SECTION 5

EAST END BRIDGE

AESTHETIC ELEMENTS WORKSHOP #2

SUMMARY

AND

RECOMMENDATION FOR TEXTURE AND COLOR

OCTOBER 16, 2007

Recommendation of Texture and Color for the East End Bridge

As part of the Phase 3B Design process, Section 5 is conducting a series of three workshops to gather input from the HPATs, AATs, and general public. The purpose of the workshops is to gather information about context sensitive, historic and aesthetic issues related to the design of the East End Bridge.

The second series of workshops is now complete. The Section 5 team has reviewed the input provided as part of the workshops and has identified a recommended color and concrete texture for the East End Bridge. Following please find a summary of the methodology used, historical context considerations, and recommendations.

Methodology

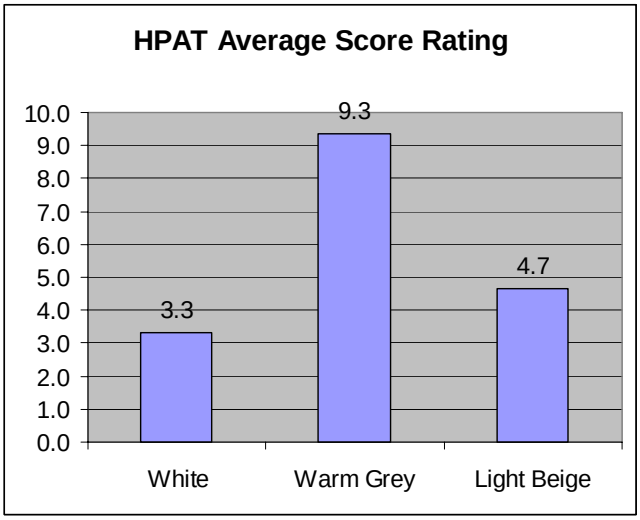
Based on the context of the East End Bridge site, the Section 5 Team identified three concrete texture options for consideration: cement based concrete coating, high silicone content acrylic sealer, and plain uncoated architectural concrete. These concrete texture options were discussed for the various bridge elements, including the tower piers, anchor piers, box structure, and other concrete elements of the bridge. The presentation prepared for Workshop #2 included advantages and disadvantages for each of the concrete texture options, as well as case study photographs of various concrete textures used on existing bridges (attached).

The Section 5 Team also identified three color options for consideration: white, warm grey, and light beige. These color options were discussed for the various metal bridge elements, including the structural steel, the cable sheaths, railings, light fixtures, and light/signage poles. The presentation prepared for Workshop #2 included renderings of the elements in the site context from various viewpoints for each of the identified colors (attached).

HPAT Workshop #2

A joint Workshop #2 was held for the IHPAT and the KHPAT on September 27, 2007. The HPAT groups were provided paper comment forms for each of the three concrete textures and color options. The forms provided a space for ranking each color on a scale from 1 to 10 for its suitability in the site context. The comment forms also provided a space for written comments related to the concrete texture options. Input from the workshop included the following:

- The comment forms received from the HPAT members indicated an overall preference for the plain uncoated architectural concrete. The comments indicated that the plain concrete was more natural looking, required less maintenance, and was a better fit for the site context.
- The comment forms received indicated an overall preference for warm grey as the most appropriate color for the bridge in the context.



The following is a summary of the questions and input received during the HPAT Workshop #2:

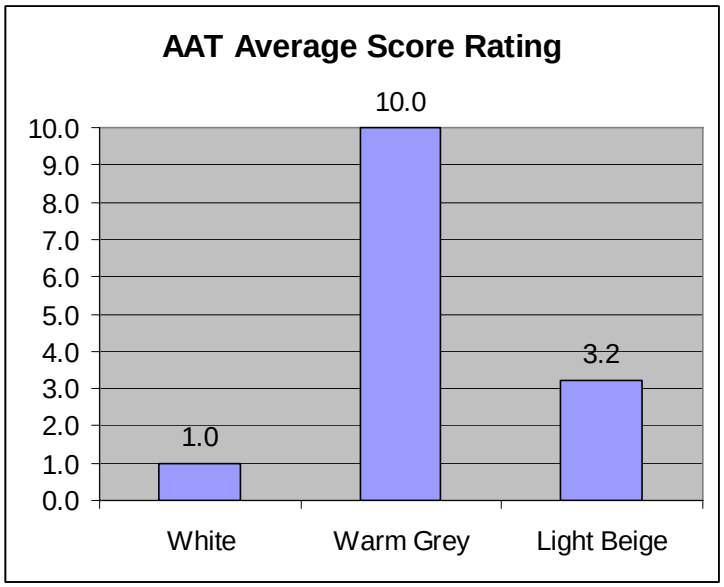
HPAT Comments/Questions	Team Response
KY and IN Approaches	
Will we get to see close-ups of the approaches next time? The approaches look busy with the 3 anchor piers.	Yes. We will show renderings of this, including Transylvania Beach. We looked at 4 anchors, but it was very busy.
Will the trees have to be cleared underneath the approach?	Yes. It will probably not be grassy underneath, possibly a crushed stone or something natural. FHWA may require some security here (not necessarily a fence). LWC may want some security also.
The LWC water well system will probably be fenced, which would be right behind the houses on Transylvania Beach Road.	
Concrete Texture Options	
Are coatings standard?	Some states have started using coatings, considering them to be more context sensitive. Miguel suggested that the natural appearance of concrete is preferable and explained that imperfections in the concrete can improve the natural look.
From a scuff standpoint, does the coating help any of this?	They will all get stained. The wide shoulders on the bridge will help with this.
Does the coating protect the concrete at all?	The coating does not add anything for long-term wear and tear. The coatings are generally not guaranteed more than 20 years. It was cited that the coatings do peel and can become unsightly over a period of time.
It would be better to have the plain concrete.	Yes, we can prepare a specification for the concrete to get the look we want.
Color Options	
What is the reasoning behind the beige?	Some people have talked about the limestone color in the past, this is representative of that.
On the cables, will they have a sheath over them?	In the US, almost all of the cables have plastic pipe over them. The Sunshine Skyway uses steel pipe, and one other under construction uses steel pipe. The color of the cable is the color of the pipe.
Does this help with corrosion?	Yes. It is also good for aerodynamics, and for keeping the cables clean.
	FHWA is currently reviewing cable-stayed bridges in light of terrorism concerns and may provide guidance in the near future.
On the Boston bridge, are the cables about the same width as the East End?	Yes, the width of the bridge is very similar, and so the diameter of the cables is similar.
Are the colors mixed on the Zakim?	Yes. The lights are blue for a marine theme.
The grey fits the setting better, since it is more natural. The white and beige seem to stand out more (in a bad way).	
Warm grey is the best (several people agreed with this).	

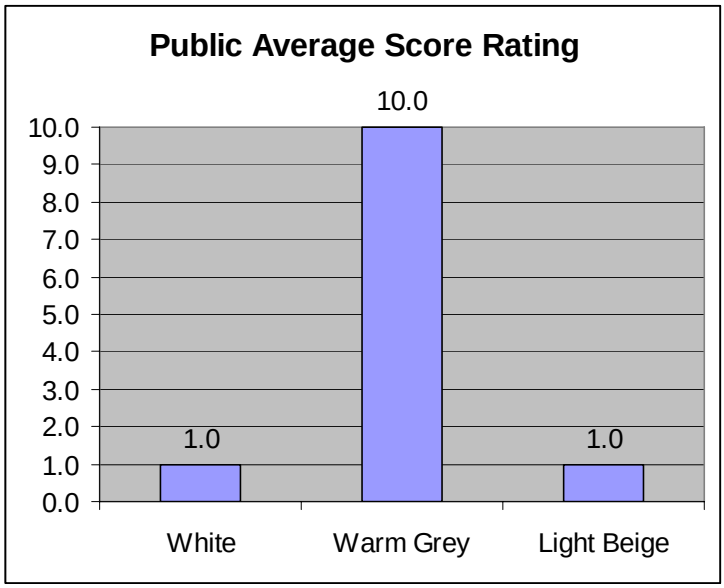
Other HPAT Comments/Questions	Team Response
What is the reason for the two different railings at the roadway edge?	One side is the crash-tested railing for vehicles, and the other is for the pedestrian side. Only the pedestrian side will have to be 6-feet in height. The concrete base is 2'8", the railing can have 8" openings, so the view will still be open.
Will this lighting be for the walkway also?	No, the lighting shown is for the highway. There will be additional lighting on the walkway. We will discuss the walkway lighting with the aesthetic lighting.
Will the pedestrian railing be higher on just one side?	FHWA has asked that the railing be higher on both sides.
Will the shape of the edge of the pile cap reduce debris collection?	Yes, it should.
What factors influence the size of the pile cap?	The type of foundation underneath the cap determines this. The preliminary size was determined during type selection, but we now have a model of the structure. We changed the spacing of the foundation piers from the standard 3x the diameter (24 feet) to 2.5x the diameter (20 feet). This reduces the overall size of the cap.
Is the pile cap needed because there are only two towers?	We are using piles in the construction, so we need the pile cap. Putting the cap at the mud line increases the cost out of the budget range. For downtown, there are different conditions. There are 2 channels downtown, and caps at the water level would encroach into the navigation channel.
For the cable attachments to the tower, is the vertical groove still being worked on? Could it be thinner?	The size of the tower and the groove are still being refined. Everything will be rendered again for the next workshop.
	October 12th will be the end of the comment period for this meeting.

AAT and Public Workshop #2

Workshop #2 for the AAT and the general public was held on September 27, 2007. Like the HPATs, the AAT and public groups were provided paper comment forms for each of the three concrete textures and color options. The AAT and public input were recorded and summarized separately. Input from the workshop included the following:

- The comment forms received from the AAT members indicated an overall preference for the plain uncoated architectural concrete. The comments indicated that the plain concrete would blend into the surroundings better and would require less maintenance.
- As shown below, the comment forms received from the AAT members and the public indicated an overall preference for warm grey as the most appropriate color for the bridge in the context.





The attached Summary of AAT Workshop #2 includes questions and input received from the AAT members and the general public.

Analysis of the Texture and Color Fitting into the Historical Context

The color and appearance of the plain uncoated architectural concrete is reminiscent of the limestone cliffs and textures that are characteristic of the East End Bridge site. The natural concrete blends well with the site context and provides an organic alternative to coated materials which require more maintenance and appear out of context. While all of the color options fall within the natural spectrum, the warm grey option is the least obtrusive and most likely to blend with the concrete elements of the bridge, the naturally occurring stone at the bridge site and the overall historic and natural context.

Recommendations

Based on the input from the HPAT and AAT workshops, as well as the historic context analysis by the SDC5 team expert, the following are recommendations for the East End Bridge:

- Plain uncoated architectural concrete for the concrete members of the bridge. It is recommended that specifications and special provisions for the concrete finish and appearance be included as part of the contract documents and final design plans.
- Warm grey color for the steel/metal members of the bridge, including the cable stays, to be identified with a federal standard color number as part of the contract documents and final design plans.

With approval from the BSMT these texture and color recommendations will be advanced to the next round of workshop considerations – detail features and aesthetic lighting.

Support Information Attached

HPAT Workshop #2 Summary

HPAT Comment Forms from Workshop #2

AAT Workshop #2 Summary

PowerPoint Presentation prepared for HPAT Workshop #2

HPAT Workshop #2 Summary

Summary of HPAT Workshop #2 is to be prepared by CTS.

HPAT Comment Forms Received for Workshop #2

THE OHIO RIVER BRIDGES

Comments

Let Us Know What You Think!

Section 5 – East End Bridge

On a scale of 1 – 10 with 1 being poor and 10 being best would you please rate the suitability of each of the color options for the East End Bridge that were presented and also provide any comments you may have.

5	Option 1: White
10	Option 2: Warm Grey
3	Option 3: Light Beige

The warm grey option provides a more uniform look overall, which seems more appropriate for this setting because it will blend with the environment better. Contrasting colors is an interesting idea and could be quite stunning visually, but that does not seem to be the desired impact for this setting. The grey color scheme along with concrete with no coatings appears to be more natural in appearance and better suited for this location.

THE OHIO RIVER BRIDGES

Comments

Let Us Know What You Think!

Section 5 – East End Bridge

Please leave the completed form with a Project Team member or mail/fax by October 12th, 2007 to:

Jeff Vlach, Manager of Environmental and MOA Commitments
Community Transportation Solutions
Forum Office Park III
305 N. Hurstbourne Parkway
Louisville, KY 40222
Fax: 502-426-9778

Please provide any comments you may have regarding the overall aesthetic theme that has been recommended for the East End Bridge.

The recommended Theme 3 (curvilinear) seems to be the most appropriate for the context, ~~as far as~~ in regard to minimizing the intrusion that a large, cable-stayed bridge causes in a largely rural area with no other bridges nearby. I think the tentative solution proposed for extending the pedestrian barrier part of the railing (between the vehicular and pedestrian lanes) probably will help to preserve much of the field of vision between southbound motorists and the river and its banks.

Please provide any comments you may have regarding the concrete texture options that were discussed and the recommendation that is being made.

I don't recall that very many members of either HPAT expressed an opinion, but those that did seemed to favor the natural (uncoated and unsealed) concrete. That seems appropriate to the context of this bridge. I do think it will be very important — as I think Miguel Rosales pointed out — to have "good specs" written for the concrete, which I interpreted to mean that the specs for the color of the sand, aggregate, and whatever other components influence the concrete's color should ensure that the concrete used in the various parts of the bridge will be as nearly uniform as possible.

John L. Carr
IDNR-DHPA
9/28/07

THE OHIO RIVER BRIDGES

Comments

Let Us Know What You Think!

Section 5 – East End Bridge

On a scale of 1 – 10 with 1 being poor and 10 being best would you please rate the suitability of each of the color options for the East End Bridge that were presented and also provide any comments you may have.

4	Option 1: White
8	Option 2: Warm Grey
3	Option 3: Light Beige

There might be some combinations of colors that could work, but I think that, generally speaking, using just the warm gray would work best. Most of the HPAT members who expressed an opinion at the joint HPATs meeting on 9/27/07 spoke in favor of warm gray, and that seems an appropriate choice, given the context of this Bridge.

John L. Carr
IDNR-DHPA
9/28/07

THE OHIO RIVER BRIDGES

Comments

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Please provide any comments you may have regarding the overall aesthetic theme that has been recommended for the East End Bridge.

Whatever would keep birds from roosting and driftwood from being left after flooding

Please provide any comments you may have regarding the concrete texture options that were discussed and the recommendation that is being made.

Whatever would require least maintenance

THE OHIO RIVER BRIDGES

Comments

Let Us Know What You Think!

Section 5 – East End Bridge

On a scale of 1 – 10 with 1 being poor and 10 being best would you please rate the suitability of each of the color options for the East End Bridge that were presented and also provide any comments you may have.

1	Option 1: White
10	Option 2: Warm Grey
8	Option 3: Light Beige

AAT Workshop #2 Summary

LSIORB – Section 5 – East End Bridge

Summary of AAT Workshop #2

Thursday, September 27, 2007

McCauley Nicolas Centre, Jeffersonville, IN

6:30 PM - 8:30 PM

INTRODUCTION

As the East End Kentucky Approach (Section 4) and the East End Indiana Approach (Section 6) Area Advisory Team (AAT) members arrived and signed in, they were directed to sit at the table at the front of the room, where they would find their handout materials for the presentation. Members of the general public were asked to sit behind the front tables. Their handout materials were also laid out at their seats.

The handout materials for the AAT members and the general public consisted of an agenda, comment form, and a list of project team members and their contact information.
20 people attended the meeting, including 13 members of the project team.

A total of 74 invitations were mailed to the AAT members and alternates three weeks prior to the meeting. Phone call reminders were made 4 days prior and e-mail reminders were sent 2 days prior.

EAST END BRIDGE PRESENTATION

East End Bridge Section 5 Project Manager Steve Slade began the meeting by welcoming the AAT members and introducing the members of the project team. He then previewed the agenda for the workshop. It was noted that electronic polling would not be part of the workshop; instead attendees would be polled using the comment forms along with verbal feedback to communicate their preferences. Steve then introduced Miguel Rosales to conduct the main presentation.

Miguel began the presentation by reviewing the bridge type that had been selected for the East End Bridge (Cable-stayed with media towers and cables) and going over the unique historic and rural aspects of the area where the bridge will be built. Miguel then shared the results from the first workshops with the HPATs and the AATs, which indicated a preference for Theme 3 (curvilinear) as the overall design theme for the East End Bridge. From there he discussed the tower pile caps, briefly touched on the coordination with Section 4 (and with Section 6 once they are under contract) regarding the approach spans, presented 3 concrete texture options (recommending the plain uncoated architectural concrete), and presented three color options (white, warm grey and light beige). Once the main presentation was complete, Miguel and Steve took questions. The attendees were reminded of next steps and the floor was again open for questions. There were no additional questions or comments and the meeting was adjourned.

SUMMARY OF COMMENTS AND QUESTIONS AND TEAM RESPONSE:

REGARDING CONCRETE TEXTURE OPTIONS:

QUESTION: *Would the texture of the concrete contribute to noise abatement?*

RESPONSE: *No. We will talk about noise abatement in Workshop #3.*

QUESTION: *When you say "texture options", do you mean the lines and patterns shown in some of the photos?*

RESPONSE: *No. The coatings are more of a covering or paint to make the concrete look more even terms of color. The structure must be cleaned very well before the coating is applied, or the coating will begin to flake off within 3-5 years. FHWA had experience with this on the Blue Ridge Parkway. There are also some rubs that can be used to make sections more uniform.*

REGARDING COLOR OPTIONS:

QUESTION: *Why does the steel need to be painted?*

RESPONSE: *The steel will corrode if it is not painted.*

COMMENT: *The limestone cliffs on the Indiana side are similar to the grey color.*

RESPONSE: *We tried to identify colors that are compatible with the environment of the East End Bridge site. The natural concrete will tend to age to a natural looking stone.*

QUESTION: *Can the colors change later?*

RESPONSE: *The steel will be painted with 3-4 coats and should last about 20-30 years or more. The cables will have a plastic pipe cover that can be colored as well.*

COMMENT: *Grey is the preferred color.*

RESPONSE: *A warm grey with would blend well.*

QUESTION: *Will the tower be the same color as the cables?*

RESPONSE: *No. The tower will be concrete. The cables will be sheathed in colored pipes. The steel box will be painted. These can be matched as closely as possible.*

OTHER COMMENTS/QUESTIONS:

QUESTION: *Is the 2'-8" concrete barrier tall enough to protect pedestrians?*

RESPONSE: *There is a metal rail on top of the concrete barrier that is crash tested. There is a big rail toward the cars and a small rail towards the pedestrians/bicyclists.*

QUESTION: *What about the horizontal bars on the pedestrian barrier – isn't this easy to climb?*

RESPONSE: *The height will be increased to about 6' and with the curved shape of the rail this will be very difficult to climb because a climber's weight would be redistributed so as to make it hard for them to get to the top.*

AAT COMMENT FORMS RECEIVED:

Please provide any comments you may have regarding the overall aesthetic theme that has been recommended for the East End Bridge.

- *Nice design – something modern for a change. My worry is how this will be paid for.*
- *Excellent – good attention to piers – reflect concerns expressed at last meeting.*
- *The design is beautiful and will look lovely when it is completed. It is sensitive to the context of the rural river area and will be an asset to the view shed.*

Please provide any comments you may have regarding what has been presented to date for the Kentucky and/or Indiana approaches to the East End Bridge.

- *The light fixtures are attractive – are they full cut off – so as to shed light only on the roadway.*
- *Keep us informed.*
- *Miguel Rosales does an excellent job explaining the design elements and the strengths and weaknesses of each option for the concrete textures and colors. The graphic portion of the presentation makes complex concepts easy to understand.*

Please provide any comments you may have regarding the concrete texture options that were discussed and the recommendation that is being made.

- *No strong opinion on texture. Would prefer minimal impact on surroundings.*
- *No application of any coating. We want it to "blend in" and NOT chip or peel.*
- *Don't add coatings!*
- *Natural is good.*
- *Concrete which is neither covered with silicone paint or a cement cover looks better and appears most prudent for long term maintenance purposes.*

On a scale of 1 – 10 with 1 being poor and 10 being best would you please rate the suitability of each of the color options for the East End Bridge that were presented.

- White = *2* Warm Grey = *10* Light Beige = *2*
- White = *0* Warm Grey = *10* Light Beige = *0*
- White = *1* Warm Grey = *10* Light Beige = *7*
- White = *2* Warm Grey = *10* Light Beige = *5*
- White = *0* Warm Grey = *10* Light Beige = *2*

Average of Ratings: White = 1.0 Warm Grey = 10 Light Beige = 3.2

Please provide any general comments you may have regarding the color options that were presented.

- *Again, minimize impact. Concrete will blend with limestone and if the rest is grey, too, it will be more uniform.*
- *Grey is best it will show dirt – and there will be dirt – the least. We must keep in mind maintenance! Simple is best.*
- *Grey blends well with environment.*
- *Prefer non-contrasting color scheme on the lighting, cables and cement.*

PUBLIC COMMENT FORMS RECEIVED:

Please provide any comments you may have regarding the overall aesthetic theme that has been recommended for the East End Bridge.

- *Very pleasing.*

Please provide any comments you may have regarding what has been presented to date for the Kentucky and/or Indiana approaches to the East End Bridge.

- *So far, everything has been positive.*

Please provide any comments you may have regarding the concrete texture options that were discussed and the recommendation that is being made.

- *Preferably smooth – not shiny.*

On a scale of 1 – 10 with 1 being poor and 10 being best would you please rate the suitability of each of the color options for the East End Bridge that were presented.

- White = *1* Warm Grey = *10* Light Beige = *1*

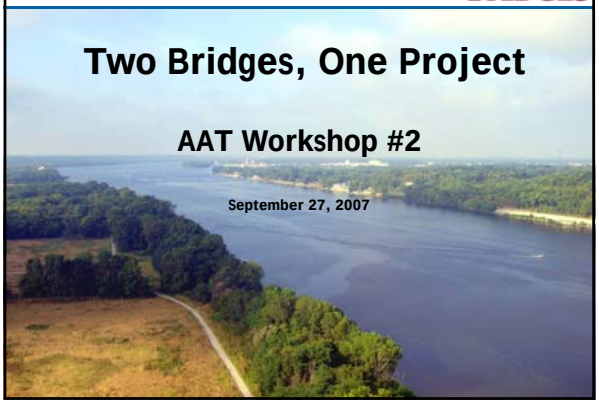
Please provide any general comments you may have regarding the color options that were presented.

- *Will the color of the "towers" that the cables are connected to be the same color of the cables.*

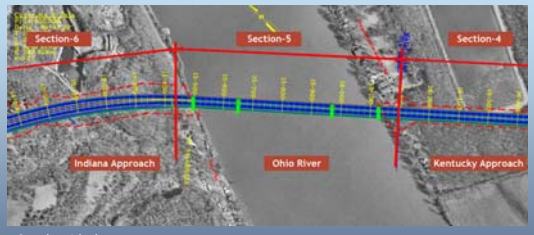
ATTENDEES	**REPRESENTING**
(AAT Members)	
Alice Gunnison	Wolf Pen Preservation Association
Ted Pullen	Louisville Metro
Sandra Leonard	City of Prospect
Mache` Readus-Wright	Louisville Metro
Ann Simms	City of Prospect
Jim Witten	City of Charlestown
(General Public)	
Larry Chaney	
(***Ohio River Bridges Project Representatives)***	
George Jones	FHWA
Carl Pearcy	Indiana Ombudsman
Jim Hilton	GEC (Community Transportation Solutions)
Chris Jones	GEC (Community Transportation Solutions)
Steve Slade	SDC5 (PB Americas)
Dennis Baron	SDC5 (PB Americas)
John Carr	SDC5 (Wilbur Smith Associates)
Samantha Wright	SDC5 (Wilbur Smith Associates)
Gary Elder	SDC5 (New West)
Shalondra Jackson	SDC5 (New West)
Donna Wade	SDC5 (New West)
Miguel Rosales	SDC5 (Rosales + Partners)
Jerry Leslie	SDC4 (HW Lochner)

ATTACHMENTS: AAT Workshop #2 Presentation
Handout Materials – Agenda and Contact Us
Comment Forms

Section 5 - East End Bridge



Bridge Alignment



Section Limits
Pier Locations

Agenda for HPAT Workshop #2

1. Welcome / Introductions
2. Review of Project Area and MOA Commitments
3. Review of Workshop #1 Evaluation Results
4. Recommended Overall Aesthetic Theme
5. Workshop #1 Design Issues / Comments
6. KY and IN Approaches to East End Bridge
7. Concrete Texture Options
8. Color Options
9. Next Steps
10. Questions / Comments

Navigational Channel

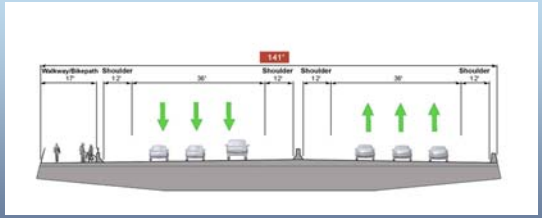
Bridge Aesthetics and Historic Context

- **Workshop #1 - August 1 & 2**
  Towers, Anchor Piers, Railings, Barriers, Roadway Lighting, and Drainage Utilities - Completed

> - **Workshop #2 - September 27**
  Tower Pile Caps, Approach Spans, Surface Treatments and Colors

- **Workshop #3 - Late November 2007**
  Aesthetic Lighting, Signage, Noise Abatement, Landscape Treatments and Kentucky and Indiana Bridge Approaches: Piers and Superstructure Options

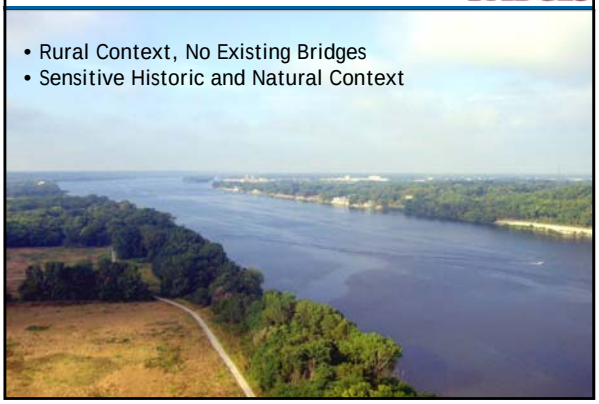
Bridge Typical Cross Section



Minimum Dimensions Shown

Unique Aspects of this Bridge

- Rural Context, No Existing Bridges
- Sensitive Historic and Natural Context



Historic and Existing Context

- Natural river landscape
- Architectural simplicity and understatement
- Good proportion and scale
- Attention to detail

Unique Aspects of this Bridge

- Wide Bridge: 6 Lanes + Shoulders + Walkway/Bikepath
- Height Restriction of 300' Above Water Level

Historic and Existing Context

- Scenic environment
- Extensive tree canopy and steep river banks
- Pastoral experience and rolling hills

Historic Cultural Landscape

Kentucky and Indiana Adjacent Historic Properties

Historic and Existing Context

Other Relevant Historic Context Elements Within the Area

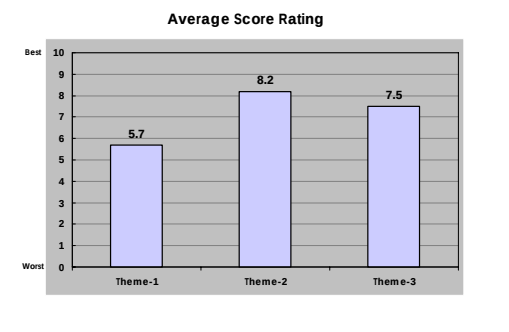
Utica Lime Kiln

Louisville Water Company Pumping Station

MOA Commitments

- Bridge design with sensitivity to aesthetic values, historic cultural landscapes and the historic context
- Aesthetic treatments to surfaces, structures, and other secondary elements
- Minimize roadway and navigational lighting dispersion and include state of the art luminaires
- Bridge deck runoff should be collected in a closed drainage system and treated at the Kentucky end of bridge
- Minimize adverse noise effect
- Inclusion of professionals with experience in areas related to historic preservation

AATs' Evaluation of Aesthetic Themes



Workshop #1

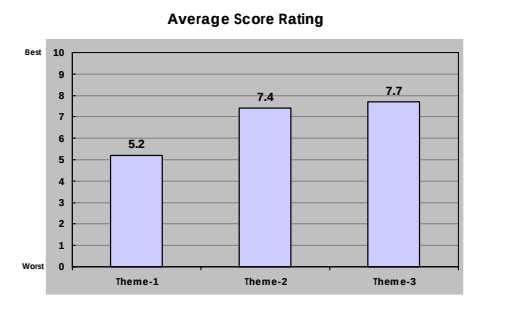
Evaluation of Three Aesthetic Themes

Theme 1 (Rectilinear)

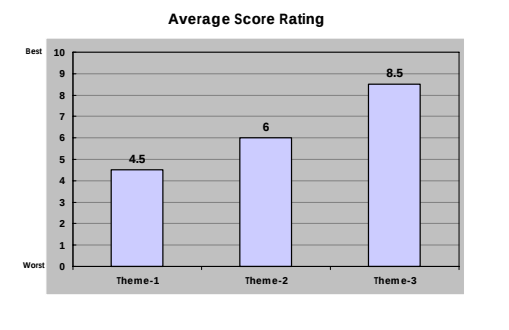
Theme 2 (Angular)

Theme 3 (Curvilinear)

Public's Evaluation of Aesthetic Themes



HPATs' Evaluation of Aesthetic Themes



Recommended Aesthetic Theme

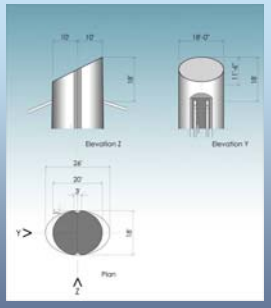
Theme 3 (Curvilinear)

Recommended Aesthetic Theme

Summary of Comments on Theme 3

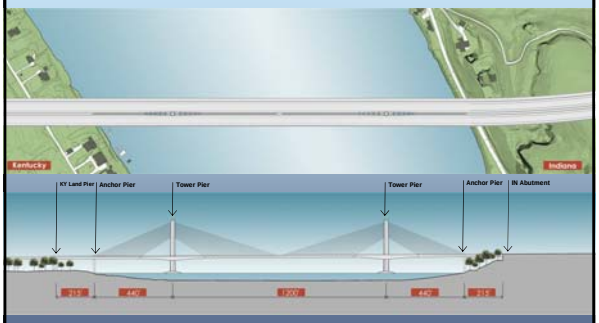
- Aesthetic Theme 3 blends well with the natural and historic setting
- Theme provides visually transparent details
- Angled tower tops consistent with inclined cables
- Overall tower height is less apparent and tower top will discourage bird nesting
- Bridge appears lighter and less obtrusive
- Lighting details have a good interaction with the cables
- Theme 3 presents a softer overall appearance

Tower

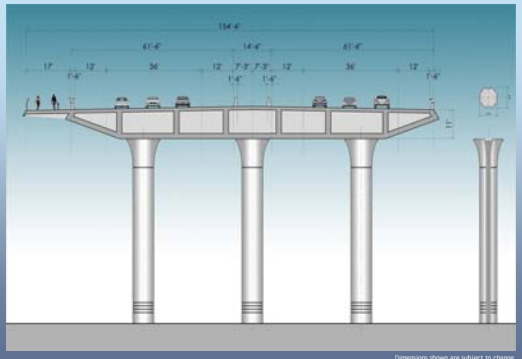


Dimensions shown are subject to change

Recommended Aesthetic Theme

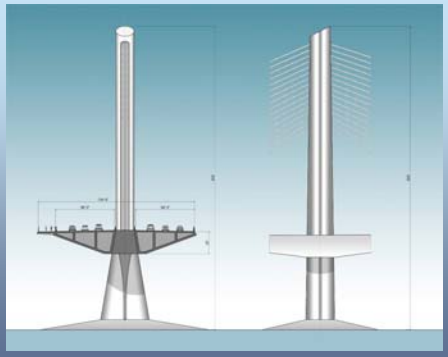


Anchor Piers

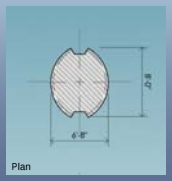


Dimensions shown are subject to change

Tower



Anchor Pier Details



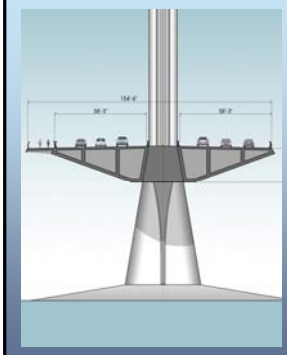
Plan

Front Elevation

Side Elevation

Dimensions shown are subject to change

Railings and Barriers



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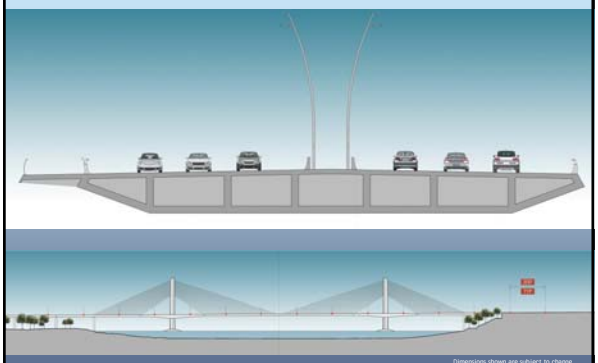
Roadway Lighting



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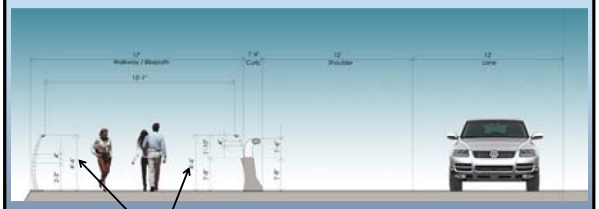
Railings – Recent Directive from FHWA



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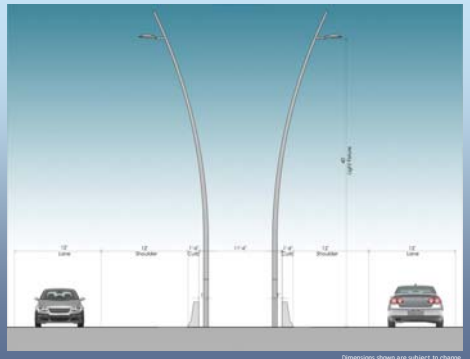
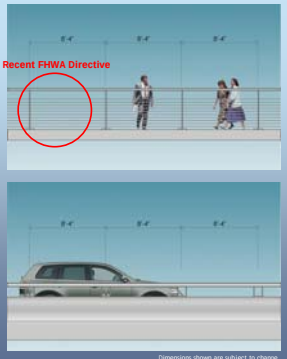
Roadway Lighting



Dimensions shown are subject to change

Railings and Barriers Detail



Dimensions shown are subject to change

Luminaire Detail

Selected Bridge Views in Context

Bridge Underside

View from Kentucky Shoreline

Tower View

Pedestrian View

Motorist View

Bridge Aesthetics and Historic Context

- Workshop #1 – August 1 & 2
  Towers, Anchor Piers, Railings, Barriers, Roadway Lighting, and Drainage Utilities - Completed
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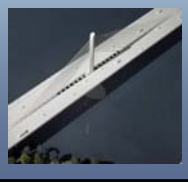


Bridge Pile Caps

- Pile caps are an integral structural component of the bridge
- Size is determined by the structural loads
- Additional cost required to move foundations below river mud line is ± $50 million
- Shape of the pile caps minimizes impact to river navigation and hydraulics
- Have been reviewed and accepted by the Coast Guard

Workshop #1 Design Issues / Comments

- Design, Size, Cost and Suitability of Bridge Pile Caps
- Compatibility of Approach Spans (Section 4) with overall East End Bridge
- Preference for Open Railings and Low Concrete Barriers
- Avoidance of Noise and Lighting Pollution
- Preference for Corrosion-Resistant Surfaces
- Overlook on the Indiana Side along Walkway (Section 6)

Bridge Pile Caps

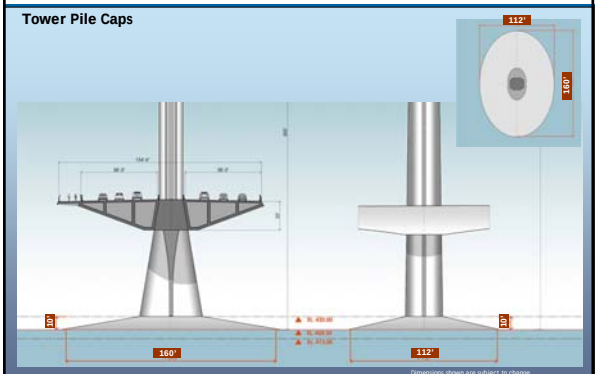
Previous Type Study

Current Preliminary Design – Approximate 30% Area Reduction

Bridge Pile Caps

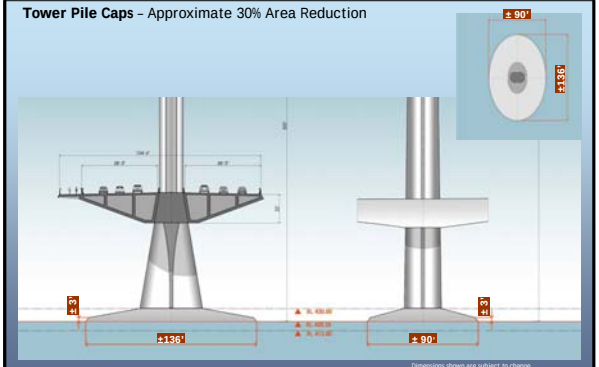
Previous Type Study

Tower Pile Caps



Current Preliminary Design

Tower Pile Caps – Approximate 30% Area Reduction



View from Kentucky Shoreline

Current Preliminary Design

View from Kentucky Shoreline

Previous Type Study

View from Indiana Shoreline

Current Preliminary Design

View from Kentucky Shoreline

Current Preliminary Design

Kentucky and Indiana Approaches

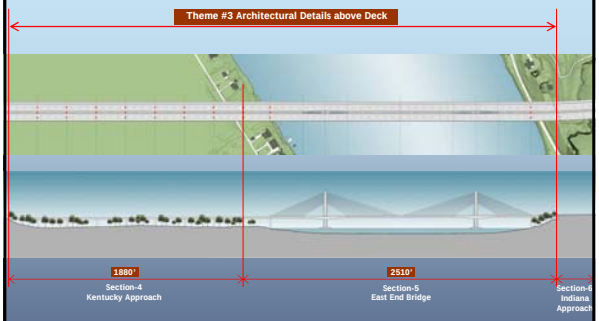
Kentucky Approach Issues:

- Superstructure types – Steel versus Concrete
- Number and location of support piers
- Architecture and shaping of approach piers
- Drainage and utilities
- Compatibility between Section 4 and Section 5
- Impact on Transylvania Beach Road and adjacent historic properties

Indiana Approach Issues:

- Compatibility between Section 5 and Section 6

Bridge Approaches



Concrete Texture

Option 2: High-Silicone content, Acrylic Sealers

Advantages

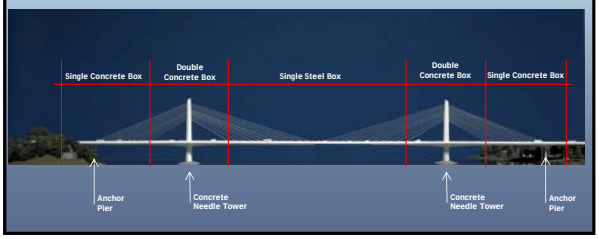
- Even concrete color
- Imperfections are partially hidden

Disadvantages

- Delamination without proper maintenance
- Shiny surfaces exaggerate form errors

Concrete Texture Options

- **Option 1: Cement-based Concrete Coating**
- **Option 2: High-Silicone content, Acrylic Sealers**
- **Option 3: Plain uncoated Architectural Concrete (Recommended)**



Case Study: Zakim Bridge, Boston

- **Steel Box - Grey**
- **Cables - White**
- **Light Posts/Luminaires - Dark Blue**
- **Concrete - Uncoated Architectural Concrete**

Previous work, Miguel Rosales (ROSALES + PARTNERS)

Concrete Texture

Option 1: Cement-based Concrete Coating

Advantages

- Even concrete color
- Imperfections are partially hidden

Disadvantages

- Discoloration and moisture stains
- Coatings eventually flake off without proper maintenance
- Problems with adhesion without proper surface preparation

Case Study: Zakim Bridge, Boston

Previous work, Miguel Rosales (ROSALES + PARTNERS)

Case Study: Zakim Bridge, Boston

Previous work, Miguel Rosales (ROSALES + PARTNERS)

Case Study: Puente Centenario, Panama

- Concrete Box
- Cables – White
- Light Posts/Luminaires – Silver Grey
- Concrete – Uncoated Architectural Concrete

Previous work, Miguel Rosales (ROSALES + PARTNERS)

Case Study: Zakim Bridge, Boston

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Bridge Color Selection Options

- All steel / metal bridge elements to be the same color including railings, steel box, cables and light posts/luminaires
- Option 1: White
- Option 2: Warm Grey
- Option 3: Light Beige

Color Study #3: Light Beige

Color Study #1: White

Color Study #1: White

Color Study #2: Warm Grey

Color Study #2: Warm Grey

Color Study #3: Light Beige

Color Study #3: Light Beige

Color Study #1: White

Next Steps

- Review comments/input from AATs and Public
- Report to BSMT
- AAT Workshop #3 – November 27, 2007
  - Refinement of theme/details from Workshop #2
  - Topics - Aesthetic Lighting, Signage, Noise Abatement, and Landscape Treatments
  - Kentucky and Indiana Bridge Approaches: Piers and Superstructure Options

Color Study #2: Warm Grey

THE OHIO RIVER BRIDGES

Agenda

September 27, 2007

Section 5 – East End Bridge

East End Bridge
Aesthetic Elements Workshop #2

1. Welcome / Introductions
2. Review of Project Area and MOA Commitments
3. Review of Workshop #1 Evaluation Results
4. Recommended Overall Aesthetic Theme
5. Workshop #1 Design Issues / Comments
6. KY and IN Approaches to East End Bridge
7. Concrete Texture Options
8. Color Options
9. Next Steps
10. Questions / Comments from AAT Members
11. Questions / Comments from General Public

Workshop #3 will be held November 27, 2007. It will address aesthetic lighting, signage, noise abatement, landscape treatments, and the KY and IN approaches.

East End Bridge Team

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DBE Program
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J. Y. Legner Associates
Ph. (502) 585-9000
jlegner@jyla.com

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Indiana Department of Transportation
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pboone@indot.in.gov

Federal Highway Administration
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Indiana Ombudsman
Carl Pearcy
Ph. (812) 288-2012
ind.ombuds@insightbb.com

THE OHIO RIVER BRIDGES

Comments

Let Us Know What You Think!

Section 5 – East End Bridge

Please leave the completed form with a Project Team member or mail/fax by October 5th, 2007 to:

Gary Elder
New West Agency
950 Breckinridge Lane
Suite 140
Louisville, KY 40207
Fax: 502-891-3551

Please provide any comments you may have regarding the overall aesthetic theme that has been recommended for the East End Bridge.

Please provide any comments you may have regarding what has been presented to date for the Kentucky and/or Indiana approaches to the East End Bridge.

THE OHIO RIVER BRIDGES

Comments

Let Us Know What You Think!

Section 5 – East End Bridge

Please provide any comments you may have regarding the concrete texture options that were discussed and the recommendation that is being made.

On a scale of 1 – 10 with 1 being poor and 10 being best would you please rate the suitability of each of the color options for the East End Bridge that were presented.

- ☐ Option 1: White
- ☐ Option 2: Warm Grey
- ☐ Option 3: Light Beige

Please provide any general comments you may have regarding the color options that were presented.

THE OHIO RIVER BRIDGES

Comments

Let Us Know What You Think!

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THE OHIO RIVER BRIDGES

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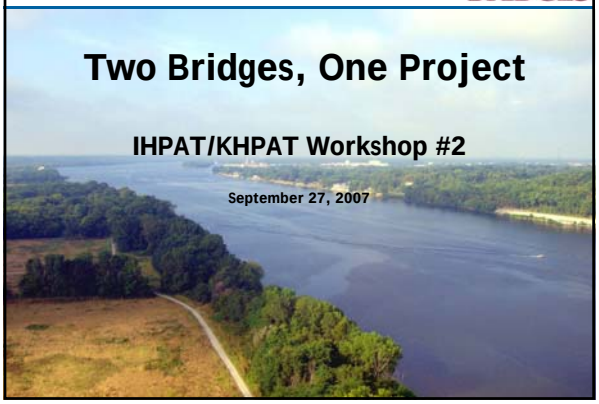
PowerPoint Presentation Prepared for HPAT Workshop #2

Section 5 - East End Bridge



Agenda for HPAT Workshop #2

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3. Review of Workshop #1 Evaluation Results
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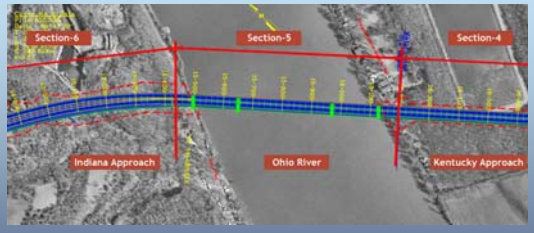
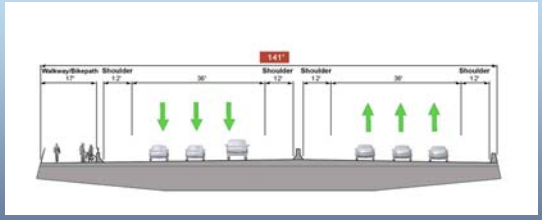
Bridge Alignment



Section Limits
Pier Locations

Navigational Channel

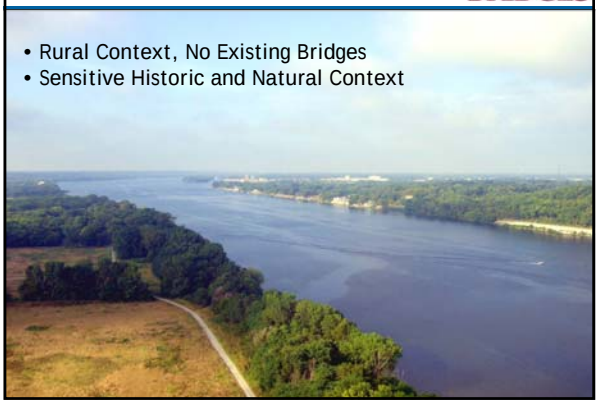
Bridge Typical Cross Section



Minimum Dimensions Shown

Unique Aspects of this Bridge

- Rural Context, No Existing Bridges
- Sensitive Historic and Natural Context



Unique Aspects of this Bridge

- Wide Bridge: 6 Lanes + Shoulders + Walkway/Bikepath
- Height Restriction of 300' Above Water Level

Historic Cultural Landscape

Kentucky and Indiana Adjacent Historic Properties

Historic and Existing Context

- Natural river landscape
- Architectural simplicity and understatement
- Good proportion and scale
- Attention to detail

Historic and Existing Context

- Scenic environment
- Extensive tree canopy and steep river banks
- Pastoral experience and rolling hills

Historic and Existing Context

Other Relevant Historic Context Elements Within the Area

Utica Lime Kiln

Louisville Water Company Pumping Station

MOA Commitments

- Bridge design with sensitivity to aesthetic values, historic cultural landscapes and the historic context
- Aesthetic treatments to surfaces, structures, and other secondary elements
- Minimize roadway and navigational lighting dispersion and include state of the art luminaires
- Bridge deck runoff should be collected in a closed drainage system and treated at the Kentucky end of bridge
- Minimize adverse noise effect
- Inclusion of professionals with experience in areas related to historic preservation

Workshop #1

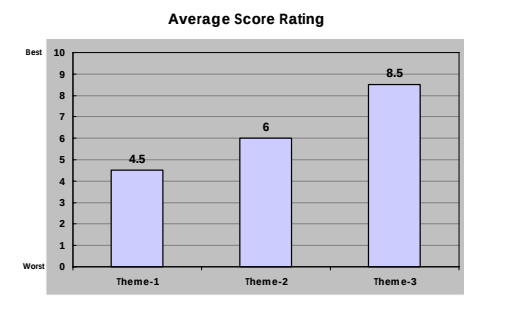
Evaluation of Three Aesthetic Themes

Theme 1 (Rectilinear)

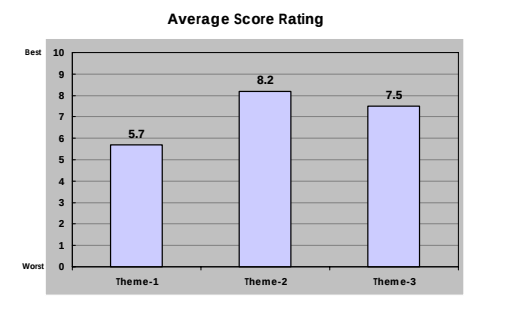
Theme 2 (Angular)

Theme 3 (Curvilinear)

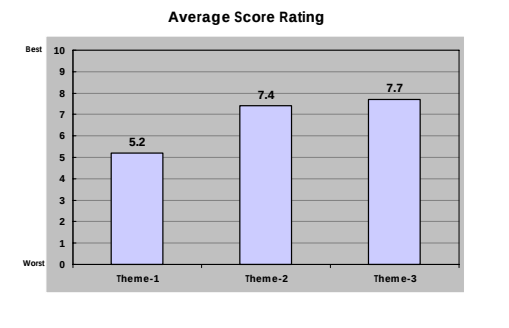
HPATs' Evaluation of Aesthetic Themes



AATs' Evaluation of Aesthetic Themes



Public's Evaluation of Aesthetic Themes



Recommended Aesthetic Theme

Theme 3 (Curvilinear)

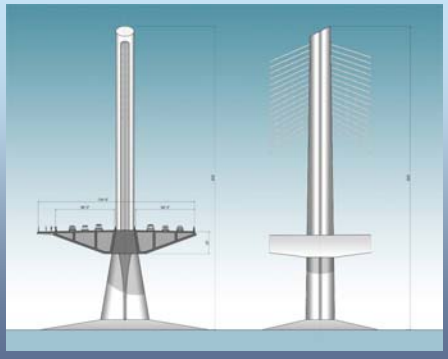
Recommended Aesthetic Theme

Summary of Comments on Theme 3

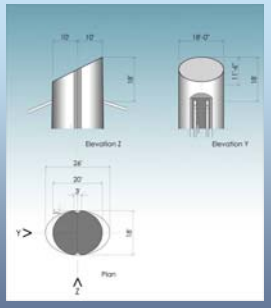
- Aesthetic Theme 3 blends well with the natural and historic setting
- Theme provides visually transparent details
- Angled tower tops consistent with inclined cables
- Overall tower height is less apparent and tower top will discourage bird nesting
- Bridge appears lighter and less obtrusive
- Lighting details have a good interaction with the cables
- Theme 3 presents a softer overall appearance

Recommended Aesthetic Theme

Tower

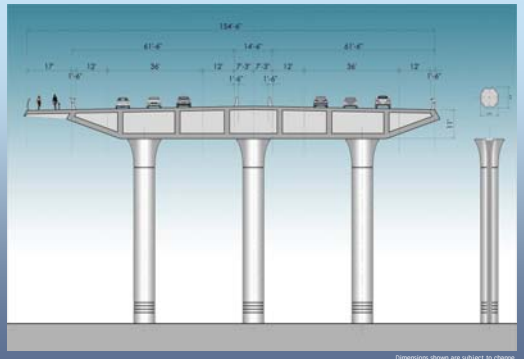


Tower



Dimensions shown are subject to change

Anchor Piers



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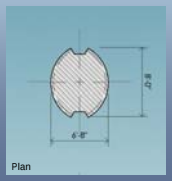
Anchor Pier Details



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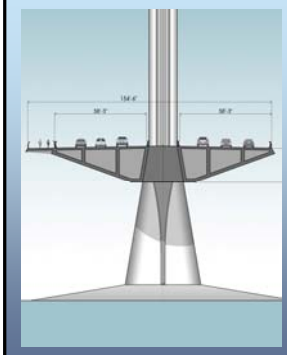
Railings and Barriers



Shoulder

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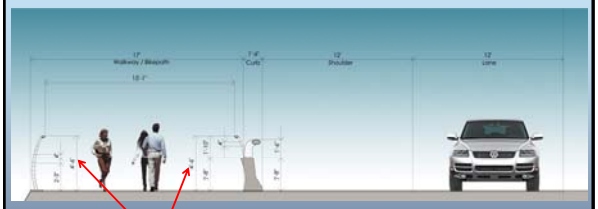
Railings - Recent Directive from FHWA



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Railings and Barriers Detail

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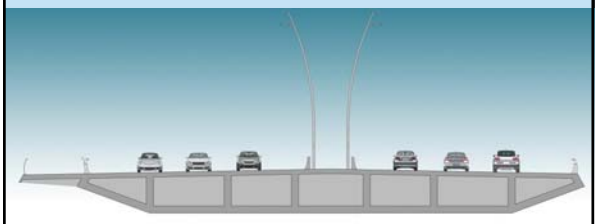
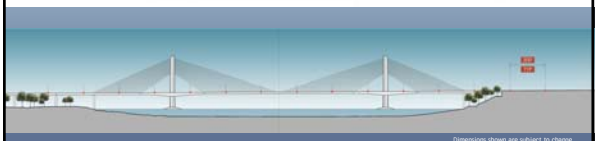
Roadway Lighting





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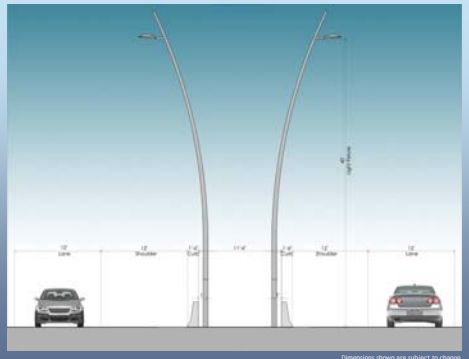

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Luminaire Detail

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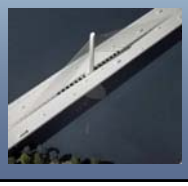

Workshop #1 Design Issues / Comments

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Bridge Pile Caps

Bridge Pile Caps

- Pile caps are an integral structural component of the bridge
- Size is determined by the structural loads
- Additional cost required to move foundations below river mud line is ± $50 million
- Shape of the pile caps minimizes impact to river navigation and hydraulics
- Have been reviewed and accepted by the Coast Guard

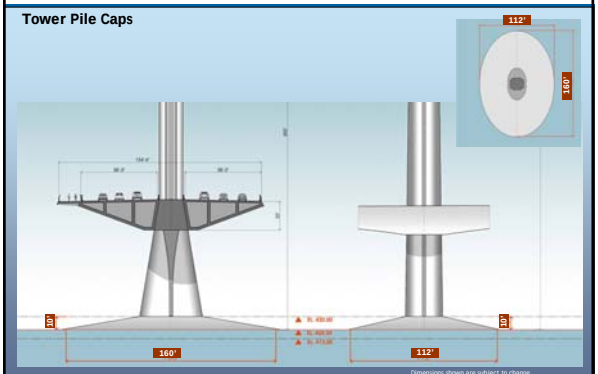
Bridge Pile Caps

Previous Type Study

Current Preliminary Design – Approximate 30% Area Reduction

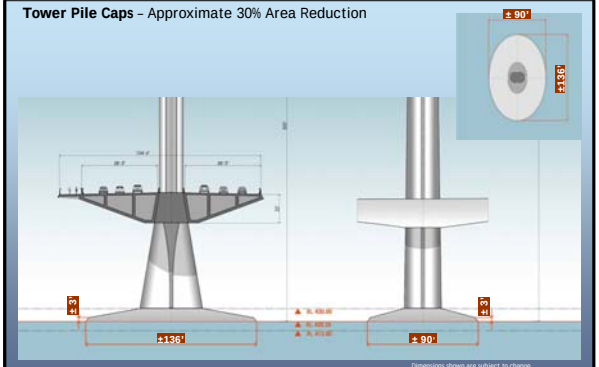
Previous Type Study

Tower Pile Caps



Current Preliminary Design

Tower Pile Caps – Approximate 30% Area Reduction



View from Kentucky Shoreline

Previous Type Study

View from Kentucky Shoreline

Current Preliminary Design

View from Kentucky Shoreline

Current Preliminary Design

View from Indiana Shoreline

Current Preliminary Design

Kentucky and Indiana Approaches

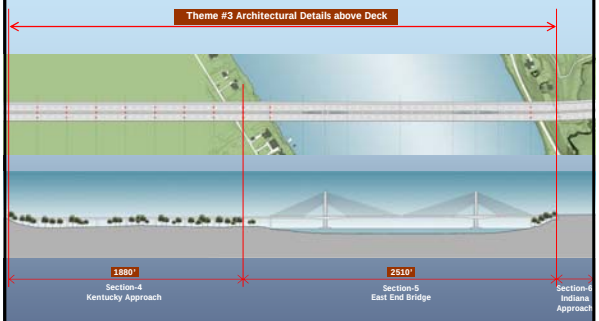
Kentucky Approach Issues:

- Superstructure types – Steel versus Concrete
- Number and location of support piers
- Architecture and shaping of approach piers
- Drainage and utilities
- Compatibility between Section 4 and Section 5
- Impact on Transylvania Beach Road and adjacent historic properties

Indiana Approach Issues:

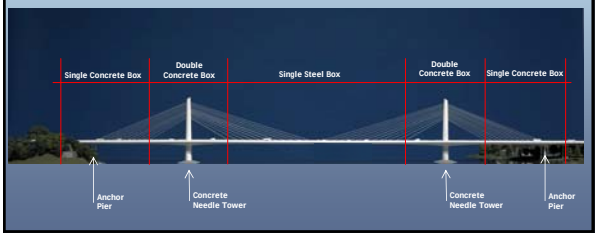
- Compatibility between Section 5 and Section 6

Bridge Approaches



Concrete Texture Options

- Option 1: Cement-based Concrete Coating
- Option 2: High-Silicone content, Acrylic Sealers
- Option 3: Plain uncoated Architectural Concrete (Recommended)



Concrete Texture

Option 1: Cement-based Concrete Coating

Advantages

- Even concrete color
- Imperfections are partially hidden

Disadvantages

- Discoloration and moisture stains
- Coatings eventually flake off without proper maintenance
- Problems with adhesion without proper surface preparation

Concrete Texture

Option 2: High-Silicone content, Acrylic Sealers

Advantages

- Even concrete color
- Imperfections are partially hidden

Disadvantages

- Delamination without proper maintenance
- Shiny surfaces exaggerate form errors

Case Study: Zakim Bridge, Boston

- Steel Box - Grey
- Cables - White
- Light Posts/Luminaires - Dark Blue
- Concrete - Uncoated Architectural Concrete

Previous work, Miguel Rosales (ROSALES + PARTNERS)

Case Study: Zakim Bridge, Boston

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Case Study: Zakim Bridge, Boston

Previous work, Miguel Rosales (ROSALES + PARTNERS)

Case Study: Puente Centenario, Panama

- Concrete Box
- Cables – White
- Light Posts/Luminaires – Silver Grey
- Concrete – Uncoated Architectural Concrete

Previous work, Miguel Rosales (ROSALES + PARTNERS)

Case Study: Puente Centenario, Panama

Previous work, Miguel Rosales (ROSALES + PARTNERS)

Case Study: Puente Centenario, Panama

Previous work, Miguel Rosales (ROSALES + PARTNERS)

Bridge Color Selection Options

- All steel / metal bridge elements to be the same color including railings, steel box, cables and light posts/luminaires
- Option 1: White
- Option 2: Warm Grey
- Option 3: Light Beige

Color Study #1: White

Color Study #2: Warm Grey

Color Study #3: Light Beige

Color Study #1: White

Color Study #2: Warm Grey

Color Study #3: Light Beige

Color Study #1: White

Color Study #2: Warm Grey

Color Study #3: Light Beige

Next Steps

- Combined Section 4 and Section 6 AAT Workshop #2 (September 27)
- Review comments/input from HPATs
- Report to BSHCT and BSMT
- HPAT Workshop #3 – November 27, 2007
  - Refinement of theme/details from Workshop #2
  - Topics - Aesthetic Lighting, Signage, Noise Abatement, and Landscape Treatments
  - Kentucky and Indiana Bridge Approaches: Piers and Superstructure Options