



8.4.15 #28


OFFICE OF ENGINEERING & TECHNICAL SUPPORT

M E M O R A N D U M

TO: The Honorable Chair and Members of the
Board of County Commissioners

THROUGH:  Mark S. Woodard, County Administrator

FROM: Kevin J. Becotte, P.E., Director of Engineering & Technical Support 

DISTRIBUTION: Paul Sacco, Assistant County Administrator 

SUBJECT: Dunedin Causeway Bridges Project Development and Environment
(PD&E) Update Presentation - Alternatives Analysis
Recommendations

DATE: August 4, 2015

The consultant agreement for the PD&E Study was approved by the Board of County Commissioners (Board) on November 18, 2014 with URS Corporation Southern/AECOM. The study includes the Main Bascule Bridge, connecting Ward Island to Dunedin Causeway, and the fixed Tide Relief Bridge, which connects Dunedin Causeway with Honeymoon Island.

This presentation will provide an update of the PD&E process and allow the PD&E Team to present the alternatives recommended to receive detailed analysis in the study.

On June 8, 2015, staff met to discuss the project from a technical perspective and selected three recommended replacement alternatives for the main bridge and one for the tide relief bridge to be analyzed in detail by the PD&E study. The recommended replacement alternatives for the Main Bridge are as follows:

- a low-level bascule bridge with 21 feet of vertical clearance
- a mid-level bascule bridge with 35 feet of vertical clearance
- and a fixed bridge with 65 feet of vertical clearance

There is only one recommended alternative for the Tide Relief Bridge - a fixed bridge replacement with an alignment partially shifted to the south (away from the condominiums). Phased construction will allow for maintenance of traffic.

It was further recommended that the alternative to rehabilitate the existing structures be eliminated for both bridges primarily because rehabilitation will result in the same functionally obsolete typical section, and will not meet the future transportation needs of the community.

On June 16, 2015, the recommended alternatives were presented to the City of Dunedin Ad Hoc Advisory Committee and they provided concurrence to proceed with the detailed study as proposed by staff.

On July 9, 2015, the recommended alternatives were presented to the City of Dunedin Commission and they also provided concurrence to proceed with the detailed study as proposed by staff.

Upon concurrence by the Board, the consultant will proceed with the detailed analysis of the recommended alternatives. It is anticipated that the results of the analysis will be vetted at an Alternatives Public Meeting to be held in late 2015. It is also anticipated that a Public Hearing will be held in the spring of 2016. The PD&E study is a two year process, which began in December 2014 and is anticipated to be completed in December 2016.



Dunedin Causeway Bridges Project Development and Environment Study

County Project Number: PID 00432A

Preliminary Screening of Alternatives



August 4, 2015
Pinellas County Commission Meeting

Meeting Purpose

- § Update— Project Status
- § Summary of Public Input from Kick-Off Open House
- § Present Results of Preliminary Screening Analysis
 - § Main Bridge
 - § Tide Relief Bridge
- § Recommend Alternatives for Detailed Analysis

Project Limits



Honeymoon Island State Park,
west of Royal Stewart Arms
Parkway east to the
intersection of
Gary Place/ Gary Circle on
Ward Island
Approximately 2.0 miles long

Project Need – Condition of Bridges

§ Both Bridges Built in 1963

§ 51 Years Old

§ Sufficiency Ratings

§ Main Bridge - 48.6

§ Tide Relief Bridge 58.0



Scale 1 – 100

100 = Excellent Condition

Less than 80 – May
Warrant Rehabilitation or
Replacement

Bridge Condition – Functionally Obsolete

- § Narrow Roadway Width
- § No Bike Lanes
- § 2 ft Wide Shoulders
- § Narrow Multi-Use Path – 6 ft Wide (Pinellas Trail Spur)
- § Narrow Sidewalks
- § Substandard Bridge Rails



Narrow Multi-Use Path/Trail

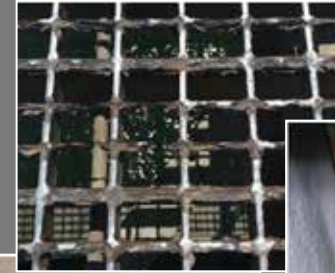
Narrow Shoulders, No Bike Lanes

Narrow Sidewalk



Bridge Condition – Structural Deficiencies

- § Corrosion
 - § Concrete/ Steel Deterioration
- § Risks for Damage
 - § From Storm Waves
 - § Vessel Collision
- § Scour – loss of bottom soils around piles
 - § Affects Bridge Structure Stability
- § Movable Bridge Operation
 - § Aging Machinery and Electrical Equipment



Bridge Condition – Navigation Clearances

§ Existing Main Bridge Clearances

§ Vertical – 20 ft at Fenders

§ Horizontal – 90 ft between Fenders

§ US Coast Guard Minimum Clearance Guidelines

§ Vertical (at Fenders)

§ Movable Bridge – 21 ft

§ Fixed Bridge – 65 ft

§ Horizontal - 100 ft between Fenders



Bridge Condition – Navigation Clearances

§ Existing Tide Relief Bridge Clearances

§ Vertical – 12 ft Minimum

§ Horizontal – 45 ft between piers

§ No US Coast Guard Clearance Guidelines

§ Require New Bridge to Meet or Exceed Existing Clearances



Goal of PD&E Study

§ Develop Preferred Alternative

- § Supported by Consensus of Stakeholders

- § Meets Transportation and Community Needs

- § Minimizes Impacts

 - § Environmental

 - § Social and Economic

- § Conceptual Design

 - § Approved by the Federal Highway Administration (FHWA)

 - § Complies with the National Environmental Policy Act of 1969 (NEPA)

 - § Required for Possible Federal Funding

Overview of NEPA

“The FHWA NEPA project development process is an approach to balanced transportation decision making that takes into account the potential impacts on the human and natural environment and the public’s need for safe and efficient transportation.”

Source: FHWA Website



Alternatives to be Evaluated

§ Main Bridge/ Tide Relief
Bridge Alternatives

§ No Build

§ Rehabilitation

§ Replacement



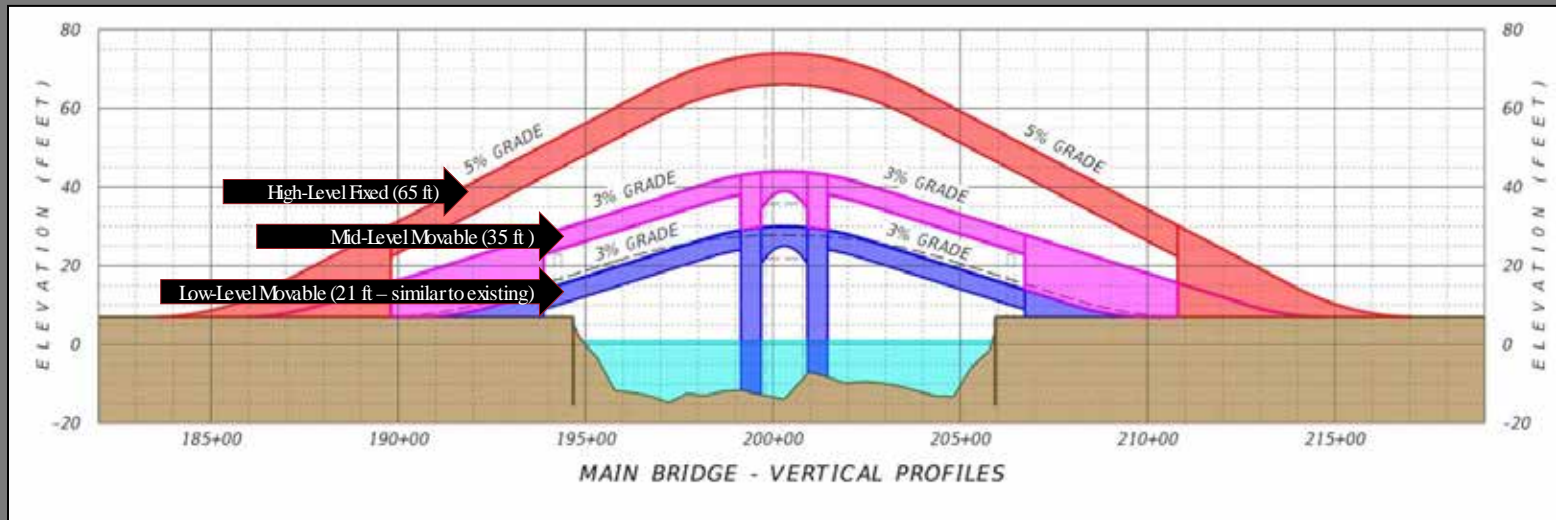
Replacement Alternatives – Main Bridge

§ Vertical Alignment (Bridge Height) Alternatives

§ Low-Level Movable Bridge – 21 ft Vertical Clearance

§ Mid-Level Movable Bridge – 35 ft Vertical Clearance

§ High-Level Fixed Bridge – 65 ft Vertical Clearance



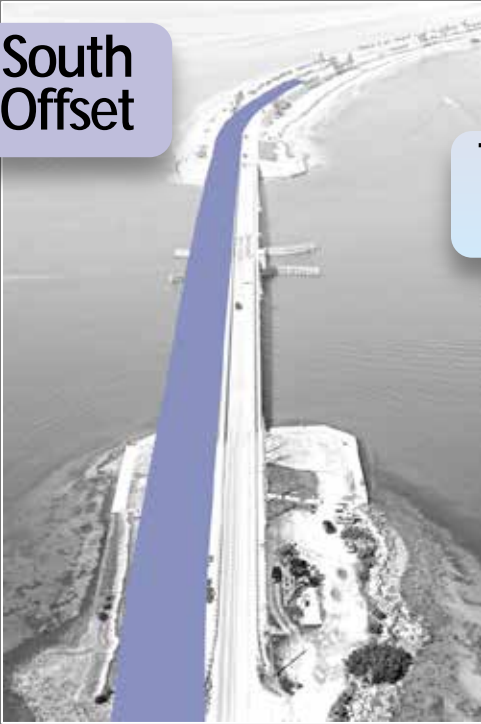
Replacement Alternatives – Main Bridge

§ Horizontal Alignment Options

§ Shifted to the North or South

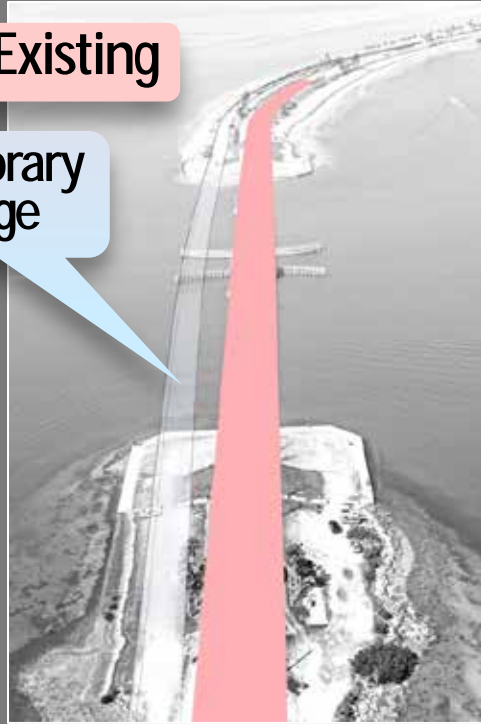
§ On Existing Alignment – with Temporary Bridge

South
Offset



Existing

Temporary
Bridge



North
Offset



Replacement Alternatives - Tide Relief Bridge

§ Vertical Profile— 8 feet Higher than Existing

§ Above Wave Crest — Wave Vulnerability

§ Above Salt Spray— Corrosion Protection



Replacement Alternatives – Tide Relief Bridge

§ Horizontal Alignment Options

§ Partial Shift to the North or South

§ Allows for Phased Construction to Maintain Traffic During Construction



South
Offset



North
Offset

Community Involvement to Date

§ Kick-Off Presentations

§ MPO Advisory Committees

§ MPO Board

§ City Commission

§ County Commission

§ Kick-Off Open House (239 attended)

§ Preliminary Screening Coordination Meetings

§ County and City Staff

§ Ad-Hoc Advisory Committee

§ City of Dunedin Commission



Community Input from Kick-Off Open House

239 Attendees

§ Questionnaire

§ Visual Preference Survey

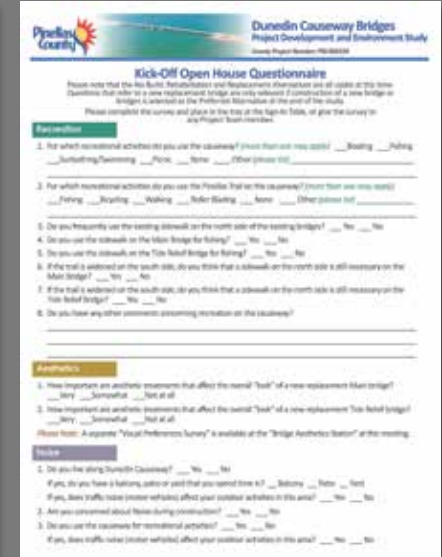
§ Comment Form

§ Via Website

§ Via Email, Mail or Phone



The Visual Preference Survey is a questionnaire designed to gather input from the community regarding the visual appearance of the proposed bridge. It includes a section for 'Locations' where respondents can select their preferred bridge design from a grid of images. The survey also includes a section for 'Comments' where respondents can provide additional input.



The Kick-Off Open House Questionnaire is a form designed to gather input from the community regarding the proposed bridge. It includes a section for 'Comments' where respondents can provide additional input. The survey also includes a section for 'Comments' where respondents can provide additional input.



The Comment Form is a form designed to gather input from the community regarding the proposed bridge. It includes a section for 'Comments' where respondents can provide additional input. The survey also includes a section for 'Comments' where respondents can provide additional input.

Community Input from Kick-Off Open House

Related to Typical Section

§ Questionnaire - Recreation Nos. 3, 6, 7

§ 30% - Use Sidewalk on North Side of Bridge

§ 50% - Desire Sidewalk on North Side of Both Bridges (even with wider multi-use trail)



Community Input from Kick-Off Open House

Related to Bridge Grade

§ Questionnaire - Travel Traffic #5, General #3

§ 68% - Concern about Steeper Grades Similar to Clearwater Memorial Bridge

§ 85% - Keep Lower Movable Bridge

§ Deal with Traffic Delays

§ 16% - Replace with High Level

§ Reduce Traffic Delays

§ Deal with Steeper Grades

Community Input from Kick-Off Open House

Most Important Issues

Questionnaire - General #1

- § Preserve all Recreational Uses and Access
- § No Changes to Causeway
- § Keep Project Small and Similar to Existing Bridge
- § Preserve Character and Charm of Causeway
- § Consider Adjacent Residents
 - § Access, Noise, View
 - § Traffic, Property Values



Community Input from Kick-Off Open House

Related to Alignment

§ Questionnaire - Alignment #2

§ Main Bridge

§ 27 % North, 33 % Existing

§ 16 % South

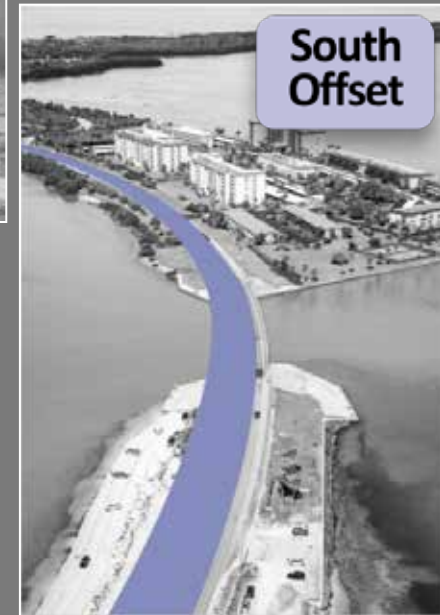
§ 27% No Preference

§ Tide Relief Bridge

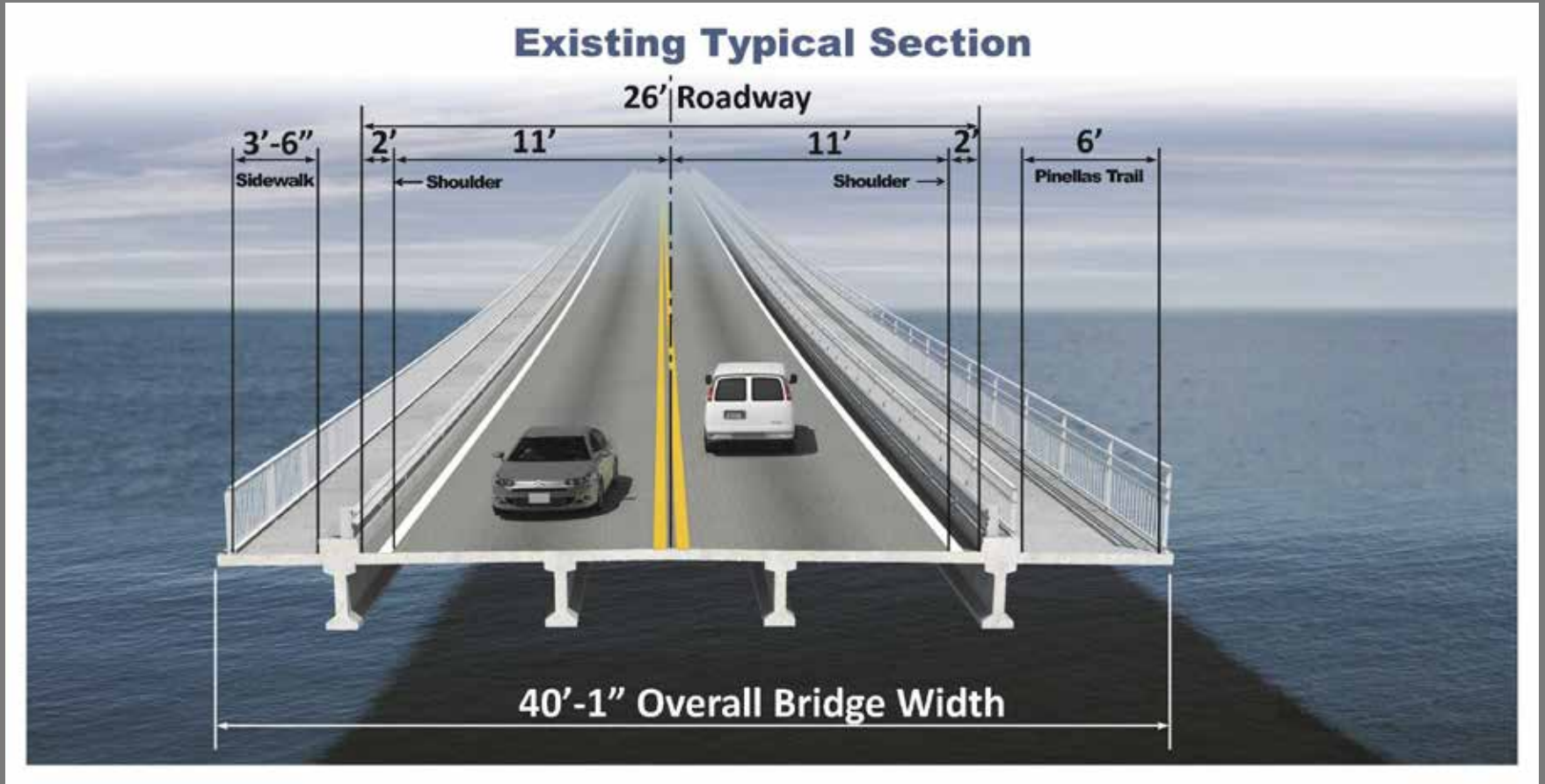
§ 27% South, 34% Existing

§ 9% North

§ 33% No Preference



Existing Bridge Typical Section



Acceptable Bridge Typical Sections



Proposed Bridge Typical Section for Preliminary Screening

Proposed Typical Section – Preliminary Alternatives Evaluation



Rehabilitation Alternatives

No Widening

- § Does Not Meet Purpose and Need
- § Would Not Meet Minimum Engineering Standards
 - § Narrow Sidewalks and Trail would Remain
 - § 2 foot Shoulders would Remain
 - § Not Designed for Current Legal Loads
 - § Not Acceptable to County Engineer or FDOT
 - § Service Life 25-30 Years
 - § Unattractive Structural Repairs (Gutch Bents / Cathodic Protection)



Recommend Elimination for Both Bridges

Rehabilitation Alternatives

With Widening

- § Not Feasible for Main Movable Bridge
 - § Requires Major Reconstruction/ Replacement of Bascule Piers
 - § Requires Replacement of Bascule Leaves
 - § Unknown Foundations – May not be able to Handle Additional Loads
- § Main and Tide Relief Bridges
 - § Service Life 25-30 Years
 - § Unattractive Structural Repairs
 - § Continued Costly Repair/ Maintenance



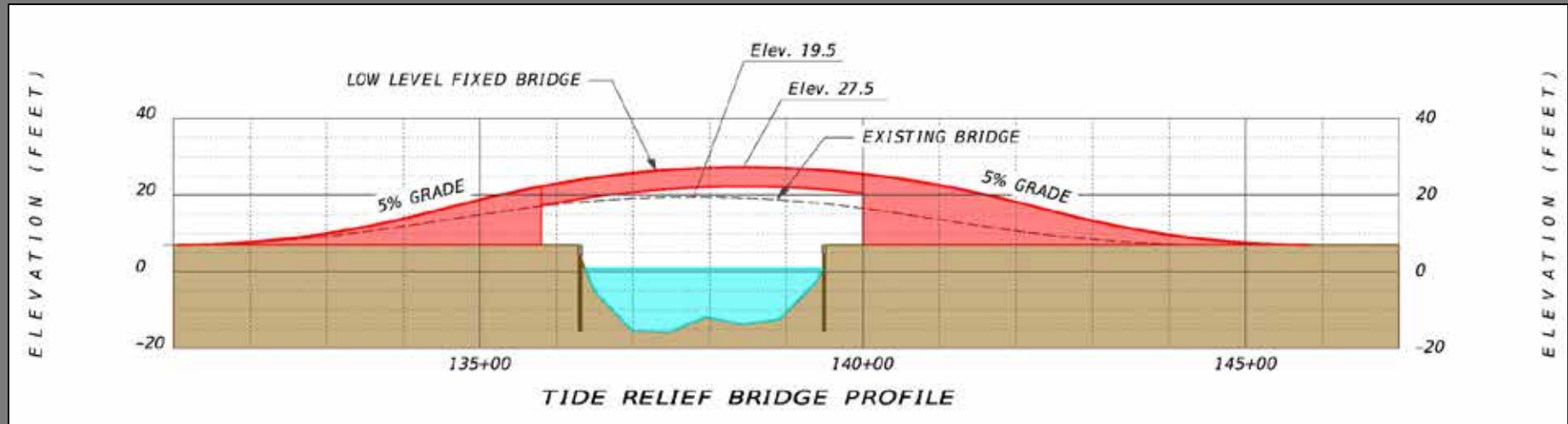
Recommend Elimination for Both Bridges

Screening Factors Considered

- § Impacts to Wetlands (Open Water Fill)
- § Impacts to Seagrass
- § Impacts to Major Utilities
- § Impacts to Recreational Access
- § Duration of Construction
- § Community Input



Tide Relief Bridge – Proposed Profile

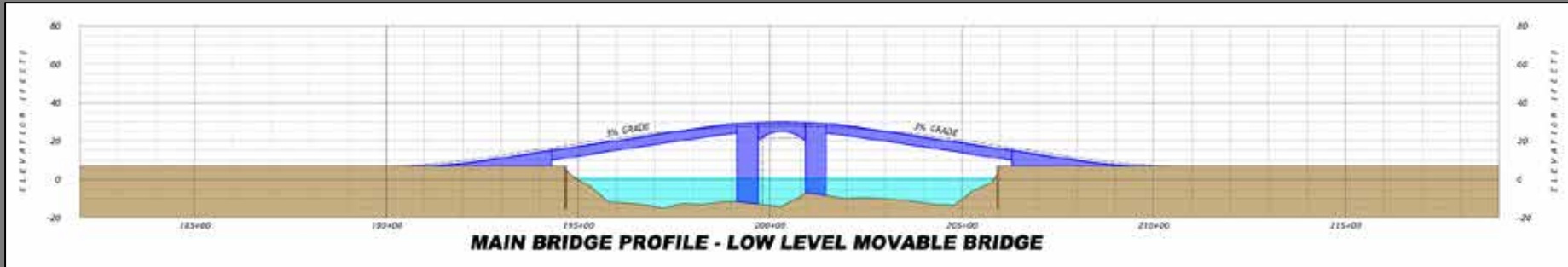


Approximately 8 ft Higher at Center of Bridge
5% Maximum Grade

TIDE RELIEF BRIDGE



Profile Options – Main Bridge



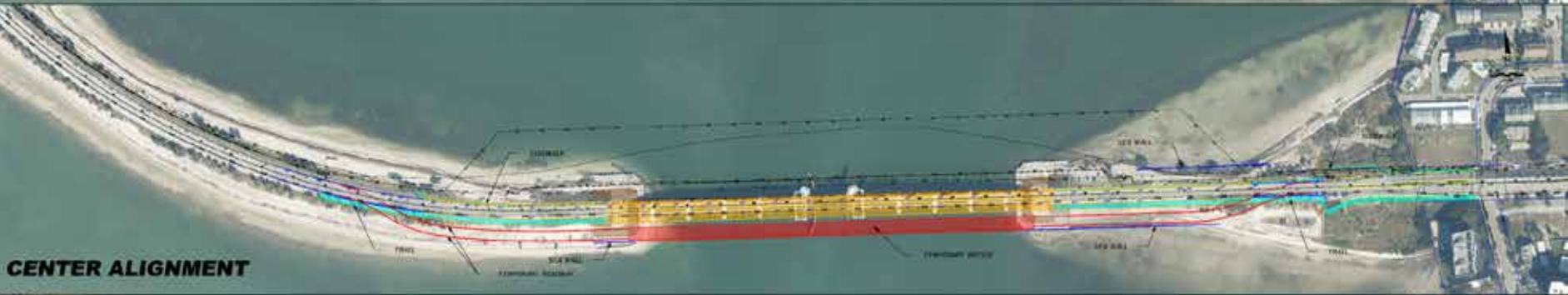
MAIN BRIDGE - LOW LEVEL PROFILE MOVABLE SPAN

NORTH OFFSET ALIGNMENT

CENTER ALIGNMENT

SOUTH OFFSET ALIGNMENT

MAIN BRIDGE - MID LEVEL PROFILE MOVABLE SPAN



MAIN BRIDGE - HIGH LEVEL PROFILE FIXED SPAN

NORTH OFFSET ALIGNMENT

CENTER ALIGNMENT

SOUTH OFFSET ALIGNMENT

Preliminary Screening Matrix

IMPACT EVALUATION CRITERIA	Impacts to Recreation Areas	Wetland Impacts (Fill)	Seagrass Impacts	Utility Impacts	Duration of Construction	Public Input
North Alignment – Main Bridge						
Low Level Movable (21 feet VC)	Medium	High	High	High	Medium (2.5 yrs)	General #3 –Keep Lower Movable Bridge
Mid-Level Movable (35 feet VC)	Medium	High	High	High	Medium (2.5 yrs)	General #3 –Keep Lower Movable Bridge
High-Level Fixed (65 feet VC)	Low	High	High	High	Medium (2.5 yrs)	Travel/Traffic #5 object to steeper grade
South Alignment – Main Bridge						
Low Level Movable (21 feet VC)	High	Medium	Medium	Low	Medium (2.5 yrs)	General #3 –Keep Lower Movable Bridge
Mid-Level Movable (35 feet VC)	High	Medium	Medium	Low	Medium (2.5 yrs)	General #3 –Keep Lower Movable Bridge
High-Level Fixed (65 feet VC)	Medium	Medium	Low	Low	Medium (2.5 yrs)	Travel/Traffic #5 object to steeper grade
Existing Alignment w/Temporary Bridge – Main Bridge General #1 Preserve all recreation areas /no changes to causeway; Keep project small-similar to existing						
Low Level Movable (21 feet VC)	Low	Low	Low	Low	High (4 years)	General #3 –Keep Lower Movable Bridge
Mid-Level Movable (35 feet VC)	Low	Low	Low	Medium	High (4 years)	General #3 –Keep Lower Movable Bridge
High-Level Fixed (65 feet VC)	Low	Low	Low	Medium	High (4 years)	Travel/Traffic #5 object to steeper grade
Temporary Impacts	Low	Low	Low	Low		
Tide Relief Bridge						
North Alignment	Low	Low	Low	High	18 months	High Public Opposition
South Alignment	Low	Low	Low	Low	18 months	
Rehabilitation	Low	Low	Low	Medium	14 months	

Recommended for Detailed Analysis

Tide Relief Bridge

- § South Alignment – 8 feet Higher than Existing

Main Bridge

- § Existing Alignment w/ Temporary Movable Bridge
 - § Low-Level Movable Bridge
 - § 21 feet Vertical Clearance
 - § Mid-Level Movable Bridge
 - § 35 feet Vertical Clearance
 - § High Level Fixed Bridge
 - § 65 feet Vertical Clearance

No Build –Viable Until After Public Hearing

Next Steps

§ Detailed Development and Analysis of Viable Alternatives

§ Alternatives Community Meeting

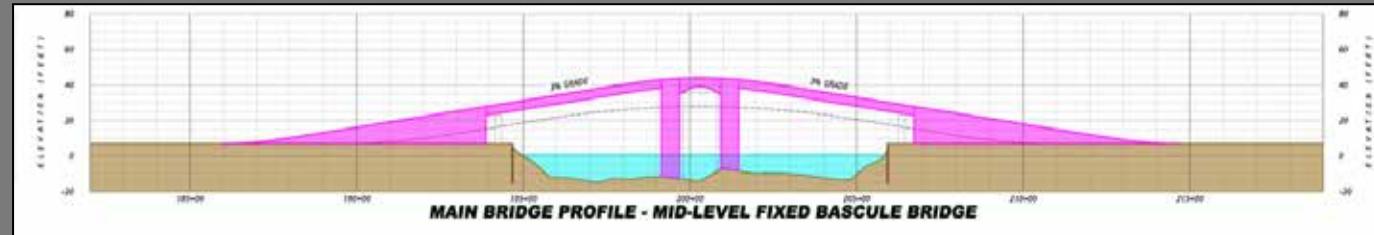
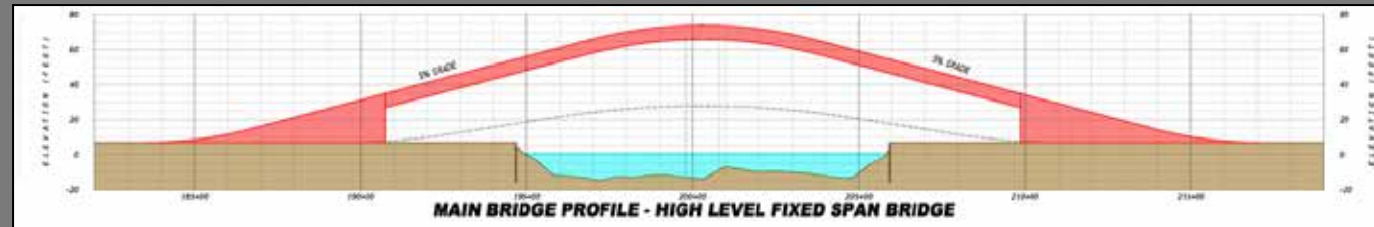
§ Winter 2015

§ Select Recommended Alternative

§ Public Hearing

§ Spring 2016

§ FHWA Approval





Questions