along with countless other residents of Western, my wife and I have quite a determination to beautify this area and make it an even more wonderful place to live. We are quite proud and protective of our "country-fied" city paradise. The quality of new housing and relentless rehabilitation efforts up and down our street clearly reflect a universal determination to better out community. It would be an indescribable insult to squander the progress we have made and supporting a majority of these plans would an uncharacteristically "corporate/big business" move for a historically docile community like Covington. I am mainly concerned with the following: - The possible destruction of our home and the thought of relocating elsewhere. - Noise. The thought of waking up every five minutes to the sound horns and jake-brakes. The drone of traffic on the Brent Spence is for the most part tolerable, but I could not imagine it any closer. - The loss of our wonderful view of downtown. - The repercussions of a closer freeway will have on our property value - The loss of privacy With all of that being said, we are realists and understand that something must be done. However, we will do everything in our power to protect our community from being destroyed. I can only hope that this great city will stand shoulder to shoulder with its citizens, most of who would conservatively like to see the least amount of change. Is it not thrue that our way of life is more important than the destruction of a Cinergy power plant on the other side of the river? I'm sure the threatened citizens of Cincinnati would agree. We would like to take an active roll in fighting for an appropriate alternative. Please let us know what we can do to participate.
24	Nancy L. and Jerry J. Spivey 1576 St. Anthony Drive Fort Wright, KY 41011 nlspivey@netzero.net	The presentation was very well illustrated. A major concern is the use of taxpayer money to prepare the different alternatives, hold the meeting, etc., since this project is slated for 2015 and many different courses of action can come up in the meantime, like lack of funding.
25	George Schuhmacher 307 W 21 Street Covington, KY 41014-1113	Overall a good presentation. Many informed people who could answer question and were on-site available. Think Plan 1 is best. Traffic needs an additional way out and in, especially traffic going through. Need separate way for I-71/I-75. #1 would avoid all local congestions and hopefully relieve present "jam-ups." New Queensgate way would have to be well marked.

Public Involvement Meeting Comments Received
May 4, 2006 – Gardens of Park Hills, Park Hills, Kentucky

Number	Name /Address	Comment
26	Ruth Crider 6209 Kingsgate Drive Burlington, KY 41005	I just read 'Bridge plans bring worries.' What a negative headline! Why not consider a bridge (one of the three proposed) at the end of Route 237 in Hebron, KY. Boone County is growing not only business-wise but also residential. Boone County owns land on Route 8 which Route 237 flows into. I traveled from Burlington to Cincinnati for years since I worked downtown. I always wondered why a bridge was not constructed near the Greater Cincinnati/Northern Kentucky airport to accommodate Ohioans who travel I-71/I-75 to Routes 237 to the airport and also Northern Kentuckians who travel/work in Ohio. I believe if the airport was contacted, they would realize the convenience for not only travelers but, also, their employees. Help get the traffic load off the dangerous I-75 hill. Maybe the Cincinnati Enquirer's headline would read: 'Airport and Boone Co. citizens thrilled with bridge plans!"
27	Mike Delmonaco 1132 Cedar Ridge Lane #3 Park Hills, KY 41011	I don't like looping junction, space utilization causes a need for them, expand width from standard 12 feet to 16 feet lanes. Divert truck traffic southbound onto I-275, Ronald Reagan and Norwood Lateral (through). Option, for US 50 westbound, too much infrastructure centralized.

Website Comment/Feedback Forms
Concurrence Point #1

Date Received	Name	Affiliation	Comments	Responses
March 22	John Compton Johncompton88@msn.com	General Public	Speaking as a member of the general public that DOES NOT live in the Cincinnati area, but drives thru several times a month.....may I suggest that the new bridge be located to the west of the new one, this way the curves could be straitened out (downtown Cincinnati). Also I would like to suggest the 71/75 split should be in Kentucky with 71 still on the Brent Spence bridge. I also believe the new bridge should be a very majestic structure; with enough versatility to be able easily be expandable to handle future traffic needs.	NA
March 23	Mary Sutton msutton@clearchannel.com 513-470-6809 513-241-0358 (f)	General Public	The purpose of contact info is to be on the list to stay informed.	NA

Website Comment/Feedback Forms
Concurrence Point #1

Date Received	Name	Affiliation	Comments	Responses
March 24	Jeff Perholtz jperholtz@insightbb.com 859-431-3069	General Public	As a small business owner and proud resident of Western Avenue I am deeply concerned about several of the proposed plans. Along with countless other residents of Western, my wife and I have quite a determination to beautify this area and make it an even more wonderful place to live. We are quite proud and protective of our "country-fied" city paradise. The quality of new housing and relentless rehabilitation efforts up and down our street clearly reflect a universal determination to better out community. It would be an indescribable insult to squander the progress we have made and supporting a majority of these plans would an uncharacteristically "corporate/big business" move for a historically docile community like Covington. I am mainly concerned with the following: - The possible destruction of our home and the thought of relocating elsewhere. - Noise. The thought of waking up every five minutes to the sound horns and jake-brakes. The drone of traffic on the Brent Spence is for the most part tolerable, but I could not imagine it any closer. - The loss of our wonderful view of downtown. - The repercussions of a closer freeway will have on our property value - The loss of privacy With all of that being said, we are realists and understand that something must be done. However, we will do everything in our power to protect our community from being destroyed. I can only hope that this great city will stand shoulder to shoulder with its citizens, most of who would conservatively like to see the least amount of change. Is it not thrue that our way of life is more important than the destruction of a Cinergy power plant on the other side of the river? I'm sure the threatened citizens of Cincinnati would agree. We would like to take an active roll in fighting for an appropriate alternative. Please let us know what we can do to participate.	NA

Website Comment/Feedback Forms
Concurrence Point #1

Date Received	Name	Affiliation	Comments	Responses
March 24	Ryan Vose voserw@gmail.com	General Public	I just read the article today regarding the possible ideas for the bridge. The article quoted Jim Olman complaining about a new bridge possibly hurting Queensgate businesses. I hope that your committee looks past these small business interests and design the most efficient bridge regardless of what businesses you might have to tear down. This bridge is a vital link in I-75 and takes precedence of local business. I understand the individual business's concern, but for the greater good of the Cincinnati area the bridge must be top priority.	NA
March 24	Ryan Ziemba rziemba@cinci.rr.com 513-289-5093	General Public	I'm disappointed and curious why you abandoned project #3. It had the most promise for many reasons. One reason is to demolish the old bridge. If you keep the existing structure and add yet another bridge then all we do is clutter up the river! The other thing this project does is open up the river bank for even more development! Do we want people to come downtown or not? Let's give people a reason to. I sure as well don't care if I come downtown, unless it's for a baseball game maybe three times a year.	Thanks for the clarification and we have noted your comment. One of the reasons that the Queensgate alignments were carried forward is to separate local, I-71, and I-75 traffic to provide capacity and safety across the bridge. The disadvantage of the Queensgate alignments is that they take additional land for right of way that is currently planned for redevelopment, irrespective of whether the exisiting bridge is retained or not. Thanks for contacting us. Please check the website periodically for updates. Public meetings will be held in late April.
March 24	Nick Azbell boiiinng@hotmail.com	General Public	I would hope that when this is all said and done that signs are posted ordering all trucks to stay to the right/left or whatever becomes necessary when going up the cut in the hill. That's the main problem right now, trucks are not warned ahead of time that they need to move over, and when the steepness of the hill forces them to slow down, it causes widespread backup.	Yes, that problem has been noted. Enforcement of the existing signs and new ones is needed. Also, additional truck climbing lanes are proposed for consideration.

Website Comment/Feedback Forms
Concurrence Point #1

Date Received	Name	Affiliation	Comments	Responses
March 24	Mitchell Landwehr m.landwehr@insightbb.com 859-586-5170	General Public	I think this project is going to be one of the most important and influential undertakings that the Northern Kentucky community will receive in decades. The current traffic situation during rush hour in the morning and evening hours has a demoralizing effect on the Northern Kentucky workforce commuting to and from Cincinnati. The amount of time and stress level during this time reduces workforce productivity. Fatigue from having to leave home/work earlier causes more wrecks and increases speeding. The current traffic system between the Buttermilk Pike exit extending over the I-75 bridge has been improved over the years, but the main bottleneck is the bridge and the lanes leading into and out of the bridge. Many lanes are converging into the bridge entrance lanes from Covington. Once onto the bridge, more crossing traffic patterns converge from the Covington entrance ramps. If you are in the left hand lane northbound on the bridge, you must cross these converging traffic patterns to get to the I-71 exit ramp. This is very dangerous and slows the already bottlenecked flow even more adding to the problem backing up all the way up the cut-in-the-hill. This does not include what happens when there are wrecks or flashing police lights for minor fender benders. Please put up signs that say "Minor fender benders must, by penalty of law, pull of the road into emergency lanes." My next and final point is the need for special hazard lanes for police to use during traffic stops and the wrecks. There must be a way to include these on the bridge itself and the I-75 cut-in-the-hill. When people see flashing police lights they slow down and change lanes, as the law requires. Please add hazard lanes or zones to the bridge to provide uninterrupted emergency resolution while allowing continuous traffic flow. If this is not considered, all of your hard work will be a waste because small traffic stops like these foil the traffic flow model with the human rubber neck element.	NA

Website Comment/Feedback Forms
Concurrence Point #1

Date Received	Name	Affiliation	Comments	Responses
March 24	Jeffrey Reser Jeffrey_reser@earthlink.net 859-491-4555	General Public	My young family of four lives in West Covington along river where we enjoy a spectacular view of the River and Cincinnati. Any plans to build a new bridge much northwestward of the current bridge would only disrupt the upward evolution of our neighborhood in its current socio-economic trajectory. West Covington holds great promise and is becoming an attractive bedroom community centrally located, green and just far enough away from the bridge to be picturesque. The bridge noise is not overwhelming at present. Move the bridge and all that could change -- putting the neighborhood back into a downward spiral from which it may never recover. Additionally, the quality of Devou Park would be somewhat compromised. We are in favor of a larger (and BTW, more beautiful) bridge to be constructed right next to and in the space of the current bridge. Thank you for considering the opportunity cost to the emerging upscale West Covington community.	Thanks for your comment. Public meetings will be held in April. Please plan to come and make your opinion known. We will incorporate your comments into the public comments.
March 24	John Schlagetter jschlagetter@yahoo.com	General Public	Alternate 1 appears to reclaim the most high value Downtown and West End real estate. Would be helpful to see farther north where the new alignment ties in to the existing roadway. I assume the Freeman Avenue exit goes away? It appears a Route 50 West exit is feasible. How does each Alternate align/coordinate with thinking on the Sixth Street Viaduct re-do?	NA
March 24	Mike King mking@altaquip.com 513-674-6411 513-674-6469 (f) Colerain Township	General Public	Everyone involved has done a great job in looking at alternatives and presenting them to the general public. This is a tough challenge. However, I was curious if anyone has ever looked at a tunnel as an alternative to a bridge. This idea crossed my mind as I was passing through a tunnel in Baltimore a few months ago. I know tunnels are very expensive, but it could mean less disruption to the bridge during the construction process. I was just wondering because I had not seen it addressed in any of the alternatives.	NA

Website Comment/Feedback Forms
Concurrence Point #1

Date Received	Name	Affiliation	Comments	Responses
March 24	Tim Coffey tcoffey@wondergroup.com 513-357-2950 513-621-1162	Industry	I hope that we will not adopt a patchwork approach. This bridge will define the aesthetic of the city and the region for decades. We can do something bold and exciting or add to the industrial sprawl that is typical of a rustbelt city. Either approach will make a statement about who we are as a region.	NA
March 24	Scott Macmann scmacmann@mac.com 513-702-2341	General Public	My thoughts: 1. Queensgate Alternatives. As attractive as it might seem, putting a couple of miles of interstate highway right through an urban industrial and commercial area will cost several fortunes and cause huge disruptions of business. This seems very very wasteful and destructive. 2. I think alternative 5 is the best of the choices. But I would put I-75 entirely on the west side and I-71 entirely on the east side (side byside) which would maximize keeping the traffic separated. 3. The Brent Spence is not only ugly, but being 40 years old... is it really going to be safe? Our engineering today is so much more advanced than it was 40 yrs ago. We should tear it down.	NA
March 24	Greg Riley gjr@ssastructural.com	Industry	As a structural engineer, I would like to see a cable-stayed bridge. It would be a nice contrast to the existing truss-bridges and compliment the Roebling very well.	NA
March 25	Lawrence Turner lwtur@aol.com 513-251-5179	General Public	I prefer choice #2. It separates the fast through traffic from local traffic, saves the Brent Spence Bridge for local traffic and only requires building one bridge.	NA

Website Comment/Feedback Forms
Concurrence Point #1

Date Received	Name	Affiliation	Comments	Responses
March 25	Paul Spencer spencepd@gmail.com Mt. Lookout	General Public	I think the only way to improve the terrible congestion through downtown I-75 is to use Alternate 1 or 2. Building a straight stretch of highway along with a new bridge designed for a high volume of traffic seems to be the right way to get this project completed. The other solutions only patch up the problem and we will always have continued accidents and congestion in the downtown area. That would be a shame since we all have to live with this decision for many years to come. I like Alternate 2 because it gets all of our traffic out of our city. But only if we can somehow regain the land of the current I-75 system. Simplifying that stretch of road (removing lanes, exit ramps, etc) broadens our land within Cincinnati for development. It could also connect a large plot of land to the west of the current I-75 with the downtown of Cincinnati. If this is not possible, then lets save the west side land and not build those 71/75 entry ramps, and just use Alternate 1. Thanks for listening.	NA

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Concurrence Point #1

Date Received	Name	Affiliation	Comments	Responses
March 26	John Stein Jstein2@fuse.net 859-635-7960 Alexandria City Councilman	Government	Please view this site in Charleston SC http://ravenelbridge.net The Ravenel Bridge replaced 2 large bridges that crossed two large rivers. I hope your dept. can come up with nice design, unlike the Taylor Southgate erector set bridge.	Thanks for your comments. They will be included in the record. We will be having public meetings in late April and I hope you will attend to register your comments as well. We will not be choosing the bridge type or final location for about 18 months. I appreciate your comments about the aesthetics of the bridge and approaches. There is an Aesthetics Committee led by Michael Moore, the City Architect for the City of Cincinnati. A number of local officials and experienced design professionals are involved. The Ravenal Bridge was designed by Parsons Brinckerhoff, for whom I work. It was a design build project with Skanska as the contractor. We are very proud of the bridge and I appreciate your accolades about it. The design manager on that bridge was Dan Carrier, who worked for me on Ft. Washington Way as well. Dan is the design manager on the Brent Spence Bridge project. My project team includes Miguel Rosales as the bridge architect. He is internationally known. Miguel worked with PB on the Woodrow Wilson Bridge in DC and the Zakim Bridge in Boston. I hope you'll visit the respective web sites to get an appreciation for the highly skilled and talented team working on this project. They will be May 2(OH) and May 4(Ky) at a location to be chosen. We will make sure you are notified.

Website Comment/Feedback Forms
Concurrence Point #1

Date Received	Name	Affiliation	Comments	Responses
March 27	Jim Hungler Jimmy9@fuse.net 513-315-4644	General Public	I would encourage NO TRUCK TRAFFIC, except local routes, inside of the 275 beltway on southbound 75. Instead, I would suggest, detouring via westbound 275 and have Kentucky build a bypass thru the western countryside that will connect back with 75 in the area south of Richwood/Mt. Zion.	NA

Website Comment/Feedback Forms
Concurrence Point #1

Date Received	Name	Affiliation	Comments	Responses
March 29	Paul Martin Paul.martin@earthlink.net 937-207-8435	General Public	I drive I-75 to Cincinnati from the Dayton area daily, and regularly see the type of traffic on the Brent Spence bridge and the entire I-75 corridor through Cincinnati, and experience the congestion the traffic brings. The congestion is a huge waste of time and gasoline, and alternatives need to be implemented much sooner than the 2015-2020 time frame. It seems to me that about 15% of the traffic consists of semi trucks, most of which appear to be through traffic. If the bridge (and I-75 through town in general) is currently carrying twice the design traffic load, why is the bypass (I-275) not required for through trucks, especially at rush hours (6-9 am and 3-6 pm)? Requiring trucks with no commercial purpose inside of the I-275 loop to use the bypass, if only during high volume periods, would significantly reduce the traffic flow on the bridge and other traffic bottlenecks (i.e., the Reagan merge / Lockland split issue). Traffic on the bridge and the I-75 corridor is always heavy, but the only real congestion issues occur in the rush hour periods. Another alternative for the bridge issue could be to route I-71 concurrently with I-471 / I-275, eliminating the I-71 traffic across the Brent Spence bridge. Has this been considered?	Some of the trucks have origins or destinations within the 275 corridor, so these must use the system as is. Enforcing a truck diversion has been tried here and elsewhere and found difficult to implement. It is against FHWA policy to forcibly divert trucks, who pay considerable road use and fuel taxes, from using any part of the roadway system, except for hazardous cargo routes. Diverting trucks into other communities also runs into opposition. Diverting trucks also adds 1 hour to their trip time through the region, increasing the number of miles they must travel, and increases the number of lane miles affected by the heavy trucks' wear and tear. Since drivers' shifts are limited to 8-10 hrs, the reduces by 60 miles or more, the distance that a driver can drive in a shift. This shifts an economic burden on the truck industry which they have resisted. However, truck bans occurred during construction projects such as Fort Washington Way. Enforcement is critical to catch and prosecute "blockade running". 3500 tickets were written during that 3 year project and caught only a fraction of the truck diversion violators. About 30% of the trucks ran through the diversion. Resheilding the I-71/I-471 routes has been discussed. Cars would use 275 to connect to I-471 to I-71 over the Daniel Carter Beard Bridge (Big Mac) instead of using Fort Washington Way. This shifts the wear and tear to the very robust Brent Spence Bridge to a lower capacity bridge. I-471 has capacity problems as well which this concept worsens. It works for cars but just moves the truck problem as I-471 is steeper than 75 and has a lower capacity interchange at 275 in Kentucky.

Website Comment/Feedback Forms
Concurrence Point #1

Date Received	Name	Affiliation	Comments	Responses
March 29	Alan Burke The CAPlan Group, Inc. alanburke@caplan-group.com 859-991-4049	Others	Have you considered a 71/75 option to tunnel under the Ohio River to provide the following... A) More usable land mass on each side of the river, B) Less 'pinch points' and exchanges/intersections on each side of the river, C) A tunnel would provide a much needed 'attraction' for the Greater Cincinnati Area, D) Possible cost reduction, E) Improved river traffic flow, F) Improved environmental/aesthetics. We would be willing to complete this study.	Yes, a tunnel was considered and evaluated for cost concerns. The interchange at the north end of the bridge is too large and complex for a tunnel and connections to Fort Washington Way and Covington would have to be eliminated. Grades and connections were evaluated from south of Kyles Lane to Ezzard Charles and found to be too steep to connect. The tunnel needs 20-30 feet of cover under the river to avoid shipping damage. Even at the maximum grade, the tunnel would be more than 1.5 miles long and cost more than $1Billion. It was considered in detail and not recommended for further study.

Website Comment/Feedback Forms
Concurrence Point #1

Date Received	Name	Affiliation	Comments	Responses
April 5	Matthew D. Birck birckmd@muohio.edu	Academia	After reading the proposed alternatives for the Brent Spence Bridge project, I was curious to know why a tunnel was not included among the alternatives. Understandably a tunnel would be more costly, but certainly that should not be a deciding factor in the preliminary stage of a feasibility study for its omission from consideration. I'm also assuming that it is not geologically infeasible, considering that the Water Works has an 8-ft diameter pipe running directly beneath the Ohio River. I'd appreciate if someone could send me a reasonable explanation for the exclusion of a traffic tunnel as one of the functional alternatives for this critical project. Thank you.	A tunnel was considered and a conceptual alternative developed. The tunnel portal began well south of Kyles Lane and daylighted at Ezzard Charles Drive for the mainline of I-75. The tunnel needs to be 4 lanes in each direction plus shoulders for emergencies given the current and future needs of I-75, assuming the tunnel does not carry I-71 as well (see below). This makes each tunnel, if circular in cross section, nearly 80 feet outside diameter. It needs at least 20 feet of cover under the River so the invert of the tunnel is nearly 100 feet lower than the bottom of the Ohio River. Chasing the grades at a maximum of 6% set the tunnel portal locations and the tunnel length. The tunnel could not carry both I-71 and I-75 due to the interchange at US50, I-71, and I-75 southeast of downtown Cincinnati. The interchange with Fort Washington way cannot be underground due to breadth and grade separation required for local access etc. Because of these complications and the Purpose and Need requirements (laneage, local and through access, cost) the tunnel was not carried forward. Is this sufficient detail?

Website Comment/Feedback Forms
Concurrence Point #1

Date Received	Name	Affiliation	Comments	Responses
May 2	Jim Pan 824 Crescent Av Covington, KY 41011 PJ11022002@yahoo.com 859-291-2841	General Public	I would not be able to make it to Thursday's public hearing due to a business trip. Here are my initial thoughts on the alternatives: Alternative 1 and 2 have 1) Major negative impact on the surrounding areas in Covington. There has been a condo booming in the area along the hill (Western, Crescent, Pike). The new queen city bridge would ruin all the development. It would be costly as acquiring these properties would not be cheap. 2) Eliminating the exit of I-75 on 5th in Covington would have a big negative impact in the economic development of Covington river front. 3) The bridge really needs to be well designed to be a signature of the region and a symbol and image for the progressive region for the further The old, ugly Brent Spence bridge would make it really hard. Alternative 4 and 5 are better in those regards. But it still has some negative impact on the neighborhood on the west side of the highway in Covington as the highway will be much closer to those houses (I am one of the owners). Structured buffers and landscaping are necessary to reduce these negative impacts.	The impacts to Western and Crescent Avenues in Covington are being documented and others brought these up. The right of way costs in Kentucky and Queensgate will be quantified to help with decision making. The 4th and 5th street ramps will be replaced with alternative access points for Covington intended to improve access. Current ramps are very short tight radii which have resulted in a number of crashes. The urban design of the roadway near your property and the aesthetic designs of the bridge are noted concerns. These will be considered in the next phase of work.
May 2	Mike Frazier mfrazier@cinci.rr.com 513-351-6636	General Public	I own seven houses on Wright St and Western Ave in Covington and like to know how this will affect my property. Who and what contact information can you give? Hi Fred Craig. Thank you for your prompt response!!!!! The property I own since the early 80s are as follows: 205 Western Ave., 207 Western Ave., 209 Western Ave., 211 Western Ave. I also own 210 and 212 Wright St. and 214 Wright St. all Covington KY 41011.How will this effect the value of said property. May I have your direct telephone number, again?	Can you give me street addresses? Two of the alternatives go through part of Western Ave at the north end. These alternatives will be evaluated further over the next two years before a final decision is made. Community impacts are a concern and your property interests and comments will be noted. Thanks for contacting us. Also, there is a community group forming on your street to consolidate neighborhood comments. I will find the name of the individual and put you in touch with them.

Website Comment/Feedback Forms
Concurrence Point #1

Date Received	Name	Affiliation	Comments	Responses
May5	John and Jennifer Stein Jstein2@fuse.net 859-635-7960	General Public	Please consider the serious impacts to the hillside neighborhoods and the approach to Devou Park. A lot of people depend on that route to their home and the park. There are also hillside issues, excavation, damage to hillside homes, due to possible use of explosives and auguring to loosen the earthworks. Why not build it up against the east side of the existing bridge? The cut over would seem much easier to manage from the east. There are no homes in that area. Noise would be tremendous if it were built to the west. It also keeps you away from the West End Electric substation network grid. Also please build us a bridge that is pleasing to the eye, not an erector set. Consider Charleston S.C. Ravenel Bridge design or the Maysville, KY bridge. Thank You	We will consider noise, geotechnical and construction impacts during the next phase of the work and will make that information available on the web site. The bridges on the east side of the existing bridge would have substandard geometry or require reconstruction of part of Fort Washington Way. Bridges on the west of the existing have community impacts and would have to miss or move the substation. There is an Aesthetics Committee that will provide input on the bridge design. PB designed the Ravenal Bridge and the Owensboro bridge which is like the Maysville bridge. The bridge type and design will be considered in the next phase.
May 5	Linda Jones lkj@djj.com 859-331-8971 513-419-6235 (f)	General Public	You can't possibly consider closing the interstate bridge to replace it! There is too much traffic everyday that would clog other arteries to and from the two states. Build another bridge and open it and then rehab the current bridge. I know that takes time and money, but not only does it help the current travelers, but it's a better long range plane.	NA
May 5	Rex Goon Rw41042@fuse.net	General Public	Cincinnati voted down mass transit but it is obvious that we will someday need to build some form of mass transit train system across the Ohio river. Why not look ahead to the future and include that into the new bridge. Someday we will finally come to the realization that we need mass transit it will cost a fortune later to add a bridge for that purpose.	NA
May 5	William Holiday Wp_doc_holiday@fuse.net 859-468-2871 859-341-4924 (f)	General Public	How long can you keep building new bridges and winding roads? Let us get real and build a light rail system or a subway system and get these cars off the road.	NA

Website Comment/Feedback Forms
Concurrence Point #1

Date Received	Name	Affiliation	Comments	Responses
May 5	Dennis Andrew Gordon, Exec Dir dgordon@nkapc.org 859-331-8980 859-331-8987 (f)	Government	Your list of Advisory Committee Members includes Keith Logsdon of my staff. I would appreciate it if you would identify him as a representative of: N KY Area Planning Commission; or, simply NKAPC. Listing him as a representative of "Northern Kentucky" is pretty vague and indescriptive of our agency. Thank you for your attention to this matter.	I am sorry he was misidentified. We will make the correction. Thanks for his and your assistance on this project.
May 9	Mary Christina Stadtlander tin.stadtlander@nlrb.gov 859-261-8016	General Public	I attended the May 4 presentation in Park Hills and would like to express my comments as follows: I am not in favor of any bridge proposal that would involve the disruption of my current living conditions, especially Proposals 1 and 2. I do not want a bridge or expressway any closer than it already is. We have lived here at 606 Western Avenue since 1980. I love the location and love my home. We have put our blood, sweat and tears into making it a wonderful place that we enjoy coming home to. I do not want to be displaced by "Eminent Domain," which, in my opinion, should never have been passed by the Supreme Court! I am fearful of this.	NA

Appendix D

Evaluation Criteria and Comparison Matrix

1.0 MATRIX EVALUATION CRITERIA

The matrix included seven primary areas of consideration with detailed components:

- Congestion Mitigation
- Safety
  Geometric Improvement
  Separation of Regional and Local Traffic
  Simplification of Roadway Network
- Engineering
  Meets Current Design Standards
  Sustainability/Flexibility
- Environmental Resource Impacts
  Hazardous Materials
  Ecological
  Historical
  Archaeological
  Community
  Environmental Justice
- Access/Accessibility
  Interstate/US Routes
  Local Roads
  Overall
- Construction Cost
- Constructability

The evaluation process used ratings of “Good”, “Average” and “Poor”. These ratings were defined for each component. Ratings were applied to each category using professional experience and judgment, the alternatives study process, and information provided by various agencies (ODOT, KYTC, et al.). The following sections explain the rating definitions of "Good”, “Average” and “Poor” for each component.

1.1 Congestion Mitigation

Congestion mitigation was evaluated as “the improvement of the flow of traffic”. Although the future level of service (LOS) for many of these roadway segments remains low (LOS E or LOS F), the degree to which the traffic can move within that LOS was considered. The basis for the criteria “Good” “Average” and “Poor” is explained as follows, with regard for the future condition and proposed alignment design:

- Good: Provides elements and conditions for improving the current flow of traffic.
- Average: Provides elements and conditions for maintaining the current flow of traffic.
- Poor: Provides elements and conditions that worsen the current flow of traffic.

It should be noted that for the evaluation of congestion mitigation for each Conceptual Alternative segment, current and future traffic numbers or modeling was not available. The “flow of traffic” evaluation was based on information provided in the *Brent Spence Bridge Replacement/Rehabilitation Project: Existing and Future Conditions Report*. It

should also be noted that at this phase in the evaluation process, consideration is given for horizontal elements only. Applying vertical information can change how an alternative is regarded.

1.2 Safety

Detailed components of the safety category include: geometric improvements, separation of regional and local traffic, and simplification of roadway network.

1.2.1 Geometric Improvement

Geometric improvements were evaluated as the "layout of alignment elements to promote safe navigation" for the future condition. Although only horizontal elements were evaluated, consideration was given for situations where vertical challenges were present (i.e. steep slopes which would require an overpass structure to tie into an underpass roadway over a short distance). The basis for the criteria "Good," "Average," and "Poor" is explained below:

- Good: Improvement on the existing condition; proposed alignment meets current design practices; and connections and transitions to existing are geometrically appropriate.
- Average: Comparable to the existing condition; Proposed alignment meets most current design practices; and connections and transitions to existing may require undesirable geometric elements. (For the WHV alternatives, the existing left-hand exit is considered a "Poor" geometric condition, and proposed alternatives that maintain this were ranked as "Poor" in the matrix.)
- Poor: Less desirable than the existing condition; proposed alignment may or may not meet current design practices; connections and transitions to existing require design exceptions.

1.2.2 Separation of Regional and Local Traffic

Separation of regional and local traffic was evaluated as "improving traffic movements by separating through travelers from local trips" for the future condition. Traffic can be eased by removing those using the I-75 corridor in the region, such as trucks and long-distance travelers, from those traveling into Cincinnati and Covington on a daily basis for work and commerce. The basis for the criteria "Good," "Average," and "Poor" is explained as follow:

- Good: Complete separation of I-75 with I-71 and local roadways; proposed I-75 only connects with major highways through interchanges and collector-distributor (CD) roads; I-71 and local roadways make all local connections
- Average: Partial separation of I-75 with I-71 and local roadways (parallel alignments); proposed I-75 connects with major highways and local roadways through interchanges, CD roads and some direct access ramps; I-71 and local roadways provide majority of connections to I-75.
- Poor: No separation of I-75 from I-71 and local roadways (shared alignments); Proposed I-75 connects directly with major highways and local roadways through interchanges, possible CD roads, and direct access ramps to all existing connections; I-71 and local roadways are the same connections as I-75.

1.2.3 Simplification of Roadway Network

Simplification of roadway network was evaluated as "ease of use to the traveler through clear ingress and egress with adequate decision time and distance" for the future condition. Safety can be attained by giving the driver ample time and clear direction as to what movement to make, as well as minimizing the number and complexity of weaving and entrance/exit movements over short distances. The basis for the criteria "Good," "Average," and "Poor" is explained below:

- Good: Mainline highway is clearly defined and identifiable separate from other roadways; entrances/exits are adequately spaced, with access limited to other major roadways and CD roads; local access separate from main through network with simple, clear access to and from highways (WHV alternatives only: simple design, improves existing layout for ease of use).
- Average: Mainline highway operates primarily separate from other roadways; entrances/exits meet or improve existing conditions, with access to/from other major roadways, CD roads and some local road access; local access integrated where necessary with main through network (WHV alternatives: adequate design, uses some existing features while improving others).
- Poor: Mainline highway integrated with other roadways and highways; entrances/exits meet or worsen existing conditions, with access ramps to/from all types of roadways, local or through; local access integrated with main network, complicating navigation of the system (WHV alternatives: complex design, worsens existing layout to inhibit ease of use).

1.3 Engineering Design

Detailed components of the safety category include: meets current design standards and sustainability/flexibility.

1.3.1 Meets Current Design Standards

Meeting current design standards was evaluated as "meeting ideal or minimum design standards set forth by the American Association of State Highway and Transportation Officials (AASHTO), ODOT and KYTC" for the future condition. It should be noted that at this step in the process, only horizontal elements are considered for evaluation. The basis for the criteria "Good" "Average" and "Poor" is explained below:

- Good: Improves existing conditions to meet ideal or, in some cases, minimum design criteria anticipated at this step.
- Average: Improves or matches existing conditions to meet many ideal or minimum design criteria anticipated at this step.
- Poor: Matches or worsens existing conditions to meet few ideal or minimum design criteria anticipated at this step.

1.3.2 Sustainability/Flexibility

Sustainability and flexibility was evaluated as "the capacity of the design to be further expanded, improved or connected to in the long-term future" for the proposed condition. The basis for the criteria "Good" "Average" and "Poor" are explained below:

- Good: Readily expandable system, can be adapted to a variety of long-term future improvements.

- Average: System capable of being expanded to fit some long-term future improvements.
- Poor: System incapable of being expanded or improved upon in the future.

1.4 Environmental Resource Impacts

Impacts to hazardous materials, ecological resources, historical resources, archaeological sites, community resources, and environmental justice populations were determined for each Conceptual Alternative. The impacts from these categories were quantitatively measured for each alternative. The quantitative values used as the basis for the criteria for "Good," "Average," and "Poor" were defined by the number of occurrences counted from Red Flag mapping locating each item in Table 1.

- Hazardous Materials include underground storage tanks and hazardous materials sites as listed in resource agency data bases.
- Ecological includes wetlands, streams and rivers and floodplains.
- Historical includes National Register of Historic Places (NRHP) listed resources and historic districts, both in Kentucky and Ohio.
- Archaeological includes recorded sites in the study area.
- Community includes community facilities and services such as schools, parks, facilities and churches; business and residential displacements and community cohesion.
- Environmental Justice includes low-income and minority populations, and are evaluated based on US Census tracts and Census data.

Table 1. Environmental Resource Rating Criteria

Rating	Section.	Hazardous Materials	Ecological	Historical	Archaeological	Community	Environmental Justice
Good	1	0	0 to 4 Streams	0	0	0 Parks and/or 0 to 10 Displace-ments	Follows Exist. Minimum Disruption of Community
	2		0 Floodplains Streams Wetlands				
	3						
	4						
Average	1	1 to 5	5 to 9 Streams	1	1	1 Park and/or 11 to 15 Displace-ments	Primarily Follows Exist. Some Disruption of Community
	2		1 to 2 Floodplains Streams Wetlands				
	3						
	4						
Poor	1	6+	10+ Streams	2+	2+	2+ Parks and/or 15+ Displace-ments	New Alignment. Considerable Disruption of Community
	2		3+ Floodplains Streams Wetlands				
	3						
	4						

1.5 Access and Accessibility

Detailed components of the access and accessibility category include: Interstate/US routes, local roads, and overall.

For the portion of the matrix addressing the independent evaluation of the Western Hills Viaduct alternatives (WHV-1 through WHV-9), consideration was given--in addition to the criteria below--to honoring the current studies being completed for the area, and the conclusions and recommendations offered by the parties involved in the development of those documents.

1.5.1 Interstate/US Routes

Interstate/US Routes was evaluated as "ease and clarity of access to the traveler to and from interstate and US routes from other interstate US routes" for the future condition. The basis for the criteria "Good" "Average" and "Poor" is explained below:

- Good: Improves existing condition to simplify the interstate network access; addition of new points of access to/from interstate and US routes; and provides clear and simple navigation to, from and between the interstate and US routes.
- Average: Meets existing conditions with elements that match the interstate network access; and navigation to, from and between the interstate and US routes is maintained as currently exists.
- Poor: Worsens existing conditions by complicating the interstate network access; removal of existing points of access to/from interstate and US routes; and traveling to, from and between interstate and US routes is difficult to discern or navigate.

1.5.2 Local Roads

Local Roads were evaluated as "ease and clarity of access to the traveler to and from interstate and US routes from the local roadway network" for the future condition. The basis for the criteria "Good" "Average" and "Poor" is explained below:

- Good: Improved the exiting condition to simplify local access to and from the interstate; provides clear and simple navigation to and from local roadways; and WHV alternatives: additional movements to connect the area.
- Average: Meets existing conditions with elements that match or simplify the local roadway network access; navigation to and from the local roadways is maintained as-is; and WHV alternatives: same movements as existing to connect the area.
- Poor: Worsens existing conditions by complication the local roadway network access; traveling to and from local roadways is difficult to navigate; and WHV alternatives: fewer movements than existing to connect the area.

1.5.3 Overall

Overall conditions for access and accessibility were evaluated as "ease and clarity of access to the traveler for the system as a whole" for the future condition. The basis for the criteria "Good" "Average" and "Poor" is explained below:

- Good: Improved network between all configurations of interstate, US routes and local roadways; and navigation to, from and between all networks is clear and simple.
- Average: Meets existing conditions for configurations of interstate, US routes and local roadways; and navigation to, from and between all networks is maintained as-is.
- Poor: Worsens existing conditions by complication of the overall network access; and traveling to, from and between is difficult to navigate.

1.6 Construction Cost

Construction cost was evaluated as "expense for construction based on anticipated items such as proposed structure, possible right of way acquisition and use/reuse of existing roadway and bridge elements" for the future condition. The basis for the criteria "Good" "Average" and "Poor" is explained below:

Table 2. Structure Lengths Found within Four Segments of Project Area

Segment/ Rating	Kyles Lane to KY 5th Street	KY 5th Street to OH 7th/Elm Street	Elm Street to North of Ezzard Charles Drive	Ezzard Charles Drive to Western Hills Viaduct
Good	Up to 3,000 feet of Structure	Up to 7,000 feet of Structure	Up to 4,000 feet of Structure	Up to 1,000 feet of Structure
Average	3,000 to 10,000 feet of Structure	7,000 to 11,000 feet of Structure	4,000 to 10,000 feet of Structure	1,000 to 8,000 feet of Structure
Poor	More than 10,000 feet of Structure	More than 11,000 feet of Structure	More than 10,000 ft of Structure	More than 8,000 feet of Structure

For the remaining considerations, the following criteria were used with engineering judgment, construction experience and knowledge of the area:

- Good: Simple alignment configuration; follows, and is within, existing corridor; and expected low maintenance of traffic costs.
- Average: Reasonable alignment configuration; is within or near existing corridor, but may require widening or grading; and expected moderate maintenance of traffic costs.
- Poor: Complex alignment configuration; outside or far from existing corridor, requires new corridor development; and expected high maintenance of traffic costs.

1.7 Constructability

Constructability was evaluated as "consideration given for buildability by using engineering judgment and field experience with complex, urban roadways and structures crossing many obstacles and features" for the future alternative. The basis for the criteria "Good" "Average" and "Poor" is explained below:

- Good: A buildable alternative and system, through one-time or staged programming; Ideal conditions for maintaining through and local access for traffic at most all times while under construction; minimum number of

obstacles, and easy access for construction equipment; maximized opportunity for worker safety; minimized temporary construction elements and work that will need to be removed

- Average: Likely buildable alternative and system, requiring staged programming; workable conditions for maintaining through and local access for traffic while under construction, some creative traffic movements will be necessary to keep the system in operation; moderate number of obstacles present, and access for construction equipment is available but not readily accessible; can meet criteria for worker safety; and some temporary construction elements and work that will need to be removed will be required.
- Poor: May not be buildable in the current configuration, long-term staging required; difficult to impossible to maintain through or local traffic while under construction, complete stoppages in some movements will be required; high number of obstacles present, construction equipment access will be limited and may inhibit certain types of design due to lack of buildability; high likelihood of worker injury; and extensive temporary construction elements and work that will need to be removed will be required.

Alternatives Comparison Matrix

This matrix is for comparison purposes only. It is intended that the scale will evolve with each step in the process to include quantification of impacts and improvements. The attached document further clarifies each category and specific evaluation criteria, and should be read in conjunction with this matrix.

Good	Lowest likely impacts, meets most criteria in respective category, addresses elements with good conformance to the Purpose and Need
Average	Mid-range of impacts, meets some criteria in respective category, addresses elements to somewhat conform to the Purpose and Need
Poor	High likely impacts, does not meet criteria in respective category, does not address elements or conform with the Purpose and Need

Geometrics and operational analyses will be used to determine feasibility of alternatives and proposed lane assignments in subsequent phases of development.

Alternative	Description[1]	Segments	Congestion Mitigation	Safety			Engineering[2]		Environmental Resource Impacts[3]						Access/Accessibility			Construction Cost	Construct-ability	Aesthetics	Comments	Recommendation
				Geometric Improvement	Separation of Regional and Local Traffic	Simplification of Roadway Network	Meets Current Design Standards	Sustainability/ Flexibility	Hazardous Materials	Ecological	Historical	Archaeological	Community	Environmental Justice	Interstate/ US Routes	Local Roads	Overall					
1	New Queensgate Bridge (2x5 Lanes) for I-75 and Rehab Existing Bridge (2x2 Lanes) for I-71 and Local Traffic	1. Kyles Lane to KY 5th Street, Kentucky	Good	Good	Average	Average	Good	Average	Good	Poor	Average	Good	Poor	Good	Good	Average	Good	Average	Average	This column to be completed by Aesthetics Committee at a future date.	Product of the EFS. Meets intent and criteria of project. Constructive elements from Alternative 6 (Dismissed) were incorporated into this alternative. More study is required.	Develop alternative further
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Good	Good	Average	Good	Good	Good	Average	Good	Good	Good	Poor	Poor	Good	Average	Good	Average	Average			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Average	Good	Good	Good	Average	Good	Poor	Good	Good	Good	Poor	Poor	Good	Average	Good	Poor	Poor			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Good	Average	Average	Average	Good	Average	Average	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average			
2	New Queensgate Bridge (2x7 Lanes) for I-71/I-75 and Rehab Existing Bridge (2x2 Lanes) for Local Traffic	1. Kyles Lane to KY 5th Street, Kentucky	Good	Average	Average	Average	Good	Good	Good	Average	Average	Good	Poor	Good	Good	Average	Good	Average	Average		Product of the EFS. Meets intent and criteria of project. Constructive elements from Alternative 15 (Dismissed) were incorporated into this alternative. More study is required.	Develop alternative further
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Good	Good	Good	Good	Good	Average	Good	Good	Good	Good	Poor	Poor	Good	Good	Good	Poor	Average			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Average	Good	Good	Good	Average	Average	Good	Good	Good	Good	Poor	Poor	Average	Average	Average	Average	Poor			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Good	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average			
3	New Double-Deck Bridge (2x5 Lanes) on West Side of the Existing Bridge for I-75 and New/Rehab Double-Deck Bridge (2x2 Lanes) at Existing Bridge for I-71 and Local Traffic	1. Kyles Lane to KY 5th Street, Kentucky	Good	Good	Average	Average	Good	Good	Good	Average	Average	Good	Average	Good	Good	Average	Good	Average	Average		Meets intent and criteria of project. Constructive elements from Alternatives 9 and 13 (Dismissed) were incorporated into this alternative. Utilizes existing corridor and bridge. More study is required.	Develop alternative further
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Good	Average	Average	Average	Good	Average	Poor	Good	Average	Good	Good	Good	Average	Average	Average	Average	Average			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Average	Average	Average	Average	Good	Average	Good	Good	Good	Average	Good	Good	Average	Average	Average	Average	Average			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Good	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Good	Average			
4	New Double-Deck Bridge (2x5 Lanes Each Direction on Top) for I-75 and (2x3 Lanes Each Direction on Bottom) for I-71 and Local on West Side of the Existing Bridge and Remove Existing Bridge	1. Kyles Lane to KY 5th Street, Kentucky	Good	Good	Average	Average	Good	Good	Average	Poor	Average	Good	Good	Good	Good	Average	Good	Good	Average		Meets intent and criteria of project. Constructive elements from Alternative 8 (Dismissed) were incorporated into this alternative. Utilizes existing corridor. More study is required.	Develop alternative further
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Average	Good	Average	Good	Good	Average	Poor	Good	Average	Good	Good	Good	Average	Average	Average	Average	Average			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Poor	Good	Average	Average	Good	Good	Good	Good	Good	Average	Good	Good	Average	Average	Average	Average	Poor			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Good	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average			
5	New Single-Deck Bridges (2x5 Lanes) on each side of the Existing Bridge for I-75 and Rehab Existing Bridge (2x2 Lanes) for I-71 and Local Traffic.	1. Kyles Lane to KY 5th Street, Kentucky	Good	Average	Average	Average	Good	Good	Good	Poor	Average	Good	Average	Good	Good	Average	Good	Average	Average		Meets intent and criteria of project. Utilizes existing corridor and bridge. More study is required.	Develop alternative further
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Good	Average	Good	Average	Good	Good	Poor	Good	Average	Good	Good	Good	Average	Average	Average	Average	Good			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Average	Average	Average	Average	Good	Poor	Good	Good	Good	Average	Good	Good	Average	Average	Average	Good	Good			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Good	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good			
NB	No Build Alternative. All Alignments Remain As-Is, with Safety Improvements, Pavement and Shoulder Rehab, and Aesthetic Treatments All Within Existing Right Of Way.	1. Kyles Lane to KY 5th Street, Kentucky	Poor	Average	Poor	Average	Poor	Poor	Good	Good	Good	Good	Good	Good	Average	Average	Average	Good	Good		A No Build Alternative is required. Baseline for evaluation purposes.	Develop alternative further
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Poor	Poor	Poor	Poor	Poor	Poor	Average	Good	Good	Good	Good	Good	Average	Average	Average	Average	Average			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Poor	Poor	Poor	Poor	Poor	Poor	Good	Good	Good	Good	Good	Good	Average	Average	Average	Average	Good			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Poor	Average	Average	Average	Average	Good	Good	Good	Good	Good	Good	Good	Average	Poor	Average	Good	Good			
The alternatives below this point (6 through 24) are not recommended, and therefore not being carried forward for further development.																				Alternatives not being carried forward will not be reviewed by the Aesthetics Committee.		
6 (Dismissed)	New Queensgate Bridge (2x3 Lanes) for I-75 and Rehab Existing Bridge (2x2 Lanes) for I-71 and Local Traffic	1. Kyles Lane to KY 5th Street, Kentucky	Good	Average	Average	Average	Good	Average	Good	Average	Poor	Good	Average	Good	Good	Average	Good	Average	Average		Number of lanes insufficient for required capacity. Therefore does not meet intent and criteria of project. Constructive elements from this alternative were moved into Alt. 1, which is being further developed.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Poor	Good	Average	Good	Good	Poor	Good	Good	Good	Good	Poor	Poor	Good	Average	Good	Average	Poor			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Poor	Good	Good	Average	Good	Average	Average	Good	Good	Good	Poor	Poor	Good	Average	Good	Poor	Poor			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Average	Average	Good	Poor	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average			
7 (Dismissed)	New Queensgate Bridge (2x3 Lanes) for I-75 and New Bridge (2x3 Lanes) Just East of Existing Bridge for I-71 and Local Traffic	1. Kyles Lane to KY 5th Street, Kentucky	Average	Average	Average	Average	Good	Poor	Good	Good	Average	Good	Average	Good	Good	Average	Good	Average	Good		Number of lanes insufficient for required capacity. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Poor	Average	Average	Good	Poor	Poor	Average	Good	Good	Good	Poor	Poor	Good	Average	Good	Poor	Poor			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Average	Good	Good	Average	Good	Poor	Good	Good	Good	Good	Poor	Poor	Good	Average	Good	Poor	Poor			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average			
8 (Dismissed)	New Queensgate Bridge (2x5 Lanes) for I-75 and New Bridge (2x3 Lanes) Just East of Existing Bridge for I-71 and Local Traffic	1. Kyles Lane to KY 5th Street, Kentucky	Good	Average	Average	Average	Good	Poor	Good	Average	Average	Good	Average	Good	Good	Average	Good	Average	Average		Alignments east of existing bridge do not meet geometric criteria. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Average	Average	Average	Good	Poor	Average	Average	Good	Good	Good	Poor	Poor	Good	Average	Good	Poor	Poor			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Average	Good	Good	Average	Good	Poor	Poor	Good	Good	Good	Poor	Poor	Good	Average	Good	Poor	Poor			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Good	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average			
9 (Dismissed)	New Queensgate Bridge (2x5 Lanes) for All Traffic and Remove Existing Bridge (New Interchange)	1. Kyles Lane to KY 5th Street, Kentucky	Average	Average	Poor	Average	Good	Good	Good	Good	Average	Good	Good	Good	Good	Average	Good	Average	Good		Number of lanes insufficient for required capacity, and elements exceed purpose and need. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Poor	Average	Poor	Poor	Good	Poor	Average	Good	Good	Good	Poor	Poor	Good	Poor	Average	Poor	Poor			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Average	Average	Average	Poor	Good	Poor	Poor	Good	Good	Good	Poor	Poor	Good	Poor	Average	Poor	Poor			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Good	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average			
10 (Dismissed)	New Queensgate Bridge (2x7 Lanes) for All Traffic and Remove Existing Bridge (New Interchange)	1. Kyles Lane to KY 5th Street, Kentucky	Good	Good	Poor	Average	Good	Good	Good	Average	Average	Good	Average	Average	Good	Average	Good	Average	Good		This alternative was eliminated during EFS, but was re-evaluated for this step. Elements exceed purpose and need. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Average	Average	Poor	Poor	Good	Good	Poor	Good	Good	Good	Poor	Poor	Good	Poor	Average	Poor	Poor			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Average	Average	Average	Poor	Good	Poor	Poor	Good	Good	Good	Poor	Poor	Good	Poor	Average	Average	Poor			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Good	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average			
11 (Dismissed)	New Bridge (2x5 Lanes) for All Traffic Just East of Existing Bridge and Remove Existing Bridge	1. Kyles Lane to KY 5th Street, Kentucky	Average	Average	Poor	Average	Good	Average	Good	Good	Good	Good	Average	Good	Average	Average	Average	Average	Good		Number of lanes insufficient for required capacity. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Poor	Poor	Poor	Poor	Poor	Poor	Average	Good	Good	Good	Good	Good	Average	Average	Average	Average	Average			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Poor	Poor	Poor	Poor	Poor	Poor	Good	Good	Good	Average	Good	Good	Average	Average	Average	Good	Good			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average			
12 (Dismissed)	New Bridge (2x7 Lanes) for All Traffic Just East of Existing Bridge and Remove Existing Bridge	1. Kyles Lane to KY 5th Street, Kentucky	Good	Average	Poor	Average	Good	Good	Good	Average	Good	Good	Average	Good	Average	Average	Average	Average	Good		Alignments east of existing bridge do not meet geometric criteria. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Average	Poor	Poor	Average	Poor	Average	Average	Good	Good	Good	Poor	Good	Average	Average	Average	Poor	Average			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Average	Poor	Average	Average	Poor	Average	Good	Good	Good	Average	Good	Good	Average	Average	Average	Average	Good			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Good	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average			
13 (Dismissed)	New Bridge (2x5 Lanes) for All Traffic Just East of Existing Bridge and Remove Existing Bridge (Elevated I-75 in Ohio)	1. Kyles Lane to KY 5th Street, Kentucky	Average	Average	Poor	Average	Good	Average	Good	Average	Good	Good	Poor	Good	Average	Good	Average	Good	Good		Number of lanes insufficient for required capacity. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Poor	Poor	Poor	Average	Poor	Poor	Poor	Good	Good	Good	Average	Good	Average	Average	Average	Average	Average			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Average	Average	Average	Good	Poor	Good	Average	Good	Good	Average	Average	Good	Average	Average	Average	Average	Average			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Poor	Average			
14 (Dismissed)	New Bridge (2x7 Lanes) for All Traffic Just East of Existing Bridge and Remove Existing Bridge (Elevated I-75 in Ohio)	1. Kyles Lane to KY 5th Street, Kentucky	Good	Good	Average	Average	Good	Good	Good	Average	Average	Good	Average	Good	Average	Good	Good	Average	Good		Alignments east of existing bridge do not meet geometric criteria. Weave lane distance not recommended for 7-lane roadway. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Average	Poor	Poor	Average	Poor	Average	Average	Good	Good	Good	Good	Good	Average	Average	Average	Average	Average			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Average	Average	Average	Good	Poor	Good	Good	Good	Good	Good	Average	Good	Good	Average	Average	Average	Average			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Poor	Average			
15 (Dismissed)	New Queensgate Bridge (2x5 Lanes) for I-71/I-75 and Rehab Existing Bridge (2x2 Lanes) for Local Traffic	1. Kyles Lane to KY 5th Street, Kentucky	Average	Average	Average	Average	Good	Good	Good	Average	Average	Good	Poor	Good	Good	Average	Average	Average	Average		Number of lanes insufficient for required capacity. Therefore does not meet intent and criteria of project. Constructive elements from this alternative were moved into Alt. 2, which is being further developed.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Average	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Poor	Poor	Average	Average	Average	Average	Poor		
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Average	Average	Good	Good	Good	Good	Good	Good	Good	Good	Poor	Poor	Average	Average	Average	Average	Poor			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Poor	Average			
16 (Dismissed)	New Single-Deck Bridges (2x5 Lanes) on Each Side of the Existing Bridge for All Traffic and Remove Existing Bridge	1. Kyles Lane to KY 5th Street, Kentucky	Average	Average	Poor	Average	Good	Average	Good	Good	Good	Good	Average	Good	Average	Average	Average	Good	Good		Number of lanes insufficient for required capacity. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Poor	Poor	Poor	Average	Poor	Poor	Poor	Good	Average	Good	Average	Good	Average	Average	Average	Average	Average			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Poor	Poor	Poor	Poor	Poor	Poor	Good	Good	Good	Average	Good	Good	Average	Average	Average	Average	Good			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Good			
17 (Dismissed)	New Double-Deck Bridge (2x5 Lanes) on West Side of the Existing Bridge for All Traffic and Remove Existing Bridge	1. Kyles Lane to KY 5th Street, Kentucky	Poor	Average	Poor	Average	Good	Average	Good	Good	Good	Good	Good	Good	Average	Average	Average	Good	Good		Number of lanes insufficient for required capacity. Therefore does not meet intent and criteria of project. Constructive elements from this alternative were moved into Alt. 4, which is being further developed.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Poor	Poor	Poor	Average	Good	Poor	Poor	Good	Average	Good	Good	Good	Average	Average	Average	Poor	Average			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Poor	Poor	Poor	Poor	Good	Poor	Good	Good	Good	Average	Good	Good	Average	Average	Average	Average	Good			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Good			

Alternatives Comparison Matrix

This matrix is for comparison purposes only. It is intended that the scale will evolve with each step in the process to include quantification of impacts and improvements. The attached document further clarifies each category and specific evaluation criteria, and should be read in conjunction with this matrix.

Good	Lowest likely impacts, meets most criteria in respective category, addresses elements with good conformance to the Purpose and Need
Average	Mid-range of impacts, meets some criteria in respective category, addresses elements to somewhat conform to the Purpose and Need
Poor	High likely impacts, does not meet criteria in respective category, does not address elements or conform with the Purpose and Need

Geometrics and operational analyses will be used to determine feasibility of alternatives and proposed lane assignments in subsequent phases of development.

Alternative	Description[1]	Segments	Congestion Mitigation	Safety			Engineering[2]		Environmental Resource Impacts[3]						Access/Accessibility			Construction Cost	Construct-ability	Aesthetics	Comments	Recommendation
				Geometric Improvement	Separation of Regional and Local Traffic	Simplification of Roadway Network	Meets Current Design Standards	Sustainability/ Flexibility	Hazardous Materials	Ecological	Historical	Archaeological	Community	Environmental Justice	Interstate/ US Routes	Local Roads	Overall					
18 (Dismissed)	New Double-Deck Bridge (2x3 Lanes) on West Side of the Existing Bridge for I-71/I-75 and Rehab Existing Bridge (2x3 Lanes) for Local Traffic	1. Kyles Lane to KY 5th Street, Kentucky	Good	Good	Good	Good	Good	Good	Good	Poor	Average	Good	Average	Good	Good	Good	Good	Average	Average	Alternatives not being carried forward will not be reviewed by the Aesthetics Committee.	Number of lanes insufficient for required capacity. Therefore does not meet intent and criteria of project. Constructive elements from this alternative were moved into Alt. 3, which is being further developed.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Poor	Poor	Good	Average	Good	Average	Poor	Good	Average	Good	Good	Good	Average	Average	Average	Poor	Average			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Poor	Poor	Average	Poor	Good	Poor	Good	Good	Good	Average	Good	Good	Average	Average	Average	Average	Good			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Good			
19 (Dismissed)	New Single-Deck Bridge(s) (2x5 Lanes) on West Side of the Existing Bridge for All Traffic and Remove Existing Bridge	1. Kyles Lane to KY 5th Street, Kentucky	Average	Average	Poor	Average	Good	Average	Good	Good	Good	Good	Good	Good	Average	Average	Average	Good	Good		Number of lanes insufficient for required capacity. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Poor	Average	Poor	Average	Good	Poor	Poor	Good	Average	Good	Good	Good	Average	Average	Average	Poor	Average			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Poor	Poor	Average	Poor	Good	Poor	Good	Good	Good	Average	Good	Good	Average	Average	Average	Average	Good			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Good			
20 (Dismissed)	New Single-Deck Bridges (2x5 Lanes) Just West of Existing Bridge and at Same Location as Existing Bridge for All Traffic	1. Kyles Lane to KY 5th Street, Kentucky	Average	Average	Poor	Average	Good	Average	Good	Good	Good	Good	Good	Good	Average	Average	Average	Good	Good		Number of lanes insufficient for required capacity. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Poor	Poor	Poor	Average	Good	Poor	Average	Good	Average	Good	Average	Good	Average	Average	Average	Poor	Average			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Poor	Poor	Average	Poor	Good	Poor	Good	Good	Good	Average	Good	Good	Average	Average	Average	Average	Good			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Good			
21 (Dismissed)	New Double-Deck Bridge (2x5 Lanes) at Same Location as Existing Bridge for All Traffic	1. Kyles Lane to KY 5th Street, Kentucky	Average	Average	Poor	Average	Good	Poor	Good	Good	Good	Good	Good	Good	Average	Average	Average	Good	Good		Number of lanes insufficient for required capacity. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Poor	Poor	Poor	Average	Good	Poor	Good	Good	Average	Good	Good	Good	Average	Average	Average	Poor	Average			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Average	Average	Average	Average	Good	Average	Good	Good	Good	Average	Good	Good	Average	Average	Average	Average	Good			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Good			
22 (Dismissed)	New Double-Deck Bridge (2x3 Lanes) on West Side of the Existing Bridge for I-75 and Rehab Existing Bridge (2x3 Lanes) for I-71 and Local Traffic	1. Kyles Lane to KY 5th Street, Kentucky	Good	Good	Average	Average	Good	Good	Good	Average	Average	Good	Average	Good	Good	Good	Good	Poor	Average		Number of lanes insufficient for required capacity. Therefore does not meet intent and criteria of project. Constructive elements from this alternative were moved into Alt. 3, which is being further developed.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Poor	Poor	Average	Average	Good	Average	Poor	Good	Average	Good	Good	Good	Average	Average	Average	Average	Good			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Poor	Average	Average	Poor	Good	Average	Good	Good	Good	Average	Good	Good	Average	Average	Average	Average	Average			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Good			
23 (Dismissed)	New Double-Deck Bridge just west of existing. Remove existing bridge. Separate I-75 traffic in Kentucky and Ohio.	1. Kyles Lane to KY 5th Street, Kentucky	Good	Good	Average	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Poor	Poor		Number of lanes insufficient for required capacity. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Poor	Average	Poor	Good	Good	Poor	Poor	Good	Average	Good	Average	Good	Average	Average	Average	Average	Average			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Average	Good	Average	Average	Good	Good	Good	Good	Good	Average	Good	Good	Average	Average	Average	Poor	Poor			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Good	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average			
24 (Dismissed)	Construct tunnels (2x5 Lanes) for I-75 traffic and rehab existing bridge (2x2 Lanes) for I-71/Local Traffic.	1. Kyles Lane to KY 5th Street, Kentucky	Good	Average	Average	Average	Good	Good	Good	Average	Average	Good	Average	Good	Good	Good	Good	Average	Average		Geometric requirements prohibit construction, access, and sustainability. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
		2. KY 5th Street to OH 3rd Street, Kentucky and Ohio	Poor	Average	Average	Average	Good	Poor	Poor	Good	Good	Good	Good	Good	Average	Average	Average	Poor	Poor			
		3. OH 3rd Street to north of Ezzard Charles Drive, Ohio	Average	Poor	Average	Average	Good	Poor	Poor	Good	Good	Good	Good	Good	Average	Average	Average	Poor	Poor			
		4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Average	Average	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average			

The alternatives below this point (I-75 NB KY Ramps, I-71/US 50 Interchange, I-71/I-75/US 50 Interchange, I-75 NB/SBWHV Interchange) have been evaluated independently of the main corridor.

Alternative	Description[1]	Segments	Congestion Mitigation	Safety			Engineering[2]		Environmental Resource Impacts[3]						Access/Accessibility			Construction Cost	Construct-ability	Aesthetics	Comments	Recommendation
				Geometric Improvement	Separation of Regional and Local Traffic	Simplification of Roadway Network	Meets Current Design Standards	Sustainability/ Flexibility	Hazardous Materials	Ecological	Historical	Archaeological	Community	Environmental Justice	Interstate/ US Routes	Local Roads	Overall					
I-75 Northbound, Kentucky Ramp Relocation Sub-Alternatives																						
I-75 NB Ky Ramp Alt 1	I-75 Northbound exit ramp to W. 12th St. and Pike St. Hewson St. realigned to provide access to area near W 14th St.	South of Brent Spence Bridge in KY, from W 14th Street to Pike St	Good	Good	Good	Good	Good	Average	Good	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average	This column to be completed by Aesthetics Committee at a future date.	Provides access to downtown while maintaining local access to the south as a separate roadway. Meets intent and criteria of project.	Develop alternative further.
I-75 NB Ky Ramp Alt 2	I-75 Northbound exit ramp becomes 2-way local access between W 14th St and Pike St.	South of Brent Spence Bridge in KY, from W 14th Street to Pike St	Average	Good	Average	Average	Good	Average	Good	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average		Provides access to downtown while maintaining local access to the south as part of the interstate access. Meets intent and criteria of project.	Develop alternative further.
I-71/US 50 Interchange Sub-Alternatives (for I-75 Queensgate Alignment)																						
I-71/US 50 Alt 1	I-71 on existing bridge. US 50 realigned to be parallel. Additional access ramps: eastbound US 50 to northbound I-75 and southbound I-75 to westbound US 50.	North of Brent Spence Bridge to 9th Street ramps (south to north), US 50 to Central Ave (west to east)	Good	Good	Good	Average	Average	Average	Good	Good	Good	Average	Average	Average	Average	Average	Average	Average	Average	This column to be completed by Aesthetics Committee at a future date.	US 50 proposed as parallel roadway, minimizing potential for left hand entrances/exits, and simplifies navigation and access of the roadway system. Meets intent and criteria of project.	Develop alternative further.
I-71/US 50 Alt 2	I-71 connected with I-75. US 50 realigned to be parallel. Additional access ramps: eastbound US 50 to northbound I-75 and southbound I-75 to westbound US 50.	North of Brent Spence Bridge to 9th Street ramps (south to north), US 50 to Central Ave (west to east)	Good	Good	Good	Good	Average	Average	Average	Good	Good	Average	Poor	Average	Good	Average	Good	Poor	Average		US 50 proposed as parallel roadway, minimizing potential for left hand entrances/exits, and simplifies navigation and access of the roadway system. Meets intent and criteria of project.	Develop alternative further.
The alternative below this point (I-71/US 50 Alt 2) is not recommended, and therefore no being carried forward for further development.																						
I-71/US 50 Alt 3 (Dismissed)	I-71 realignment. US 50 remains primarily on existing. Additional access ramps: eastbound US 50 to northbound I-75 and southbound I-75 to westbound US 50.	North of Brent Spence Bridge to 9th Street ramps (south to north), US 50 to Central Ave (west to east)	Average	Average	Poor	Poor	Poor	Poor	Good	Good	Good	Average	Good	Good	Poor	Average	Average	Average	Average	Will not be reviewed.	Interstate and US Routes are separated directionally (not parallel roadways). This increases potential for undesirable left hand entrances/exits, and complicates navigation and access of the roadway system.	Not recommended to carry this alternative forward.
I-71/I-75/US 50Interchange Sub-Alternatives																						
I-71/I-75/ US 50 Alt 1	I-71/I-75/US 50realignment, I-75 parallel in existing corridor. Option: I-75 above or below other roadways Option: Additional access ramps-- eastbound US 50 to northbound I-75 and southbound I-75 to westbound US 50.	North of Brent Spence Bridge to 9th Street ramps (south to north), US 50 to Central Ave (west to east)	Average	Average	Average	Average	Average	Average	Good	Good	Good	Average	Average	Good	Good	Average	Average	Average	Average	This column to be completed by Aesthetics Committee at a future date.	I-75 and US 50 proposed as parallel roadways, minimizing potential for left hand entrances/exits, and simplifies navigation and access of the roadway system. Meets intent and criteria of project.	Develop alternative further.
I-71/I-75/ US 50 Alt 2	I-71/I-75/US 50realignment, I-75 parallel in existing corridor. Extension of downtown street grid, existing access to/from highways/downtown maintained.	North of Brent Spence Bridge to 9th Street ramps (south to north), US 50 to Central Ave (west to east)	Average	Average	Good	Average	Average	Good	Good	Good	Good	Average	Good	Good	Good	Good	Good	Average	Average		I-75 and US 50 proposed as parallel roadways, minimizing potential for left hand entrances/exits, and simplifies navigation and access of the roadway system. Meets intent and criteria of project.	Develop alternative further.
I-71/I-75/ US 50 Alt 3	I-71/I-75/US 50realignment, I-75 parallel in existing corridor. Extension of downtown street grid, access to/from highways/downtown combined in CD/local roadways.	North of Brent Spence Bridge to 9th Street ramps (south to north), US 50 to Central Ave (west to east)	Average	Good	Good	Good	Good	Good	Good	Good	Good	Average	Good	Good	Good	Average	Good	Average	Average		I-75 and US 50 proposed as parallel roadways, minimizing potential for left hand entrances/exits, and simplifies navigation and access of the roadway system. Meets intent and criteria of project.	Develop alternative further.

Alternatives Comparison Matrix

This matrix is for comparison purposes only. It is intended that the scale will evolve with each step in the process to include quantification of impacts and improvements. The attached document further clarifies each category and specific evaluation criteria, and should be read in conjunction with this matrix.

Good	Lowest likely impacts, meets most criteria in respective category, addresses elements with good conformance to the Purpose and Need
Average	Mid-range of impacts, meets some criteria in respective category, addresses elements to somewhat conform to the Purpose and Need
Poor	High likely impacts, does not meet criteria in respective category, does not address elements or conform with the Purpose and Need

Geometrics and operational analyses will be used to determine feasibility of alternatives and proposed lane assignments in subsequent phases of development.

Alternative	Description[1]	Segments	Congestion Mitigation	Safety			Engineering[2]		Environmental Resource Impacts[3]						Access/Accessibility			Construction Cost	Construct-ability	Aesthetics	Comments	Recommendation
				Geometric Improvement	Separation of Regional and Local Traffic	Simplification of Roadway Network	Meets Current Design Standards	Sustainability/ Flexibility	Hazardous Materials	Ecological	Historical	Archaeological	Community	Environmental Justice	Interstate/ US Routes	Local Roads	Overall					
The alternatives below this point (I-71/I-75/US 50 Alt 5 through 9) are not recommended, and therefore not being carried forward for further development.																						
I-71/I-75/ US 50 Alt 4 (Dismissed)	I-75 and I-71 realignment, US 50 access to SB realignment. Access from I-75 to 5th St eliminated, to 2nd St realigned. No additional access ramps.	North of Brent Spence Bridge to 9th Street ramps (south to north), US 50 to Central Ave (west to east)	Good	Average	Good	Good	Average	Poor	Good	Good	Good	Average	Average	Good	Average	Poor	Poor	Average	Average	Alternatives not being carried forward will not be reviewed by Aesthetics Committee.	Number of existing access points to local roads is reduced, which is undesirable. Left hand exits exist, which is undesirable.	Not recommended to carry this alternative forward.
I-71/I-75/ US 50 Alt 5 (Dismissed)	I-75 and I-71 realignment, US 50 access to SB realignment. Access from I-75 to 5th St eliminated, to 2nd St realigned. Additional access ramps: eastbound US 50 to northbound I-75 and southbound I-75 to westbound US 50.	North of Brent Spence Bridge to 9th Street ramps (south to north), US 50 to Central Ave (west to east)	Good	Average	Good	Average	Average	Average	Good	Good	Good	Average	Average	Good	Average	Average	Average	Poor	Average		Number of existing access points to local roads is reduced, which is undesirable. Left hand exits exist, which is undesirable.	Not recommended to carry this alternative forward.
I-71/I-75/ US 50 Alt 6 (Dismissed)	I-71/I-75/US 50 realignment. I-75 at grade. 5th St. and 6th St. extended with signals west of Central Ave. Additional access ramps: eastbound US 50 to northbound I-75 and southbound I-75 to westbound US 50.	North of Brent Spence Bridge to 9th Street ramps (south to north), US 50 to Central Ave (west to east)	Poor	Poor	Poor	Average	Average	Poor	Good	Good	Good	Average	Poor	Good	Average	Good	Average	Poor	Poor		Left hand exits exist, which is undesirable. Extending street grid and signals in ramp area undesirable.	Not recommended to carry this alternative forward.
I-71/I-75/US 50 Alt 7 (Dismissed)	I-71/I-75/US 50realignment. I-75 elevated. 5th St. and 6th St. extended with signals west of Central Ave. Additional access ramps: eastbound US 50 to northbound I-75 and southbound I-75 to westbound US 50.	North of Brent Spence Bridge to 9th Street ramps (south to north), US 50 to Central Ave (west to east)	Average	Average	Poor	Average	Average	Poor	Good	Good	Good	Average	Poor	Good	Good	Good	Good	Poor	Poor		Left hand exits exist, which is undesirable. Extending street grid and signals in ramp area undesirable.	Not recommended to carry this alternative forward.
I-71/I-75/ US 50 Alt 8 (Dismissed)	I-71/I-75/US 50realignment. I-71/I-75 shown to avoid Longworth Hall. Additional access ramps: eastbound US 50 to northbound I-75 and southbound I-75 to westbound US 50.	North of Brent Spence Bridge to 9th Street ramps (south to north), US 50 to Central Ave (west to east)	Average	Good	Average	Average	Average	Poor	Good	Good	Good	Average	Poor	Good	Good	Average	Average	Poor	Average		Left hand exits exist, which is undesirable. Similar to other alternatives, with exception of Longworth Hall alignment adjustment. Apply the alignment adjustment to all I-71/I-75/US 50alternatives being carried forward.	Not recommended to carry this alternative forward.
I-75 Northbound and Southbound Corridor Sub-Alternatives																						
I-75 NB/SB Alt 1	Improve existing I-75 NB and SB. Create C-D roads parallel to I-75 from south of I-75 to WHV Interchange. Widen existing bridges over local roadways.	I-75 from south of Ezzard Charles to Western Hills Viaduct	Good	Good	Good	Average	Good	Good	Good	Good	Good	Average	Average	Good	Good	Average	Good	Average	Good	This column to be completed by Aesthetics Committee at a future date.	Improves existing roadway condition. Meets intent and criteria of project.	Develop alternative further.
I-75 NB/SB Alt 2	Improve existing I-75 NB and SB. Improve Winchell and Western Avenue arterials. Replace existing bridges over local roadways. Ezzard Charles/I-75 ramps eliminated.	I-75 from south of Ezzard Charles to Western Hills Viaduct	Average	Average	Average	Good	Good	Average	Good	Good	Good	Average	Good	Good	Average	Poor	Average	Good	Good		Improves existing roadway condition. Meets intent and criteria of project.	Develop alternative further.
Western Hills Viaduct Interchange Sub-Alternatives																						
WHV-1	Offset Roundabout Diamond, east of I-75, full movements	4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Good	Average	Average	Average	Average	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average	This column to be completed by Aesthetics Committee at a future date.	Meets intent and criteria of project. Offers full interchange movements.	Develop alternative further.
WHV-2	Single Roundabout Diamond, full movements	4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Good	Average	Average	Average	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average		Meets intent and criteria of project. Offers full interchange movements.	Develop alternative further.
WHV-3	Single Point Urban Interchange, full movements	4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Good	Good	Average	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Average	Average		Meets intent and criteria of project. Offers full interchange movements.	Develop alternative further.
WHV-NB	No Build Alternative. Alignments Remain As-Is. Safety Improvements and Pavement/ Shoulder Rehab Within Existing Right Of Way.	4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Poor	Poor	Average	Average	Poor	Poor	Good	Good	Good	Good	Good	Good	Poor	Average	Poor	Good	Good		A No Build Alternative is required. Baseline for evaluation purposes.	Develop alternative further.
The alternatives below this point (WHV-4 through WHV-1) are not recommended, and therefore not being carried forward for further development.																						
WHV-4 (Dismissed)	Central Parkway Ramp Intersection, exit and entrance to I-75 northbound via intersection at Central Parkway, partial movements	4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Poor	Average	Average	Average	Average	Poor	Good	Good	Good	Good	Average	Good	Poor	Poor	Poor	Good	Good	Alternatives not being carried forward will not be reviewed by the Aesthetics Committee.	Does not offer full interchange movements. Therefore does not meet intent and criteria of project. Potential impact to Colerain Ave bridge over Central parkway.	Not recommended to carry this alternative forward.
WHV-5 (Dismissed)	Modified Roundabout Diamond West Side, east of I-75, partial movements	4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Good	Good	Average	Average	Average	Poor	Good	Good	Good	Good	Average	Good	Average	Poor	Average	Average	Average		Does not offer full interchange movements. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
WHV-6 (Dismissed)	Flyover Ramp East Side, partial movements	4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Average	Average	Good	Poor	Good	Good	Good	Good	Good	Good	Poor	Poor	Poor	Poor	Average		Does not offer full interchange movements. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
WHV-7 (Dismissed)	Three-Leg interchange, partial movements	4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Poor	Good	Average	Poor	Good	Good	Good	Good	Good	Good	Poor	Poor	Poor	Poor	Poor		Does not offer full interchange movements. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
WHV-8 (Dismissed)	Two-Phase Signal Ramp Intersection, partial movements	4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Average	Average	Average	Average	Average	Poor	Good	Good	Good	Good	Good	Good	Poor	Poor	Poor	Average	Average		Does not offer full interchange movements. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
WHV-9 (Dismissed)	Central Parkway Ramp Intersection, exit and entrance to I-75 northbound via intersection at Central Parkway, partial movements	4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Poor	Average	Average	Average	Average	Poor	Good	Good	Good	Good	Good	Good	Average	Poor	Average	Good	Good		Does not offer full interchange movements. Therefore does not meet intent and criteria of project.	Not recommended to carry this alternative forward.
WHV-10 (Dismissed)	Right-hand Exit Loop Off C-D Road	4. Ezzard Charles Drive to Western Hills Viaduct, Ohio	Poor	Poor	Average	Average	Poor	Poor	Good	Good	Good	Good	Good	Good	Poor	Average	Poor	Average	Average		Does not offer full interchange movements. Therefore does not meet intent and criteria of project. Exit loop radius < 160' resulting in design speed < 25 MPH.	Not recommended to carry this alternative forward.

1. For this document, five lanes for I-75 was used as the criteria for evaluation. Alternatives that did not meet this requirement were dismissed and not recommended to be carried forward. Positive elements from some dismissed alternatives were incorporated into the alternatives being carried forward.

2. For this phase of evaluation, only horizontal design components were considered. Vertical design standards will be included for evaluation at a later step in the process.

3. Noise and Air Quality have been identified as Environmental Resources. At the time of this document, they were not yet studied enough to rate the impacts. Future studies will be conducted to identify and quantify these impacts, as well as identify possible mitigation measures.

Joint Technical Memorandum
(October 25, 2005)

JOINT TECHNICAL MEMO
Evaluation of Potential Benefits and Impacts
for 5-Lane Continuity Alternative

HAM-75-2.30 (PID 76257)
HAM-75-10.10 (PID 76256)

Prepared by: TranSystems Corporation
M-E Companies
ODOT District 8

Revised October 25, 2005

Introduction

The Ohio Department of Transportation (ODOT) is considering safety and capacity improvements to the I-75 corridor in Hamilton County as part of the I-75 Mill Creek Expressway project (HAM-75-2.30) and the I-75 Thru the Valley project (HAM-75-10.10). These projects are currently in Steps 5 and 6, respectively, under ODOT's Project Development Process (PDP). In Step 5, the PDP focuses on development and evaluation of conceptual alternatives. Only those alternatives that are truly considered feasible – reasonable to construct – are supposed to be given more detailed evaluation in Step 6.

One of the primary goals of each project is to reduce congestion. As a part of these efforts, conceptual alternatives have been developed for the I-75 mainline and the interchanges within the project limits. For the purposes of this memo, all discussion refers to the mainline options.

Existing I-75, from its interchange with I-74 to the north, has three lanes in each direction. South of I-74, the existing route has four lanes in each direction. In addition to improving ramp terminals and merges, additional through lane capacity is needed. Both project teams are considering the "four-lane continuity" alternative, as suggested by the North South Transportation Initiative, but it is recognized that this option will not meet design standards for Level of Service (LOS), by failing to provide for LOS D for the design hour in the design year throughout the project limits.

Therefore, the team has been requested to evaluate a second additional through lane, providing five lanes in each direction, known as the "five-lane continuity" option. This memo will illustrate the benefits and consequences of this option by presenting the preliminary findings, beginning with travel demand and trip diversion for the corridor as a whole. Then, each project will be discussed separately in terms of levels of service, impacts and cost, based upon available data in each project area. The goal is to provide adequate information to conclude whether this option should be dropped from further consideration or be carried forward as feasible into Step 5 and 6 engineering.

Travel Demand and Diversion of Trips

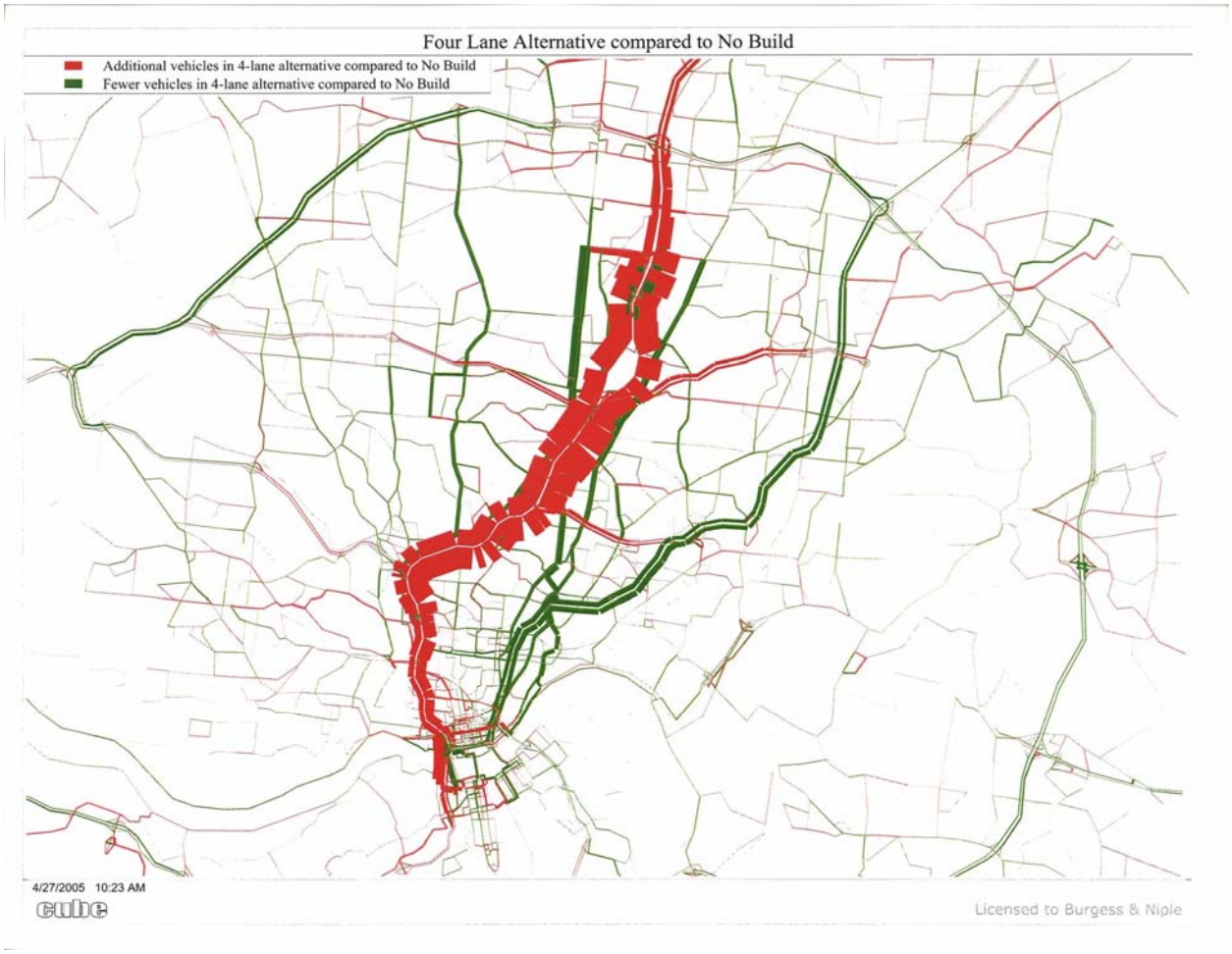
In order to coordinate the traffic projections for all of the three adjoining I-75 projects (*HAM-71-0.00 Brent Spence Bridge, HAM-75-2.30 Mill Creek Expressway and the HAM-75-10.10 Thru the Valley*), ODOT assembled a Modeling Advisory Committee (MAC). In accordance with the direction of the MAC, a 30th highest hour adjustment factor of 1.056 was developed for use on all three projects. This factor was applied to 2004 peak hour counts to determine the 30th Highest Hour for each movement. The 30th Highest Hour adjustments were validated for 2004 traffic on all three projects. A March 9, 2005 memo from Burgess & Niple, Inc. (B&N) provided the adjustment methodology for developing the 2030 30th highest hour ramp volumes using 2004 30th Highest Hour as a starting point. 2004 and 2030 Tranplan travel demand model outputs for each ramp were used, in accordance with the methodology, to calculate the growth or shrinkage to the 2030 level.

Select link analysis of the southbound exit ramp to Neumann Way in the AM peak hour was used to resolve a noted anomaly in 2030 morning traffic at this ramp. The March 9th memo also supplied the 2030 I-75 "Master Link" volume for the I-75 link between Paddock Road and State Route (SR) 126. The Master Link volumes were coordinated for all three projects by B&N and approved by the MAC. The project team used the 2030 Master Link volume and the refined ramp volumes to calculate the 2030 Refined Baseline No Build peak hour traffic volumes. Using the 2030 Refined Baseline No-Build Volumes for the AM and PM peak hours as a basis, ramp and mainline volumes were hand-adjusted for each conceptual mainline alternative.

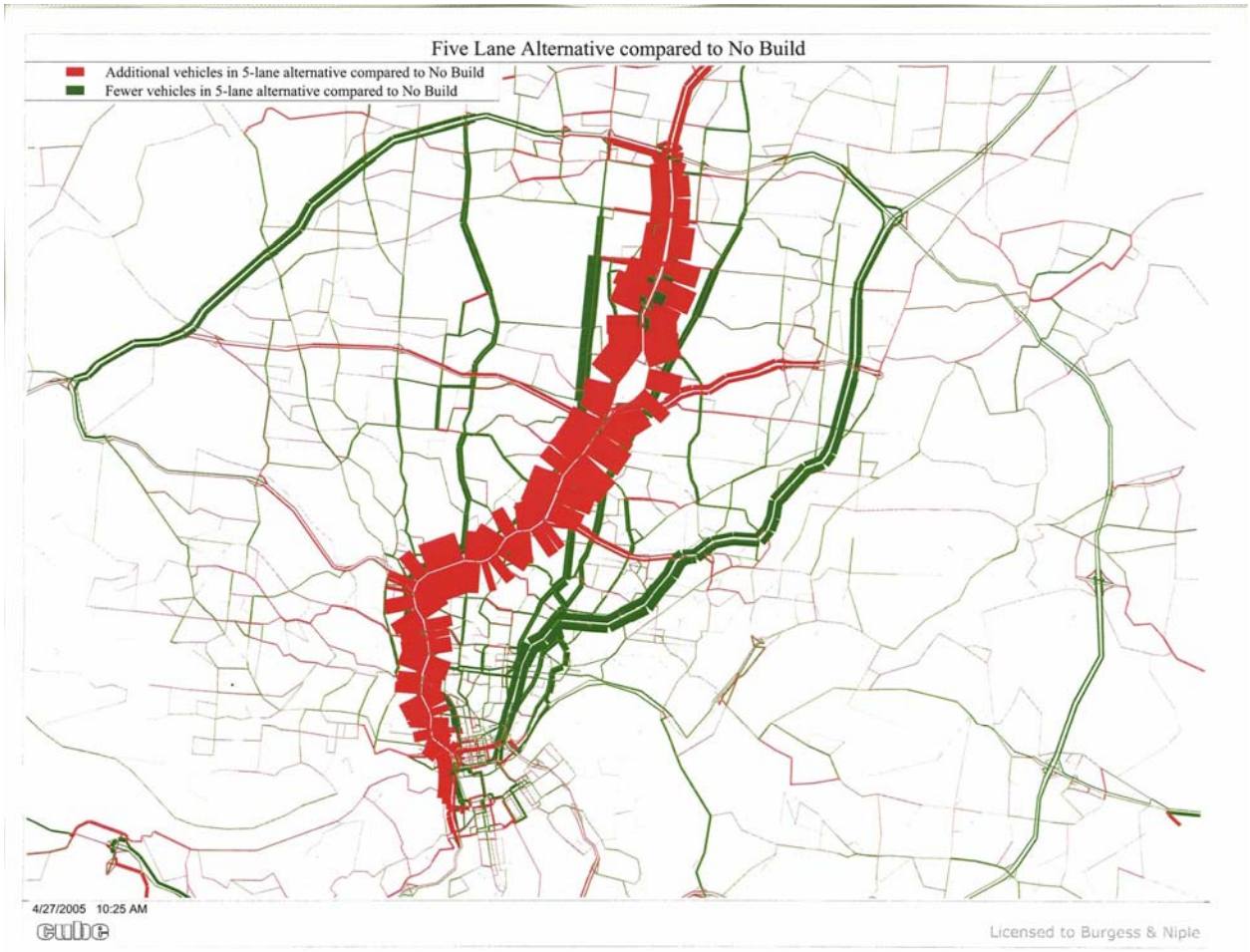
In addition to providing design year volumes for the I-75 corridor projects, B&N, under contract to TranSystems and M-E Companies, utilized the OKI travel demand model ("the model") for the purpose of estimating future traffic volumes on I-75 and surrounding routes within the corridor for the purpose of evaluating the Five-Lane Continuity Alternative. Existing counts, taken in 2004, were used to develop the current year No Build volumes. These results were used to calibrate the model and produce design year No Build volumes according to the methodology described above. Lastly, the model was coded to represent the four- and five-lane options in order to determine how much traffic would increase on I-75 in the widening scenarios due to diversion of traffic from other routes.

The results of this analysis are summarized on the following pages.

The graphic below illustrates the changes in traffic volumes for the four-lane alternative compared to the No Build case. The increases in volumes on I-75 are shown in red. The green bands represent routes where traffic volumes are reduced. The thickness of the band in each area represents the magnitude of increase or decrease in volume. This graphic indicates that trips are diverted primarily from the local arterial system, with modest increases on the Ronald Reagan and the Norwood Lateral, which feed into I-75. There is some diversion shown from I-71, particularly south of the Norwood Lateral.

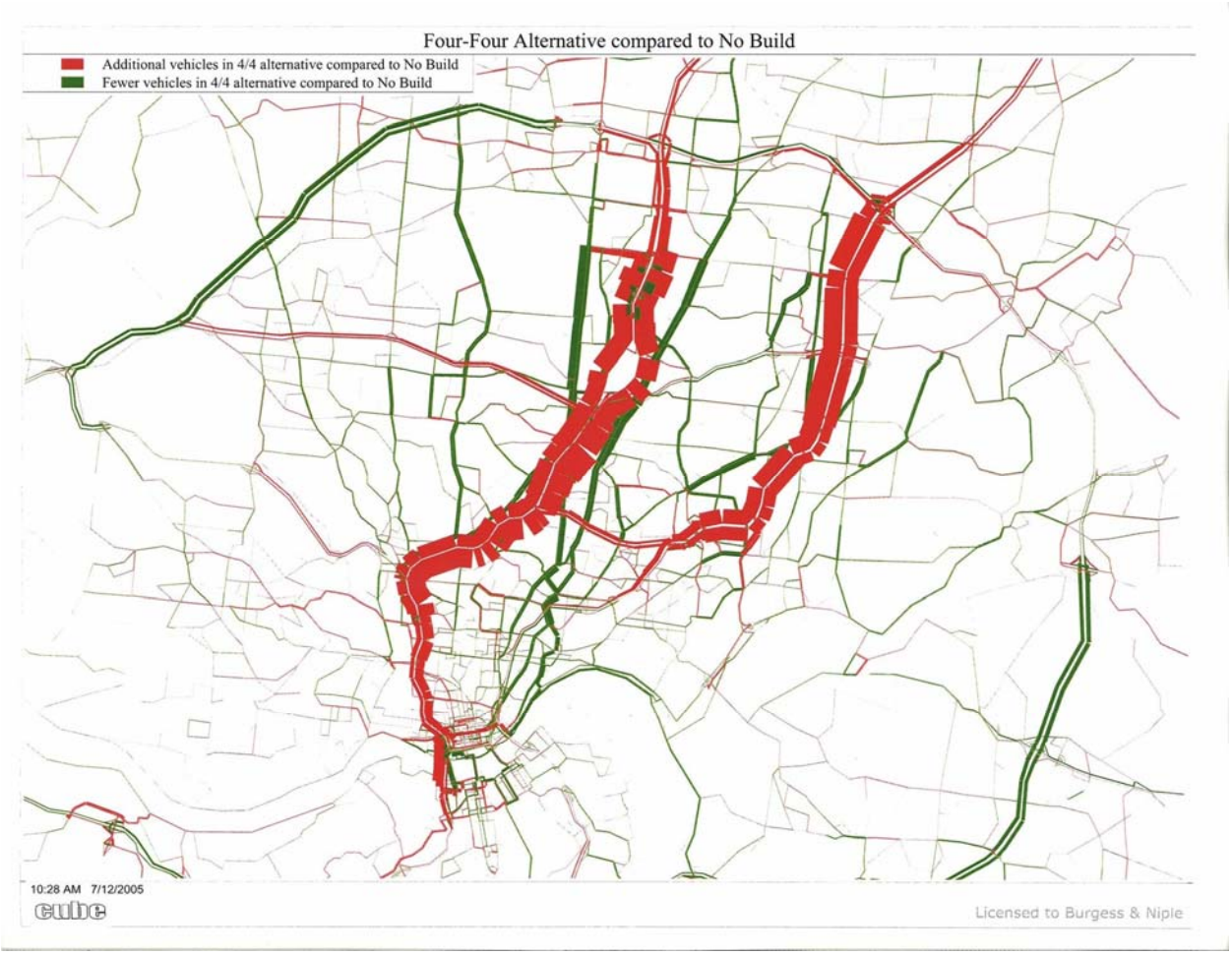


The graphic below illustrates the results for the five-lane alternative compared to the No Build case. Again, the thickness of the band in each area represents the magnitude of increase or decrease in volume. This graphic indicates approximately the same magnitude of trips diverted from the local arterial system, but shows greater diversions from I-71 and I-275. This results in additional increases on the Ronald Reagan and the Norwood Lateral. Comparing these results side-by-side indicates that traffic was drawn to I-75 from alternative routes, including I-71, in both build scenarios, but much more so and from a greater distance in the five-lane option.



So what does this mean? It could be interpreted that additional capacity is needed in the system on a regional basis, which is likely in most urban settings. In order to test the effect of providing this capacity at another location, the model was coded to reflect the four-lane alternative on I-75, but with an additional lane on I-71. In other words, the same number of additional interstate lanes as in the five-lane option, but split between two routes.

The results of this additional modeling analysis, shown below, indicate that four-lane directional capacity on both I-71 and I-75 would eliminate the attraction of traffic from I-71 to I-75. Also eliminated in this scenario is much of the east-west traffic progression between the two Interstate routes.



I-75 Mill Creek Expressway Evaluation of Four-Lane versus Five-Lane

Traffic Volumes and Levels of Service

TranSystems performed capacity analyses for each segment of IR 75 between the Western Hills Viaduct and Paddock Road to evaluate four-lane and five-lane continuity alternatives for the northbound and southbound directions. Highway Capacity Software (HCS) was used to calculate level-of-service results using design year (2030) traffic volumes extracted from the OKI regional travel demand model for each alternative. As noted elsewhere, the model projected that traffic demand on IR 75 would increase as the number of travel lanes increase. Thus, higher traffic volumes were input into the capacity analyses for a five-lane section as compared to the four-lane option.

Freeway capacity was calculated per FHWA's published policy. The calculation procedure accounts for the free-flow speed, heavy vehicle percentage, location (urban versus rural), peak hour factor and the number of travel lanes. This manual procedure indicated that IR 75 would operate with a capacity of 7,886 vehicles per hour with four lanes or a capacity of 9,857 vehicles per hour with five lanes. These values were used to compute volume to capacity (v/c) ratios for each segment. The v/c ratio indicates whether the freeway segment in question can carry the traffic destined for it.

The summary table on the following page details the results of the 2030 AM and PM design hour capacity analyses. The results suggest that the v/c ratio would decrease (i.e., improve) in all segments along the IR 75 corridor with the five-lane concept as compared to the four-lane option although overall hourly traffic volumes will increase. However, failures would still occur on the IR 75 mainline in several locations even with the additional through lane in both directions.

While some freeway segments would no longer fail independently, other segments would continue to fail thus resulting in vehicular queuing within the corridor. The following locations will continue to operate at LOS F in the five-lane scenario:

- IR 75 Southbound from Paddock to Towne – AM Hour
- IR 75 Southbound from IR 74 to Hopple – AM Hour
- IR 75 Southbound from Hopple to Western Hills – AM Hour
- IR 75 Northbound from Bates to I-74 – PM Hour

It can be concluded that travel delay would decrease with the construction of a fifth lane, yet congestion related to capacity constraints would not be fully alleviated. Therefore, the four-lane continuity alternative will provide a measurable improvement in traffic operations. The five-lane continuity alternative would provide greater improvement, but not fully eliminate congestion.

Freeway Segment	Alt.	Southbound AM Volume	Southbound AM FHWA v/c	Southbound AM HCS LOS	Southbound PM Volume	Southbound PM FHWA v/c	Southbound PM HCS LOS	Northbound AM Volume	Northbound AM FHWA v/c	Northbound AM HCS LOS	Northbound PM Volume	Northbound PM FHWA v/c	Northbound PM HCS LOS
W.H. to Hopple	Four Lane	9,597	1.22	F	7,756	0.98	E	7,698	0.98	E	9,242	1.17	F
	Five Lane	10,649	1.08	F	7,890	0.80	D	7,904	0.80	D	9,523	0.97	E
Hopple to Bates	Four Lane	10,227	1.30	F	8,459	1.07	F	7,228	0.92	E	8,931	1.13	F
	Five Lane	11,096	1.13	F	8,595	0.87	D	7,430	0.75	D	9,178	0.93	E
Bates to I-74	Four Lane	Same as Hopple to Bates						7,475	0.95	E	9,651	1.22	F
	Five Lane							7,681	0.78	D	9,905	1.00	F
I-74 Interchange	Four Lane	6,341	0.80	D	6,447	0.82	D	5,656	0.72	D	5,533	0.70	D
	Five Lane	7,038	0.71	D	6,545	0.66	C	5,850	0.59	C	5,769	0.59	C
I-74 to Mitchell	Four Lane	7,265	0.92	E	8,106	1.03	F	7,821	0.99	E	6,731	0.85	D
	Five Lane	7,945	0.81	D	8,197	0.83	D	8,042	0.82	D	6,978	0.71	D
Mitchell to SR 562	Four Lane	8,477	1.07	F	8,134	1.03	F	7,730	0.98	E	7,403	0.94	E
	Five Lane	9,035	0.92	E	8,208	0.83	D	7,910	0.80	D	7,651	0.78	D
SR562 to Towne	Four Lane	Same as Towne to Paddock						8,144	1.03	F	7,210	0.91	E
	Five Lane							8,325	0.84	D	7,469	0.76	D
Towne to Paddock	Four Lane	9,323	1.18	F	8,515	1.08	F	7,980	1.01	F	7,949	1.01	F
	Five Lane	9,876	1.00	F	8,577	0.87	D	8,187	0.83	D	8,239	0.84	D

It should be noted that the number of lanes to be provided for I-75 south of I-74 may depend, in some degree, on the plan for improvements south of this area, currently under study in the Brent Spence Bridge project (HAM-71/75-0.00). Additional capacity needs to be provided south of I-74, but may not be reasonable to provide if no additional through lanes are added south of this point. One option, currently being carried forward for consideration, provides four-lanes in each direction north of I-74 and five lanes in each direction south of this point.

Environmental and Community Impacts

TranSystems utilized the existing GIS database to estimate additional impacts to parcels, structures, parkland and environmental resources for the five-lane option. A preliminary alignment, profile and work limits were developed to approximate the proposed right-of-way for the Five-Lane Continuity alternative. These limits were compared to the Four-Lane Continuity limits to assess additional impacts of the added lane.

Property Impacts & Relocations – Existing r/w limits are not well established at this point in the process. However, based upon preliminary information, it is expected that

the Five-lane Continuity option would impact approximately 12 additional acres of property. Potential building relocations would increase by 2 homes and 3 businesses. Based upon the Hamilton County Auditor's data, the current value for the 2 homes would be roughly $ 85,000, with $ 4.5 million for the 3 businesses.

Park Impacts – Mt. Storm Park, located within the Clifton neighborhood of Cincinnati, abuts the Mill Creek Expressway Project just north of the I-74 interchange. The park sits on 57 acres of land that rises steeply from the highway to a grassy peak which includes a parking area, two shelters and a playground. Either alternative would have similar impacts to this property.

Maple Avenue Park is a ballfield located west of the highway. It is avoided by the 4-lane option, but would experience approximately 0.04 acres of impact from the 5-lane option.

Bank Avenue Park/Landfill – Bank Avenue Park, a former St. Bernard landfill, is currently a park with ball fields located east of the existing highway just north of the Mitchell Avenue interchange. Approximately 0.25 acres would be affected by the four-lane option. The five-lane option would increase this impact to approximately 0.38 acres. This site is pending a Phase II Environmental Site Assessment to determine the limits and existing infrastructure of the closed landfill.

Mill Creek - The five-lane alternative could potentially encroach upon the channelized Mill Creek, west of the highway just north of the Mitchell Avenue interchange. The arrangement of the Mill Creek on the west and existing homes and the former St. Bernard landfill east of the highway create a "pinch point." The close proximity of the river, homes and former landfill in combination with a substandard curve make all of these resources potentially affected by the five-lane alternative.

Conceptual Cost

The current committed funding for this project for construction is $80 million TRAC and $31.543 million Multi-Lane, for a total current budget for construction of approximately $111 million.

The conceptual-level cost difference between the 5-lane and 4-lane mainline alternatives is shown in the table below. Major differentiating cost drivers have been provided on separate lines. The costs for construction are based on 2005 unit prices with a 25% contingency.

Mainline Alternative Cost Comparison[1]

	4-Lane Alternative	5-Lane Alternative
ProjectTotal[4]	$243 Million	$307 Million
Major Cost Differentiators		
- Pavement	$51.1 Million	$56.7 Million
- Retaining Walls	$23.6 Million	$35.9 Million
- Bridges	$42.0 Million	$66.4 Million[2]
- Excavation	$9.6 Million	$10.9 Million
- Embankment	$2.4 Million	$2.8 Million
Utility Relocation		+ $1.2 Million

NOTES:
1. All construction figures in table are shown with the 25% contingency, 3.5% inflation to 2013. The project cost includes 8% for design.
2. Cost increase includes widening at-grade bridges 24', replacing Ludlow Viaduct structure within State's ROW, and replacing the entire Paddock Road Over I-75 structure in kind.
3. Utility relocations are shown here as an increase or decrease in cost between the 4-Lane and 5-Lane alternatives. Impacts include major transmission facilities and billboards.
4. Preliminary r/w estimate for 4-lane option is still in development, so this is not included in the cost comparison above. Auditor's data suggests that additional relocations for 5-lane option would increase the cost difference by an additional $6 million.

It is important to note that preliminary information suggests that the four-lane option will not require the replacement of the major structure known as the Ludlow Viaduct nor the recently completed Paddock Road bridge. Both of these structures would be impacted by the five-lane option.

Summary for Mill Creek Expressway

- While each segment would have an improved v/c ratio under the five-lane option, three segments in the southbound direction and one in the northbound would still fail in the design year, resulting in queues in adjacent sections.
- An additional 12 acres of right-of-way and 5 relocations will be required for the five-lane continuity alternative compared to the four-lane option.
- Additional park impacts would result from the five-lane option that are avoided by the four-lane option, including impacts to the Maple Avenue park.
- Cemetery and landfill issues would result from the five-lane option that would need to be avoided with retaining walls or mitigated
- The five-lane continuity option would be expected to have a project cost of approximately $307 million, compared to $243 million for the four-lane option.

Recently completed Paddock Road bridge

Traffic Performance

Following the volume assignments, the standard ODOT analysis package—*Highway Capacity Software 2000, Version 4.1d*--was used to analyze the freeway segments, interchange entrance ramp merge points, and interchange exit ramp diverge points for each conceptual alternative.

		SOUTHBOUND						NORTHBOUND					
		AM			PM			AM			PM		
Freeway Segment	Alt.	Volume	FHWA v/c	HCS LOS	Volume	FHWA v/c	HCS LOS	Volume	FHWA v/c	HCS LOS	Volume	FHWA v/c	HCS LOS
I-275 to Sharon	4-Lane	9,980	0.97	E	7,500	0.74	D	7,590	0.74	D	9,150	0.90	E
	5-Lane	11,070	0.89	E	8,260	0.68	C	8,350	0.67	C	10,070	0.8	D
Mainline between Sharon ramps	4-Lane	9,190	1.11	F	6,540	0.81	D	7,220	0.88	E	8,000	1	F
	5-Lane	10,200	0.99	F	7,200	0.71	D	7,940	0.77	D	8,800	0.9	D
Sharon to Glendale Milford	4-Lane	9,700	0.94	E	7,580	0.75	D	8,410	0.82	D	8,380	0.8	D
	5-Lane	10,760	0.87	D	8,350	0.69	C	9,250	0.75	D	9,220	0.8	D
Mainline between Glendale Milford ramps	4-Lane	7,070	0.86	D	6,370	0.79	D	7,190	0.87	E	7,140	0.9	E
	5-Lane	7,870	0.76	D	7,020	0.69	C	7,910	0.77	D	7,850	0.8	D
Glendale Milford to Galbraith	4-Lane	8,140	0.99	F	8,200	1.01	F	Not Applicable in this Direction					
	5-Lane	9,050	0.88	E	9,130	0.90	E						
Mainline between Galbraith ramps	4-Lane	7,330	0.89	E	7,430	0.92	E						
	5-Lane	8,160	0.79	D	8,280	0.82	D						
Mainline between Galbraith/SR 126 ramps	4-Lane	8,750	0.85	D	8,510	0.84	D						
	5-Lane	9,730	0.79	D	9,470	0.78	D						
Shepherd Lane to Glendale Milford	4-Lane	Not Applicable in this Direction						8,170	0.99	F	7,810	1	E
	5-Lane							8,990	0.87	E	8,590	0.9	D
Mainline between Shepherd Lane ramps	4-Lane							7,100	0.94	E	6,930	1	E
	5-Lane							7,810	0.83	D	7,620	0.9	D
Davis to Shepherd Lane	4-Lane							7,900	1.05	F	7,470	1	F
	5-Lane							8,690	0.92	E	8,220	0.9	E
Galbraith to Davis	4-Lane							8,050	0.85	D	7,650	0.9	D
	5-Lane							8,860	0.78	D	8,420	0.8	D
Mainline between SR 126 ramp and Galbraith ramp	4-Lane							7,720	1.02	F	7,170	1.00	F
	5-Lane							8,500	0.90	E	7,890	0.9	E
Mainline between Galbraith & SR 126 ramp	4-Lane							7,230	0.88	E	6,900	0.9	D
	5-Lane							7,960	0.77	D	7,590	0.8	D
Mainline between SR 126 EB ramp and Galbraith NB	4-Lane							7,460	0.90	E	7,200	0.9	E
	5-Lane							8,210	0.80	D	7,920	0.8	D
Paddock to SR 126	4-Lane	9,700	0.94	E	9,210	0.91	E	8,760	0.85	D	8,910	0.9	E
	5-Lane	10,780	0.87	D	10,240	0.84	D	9,640	0.78	D	9,800	0.8	D

The table above details the results of the 2030 AM design hour capacity analyses on the mainline links for the No-Build, Four-Lane Continuity, and Five-Lane Continuity. The results suggest that the v/c ratio would decrease (i.e., improve) in all segments along the IR 75 corridor with the five-lane concept as compared to the four-lane option although overall hourly traffic volumes will increase. However, LOS E would still occur on the IR 75 mainline in several locations even with the additional through lane in both directions.

Environmental Impacts

A fifth lane on I-75 would impact more environmental resources than the Four-Lane Continuity alternative. In particular, the Benson Street bridge and the Lockland High School would be impacted. An additional 5,300 linear feet of waterway, 27 acres of floodplain, and 16 acres of floodway would be impacted in the Mill Creek area along the east side of the I-75/SR 126 interchange because a fifth lane requires the relocation of some of the bridge structures and ramps that are in proximity to the Mill Creek.

Cost Comparison

The current committed funding for this project for construction is $80 million TRAC, $29.268 million Multi-Lane, and $1.707 million District Allocation, for a total current budget for construction of approximately $111 million.

The costs for the Five-Lane Continuity Alternative were calculated and compared to the Four-Lane Continuity Alternative. The breakdown of these costs is shown in the below table:

Mainline Alternative Cost Comparison

Cost Type	Cost Items	Four-Lane Continuity ($ million)	Five-Lane Continuity ($ million)	Additional Incremental Cost ($ million)
Construction Costs	Earthwork	$9	$21	+$12
	Pavement	$18	$27	+$9
	Structures	$49	$97	+$48
	Drainage	$4	$9	+$5
	Traffic Control	$4	$6	+$2
	Incidentals	$6	$11	+$5
	Contingencies	$21	$40	+$19
	Inflation	$25	$49	+$24
	Design	$11	$22	+$11
ROW Cost	Right-of-Way	$6	$14	+$8
Totals		**$153**	**$296**	**+$143**

The construction cost of the Five-Lane Continuity Alternative would include more than just the additional pavement costs. A fifth lane would require the removal and relocation

of the I-75/SR 126 bridge piers in order to accommodate the additional width. Structure replacement costs along the interstate increase as well with the additional pavement width required. The fifth lane would also require additional relocations and right of way, as discussed below. Cost associated with work to be performed along SR 126 due to the widening was included as part of this estimate.

The relocation impacts and costs were estimated based on the right-of-way being 12 feet wider than for the Four-Lane Continuity Alternative. The Five-Lane Continuity Alternative will require additional acreage and more relocations of homes and businesses, thus increasing the overall project cost. Currently, the Four-Lane Continuity Alternative would require eight acres of new right-of-way and 25 relocations. The Five-Lane Continuity Alternative would require 16 acres of new right-of-way and 51 relocations. Therefore, the Five-Lane Continuity Alternative would require an additional eight acres of new right-of-way and 26 additional relocations.

Major Impacts of Adding the 5th Lane

Adding a fifth lane results in ripple effects, particularly in the vicinity of SR 126, that represents a large portion of the increased construction cost for the Five-Lane Continuity Alternative. Following are a few key points to consider if the five-lane option were to be carried forward.

The I-75 NB ramp to SR126 WB will have a tighter radius than it does now. Any adjustment to the ramp, will impact EB SR 126, EB SR 126 ramp to NB I-75, and NB I-75 ramp to EB SR 126.

SR 126 and connection ramps to I-75 SB will need to be adjusted, including relocation of SR 126 alignment, relocation of retaining walls, and possible impacts to electrical pylons.

I-75 NB under SR126, showing proximity of bridge piers to I-75 existing edge of pavement.

Overpass structures for SR 126 will need to be replaced, their piers and abutments do not allow for five lanes plus full width shoulder.

Right of way encroaches on Forrer Road as well as the high school before the split.

Summary for Thru the Valley

The below list summarizes the main differences from the analysis of the Four-Lane Continuity and Five-Lane Continuity alternatives:

- Three of the seven northbound I-75 links will be improved by one incremental level of service, and three of the five southbound I-75 links will be improved by one incremental level of service.
- Three of the northbound I-75 links and two of the five southbound I-75 links will be at LOS E for the Five-Lane Continuity Alternative.
- An additional eight acres of right-of-way and 26 relocations will be required for the Five-Lane Continuity Alternative.
- In addition to increased right-of-way impacts, more structures would need to be relocated, and there would be additional ecological resources and history/architecture sites impacted for the Five-Lane Continuity Alternative.
- The Five-Lane Continuity Alternative would have an overall cost of $296 million, which is $143 million more than the Four-Lane Continuity Alternative.

Decision Factors

In determining the decision of whether to carry forward the five-lane continuity option, several factors need to be considered: environmental and property impacts, cost and implementation schedule, and operational benefits.

The property and environmental impacts, particular to parks and neighborhoods, are greater for the five lane option. This is especially challenging where the roadway is constrained by the Mill Creek, the railroad, and the hillside. The four-lane alternative has impacts on homes, businesses and park properties, but these are increased for the five-lane option. Considered alone, this may not be that large of an issue. If the Purpose and Need requires LOS D, then these impacts would be an accepted consequence of the project. However, the community is likely to view these impacts particularly unfavorably considering the NSTI recommendation to pursue the four-lane option.

Operational benefit is provided from I-74 to the north by the four-lane continuity option compared to the No Build. (The potential for a fifth lane is needed to provide any improvement south of I-74 where it is already four lanes in each direction.) While the addition of a fifth through lane in each direction in this area does provide an additional improvement in level of service, it does not achieve the LOS D standard that is typically desired throughout the project length. If a fifth lane is going to be required due to meeting this standard for portions of the project length, then we must also consider addition of a sixth lane to achieve LOS D south of I-74 and north of Galbraith Road.

Lanes added to urban interstates quickly fill up. We know that adding lanes on I-75 will pull traffic from other routes. The more lanes that are added the more traffic that is diverted and from farther away. The model results indicate that traffic is drawn from I-275 and I-71 in a substantial amount in the five-lane scenario, resulting in traffic increases on the lateral routes. This shows that additional capacity is needed in the

system as a whole -- I-75 would not be the choice for much of this traffic if I-71 also had four lanes, for example. Since the operational benefit of additional lanes on I-75 is eroded by diversion of traffic from other routes, it begs the question of whether this additional capacity is better provided elsewhere in the system.

Lastly, the additional cost of the fifth lane needs to be considered. Adding the fifth lane in the Mill Creek Expressway area would add approximately $64 million to the project cost, with $143 million additional in the Through the Valley section. Since funds are not unlimited, it must be considered whether this additional lane on I-75 is the best use of these additional resources.

Level of Service is not one of the thirteen specific controlling criteria that require a design exception. That is, as a matter of policy, ODOT may choose to accept a lesser level of service in the design year on I-75, rather than be committed to five, six or even seven lanes in each direction in order to achieve LOS D. Volume/Capacity ratio is only one of a number of relevant factors and impacts to be considered in reaching a decision about the most practical, prudent and feasible use of available and anticipated resources.

Addition of a fourth lane provides a 33% increase in capacity and a calculable improvement in level of service. The associated improvements to roadway geometry, closure of access points, correction of merge and weave conditions, and elimination of design deficiencies will provide additional benefit in experienced capacity along the corridor, resulting in improved reliability of travel times which is probably more important than carrying capacity alone.

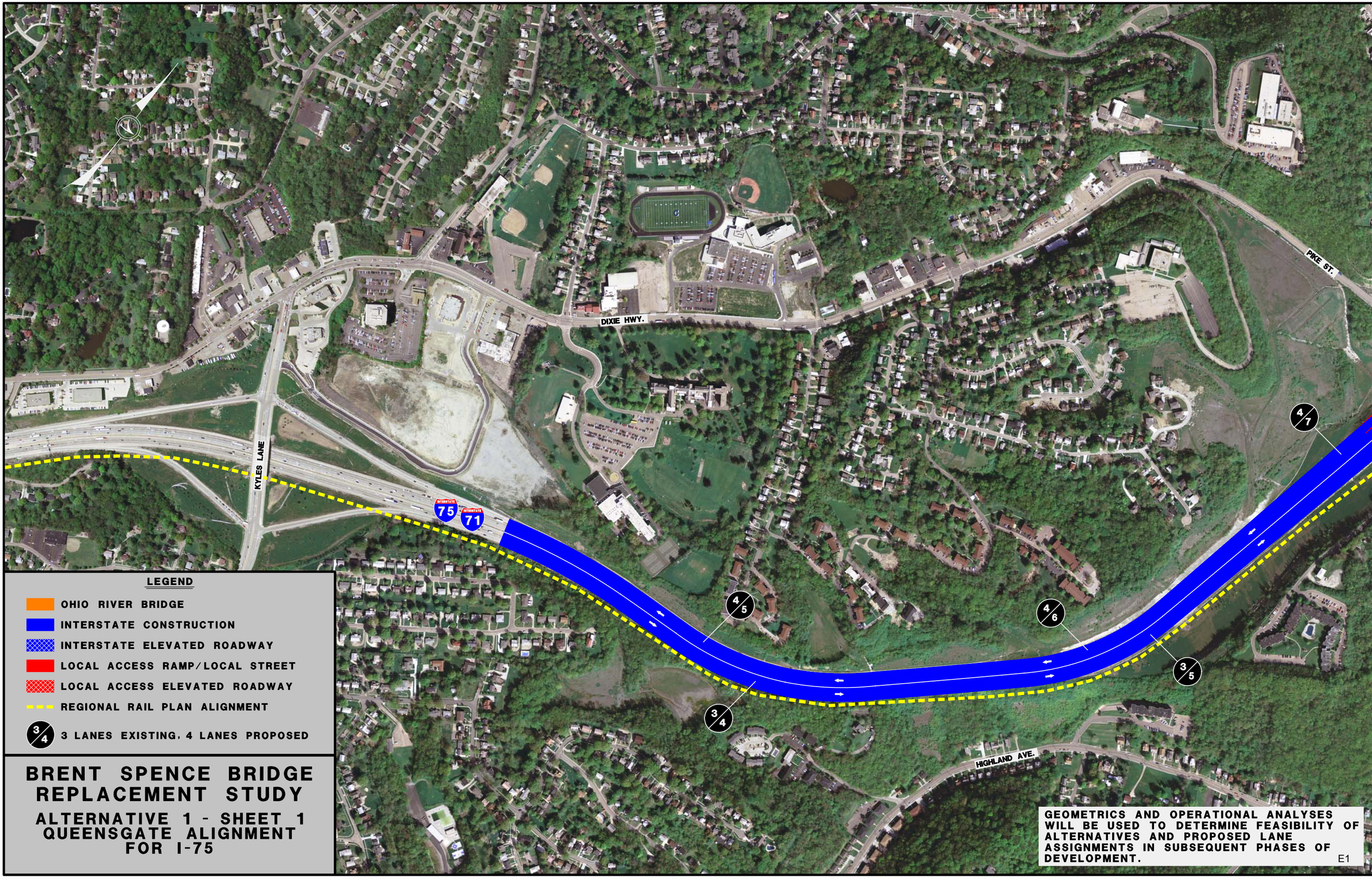
The geometric improvements and added capacity of one additional lane would have a significant impact to the safety of the motoring public. Although there is no quantitative measure to compare a one lane to two lane addition scenario from a safety perspective, we can reasonably assume that a second additional lane would have a much smaller impact compared to the improved geometrics (especially inside shoulder width) and one additional lane. The addition of two or more lanes would most likely have a much smaller rate of return in comparison to the one lane addition with geometric improvements. So, from a safety standpoint, the one lane addition with geometric improvements would provide a major long term improvement to the safety of this portion of the I75 corridor.

When considered as a dynamic network, the regional transportation system would be best served by limiting the impacts to the I-75 corridor while at the same time providing significant improvement to the safety and operational function of the roadway by constructing a fourth lane in each direction.

It is recognized that this facility will require consideration of other strategies to manage congestion rather than providing additional lanes. Improvements to the IR-75 Corridor will incorporate transportation demand management strategies to mitigate the impact on the freeway of a build solution that accepts a reduced level of service in the design year. District Eight is implementing a system level ramp metering project on the IR-74

corridor scheduled for construction in fiscal year 2007, providing regional familiarity with the concept. Each interchange along the IR-75 corridor will be evaluated and designed to be compatible with future ramp metering. Use of ITS for travel demand management and incident response will be evaluated and enhancements incorporated that will improve the delivery of these services. The value of special purpose lanes (HOT, HOV and Busway) will be reevaluated for implementation when the freeway reaches an unacceptable level of service.

Appendix E
Mainline Alternatives and Sub-Alternatives



LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED ROADWAY
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

ALTERNATIVE 1 - SHEET 1 QUEENSGATE ALIGNMENT FOR I-75

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

RAMP RECONFIGURATION
SEE I-75 NB - KY RAMP ALTS.

PIKE ST.

WESTERN AVE.

CRESCENT AVE.

INTERSTATE 75

INTERSTATE 71

GOEBELS PARK

3RD ST.

4TH ST.

PHILADELPHIA ST.

5TH ST.

6TH ST.

7TH ST.

8TH ST.

9TH ST.

12TH ST.

MAIN ST.

PIKE ST.

COVINGTON

LINDEN GROVE CEMETERY

0/5

4/2

4/2 TOP

4/2 BOTTOM

4/7

3/7

3/2

0/5

0/5

LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED ROADWAY
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

ALTERNATIVE 1 - SHEET 2
QUEENSGATE ALIGNMENT FOR I-75

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

WESTERN AVE.

CRESCENT AVE.

INTERSTATE 75

INTERSTATE 71

0/5

4/2 TOP

4/2 BOTTOM

REHAB. EXISTING BRIDGE

3RD ST.

MERRING WAY

GEST ST.

5TH ST.

6TH ST.

US 50

2/2

2/1

PETE ROSE WAY

2ND ST.

3RD ST.

PLUM ST.

4TH ST.

5TH ST.

6TH ST.

7TH ST.

ELM ST.

CENTRAL AVE.

8TH ST.

9TH ST.

COURT ST.

12TH ST.

CENTRAL PKWY.

INTERCHANGE RECONSTRUCTION SEE I-71, US 50 INT. ALTS.

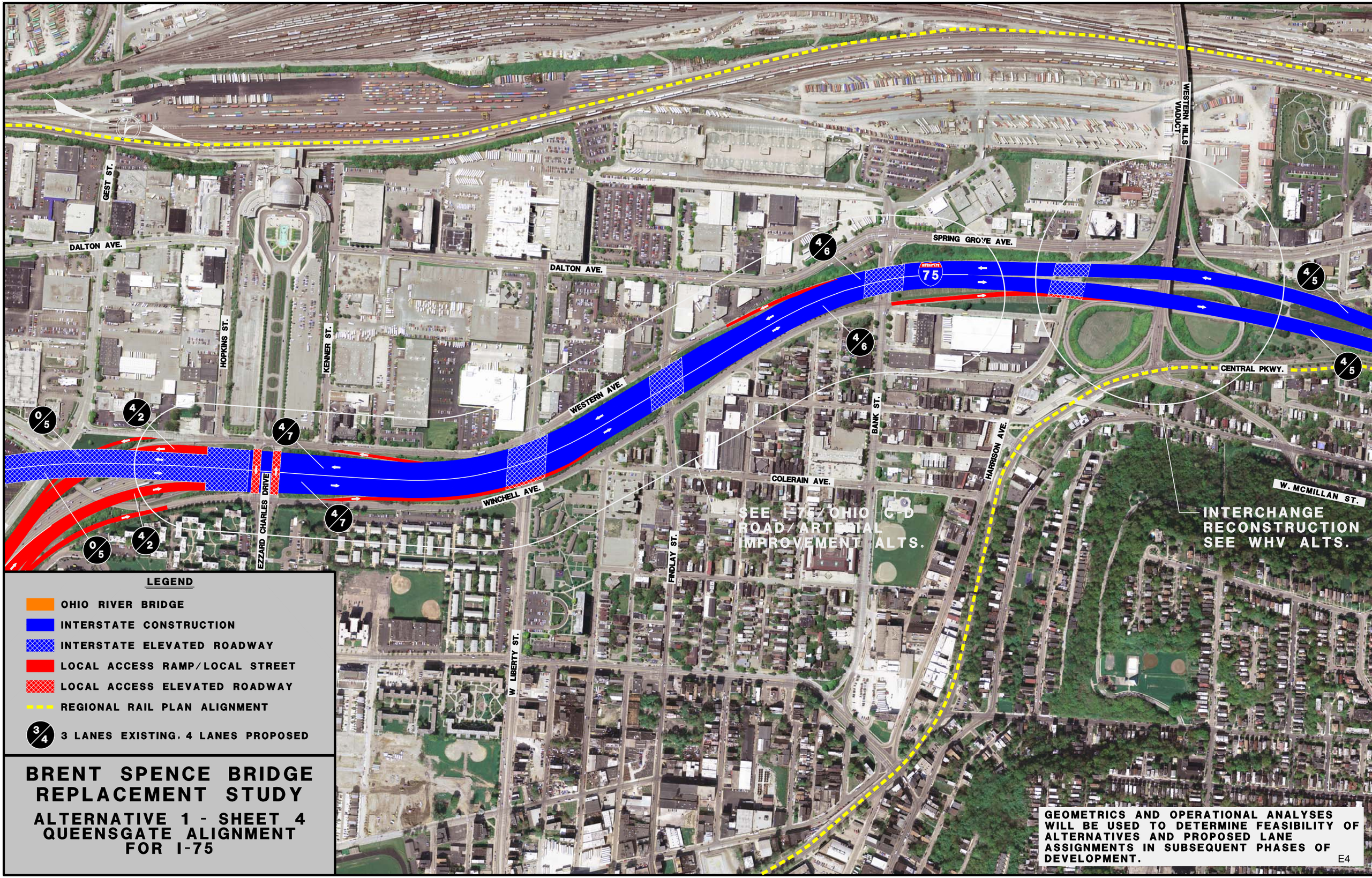
LEGEND

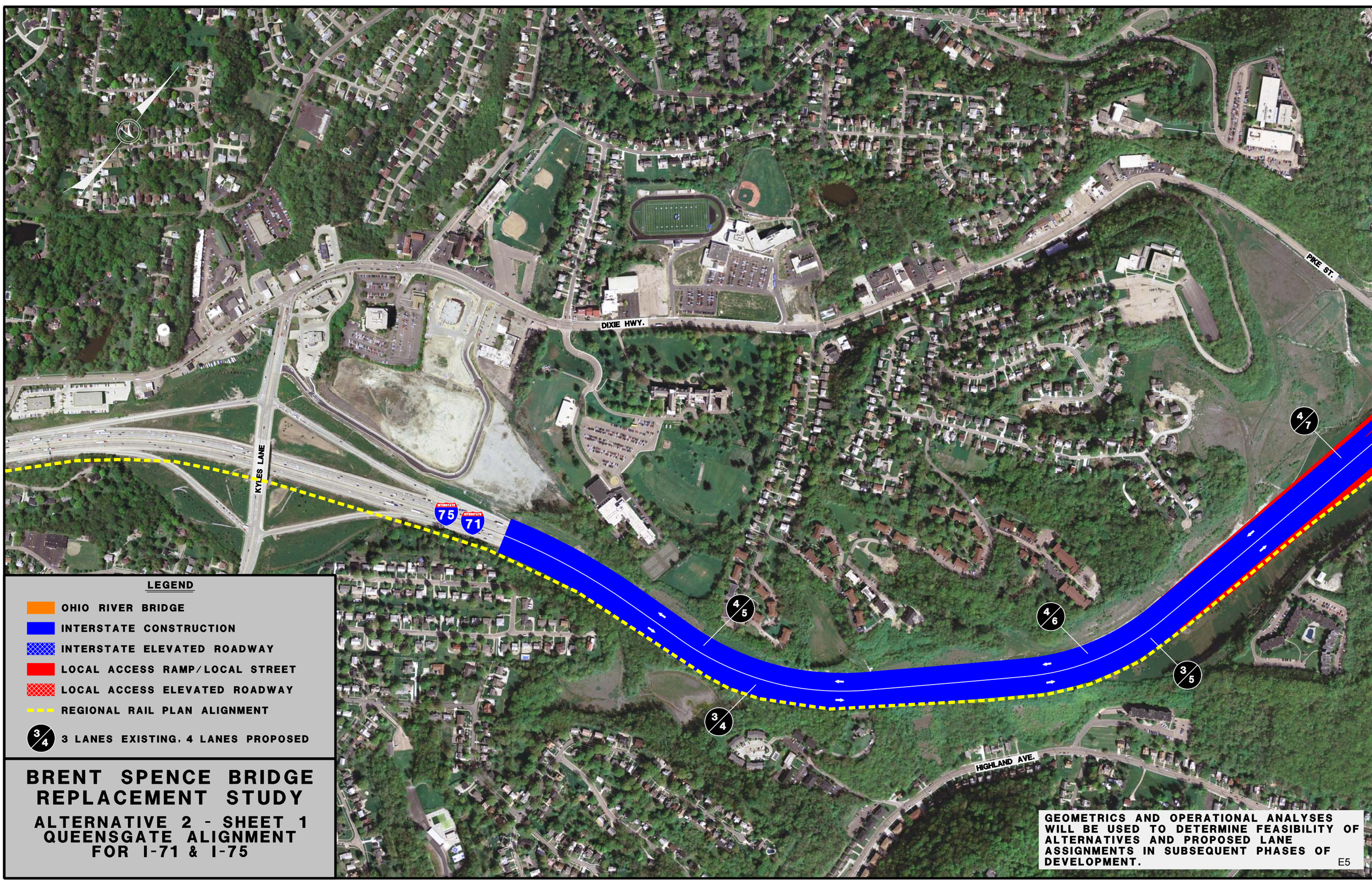
- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP
- LOCAL ACCESS ELEVATED RAMP
- US 50
- US 50 ELEVATED
- LOCAL STREET
- LOCAL STREET ELEVATED
- RAMP/ROADWAY REMOVAL
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

ALTERNATIVE 1 - SHEET 3 QUEENSGATE ALIGNMENT FOR I-75

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.


GEST ST.
DALTON AVE.
HOPKINS ST.
KENNER ST.
DALTON AVE.
WESTERN AVE.
WINCHELL AVE.
EZZARD CHARLES DRIVE
SPRING GROVE AVE.
INTERSTATE 75
WESTERN HILLS VIADUCT
CENTRAL PKWY.
BANK ST.
HARRISON AVE.
COLERAIN AVE.
FINDLAY ST.
W LIBERTY ST.
W. MCMILLAN ST.
SEE I-75/OHIO C D ROAD/ARTERIAL IMPROVEMENT ALTS.
INTERCHANGE RECONSTRUCTION SEE WHV ALTS.
0/5
4/2
4/7
4/6
4/5
LEGEND
OHIO RIVER BRIDGE
INTERSTATE CONSTRUCTION
INTERSTATE ELEVATED ROADWAY
LOCAL ACCESS RAMP/LOCAL STREET
LOCAL ACCESS ELEVATED ROADWAY
REGIONAL RAIL PLAN ALIGNMENT
3/4 3 LANES EXISTING, 4 LANES PROPOSED
BRENT SPENCE BRIDGE REPLACEMENT STUDY
ALTERNATIVE 1 - SHEET 4
QUEENSGATE ALIGNMENT FOR I-75
GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.
E4



LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED ROADWAY
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

ALTERNATIVE 2 - SHEET 1 QUEENSGATE ALIGNMENT FOR I-71 & I-75

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

RAMP RECONFIGURATION
SEE I-75 NB - KY RAMP ALTS.

PIKE ST.

WESTERN AVE.

CRESCENT AVE.

INTERSTATE 75 INTERSTATE 71

GOEBELS PARK

4TH ST.

3RD ST.

PHILADELPHIA ST.

5TH ST.

6TH ST.

7TH ST.

8TH ST.

9TH ST.

12TH ST.

MAIN ST.

PIKE ST.

COVINGTON

LINDEN GROVE CEMETERY

4/2 TOP

4/2 BOTTOM

LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED ROADWAY
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

ALTERNATIVE 2 - SHEET 2
QUEENSGATE ALIGNMENT
FOR I-71 & I-75

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

WESTERN AVE.

CRESCENT AVE.

0/7

0/7

INTERSTATE 75

INTERSTATE 71

4/2 TOP

4/2 BOTTOM

3RD ST.

MERRING WAY

GEST ST.

0/5

0/5

0/5

0/5

5TH ST.

6TH ST.

INTERSTATE 75

GEST ST.

4/2

4/2

INTERSTATE 71

INTERSTATE 71

0/2

0/2

US 50

2/2

REHAB. EXISTING BRIDGE

PETE ROSE WAY

2ND ST.

3RD ST.

INTERSTATE 71

2/2

2/2

CENTRAL AVE.

PLUM ST.

4TH ST.

5TH ST.

6TH ST.

7TH ST.

ELM ST.

8TH ST.

9TH ST.

COURT ST.

12TH ST.

CENTRAL PKWY.

INTERCHANGE RECONSTRUCTION SEE I-71, US 50 INT. ALTS.

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

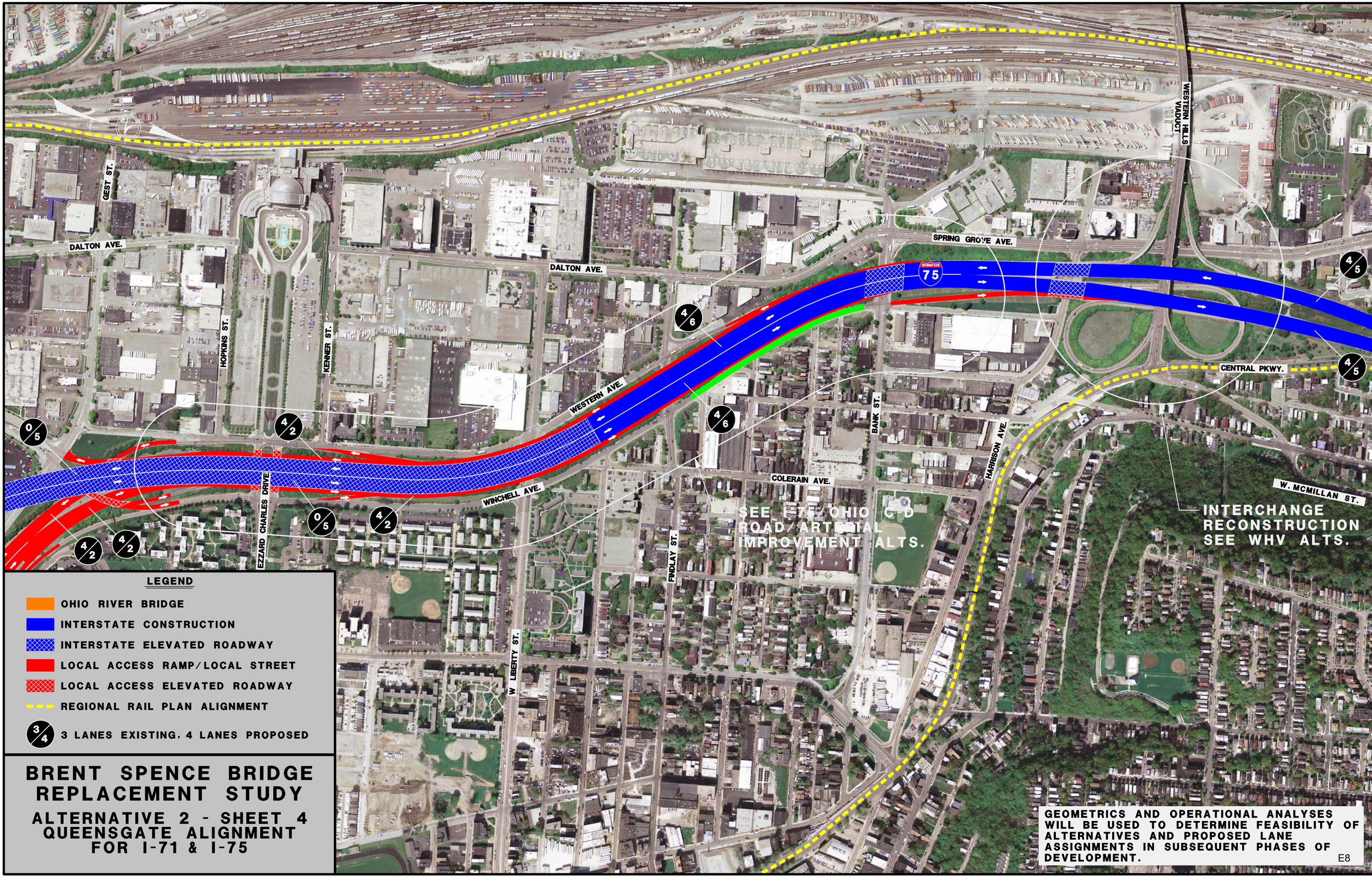
E7

LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP
- LOCAL ACCESS ELEVATED RAMP
- US 50
- US 50 ELEVATED
- LOCAL STREET
- LOCAL STREET ELEVATED
- RAMP/ROADWAY REMOVAL
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

ALTERNATIVE 2 - SHEET 3 QUEENSGATE ALIGNMENT FOR I-71 & I-75


GEST ST.
DALTON AVE.
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DALTON AVE.
WESTERN AVE.
WINCHELL AVE.
EZZARD CHARLES DRIVE
SPRING GROVE AVE.
WESTERN HILLS VIADUCT
INTERSTATE 75
CENTRAL PKWY.
BANK ST.
HARRISON AVE.
COLERAIN AVE.
FINDLAY ST.
W. LIBERTY ST.
W. MCMILLAN ST.
SEE I-75/OHIO C-D ROAD/ARTERIAL IMPROVEMENT ALTS.
INTERCHANGE RECONSTRUCTION SEE WHV ALTS.
0/5
4/2
4/6
4/5
3/4
LEGEND
OHIO RIVER BRIDGE
INTERSTATE CONSTRUCTION
INTERSTATE ELEVATED ROADWAY
LOCAL ACCESS RAMP/LOCAL STREET
LOCAL ACCESS ELEVATED ROADWAY
REGIONAL RAIL PLAN ALIGNMENT
3 LANES EXISTING, 4 LANES PROPOSED
BRENT SPENCE BRIDGE REPLACEMENT STUDY
ALTERNATIVE 2 - SHEET 4
QUEENSGATE ALIGNMENT
FOR I-71 & I-75
GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.
E8

DIXIE HWY.

PIKE ST.

KYLES LANE

INTERSTATE 75

INTERSTATE 71

HIGHLAND AVE.

4/1

4/5

4/6

3/5

3/4

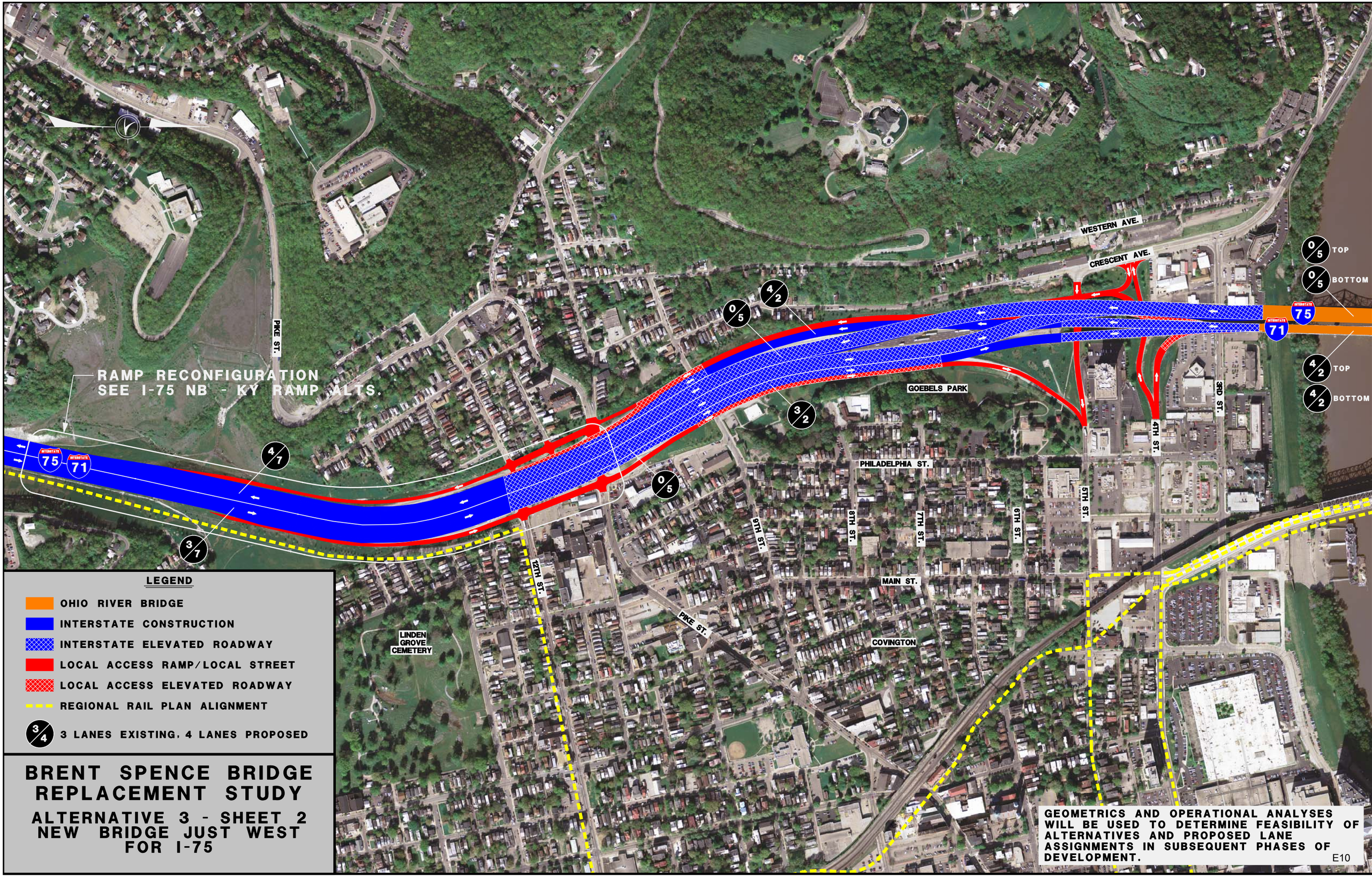
LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED ROADWAY
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

ALTERNATIVE 3 - SHEET 1
NEW BRIDGE JUST WEST FOR I-75

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.


RAMP RECONFIGURATION
SEE I-75 NB - KY RAMP ALTS.
PIKE ST.
WESTERN AVE.
CRESCENT AVE.
GOEBELS PARK
3RD ST.
4TH ST.
PHILADELPHIA ST.
5TH ST.
6TH ST.
7TH ST.
8TH ST.
9TH ST.
12TH ST.
MAIN ST.
COVINGTON
LINDEN GROVE CEMETERY
INTERSTATE 75
INTERSTATE 71
0/5 TOP
0/5 BOTTOM
4/2 TOP
4/2 BOTTOM
4/2
0/5
3/2
4/7
3/7
0/5
LEGEND
OHIO RIVER BRIDGE
INTERSTATE CONSTRUCTION
INTERSTATE ELEVATED ROADWAY
LOCAL ACCESS RAMP/LOCAL STREET
LOCAL ACCESS ELEVATED ROADWAY
REGIONAL RAIL PLAN ALIGNMENT
3/4 3 LANES EXISTING, 4 LANES PROPOSED
BRENT SPENCE BRIDGE REPLACEMENT STUDY
ALTERNATIVE 3 - SHEET 2
NEW BRIDGE JUST WEST FOR I-75
GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.
E10

WESTERN AVE.

CRESCENT AVE.

3RD ST.

0/5 TOP

0/5 BOTTOM

4/2 TOP

4/2 BOTTOM

INTERSTATE 75

INTERSTATE 71

REHAB. EXISTING BRIDGE

MEHRING WAY

GEST ST.

5TH ST.

6TH ST.

3RD ST.

US 50

4/5

4/5

GEST ST.

INTERSTATE 75

2/2

2/5

INTERSTATE 75

2/2

INTERSTATE 71

INTERSTATE 71

2/5

INTERCHANGE RECONSTRUCTION SEE I-75, I-71, US 50 INT. ALTS.

PETE ROSE WAY

CENTRAL AVE.

8TH ST.

9TH ST.

COURT ST.

12TH ST.

PLUM ST.

2ND ST.

3RD ST.

INTERSTATE 71

4TH ST.

5TH ST.

6TH ST.

7TH ST.

ELM ST.

CENTRAL PKWY.

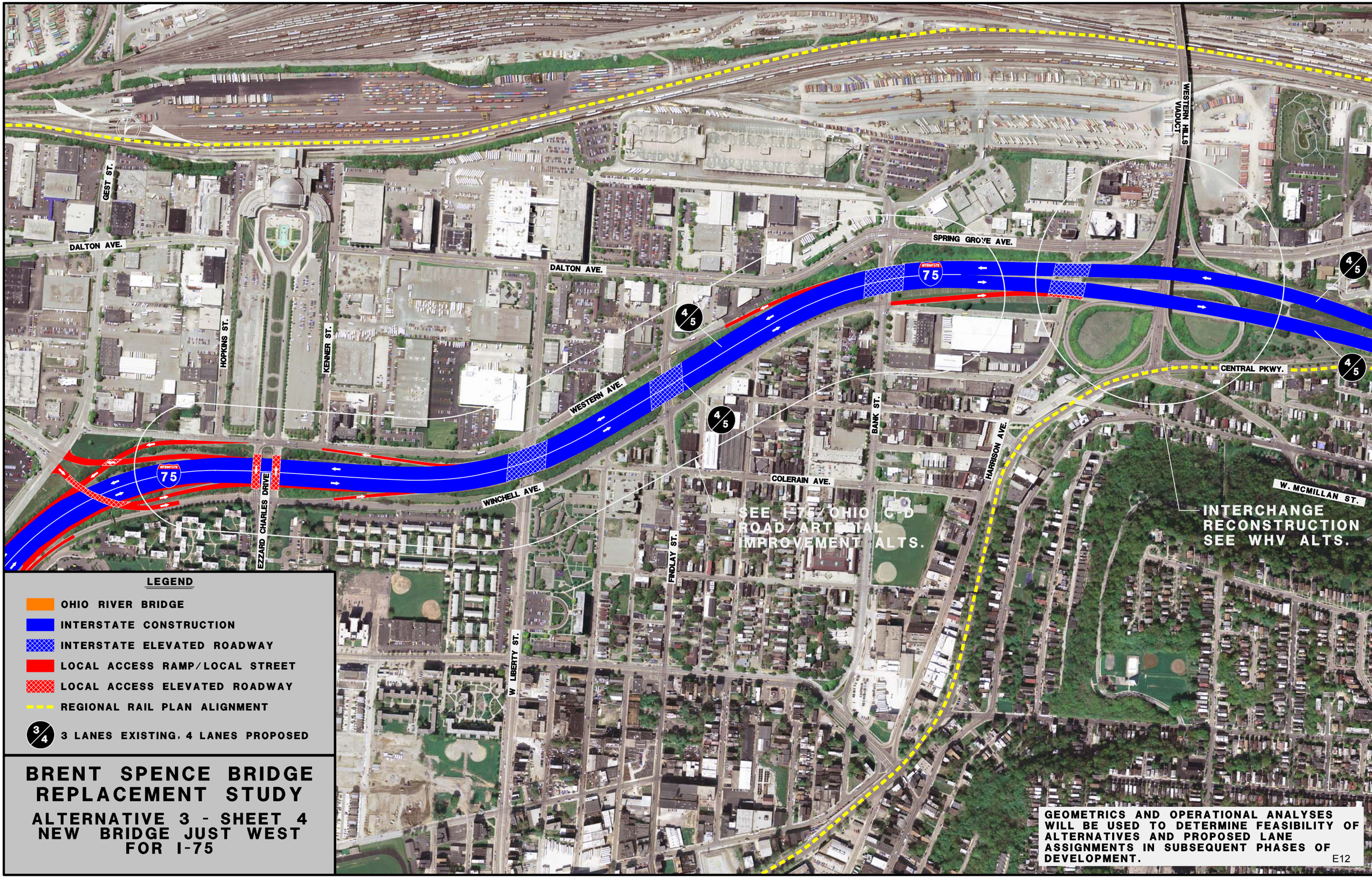
LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP
- LOCAL ACCESS ELEVATED RAMP
- US 50
- US 50 ELEVATED
- LOCAL STREET
- LOCAL STREET ELEVATED
- RAMP/ROADWAY REMOVAL
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

ALTERNATIVE 3 - SHEET 3 NEW BRIDGE JUST WEST FOR I-75

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.



LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED ROADWAY
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

ALTERNATIVE 3 - SHEET 4 NEW BRIDGE JUST WEST FOR I-75

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

DIXIE HWY.

PIKE ST.

KYLES LANE

INTERSTATE 75

INTERSTATE 71

HIGHLAND AVE.

LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED ROADWAY
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

ALTERNATIVE 4 - SHEET 1
NEW BRIDGE JUST WEST FOR ALL TRAFFIC

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

RAMP RECONFIGURATION
SEE I-75 NB - KY RAMP ALTS.

WESTERN AVE.
CRESCENT AVE.
PIKE ST.
GOEBELS PARK
3RD ST.
4TH ST.
PHILADELPHIA ST.
5TH ST.
6TH ST.
7TH ST.
8TH ST.
9TH ST.
12TH ST.
MAIN ST.
PIKE ST.
LINDEN GROVE CEMETERY
COVINGTON
TOP
BOTTOM

0/2 4/5 0/2 3/5 0/2 4/7 4/5 0/2 3/5 3/7 0/2 0/5 0/5 0/3 0/3

INTERSTATE 75 INTERSTATE 71

LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED ROADWAY
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

ALTERNATIVE 4 - SHEET 2
NEW BRIDGE JUST WEST FOR ALL TRAFFIC

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

WESTERN AVE.

CRESCENT AVE.

4TH

3RD ST.

REMOVE EXISTING BRIDGE

INTERSTATE 75 TOP 2/5 2/5

BOTTOM 2/3 2/3 INTERSTATE 71

MERRING WAY

GEST ST.

3RD ST.

5TH ST.

6TH ST.

US 50

2/2

2/5

INTERSTATE 75

INTERSTATE 71

PETE ROSE WAY

2ND ST.

3RD ST.

PLUM ST.

4TH ST.

5TH ST.

6TH ST.

7TH ST.

ELM ST.

CENTRAL AVE.

4/5

4/5

GEST ST.

INTERSTATE 75

INTERCHANGE RECONSTRUCTION SEE I-75, I-71, US 50 INT. ALTS.

8TH ST.

9TH ST.

COURT ST.

12TH ST.

CENTRAL PKWY.

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

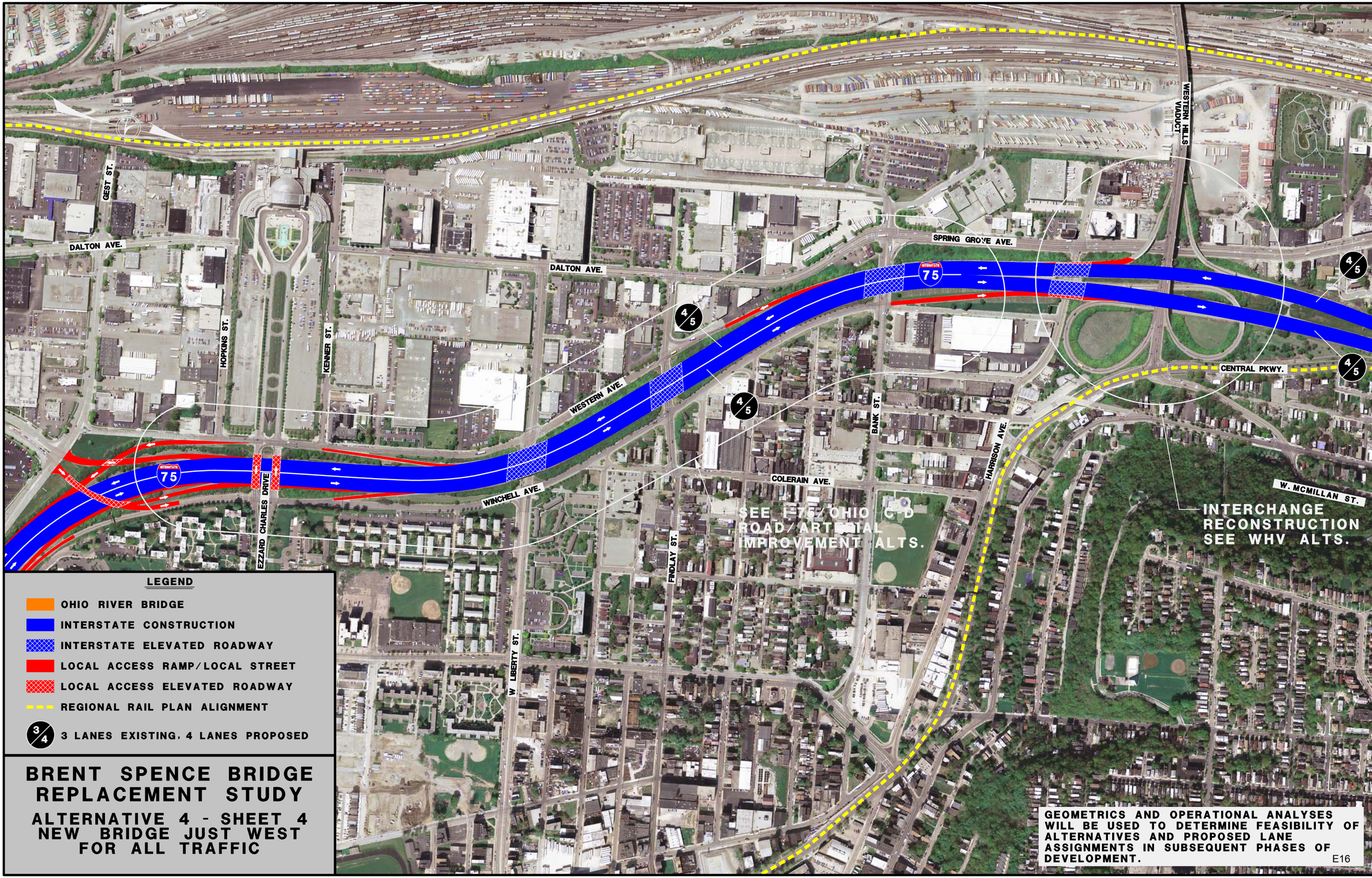
E15

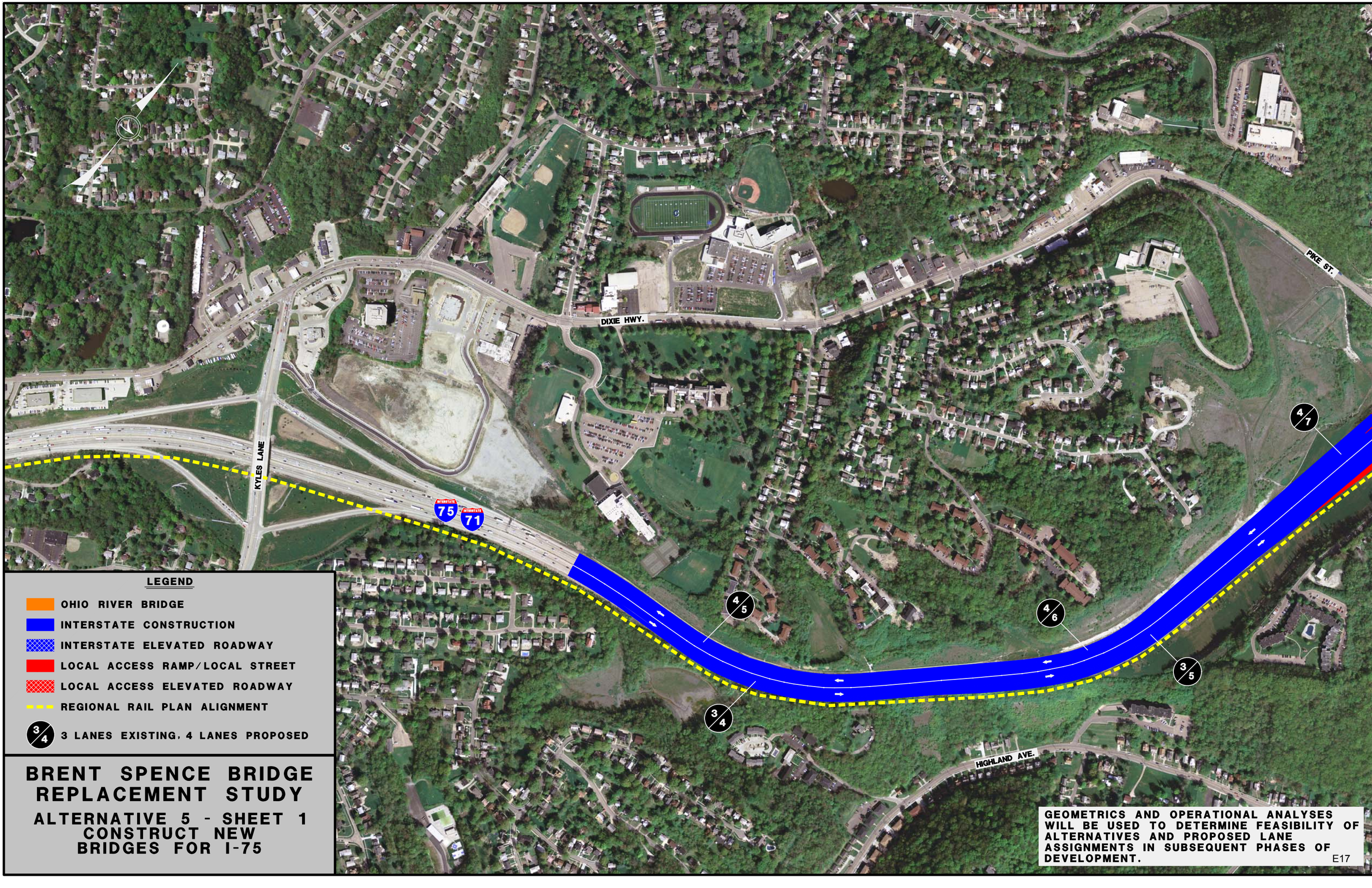
LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP
- LOCAL ACCESS ELEVATED RAMP
- US 50
- US 50 ELEVATED
- LOCAL STREET
- LOCAL STREET ELEVATED
- RAMP/ROADWAY REMOVAL
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

ALTERNATIVE 4 - SHEET 3 NEW BRIDGE JUST WEST FOR ALL TRAFFIC


GEST ST.
DALTON AVE.
HOPKINS ST.
KENNER ST.
DALTON AVE.
WESTERN AVE.
SPRING GROVE AVE.
WESTERN HILLS VIADUCT
INTERSTATE 75
4/5
CENTRAL PKWY.
BANK ST.
HARRISON AVE.
COLERAIN AVE.
WINCHELL AVE.
EZZARD CHARLES DRIVE
FINDLAY ST.
W LIBERTY ST.
W. MCMILLAN ST.
SEE I-75/OHIO C-D ROAD/ARTERIAL IMPROVEMENT ALTS.
INTERCHANGE RECONSTRUCTION SEE WHV ALTS.
LEGEND
OHIO RIVER BRIDGE
INTERSTATE CONSTRUCTION
INTERSTATE ELEVATED ROADWAY
LOCAL ACCESS RAMP/LOCAL STREET
LOCAL ACCESS ELEVATED ROADWAY
REGIONAL RAIL PLAN ALIGNMENT
3/4 3 LANES EXISTING, 4 LANES PROPOSED
BRENT SPENCE BRIDGE REPLACEMENT STUDY
ALTERNATIVE 4 - SHEET 4
NEW BRIDGE JUST WEST FOR ALL TRAFFIC
GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.
E16



LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED ROADWAY
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

ALTERNATIVE 5 - SHEET 1 CONSTRUCT NEW BRIDGES FOR I-75

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

RAMP RECONFIGURATION
SEE I-75 NB - KY RAMP ALTS.

4/7

3/6

4/2

0/5

3/2

4/2 TOP

4/2 BOTTOM

0/5

0/5

0/5

WESTERN AVE.

CRESCENT AVE.

PIKE ST.

GOEBELS PARK

3RD ST.

4TH ST.

PHILADELPHIA ST.

5TH ST.

6TH ST.

7TH ST.

8TH ST.

9TH ST.

12TH ST.

MAIN ST.

PIKE ST.

COVINGTON

LINDEN GROVE CEMETERY

LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED ROADWAY
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

ALTERNATIVE 5 - SHEET 2
CONSTRUCT NEW BRIDGES FOR I-75

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

WESTERN AVE.

CRESCENT AVE.

3RD ST.

4TH

REHAB. EXISTING BRIDGE

0/5

4/2 TOP

4/2 BOTTOM

MEHRING WAY

GEST ST.

3RD ST.

5TH ST.

6TH ST.

50

4/5

GEST ST.

4/5

2/5

2/2

PETE ROSE WAY

2ND ST.

3RD ST.

2/5

2/2

CENTRAL AVE.

PLUM ST.

4TH ST.

5TH ST.

6TH ST.

7TH ST.

ELM ST.

8TH ST.

9TH ST.

COURT ST.

12TH ST.

CENTRAL PKWY.

INTERCHANGE RECONSTRUCTION SEE I-75, I-71, US 50 INT. ALTS.

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

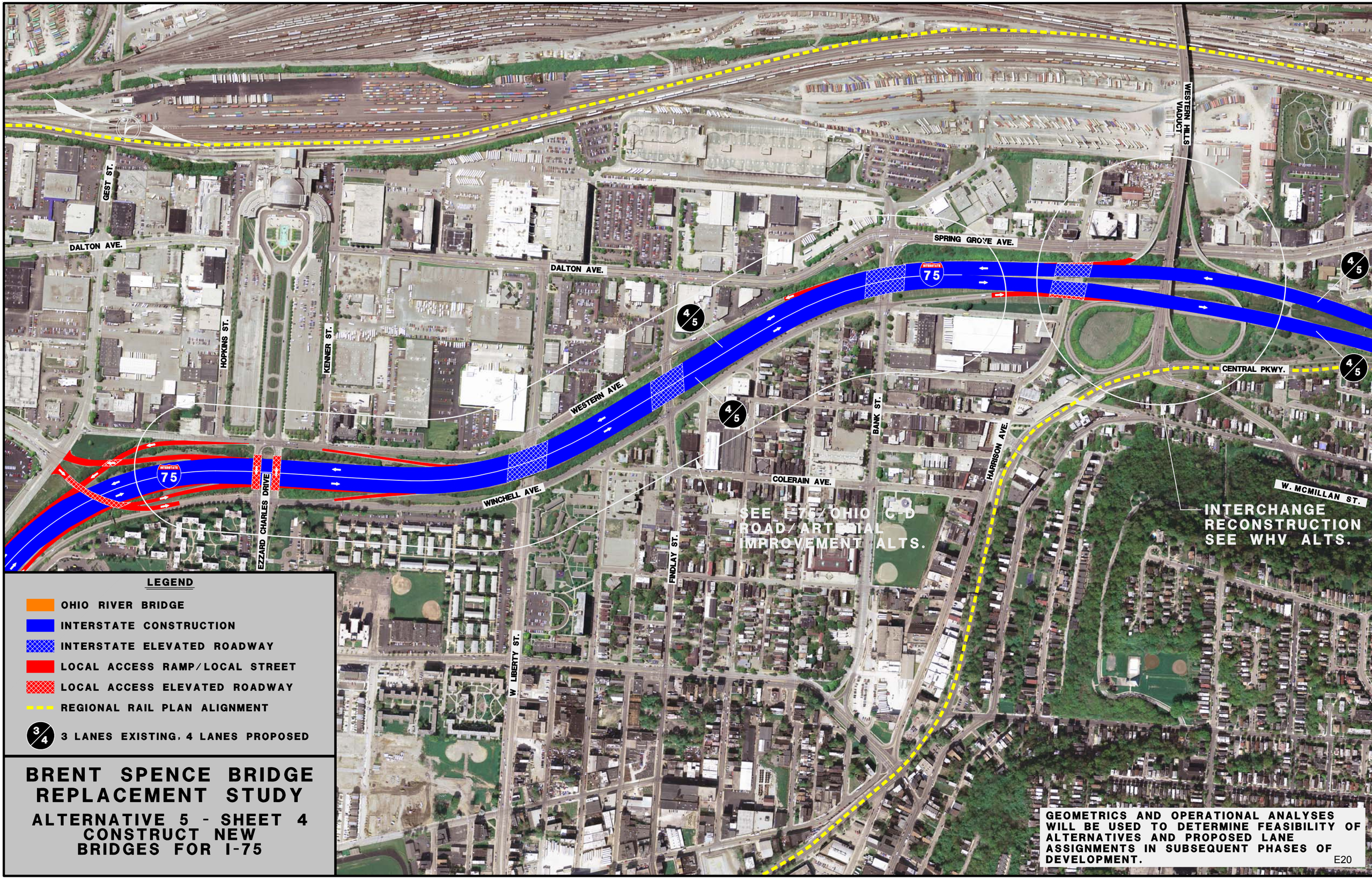
E19

LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP
- LOCAL ACCESS ELEVATED RAMP
- US 50
- US 50 ELEVATED
- LOCAL STREET
- LOCAL STREET ELEVATED
- RAMP/ROADWAY REMOVAL
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

ALTERNATIVE 5 - SHEET 3 CONSTRUCT NEW BRIDGES FOR I-75



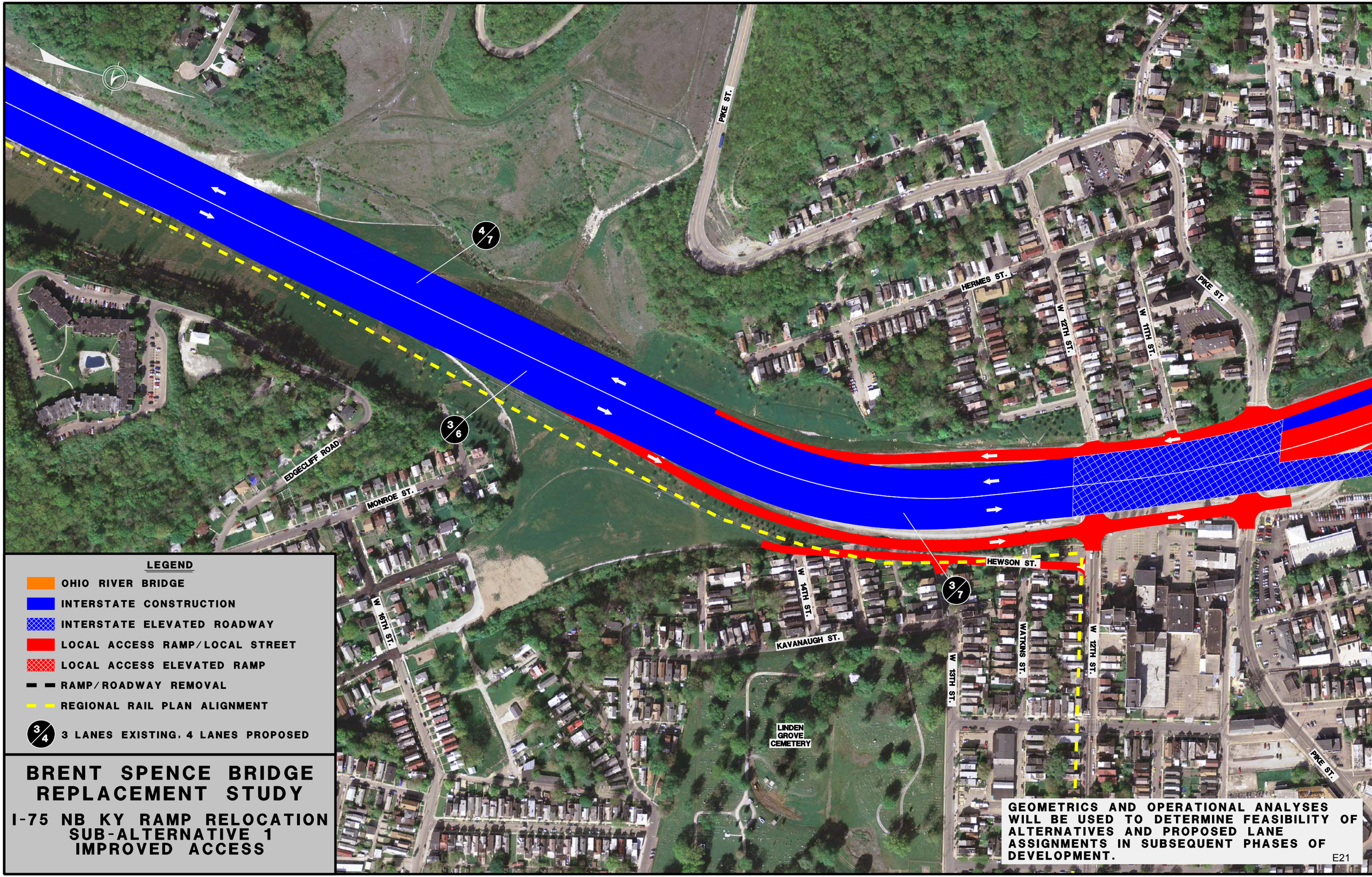
LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED ROADWAY
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

ALTERNATIVE 5 - SHEET 4 CONSTRUCT NEW BRIDGES FOR I-75

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.


PIKE ST.
HERMES ST.
W 12TH ST.
W 11TH ST.
PIKE ST.
4/7
3/6
EDGECLIFF ROAD
MONROE ST.
W 16TH ST.
W 14TH ST.
KAVANAUGH ST.
LINDEN GROVE CEMETERY
HEWSON ST.
3/7
W 13TH ST.
WATKINS ST.
W 12TH ST.
PIKE ST.
LEGEND
OHIO RIVER BRIDGE
INTERSTATE CONSTRUCTION
INTERSTATE ELEVATED ROADWAY
LOCAL ACCESS RAMP/LOCAL STREET
LOCAL ACCESS ELEVATED RAMP
RAMP/ROADWAY REMOVAL
REGIONAL RAIL PLAN ALIGNMENT
3/4 3 LANES EXISTING, 4 LANES PROPOSED
BRENT SPENCE BRIDGE REPLACEMENT STUDY
I-75 NB KY RAMP RELOCATION SUB-ALTERNATIVE 1 IMPROVED ACCESS
GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.
E21

PIKE ST.

HERMES ST.

W 12TH ST.

W 11TH ST.

PIKE ST.

4/7

3/6

EDGECLIFF ROAD

MONROE ST.

W 16TH ST.

W 14TH ST.

KAVANAUGH ST.

3/7

HEWSON ST.

W 13TH ST.

WATKINS ST.

W 12TH ST.

LINDEN GROVE CEMETERY

PIKE ST.

LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED RAMP
- RAMP/ROADWAY REMOVAL
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

I-75 NB KY RAMP RELOCATION SUB-ALTERNATIVE 2 IMPROVED ACCESS

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP
- LOCAL ACCESS ELEVATED RAMP
- US 50
- US 50 ELEVATED
- LOCAL STREET
- LOCAL STREET ELEVATED
- RAMP/ROADWAY REMOVAL
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

I-71/US 50 INTERCHANGE SUB-ALTERNATIVE 1 MAINLINE, US 50 REALIGNMENT, OPTIONAL US 50 RAMPS

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

E23

GEST ST.

MEHRING WAY

5TH ST.

6TH ST.

INTERSTATE 71

US 50

OPTIONAL

OPTIONAL

0/2

0/2

4/2

4/3

2/2

2/2

LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP
- LOCAL ACCESS ELEVATED RAMP
- US 50
- US 50 ELEVATED
- LOCAL STREET
- LOCAL STREET ELEVATED
- RAMP/ROADWAY REMOVAL
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

I-71/US 50 INTERCHANGE SUB-ALTERNATIVE 2 MAINLINE, US 50 REALIGNMENT OPTIONAL US 50 RAMPS

2ND ST.

3RD ST.

INTERSTATE 71

PLUM ST.

4TH ST.

5TH ST.

CENTRAL AVE.

6TH ST.

7TH ST.

9TH ST.

9TH ST.

COURT ST.

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

E24

GEST ST.

5TH ST.

6TH ST.

MEHRING WAY

OPTIONAL

4/5

2/5

50

I-75 ELEVATED
OPTIONAL

2/2

2/2

OPTIONAL

CENTRAL AVE.

7TH ST.

9TH ST.

8TH ST.

COURT ST.

2ND ST.

3RD ST.

4TH ST.

5TH ST.

6TH ST.

PLUM ST.

LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP
- LOCAL ACCESS ELEVATED RAMP
- US 50
- US 50 ELEVATED
- LOCAL STREET
- LOCAL STREET ELEVATED
- RAMP/ROADWAY REMOVAL
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

I-71/I-75/US 50 INTERCHANGE
SUB-ALTERNATIVE 1
I-75, US 50 REALIGNMENT
OPTIONAL US 50 RAMPS

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

GEST ST.
5TH ST.
6TH ST.
MEHRING WAY
50
OPTIONAL
4/5
2/5
2/2
2/2
OPTIONAL
CENTRAL AVE.
9TH ST.
7TH ST.
8TH ST.
COURT ST.
4TH ST.
5TH ST.
6TH ST.
2ND ST.
3RD ST.
PLUM ST.

LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP
- LOCAL ACCESS ELEVATED RAMP
- US 50
- US 50 ELEVATED
- LOCAL STREET
- LOCAL STREET ELEVATED
- SIGNALIZED INTERSECTION
- RAMP/ROADWAY REMOVAL
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

I-71/I-75/US 50 INTERCHANGE

SUB-ALTERNATIVE 2

I-75, US 50 REALIGNMENT

STREET GRID EXTENSION

APRIL 7, 2006

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

GEST ST.
5TH ST.
6TH ST.
MEHRING WAY
50
OPTIONAL
4/5
2/5
75
71
2/2
2/2
OPTIONAL
9TH ST.
7TH ST.
8TH ST.
COURT ST.
CENTRAL AVE.
4TH ST.
5TH ST.
6TH ST.
2ND ST.
3RD ST.
PLUM ST.

LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP
- LOCAL ACCESS ELEVATED RAMP
- US 50
- US 50 ELEVATED
- LOCAL STREET
- LOCAL STREET ELEVATED
- SIGNALIZED INTERSECTION
- RAMP/ROADWAY REMOVAL
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

I-71/I-75/US 50 INTERCHANGE

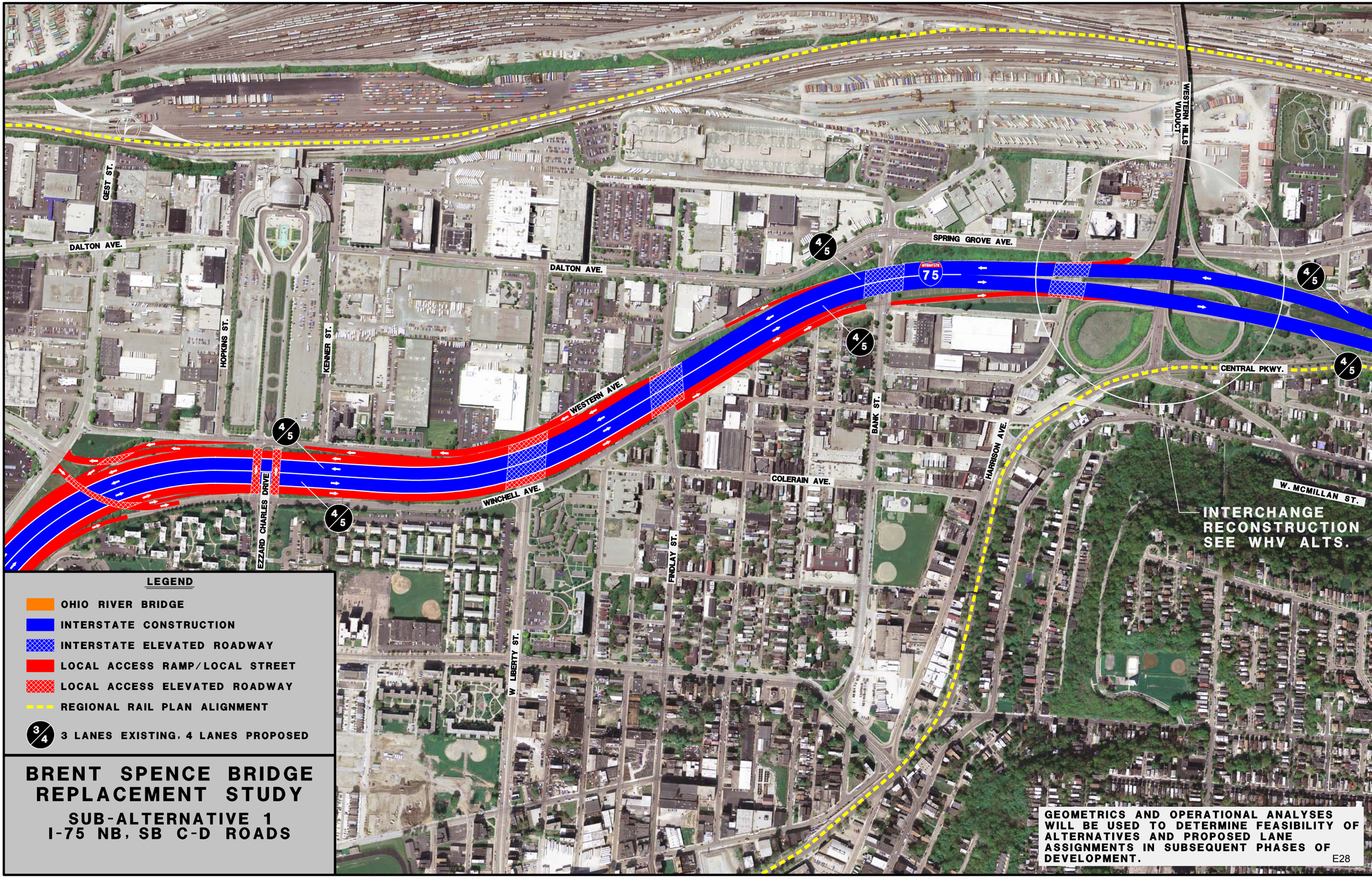
SUB-ALTERNATIVE 3

I-75, US 50 REALIGNMENT

STREET GRID EXTENSION ALT.

APRIL 7, 2006

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.



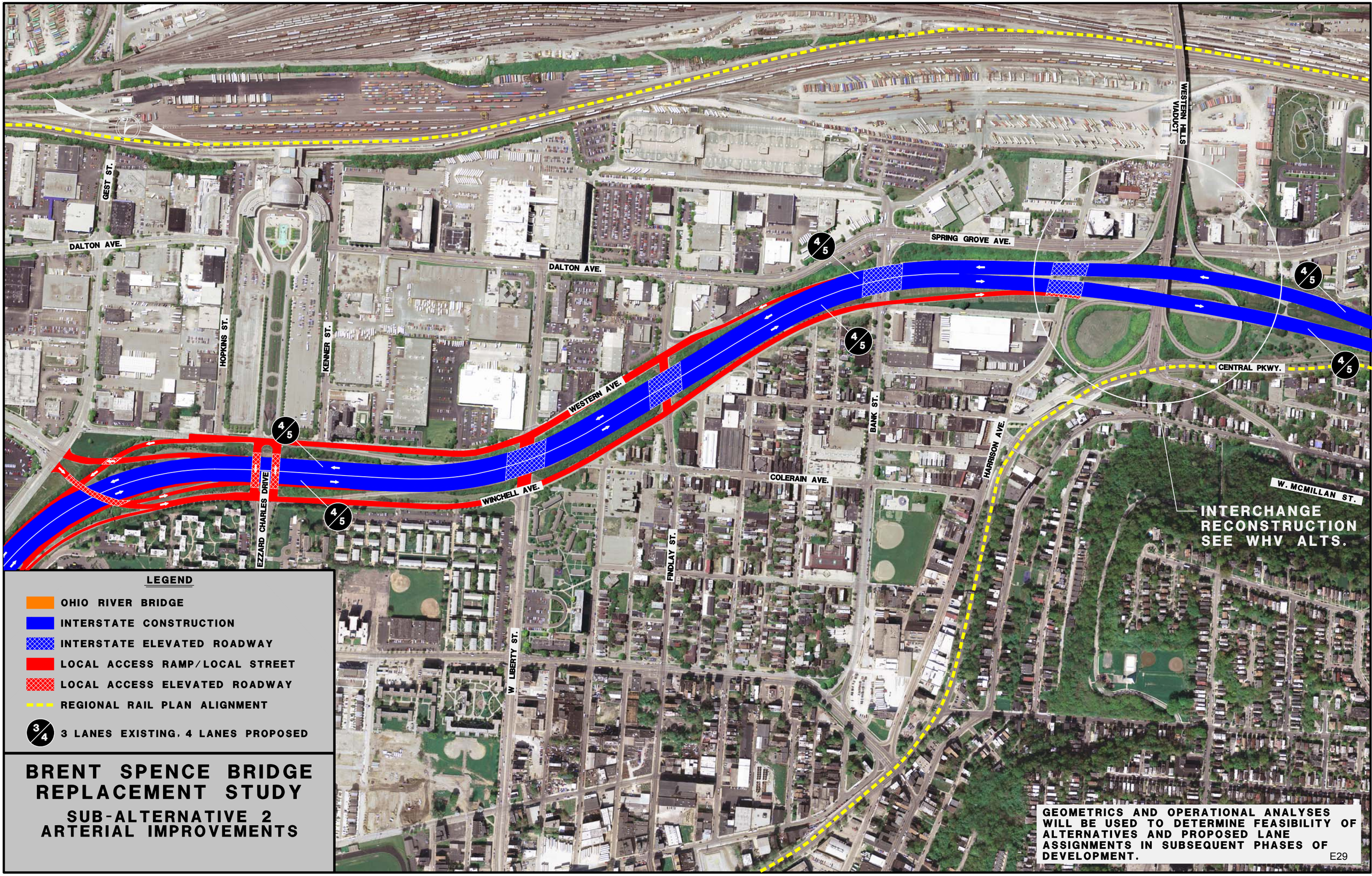
LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED ROADWAY
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

SUB-ALTERNATIVE 1
I-75 NB, SB C-D ROADS

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.



LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED ROADWAY
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

SUB-ALTERNATIVE 2 ARTERIAL IMPROVEMENTS

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

WESTERN HILLS VIADUCT

SPRING GROVE AVE.

CENTRAL PKWY.

HARRISON AVE.

W. MCMILLAN ST.

INTERSTATE 75

INTERSTATE 75

4/5

4/5

LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED ROADWAY
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

SUB-ALTERNATIVE NO. WHV-1
I-75/WESTERN HILLS VIADUCT INTERCHANGE
OFFSET ROUNDABOUT DIAMOND

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

WESTERN HILLS VIADUCT

SPRING GROVE AVE.

CENTRAL PKWY.

POTENTIAL INTERSECTION IMPROVEMENT NECESSARY

HARRISON AVE.

W. MCMILLAN ST.

4/5

4/5

75

75

LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED ROADWAY
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

BRENT SPENCE BRIDGE REPLACEMENT STUDY

SUB-ALTERNATIVE NO. WHV-2
I-75/WESTERN HILLS VIADUCT INTERCHANGE
SINGLE ROUNDABOUT DIAMOND

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

E31

WESTERN HILLS VIADUCT

SPRING GROVE AVE.

CENTRAL PKWY.

POTENTIAL INTERSECTION IMPROVEMENT NECESSARY

HARRISON AVE.

W. MCMILLAN ST.

4/5

4/5

75

75

LEGEND

- OHIO RIVER BRIDGE
- INTERSTATE CONSTRUCTION
- INTERSTATE ELEVATED ROADWAY
- LOCAL ACCESS RAMP/LOCAL STREET
- LOCAL ACCESS ELEVATED ROADWAY
- REGIONAL RAIL PLAN ALIGNMENT
- 3/4 3 LANES EXISTING, 4 LANES PROPOSED

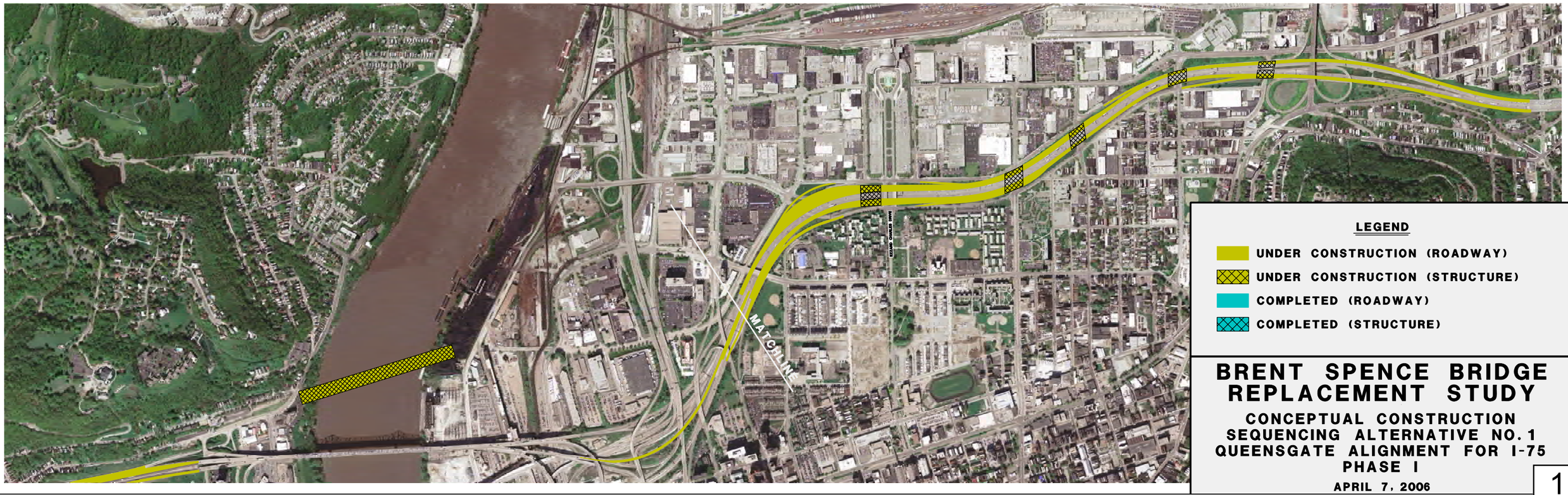
BRENT SPENCE BRIDGE REPLACEMENT STUDY

SUB-ALTERNATIVE NO. WHV-3
I-75/WESTERN HILLS VIADUCT INTERCHANGE
SINGLE POINT URBAN INTERCHANGE

GEOMETRICS AND OPERATIONAL ANALYSES WILL BE USED TO DETERMINE FEASIBILITY OF ALTERNATIVES AND PROPOSED LANE ASSIGNMENTS IN SUBSEQUENT PHASES OF DEVELOPMENT.

Appendix F

Conceptual Construction Sequencing



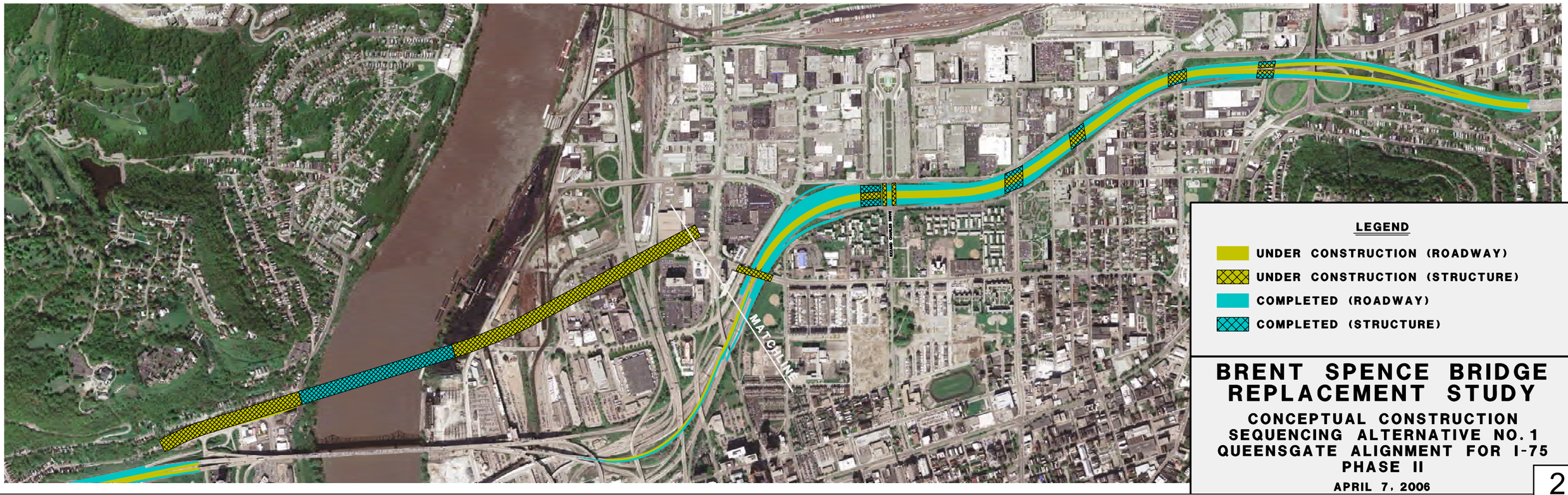
LEGEND

- UNDER CONSTRUCTION (ROADWAY)
- UNDER CONSTRUCTION (STRUCTURE)
- COMPLETED (ROADWAY)
- COMPLETED (STRUCTURE)

BRENT SPENCE BRIDGE REPLACEMENT STUDY

CONCEPTUAL CONSTRUCTION SEQUENCING ALTERNATIVE NO. 1 QUEENSGATE ALIGNMENT FOR I-75 PHASE I

APRIL 7, 2006



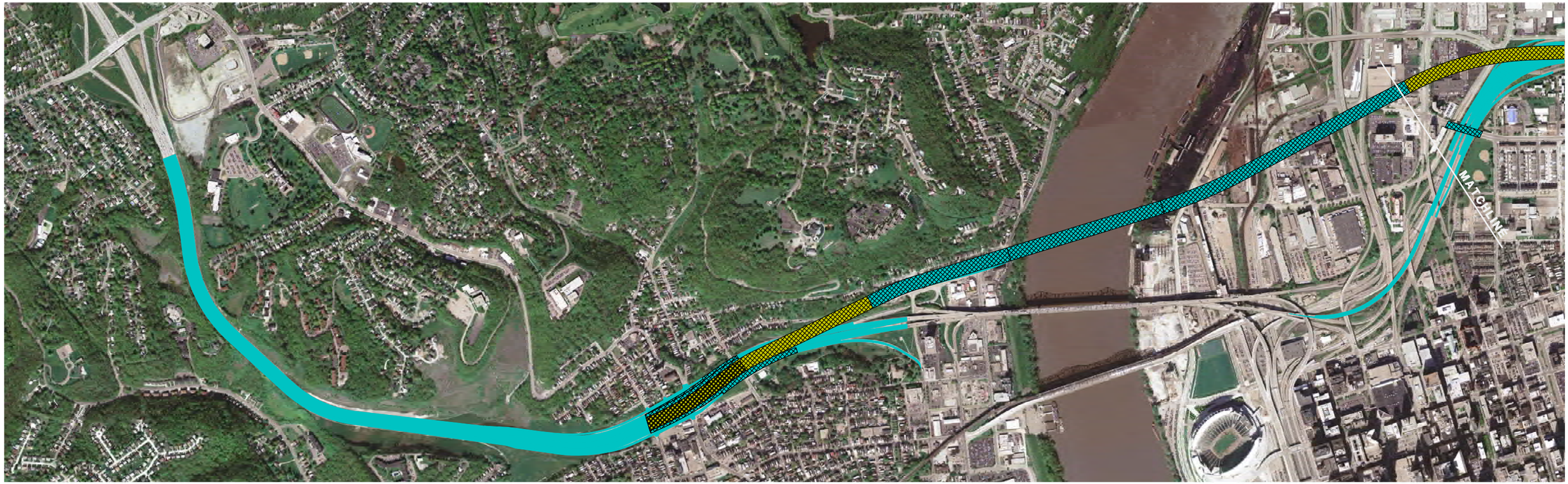
LEGEND

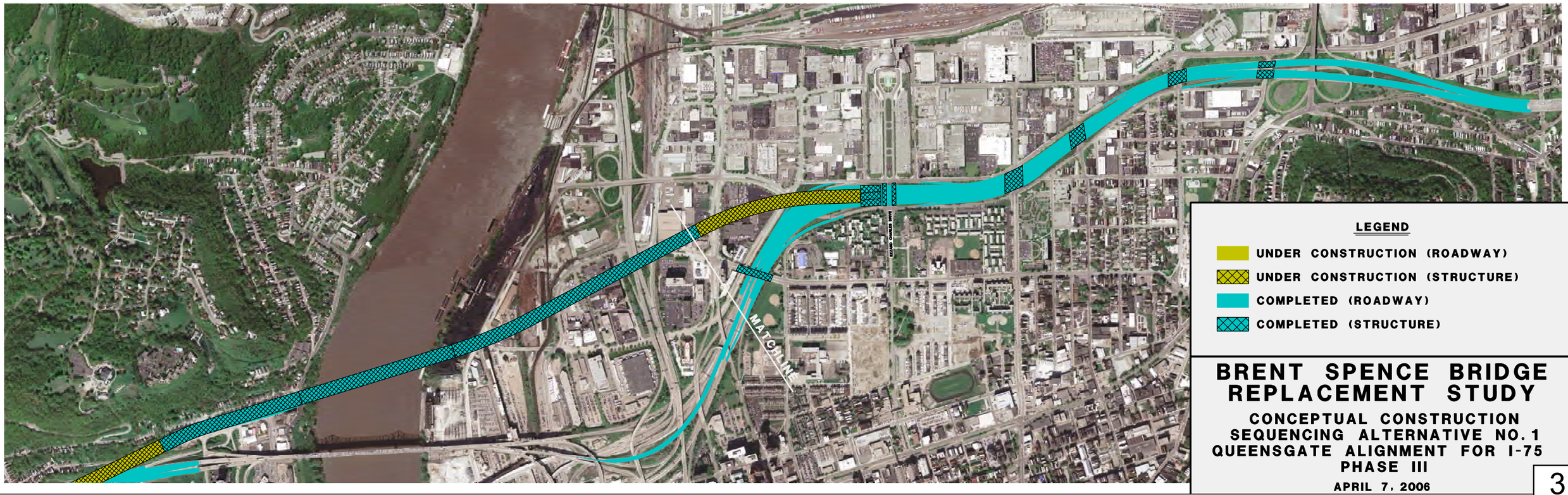
- UNDER CONSTRUCTION (ROADWAY)
- UNDER CONSTRUCTION (STRUCTURE)
- COMPLETED (ROADWAY)
- COMPLETED (STRUCTURE)

BRENT SPENCE BRIDGE REPLACEMENT STUDY

CONCEPTUAL CONSTRUCTION SEQUENCING ALTERNATIVE NO. 1 QUEENSGATE ALIGNMENT FOR I-75 PHASE II

APRIL 7, 2006





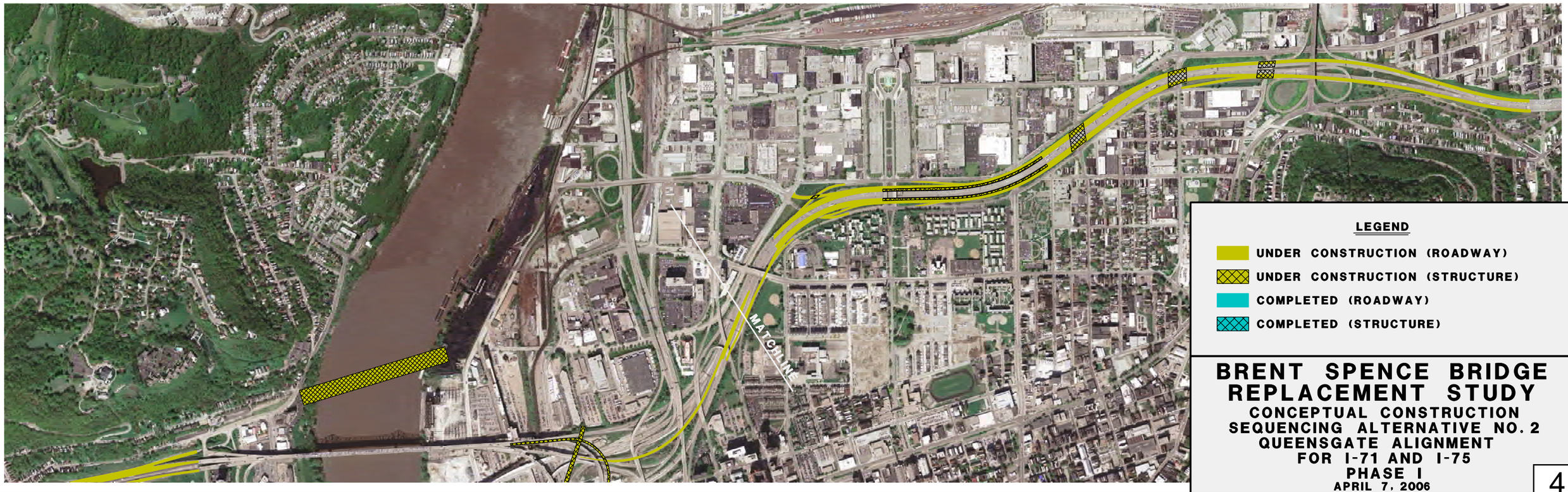
LEGEND

- UNDER CONSTRUCTION (ROADWAY)
- UNDER CONSTRUCTION (STRUCTURE)
- COMPLETED (ROADWAY)
- COMPLETED (STRUCTURE)

BRENT SPENCE BRIDGE REPLACEMENT STUDY

CONCEPTUAL CONSTRUCTION SEQUENCING ALTERNATIVE NO. 1 QUEENSGATE ALIGNMENT FOR I-75 PHASE III

APRIL 7, 2006



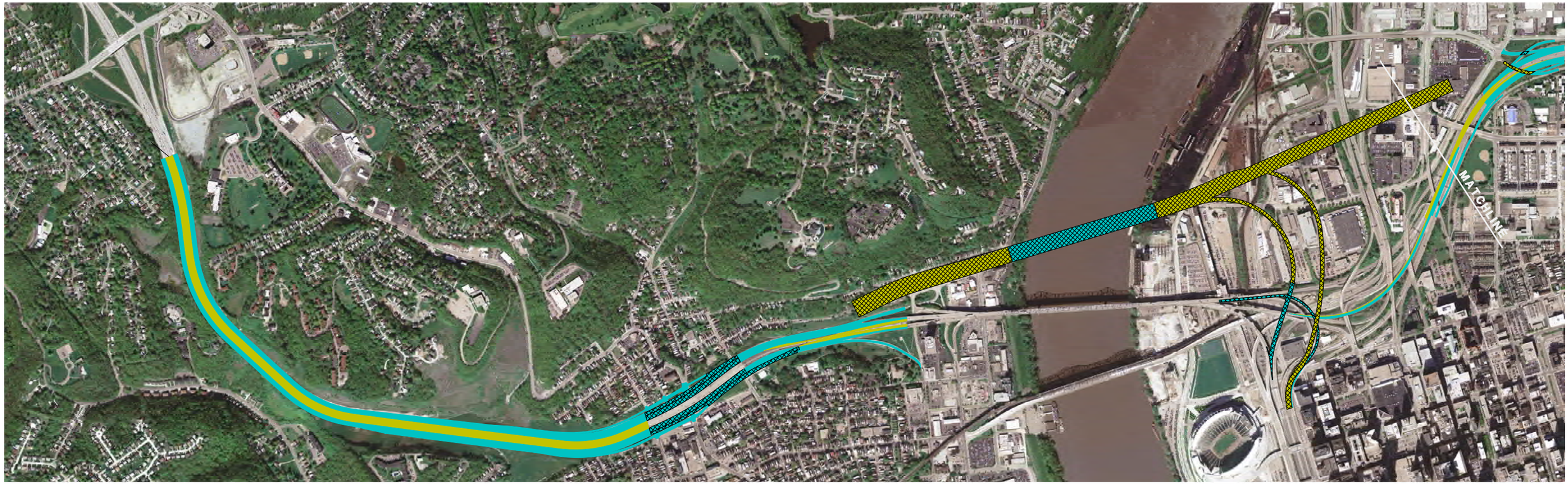
LEGEND

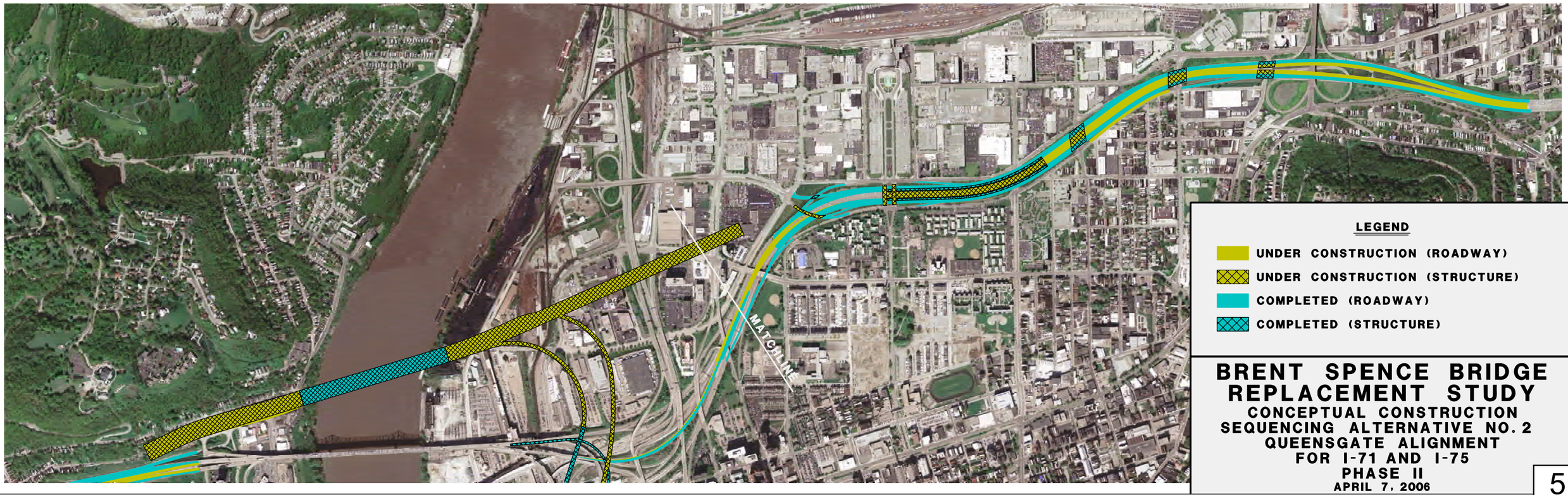
- UNDER CONSTRUCTION (ROADWAY)
- UNDER CONSTRUCTION (STRUCTURE)
- COMPLETED (ROADWAY)
- COMPLETED (STRUCTURE)

BRENT SPENCE BRIDGE REPLACEMENT STUDY

CONCEPTUAL CONSTRUCTION SEQUENCING ALTERNATIVE NO. 2 QUEENSGATE ALIGNMENT FOR I-71 AND I-75 PHASE I

APRIL 7, 2006





LEGEND

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- UNDER CONSTRUCTION (STRUCTURE)
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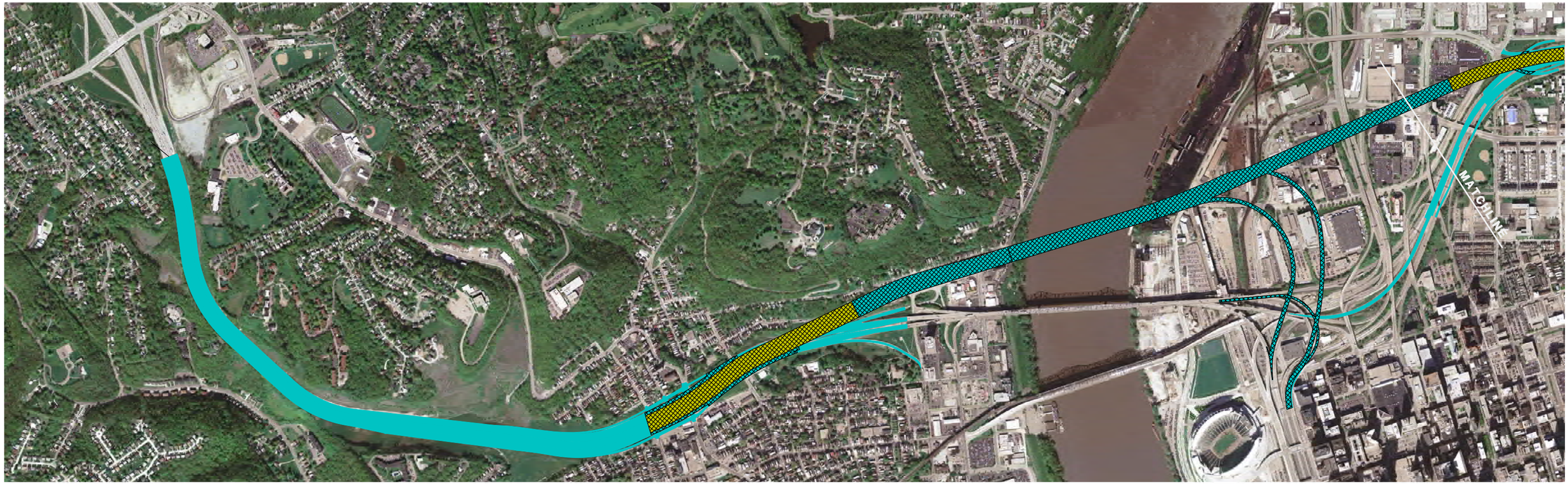
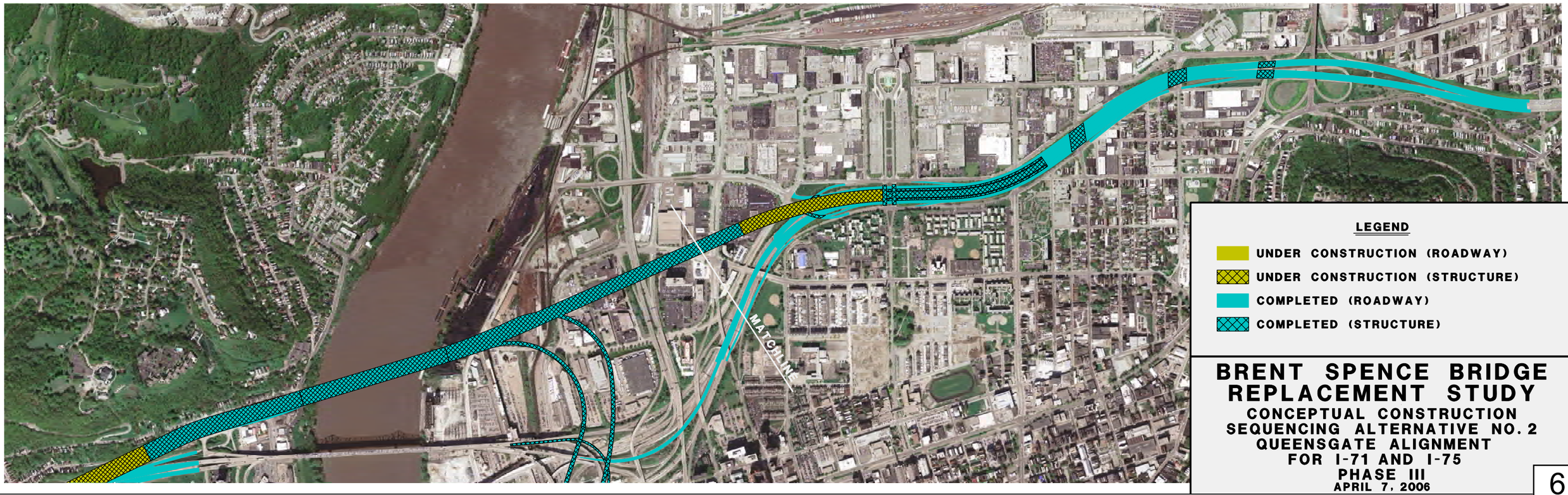
BRENT SPENCE BRIDGE REPLACEMENT STUDY

CONCEPTUAL CONSTRUCTION SEQUENCING ALTERNATIVE NO. 2 QUEENSGATE ALIGNMENT FOR I-71 AND I-75 PHASE II

APRIL 7, 2006





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- COMPLETED (STRUCTURE)

BRENT SPENCE BRIDGE REPLACEMENT STUDY

CONCEPTUAL CONSTRUCTION SEQUENCING ALTERNATIVE NO. 2 QUEENSGATE ALIGNMENT FOR I-71 AND I-75 PHASE III

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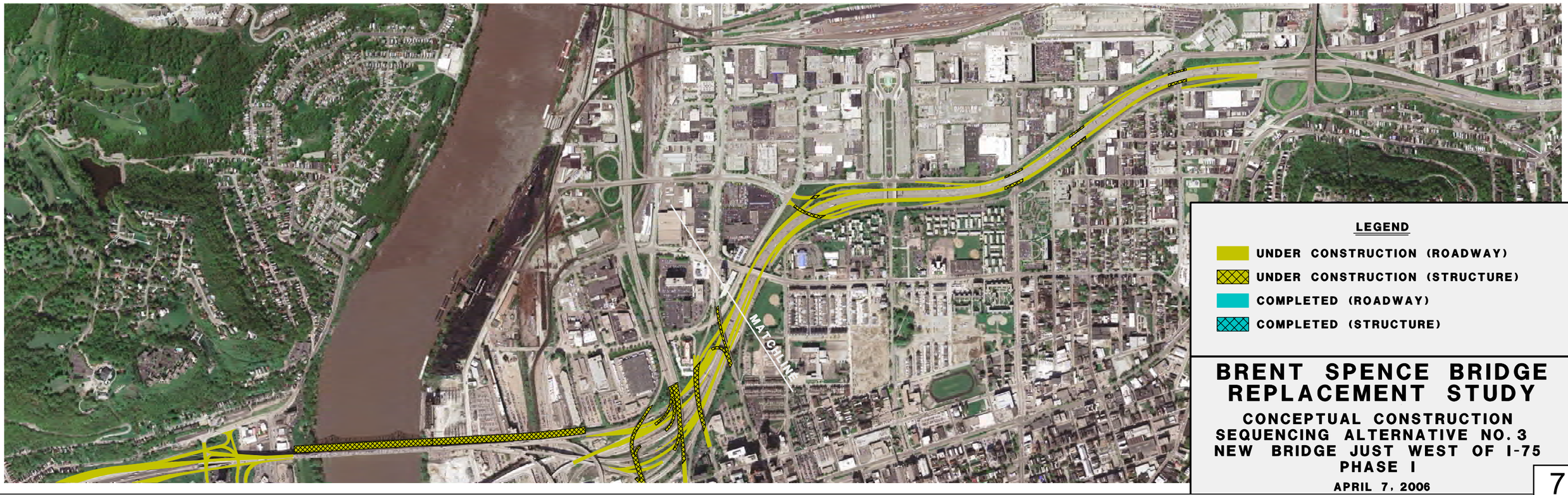

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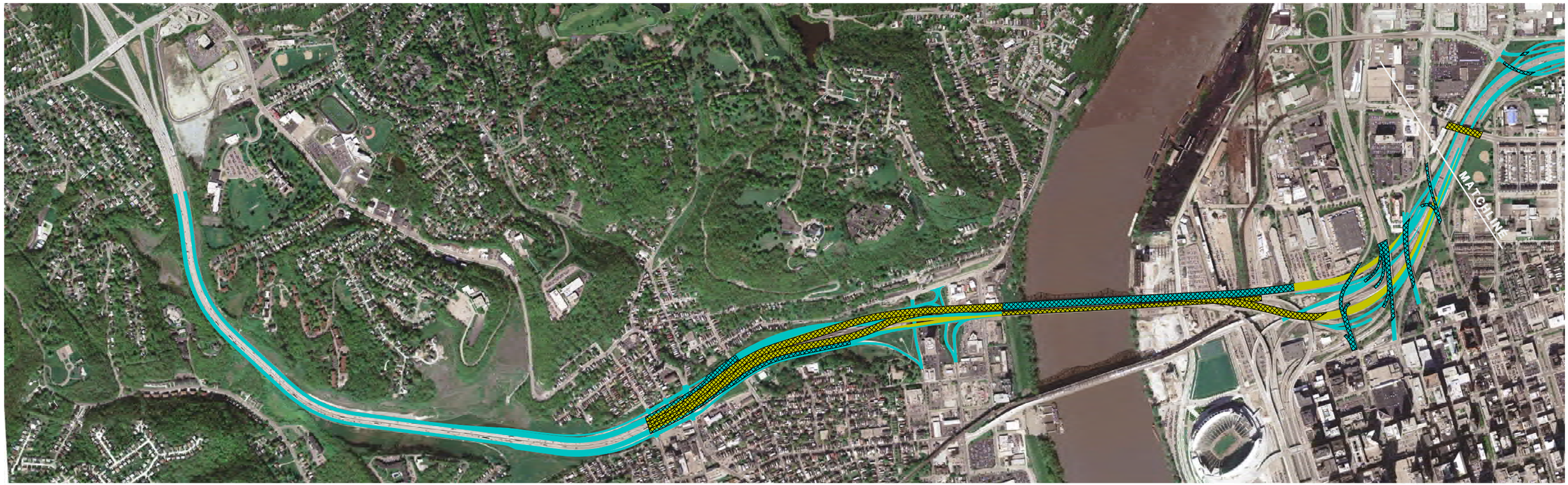
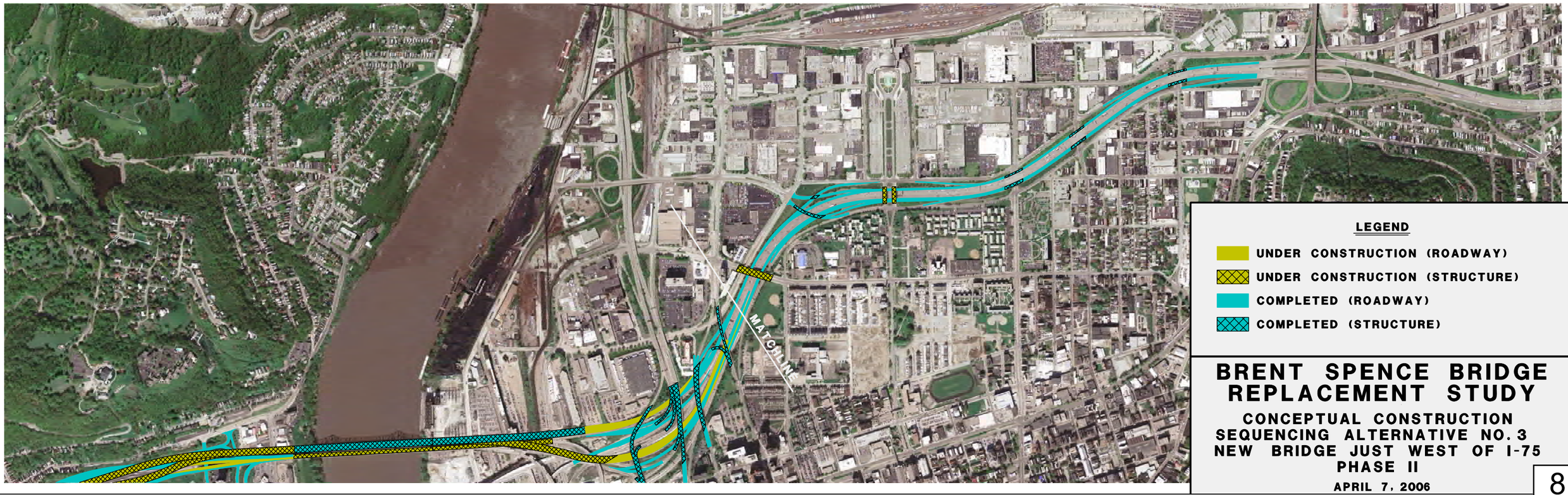
- COMPLETED (STRUCTURE)

BRENT SPENCE BRIDGE REPLACEMENT STUDY

CONCEPTUAL CONSTRUCTION SEQUENCING ALTERNATIVE NO. 3 NEW BRIDGE JUST WEST OF I-75 PHASE I

APRIL 7, 2006





LEGEND

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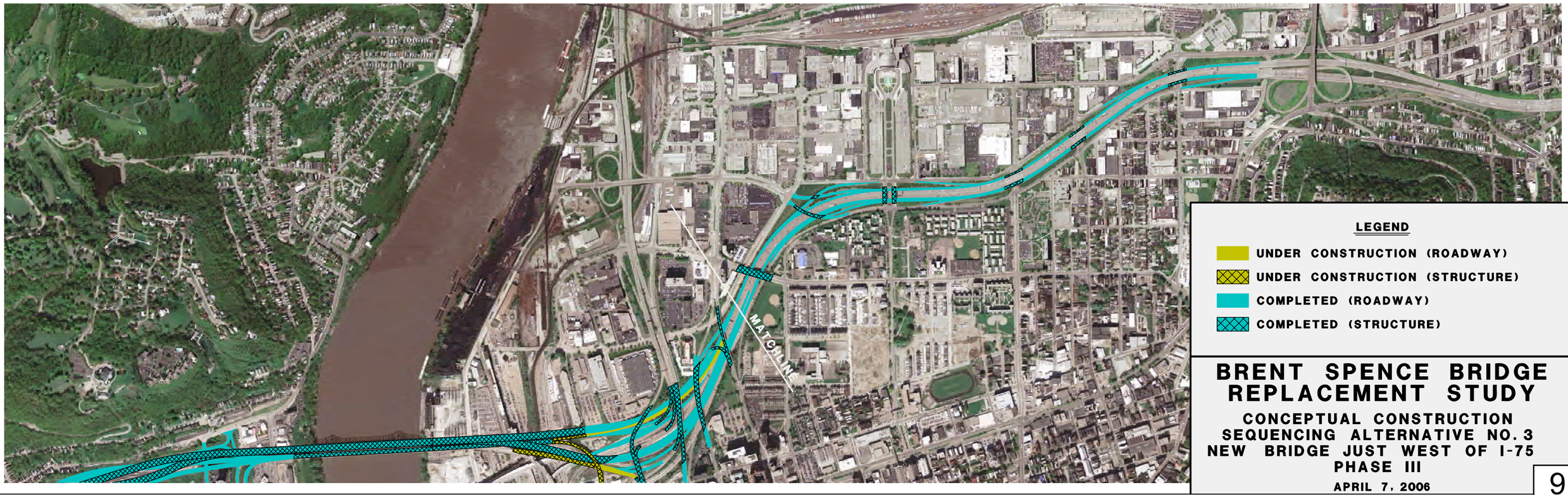
BRENT SPENCE BRIDGE REPLACEMENT STUDY

CONCEPTUAL CONSTRUCTION SEQUENCING ALTERNATIVE NO. 3 NEW BRIDGE JUST WEST OF I-75 PHASE II

APRIL 7, 2006



LEGEND

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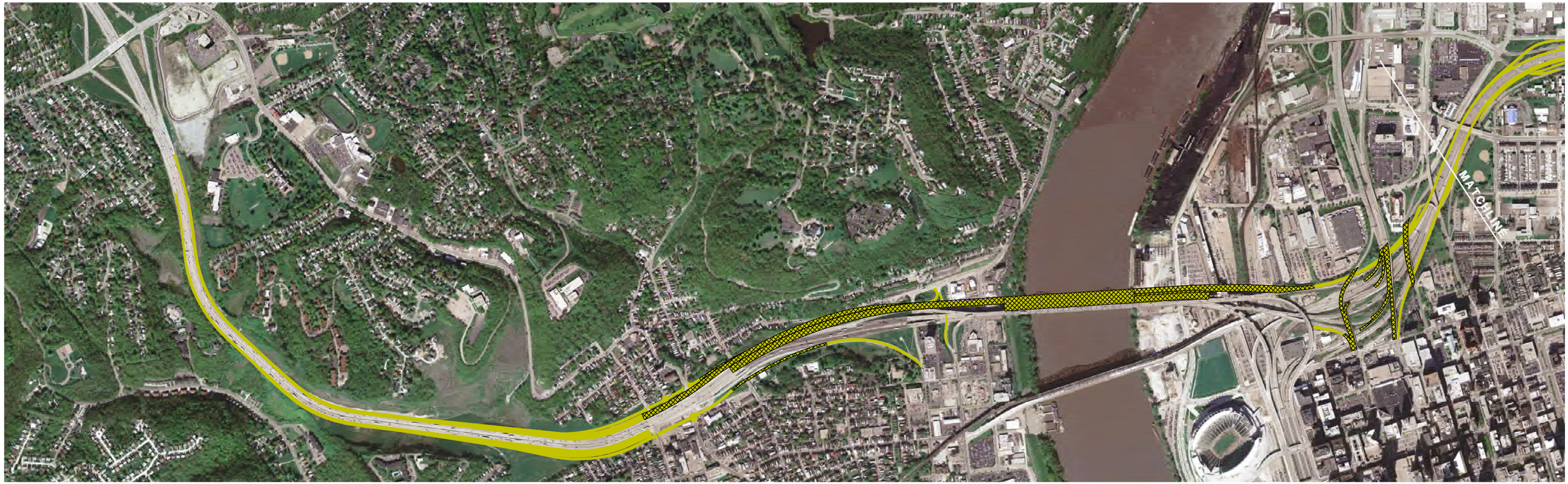
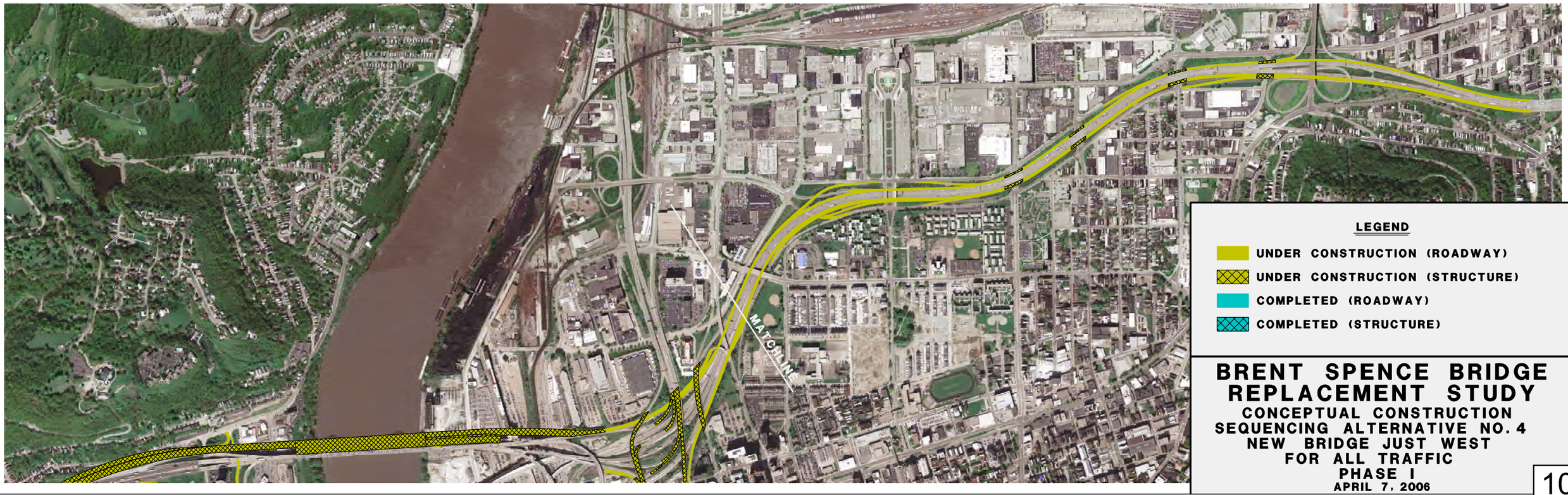
- UNDER CONSTRUCTION (STRUCTURE)
- COMPLETED (ROADWAY)
- COMPLETED (STRUCTURE)

BRENT SPENCE BRIDGE REPLACEMENT STUDY

CONCEPTUAL CONSTRUCTION SEQUENCING ALTERNATIVE NO. 3 NEW BRIDGE JUST WEST OF I-75 PHASE III

APRIL 7, 2006





LEGEND

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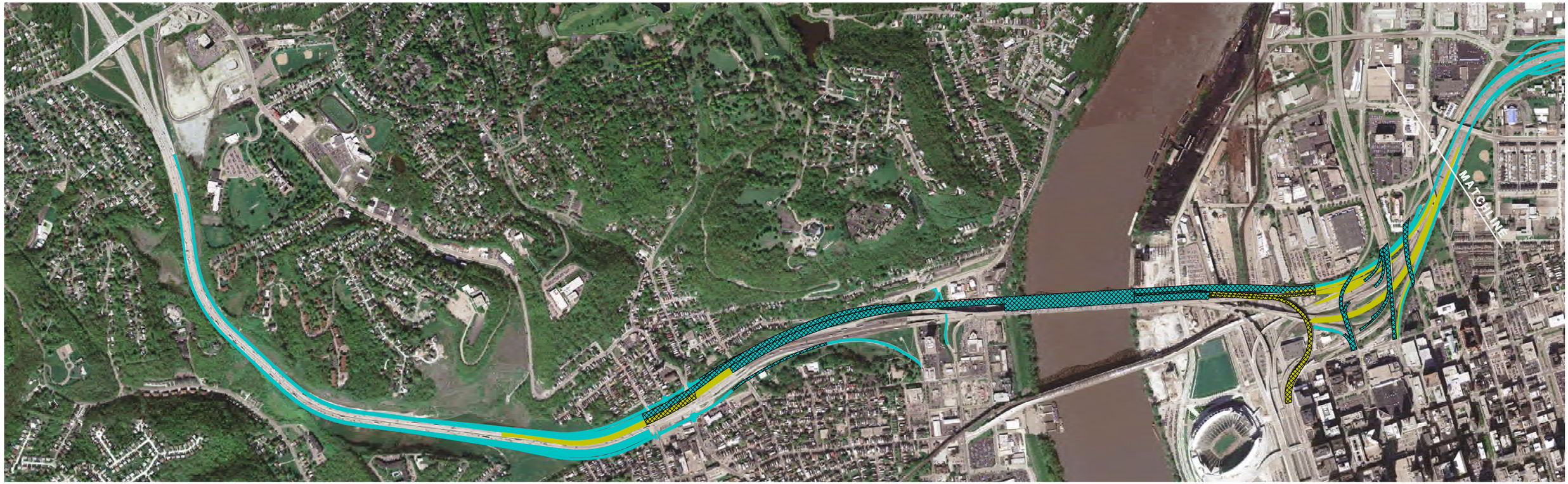
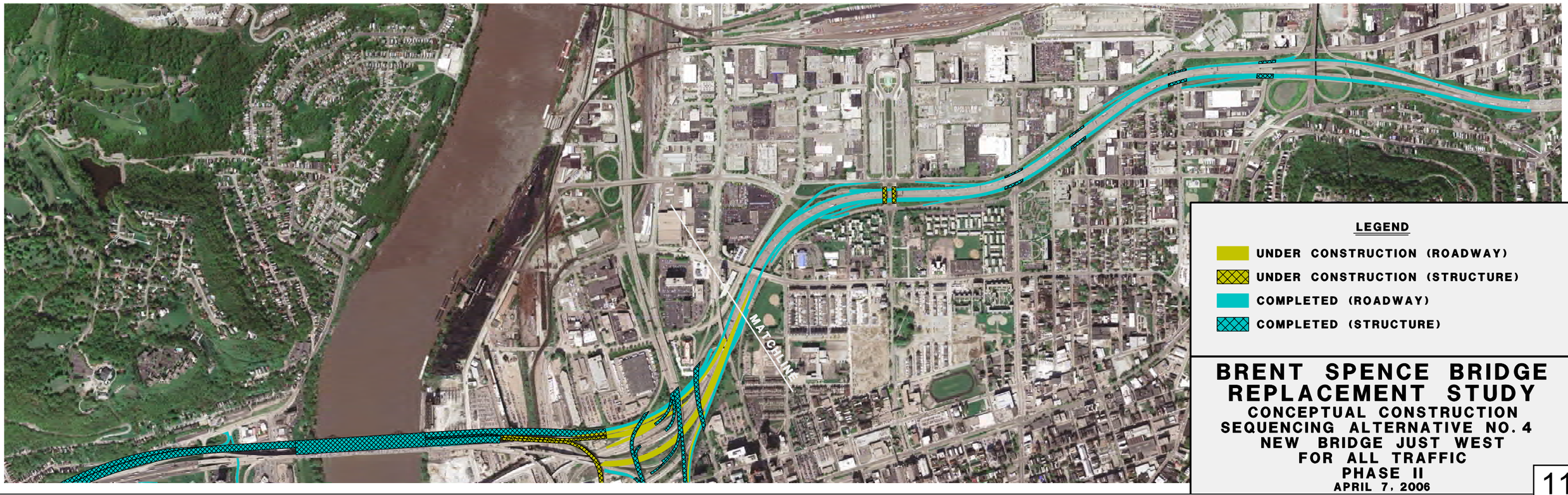
- UNDER CONSTRUCTION (STRUCTURE)
- COMPLETED (ROADWAY)
- COMPLETED (STRUCTURE)

BRENT SPENCE BRIDGE REPLACEMENT STUDY

CONCEPTUAL CONSTRUCTION SEQUENCING ALTERNATIVE NO. 4 NEW BRIDGE JUST WEST FOR ALL TRAFFIC PHASE I

APRIL 7, 2006





LEGEND

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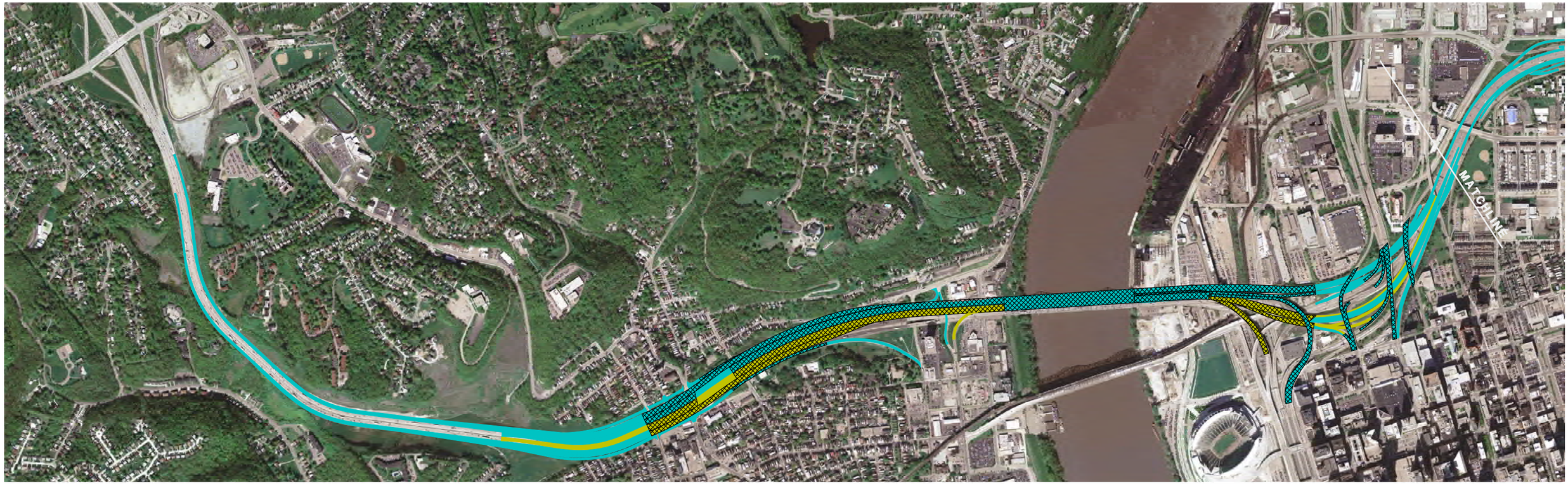
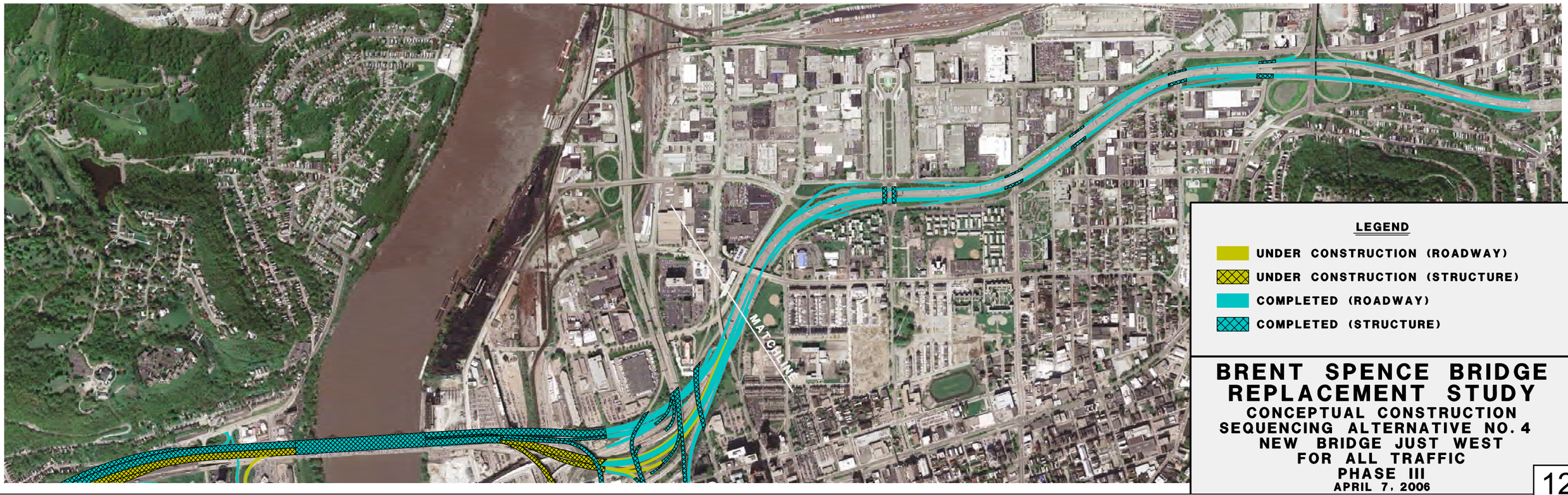
- UNDER CONSTRUCTION (STRUCTURE)
- COMPLETED (ROADWAY)
- COMPLETED (STRUCTURE)

BRENT SPENCE BRIDGE REPLACEMENT STUDY

CONCEPTUAL CONSTRUCTION SEQUENCING ALTERNATIVE NO. 4 NEW BRIDGE JUST WEST FOR ALL TRAFFIC PHASE II

APRIL 7, 2006





LEGEND

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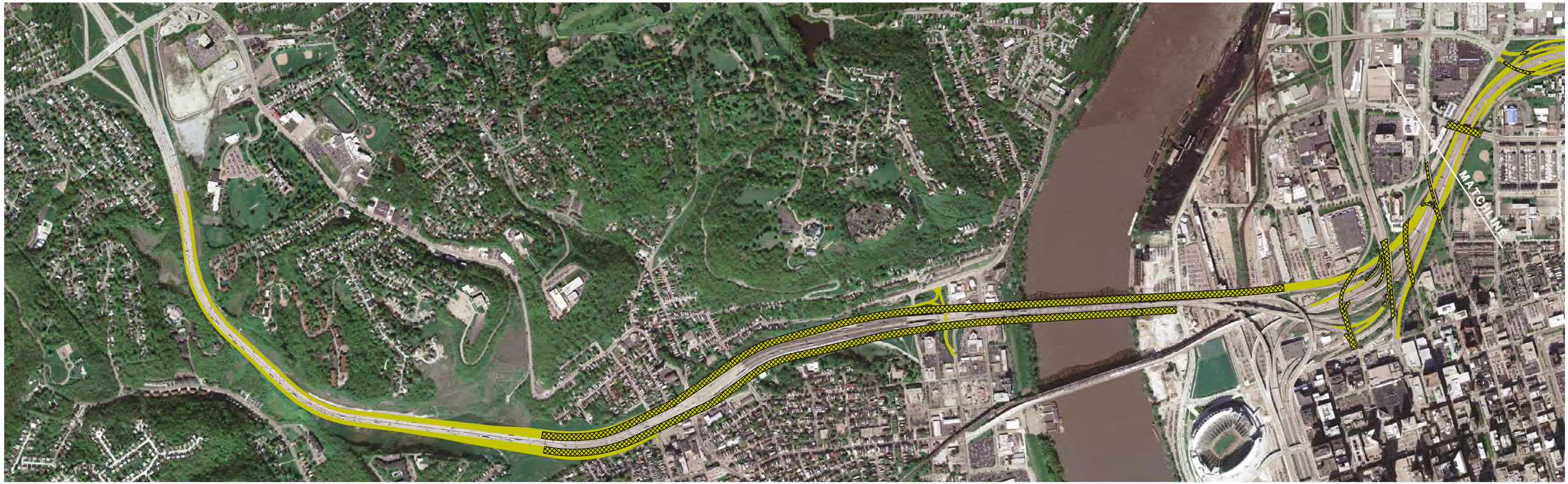
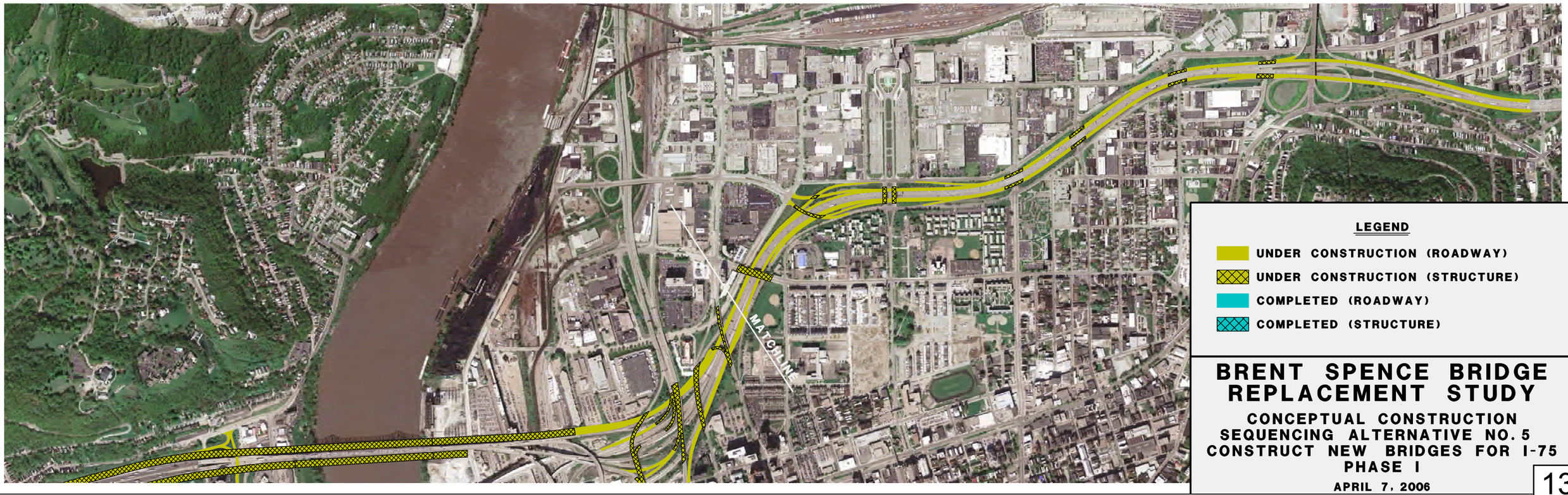
- UNDER CONSTRUCTION (STRUCTURE)
- COMPLETED (ROADWAY)
- COMPLETED (STRUCTURE)

BRENT SPENCE BRIDGE REPLACEMENT STUDY

CONCEPTUAL CONSTRUCTION SEQUENCING ALTERNATIVE NO. 4 NEW BRIDGE JUST WEST FOR ALL TRAFFIC PHASE III

APRIL 7, 2006





LEGEND

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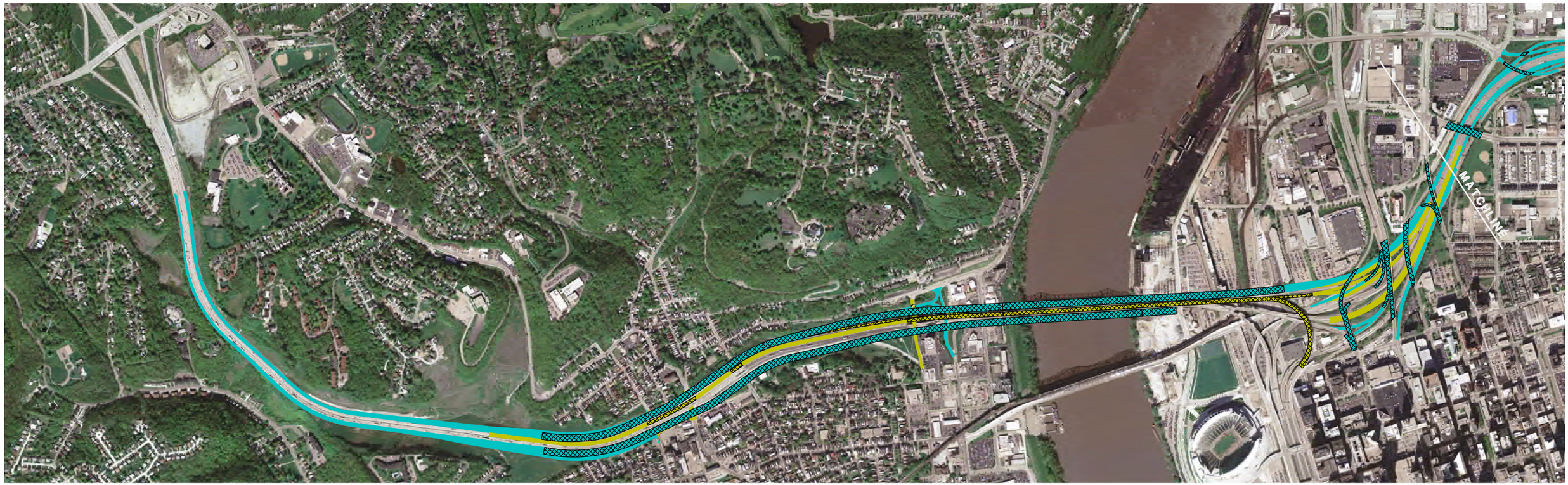
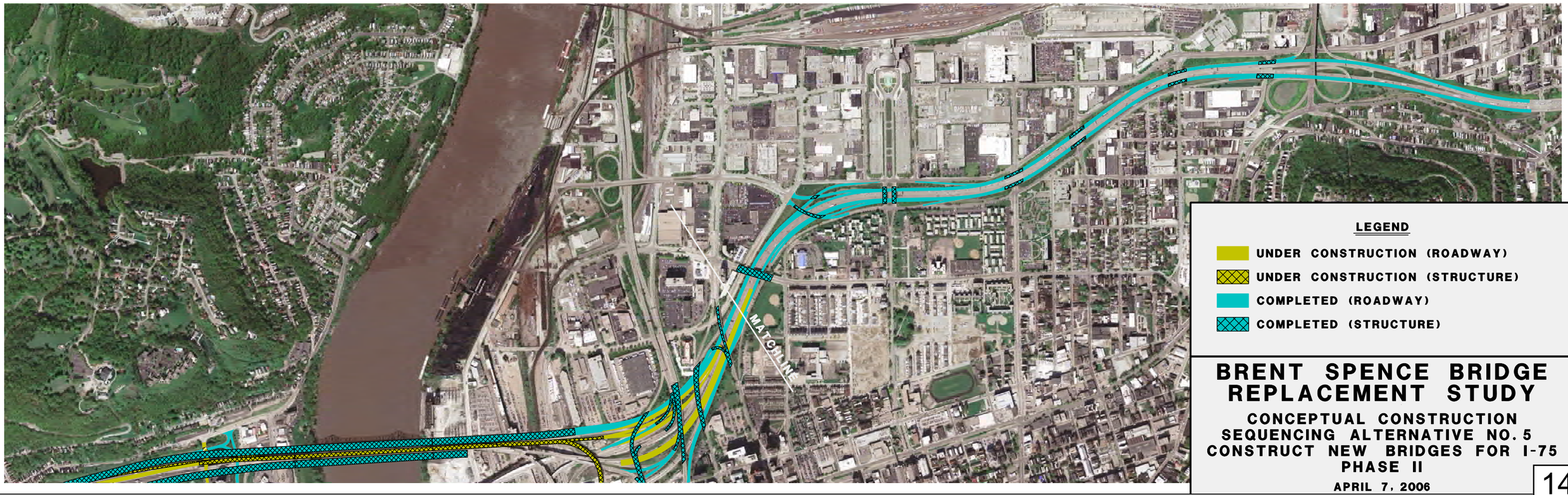
- COMPLETED (STRUCTURE)

BRENT SPENCE BRIDGE REPLACEMENT STUDY

CONCEPTUAL CONSTRUCTION SEQUENCING ALTERNATIVE NO. 5 CONSTRUCT NEW BRIDGES FOR I-75 PHASE I

APRIL 7, 2006





LEGEND

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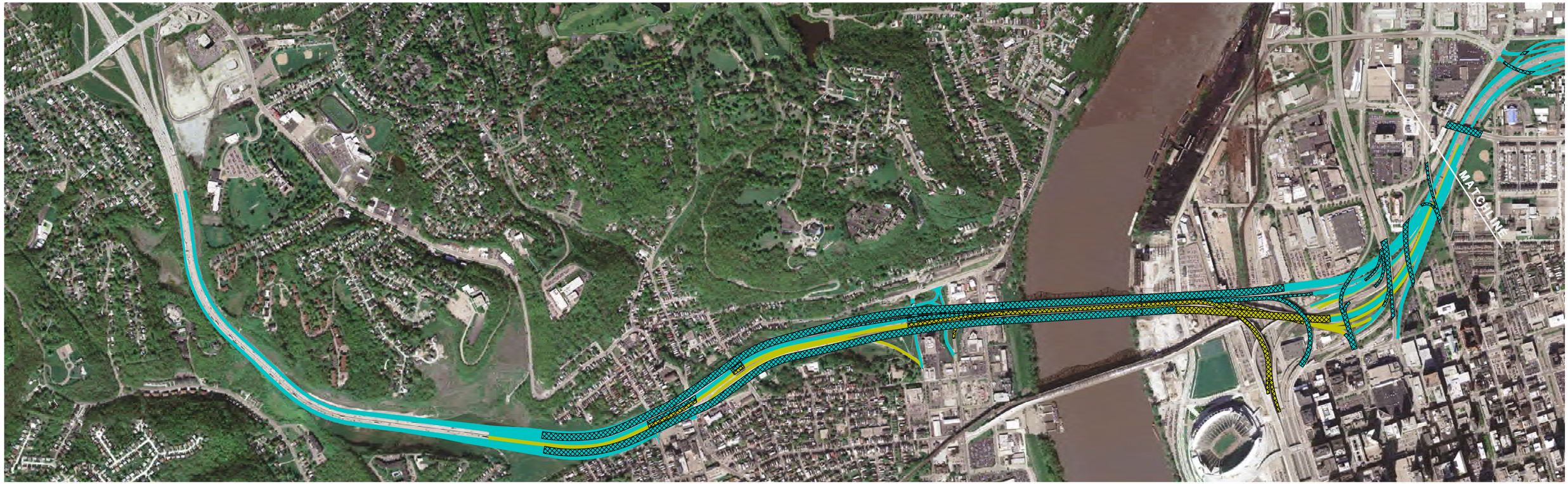
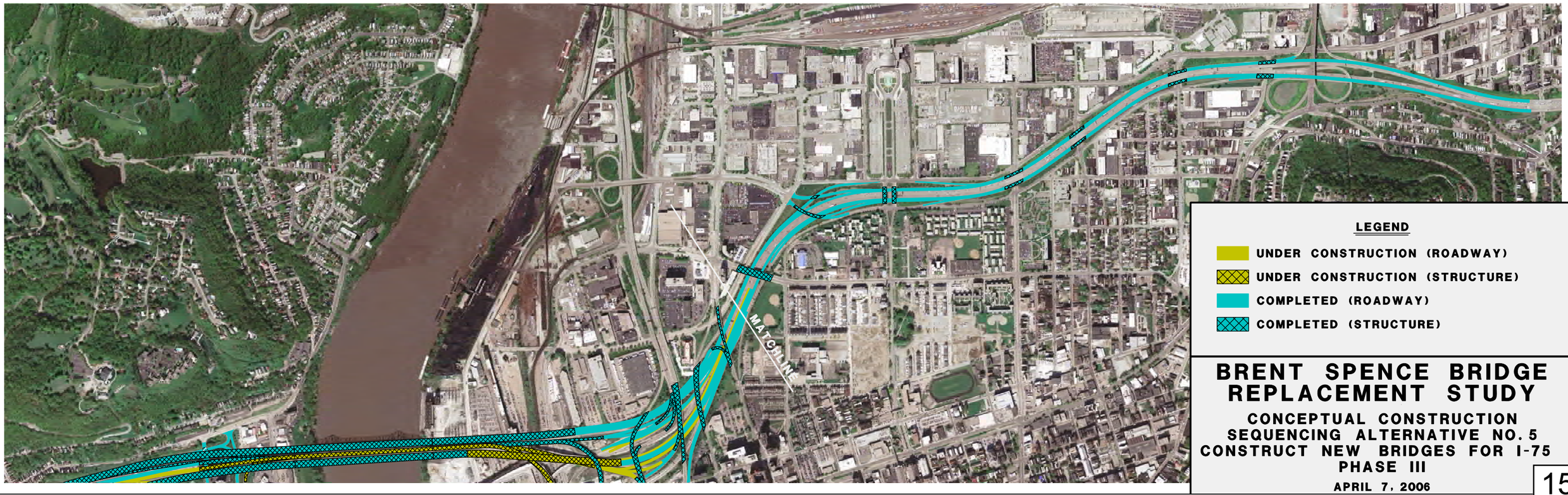
BRENT SPENCE BRIDGE REPLACEMENT STUDY

CONCEPTUAL CONSTRUCTION SEQUENCING ALTERNATIVE NO. 5 CONSTRUCT NEW BRIDGES FOR I-75 PHASE II

APRIL 7, 2006





LEGEND

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- COMPLETED (STRUCTURE)

BRENT SPENCE BRIDGE REPLACEMENT STUDY

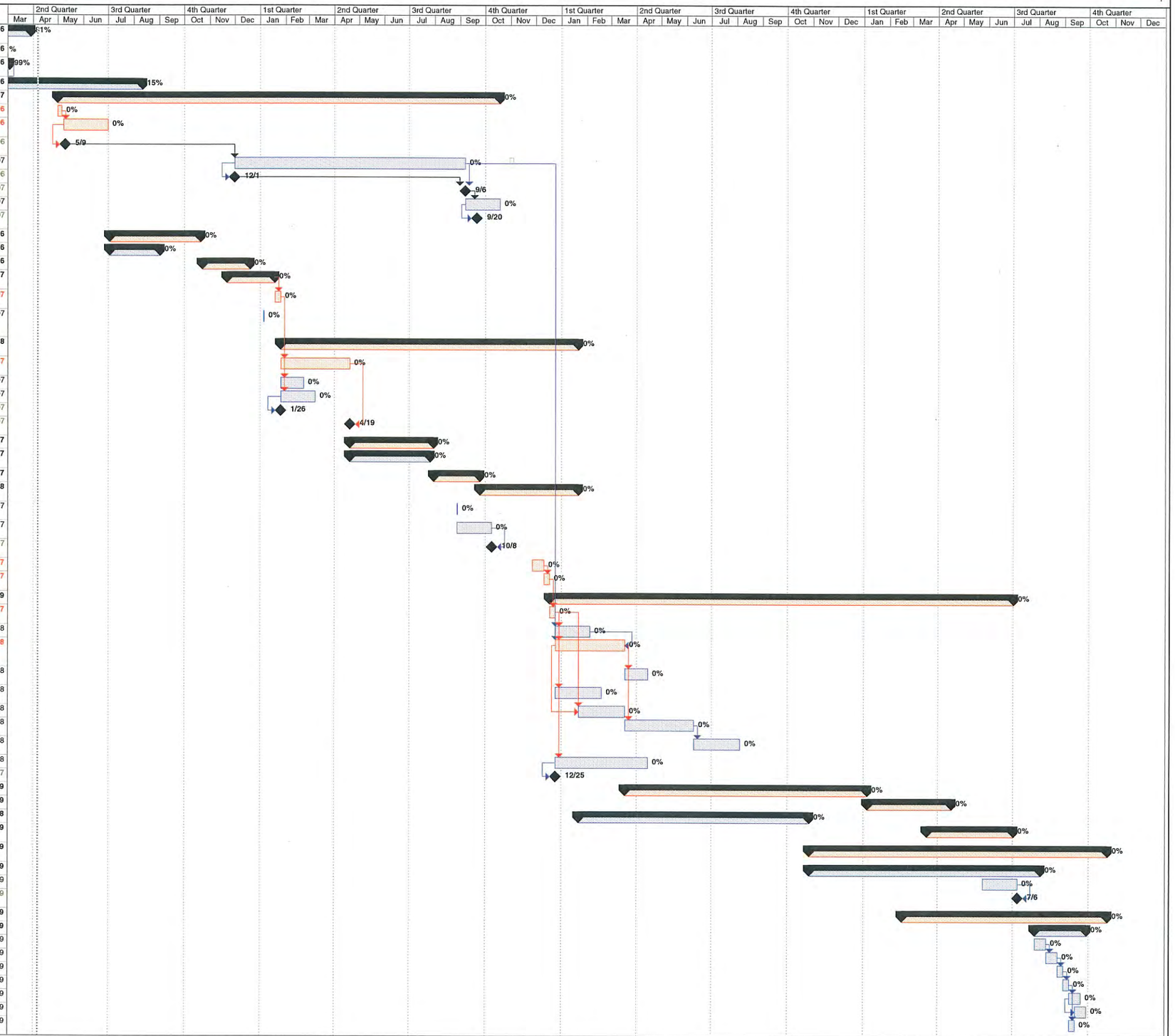
CONCEPTUAL CONSTRUCTION SEQUENCING ALTERNATIVE NO. 5 CONSTRUCT NEW BRIDGES FOR I-75 PHASE III

APRIL 7, 2006

Appendix G

Project Schedule

ID	Task Name	Duration	Start	Finish
1	**Step 1 - Work with Stakeholders to Understand Problems, Needs and Goals**	**221.75 days**	**Tue 5/24/05**	**Wed 3/29/06**
34	**Step 2 - Conduct Research and Technical Studies**	**164 days**	**Thu 6/30/05**	**Tue 2/14/06**
111	**Step 3-Identify and Evaluate Conceptual Alternative Solutions**	**115 days**	**Mon 9/26/05**	**Fri 3/3/06**
143	**Step 4 - Develop Planning Study Report and Strategic Plan**	**150 days**	**Mon 1/16/06**	**Fri 8/11/06**
186	**Step 5- Develop Conceptual Alternative Alignments**	**384 days**	**Mon 5/1/06**	**Thu 10/18/07**
187	**Obtain Advanced Authorization for Steps 5 and 6**	**5 days**	**Mon 5/1/06**	**Fri 5/5/06**
188	**Develop design elements of the Conceptual Alternatives Study for Step 5 environmental field studies**	**40 days**	**Mon 5/8/06**	**Fri 6/30/06**
189	JPP Project Milestone: Roadway Engineering Geometric Concepts Initiated	0 days	Tue 5/9/06	Tue 5/9/06
190	Complete Design Level Aerial Photography and Mapping	200 days	Fri 12/1/06	Thu 9/6/07
191	JPP Project Milestone: Design Level Mapping Initiated	0 days	Fri 12/1/06	Fri 12/1/06
192	JPP Project Milestone: Design Level Mapping Completed	0 days	Thu 9/6/07	Thu 9/6/07
193	Contact utility companies to locate major facilities	30 days	Fri 9/7/07	Thu 10/18/07
194	JPP Utilities Milestone: Contact/Coordination with Utilities Initiated	0 days	Thu 9/20/07	Thu 9/20/07
195	**Perform Environmental Field Studies**	**80 days**	**Mon 7/3/06**	**Fri 10/20/06**
218	**Complete Step 5 design activities**	**45 days**	**Mon 7/3/06**	**Fri 9/1/06**
222	**Complete Conceptual Alternatives Study Report**	**42 days**	**Mon 10/23/06**	**Tue 12/19/06**
228	**Hold Concurrence Point 2 (Conceptual Alternatives Study)**	**42 days**	**Wed 11/22/06**	**Thu 1/18/07**
233	**Select feasible alternatives to be further developed in Step 6**	**5 days**	**Fri 1/19/07**	**Thu 1/25/07**
234	Update Ellis	1 day	Fri 1/5/07	Fri 1/5/07
235	**Step 6- Develop Feasible Alternative Alignments**	**257 days**	**Fri 1/26/07**	**Mon 1/21/08**
236	**Develop design elements of the Assessment of Feasible Alternatives for Step 6 environmental studies**	**60 days**	**Fri 1/26/07**	**Thu 4/19/07**
237	Office of Technical Services validation of Planning Level Traffic	20 days	Fri 1/26/07	Thu 2/22/07
238	Soil borings at critical locations	30 days	Fri 1/26/07	Thu 3/8/07
239	JPP Earthwork Milestone: Geotechnical Engineering Initiated	0 days	Fri 1/26/07	Fri 1/26/07
240	JPP Right of Way Milestone: "Preferred Corridor Over Tax Map" Completed	0 days	Thu 4/19/07	Thu 4/19/07
241	**Environmental**	**72 days**	**Fri 4/20/07**	**Mon 7/30/07**
258	**Complete Step 6 Design Activities**	**70 days**	**Fri 4/20/07**	**Thu 7/26/07**
262	**Complete Assessment of Feasible Alternatives Report**	**40 days**	**Tue 7/31/07**	**Mon 9/24/07**
266	**Hold Concurrence Point 3 (Assessment of Feasible Alternatives)**	**85 days**	**Tue 9/25/07**	**Mon 1/21/08**
275	Update Ellis	1 day	Tue 8/28/07	Tue 8/28/07
276	Preliminary Engineering Value Engineering study/First Constructability Review and conclusions	30 days	Tue 8/28/07	Mon 10/8/07
277	JPP Project Milestone: Preliminary Value Engineering Study Completed	0 days	Mon 10/8/07	Mon 10/8/07
278	**Update Strategic Plan**	**10 days**	**Tue 11/27/07**	**Mon 12/10/07**
279	**Develop Scope of Services for Steps 7 and 8**	**5 days**	**Tue 12/11/07**	**Mon 12/17/07**
280	**Step 7- Develop Preferred Alternative Alignment**	**402 days**	**Tue 12/18/07**	**Wed 7/1/09**
281	**Obtain Advanced Authorization for Steps 7 and 8**	**5 days**	**Tue 12/18/07**	**Mon 12/24/07**
282	Complete ground survey	30 days	Tue 12/25/07	Mon 2/4/08
283	**Develop Preferred Alternative Verification design activities needed for environmental document and intermediate reviews**	**60 days**	**Tue 12/25/07**	**Mon 3/17/08**
284	Maintenance of Traffic Exception Committee - Review and Approval	20 days	Tue 3/18/08	Mon 4/14/08
285	Perform subsurface investigation	40 days	Tue 12/25/07	Mon 2/18/08
286	Pavement Design Requested & Received	40 days	Tue 1/22/08	Mon 3/17/08
287	Interchange Justification/Modification Studies - ODOT Roadway Engineering Services and KYTC Frankfort Review and Approval	60 days	Tue 3/18/08	Mon 6/9/08
288	Interchange Justification/Modification Studies - FHWA Review and Approval	40 days	Tue 6/10/08	Mon 8/4/08
289	Subsurface Utility Engineering	80 days	Tue 12/25/07	Mon 4/14/08
290	JPP Utilities Milestone: Subsurface Engineering Work Initiated	0 days	Tue 12/25/07	Tue 12/25/07
291	**Environmental Studies**	**210 days**	**Tue 3/18/08**	**Mon 1/5/09**
336	**Complete Draft Environmental Document**	**74 days**	**Tue 1/6/09**	**Fri 4/17/09**
340	**Complete Preferred Alternative Verification**	**200 days**	**Tue 1/22/08**	**Mon 10/27/08**
351	**Hold Concurrence Point 4 (Preferred Alternative Verification)**	**75 days**	**Thu 3/19/09**	**Wed 7/1/09**
360	**Step 8 - Prepare Environmental Clearance and Develop Ohio Stage 1 Design**	**259 days**	**Tue 10/28/08**	**Fri 10/23/09**
361	**Stage 1 Detailed Design**	**200 days**	**Tue 10/28/08**	**Mon 8/3/09**
379	**Detailed Design Value Engineering Study and Conclusions**	30 days	Tue 5/26/09	Mon 7/6/09
380	JPP Project Milestone: Second Value Engineering Study Completed	0 days	Mon 7/6/09	Mon 7/6/09
381	**Environmental**	**179 days**	**Tue 2/17/09**	**Fri 10/23/09**
401	**Ohio and Kentucky Actions**	**45 days**	**Tue 7/28/09**	**Mon 9/28/09**
402	Update Strategic Plan	10 days	Tue 7/28/09	Mon 8/10/09
403	Draft MOA for Design Completion, R/W Acquisition, and Construction Activities	10 days	Tue 8/11/09	Mon 8/24/09
404	Circulate for Comment	5 days	Tue 8/25/09	Mon 8/31/09
405	Finalize MOA	5 days	Tue 9/1/09	Mon 9/7/09
406	Obtain Signatures	10 days	Tue 9/8/09	Mon 9/21/09
407	Announce agreement and plan for completion of Detailed Design, R/W, and Construction	10 days	Tue 9/15/09	Mon 9/28/09
408	Develop Scope of Services for Steps 9	5 days	Tue 9/8/09	Mon 9/14/09



Brent Spence Bridge Schedule
Planning Study Report
April 7, 2006

Critical Task · Task · Split · Progress · Milestone · Summary · Project Summary · External Tasks · External Milestone · Deadline

Appendices H-K

Technical Reports (on CD)

These technical reports are provided in the 2012 Environmental Assessment (Appendix A)