



Final Bridge Design Charette #1

with the National Park Service and FDOT

Wekiva River Bridges

In Harmony with the Scenic River

December 11, 2013





Coordination of Today's Activities
Kevin Moss, P.E.
Project Manager
Florida Department of Transportation

Welcome and Introductions

Alan Hyman, P.E.

District Five, Director of Operations
Florida Department of Transportation



Welcome & Introductions



Lead Agency

Design Team



gai consultants

Project Management,
Roadway Design, Stormwater Design



Wekiva River Bridge Design



Environmental

ETP

Noise Analysis



Roadway Design, Stormwater Design



Geotechnical

Welcome & Introductions



FDOT - District 5

Alan Hyman, P.E.
Director of Transportation Operations

Kevin Moss, P.E.
Project Manager

Hannah Hernandez
Permit Coordinator



National Park Service

Jeff Duncan, PhD
Southeastern Rivers Program Manager
Rivers, Trails and Conservation Assistance

Jaime Doubek-Racine
Regional Program Manager
Rivers, Trails and Conservation Assistance



US Army Corps of Engineers

Andrew Phillips
Project Manager

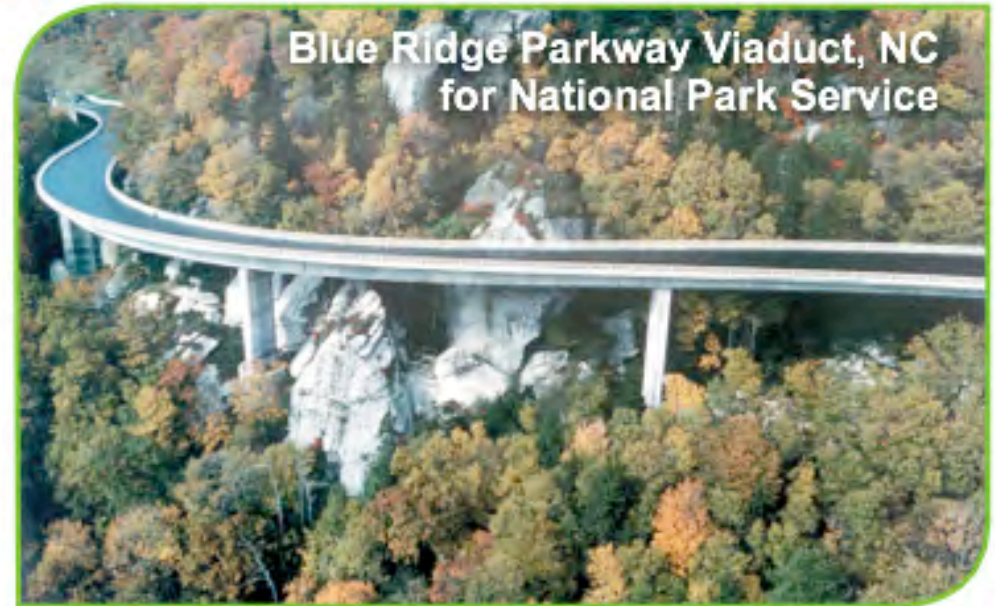
Your Bridge Design Team

Linda Figg

President / Director Of Bridge Art

Dwight Dempsey, P.E., S.E.

Bridge Design Manager





SEGMENT 6
KEEPING WEKVA
BEAUTIFUL

Overview of Agenda

Design Charette 1 Agenda

Process Goals and Objectives

Project Overview

Discussion of Bridge Aesthetics and
Bridge Theme Selection

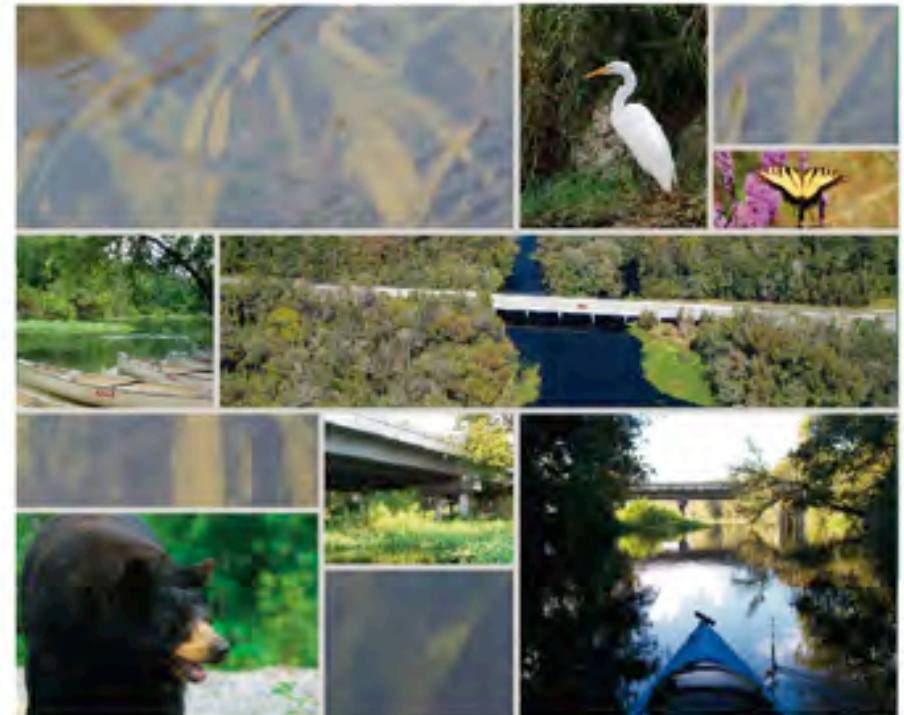
**Bridge Style Preferences
(Shape, Shadow, Textures, Colors)**

Outstandingly Remarkable Values
(ORV) Initiatives Discussion and
Feedback

Summary of Design Charette #1

Discussion of Next Steps

Adjourn



FINAL BRIDGE DESIGN CHARETTE #1

SR 429/SR 46 Wekiva Parkway

Wekiva River Bridges

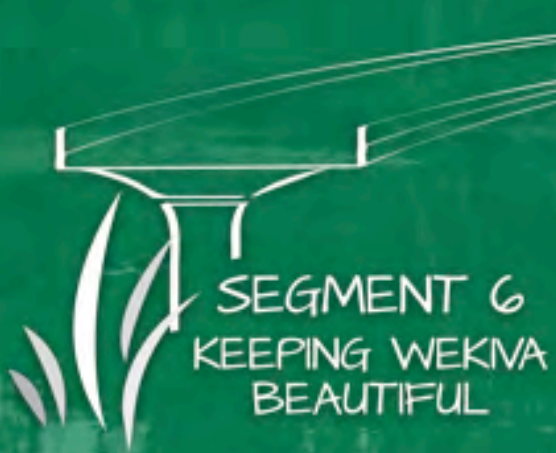
December 11, 2013

Financial Project ID: 238275-7-32-02
Lake and Seminole Counties

Prepared for: Florida Department of Transportation, District Five
Prepared by: Figg Bridge Engineers, Inc.



WEKIVA PARKWAY
A Scenic Parkway
401



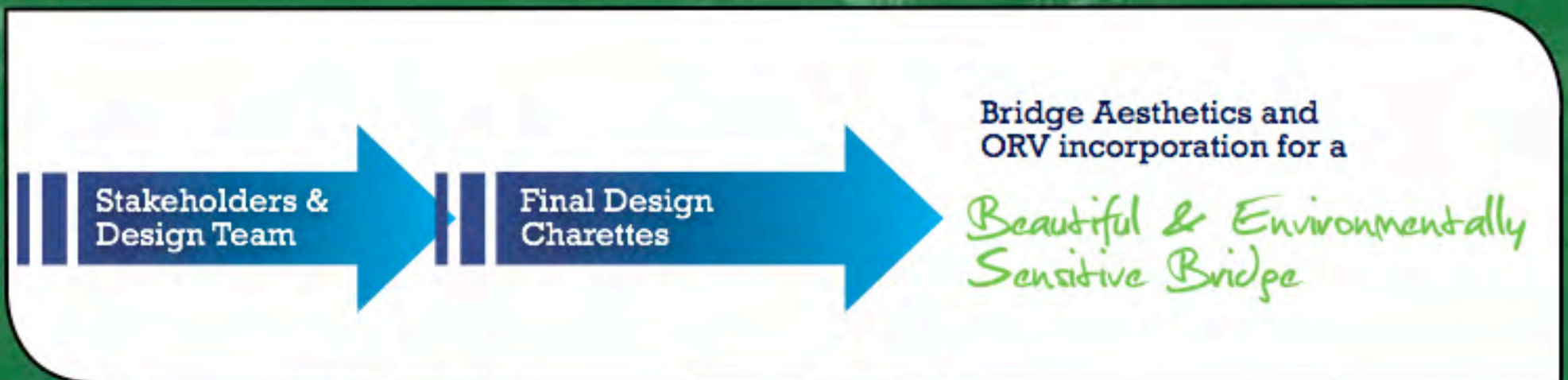
Charette Process Goals and Objectives

Public Involvement Process Goals & Objectives

GOALS

Gain input from the stakeholders through open communications throughout design.

Through the Design Charettes, participants come together to select key aesthetic features and incorporate Outstandingly Remarkable Values (ORV's) for the new bridge.



Final Bridge Design Charette Process Goals & Objectives

OBJECTIVES

Develop a solution that recognizes and protects the Outstandingly Remarkable Values (ORV's) of the Wekiva River

Achieve a design that allows for streamlined Section 7(a) approval

Create a bridge that is beautiful, functional and compliments the landscape with context sensitive design while minimizing contrast



Summary of Project Development and Environmental Phase (PD&E)

Prior Preliminary Design Charettes

March 2 & 3, 2011
April 20, 2011
July 13, 2011



Viewsheds of the bridge site were identified

Vertical bridge profile to maximize wildlife movement and minimize site contrast.

New service road alignment to the South of the mainline Parkway bridges

Natural Inspiration as a common theme for development for aesthetics

Separated bridges for light penetration

Summary of PD&E Phase

The Segmental Concrete Box Girder was the preferred bridge type by a substantial margin as selected by the attendees at the July 11, 2011 Charette



**Initial Concept Rendering from Initial Studies
Segmental Concrete Box Girder**

Commitments as stated in FONSI, May 2012

FDOT has made the following commitments to the National Park Service (NPS):

To clear span the waters of the Wekiva River with the proposed Wekiva River bridges

To coordinate with the Wekiva River System Advisory Management Committee on final design

To obtain the Wild and Scenic Rivers Act Section 7(a) determination from NPS prior to approving the final design

Federal Highway Administration
Florida Division

ADMINISTRATIVE ACTION FINDING OF NO SIGNIFICANT IMPACT

U.S. Department of Transportation Federal Highway Administration and
Florida Department of Transportation, District Five
In cooperation with the Orlando-Orange County Expressway Authority
Financial Management Number(s): 238275 1 22 01 and 240200 1 22 01
Federal Aid Project Number(s): TCSP 025 U and TCSP 024 U

Wekiva Parkway (SR 429)/SR 46 Realignment
Orange, Lake, and Seminole Counties, Florida

Wekiva Parkway (SR 429)
From US 441 (SR 500)/John Land Apopka Expressway (SR 429/SR 434) Interchange, Orange County
to SR 417-4 (SR 400) Interchange, Seminole County

SR 46 Realignment
From US 441 (SR 500)/SR 46 Interchange, Lake County
to Wekiva Parkway (SR 429), Orange County

The proposed action is construction of the Wekiva Parkway, a new four-lane/two-lane divided limited access toll-free expressway to complete the Western Beltway (SR 429) around the metropolitan Orlando area from Apopka to Orange County to Sanford in Seminole County; realignment of SR 46A in Lake County as part of the Wekiva Parkway project; reconstruction of the existing SR 46 facility in Lake County and Mount Dora to provide six-lane divided controlled-access from US 441 to east of Round Lake Road; and the realignment of SR 46 as a limited access toll-free expressway from east of Round Lake Road to a new systems interchange with Wekiva Parkway near the Orange/Lake County line.

Submitted pursuant to 42 U.S.C. 4332 (2)(C).

S. Hillier
Date

for Betty Curill
Division Administrator
Federal Highway Administration

The Federal Highway Administration (FHWA) has determined that this project will not have any significant impact on the environment. This finding of No Significant Impact is based on the attached Environmental Assessment which has been independently evaluated by the FHWA and determined to adequately and accurately discuss the environmental issues and impacts of the proposed project and appropriate mitigation measures. It provides sufficient evidence and analysis for determining that an Environmental Impact Statement is not required. The FHWA takes full responsibility for the accuracy, scope, and content of the attached Environmental Assessment.

A Sustainable Bridge That Achieves NPS Goals For This Scenic River Crossing

- ✓ **Main span length of at least 300' to clear span the Wekiva River**
- ✓ **Design principals to blend the bridge with the environment repeating the landscape's visual element of form, line, color and texture**
- ✓ **Enhance area through greater natural lighting and reduced auditory levels**
- ✓ **Enhance recreational experience for river users**
- ✓ **Optimize connectivity of wildlife corridor under bridge**
- ✓ **Preserve water quality**



Section 7(a) Flowchart for a Water Resources Project “within” a Wild and Scenic River Corridor



Is project federally assisted ?

Yes

Is project within a Wild and Scenic River (WSR) corridor?

Yes

Does project involve construction in WSR's bed or banks below ordinary high water mark?

Yes

Project evaluated under Section 7(a) “direct and adverse effect” standard; evaluation submitted to Federal permitting agency (USACE)

Federal permitting agency (USACE) issues CWA Section 404 Permit Public Notice and begins consultation with river-administering agency (NPS)

NPS –USACE – FDOT
Coordination and Consultation w/ WRSAMC
Stakeholder Input

NPS provides Section 7(a) Determination to USACE

USACE issues
CWA Section 404 Permit for activity

Stakeholders Workshop - June 18, 2013

FDOT Urban Office in Orlando, Florida at 2PM.



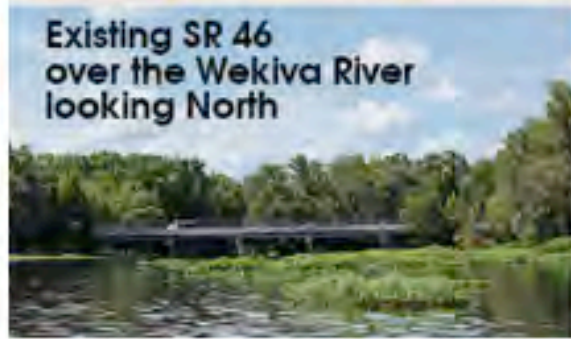


Bridge Design Workshop
with the National Park Service and FDOT
Wekiva River Bridges

Environmental Park Bridge
In Harmony with the Scenic River



Existing SR 46
over the Wekiva River
looking
South



Existing SR 46
over the Wekiva River
looking North



Stakeholders Workshop

June 18, 2013 - Key Discussion Items

New Bridge Viewsheds

How Aesthetically Pleasing Bridges are Created

Final Bridge Design Charette Process

Bridge Type

Approach Structure

Main Span Structures

Construction Operations

Bridge Geometry

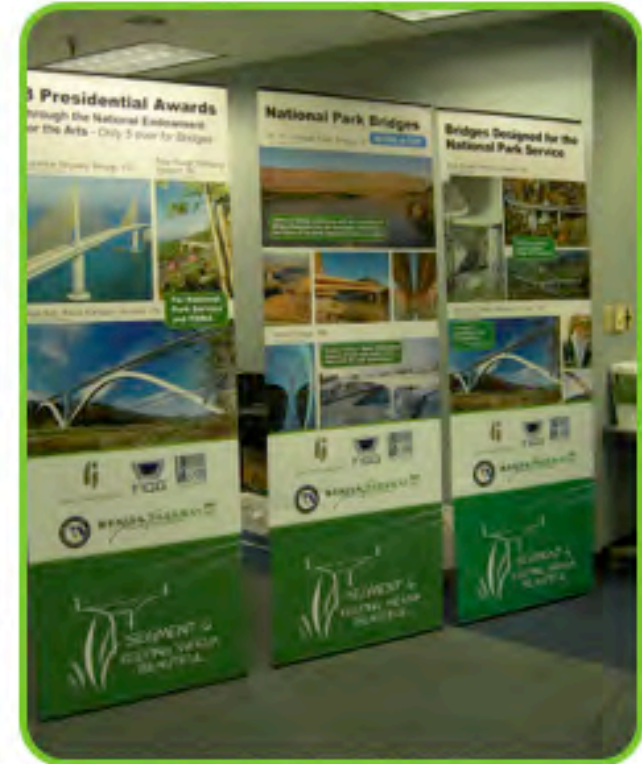
**Group Discussions on Bridge Geometry
(Vertical Height)**

**Theme Ideas/Distribute Form to
Solicit Written Comments**

Stakeholders Workshop - June 18, 2013

**Group brainstorming
of ideas for
aesthetic themes**

**Participants
identified local
influences to provide
design inspiration**



Meeting and Charette Schedules

NPS/FDOT Workshop	Jun. 18, 2013
Bridge Design Charette 1	Dec. 11, 2013
Bridge Design Charette 2	Jan. 28, 2014
Public Information Meeting	Spring 2014

Bridge Design Charette 1

Key Steps/Procedures

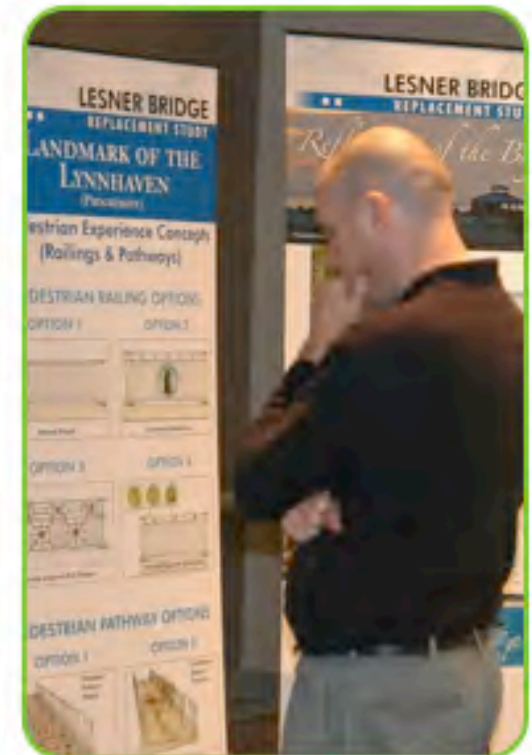
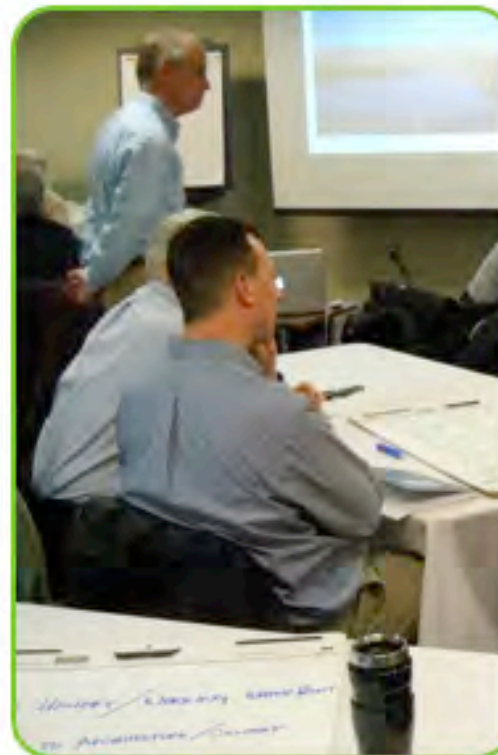
Follow a set agenda

Present options

Encourage open discussion

Provide handouts on information presented

Record preferences



Recording Preferences

Voting forms to record bridge design preferences are provided on each agenda topic

Example

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	3	4	5	6	7	8	9	10
Dislike			Neutral				Like		

Comments: _____

Like = 10

Neutral = 5

Dislike = 1

Design Charette Voting Forms

Please completely fill-in only one red box as shown below, and use only the black pens provided on the tables.

Correct

Score will be recorded as an 8

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	3	4	5	6	7	8	9	10
Dislike				Neutral				Like	

Incorrect

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	3	4	5	6	7	8	9	10
Dislike				Neutral				Like	



Project Overview- Bridge Site Review and Vistas

Site Features



Wekiva River

**Katie's Landing Park
1 Mile from Bridge**

Seminole State Forest

Lower Wekiva Aquatic Preserve State Park

SR 46 Wekiva River Bridge

46

Rock Springs Run State Reserve

46

Wekiva River Oaks

Foxspur

Estates at Wekiva Park

Wekiva River Rd

Peachtree Lane

**Wilson's Landing Park
0.5 Miles from Bridge**

Katie's Landing Park (1 Mile north of bridge along the river)



Wilson's Landing (0.5 Miles from bridge along the river)



Picture Taken On East Bank From Wilson's Landing



Important Vistas Identified



Important Vistas Identified



Existing View 1

Looking East down Highway 46



Existing View 2

Looking East from North side of Bridge



Existing View 3

Looking South from North side of Bridge



Existing View 4

Looking South from North side of Bridge



Existing View 5

Looking South from roadway deck



Existing View 6

Looking West along Highway 46



Existing View 7

Looking North from South side of Bridge



Existing View 8

Looking North from South side of Bridge



Existing View 9

Looking North from South side of Bridge



Existing View 10

Looking South from North side of Bridge



Existing View 11

Looking South from Northeast bank of River



Existing View 12

Looking West along North side of Bridge



Existing View 13

Looking North at East Bridge Embankment



Existing View 14

Looking North from South side of Bridge



Existing View 15

Looking North from South side of Bridge



Existing View 16

Looking East along South side of Bridge



Existing View 17

Looking East along
North side of Bridge



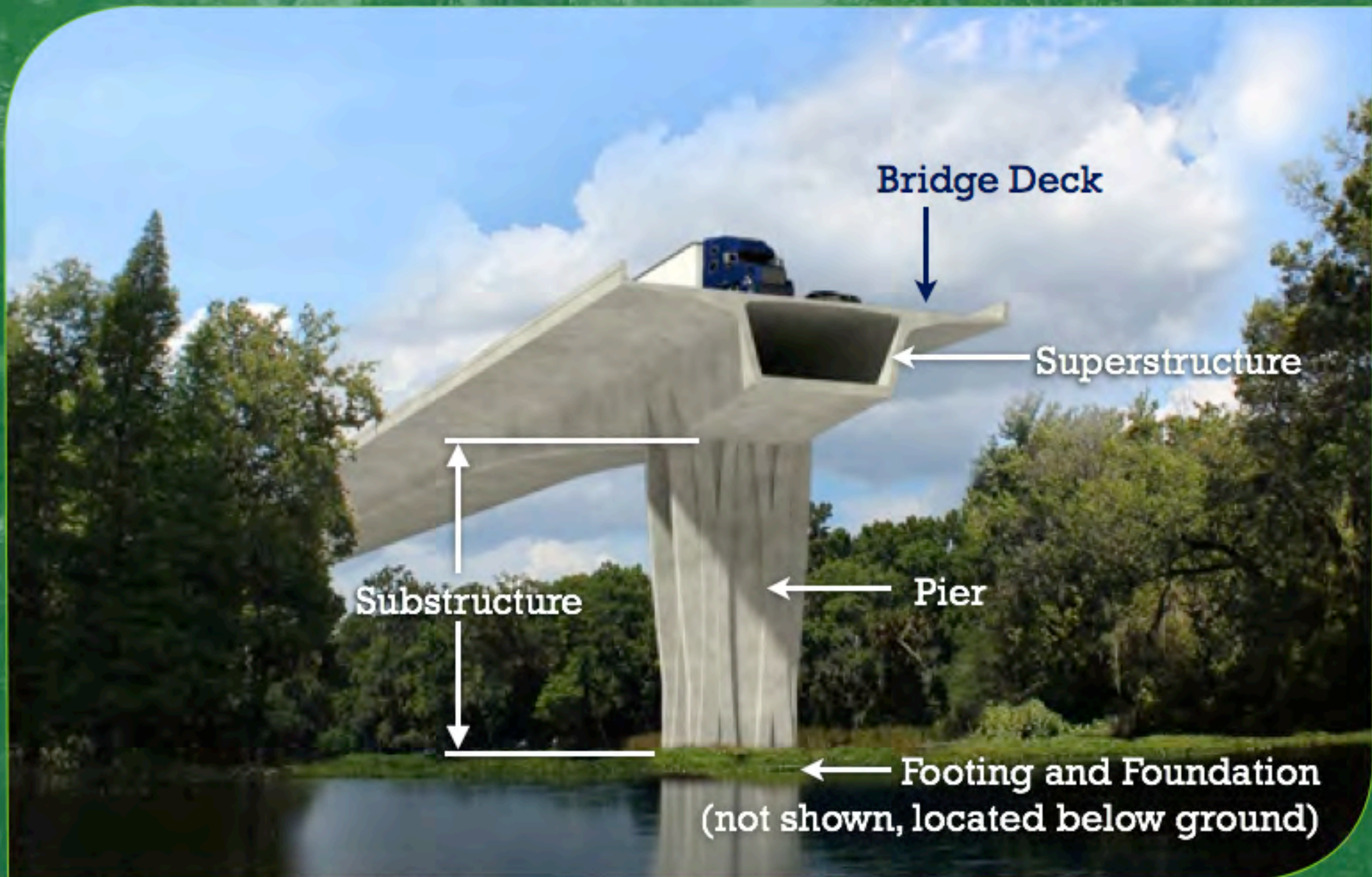


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Bridge Project Development Criteria and Geometry

Bridge Terminology

Schematic Bridge For Illustration Of Terms



Existing Bridge Layout



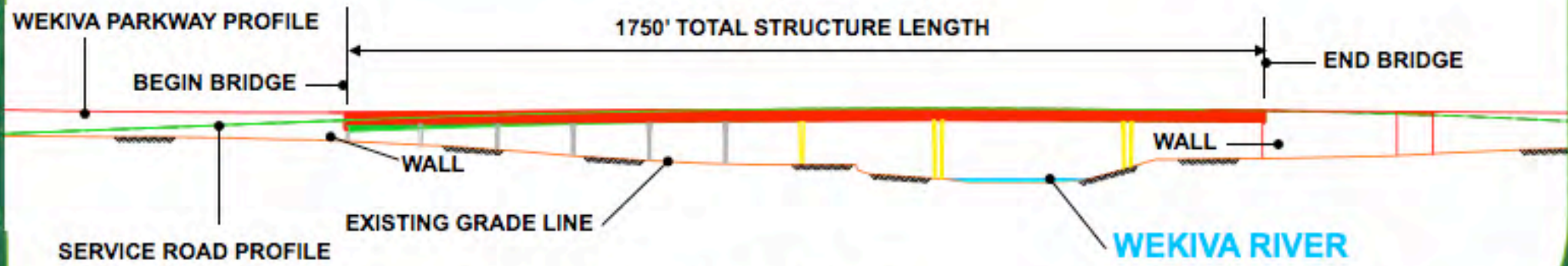
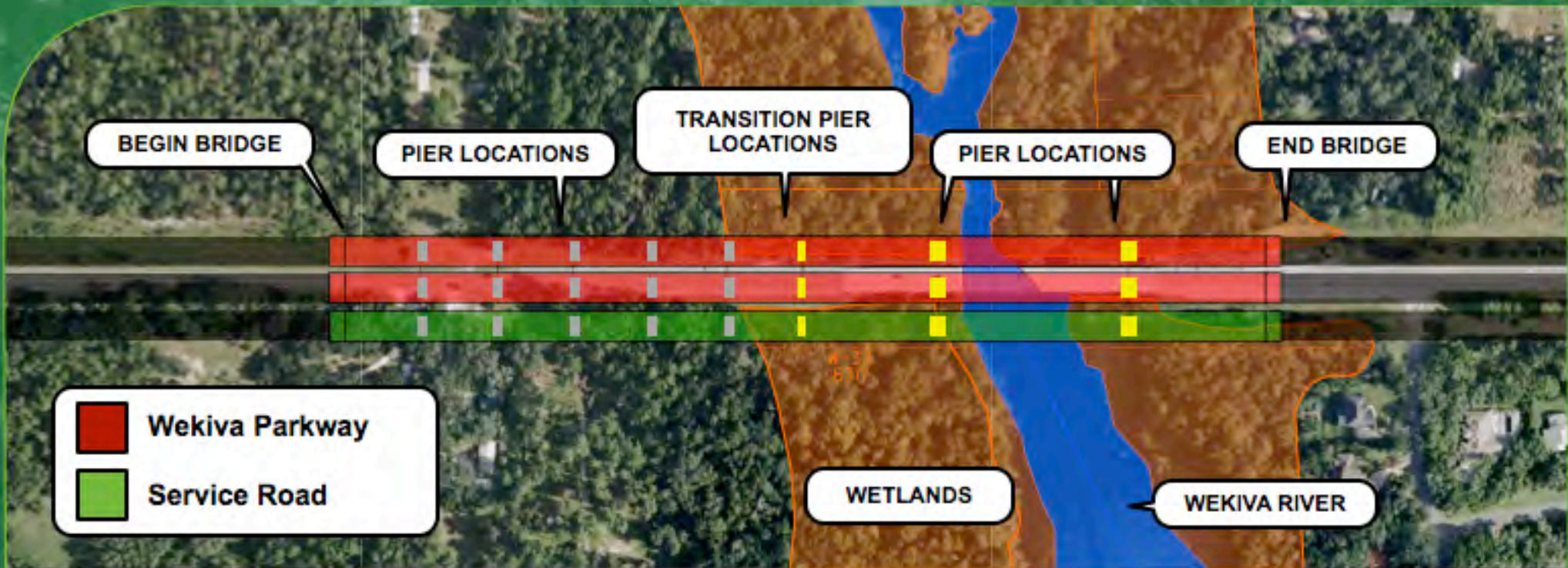
Total Bridge Length – 561'

(11) 51' Spans

River Width - 188' at existing bridge (270' just north)

Three (3) pier bents located in the river

New Bridge Plan and Profile



SCHEMATIC

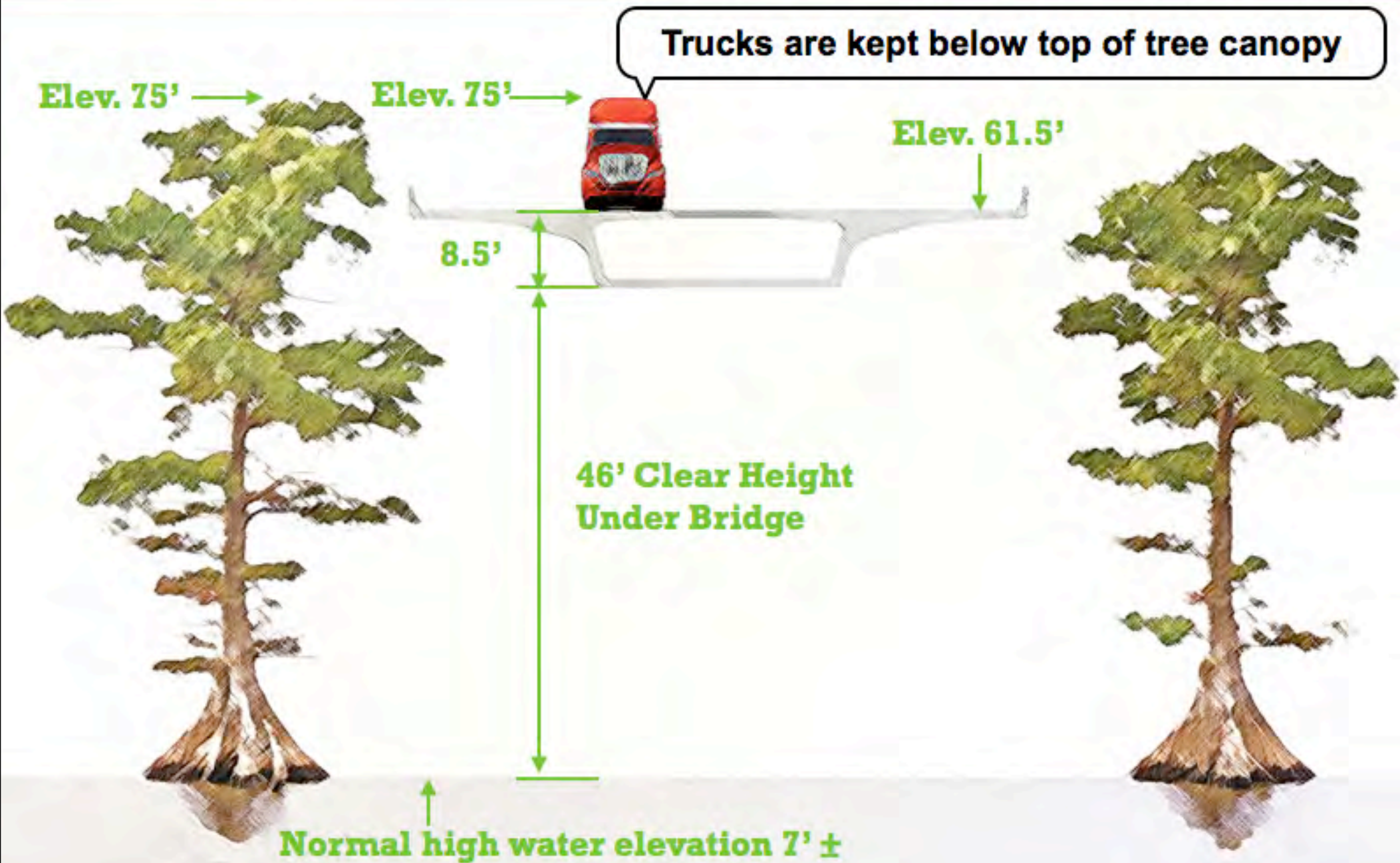
Bridge Vertical Profile

Important Criteria From Bridge Design Workshop
on June 18, 2013

“Provide a bridge profile where the bridge and vehicles on top are kept below top of tree canopy”



Selected Bridge Vertical Profile



Final Bridge Vertical Profile

Original Profile (PD&E)

Bridge Deck Elevation 70'



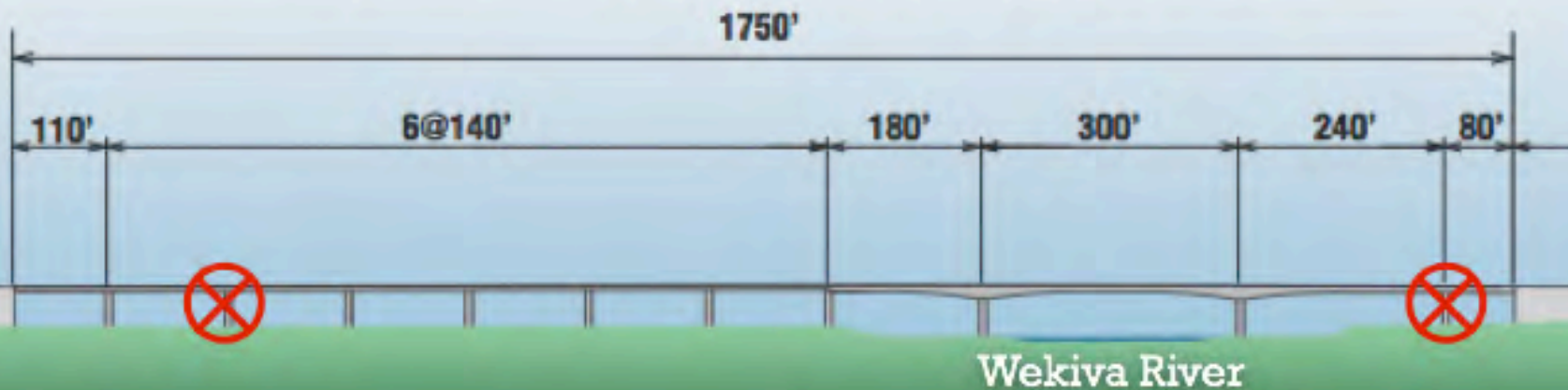
Proposed Profile

Bridge Deck Elevation 61.5'



Enhanced Design Preserves Environment

Preliminary Bridge Layout from PD&E



1 Pier Removed

Main-Span increased from 300' to 360'
Same minimized structure depth with longer spans

1 Pier Removed

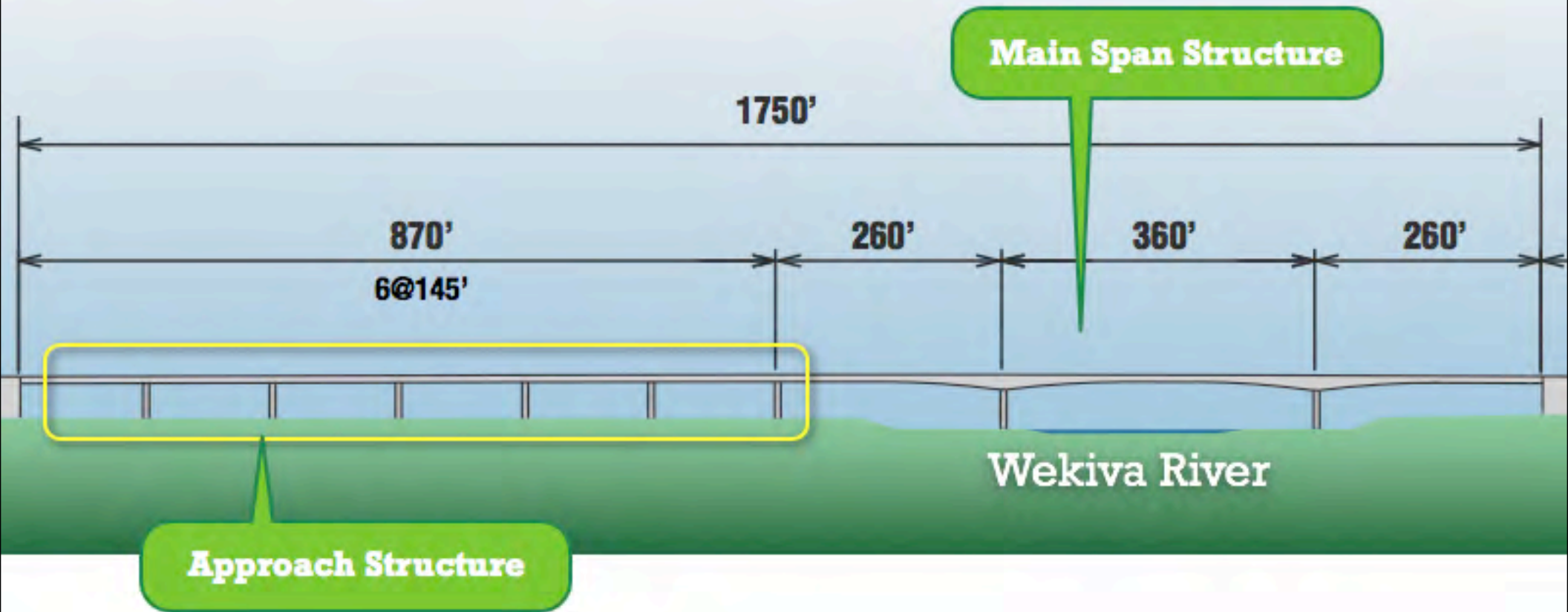


Proposed Bridge Layout

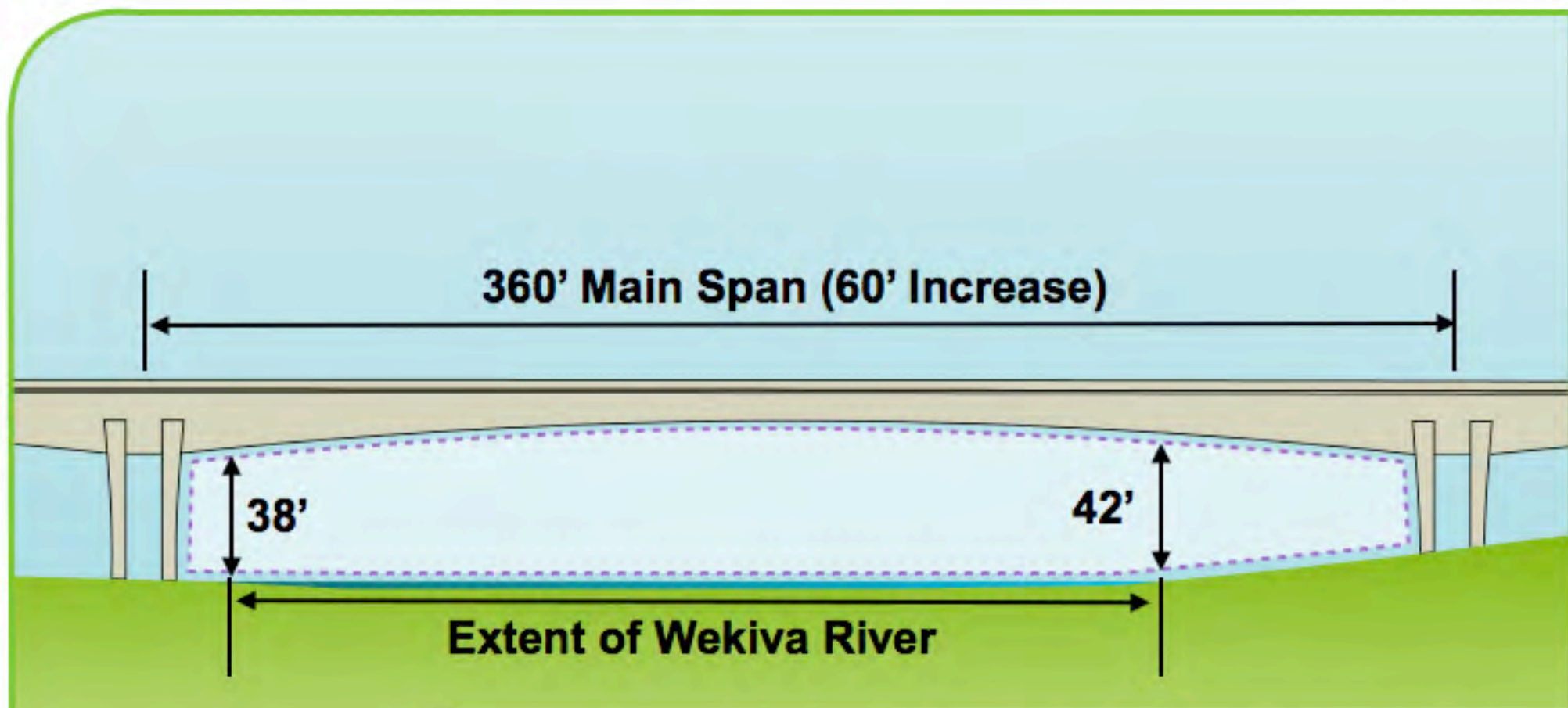
Longer span over river and 6 total piers removed

Proposed Bridge Layout

Different structure types are being evaluated for the two sections of bridge



Openness of Longer Span over River



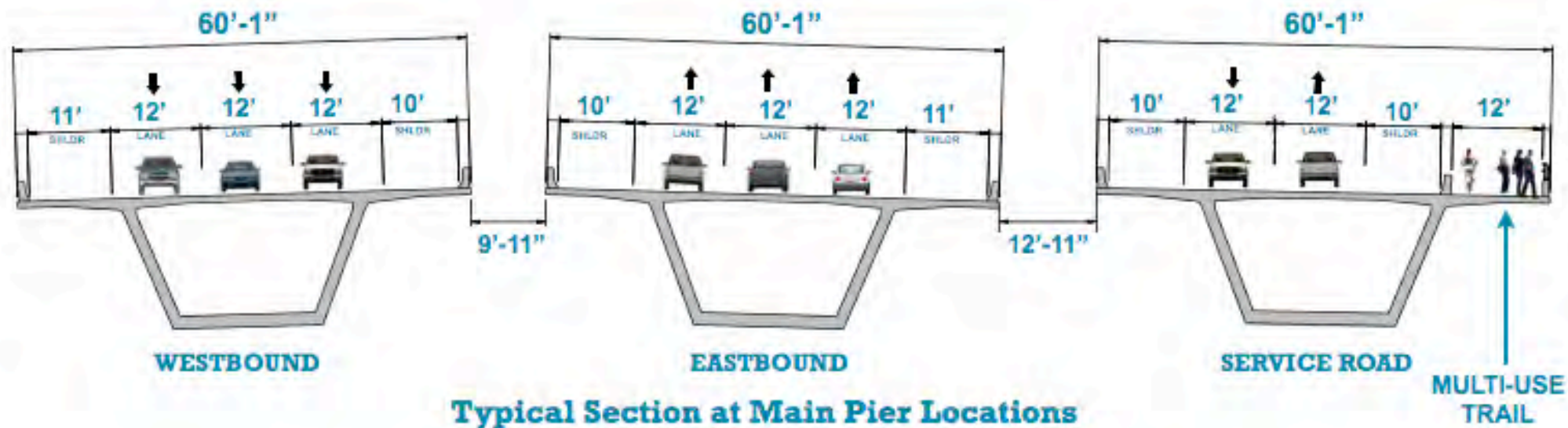
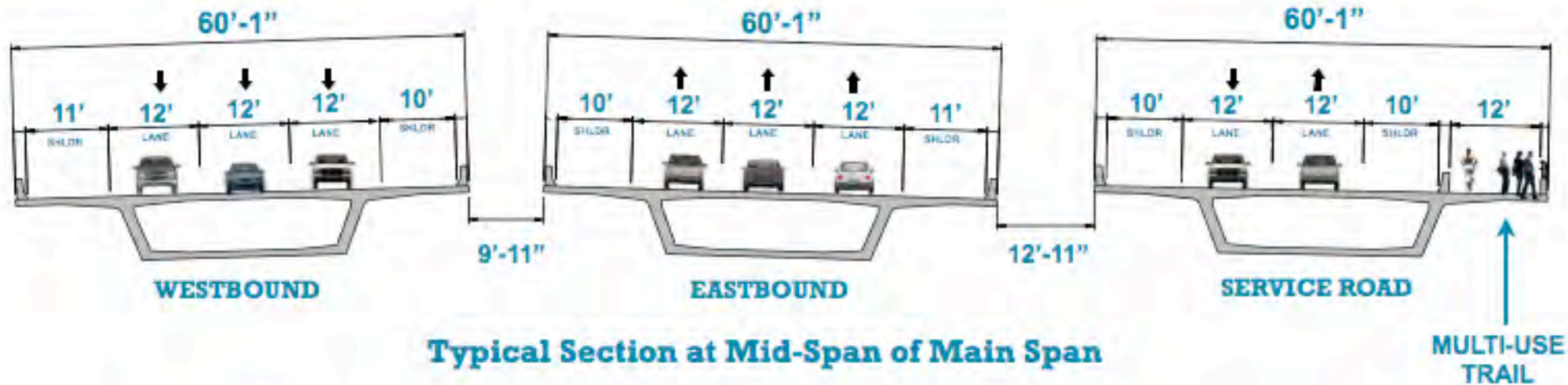
Focus on Nature- Over 13,800 sq ft. clear window opening under the bridge which represents a 17% increase over the 300' span length

Openness of Longer Span over River



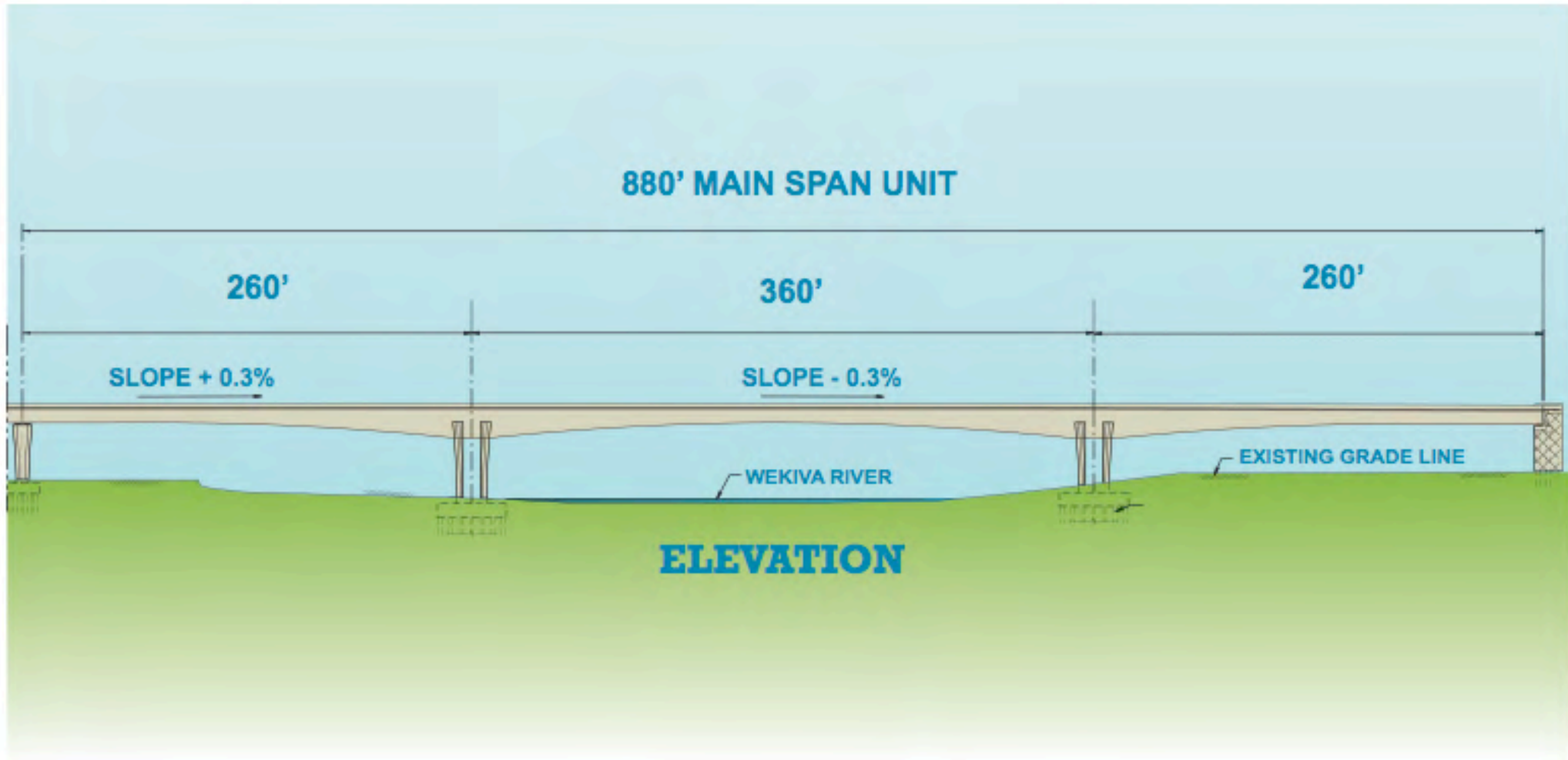
FOOTINGS ARE LOCATED UNDERGROUND

Typical Cross Sections



**Showing ultimate configuration.
Parkway bridges will have 2 lanes in each direction for initial configuration.**

Main Span Unit Layout





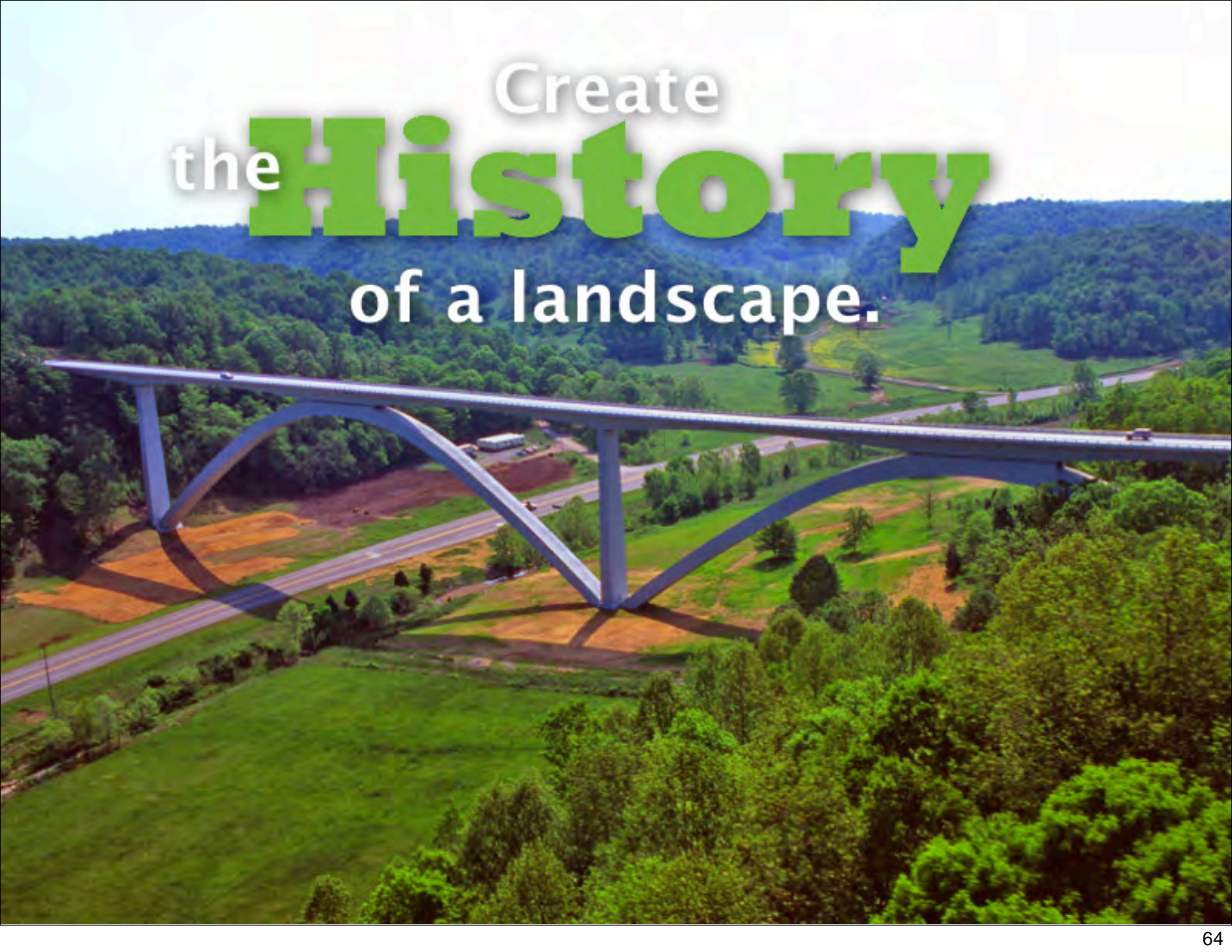
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Discussion on Project Development



Bridge Aesthetics and Bridge Theme Selection

Create
the **History**
of a landscape.





the **Nature**

**Blue Ridge Parkway Viaduct
National Park Service**

**Grandfather Mountain,
North Carolina**

the **Places**



Broadway Bridge
Daytona Beach, Florida

the **Story**

A photograph of the new I-35W Bridge in Minneapolis, Minnesota. The bridge features a large, white concrete arch structure supported by several piers. The river below is partially frozen, and the city skyline is visible in the background under a clear sky.

The New I-35W Bridge

Minneapolis, Minnesota

the **Events**



Four Bears Bridge



New Town, North Dakota

the People

1st Five Bridges Glenwood Canyon

Glenwood Springs, Colorado

Every bridge shares that story.
It begins with

a **vision**

Wabasha Freedom Bridge

St. Paul, Minnesota

Applying FIGG Archetypal Design Principals

Establish a Theme

Blend Shapes

Create Shadows

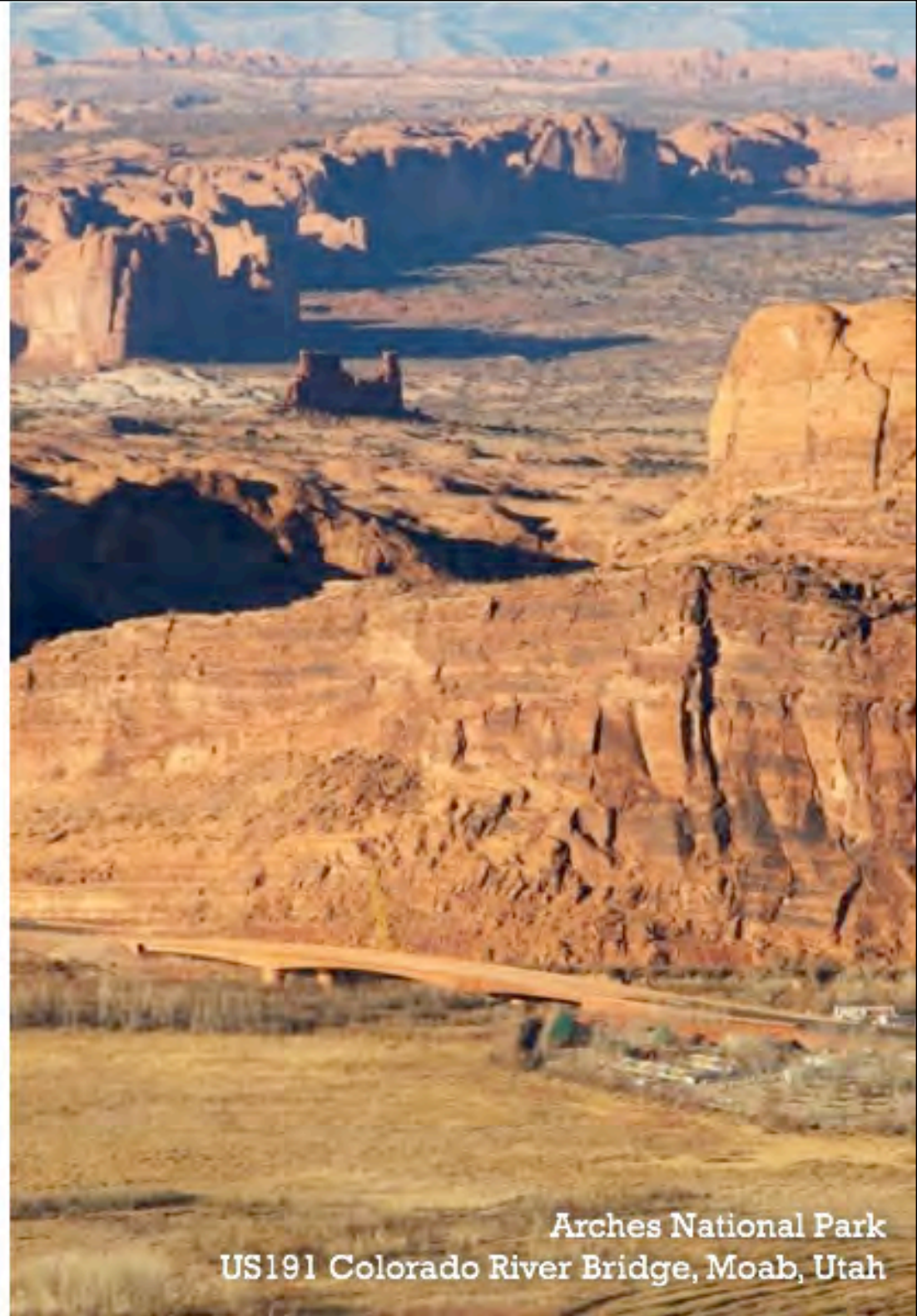
Select Appropriate Textures

Choose Pleasing Colors

Open New Vistas

Use Native Materials

Incorporate Landscaping



Arches National Park
US191 Colorado River Bridge, Moab, Utah

To Be Aesthetically Pleasing, A Bridge Must:



Be Functional

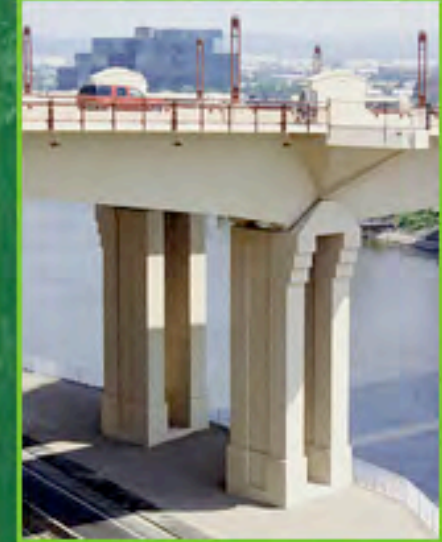
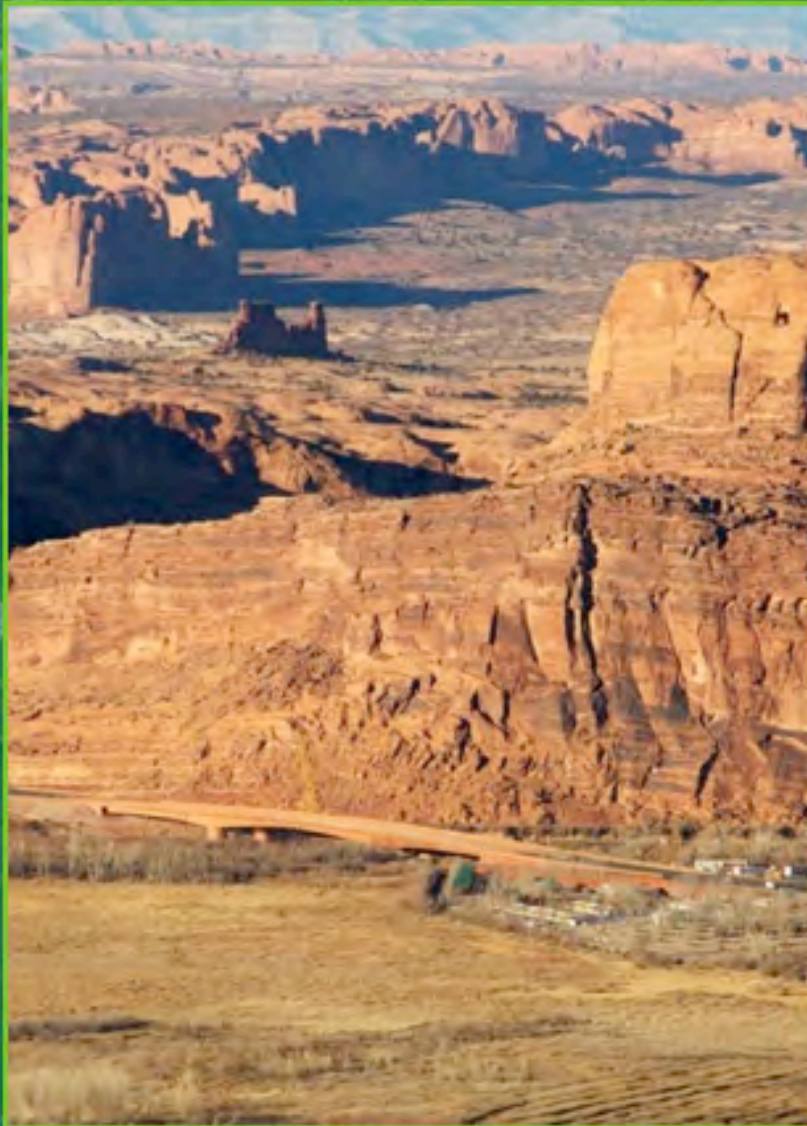
Be Economical

Satisfy Cultural Needs



Be In Harmony with the Environment

Functional Bridge Sculpture



Review of June 2013 Workshop Initial Theme Ideas

**Question 1 –
Things that best describe
local environment?**

**Question 2 –
Important Considerations
for this new bridge?**

**Question 3 –
Other Ideas and
Suggestions?**

 **Wekiva Parkway**
with the National Park Service and FDOT

Bridge Design Workshop
with the National Park Service and FDOT
Wekiva River Bridges
Environmental Park Bridge in Harmony with the Scenic River

June 18, 2013

Please Give Us Your Ideas!

List three or more things that best describe the native environment around the bridge, such as particular types of flora and fauna. This is part of the brainstorming to create possible natural thematic approaches for the bridge design shapes and features.

Describe considerations that are important to you for this new bridge.

Any other ideas or suggestions? (Feel free to use the back for more space if you like)

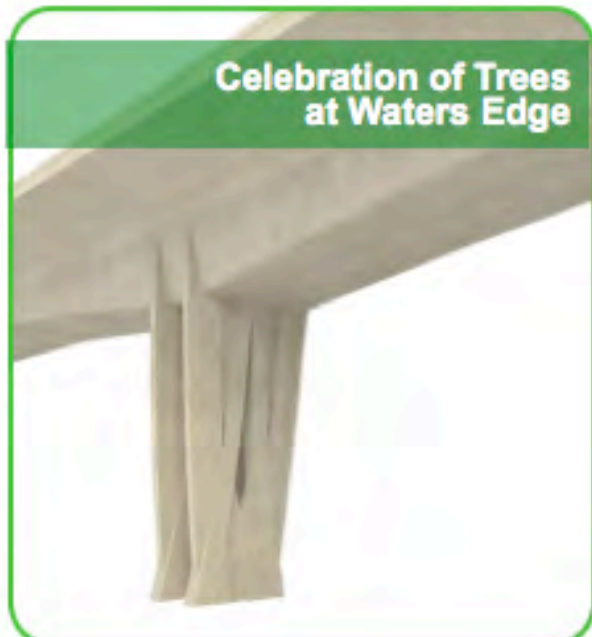
Thank You for your input!

Name (optional): _____ please print Email: _____

16 comment forms were returned

Review of June 2013 Workshop Initial Theme Ideas



Reflective Blue Color Emphasizes The Open Blue Sky Background



Question 1 – Things that best describe local environment?

River

- **“Openness of the river”**
- **“Flowing tannic colored river water”**
- **“Rippling water”**
- **“The slow flow of water and the way the sunlight reflects off the surface and the shadows it creates”**
- **“Water - reflections”**

Trees

- **“Low lying trees over the water”**
- **“Trees; Cypress knees and trees, palms, oaks, palmettos”**
- **“Contrast of evergreen and deciduous trees”**
- **“The abundance of trees”**

Question 1 – Things that best describe local environment?

Plants/Vegetation

- **“Dense vegetation, River grasses, Ferns, Vines”**
- **“Aquatic plants in water away from shoreline”**
- **“Lush aquatic flora”**
- **“Blooms”**

Wildlife

- **“Birds, turtles, black bears, white-tailed deer, otters, raccoons”**
- **“Alligators, turtles”**
- **“Nesting birds, wading birds”**

Question 2 – Important Considerations for this new bridge?

River User Experience

- **“Design with visual elements that would maximize river user enjoyment – I like the idea of user surprise when below the bridge”**
- **“I liked the surprise blue ceiling underneath the bridge to look like the sky.....should be reflective, not comic like”**

Blend Bridge with Environment

- **“Harmony with nature and blends with the environment”**
- **“Should not be of high contrast, minimize visual contrast”**
- **“The bridge needs to be designed to disappear into the landscape”**

Question 2 – Important Considerations for this new bridge?

Piers

- **“Tree shape for piers, i.e. cypress tree”**
- **“Like waterside trees for piers”**

Long Span

- **“Wide span bridge below tree line”**
- **“Minimize intrusion into river”**
- **“Like long span at 60’ elevation”**

Noise

- **“Minimization of noise”**
- **“Sound buffering”**
- **“Quiet/noise reduction”**

Question 2 – Important Considerations for this new bridge?

Wildlife

- **“Protect effective wildlife corridor for terrestrial animals”**
- **“Wildlife corridors – protecting wildlife from vehicles”**
- **“Ecologically-sensitive design provides a functional passageway for wildlife”**
- **“Safety for wildlife”**

Preservation of Environment

- **“Water quality”**
- **“Minimize tree removal during construction”**
- **“Restoration of natural habitats (post construction)”**

Wekiva River Themes



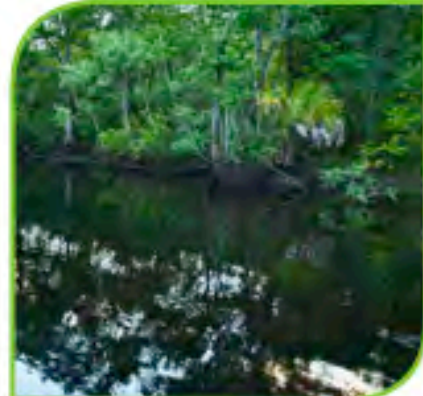
**Blooms Along
the River**



**Celebration of Trees
on the Rivers Edge**



**Tribute to Nature on
Wekiva**



**Tribute to Water on
Wekiva**



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Blooms Along the River

Blooms Along the River - Button Bush



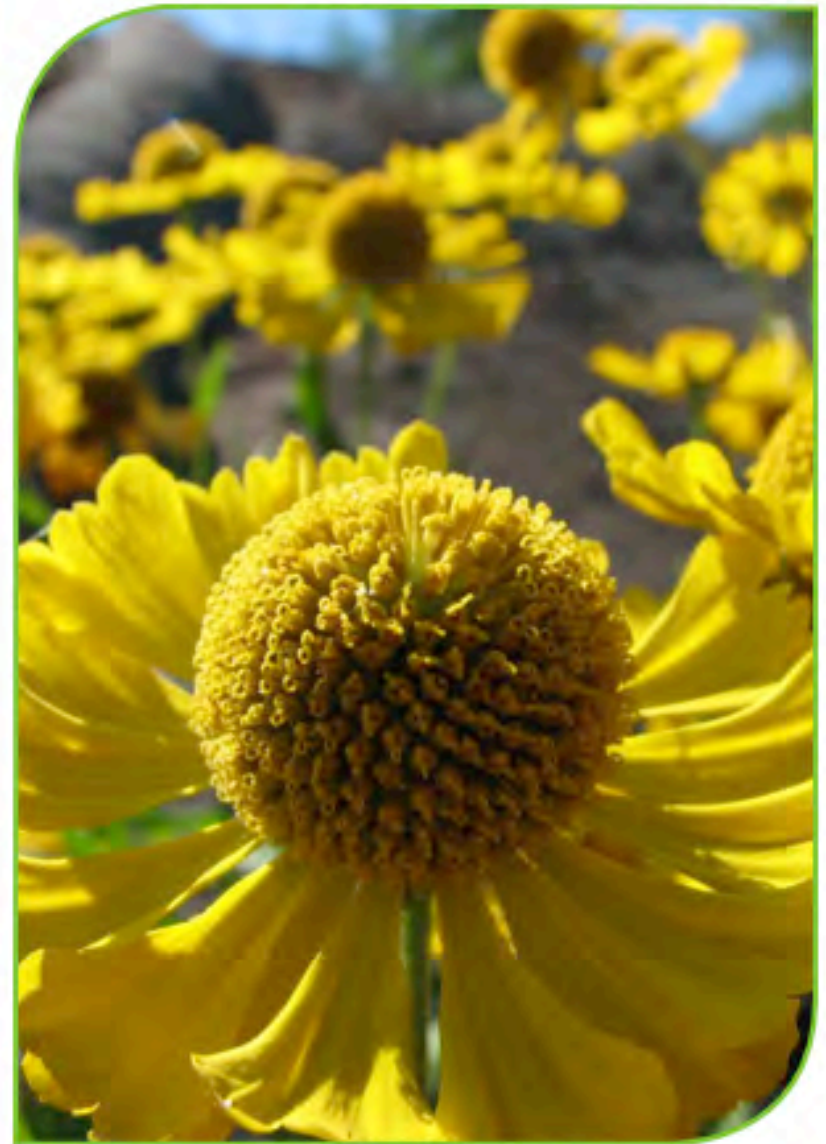
Blooms Along The River - Spiked Gayfeather



Blooms Along the River - Magnolia Blossoms



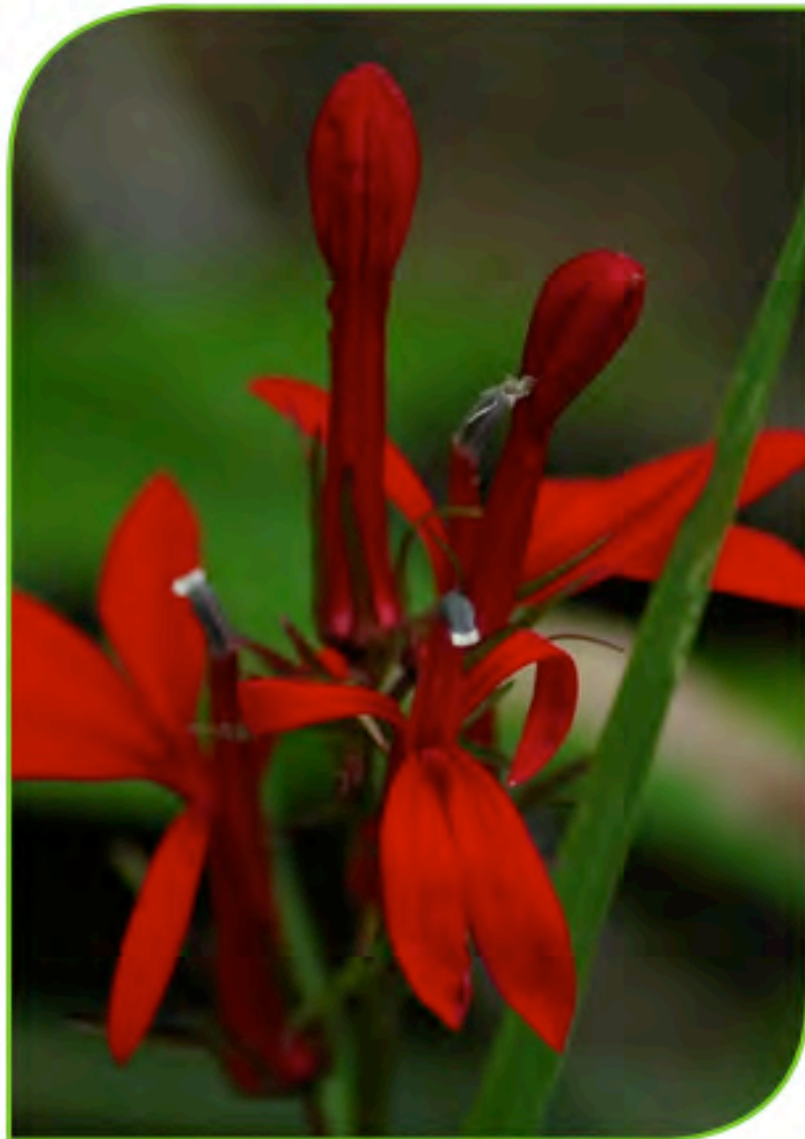
Blooms Along the River - Butterweed



Blooms Along the River - Florida Bellflower



Blooms Along the River - Cardinal Flower



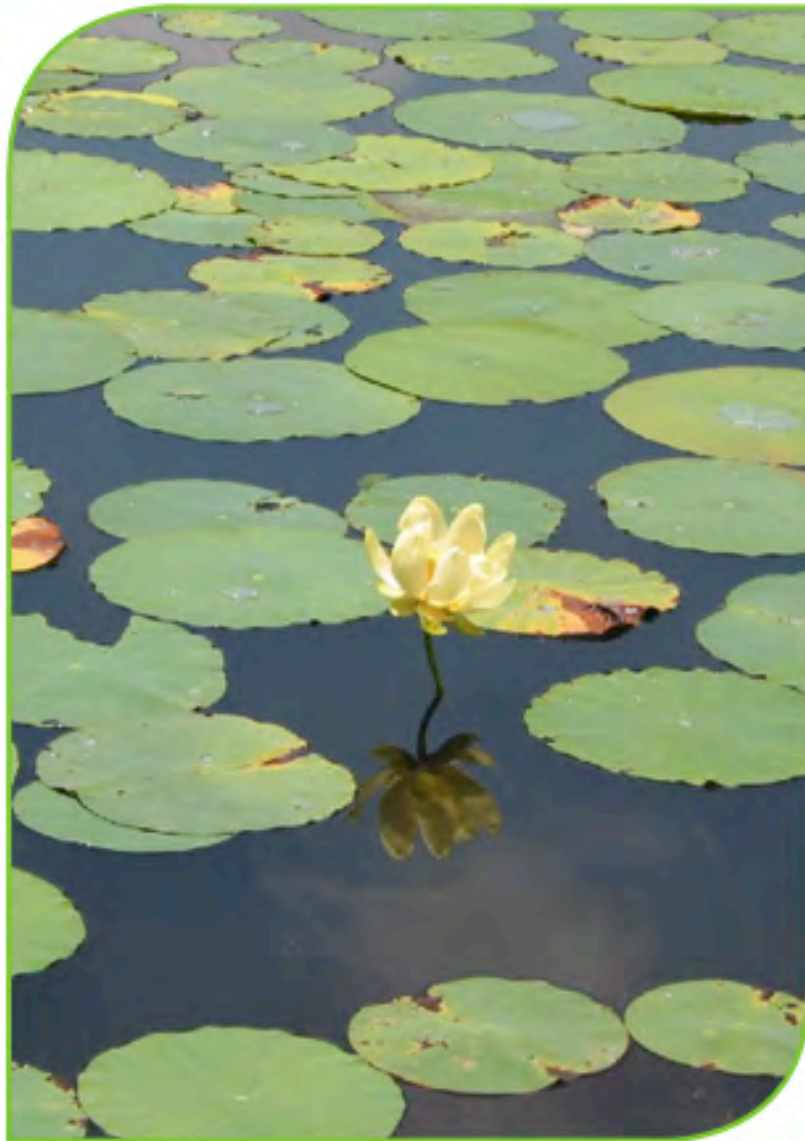
Blooms Along the River - Scarlet Hibiscus



Blooms Along the River - Swamp Sunflower



Blooms Along the River - Yellow Lotus



Blooms Along the River - Shiny Lyonia



Blooms Along the River - Skyflower



Blooms Along the River - Beauty Berry





Celebration of Trees on the Rivers Edge

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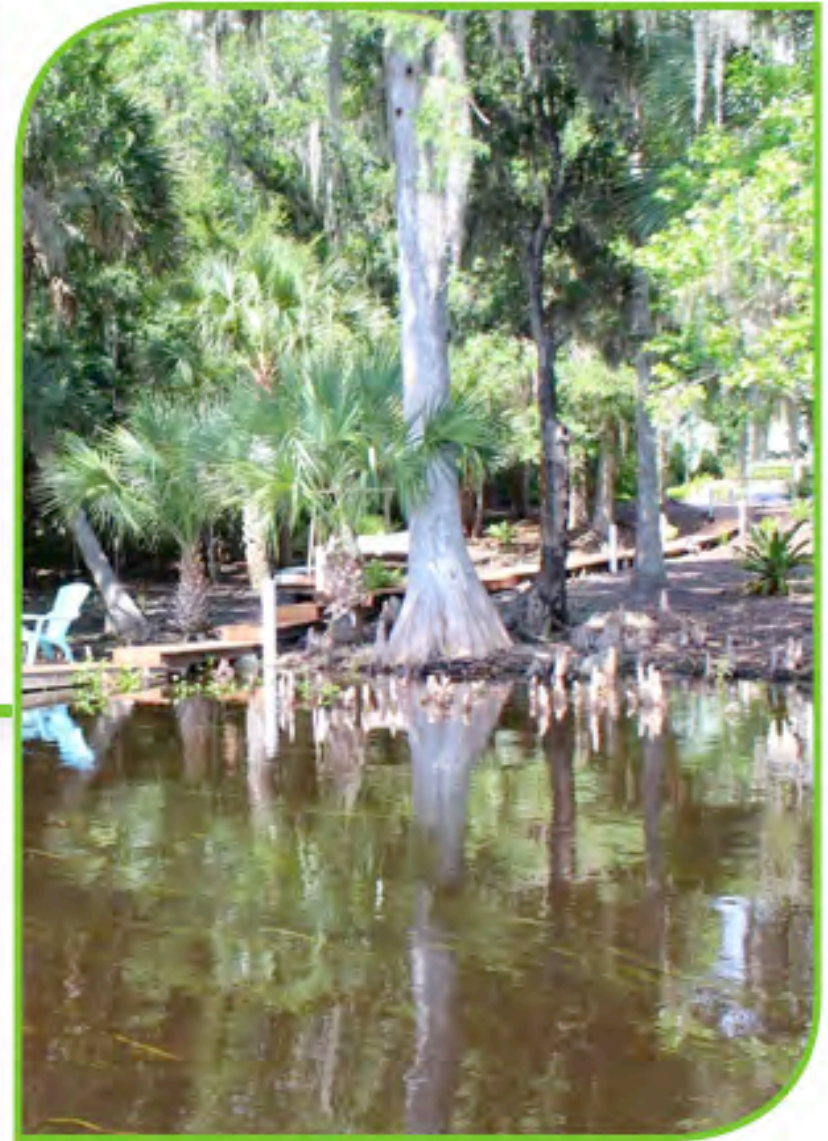
North Of The Bridge, Tree Overhanging River



Trees Near the Existing Bridge - Cabbage Palms



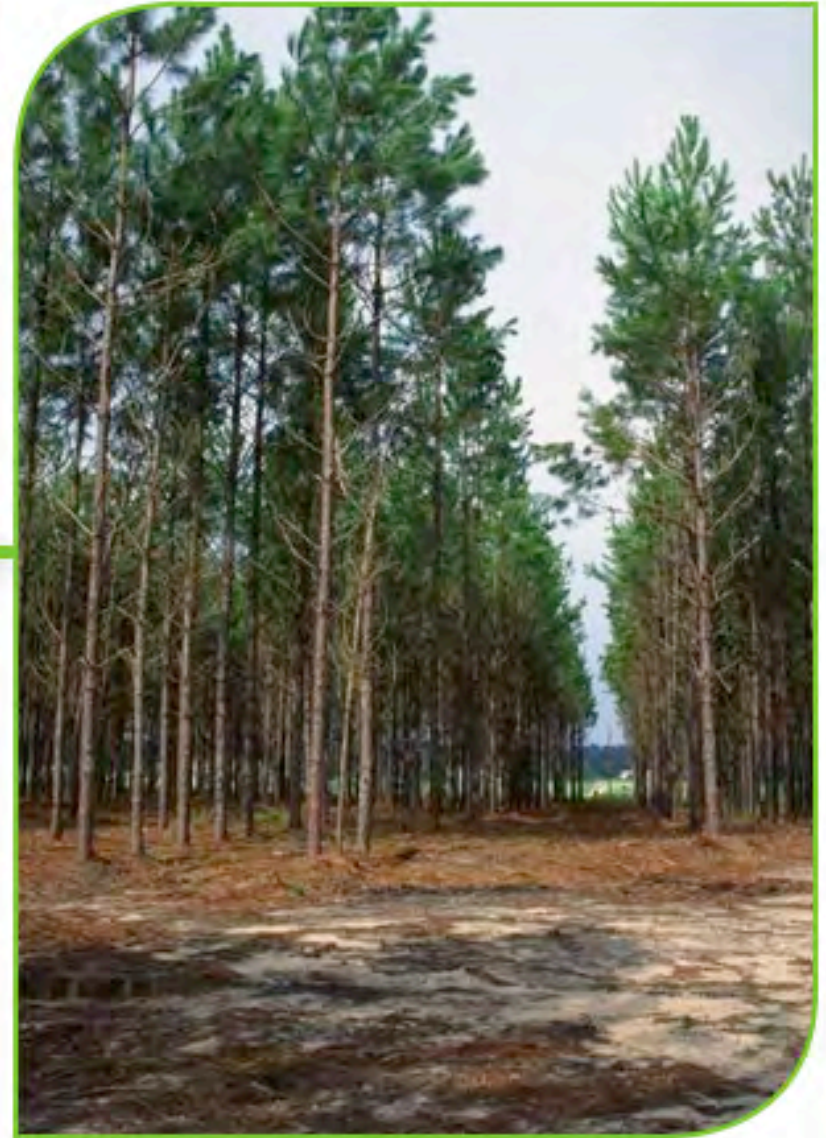
Trees Near the Existing Bridge - Cypress Trees



Trees Near the Existing Bridge - Longleaf Pines



Trees Near the Existing Bridge - Slash Pines



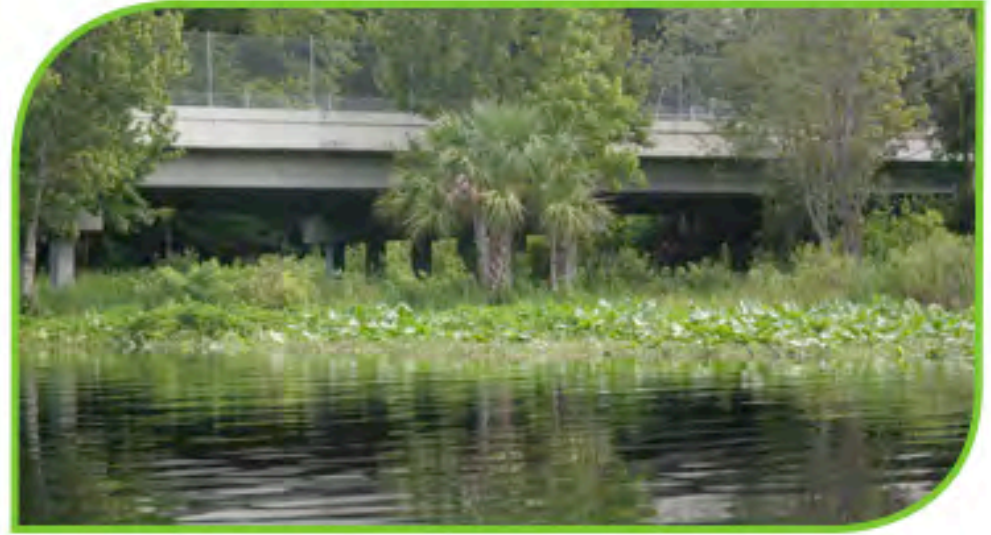
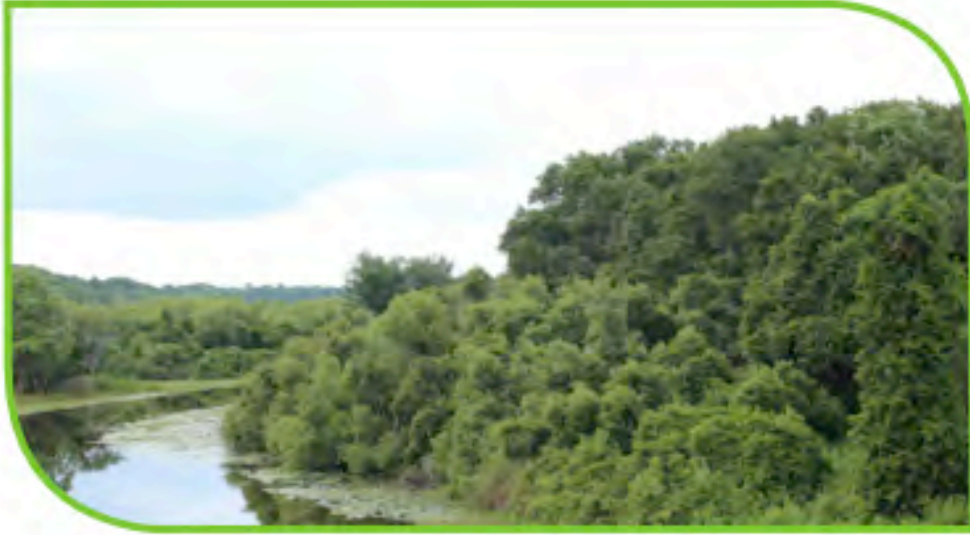
Trees Near the Existing Bridge - Oak Trees



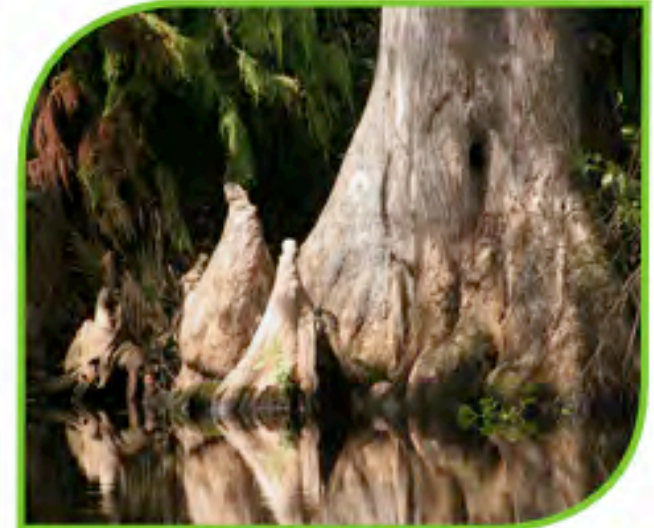
Trees Near the Existing Bridge - Tupelo Trees



Trees Next to Existing Bridge - Overall Views



Trees Along 1 Mile Stretch of Existing Bridge



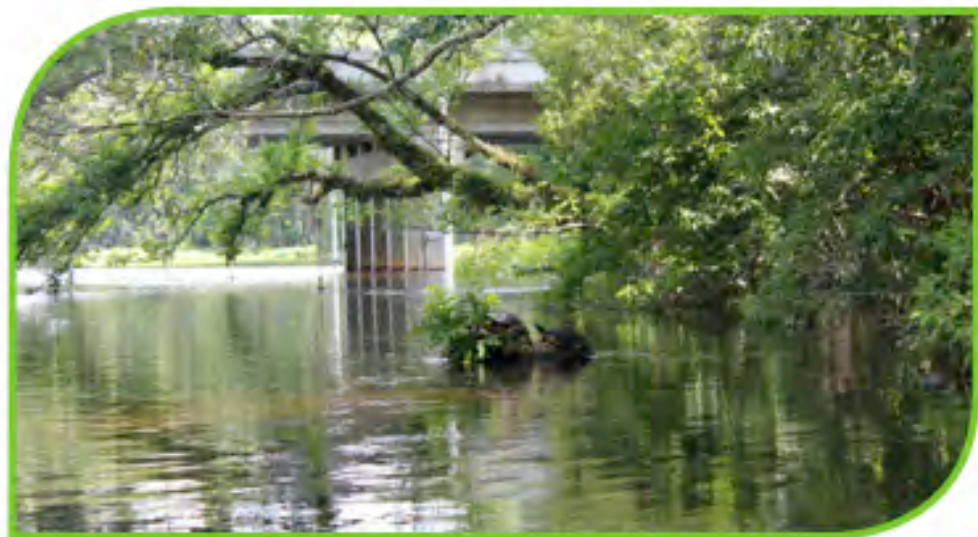
Trees Along 1 Mile Stretch of Existing Bridge



Trees Along 1 Mile Stretch of Existing Bridge



Celebration of Trees on the Waters Edge



Branches Extending over Water



Contrast between Deciduous & Evergreens



Cabbage Palm



Floodplain Hardwoods



Cypress Tree Knees



SEGMENT 6
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Tribute to Nature on Wekiva

Tribute to Nature on Wekiva - Wading Birds



Florida Sandhill Crane



Great Egret



Limpkins



Great Blue Heron



Ibis

Tribute to Nature on Wekiva



Green Heron



Red-bellied Woodpecker



Wood Duck



Osprey



Warblers

Tribute to Nature on Wekiva



Spiked Gayfeathers



Ferns



Witch Hazel



Typical Sandhill Habitat



Flowering Dogwood

Tribute to Nature on Wekiva



Large Mouth Bass



Blue Gills



Sherman's Fox squirrels



River Otter



White-tailed Deer



Eastern Box Turtle

Tribute to Nature on Wekiva



Alligator



Wild Turkey




Bald Eagle



Manatee



Florida Black Bear



Tribute to Water on Wekiva

SEGMENT 6
KEEPING WEKIVA
BEAUTIFUL

Tribute to Water on Wekiva



Relaxing Respite



Creating Life on the River



Adventure Awaits

Tribute to Water on Wekiva



The River Sparkles



Outdoor Excitement



Movement of Water



Serenity



Gathering Place

Tribute to Water on Wekiva



Flow of Water on the Surface



The Waters Reflection



Life in the Water

Tribute to Water on Wekiva



Roadway to Discovery



Kayakers Dream

Tribute to Water on Wekiva



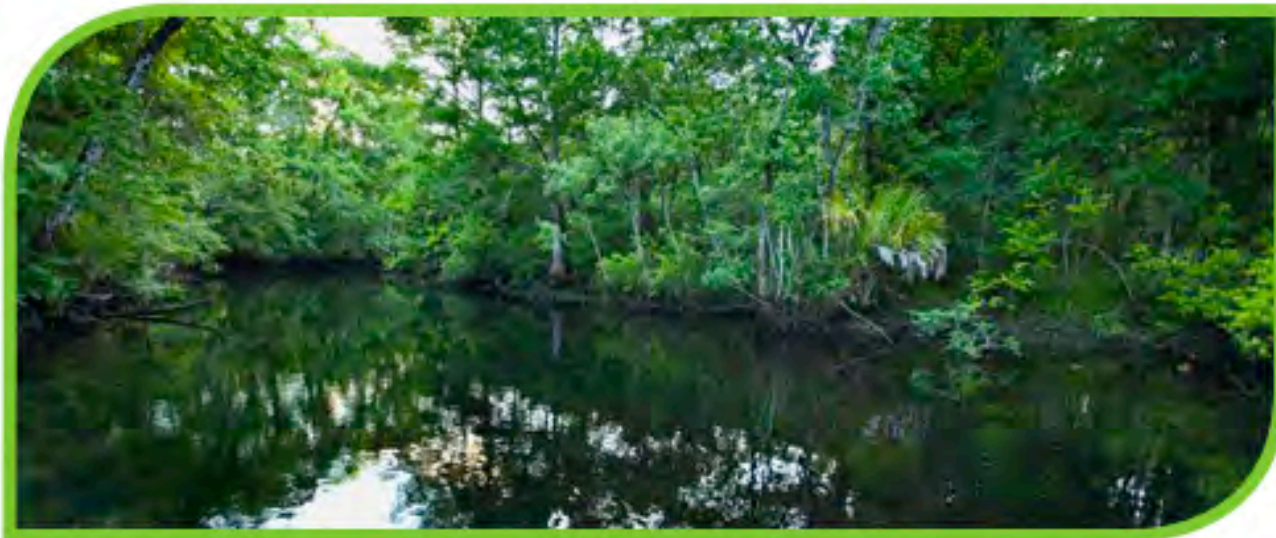
Tannic Color



Rippling Water



Dappling of Colors



Soft Flow of Water

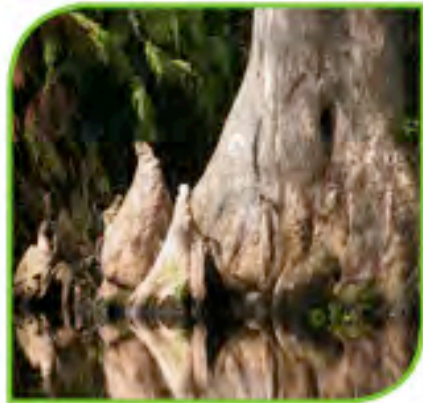


Reflections

Wekiva River Themes



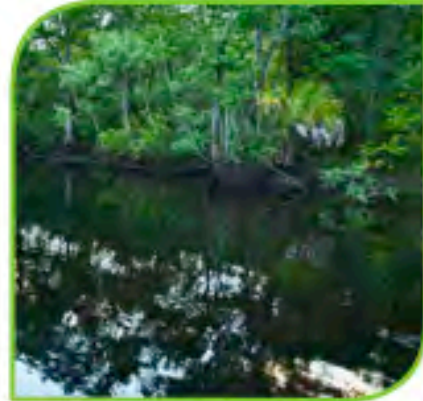
**Blooms Along
the River**



**Celebration of Trees
on the Rivers Edge**



**Tribute to Nature on
Wekiva**



**Tribute to Water on
Wekiva**

Blooms Along the River

Example pier concept inspired by the theme





Blooms Along the River

Example pier concept inspired by the theme





Celebration of Trees on the Rivers Edge

Example pier concept inspired by the theme





Celebration of Trees on the Rivers Edge

Example pier concept inspired by the theme



Fanning Palms



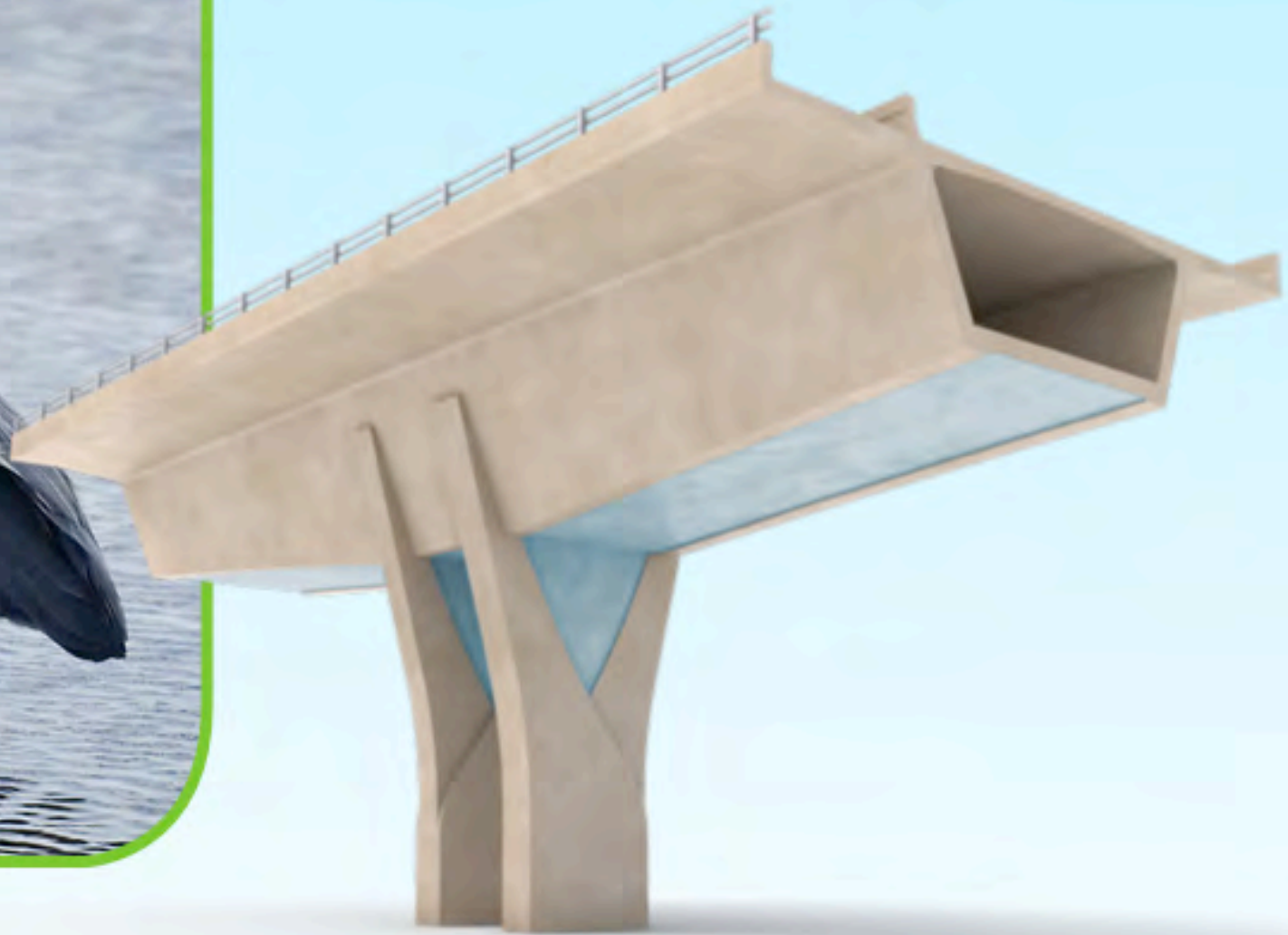


Tribute to Nature on Wekiva

Example pier concept inspired by the theme



Wading Birds





Tribute to Nature on Wekiva

Example pier concept inspired by the theme



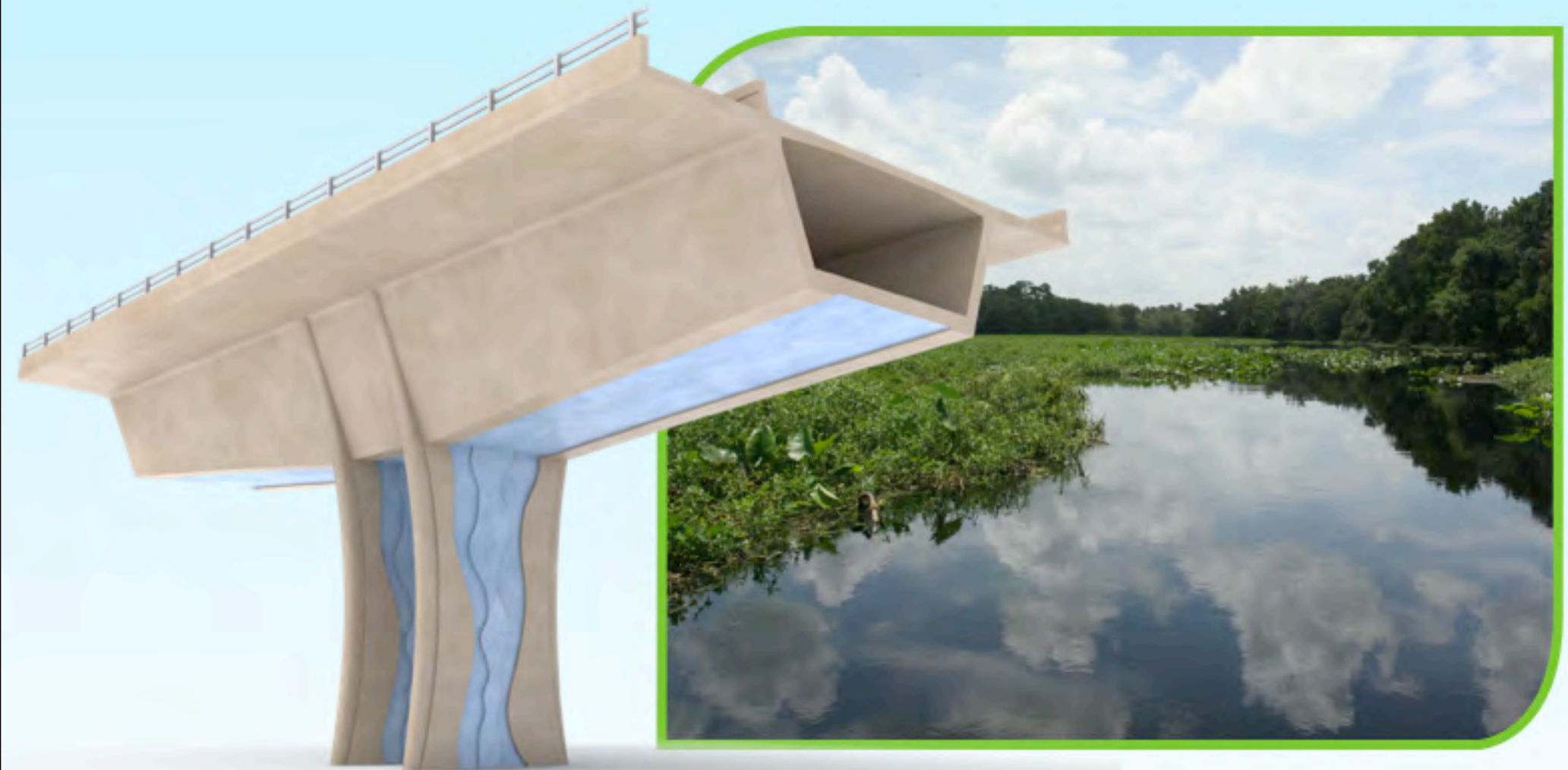
Turtles





Tribute to Water on Wekiva

Example pier concept inspired by the theme





Tribute to Water on Wekiva

Example pier concept inspired by the theme

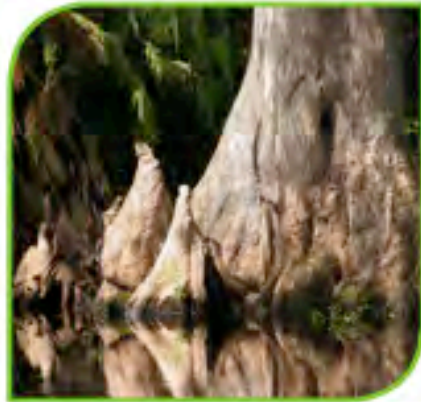




Discussion on Project Theme



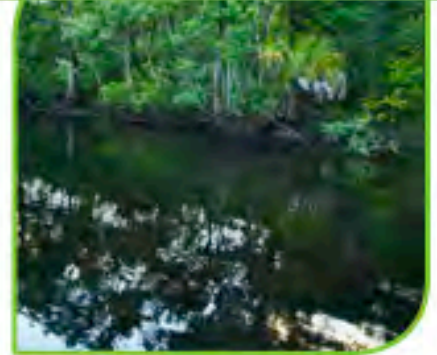
**Blooms Along
the River**



**Celebration of Trees
on the Rivers Edge**



**Tribute to Nature on
Wekiva**



**Tribute to Water on
Wekiva**

Theme Preference

FINAL BRIDGE DESIGN CHARETTE #1

SR 429/SR 46 Wekiva Parkway

Wekiva River Bridges

December 11, 2013



Theme Preference

Using the black pens provided, please fill in completely one red box for each item that represents your preference. If no box is filled then a 5 will be recorded as Neutral.
NOTE: 1 = Lowest Score (Dislike); 5 = Neutral; 10 = Highest Score (Like).

1. Blooms Along the River

1 2 3 4 5 6 7 8 9 10

Dislike Neutral Like

Comments: _____

2. Celebration of Trees on the Rivers Edge

1 2 3 4 5 6 7 8 9 10

Dislike Neutral Like

Comments: _____

3. Tribute to Nature on Wekiva

1 2 3 4 5 6 7 8 9 10

Dislike Neutral Like

Comments: _____

4. Tribute to Water on Wekiva

1 2 3 4 5 6 7 8 9 10

Dislike Neutral Like

Comments: _____



SEGMENT 6
KEEPING WEKVA
BEAUTIFUL

Bridge Style Preferences Shape, Shadows, Textures & Colors

Wekiva River Bridges

In Harmony with the Scenic River

Begins With A Theme

The “Theme” will be the inspiration for creating many bridge features using bridge archetypal design principals. Various options of shapes, shadows, texture, and color will be explored with the theme in mind. These options will be presented at Final Bridge Design Charette #2 for selection of favorite design.

SHAPES & SHADOWS

Examples of bridge pier shapes with rounded/organic styles and angular styles:

Rounded/Organic



Elliptical Pier with Glass Mosaic Tiles
Broadway Bridge,
Florida



Rounded Pier
Selmon Expressway, Florida



Curved/Open pier
US 280 Elevated Roadway,
Alabama



Sculptural Slender Pier
New I-35W Bridge,
Minnesota

Angular



Tapered Pier with Local Stone
Smart Road Bridge,
Virginia



Angular Pier
Victory Bridge,
New Jersey



Angular Slender Pier
17th Street Bridge,
Florida



Angular Pier
Wabasha Freedom Bridge,
Minnesota

Shapes and Shadows

4th Street Bridge, CO



Angular

Broadway Bridge, FL



Rounded

Structures are designed to compliment surrounding features

The appearance of elements can be changed using shadows cast by shapes

Example of Curved/Open pier



Rendering -US 280 Elevated Roadway, Alabama

Example of Curved Pier



New I-35W Bridge, Minnesota

Example of continuity between substructure and superstructure
Curved shape matches parabolic curve of superstructure



Allegheny River Bridge, Pennsylvania

Example of round/organic shaped piers



Selmon Expressway, Tampa, Florida

Example of octagonal shape with curvilinear faces



**Blue Ridge Parkway Viaduct, North Carolina
National Park Service**

Example of octagonal shape with curvilinear faces



**Blue Ridge Parkway Viaduct, North Carolina
National Park Service**

Example of rectangular shape piers



Wabasha Freedom Bridge, Minnesota

Example of rectangular shape piers



Wabasha Freedom Bridge, Minnesota



Example of slender sculptured piers



17th Street Bridge, Florida

Angular Piers



Example of angular piers to compliment landscape



I-70 Hanging Lake Viaduct, Colorado

Tapered and Rectangular Piers

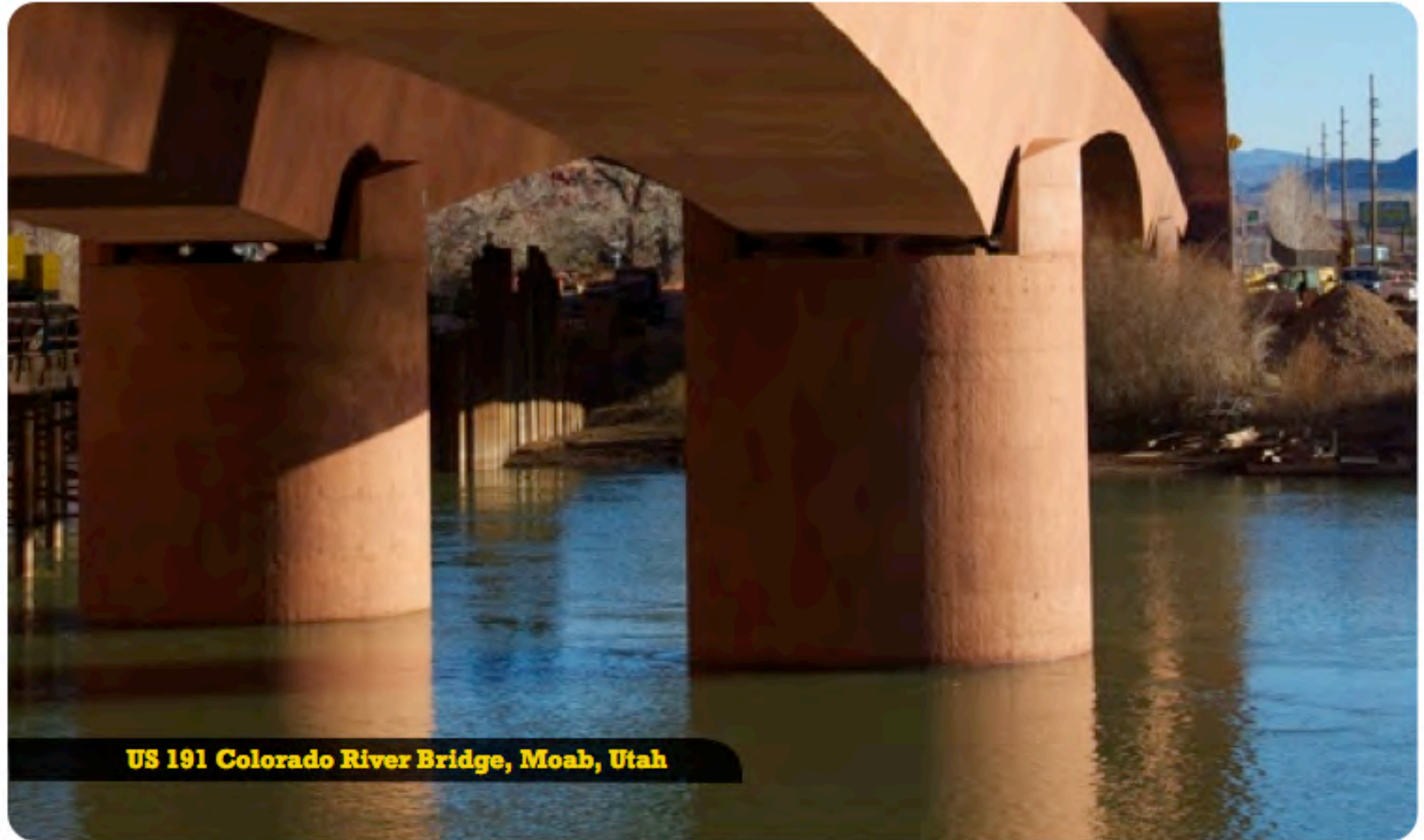


Smart Road Bridge, Virginia



Victory Bridge, New Jersey

Examples of Bridges Incorporating Color and Textures



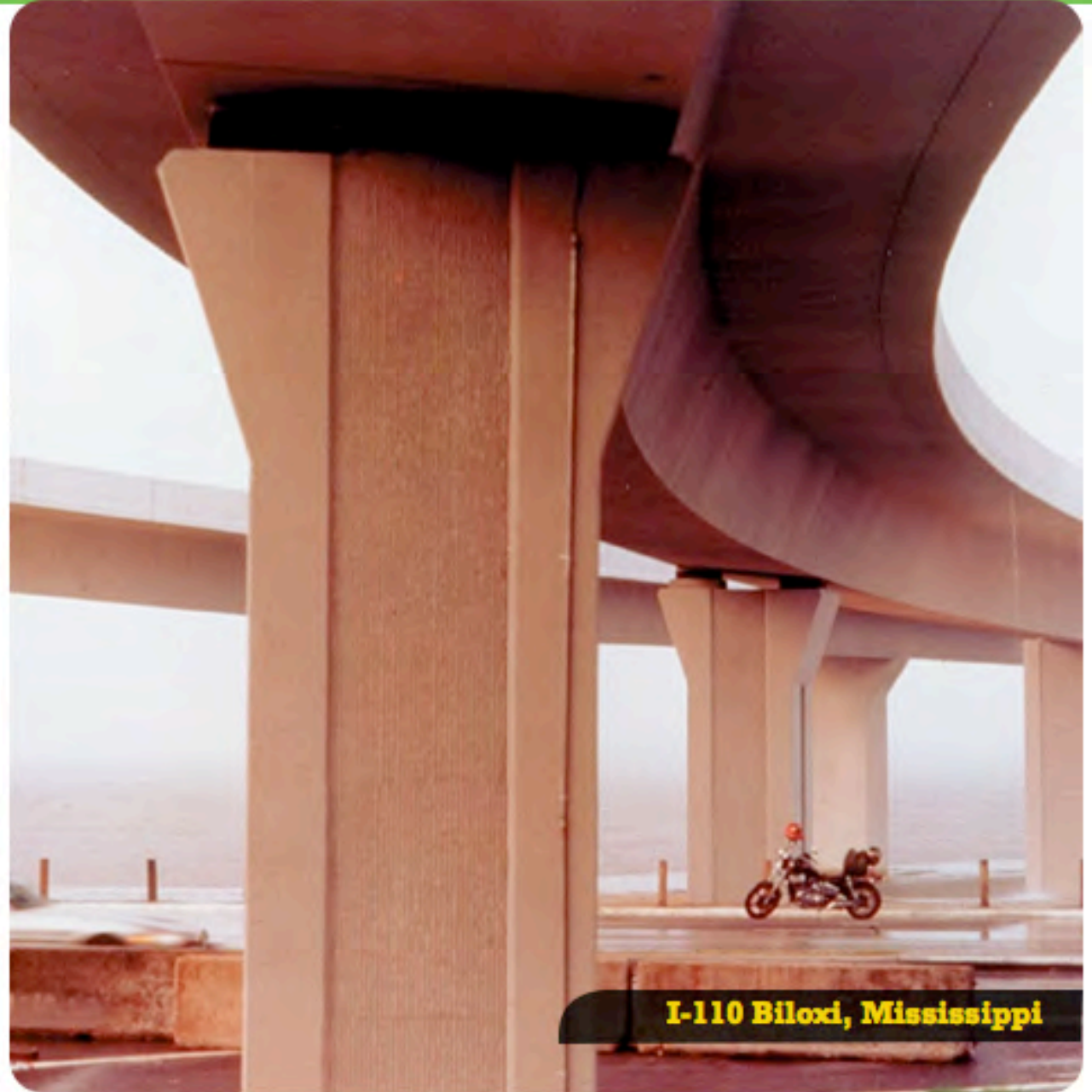
US 191 Colorado River Bridge, Moab, Utah

Earthen Texture Matching Landscape



US 191 Colorado River Bridge, Moab, Utah

Vertical Texture placed in forms are replicated on the face of the piers



I-110 Biloxi, Mississippi

Example of Horizontal Texture



Hanging Lake Viaduct, Colorado

Texture of Trees

Twin wall texture of
organic layers



Dresbach Bridge Rendering
Crossing Mississippi River

Authentic Bridge Color Comes from Local Sourcing of Materials From Nature

COLOR

Proper use of local materials can create a bridge that blends into the natural landscape



sand



water



cement



gravel



AirTrain JFK, New York



Victory Bridge, New Jersey



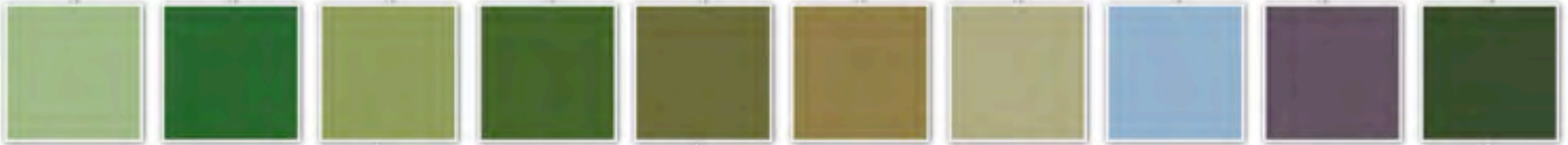
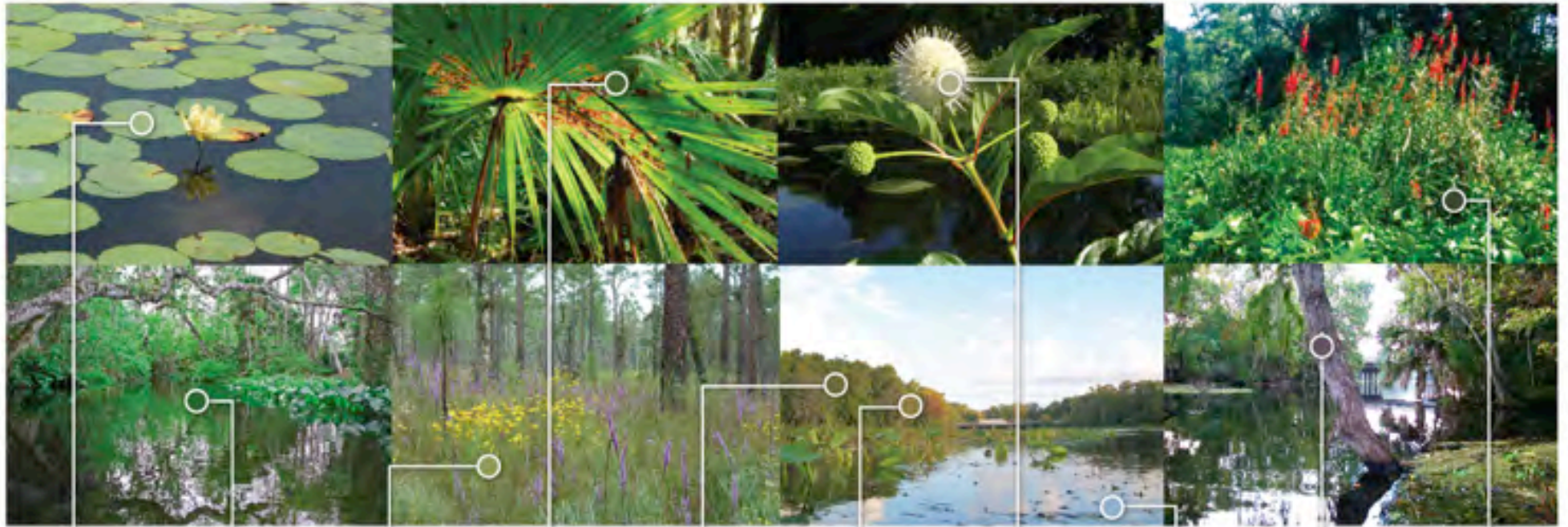
South Norfolk Jordan Bridge, Virginia

Accent in Eco-Stains



US 191 Colorado River Bridge, UT

Select Color Palette: Wekiva River Bridge Location



Natural Color of Materials - Local Sourcing



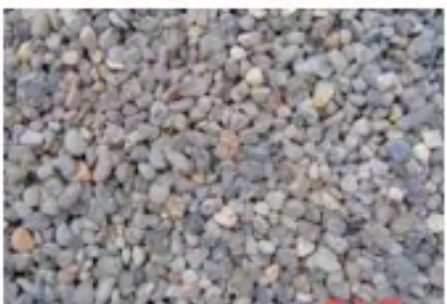
Sand



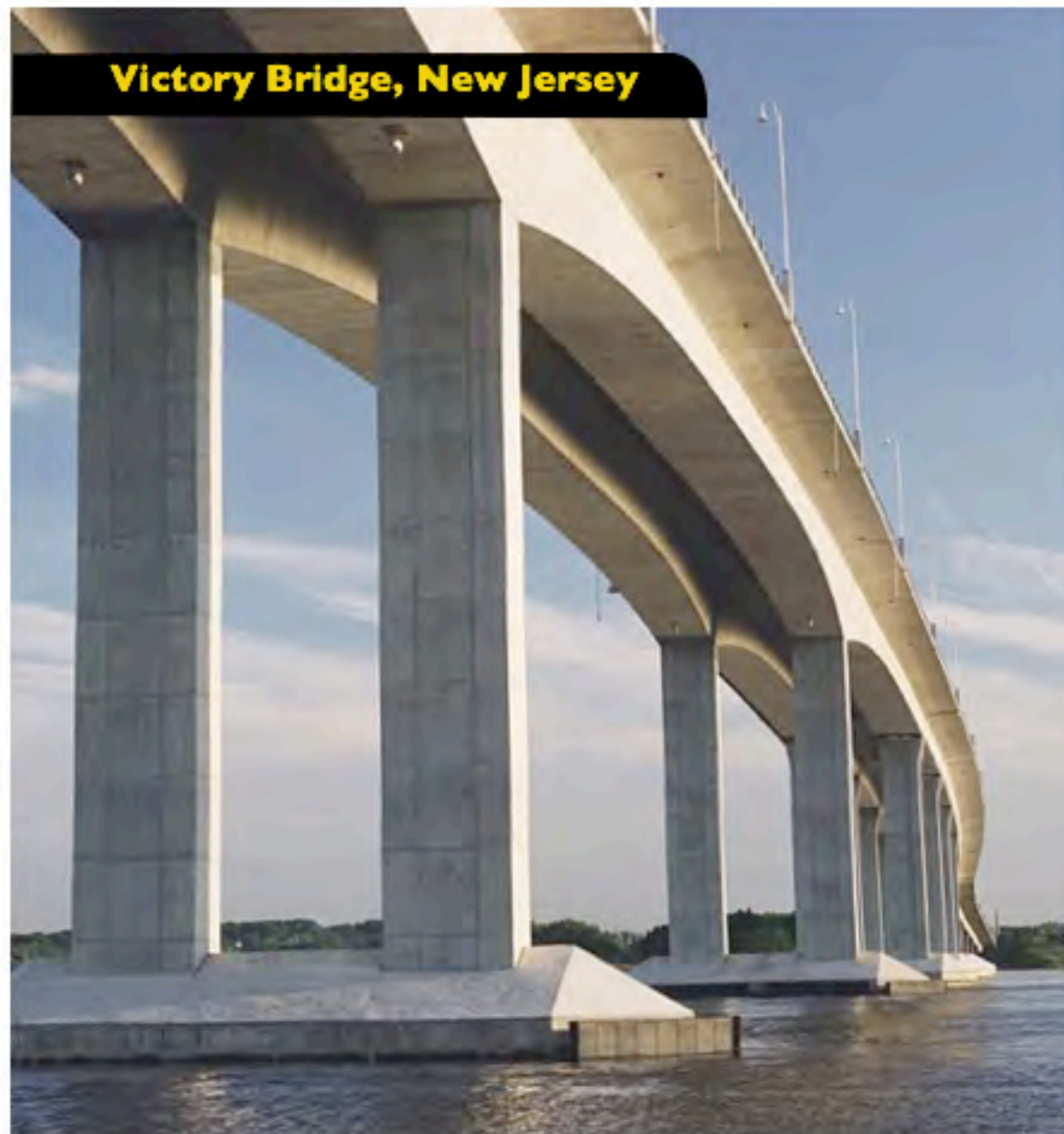
Water



Cement



Gravel

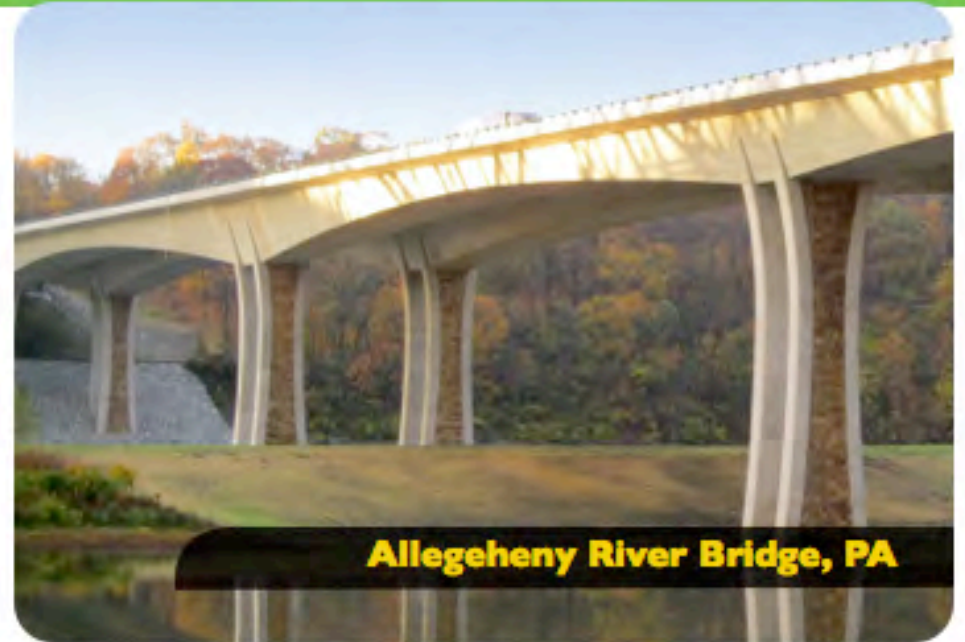


Authentic Concrete Color



Victory Bridge, New Jersey

Accent in Eco-Stains



Blend the Bridge with the Landscape



US 191 Colorado River Bridge, Moab, Utah

Blending Colors for a Bridge that Appears to be “Born of the Earth”

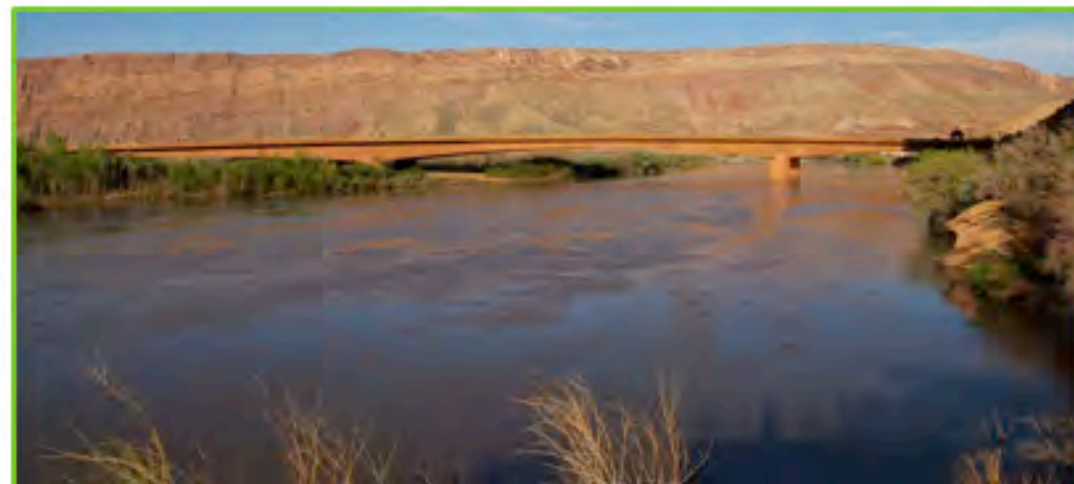


Use Colors from Nature with Eco-Friendly stains

**Bella Vernici Stain
(Rodney Ray in Orlando)**

Variations in color just like nature

Examples of Eco-Friendly Stained bridges



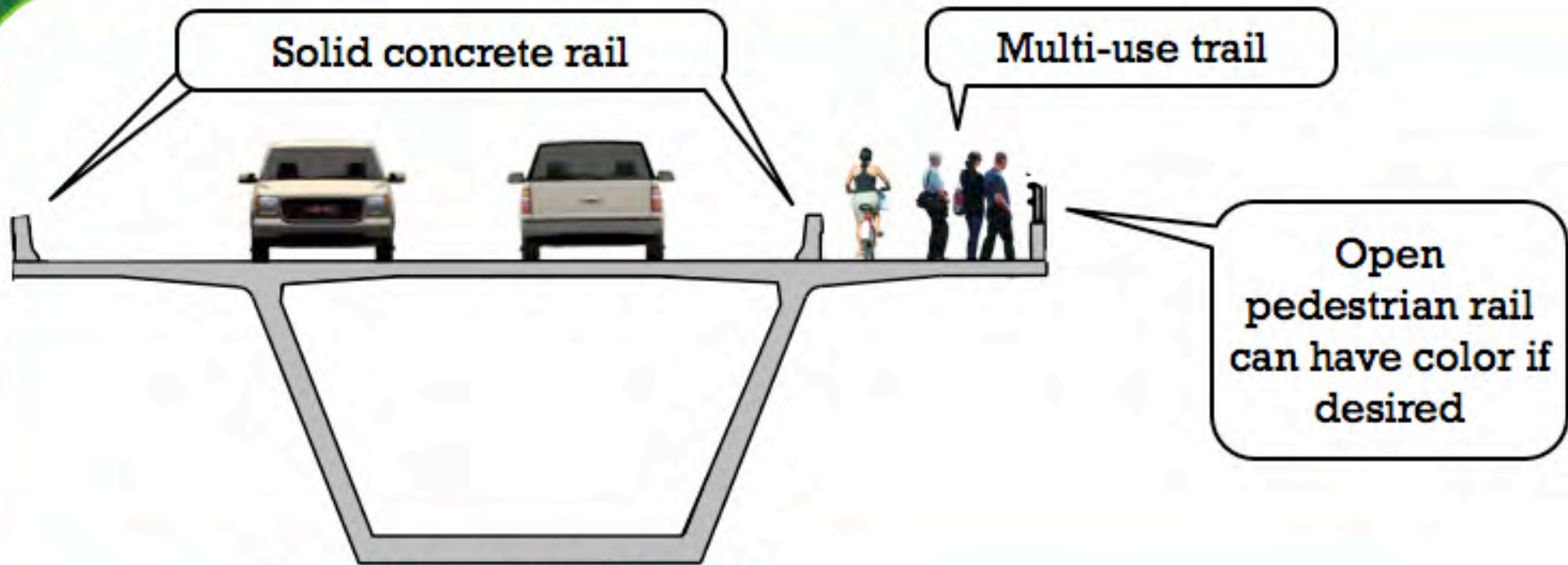
A Pleasant Surprise for Recreational users boating under the Bridge

A Great Thing about Nature is its Wonderful Visual Surprises



**Reflective Blue color emphasizes the
open blue sky background**

Pier shapes with celebration of trees at waters edge



Service Road Bridge (Wekiva)



Example - Broadway Bridge, Daytona, Florida



SEGMENT 6
KEEPING WEKIVA
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Discussion on Bridge Style Preferences

Bridge Style Preferences

FINAL BRIDGE DESIGN CHARETTE #1

SR 429/SR 46 Wekiva Parkway

Wekiva River Bridges

December 11, 2013



Bridge Style Preferences (Shapes, Shadows, Textures and Colors)

Using the black pens provided, please fill in completely one red box for each item that represents your preference. If no box is filled then a 5 will be recorded as Neutral.
NOTE: 1 = Lowest Score (Dislike); 5 = Neutral; 10 = Highest Score (Like).

SHAPES (Please provide a preference for each item)

1a. Rounded / Organic Shapes



Example

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

1 2 3 4 5 6 7 8 9 10

Dislike Neutral Like

Comments: _____

1b. Angular Shapes



Example

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

1 2 3 4 5 6 7 8 9 10

Dislike Neutral Like

Comments: _____

TEXTURE (Please provide a preference for each item)

2a. Abstract Texture



Example

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

1 2 3 4 5 6 7 8 9 10

Dislike Neutral Like

Comments: _____

2b. No Texture



Example

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

1 2 3 4 5 6 7 8 9 10

Dislike Neutral Like

Comments: _____

COLOR (Please provide a preference for each item)

3a. Natural Color of Materials



Example

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

1 2 3 4 5 6 7 8 9 10

Dislike Neutral Like

Comments: _____

3b. Staining



Example

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

1 2 3 4 5 6 7 8 9 10

Dislike Neutral Like

Comments: _____



SEGMENT 6
KEEPING WEKIVA
BEAUTIFUL

Outstandingly Remarkable Values (ORV) Initiatives Discussion and Feedback

Outstandingly Remarkable Values (ORV)

Scenic

Recreation

Wildlife and Habitat

Historic and Cultural

Water Quality and Quantity

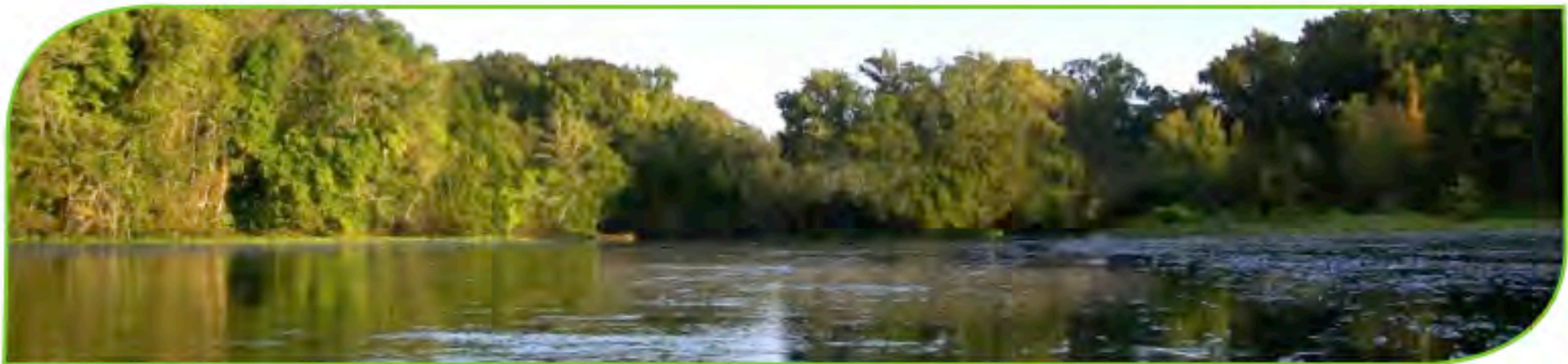
Scenic

Bridge preserves and enhances scenery by repetition of surrounding landscape's fundamental visual elements of form, line, color and texture

Visual contrasts of the bridge against the surrounding landscape is minimized through optimized vertical profile and aesthetic

Sound and light:

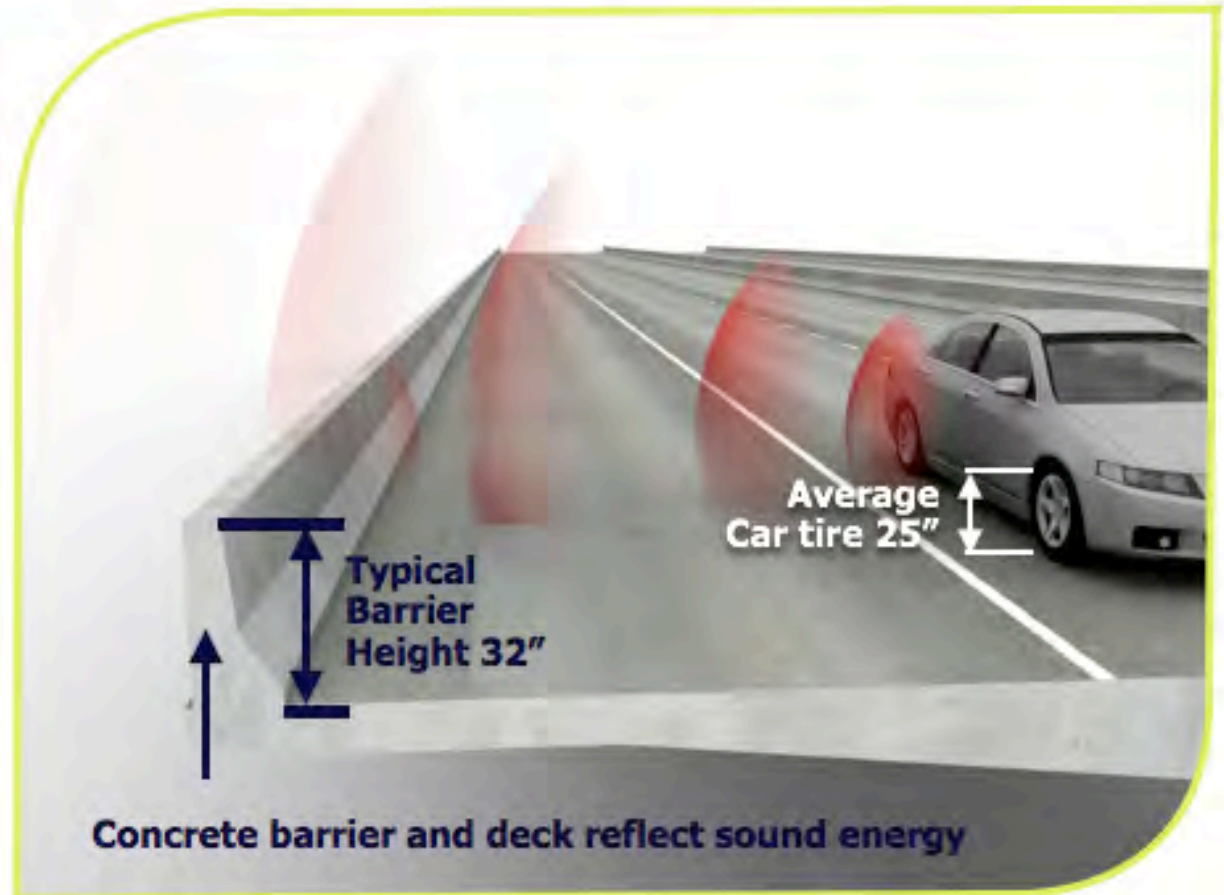
Clear distances between bridges are 9'-11" and 12'-11" to add light



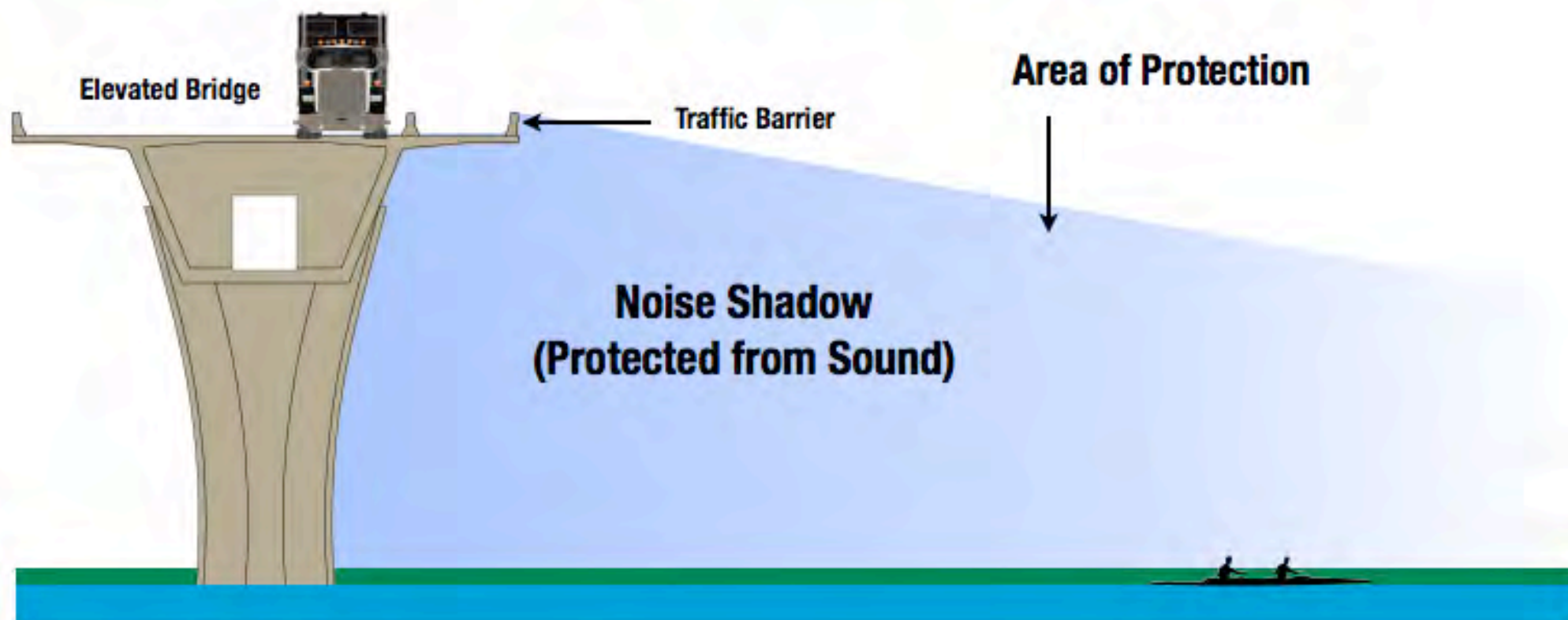
Solid Objects Reduce Noise Energy

When sound waves encounter solid objects like concrete, the waves undergo bending and reflection

Source: "Transportation Engineering and Planning,"
C.S. Papcostas, Ph.D. and P.D.
Prevedouros, Ph.D.



New Scenic Bridge Will Be 40' Higher Than Existing, Producing Greater Area For Noise Shadowing



Noise shadows can be considered as areas **protected** from noise

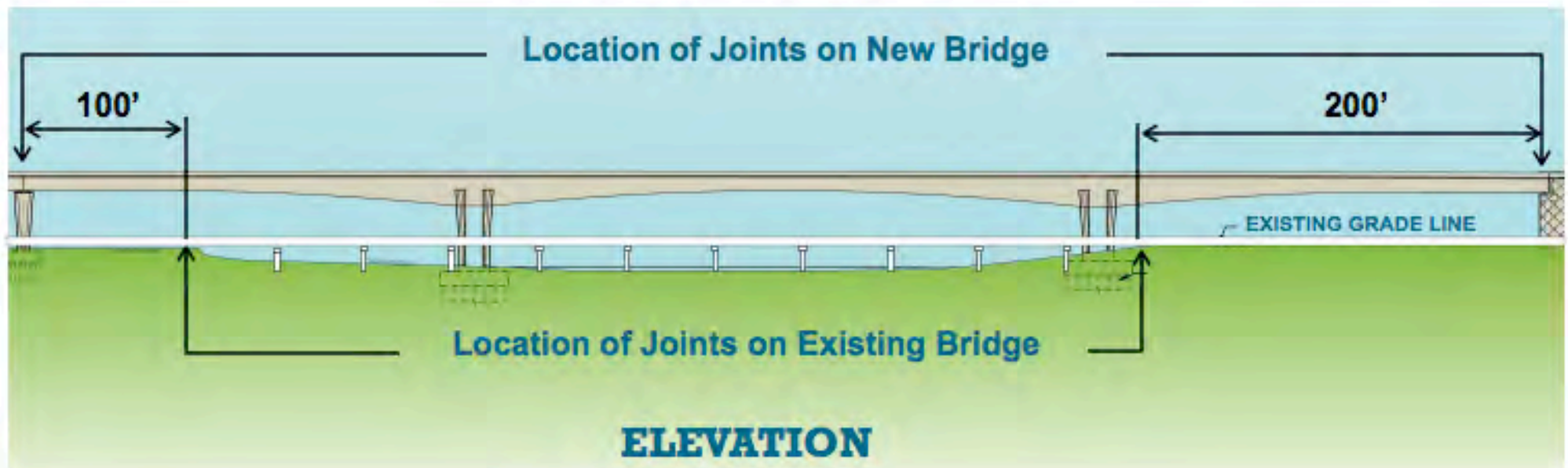
Source: "Transportation Engineering and Planning,"
C.S. Papcostas, Ph.D. and P.D. Prevedouros, Ph.D.

Reducing noise with expansion joints located farther from the river

Tire/pavement interaction noise will be reduced by increasing the distance of the expansion joints on the bridge to the Wekiva River.

New bridge expansion joints are located 100' farther to the West and 200' farther to the East of the river as compared to the existing bridge.

New Bridges will utilize expansion joint systems that reduce noise over the existing bridge.



Recreation

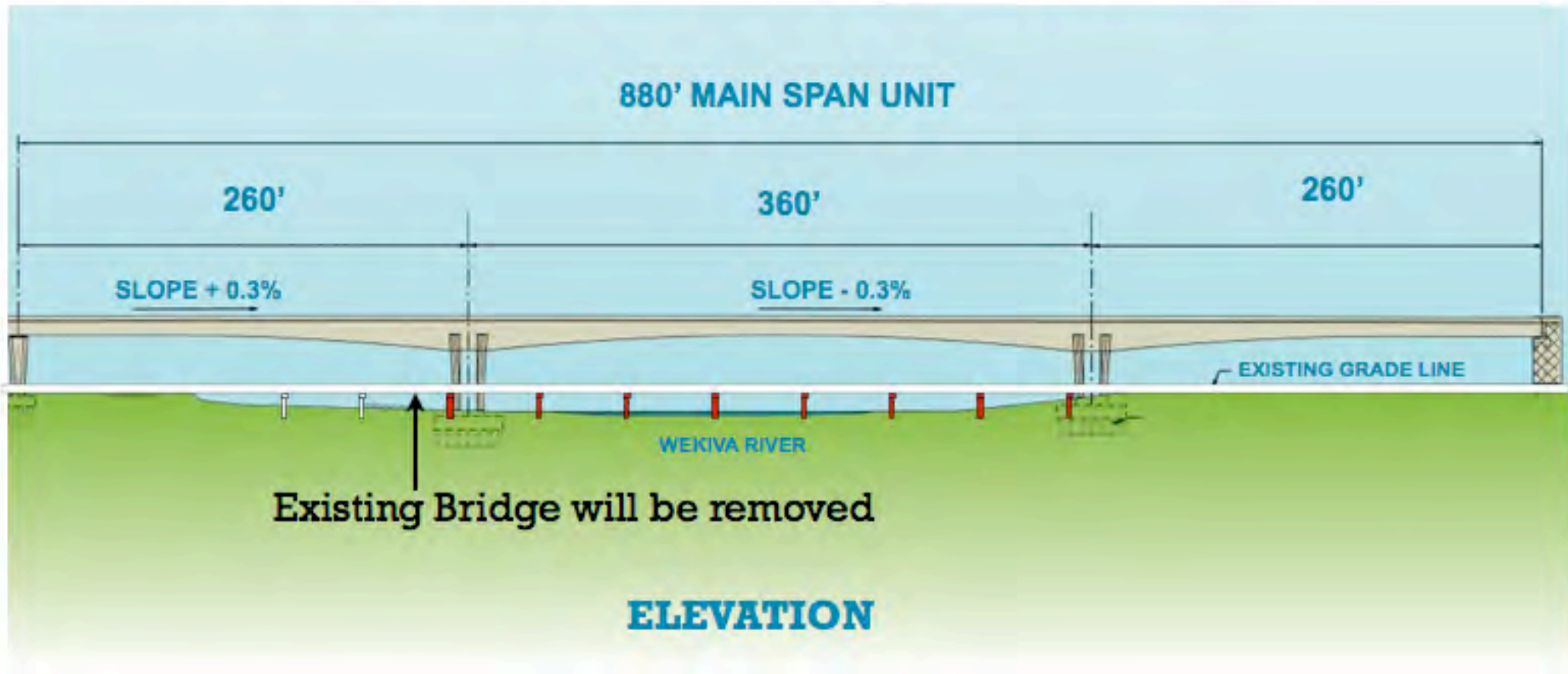
River recreation experience is enhanced by:

Pier locations being completely removed from the river and allowing unobstructed passage

Construction will allow use of the river during construction



Openness of Longer Span over River Enhances Recreational Experience



8 Piers of the existing bridge will be replaced with 1 span and 2 piers for the new bridge

Upland and Wetland Habitats

Impacts minimized by:

Using the existing road corridor

Extending the bridge ends to span the river & floodplain will improve the connection to adjacent habitats that are currently severed by fill.

Strict erosion control measures to minimize impacts to aquatic species

Raising the bridge to reduce shading impacts and reduce noise immediately beneath the bridge

Wildlife and Habitat Connectivity

Existing

Wekiva River Bridge

Built in 1996

561-foot length x 46-foot road width encroaches into floodplain

No wildlife fence

Proposed

Spans Wekiva River

1750-foot length

Replaces existing Wekiva bridge

Spans the floodplain

Full suite of target species



Wildlife and Habitat Connectivity

Causeway Fill Removal Will:

Improve the connection to adjacent wetland and upland habitats that are currently severed by the fill

Reduce the potential for erosion and sedimentation at the bridge thereby reducing impacts to aquatic species habitats

Provide a benefit to wildlife moving upstream and downstream. Wildlife restricted by higher than normal water levels will be capable of moving in both high and low water conditions

Result in less human activity within the wetlands and river systems by restricting access points from the road in combination with wildlife fencing.

Key Target Wildlife Species

State-listed

Florida Black Bear

Gopher Tortoise

Sherman's Fox Squirrel

Blue Nose Shiner

Federally-listed

Eastern Indigo Snake

Common Species

White-tailed Deer

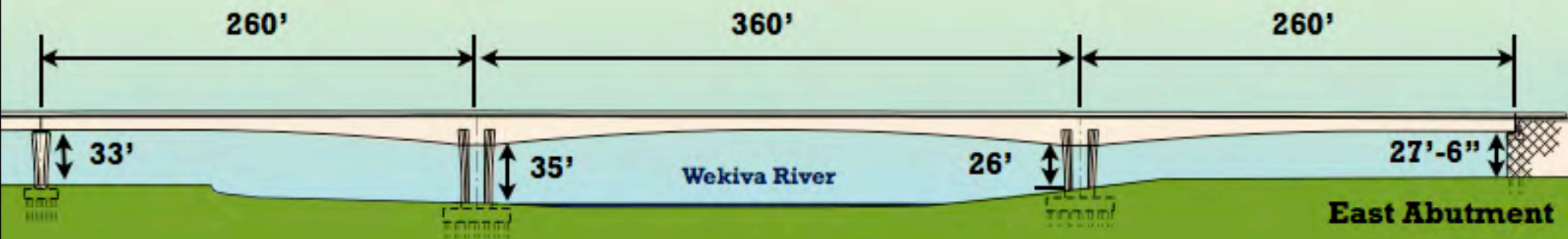
Bobcat

River Otter



Wildlife and Habitat

Optimization of wildlife passage and connectivity through lengthening of back spans to maximize openness



Preliminary Bridge Layout

Historic and Cultural

Potential Impacts will be minimized by:

**Using the existing road corridor
Spanning the river & floodplain**

There are no documented archaeological or historic sites within the bridge footprint.

The proposed improvements are not expected to impact any archaeological or historic sites which are listed, determined eligible, or considered potentially eligible for listing in the NRHP.

Water Quality and Quantity

Water quality is protected through the capture and treatment of stormwater runoff on both sides of the river

No direct discharge of untreated stormwater runoff to the Wekiva River



Water Quality and Quantity

The project will ensure attenuation requirements are met

Attenuation of peak flows to the river

Maintain pre-development discharge

No loss of Wekiva River floodplain volume

**Improved flow through clear-spanning of the river
and removal of the existing bridge piers**



Discussion of Outstandingly Remarkable Value Initiatives



ORV Comment Form

FINAL BRIDGE DESIGN CHARETTE #1

SR 429/SR 46 Wekiva Parkway

Wekiva River Bridges

December 11, 2013



COMMENT FORM – Please Give Us Your Ideas!

How important to you are the Outstandingly Remarkable Values (ORV) for the new bridge? Describe what makes them important?

Scenic

Recreation

Wildlife and Habitat

Historic and Cultural

Water Quality and Quantity

Thank you for your input!

Name (optional): _____ Email: _____

please print

Final Bridge Design Charettes

Bridge Design Charette 1 December 11, 2013

Select a Theme

Discuss overall bridge layout
& configuration

Select direction for:

Shapes

Textures and Colors

Other Features

ORV's



Bridge Design Charette 2 January 28, 2014

Based on previous Design
Charette preferences multiple
design options are developed
for selection

Final Selection of:

Shapes

Textures and Colors

Railings

Other Features

ORV's

Bridge Aesthetics and
ORV incorporation for a

*Beautiful & Environmentally
Sensitive Bridge*

Stakeholders &
Design Team

Final Design
Charettes

Meeting and Charette Schedules

NPS/FDOT Workshop	Jun. 18, 2013
Bridge Design Charette 1	Dec. 11, 2013
Bridge Design Charette 2	Jan. 28, 2014
Public Information Meeting	Spring 2014

Comment Form

FINAL BRIDGE DESIGN CHARETTE #1

SR 429/SR 46 Wekiva Parkway

Wekiva River Bridges

December 11, 2013



COMMENT FORM – Please Give Us Your Ideas!

What did you think about today's activities towards creating your new bridge?

What parts of today's activities were most meaningful to you?

If you could give the bridge designers one piece of advice in consideration of your new bridge, what would that advice be?

Any other ideas or comments? (Feel free to use the back if you need more space)

Thank you for your input!

Name (optional): _____ Email: _____
please print



SEGMENT 6
KEEPING WEKVA
BEAUTIFUL

Thank You

for Participating in Creating
Your Bridge Design!