APPENDIX F
CONCEPTUAL ALTERNATIVES DEVELOPMENT ENGINEERING

I. Development Workshop

Brent Spence Bridge Team Meeting
Wednesday, December 10, 2003
Montgomery Inn Boathouse
Cincinnati, Ohio

Agenda

- **Welcome & Introductions**
- **Process to be followed**
- **Mission of Workshop**
  - **Determine 6 "Best" Alternatives to carry forward**
- **Information Phase**
- **Development of Parameters**
  - **Criteria used to filter alternatives to 6 "Best"**
- **Alternatives Considered in 1998 Scoping Study**
- **Brainstorming for New/Additional Alternatives**
- **Judgment Phase**
  - **Advantages/Disadvantages**
- **Results/Closing**
  - **Guidance/Concerns/Items of Interest**

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Wednesday, December 10, 2003

Name	Organization	Office Phone Number	Cell Phone	E-mail
David Kratt	KYTC C.O.	502-564-3388	502-330-4656	David.Kratt@ky.gov
John Eckler	KYTC – D-6	859-341-2700	859-750-4132	John.Eckler@mail.state.ky.us
Kevin Rust	KYRC – D-6	859-341-2700		Kevin.Rust@mail.state.ky.us
Mike Bezold	KYTC D-6	859-341-2700		Mike.Bezold@mail.state.ky.us
Larry Sutherland	ODOT C.O.	614-644-1203		LSutherl@dot.stater.oh.us
Stefan Spinosa	ODOT D-8	513-933-6639	513-218-0163	stefan.spinosa@dot.state.oh.us
Diana Martin	ODOT D-8	513-933-6597		Diana.Martin@dot.state.oh.us
Richard Crane	FHWA – KY	502-223-6763		richard.crane@fhwa.dot.gov
Michael M. Loyselle	FHWA – KY	502-223-6734		michael.loyselle@fhwa.dot.gov
Matt Shamis	FHWA – OH	614-280-6847		Matt.Shamis@fhwa.dot.gov
Jim Garrison	Burgess & Niple	614-459-2050	614-832-4340	jgarrison@burnip.com
Herb Mack	Burgess & Niple	614-459-2050	614-203-1235	hmack@burnip.com
Mark Willis	Burgess & Niple	859-273-0557		mwillis@burnip.com
Jon Brunot	Burgess & Niple	513-579-0042		jbrunot@burnip.com
Henry Osman	Burgess & Niple	859-273-0557		hosman@burnip.com
Richard Sutherland	American Consulting Eng.	859-233-2100		Sutherland@ace-plc.com
Glenn Hardin	American Consulting Eng.	859-233-2100	859-227-4461	hardin@ace.plc.com
Greg Sharp	American Consulting Eng.	859-233-2100		GSharp@ace.plc.com
J. Paul Silvestri	National Constructor’s Group	707-257-8994		Jpaul.silvestri@lycos.com
Gerry Fister	Third Rock Consultants	859-977-2000	859-619-1237	gfister@thirdrockconsultants.com
Carol Weed	Gray & Pape	513-287-7700	513-300-1520	cweed@graypape.com

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Meeting Notes

- Railroad under Brent Spence – 40 trains a day, Cincinnati side. Main route for CSX between the north (Chicago/Toledo) and south (Atlanta) and the coalfields; tri-weekly Amtrak to Washington, D.C.
- Cinergy – Substation
  - Feeds all Downtown and a large portion of Northern Kentucky
  - As much underground as on surface
  - 3 main transmission lines underground to Downtown
  - Relocation rumored to cost $200 million
  - Future; 345 KV addition possible
  - FHWA indicated that they may not be as concerned with going over power substation, however, gas lines could be a concern
- Cost Guard
  - Only have initial window, holding until possible locations developed
- Environmental
  - "No Fatal Flaws" from desktop survey
    - Several federal endangered mussels in the region. Study area width was 3000' total (1500' either side of I-75)
  - 37 HazMat sites documented within study area, one within the ROW limits
  - Some Superfund sites (KY definition)
  - 60 underground sites, near interchanges and industrial area
    - UST, un-documented sites expected to be found in future work
    - Substation could likely contain PCB's
  - Some parks in area
- Cultural/Historical Resources
  - Ohio
    - National Historic Register – Buildings listed on register
      A. Union Terminal – significant building both inside and out
      B. B&O Freight Terminal – "Longworth Hall" Inside is recently renovated. Floors and ceiling integrity remain. Only freight terminal of its nature remaining in country. When I-75 originally built, 135' of building was taken. However, it was not on the Historical Register at that time.
    - Feeling is that Cincinnati Preservation Association will fight to preserve Longworth Hall (unmodified). Is in a preservation easement.
    - Going over Longworth may be better than taking or modifying it.
    - Longworth:
      - If purpose and need are strong and there is no other feasible alternative then it could be taken.
      - Other existing buildings (other than terminal) not as significant
      - Any historic building or historic district impacted will add to timeline
    - 4 archaeological sites in Ohio

        - Expecting some archaeological sites in Ohio
    - Remnants of Cincinnati & White Water Canal – "not a show stopper," mostly covered by railroad bed
- Kentucky
    - A number of historic districts in Covington; added after I-75 built
    - 900 buildings within area, individually listed
    - Big part of identity of Covington
    - 1 archaeological site in Kentucky
    - Unknown resources
    - Many potential archaeological sites in Kentucky (many disturbed)
    - All theoretically can be dealt with
    - Recommend not break boundaries of the districts
    - Issue of impacts to timeline – KYTC noted that 12th Street in Covington taking over 10 years and still not built

Discussion of parameters

A. Environmental Fatal Flaws
    - ? years to resolve disposition of Longworth
    - UST/HazMat will likely be issues

B. Maintenance of Traffic

C. Relative costs (Hi-Mod-Low)

D. Operations

E. Access to Cincinnati and Covington

F. Impacts on existing buildings

G. Utility impacts

I-71/75 MIS Concepts Discussed

- The three "best" as determined from the Scoping Study were displayed and discussed.

Range of Alternatives

Initially, the team identified 12 alternatives and/or combinations. The following characterizes the major elements of the various alternatives:

- Single deck structures
- Double deck structures

- Near existing bridge (west and/or east)
- Further downstream

- Separate bridges for I-75 and I-71
- I-75/I-71 on same bridge(s)

- Separate I-75 through traffic
- Maintain all present connections

- New bridge plus existing BSB (rehabilitate)
- New bridge plus replace on existing

After considerable discussion, the list of preliminary alternatives was reduced to the following groupings:

- Parallel structure to the east (two possible)
- Parallel structure to the west (two possible)
- Rehabilitate existing BSB (no-build)
- New bridge on existing alignment
- New I-75 downstream (with no local connections) with I-71 left on existing bridge
- New I-75/I-71 downstream with all connections retained

The exhibits at the end of this document represent only a visualization of these groupings, or concepts and are intended to encourage further discussion and to get a representative sample of feasible alternatives to carry forward into design development.

Further discussion ensued on the addition of more parameters

- Minimize design exceptions
- Eliminate left-hand exits
- Minimize weaves
- 5 through lanes with full shoulders

Outstanding Issues

- Confirm typical section once traffic is developed

Brent Spence Bridge Constructability Study
Preliminary Alternative Alignment
Advantage/Disadvantage
Assessment

Rehab + I-75 West

Advantages:

- Minimizes the number of new lanes required for a new bridge crossing and its approach structure 2X3 lanes*
- Fully utilizes the existing infrastructure, existing Brent Spence Bridge, approaches, and ramps to local access with minimal construction/rehab
- Allows for un-congested "thru traffic" directly to and through I-75
- Accommodates thru/truck traffic well on the more heavily traveled I-75 roadway*
- Dramatically reduces heavy traffic loading on the existing Brent Spence Bridge structure, allowing its continued use*
- It avoids major delay and cost generators such as Longworth Hall, maintenance of traffic problems and the Cinergy power plant
- This plan allows for redundancy of the I-75 crossing of the Ohio River

Disadvantages:

- It's skewed alignment requires a somewhat longer bridge across the Ohio River
- Approach roadways may have to be elevated along the entire alignment*
- Existing overpass structures on the Ohio end cause the alignment to terminate 1600+/- feet beyond the study limits at Ezzard Charles Drive
- The alignment will pass over several existing buildings
- The alignment "chases" the existing I-75 corridor, shadowing the existing roadway below
- The rehabilitation of the existing Bent Spence Bridge may not be cost effective nor aesthetically desirable*
- This alternative does not allow for full redundancy of the I-71 crossing of the Ohio River

New East + I-75 West

Advantages:

- Allows for un-congested "thru traffic" directly to and through I-75
- Accommodates thru/truck traffic well on the more heavily traveled I-75 roadway*
- Dramatically reduces heavy traffic loading on a new bridge dedicated to I-71 and local I-75 and downtown commuter traffic*
- It avoids major delay and cost generators such as Longworth Hall, some maintenance of traffic problems and the Cinergy power plant
- This plan allows for redundancy of the I-75 crossing of the Ohio River

All lane configurations and numbers of lanes are assumed and include appropriate 12 foot wide shoulders and barriers where warranted.
* indicates assumed advantages or disadvantages that will require verification by further study (traffic analysis or detailed geometric study).
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- It provides for two new major river crossing structures, allowing for greater flexibility in accommodating future traffic volumes.
- This alternative allows for flexibility of the aesthetic treatment of the bridge crossing

Disadvantages:

- This alternative requires two new bridges, in stead of one
- The I-75 "by-Pass component of this plan is a skewed alignment requiring a somewhat longer bridge across the Ohio River
- Approach roadways from the bypass alignment may have to be elevated along the entire I-75 by-pass alignment*
- Existing overpass structures on the Ohio end cause the by-pass alignment to terminate 1600+/- feet beyond the study limits at Ezzard Charles Drive
- The bypass alignment will pass over several existing buildings, possibly causing their removal
- The by-pass alignment "chases" the existing I-75 corridor, shadowing the existing I-75 roadway below
- This alternative does not allow for full redundancy of the I-71 crossing of the Ohio River
- Maintenance of traffic associated with the Kentucky side construction of the new I-75/71 bridge will be difficult*

New West W/ New Interchange

Advantages:

- Allows for un-congested "thru traffic" directly to and through I-75 and to I-71 via Fort Washington Way
- Accommodates thru/truck traffic well on the more heavily traveled I-75 roadway*
- It avoids major delay and cost generators such as Longworth Hall, maintenance of traffic problems and the Cinergy power plant
- This alternative allows for flexibility of the aesthetic treatment of the bridge crossing

Disadvantages:

- This plan does not allow for redundancy of the I-75, nor the I-71 crossing of the Ohio River
- Causes the abandonment of existing infrastructure, existing Brent Spence Bridge, approaches, and ramps to local access
- It requires an extremely wide (approximately 150'), single elevation bridge*
- It requires the construction of a new major interchange to provide local access to downtown Cincinnati
- Maintenance of traffic during construction will be very difficult and problematic*
- It may require the re-construction/ widening of 6th Street and attendant local access roads
- It's skewed alignment requires a somewhat longer bridge across the Ohio River
- Approach roadways may have to be elevated along the entire alignment*

All lane configurations and numbers of lanes are assumed and include appropriate 12 foot wide shoulders and barriers where warranted.

* indicates assumed advantages or disadvantages that will require verification by further study (traffic analysis or detailed geometric study).

- Existing overpass structures on the Ohio end cause the alignment to terminate 1600+/- feet beyond the study limits at Ezzard Charles Drive
- The alignment will pass over several existing buildings

Single Bridge Replacement

Advantages:

- It's zero skew alignment requires a minimal bridge length across the Ohio River
- The alignment partially utilizes the existing bridge approaches, and ramps to local access with moderate levels of construction/rehab
- This alternative allows for flexibility of the aesthetic treatment of the bridge crossing

Disadvantages:

- It does not completely avoid major delay and cost generators such as Longworth Hall, maintenance of traffic problems and the Cinergy power plant
- This alternative does not allow for redundancy of the I-75 nor the I-71 crossing of the Ohio River
- It requires an extremely wide (approximately 150'), single elevation bridge*
- Maintenance of interstate traffic during construction may be difficult*
- The "at grade" widening of existing I-75 on the Ohio side may be problematic or not feasible*

Double Bridge Replacement

Advantages:

- It's zero skew alignment requires minimal bridge lengths across the Ohio River
- The alignment partially utilizes the existing bridge approaches, and ramps to local access with moderate levels of construction/rehab
- Allows for un-congested "thru traffic" directly to and through I-75*
- This alternative allows for flexibility of the aesthetic treatment of the bridge crossing

Disadvantages:

- Approach roadways on the Ohio side will have to be elevated along the entire alignment*
- Two new bridges are required
- Existing overpass structures on the Ohio end cause the alignment to terminate 1600+/- feet beyond the study limits at Ezzard Charles Drive
- The alignment "chases" the existing I-75 corridor, shadowing the existing roadway below
- This alternative does not allow for redundancy of the I-71 crossing of the Ohio River
- Removal of the Brent Spence Bridge may be more difficult
- Does not provide for local access from I-75 to Covington. Addition of this access may be possible but will be problematic at best*

All lane configurations and numbers of lanes are assumed and include appropriate 12 foot wide shoulders and barriers where warranted.

* indicates assumed advantages or disadvantages that will require verification by further study (traffic analysis or detailed geometric study).

Rehab + I-75/I-71 West

Advantages:

- Fully utilizes the existing infrastructure, existing Brent Spence Bridge, approaches, and ramps to local access with minimal construction/rehab
- Allows for un-congested “thru traffic” directly to I-71 via Fort Washington Way and I-75
- Accommodates thru/truck traffic well on the more heavily traveled I-75 roadway*
- Dramatically reduces heavy traffic loading on the existing Brent Spence Bridge structure, allowing its continued use*
- It avoids major delay and cost generators such as Longworth Hall, maintenance of traffic problems and the Cinergy power plant
- This plan allows for nearly complete redundancy of the both I-71 and I-75 crossing of the Ohio River

Disadvantages:

- It’s skewed alignment requires a somewhat longer bridge across the Ohio River
- Approach roadways attendant to the new bridge will have to be elevated along their entire alignments*
- It requires an extremely wide (approximately 150’), single elevation bridge*
- Existing overpass structures on the Ohio end cause the new I-75 alignment to terminate 1600+/- feet beyond the study limits at Ezzard Charles Drive
- The alignment will pass over several existing buildings
- The rehabilitation of the existing Bent Spence Bridge may not be cost effective nor astatically desirable*

All lane configurations and numbers of lanes are assumed and include appropriate 12 foot wide shoulders and barriers where warranted.

* indicates assumed advantages or disadvantages that will require verification by further study (traffic analysis or detailed geometric study).

II. Schematics