



**THE LOUISVILLE-SOUTHERN INDIANA OHIO RIVER BRIDGES PROJECT  
SECTION 2, DOWNTOWN BRIDGE**

**THIRD COMBINED KENNEDY INTERCHANGE & DOWNTOWN INDIANA  
AREA ADVISORY TEAM/REGIONAL ADVISORY COMMITTEE MEETING  
THE 300 SPRING BUILDING  
300 SPRING STREET, JEFFERSONVILLE, IN  
MARCH 13, 2006  
6:00 - 8:00 PM**

**SUBJECT: Ohio River Bridges Project Bridge Type Alternatives**

**MEETING ATTENDEES**

*(AAT Members)*

Barry Alberts – Downtown Development Corporation  
Emily Boone – Clifton Community Council  
Aida Copic – Louisville Metro  
Steven Kersey – Phoenix Hill Neighborhood Association  
Jim Segrest – Butchertown Neighborhood Association  
Evelyn Umbach – Clarksville Parks Department  
Mary Vanderpool – Southern Indiana Realtors Association

*(RAC Members)*

Saeed Assef – Louisville/Jefferson County Metropolitan Sewer District  
John Emmerich – Louisville Sailing Club  
James Keith – Clark-Floyd Counties Convention & Tourism Bureau  
Ty Gettis – Kentuckiana Minority Business Council  
Doug Stubblefield – South Central Indiana Central Labor Council  
Harold Tull – Kentuckiana Regional Planning and Development

*(Other Organizations)*

Clinton Deckard - Construction Solutions  
Norma Ward - Louisville Metro Housing

**Ohio River Bridges Project Team Members**

Paul Boone – Indiana Department of Transportation  
John Carr – Section 5 Design Team/Wilbur Smith Associates  
Pat Cassity – Community Transportation Solutions-General Engineering Consultant  
Gary Elder – Section 5 Design Team/New West Agency  
Chris Jones – CTS-GEC  
George Jones – Federal Highway Administration  
Kristen Jordan – CTS-GEC  
Barbara Michael – Parsons Brinckerhoff  
Steve Nicaise – CTS-GEC

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Section 2 Design Team/Michael Baker Jr., Inc.

Kenny Caples – Niche Marketing  
John Dietrick – Michael Baker Jr., Inc.  
Rick Fitch – Burgess & Niple  
Gordon Glass – Burgess & Niple  
Steve Goodpaster – American Engineers Inc.  
Shaun Lockhart – Niche Marketing  
Rohena Miller – Niche Marketing  
Patrick Osborne – Michael Baker Jr., Inc.  
Ken Ott – Michael Baker Jr., Inc.  
Aaron Stover – Michael Baker Jr., Inc.  
Laura Toole – Michael Baker Jr., Inc.  
J.B. Williams – Michael Baker Jr., Inc..

*Section 2 Electronic Polling Team*

Ted Grossardt –University of Kentucky  
John Ripy – University of Kentucky

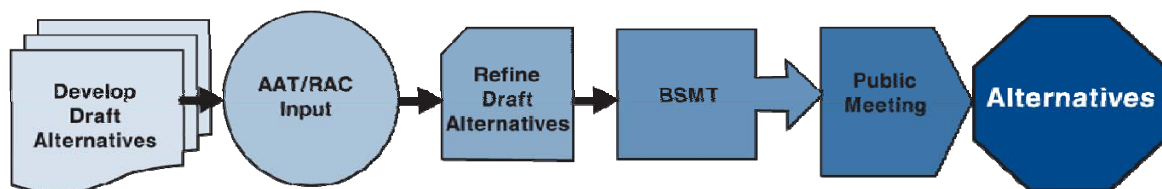
**MEETING SUMMARY**

The meeting was called to order at 6:00pm. J.B. Williams, project manager for the consultant team for the Downtown Bridge welcomed the Area Advisory Team (AAT) and Regional Advisory Committee (RAC) members. He introduced members of the Section 2 Design Team as well as representatives from Community Transportation Solutions, the Bi-State Management Team and the Federal Highway Administration. The assembled members of the Design Team then presented the following information, shown below as abridged.

**Meeting Agenda**

- Welcome/Introductions
- The Step 3 Process
- What is an Alternative?
- Alternatives Overview
- Bridge Type Preference Polling
- Next Steps

**The Step 3 Process: Develop Alternatives**



# THE LOUISVILLE-SOUTHERN INDIANA OHIO RIVER BRIDGES PROJECT DOWNTOWN BRIDGE, SECTION 2

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## Bridge Type Alternatives Consider:

- Constructibility
- Maintenance
- Cost
- Height
- Compatibility
- Symmetry

## Public Comments – During Steps 1 & 2

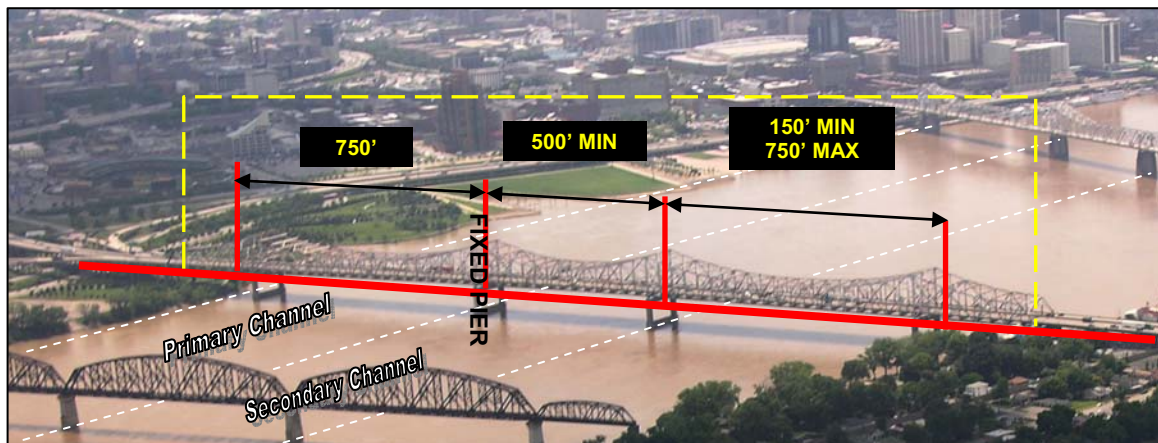
- 84 from the Project Website
- 235 from Meetings (AAT/RAC and Public Open Houses)

## Unique Aspects of Downtown Bridge Design

- Urban Context: Proximity of Existing Bridges
- Bridge Width: 115 feet
  - Including pedestrian walkway/bikeway
- Uni-Directional Traffic
  - Supporting elements in the center of the bridge are not possible



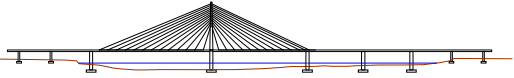
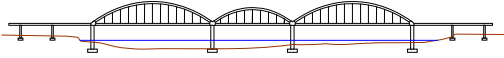


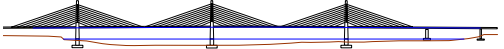
- Parks at Both Landings
  - Importance of pedestrian-level considerations
- Navigational Configuration
  - As required by the United States Coast Guard
  - Initial span arrangement: 1100' between center pier
  - New span (per Coast Guard): 750' from the Kentucky side pier to fixed pier; 500' minimum to the next pier; 105' minimum/750' maximum to the Indiana side pier.



# THE LOUISVILLE-SOUTHERN INDIANA OHIO RIVER BRIDGES PROJECT DOWNTOWN BRIDGE, SECTION 2

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## **Bridge Types Considered:**

- *Cable-Stayed* 
- *Arch* 
- *Truss* 
- *Box Girder* 
- *Extradosed* 

## **Preference Polling Results: 6 Bridge Type Alternatives**

- Aesthetic Preference: Symmetry
  - Symmetric concepts were favored over asymmetric concepts



- Aesthetic Preference: Height
  - Lower height concepts were generally preferred to those with tall towers
- Aesthetic Preference: Visual Simplicity
  - Visual simplicity is somewhat preferred to a more complex appearance
- Aesthetic Preference: Enclosure
  - Tall structures – open is preferred
  - Low structures – closed is preferred

## **Bridge Type Alternatives**

1. Three Span Tied Arch
  - Vertical hangers and arch ribs
  - X-Bracing of arch rib
  - Piers line up with Kennedy Bridge piers



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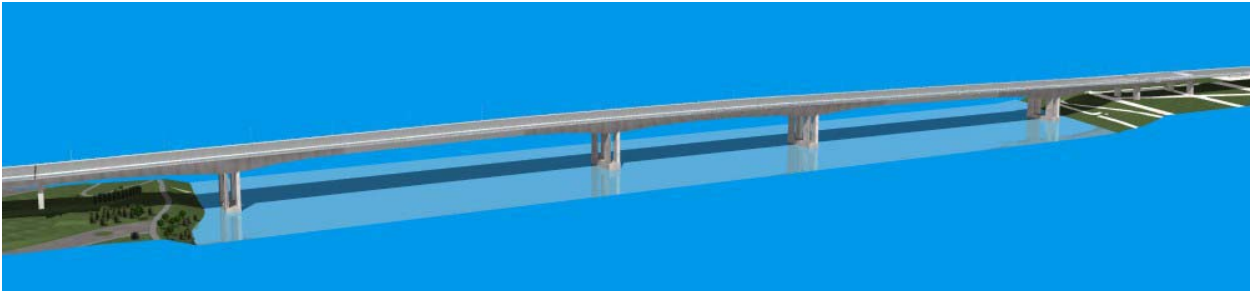
2. Three Span Thru Arch

- Vertical hangers
- Inclined arch ribs
- Horizontal bracing of arch rib
- Arch form extends to water level



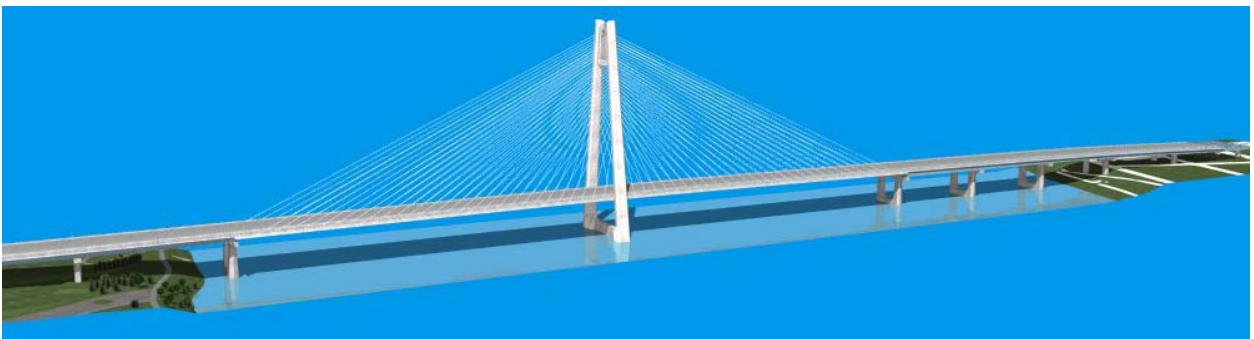
3. Hybrid Box Girder

- Superstructure is below deck
- Piers line up with the Kennedy Bridge
- Raised bridge profile is 20' above the Kennedy Bridge at peak



4. Single Tower Cable-Stayed

- One 350-foot tower
- Semi-fan cable arrangement



5. Four Tower Cable-Stayed

- Four 180-foot towers
- Towers inclined outward (open appearance)
- Semi-fan cable arrangement

## THE LOUISVILLE-SOUTHERN INDIANA OHIO RIVER BRIDGES PROJECT DOWNTOWN BRIDGE, SECTION 2

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- Piers line up with the Kennedy Bridge



6. Three Tower Cable-Stayed
  - Three 150 to 190-foot towers
  - Vertical towers (open appearance)
  - Cables are in a vertical plane
  - Harped cable arrangement



### **Bridge Alternative Preference Polling – AAT/RAC Responses**

The Design Team then obtained AAT and RAC feedback on each of the six Bridge Alternatives using an electronic polling system to evaluate members' preferences, the results of which are listed below.

During the polling process, each of the six alternatives was viewed from four different angles: an aerial computer simulation, a drive-through computer simulation, and park views from both the Indiana and Kentucky shorelines. AAT/RAC members polled their preferences for each view, and were then asked to poll the importance of the following bridge evaluation criteria: aesthetics, construction cost, construction impacts, and maintenance issues.

*(Note: for images of each bridge type alternative view, please see attached Appendix).*

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**AAT/RAC Member Comments:**

*Polling Session # 1 (Global [Aerial] Perspective)*

- Alternative 2, Three Span Thru Arch – Highest Overall Visual Preference
  - Like the symmetry, but not the basket handle; would prefer vertical arch ribs
  - Too massive in the water, would like to have piers line up with Kennedy
  - Looks like massive concrete trees
  - Want to be sure that bridge can be maintained (painting)
  - Like simplicity and symmetry
  - Like that there are no secondary piers, bridge appears to go from shore to shore and spans river completely
  
- Alternative 3, Hybrid Box Girder – 2<sup>nd</sup> Highest Overall Visual Preference
  - Very simple and not busy
  - Not interesting
  - Very simple, does not make much of a statement
  - Don't like looking into the side of this bridge from the Kennedy
  - Would obliterate the viewshed from Kennedy
  
- Alternative 4, Single Tower Cable-Stayed
  - Concerned about wind velocity influencing stability of bridge
  - Most interesting aspect is the single structural element
  - Makes a statement, fits better with downtown Louisville
  - Distracts from the other structures (bridges)

*Polling Session #2 (Driver's Perspective)*

- Alternative 4, Single Tower Cable-Stayed – Highest Overall Visual Preference
  - Can see out to the countryside, view is less obstructed
  - Feeling of openness
  - Feels like it's very well built, massive, safe
  - Presence of a gateway with the single element
  
- Alternative 6, Three Tower Cable-Stayed – 2<sup>nd</sup> Highest Overall Visual Preference
  - Looks like six spikes
  - Fairly open but non-descript
  
- Alternative 5, Four Tower Cable-Stayed
  - It's leaning, don't like it
  - Like the cable fan more than the harp fan
  - Interesting three-dimensional view, sense of deep dimension
  
- Alternative 2, Three Span Thru Arch

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- Driving experience is very complicated
- Shadows catch the eye
- Good sense of depth – positive
- Both arches are busy driving through them, but from a distance they look nice and symmetrical with the Kennedy Bridge
- Would prefer if the arch ribs were vertical

*Polling Session #3 (Park Perspectives)*

- Alternative 4, Single Tower Cable-Stayed – Highest Overall Visual Preference
  - The concrete seems minimized
  - Would like to see integration of design of bridge piers with different sections of project
  - Piers should have some continuity with approaches
  - Would like to see options on the underside of the deck
- Alternative 1, Three Span Tied Arch – 2<sup>nd</sup> Highest Overall Visual Preference
  - Minimal piers
  - Fewer piers on the Indiana side (positive)
  - Simple, clean design
- Alternative 6, Three Tower Cable-Stayed
  - Bigger space between piers on the Kentucky side
- Alternative 3, Hybrid Box Girder
  - Too much concrete
  - Obliterates viewshed

*Polling Session #4 (Evaluation Criteria)*

(Note: The project team asked AAT/RAC members which of the following criteria are most important in evaluating each alternative: aesthetics, cost, construction impacts, or maintenance. Attendees pressed a value between 1 and 9 that expressed the importance of these considerations as relative to one another)

Results:

Aesthetics vs. Construction Cost

- Score Avg. ~ *aesthetics are somewhat more important than construction cost*

Aesthetics vs. Construction Impacts

- Score Avg. ~ *aesthetics are somewhat more important than construction impacts*

Aesthetics vs. Maintenance Issues

- Score Avg. ~ *maintenance issues are somewhat more importance than aesthetics*

Construction Costs vs. Construction Impacts

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- Score Avg. ~ *importance value is about the same*

#### Construction Costs vs. Maintenance Issues

- Score Avg. ~ *maintenance issues are somewhat more important than construction costs*

#### Maintenance Issues vs. Construction Impacts

- Score Avg. ~ *maintenance issues are somewhat more important than construction impacts*

### **Alternatives Comparison**

*The AAT/RAC meeting then continued with information presented that compared alternatives for construction cost, construction impacts, and maintenance issues:*

#### 1. Three Span Tied Arch

- Construction Cost: middle to high range
- Maintenance Issues: higher maintenance than cable-stayed alternatives
- Construction Impact: difficult to construct without temporary towers or special equipment

#### 2. Three Span Thru Arch

- Construction Cost: middle to high range
- Maintenance Issues: higher maintenance than cable-stayed alternatives
- Construction Impact: difficult to construct without temporary towers or special equipment

#### 3. Hybrid Box Girder

- Construction Cost: lower to middle range
- Maintenance Issues: lowest maintenance
- Construction Impact: potential for top-down construction and no temporary towers

#### 4. Single Tower Cable-Stayed

- Construction Cost: lowest range
- Maintenance Issues: lowest maintenance of cable-stay alternatives
- Construction Impact: special equipment, possible temporary supports

#### 5. Four Tower Cable-Stayed

- Construction Cost: middle to high Range
- Maintenance Issues: lower maintenance than arch alternatives
- Construction Impact: special equipment, no temporary supports

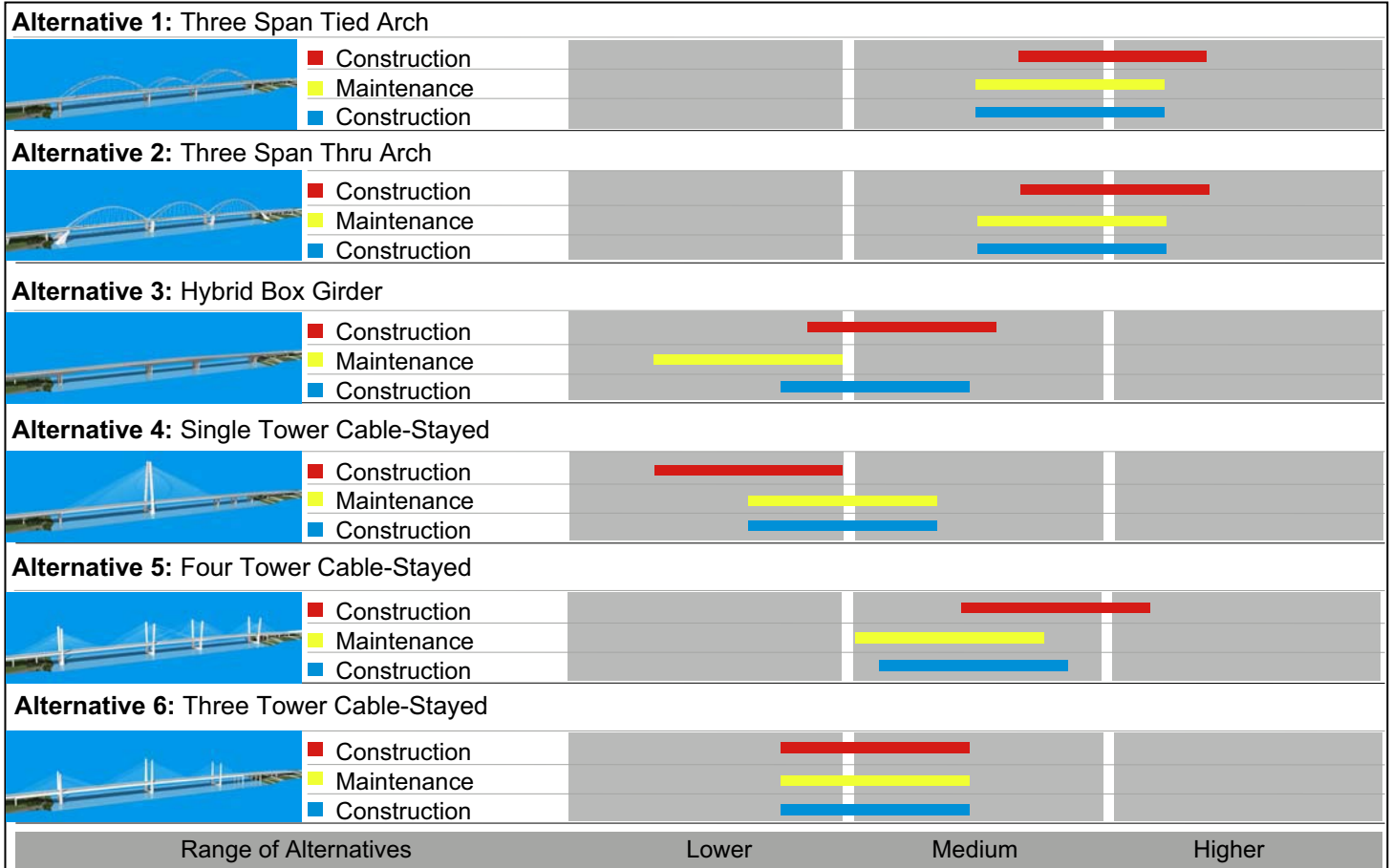
#### 6. Three Tower Cable-Stayed

- Construction Cost: low to middle range
- Maintenance Issues: lower maintenance than arch alternatives

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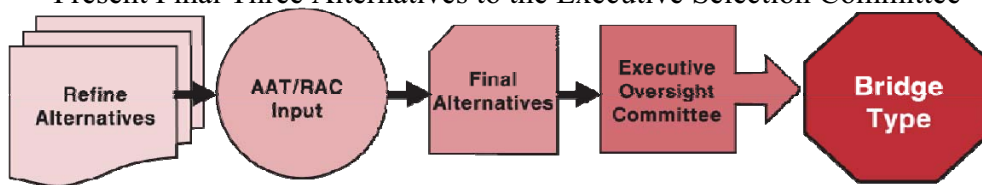
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- Construction Impact: special equipment, no temporary supports



**Next Steps**

- Step 3
  - Public Open House: March 21 and 23, 2006
- Step 4 : Select Bridge Type
  - Refine Alternatives
  - Obtain AAT/RAC Input
  - Present Final Three Alternatives to the Executive Selection Committee



There being no other questions or comments; the meeting was adjourned.