Following is a copy of the briefing journal submitted to The Northern Kentucky Chamber of Commerce and the Greater Cincinnati Chamber of Commerce on February 26, 2003.
I-71/I-75 Brent Spence Bridge
Congressional Briefing Journal

for:
The Northern Kentucky Chamber of Commerce
The Greater Cincinnati Chamber of Commerce

February 26, 2003
Overview

The Brent Spence Bridge, connecting Northern Kentucky and Cincinnati Ohio, is a critical component of the nation’s interstate system. It carries both I-75 and I-71 traffic across the Ohio River, facilitating passenger and freight movement through and within the region. It serves as a vital international and regional economic link within the Interstate System. The modernization of this transportation link has been the focus of numerous studies. Each study has recognized deficiencies known at that time and highlighted potential solutions including the replacement of the bridge.

The Bridge Condition Report completed in 1996 concludes, “...the current projected remaining fatigue life is liberally estimated at less than 12 years.” Using an alternate analysis technique, the same report indicated that the functional life could extend to 16 years. The 1998 National Bridge Inventory identified the status of the bridge to be “functionally obsolete.” In April of 2000 the Structure Inventory and Appraisal Sheet again categorized the bridge as being “functionally obsolete.” In essence, these reports mandate the expedient study of the bridge, and that the resulting conclusions need to be implemented between 2008 and 2012.

This document provides several discussion points about the bridge, a current and proposed implementation plan, a historical and functional overview of the existing bridge, and schematics details of five build alternatives. It also recognizes conclusions and recommendations of the prior studies. In addition, this document outlines issues, alternatives, and recommendations identified by the Brent Spence Bridge Work Group, operating within the context of the North South Transportation Initiative (OKI). The charge of this work group was to evaluate potential transportation solutions that would improve the efficiency and safety of the I-75/I-71 traffic across the Ohio River. Parsons Brinckerhoff has also completed additional analyses that are highlighted in this journal.
**Discussion Points**

**National Defense**
Interstate 75 connects Wright Patterson Air Force Base, Fort Campbell, and Fort Knox. Recently, the bridge has proven vital to transporting National Guard troops to deployment sites. Soldiers from the 101st Airborne Division based in Fort Campbell, Kentucky depend on the Brent Spence Bridge to reach their destination.

The current configuration of the Brent Spence Bridge presents a problem for Homeland Security efforts. The movement of emergency vehicles across the bridge in the event of serious emergency are restricted by the lack of shoulders and substandard vertical clearance (less than 15 feet).

**Economics**
Interstate 75 is the most heavily traveled north-south corridor in the Midwest. It moves more than $24.5 billion in commodities annually.

The Brent Spence Bridge is the gateway to Northern Kentucky and Greater Cincinnati. The 2000 Census data indicates that there are nearly 1 million jobs with an annual payroll of over $30 million within the Northern Kentucky and Greater Cincinnati region alone that depend on the Brent Spence Bridge. The Brent Spence Bridge is not only a key artery for these commuters but all for the goods and services they use and produce. Congestion costs every resident in the area $855 in lost fuel and wages. Every truck stopped in Brent Spence Bridge traffic represents nearly $25 dollars per hour lost to the regional economy.

In 2000, 92 community and business leaders within the I-75 corridor were surveyed. Forty-eight percent of these key leaders cited congestion, safety, and continued maintenance on I-75 the biggest transportation challenge they face.

**Capacity**
The Brent Spence Bridge was originally designed for 80,000 vehicles a day. In 1995, it carried 143,000 vehicles a day. This is nearly 80% more than its original design.

In 1995, the bridge was at 91% of its capacity with a four-lane configuration. The bridge capacity was exceeded by the year 2000. By the year 2030, the traffic volume is expected to be 44% over the bridge capacity. This is a 58% in traffic volumes over since 1995 and nearly 2 times the design capacity of the structure.

Commodities and Truck Volumes on the bridge are steadily increasing. In 1995, 19% of the vehicles were trucks. By 2030, they expected to increase to 21%. For the year 2030, this is a 75% increase in truck traffic from 1995.

**Maintenance of Traffic**
The maintenance of traffic plan to be used during construction may dictate the bridge type to be used. Advanced design and construction techniques may be required during the bridge replacement to maintain an adequate level of service not only within the Northern Kentucky and Greater Cincinnati region but also for connections to the National Transportation system.

**Environmental**
The Cincinnati region is in a non-attainment zone for ozone. Renewal of air quality permits could be impacted indirectly by the increasing regional congestion.
# Table of Contents

1.0 Introduction ............................................................................................................. 1  
2.0 Project Setting ......................................................................................................... 4  
   Natural Environment .............................................................................................................6  
   Cultural Resources .............................................................................................................10  
   Hazardous Materials .........................................................................................................12  
3.0 Stakeholder Involvement...................................................................................... 14  
4.0 Existing Bridge Conditions .................................................................................. 17  
   Traffic Volume and Level of Service .......................................................................................17  
   Safety .........................................................................................................................................18  
   Roadway Geometry ................................................................................................................19  
   Visibility and Sight Distance ..................................................................................................20  
   Air Quality ...............................................................................................................................20  
   Structural Maintenance ...........................................................................................................21  
5.0 Alternatives ............................................................................................................ 22  
   Size of Bridge ..........................................................................................................................23  
   Evaluation Criteria ............................................................................................................. .......23  
   Conceptual Alternatives ..........................................................................................................25  
6.0 Bridge Study Recommendations ......................................................................... 33  
   Recommended Workgroup Representatives ..........................................................................33  
   Conceptual Outline for Detailed Bridge Study.........................................................................33  
Summary...................................................................................................................... 36
1.0 Introduction

In 2000, the Metropolitan Planning Organizations for the Greater Cincinnati and Greater Dayton regions (OKI and MVRPC), in cooperation with the Ohio Department of Transportation, and the Kentucky Transportation Cabinet, initiated a Major Investment Study (MIS) of transportation issues within the I-75 Corridor. The corridor’s study area extends from the southern limits of Boone County in Northern Kentucky through Piqua, Ohio in Miami County. The study area is shown below in Figure 1. The MIS, known as the North South Transportation Initiative, examined a wide range of transportation issues and potential multi-modal solutions to address concerns identified by the regions’ stakeholders. These stakeholders include current transportation system managers, elected officials, business and community leaders and the general public.

The Brent Spence Bridge is a critical component of the study and the nation’s interstate system. It carries both I-75 and I-71 traffic across the Ohio River, facilitating passenger and freight movement through and within the OKI region. Interstate-75 is also a major international trade route. Along with its Canadian connection, Highway 401, I-75 is one of the busiest Interstate highways in the North America. In fact, the average number of vehicles per day, which crossed the Brent Spence Bridge, grew from 95,000 in 1980 to an estimated 140,000 in 2002. For planning purposes, it is estimated that 230,000 vehicles per day will cross the bridge, reflecting a 64% increase of traffic from 2002.

Information from numerous planning studies was gathered and used as reference throughout the development of the MIS. Two notable references for the analyses associated with the Brent Spence Bridge include the OKI 2030 Regional Transportation Plan and the I-71 Corridor Major Investment Study.

OKI 2030 Regional Transportation Plan

The OKI 2030 plan is in progress, and will be an update of the previous long-range transportation plan (Looking Ahead: 2020 Metropolitan Transportation Plan). This updated plan will recognize that “Transportation has long been a major contributor to the region’s prosperity and quality of life.” It has also set specific goals to improve mobility for people and goods, protect environmental quality and improve travel safety, all of which are directly relevant to the replacement of the Brent Spence Bridge.
In its current state, the Brent Spence Bridge is failing to meet the goals outlined above. As a result, its replacement is included in the Recommended Highway Projects of the OKI 2030 plan as “needed but not financially constrained.” This means that funding for this project has not been identified.

**I-71 Corridor Major Investment Study**

The I-71 Major Investment Study was prepared for OKI in 1998. Generally, this study extended from the Cincinnati/Northern Kentucky International Airport in Boone County Kentucky and runs parallel to I-275 and I-71/I-75 to the Central Business District of Cincinnati. The study corridor then continues through urban neighborhoods, generally parallel to and west of I-71, into Warren County near Kings Island Amusement Park. The I-71 Corridor MIS studied options for meeting the future travel demand through 2020. Among the goals of the study were to:

- Improve the transportation system,
- Provide better access to downtown Cincinnati and Covington,
- Reduce current and projected traffic congestion on I-71, and
- Reduce automobile related emissions.

In light of these goals, the I-71 Corridor MIS team prepared the I-71/I-75 Brent Spence Bridge Scoping Study (Burgess & Niple. 1998). The conclusion of the study stated, “Based upon the unacceptable service level, undesirable cross section, high accident rate, and stress on the bridge, there is a need to develop and implement a strategy to replace the bridge in a timely manner.”

The I-71 Corridor MIS examined several alternatives for the replacement of the bridge. The Oversight Committee identified two preferred alternatives. The first was to replace the existing double-deck bridge with two single-deck five lane bridges. The northbound bridge would be on the east side of the existing bridge and the southbound bridge on the west side of the existing bridge. This alternative is not feasible because it would create tight ramp radii from I-71/I-75 northbound to Fort Washington Way and I-71. The second preference of the Oversight Committee was a new double-deck bridge to the west of the existing structure. In both cases the existing bridge was to be replaced by the new bridge(s). Schematic drawings of these two concepts are exhibited in Figure 2.

Both of these preferred alternatives for bridge replacement have been carried into the North South Transportation Initiative's bridge alternatives. Additional bridge alternatives were developed and immediate attention was given, as to whether the alternatives were feasible in terms of maintaining traffic during construction, and to the geometric constraints of the adjacent highways and ramps.
Figure 2: Recommended alternatives from the I-71 Corridor Major Investment Study
2.0 Project Setting

According to the 2000 Census data, Greater Cincinnati is ranked 23rd among metropolitan regions in the country with an estimated population of around 1,980,000. By 2030, the population is expected to climb to over 2,300,000. Although sometimes viewed as a single unit, the Greater Cincinnati region is actually comprised of Hamilton, Butler, Warren and Clermont counties in Ohio as well as Boone, Kenton and Campbell counties in Kentucky. One critical component of the regional transportation network is the Brent Spence Bridge, which carries traffic for both Interstate-71 and Interstate-75 (I-71/I-75). In Ohio, these two interstates merge on the approach ramps of the Brent Spence Bridge.

The existing Brent Spence Bridge was completed in 1963 as part of the Interstate Highway System. It is a typical double-deck steel truss design with a main span of 830.5 feet and two approach spans measuring 453 feet each. Originally, each of two decks were designed and built with three 12 foot travel lanes and 2 shoulders, within a 49 foot cross section, providing a total of 6 travel lanes. The upper and lower decks are dedicated to southbound and northbound traffic, respectively.

Increasing capacity demands on the bridge required lane configurations to be modified in order to help alleviate the congestion. In 1986, the shoulders were replaced with curb and gutter in order to create four 11-foot travel lanes in each direction, providing a total of 8 travel lanes. In 1995 the bridge underwent major rehabilitation to include resurfacing and seismic retrofitting.

In Northern Kentucky, the approach to Covington and Cincinnati on I-75/I-71 provides one of the most visually dramatic entries into the cities, found anywhere in the country. The right-of-way approaching the Brent Spence Bridge weaves through residential neighborhoods, a public park and a densely developed urban area comprised primarily of commercial and retail land uses. The Lewisburg and Main Strasse Historic districts are also adjacent to this right-of-way. Both are on the National Register of Historic Places (NRHP). The areas immediately east and west of the bridge approaches in northern Kentucky are undergoing redevelopment as destination locations along the riverfront with new and renovated hotels, entertainment sites, and housing.

The area adjacent to the bridge in Ohio is urbanized and commercial/industrial in nature. To the immediate west of the bridge, and adjacent to the Ohio River, is the Cinergy West End Electrical Substation, which supplies electricity to much of the Greater Cincinnati region including the Central Business District. Just north of the substation and abutting the right-of-way is Longworth Hall, also listed on the NRHP. To the east of the Brent Spence Bridge is the City of Cincinnati’s Central Riverfront, which spans approximately 48 acres and anchors major attractions such as the Paul Brown Stadium, the Great American Ballpark, and the National Underground Railroad Freedom Center.
In Cincinnati, a new central riverfront development, known as “The Banks,” is in the planning stages. It is envisioned that The Banks will provide additional residential, retail, open space, and office space in the region. Figure 3 provides a graphical depiction of the project setting for both the Ohio and Kentucky portions of the study.
As part of the Brent Spence Bridge analysis, an Environmental Overview was completed. The purpose of this Environmental Overview is to present a current inventory of environmental resources within the study area. This process will reveal only "fatal flaws" of the study area, and identify known resources that could be impacted by bridge replacement. This overview will also serve as a basis for the environmental review process by providing a list of resources that merit additional analyses and reviews. This overview is formatted to facilitate a smooth transition into environmental documentation and contains three sections:

- Natural Environment
- Cultural Resources
- Hazardous Materials

**Natural Environment**

A natural environmental overview was conducted to determine general terrestrial and aquatic resources within the study area. This overview is based on a secondary source literature review in order to identify potential wetland areas; habitats or occurrences of threatened, endangered, or special concern species; and the location of 100-year floodplains, within the study area.

**Terrestrial Ecology**

No unique terrestrial habitats were observed in the highly urbanized study area. The major terrestrial communities and land uses within the study area are urban, with small areas of scattered scrub-shrub. Urban use areas included roadways, railways, and paved areas surrounding buildings. Scrub-shrub habitats typically occurred in small, fragmented areas behind buildings, between buildings and road areas, or between urban areas and the river. The woody vegetation in these habitats generally consisted of honeysuckle (*Lonicera* sp.), amur honeysuckle (*Lonicera maackii*), tree-of-heaven (*Ailanthus altissima*), and other disturbance-tolerant species.

**Aquatic Ecology**

The study area includes the Ohio River at approximate River Mile 471. In the Greater Cincinnati area, the Ohio River is used as a source of drinking water for over one million people in two states and is the site of increasing recreational use. Upstream of the Cincinnati area, the water quality of the Ohio River is generally able to support sensitive uses—sources of drinking water, contact recreation, and aquatic life habitat. Within the OKI region, the Ohio River receives discharges from over 100 square miles of urban watershed, and other non-point sources associated with a major metropolitan area. The river’s water
quality, and its suitability for contact recreation in particular, is subject to rapid changes, particularly during and after precipitation events.¹

**Wetlands**

With the exception of the Ohio River, the National Wetland Inventory (NWI) map does not identify any potential wetland sites within the study area. The Ohio River is identified on the NWI map as a riverine, lower perennial, unconsolidated bottom, permanently flooded resource. The river body itself is not considered a wetland, but portions of the river with vegetated areas such as sandbars and areas along each bank could be jurisdictional wetlands.

**Threatened and Endangered Species**

**State Listed Species**

There are many records of state listed threatened and endangered species occurring in the Ohio River, including the Ohio and Kentucky endangered lake sturgeon (*Acipenser fulvescens*), the Ohio threatened paddlefish (*Polyodon spathula*), and several state listed mussel species. According to the Kentucky State Nature Preserve Commission (KSNPC) “the vast majority of occurrences for organisms in [the Ohio River and Licking River] are historic records.” Due to pollution, “many if not all of these organisms apparently have been extirpated from the area” (KSNPC, 2001). The ODNR-DNAP indicated two sites of the special interest species Mooneye (*Hiodon tergisus*) immediately downstream of the study area. See Figure 3a.

**Federal Listed Species**

No federally threatened or endangered species are known to occur within 1 mile of the study area. However, the project area lies within the range of several federally listed species. These species along with the county of occurrence and preferred habitat are listed in Table 1.

<table>
<thead>
<tr>
<th>County</th>
<th>State</th>
<th>Common name</th>
<th>Scientific Name</th>
<th>Federal Status</th>
<th>State Status</th>
<th>Preferred habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamilton and Kentucky</td>
<td>Ohio, Kentucky</td>
<td>Indiana bat</td>
<td>Myotis sodalis</td>
<td>E</td>
<td>E</td>
<td>Trees with shedding bark or cavities, riparian corridors</td>
</tr>
<tr>
<td>Hamilton and Kenton</td>
<td>Ohio, Kentucky</td>
<td>Running buffalo clover</td>
<td>Trifolium stoloniferum</td>
<td>E</td>
<td>E (Ohio)</td>
<td>Areas of rich soils in the transition between open forest and prairie, usually in areas disturbed by grazing and mowing.</td>
</tr>
<tr>
<td>Hamilton</td>
<td>Ohio</td>
<td>Bald eagle (wintering)</td>
<td>Haliaeatus leucocephalus</td>
<td>T</td>
<td>E</td>
<td>Mature trees near water</td>
</tr>
<tr>
<td>Kenton</td>
<td>Kentucky</td>
<td>Pink mucket (mussel)</td>
<td>Lampsilis abrupta</td>
<td>E</td>
<td>E (Ohio)</td>
<td>Lower Ohio River and its larger tributaries in sand and gravel</td>
</tr>
<tr>
<td>Kenton</td>
<td>Kentucky</td>
<td>Ring pink (mussel)</td>
<td>Obovaria retusa</td>
<td>E</td>
<td>E</td>
<td>Large rivers in gravel or sand</td>
</tr>
<tr>
<td>Kenton</td>
<td>Kentucky</td>
<td>Fanshell (mussel)</td>
<td>Cyprogenia stegaria</td>
<td>E</td>
<td>E</td>
<td>Medium to large rivers in gravel riffles</td>
</tr>
<tr>
<td>Kenton</td>
<td>Kentucky</td>
<td>Purple catspaw (mussel)</td>
<td>Epioblasma obliquata obliqua</td>
<td>E</td>
<td>E</td>
<td>Medium to large rivers in gravel riffles</td>
</tr>
<tr>
<td>Kenton</td>
<td>Kentucky</td>
<td>Northern riffleshell (mussel)</td>
<td>Epioblasma torulosa rangiana</td>
<td>E</td>
<td>E</td>
<td>Medium to large rivers in gravel riffles</td>
</tr>
<tr>
<td>Kenton</td>
<td>Kentucky</td>
<td>Orangefoot pimpleback (mussel)</td>
<td>Plethobasus cooperianus</td>
<td>E</td>
<td>E</td>
<td>Large rivers in gravel or mixed sand and gravel</td>
</tr>
<tr>
<td>Kenton</td>
<td>Kentucky</td>
<td>Clubshell (mussel)</td>
<td>Pleurobema clava</td>
<td>E</td>
<td>E</td>
<td>Medium to large rivers in gravel or mixed gravel and sand</td>
</tr>
<tr>
<td>Kenton</td>
<td>Kentucky</td>
<td>Rough pigtoe (mussel)</td>
<td>Pleurobema plenum</td>
<td>E</td>
<td>E</td>
<td>Medium to large rivers in sand or gravel</td>
</tr>
<tr>
<td>Hamilton and Kenton</td>
<td>Ohio, Kentucky</td>
<td>Bachman’s sparrow</td>
<td>Aimophila aestivalis</td>
<td>MC</td>
<td>SI (Ohio)</td>
<td>Open woods and bushy pastures</td>
</tr>
<tr>
<td>Hamilton and Kenton</td>
<td>Ohio, Kentucky</td>
<td>Henslow’s sparrow</td>
<td>Ammodramus henslowii</td>
<td>MC</td>
<td>SI (Ohio)</td>
<td>Weedy fields</td>
</tr>
</tbody>
</table>

T=threatened, E=endangered, C=candidate species, MC=species of management concern, SI=special interest species, SC=special concern species

**100-Year Floodplains**

National Flood Insurance Program floodplain maps show that study area is within portions of the Ohio River 100-year floodplain.
Cultural Resources

A cultural resource overview was conducted to determine whether the study area contains resources that could be adversely affected by the proposed project and to identify resources that would be considered a fatal flaw for the preferred alternative. The overview is based on literature sources used to identify resources that are either on or eligible for inclusion on the National Register of Historic Places (NRHP). The NRHP is the Nation’s official list of cultural resources worthy of preservation and includes districts, sites, buildings, structures, and objects that are important in American or local history, architecture, archeology, engineering, and culture. Formal Determinations Of Eligibility (DOE) for the NRHP are designated by the Keeper of the NRHP or by a consensus determination between the State Historic Preservation Office and the lead agency sponsoring an undertaking that could affect a historic resource. A resource that has been formally determined eligible must be treated as if it is listed in the NRHP.

From Northern Kentucky, the right-of-way approaching the Brent Spence Bridge is located adjacent to both the Lewisburg and Main Strasse Historic districts, both of which are on the National Register of Historic Places (NRHP). The Lewisburg Historic District, located to the west I-71/75 right-of-way, consists of 450 buildings dating to the 1840s. Lewisburg was once an independent community physically separated from Covington by Willow Run Creek, which is now the current site of the interstate. Hilly terrain and a wide range of architectural styles characterize the district. To the west of the Brent Spence Bridge approach in Kentucky is the Main Strasse Historic District which is a collection of approximately 800 buildings, built beginning in the 1940s by German immigrants, although some structures date back to just following the Civil War.

Crossing the main span of the Brent Spence Bridge into Ohio, the bridge is immediate east of Longworth Hall a resource also listed on the NRHP. North and east of the study area, within the Cincinnati Central Business District are numerous local and nationally recognized historic districts including the West 4th Street Historic District. National, local, and potentially eligible historic resources for the study area are identified in Figure 4.
Hazardous Materials

An Environmental Site Assessment (ESA) Screening was completed to determine the presence of hazardous materials that could affect the proposed project and to identify areas that could be considered a fatal flaw for the preferred alternative. Federal and state databases were searched in an effort to identify areas of concern.

The aerial photographs that were reviewed indicate that I-75 is one of the dominant features of the study area. In addition, the study area has been a mix of heavy industrial, commercial, and public facilities for at least the past 30 years.

There were two site-specific locations identified within the study area. In Kentucky, the BP Oil Station was identified as a state hazardous waste site. A Phase I ESA is recommended for any areas of concern that would be impacted as a result of construction or right-of-way acquisition. The intent of a Phase I ESA is to determine the potential for encountering hazardous materials/waste at a specific site. A Phase I ESA includes a review of available site-specific regulatory information, a visual site inspection, and interviews with individuals having knowledge regarding the specific site.

The second site identified within the Brent Spence Bridge Study area is located in Ohio and is associated with CCL Custom Manufacturing Incorporated. Although this site was identified through secondary resources, it is in the vicinity of the recently completed Paul Brown Stadium and has been remediated. Additional work is not recommended for this area.

Table 2 provides a summary of the databases searched and the number of sites within the study area identified for each database. The areas of concern are shown on Figure 5 and in cases, where there is more than one area of concern (e.g., spill sites, dual listings).

Although not considered a Hazardous materials site, special consideration should be given in regard to Cinergy’s West End Electric Substation. This grid system, which supplies power to Downtown Cincinnati, is adjacent to the Bridge.
### Table 2. Databases Searched and Sites Identified Within the Study Area.

<table>
<thead>
<tr>
<th>Description of Database</th>
<th>Number of sites within study area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Federal Standard</strong></td>
<td></td>
</tr>
<tr>
<td>National Priority List (NPL)</td>
<td>0</td>
</tr>
<tr>
<td>Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)</td>
<td>0</td>
</tr>
<tr>
<td>No Further Remedial Action Planned (CERC-NFRAP)</td>
<td>0</td>
</tr>
<tr>
<td>Corrective Action Report (CORRACTS)</td>
<td>0</td>
</tr>
<tr>
<td>Resource Conservation and Recovery Information System (RCRIS)</td>
<td>1</td>
</tr>
<tr>
<td>Emergency Response Notification System (ERNS)</td>
<td>0</td>
</tr>
<tr>
<td><strong>Federal Supplement</strong></td>
<td></td>
</tr>
<tr>
<td>Superfund Consent Decrees (CONSENT)</td>
<td>0</td>
</tr>
<tr>
<td>Records of Decision (ROD)</td>
<td>0</td>
</tr>
<tr>
<td>Delisted NPL</td>
<td>0</td>
</tr>
<tr>
<td>Facility Index System (FINDS)</td>
<td>0</td>
</tr>
<tr>
<td>Hazardous Material Information Reporting System (HMIRS)</td>
<td>0</td>
</tr>
<tr>
<td>Material Licensing Tracking System (MLTS)</td>
<td>0</td>
</tr>
<tr>
<td>Mines Master Index File (MINES)</td>
<td>0</td>
</tr>
<tr>
<td>Federal Superfund Liens (NPL Liens)</td>
<td>0</td>
</tr>
<tr>
<td>PCB Activity Database System (PADS)</td>
<td>0</td>
</tr>
<tr>
<td>RCRA Administrative Tracking Systems (RAATS)</td>
<td>0</td>
</tr>
<tr>
<td>Toxic Chemical Release Inventory System (TRIS)</td>
<td>0</td>
</tr>
<tr>
<td>Toxic Substances Control Act (TSCA)</td>
<td>0</td>
</tr>
<tr>
<td><strong>State Standard</strong></td>
<td></td>
</tr>
<tr>
<td>State Hazardous Waste Sites (SHWS)</td>
<td>1</td>
</tr>
<tr>
<td>Licensed Solid Waste Facilities (SWF/LF)</td>
<td>0</td>
</tr>
<tr>
<td>Leaking Underground Storage Tank (LUST)</td>
<td>0</td>
</tr>
<tr>
<td>Underground Storage Tank File (UST)</td>
<td>0</td>
</tr>
<tr>
<td><strong>State Supplemental</strong></td>
<td></td>
</tr>
<tr>
<td>Emergency Response Database (OH Spills)</td>
<td>0</td>
</tr>
<tr>
<td>Division of Emergency Response and Remediation</td>
<td>0</td>
</tr>
</tbody>
</table>

### 3.0 Stakeholder Involvement

Brent Spence Bridge Replacement Study Congressional Briefing Journal  
Northern Kentucky Chamber of Commerce / Greater Cincinnati Chamber of Commerce  
February, 2003
To guide the study of the Brent Spence Bridge, a work group was formed to address the technical and environmental issues of the project. This work group included a broad range of individuals with diverse backgrounds and interests. It was felt that a strong and realistic representation of the project stakeholders was vital in order to produce the best possible solution to the very complex array of issues. Table 3 provides a list of the work group members who contributed to the planning efforts within the context of the North South Transportation Initiative.

Table 3. Brent Spence Bridge Work Group

<table>
<thead>
<tr>
<th>Organization</th>
<th>Representative(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cinergy</td>
<td>John Stowell</td>
</tr>
<tr>
<td>City of Cincinnati – Planning</td>
<td>Liz Blume, John Deatrick, Steve Niemeier, Joe Vogel</td>
</tr>
<tr>
<td>City of Cincinnati – Transportation</td>
<td></td>
</tr>
<tr>
<td>City of Cincinnati – Architecture</td>
<td>Joel Koopman</td>
</tr>
<tr>
<td>City of Covington</td>
<td>Terry Hughes</td>
</tr>
<tr>
<td>City of Newport</td>
<td>Beth Fennell</td>
</tr>
<tr>
<td>Covington Business Council</td>
<td>Carolyn Zink</td>
</tr>
<tr>
<td>CSX Transportation</td>
<td>Jay Westbrook</td>
</tr>
<tr>
<td>Federal Highway Administration – Kentucky</td>
<td>Gary Davis</td>
</tr>
<tr>
<td>Federal Highway Administration – Ohio</td>
<td>Mark VonderEmbse</td>
</tr>
<tr>
<td>Greater Cincinnati &amp; Northern Kentucky African</td>
<td></td>
</tr>
<tr>
<td>American Chamber</td>
<td>Kathye Lewis</td>
</tr>
<tr>
<td>Greater Cincinnati Chamber of Commerce</td>
<td>Tom Ewing</td>
</tr>
<tr>
<td>Kenton County Fiscal Court</td>
<td>Richard Murgatroyd</td>
</tr>
<tr>
<td>Kentucky Transportation Cabinet – District 6</td>
<td>Bob Hill</td>
</tr>
<tr>
<td>Kentucky Transportation Cabinet – Central Office</td>
<td>Barry House</td>
</tr>
<tr>
<td>Metro Southwest Ohio Regional Transit Authority</td>
<td>Tim Reynolds</td>
</tr>
<tr>
<td>National Underground Railroad Freedom Center</td>
<td>Susan Redman-Rengstorf</td>
</tr>
<tr>
<td>Northern KY Area Planning Commission</td>
<td>Marshall Slagle</td>
</tr>
<tr>
<td>Northern KY Chamber of Commerce</td>
<td>Ed Buechel</td>
</tr>
<tr>
<td>Ohio Department of Transportation – Central Office</td>
<td></td>
</tr>
<tr>
<td>Ohio Department of Transportation – District 8</td>
<td>Dirk Gross, Cheryl Kanitz, Larry Sutherland</td>
</tr>
<tr>
<td>Over-the-Rhine Community Council</td>
<td>Carrie Johnson</td>
</tr>
<tr>
<td>Southbank Partners</td>
<td>Alan Bernstein, Wally Pagan</td>
</tr>
<tr>
<td>The Verst Group – Local business</td>
<td>William Verst</td>
</tr>
<tr>
<td>Transit Authority of Northern Kentucky</td>
<td>Winter Troxel</td>
</tr>
<tr>
<td>Tri-County Economic Development</td>
<td>Danny Fore</td>
</tr>
<tr>
<td>West End Community Council</td>
<td>George Beatty, III</td>
</tr>
</tbody>
</table>
To initiate the analyses, the work group identified a broad list of concerns and criteria regarding the Brent Spence Bridge. These concerns are listed as follows:

**Design**
- Add Capacity
- Maintain Local and Interstate Access
- Improve Maintenance Access
- Improve Visibility of Signage
- Improve Vertical Clearance
- Accommodate Truck Lane Restrictions
- Accommodate Oversized Loads
- Accommodate Hazardous Materials Routes
- Accommodate the ARTIMIS Building
- Compatible with Planned Transit Improvements
- Incorporate Intelligent Transportation System (ITS) for the Bridge

**Business and Community Cohesion**
- Maintain Local Community Continuity
- Maintain Covington Parking Facilities
- Provide Connection from Eastbound US 50 to Northbound I-75
- Maintain Existing Telecommunication Connections

**Financing Plan**
- Provide Accurate Capital Costs for Bridge and Approaches
- Include Facility Maintenance Costs
- Leverage Funding Strategies

**Safety Benefits**
- Improve Incident Management

**Aesthetics**
- Improve Vistas of Cities
- Reduce “Tunnel Effect” on the Lower Deck

**Environmental**
- Limit Right-of-Way Impacts
- Minimize Impacts of Existing Parks
- Identify Applicable Noise Concerns/Walls
- Minimize Impacts to Historic Resources
- Maintain Covington Floodwall
- Avoid Hillsides

**Equity (Environmental Justice)**
- Provide an Equitable Distribution of Benefits
- Provide an Equitable Distribution of Impacts

**System Flexibility**
- Be Consistent with Long Range Transportation Plans
- Support Planned Development (Riverfronts)

**Implementation**
- Maintain Interstate Traffic During Construction
- Maintain Local Access During Construction
- Balance Schedule with Local Projects
4.0 Existing Bridge Conditions

Current traffic data indicates that about 140,000 vehicles a day crossed the Brent Spence Bridge in 2002. Furthermore, it is estimated that about 230,000 vehicles a day will cross the bridge in 2030\(^2\). Currently the bridge operates at a Level of Service (LOS) F during peak travel periods. Other factors, in addition to volume, which contribute to the operating conditions of the bridge, include safety, geometry, and visibility. The following table illustrates the growth of the traffic volume on the bridge since 1980.

<table>
<thead>
<tr>
<th>Year</th>
<th>Vehicles Per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>2030</td>
<td>230,000 (Estimated)</td>
</tr>
<tr>
<td>2002</td>
<td>140,000 (Estimated)</td>
</tr>
<tr>
<td>2000</td>
<td>116,000</td>
</tr>
<tr>
<td>1995</td>
<td>162,000</td>
</tr>
<tr>
<td>1990</td>
<td>136,000</td>
</tr>
<tr>
<td>1985</td>
<td>83,000</td>
</tr>
<tr>
<td>1980</td>
<td>95,100</td>
</tr>
</tbody>
</table>

The relative “low” traffic count on the bridge in year 2000 is primarily due to the construction on Fort Washington Way, which heavily impacted travel patterns on I-71, I-75, SR 50 and other local routes.

Traffic Volume and Level of Service

Currently, the Brent Spence Bridge area is experiencing traffic volumes that are more than 20% higher than it was designed to carry. By 2030, the volumes in some areas will be more than 80% higher than the ideal capacity. According to the regional travel demand model, updated as part of the North South Transportation Initiative, travel time is expected to increase, from 6 minutes in the base year (1995), to 7 minutes in design year (2030), between Kyles Lane in Kentucky and Freeman Avenue in Ohio.

\(^2\) Traffic projections of the Ohio-Kentucky-Indiana Regional Council of Governments and the Miami Valley Regional Planning Commission’s combined traffic model.
One measure of the increased level of highway congestion is called Level of Service (LOS). LOS A is the best rating, indicating free flow conditions. At LOS F, the traffic volumes exceed the roadway’s capacity, which may result in queues and stop-and-go conditions. In 1995, in the Brent Spence Bridge area, LOS ranged between D and F, during Peak Hours. By 2030, I-75 in the area will operate at a LOS F, during Peak Hours as shown in Table 4.

<table>
<thead>
<tr>
<th>Brent Spence Bridge Area</th>
<th>Peak Hour Level of Service</th>
<th>Peak Hour Volume to Capacity Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>From, To</td>
<td>1995, 2030</td>
<td>1995, 2030</td>
</tr>
<tr>
<td>Brent Spence Bridge Approach</td>
<td>F, F</td>
<td>1.27, 1.83</td>
</tr>
<tr>
<td>Brent Spence Bridge Approach (Kentucky)</td>
<td>D, F</td>
<td>0.91, 1.44</td>
</tr>
<tr>
<td>Fort Washington Way</td>
<td>D, F</td>
<td>0.83, 1.22</td>
</tr>
</tbody>
</table>

Source: MVRPC and OKI Combined Regional Travel Demand Model

Safety
Possibly the most compelling problem associated with the existing bridge are the number of accidents on the bridge. The number of accidents on the bridge and approaches exceed the Kentucky Interstate average accident rate. The existing conditions and poor performance of the bridge will likely continue to deteriorate until the appropriate solutions are studied and implemented.

The safety performance of I-75 is of concern to the Ohio Department of Transportation (ODOT), the Kentucky Transportation Cabinet (KYTC), emergency service agencies, as well as daily commuters. Based on national crash rate data, the Ezzard Charles/Freeman Avenue area exceed both the national total crash rates (140 crashes per 100 million vehicle miles) and the national fatal and injury crash rate averages (60 crashes per 100 million vehicle miles). The total crash rate is also exceeded at Harrison Ave, I-71/5th Street/River Road (northbound and southbound), 12th Street/5th Street in Kentucky (northbound), and at Kyles Lane in Kentucky (northbound).

An accident on one Ohio River Crossing impacts all of the other river crossings.
As illustrated in Table 5, it can be concluded that there are serious and immediate safety concerns in the Brent Spence Bridge area. For example, the total crash rate between Ezzard Charles and Freeman Avenue is more than twice the total crash rate national average and the fatal/injury crash rate in the southbound direction. Also, the Ohio approaches are clearly well above the national averages for total crashes. It is clear from the data that the Brent Spence Bridge area is in need of an upgrade to correct current design deficiencies and to improve the safety of the interstate.

<table>
<thead>
<tr>
<th>Interchange Segments*</th>
<th>Total Crashes**</th>
<th>Segment Mainline Distance (miles)</th>
<th>Total Crash Rate*** (crashes/ 100 MVM)</th>
<th>Fatal &amp; Injury Crash Rate* (crashes/ 100 MVM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northbound</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harrison Avenue</td>
<td>289</td>
<td>1.5</td>
<td>151</td>
<td>37</td>
</tr>
<tr>
<td>I-71 North/5th Street/River Road</td>
<td>286</td>
<td>1.5</td>
<td>181</td>
<td>41</td>
</tr>
<tr>
<td>12th St/5th St</td>
<td>177</td>
<td>1.3</td>
<td>132</td>
<td>29</td>
</tr>
<tr>
<td>Kyles Lane</td>
<td>231</td>
<td>1.5</td>
<td>147</td>
<td>31</td>
</tr>
<tr>
<td>Southbound</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kyles Lane</td>
<td>99</td>
<td>1.5</td>
<td>63</td>
<td>13</td>
</tr>
<tr>
<td>12th St/5th St</td>
<td>123</td>
<td>1.3</td>
<td>92</td>
<td>29</td>
</tr>
<tr>
<td>2nd Street/7th Street/I-71 North/River Road</td>
<td>190</td>
<td>1.0</td>
<td>214</td>
<td>50</td>
</tr>
<tr>
<td>Ezzard Charles/Freeman Ave</td>
<td>374</td>
<td>1.1</td>
<td>337</td>
<td>73</td>
</tr>
</tbody>
</table>

* Interchange Segments represent the interstate mainline only in the vicinity of the interchange
** Total crashes represent interstate mainline crashes only.
*** Shaded cells denote areas that exceed the National or State Averages

Roadway Geometry
One of the factors contributing to the inadequate traffic flow across the bridge is the substandard geometry of the approaches. For example, the northbound entrance ramp from 4th Street in Covington creates a speed differential problem between the existing northbound traffic approaching the bridge and the traffic entering from the 4th Street ramp. The preferred acceleration distance for an entrance ramp should be a minimum of 1,800 feet. Traffic entering from 4th Street in Covington must accelerate to match the speed of northbound vehicles and cross two lanes of traffic over a distance of roughly 2,500 feet in order to continue north on I-75.
Similar merging and weaving problems, coupled with speed differentiations, exist with other ramps north and south of the bridge. This not only contributes to the daily traffic congestion but also contributes to existing safety hazards of the current configuration.

**Visibility and Sight Distance**

Another issue of concern is the insufficient visibility of signs on the lower northbound deck. As shown in the image above, signs are partially hidden by the steel members of the bridge. This condition cannot be improved on the existing bridge due to the already substandard vertical clearance of 14-feet 11-inches; today’s standards require a minimum of 17 feet. Because of this situation, it is difficult for motorists to read the signs at an appropriate distance to change lanes safely, particularly in moderate to heavy traffic conditions. Members of the Brent Spence Bridge work group also noted that these clearance issues create a tunnel effect during which entrance and exits to the Interstate are unexpected.

**Air Quality**

The congestion of vehicles attempting to cross the Ohio River also contributes to the poor air quality in the region. As a result of this condition, pursuant to the 1990 Clean Air Act Amendments (CAAA 90), the EPA classified the region, as a “Moderate Non-attainment” area for ozone, based on air quality measurements taken from 1988-1990. On July 5, 2000 the EPA determined that the region had attained the one-hour ozone standard based on three consecutive years without a violation of the standard. The region was redesignated to a “Maintenance Area” and must continue to monitor for violations of the one-hour ozone standard in order to ensure compliance.

However, it has been recommended that the OKI region be placed back in a new “Non-attainment” area under a new 8-hour standard, which began in 1997. The EPA’s authority to enforce the 8-hour standard is currently under judicial review and the recommended designation is pending.

Regardless of the regions technical classification by the EPA, air quality remains poor and requires improvement. Of greatest concern are health risks associated with the poor air quality. This has a demonstrated effect on the people who live and work in the region. Improving poor traffic conditions on the bridge and its approaches may reduce negative effects on the regions air quality.
Structural Maintenance

It is important to point out that the Kentucky Transportation Cabinet is adequately maintaining the structural integrity of the Brent Spence Bridge. However, the increased volume of traffic together with the increased percentage of trucks crossing the bridge has caused the deterioration of the bridge and its approaches to accelerate. This is due to continuously increasing vibration and loads placed on the bridge. The 1996 Bridge Condition Report concluded, "...the current projected remaining fatigue life is liberally estimated at less than 12 years." An alternate analysis used for the same report indicated that the safe life could extend 16 years, to the year 2012. The 1998 National Bridge Inventory gave the bridge a sufficiency rating of 73 on a 100-point scale and rated the bridge status as "functionally obsolete." A more recent, 2000 Bridge Condition Report rated the sufficiency of the bridge even lower: 64 of a possible 100 and concluded that the bridge remains "functionally obsolete."
5.0 Alternatives

Because of the compact, bridge right-of-way and the fully developed nature of the area surrounding the bridge, a larger study area, than the bridge itself is required. Any alternate ramp configurations would have potential impacts well north and south of the existing bridge. Likewise, areas east and west of the bridge need to be included in the study due to the impacts of locating a new bridge to either side of the existing structure.

As a result, the Workgroup defined the bridge study area to encompass the I-75 mainline and its ramps from 12th Street in Covington, Kentucky (locally known as the “Cut in the Hill”) through Ezzard Charles Drive in Cincinnati, Ohio. The east/west limits for the study area is defined as the existing interstate right-of-way and any additional impacted areas as a result of the improvements as illustrated in Figure 6.
Size of Bridge
Figure 7 below, illustrates the current estimated volume of traffic on the bridge and the estimated Level of Service (F), provided during peak travel periods. Under the existing conditions of 11 foot lanes and 1 foot shoulders.

The figure also illustrates the Level of Service estimated for the design year 2030, based on the provision of four to seven lanes, with 12-foot lanes and shoulders. This information was produced to help determine the size of bridge required to achieve an acceptable Level of Service.

<table>
<thead>
<tr>
<th>Level of Service (LOS)</th>
<th>Current Estimates = 140,000 Vehicles Per Day</th>
<th>2030 Estimates = 230,000 Vehicles Per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>At Peak Traffic Hour</td>
<td>4 Lanes</td>
<td>4 Lanes</td>
</tr>
<tr>
<td></td>
<td>With 11’ Lanes and 1’ Shoulders</td>
<td>12’ Lanes and Shoulders</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
</tr>
</tbody>
</table>

Evaluation Criteria
The Work Group identified the major issues associated with the bridge replacement and categorized them into distinct classifications. It was agreed that these issues would be used as criteria for the evaluation of the alternatives. These Criteria, as presented in Figure 8, are both qualitative and quantitative by nature of the planning and design process. Overall, the evaluation of the bridge alternatives was to be based on the alternative’s effectiveness and subsequent impacts. Using common, specific criteria to compare the feasibility of the alternatives would aid in the identification of the best alternative.
**Figure 8. Brent Spence Bridge Evaluation Criteria**

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No Build</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Single-deck on west - remove existing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Double-deck on west - remove existing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Double-deck on west - rehab/replace existing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Single-deck on west - replace existing w/single-deck same location</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Design**
- Adds Capacity
- Maintains Local and Interstate Access
- Improves Maintenance Access
- Improves Visibility of Signage
- Improves Vertical Clearance
- Accommodates Truck Lane Restrictions
- Accommodates Oversize Loads
- Accommodates Hazardous Materials Routes
- Accommodates the ARTIMIS Building
- Compatible with Planned Transit Improvements
- Incorporates Intelligent Transportation System Components

**Business/Community Cohesion**
- Maintains Local Community Continuity
- Maintains Covington Parking Facilities
- Provides Connection from Eastbound US 50 to Northbound I-75
- Maintains Existing Telecommunication Connections

**Financial Measures**
- Capital Costs
- Facility Maintenance Costs
- Leverages Funding Strategies

**Safety Benefits**
- Improves Incident Management
- Improves Vistas of Cities
- Reduces “Tunnel Effect”

**Environmental**
- Right-of-Way Impacts
- Impacts to Existing Parks
- Noise Concerns/Walls
- Historic Resources
- Covington Floodwall/Hillside

**Equity (Environmental Justice)**
- Equitable Distribution of Benefits
- Equitable Distribution of Impacts

**System Flexibility**
- Consistent with Long Range Transportation Plans
- Compatible with Planned Development (Riverfronts)

**Implementation**
- Maintains Interstate Traffic During Construction
- Maintains Local Access During Construction
- Schedule
Arguably, the most important technical criteria are an alternative’s ability to function effectively and provide an adequate level of service during peak traffic periods. Another important consideration is whether established design standards are met, or if exceptions will be required to make an alternative possible. The alternatives would also be judged on whether they provided all of the desired access points, including interstates, highways, and the adjacent central business districts.

A critical element to be used in the evaluation process is the constructability and the maintenance of traffic issues relative to each alternative. These are complex issues, which must be weighed carefully as part of each analysis. It is vital that the interstate system operates continuously, at an acceptable level of service, during the entire construction process. Any maintenance of access planning must insure that existing traffic and local access are accommodated. As one would expect, cost will also be a significant determining factor as to whether an alternative is feasible and will weigh heavily on the final selection of an alternative.

As required by State and Federal agencies, the effects on both the human and the natural environment must be scrutinized. Therefore, impacts of each alternative will be compared, as well as the technical considerations discussed above. This will carry substantial weight in the evaluation process.

Additional major environmental concerns include impacts on neighborhoods, schools, parks, historical structures, and districts. The impacts of the natural environment, such as plants, animals and their habitats, including any effects on the air and water quality will be studied in detail, and used to critique the alternative’s feasibility.

Conceptual Alternatives
Seven conceptual alternatives, including the No Build alternative, were under consideration for the replacement of the Brent Spence Bridge. The alternatives were to be evaluated in detail, based on the criteria outlined above to determine which will better suit the needs of the transportation system.

Some types of bridges are better suited than others for particular applications. The required span, load, appearance and costs, will dictate the type of bridge(s) to be recommended. In this case, some of the better-suited bridge types appear to be the truss and cable-stay. A more detailed study would be required to determine which type of bridge would be best suited for this particular application, as discussed in the Bridge Study Recommendations section of this document. In addition to the consideration of bridge types, the width of the bridge is of concern, given the right-of-way constraints and associated costs. Figure 9 provides a comparison of the current bridge width of 49 feet, to conceptual widths for single and double deck configurations.

Although the following alternatives do not address the type of bridge(s), they will aid in the evaluation of the different possible configurations, such as single versus double-deck, one bridge versus two, and the different location combinations. The number of lanes required will be based on cost, projected traffic volume, the desired level of service, lane requirements of the specific alternatives and the recommended configuration of the mainline. Also included are some of the key preliminary advantages and disadvantages identified by the work group for each alternative.
No Build
The no-build option would continue with the rehabilitation and general maintenance activities of the existing bridge, but ultimately, an additional and/or a replacement structure would not be built.

Advantages:
- Maintenance costs would be lower than the new construction costs associated with the build options.
- The Cinergy’s West End Substation and Longworth Hall, a NRHP, would not be impacted.

Disadvantages:
- Maintenance costs for an aging and over utilized structure would continue to rise.
- Substandard geometry, sight distance and weaving problems would not be alleviated.
- The existing number of lanes is not sufficient to accommodate the anticipated traffic volumes. Regional interstate congestion along I-71 and I-75 will increase causing mobility and air quality concerns.
**Alternative 1**

Construct two single-deck bridges, one on the west side of the existing bridge and one on the east side of the existing bridge (5 lanes northbound and 5 lanes southbound minimum). Remove the existing bridge after construction. This is the preferred alternative of the I-71 Corridor Transportation Study.

**Advantages:**
- A single-deck bridge provides maximum maintenance flexibility as compared to a double-deck bridge.
- Maintains the current bridge at its full capacity during construction except where and when the connections are made.

**Disadvantages:**
- More than five lanes, as specified in the I-71 alternative, may be needed to accommodate the anticipated traffic volumes.
- Reconfiguration of ramps to and from Fort Washington Way would be required for the new bridges.
- The east portion of Longworth Hall (on the NRHP), and Cinergy’s West End Substation may be impacted.
- The construction cost of two single-deck bridges is typically higher than that of one double-deck bridge.
Alternative 2
Construct a double-deck bridge on the west side of the existing bridge (5 lanes northbound and 5 lanes southbound minimum), and remove the existing bridge after construction. This is the second choice of the I-71 Corridor Transportation Study.

Advantages:
- The construction cost of one double-deck bridge is typically less than two single-deck bridges.
- Maintains the current bridge at its full capacity during construction.
- The west configuration could accommodate the ramps to and from Fort Washington Way.

Disadvantages:
- More than five lanes, as specified by the I-71 Study, may be warranted to accommodate the anticipated traffic volumes.
- A double-deck bridge does not provide the maintenance flexibility as compared to a single-deck bridge.
- The east portion of Longworth Hall (on the NRHP), and Cinergy’s West End Substation may be impacted.
- Would require reconstruction of the approach ramps on both sides of bridge.
Alternative 3
Construct a double-deck bridge on the west side of the existing bridge (3 lanes northbound and 3 lanes southbound). Rehabilitate and/or replace the existing bridge (3 lanes northbound & 3 lanes southbound). Utilize both bridges for a total of (6 lanes northbound and 6 lanes southbound).

Advantages:
- The construction cost of one double-deck bridge is typically less than two single-deck bridges.
- The existing and west configuration could accommodate the ramps to and from Fort Washington Way.
- The capacity of six travel lanes in each direction would be more appropriate given the anticipated traffic volumes.

Disadvantages:
- Traffic may not be maintained at the desired capacity during the rehabilitation of the existing bridge and substantial changes to the approaches would be required.
- If the existing bridge were utilized, its inherent weaving, vertical clearance and structural life problems may not be alleviated.
- Although the alternative would decrease the amount of traffic on the existing bridge, its rehabilitation may not significantly increase the structural life of the bridge.
- The east portion of Longworth Hall and Cinergy’s substation would be impacted.

Figure 12: Alternative 3 (a new double deck bridge to west, rehab existing bridge).
**Alternative 4**

Construct one or two single-deck bridge(s) on the west side of the existing bridge (a minimum of 5 lanes northbound and 5 lanes southbound). Remove the existing bridge after construction.

**Advantages:**
- A single-deck bridge provides maximum maintenance flexibility as compared to a double-deck bridge.
- Maintains the current bridge at its full capacity during construction.
- The west configuration could accommodate the ramps to and from Fort Washington Way.

![Figure 13: Alternative 4 (new single deck bridges to the west)](image)

**Disadvantages:**
- The impacts to the east portion of Longworth Hall (on the NRHP) may include building sections that were not modified as part of the original construction of the bridge.
- Cinergy’s West End Substation would be impacted. At least one of the grid system would be impacted and require relocation. Portions of the main building may also be impacted.
- The construction cost of two single-deck bridges is typically higher than that of one double-deck bridge.
Alternative 5
Construct two single-deck bridges, one on the west side of the existing bridge and one at the same location of the existing Brent Spence Bridge (a minimum of 5 lanes northbound and 5 lanes southbound).

Advantages:
- Two single-deck bridges provide maximum maintenance flexibility as compared to a double-deck bridge.
- The existing and west configuration could likely tie into the ramps to and from Fort Washington Way.
- Adequate maintenance of traffic would likely be possible during construction and demolition phases.

Disadvantages:
- Capacity is reduced during construction as existing bridge is demolished and a new bridge is built.
- The footprint of the new bridge will be larger than the existing bridge and may cause impacts to the east portion of Longworth Hall (on the NRHP), and portions of Cinergy's West End Substation
- The construction cost of two single-deck bridges is typically higher than that of one double-deck bridge.

Figure 14: Alternative 5 (a new single deck to the west replacing existing bridge with a single deck)
**Alternative 6**
Close the existing bridge for 3 or more years, detour traffic to other interstates and bypasses, demolish the Brent Spence Bridge and replace it in the same location with a new double-deck bridge (a minimum of 5 lanes northbound and 5 lanes southbound).

**Advantages:**
- The construction cost of one double-deck bridge is typically less than two single-deck bridges.
- Would accommodate the existing ramps to and from Fort Washington Way.

**Disadvantages:**
- The weaving movements to and from the Covington and Cincinnati exits may not be resolved.
- All Ohio River crossings in the Greater Cincinnati/Northern Kentucky area will be burdened during construction as existing bridge is demolished and a new bridge is built. Congestion will be imbalanced on the region’s interstate systems as traffic is detoured to other bridges.
- A double-deck bridge does not provide the maintenance flexibility as compared to a single-deck bridge.
- Although smaller than other build alternatives, the footprint of the new bridge will be larger than the existing bridge; therefore portions of Longworth Hall, a NRHP, and the grid system from Cinergy’s West End Substation may be impacted.
6.0 Bridge Study Recommendations

The complexities and potential impacts of replacing the Brent Spence Bridge warrants the full participation and resources of the stakeholders in order to achieve consensus on a solution with equitable benefits and costs. As outlined by these alternatives, the required resources and effort needed to adequately study the bridge, extends beyond the means of the North South Transportation Initiative. Therefore, a separate comprehensive study is recommended to properly evaluate the alternatives to the fullest extent practical. Recommended stakeholder representatives and an outline of the services required to address the complexity of this problem is outlined in this section.

Recommended Workgroup Representatives
To achieve fair representation from all of the potential stakeholders, the following list of stakeholders are recommended by the workgroup to participate in the planning process.

Kentucky Transportation Cabinet
Ohio Department of Transportation
Federal Highways Administration
Ohio-Kentucky-Indiana Regional Council of Governments
City of Covington
City of Newport
City of Cincinnati
Transit Agencies

Conceptual Outline for Detailed Bridge Study
The following is a conceptual outline for a bridge replacement study based on the input of the work group.

Study Area - At a minimum, it is recommended that the Brent Spence Bridge study area encompass the I-75 mainline and its ramps from 12th Street in Covington, Kentucky (locally known as the “Cut in the Hill”) through Ezzard Charles Boulevard in Cincinnati, Ohio. The east west limits for the study is recommended to include the existing interstate right-of-way and any additional impacted areas as a result of the improvements.

The tasks included in the study may be comprised of capacity and design criteria, construction impacts, maintenance of traffic, conceptual engineering, environmental documentation, alternatives visualization, and the public involvement aspects of the bridge replacement.

Bridge Capacity and Design Criteria - Bridge design criteria including capacity, for the main line and approaches would be evaluated. The bridge would be studied as an extension of the Highway system. The capacity requirements of the main line, in addition to other highway improvement recommendations would be evaluated and become the basis for the conceptual engineering of the bridge itself.

The design criteria for the main line and approach bridges would be determined, as provided by the Kentucky Transportation Cabinet and the Ohio Department of Transportation for the subsequent development of the preliminary and final bridge design. Differences in the geometric design criteria of either of the two regulatory
agencies would be identified and recommendations developed for transitioning from one jurisdiction to the other across the bridge structure as appropriate.

The design criteria relative to the Ohio River would also be considered, such as the flood plain and pool elevations. The Ohio River shipping channel will also be considered to ensure the required vertical and horizontal navigation clearances are maintained.

**Construction Impacts and Process** - The evaluation of the river crossing and approach bridge alternatives would consider the Right-of-Way and construction requirements. Adjacent to the existing highway are residential, commercial, city, and state properties, all of which have different acquisition considerations. Of primary concern are the environmental justice issues relative to the residential properties. The B&O Freight Terminal (Longworth Hall), which is on the National Register of Historic Places, and Goebel Park are also adjacent to the highway and have significant environmental implications to consider. The Environmental Impact Statement would directly address the socio-economic and environmental impacts associated with specific property acquisitions in significant detail. However, the conceptual design of the bridge would take into consideration the impacts to the more sensitive areas of concern mentioned above.

The replacement of the bridge would also likely require the relocation of a Cinergy power grid. The shutdown/startup procedure can only be done during mild climates while energy consumption is down. The critical timing of the potential relocation would be considered in the bridge replacement plan.

**Maintenance of Traffic** – The ability to maintain traffic flow during construction would be evaluated to determine appropriate alternatives. The alternatives must facilitate an acceptable level of service during construction, as determined by the Kentucky Transportation Cabinet and the Ohio Department of Transportation. The physical location of the bridge and approaches, as well as the construction schedule of the alternatives, would have different impacts on the level of service possible and would be evaluated accordingly. In addition, alternate routes, detours, and closures would be evaluated as they pertain to each alternative’s ability to provide adequate traffic flow.

**Conceptual Engineering** -The conceptual engineering task would build upon highway recommendations, bridge capacity requirements, design criteria, construction impacts and maintenance of traffic considerations outlined above. Accordingly, a conceptual level geometric and structural design study of the main span and approaches for the replacement of the bridge would follow. The Conceptual Design Study would address the following five major elements of the bridge replacement:

- Bridge Type
- Bridge Alignment
- Conceptual Construction Estimate of the Bridge Main Span and Approaches
- Construction Staging and Conceptual Maintenance of Traffic Plan of the Bridge Main Span and the Approaches

A Conceptual Bridge Design Report could be prepared and would recommend at least one steel bridge scheme and one concrete bridge scheme, for the river crossing, to be carried into subsequent preliminary design. Recommendations would also be made for the approach bridges.

**Environmental Documentation** - The objective of the environmental documentation task would be to prepare an Environmental Assessment (EA) or Environmental Impact
Statement (EIS) in accordance with current state and federal procedures for the replacement of the bridge. This task may include assembling and summarizing technical information, methodologies, and results of analyses in the correct format for an EA/EIS in accordance with applicable KYTC procedures, including the Environmental Procedures Manual produced by the Division of Environmental Analysis (1996), the requirements of the National Environmental Policy Act 23 CFR-771 and the Federal Highway Administration’s (FHWA) Technical Advisory 6640.8A

**Alternatives Visualization** - An alternatives visualization task would be a critical element in today’s public and agency participation process and would provide the tools necessary to effectively communicate the critical issues of the project and help to determine which alternative is the best solution for the community. This would include building a three-dimensional computer model of the existing features in the vicinity of the Brent Spence Bridge. Conceptual bridge alternatives and their ramps would then be incorporated into a combination of computer-generated animation, live video composites, and photo simulations.

**Public Involvement** - The public involvement task would provide the development and implementation of a public involvement program. OKI is very proactive in public involvement and advocates the use of public involvement as a vital component in the planning process. This task would build on successful activities already initiated by OKI, through the Initiative, to develop and conduct a comprehensive public involvement program. Some of the tools to engage the public in the process may include: a project web site, a speaker's bureau, media relations programs, and public workshops, meetings and hearings.

The full scope of the project as outlined above, would provide a comprehensive, preferred alternative, for the replacement of the Brent Spence Bridge; derived from the full participation of the governing agencies, business leaders and citizens of the community. It is felt that an inclusive approach to the problem would produce the best possible solution for all of the stakeholders.
Summary

The Brent Spence Bridge is a vital link in both our national and regional transportation systems. The free flow of goods, services, and people to and through the Nation directly impacts the economic strength of the communities that border Interstates-75 and 71. While the need for replacement is widely recognized, there are numerous factors that point to the need to accelerate these plans for the Brent Spence Bridge including:

**Existing Capacity** - The Brent Spence Bridge was opened in 1965. At that time the interstate system was still under development. The volume of traffic crossing the Ohio River is approximately 140,000 vehicles daily and will substantially increase to an estimated 230,000 vehicles daily by the year 2030. The fixed capacity restrictions of the bridge remain below what is needed to accommodate the existing and future, regional and national transportation needs, which negatively impact the socio/economic environments.

**Existing Maintenance Cycle** - The Bridge is over burdened in terms of both volume and fatigue. The stress of servicing an estimated 140,000 vehicles daily in the year 2001, twenty-five percent of which can be attributed to freight vehicles, has increased the frequency and degree of maintenance cycles. This recurring cost of actual repairs and transportation delays is already impacting regional economic decisions. The Kentucky Transportation Cabinet recognizes the need for action.

**Safety Deficiencies** - The existing Brent Spence Bridge and several of its approaches do not meet current design standards. The heavy congestion compounded with merging and weaving problems, largely due to geometric design deficiencies such as tight turning radii and insufficient sight distances, has increased the frequency of incidents on the Bridge well beyond the statewide and national average. In addition, the absence of shoulders provides no opportunities for incident management, also contributing to congestion problems.

The complexity of replacing this major link of the transportation system takes considerable planning and forethought of physical, environmental, and financial constraints. The need to ensure the efficient movement of people, services and goods, calls for immediate attention to initiate the Brent Spence Bridge planning process.

---

3 Anticipated traffic projections of the Ohio-Kentucky-Indiana Regional Council of Governments and the Miami Valley Regional Planning Commission’s combined traffic model.