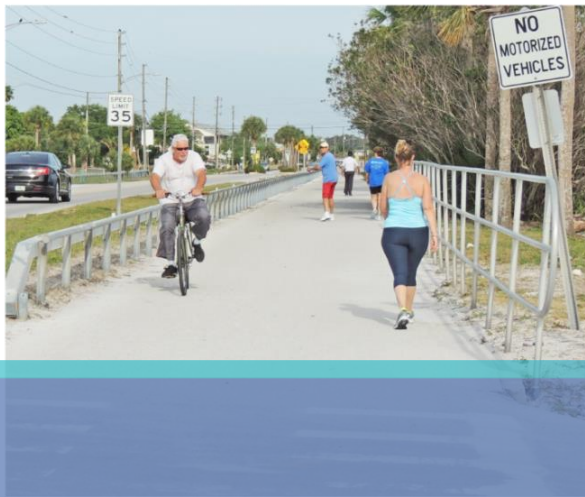




Dunedin Causeway Bridges Project Development and Environment Study

County Project Number: PID 00432A

Public Alternatives Workshop Results Screening



August 4, 2016
Pinellas County Board of County Commissioners
Workshop

Project Limits



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



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



PD&E Process

- Engineering, Social & Environmental Studies
- Community Input
- Develop and Evaluate Alternatives
- **County Selects Recommended Alternative**
- Obtain FHWA Approval



Key Factors Considered – Evaluation of Alternatives

- Community Input
- Impacts to Adjacent Property and Utilities
- Impacts to Navigation
- Impacts to Recreation Areas and Parks
- Impacts to Cultural Resources
- Air and Noise Impacts
- Impacts to Wildlife and Habitat, Wetlands
- Need for Safe Pedestrian and Bicycle Facilities
- Need for Safe and Efficient Transportation
- Visual Impacts and Aesthetics
- Construction Impacts and Costs



Public Alternatives Workshop - March 29, 2016

Purpose

- Present Viable Alternatives & Potential Impacts
- Obtain Community Input

Alternatives Presented

Tide Relief Bridge

- No-Build
- Low-Level Fixed Bridge

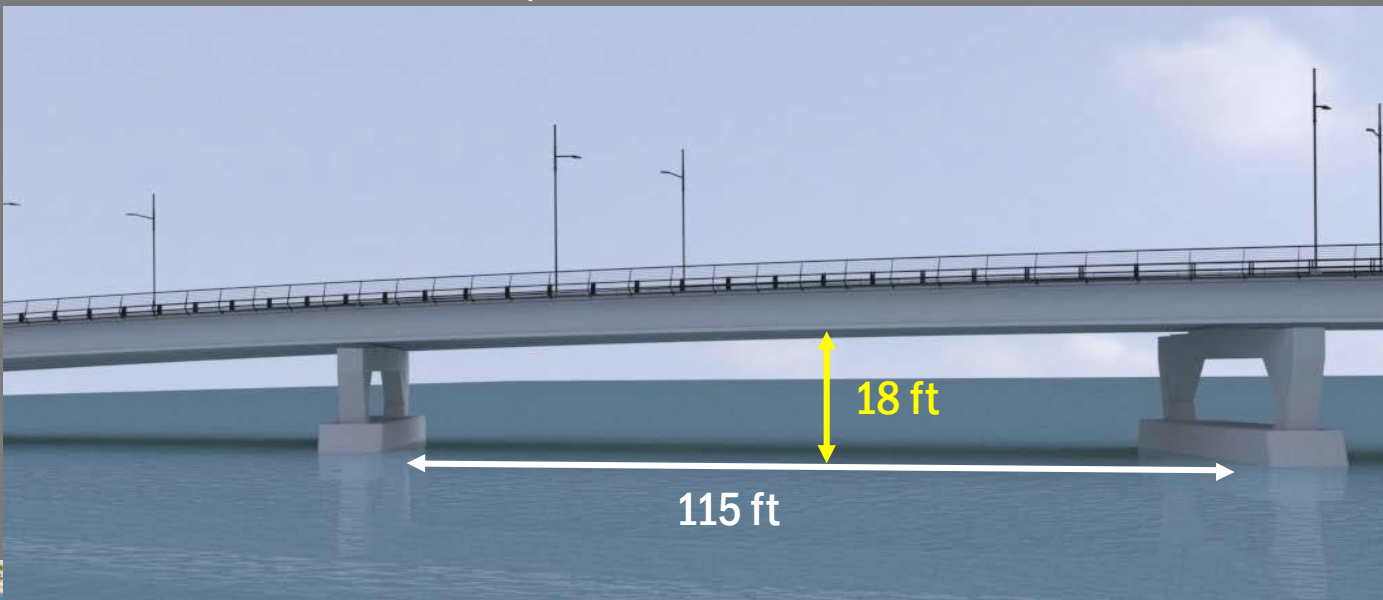
Main Bridge

- No-Build
- Low-Level Movable Bridge
- Mid-Level Movable Bridge
- High-Level Fixed Bridge



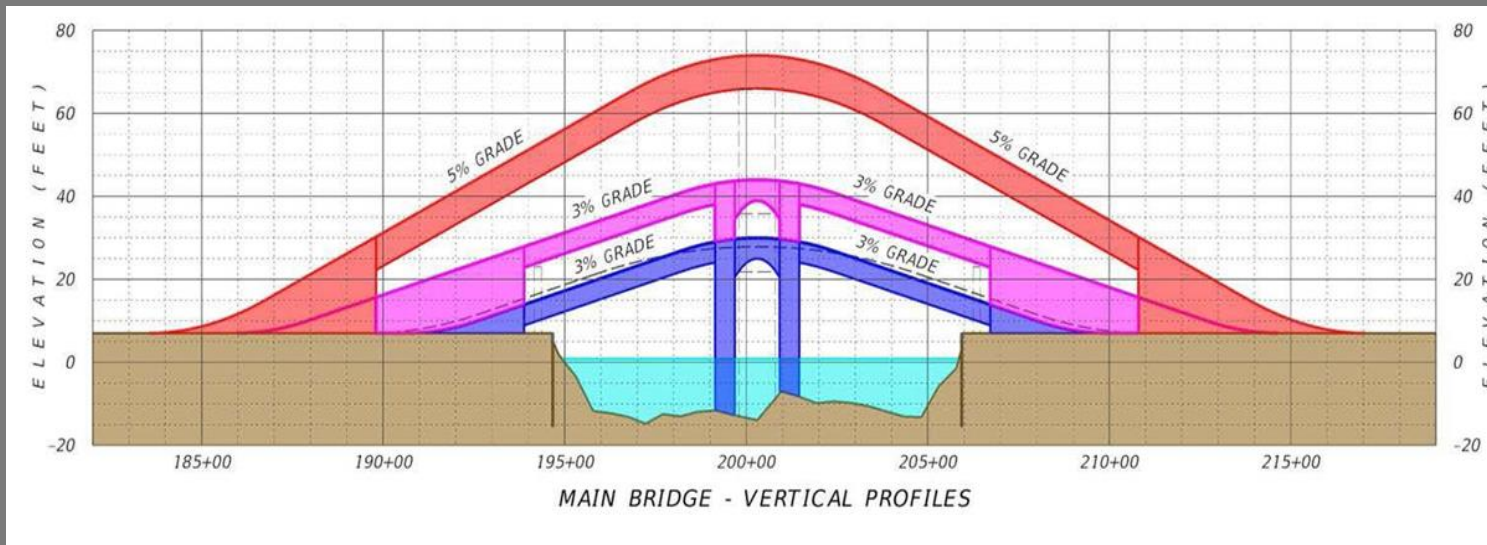
Tide Relief Bridge: Low-Level Fixed Alternative

- South Alignment
- 14.5 feet Minimum Navigational Clearance, 18 feet at Center Span
- 115 feet Clearance for Boats between Piers
- Maximum Grade 4.75% for a Short Distance
- Approximately 9 feet Higher at Highest Point
- Reduced Potential for Damage from Storm Force Waves and Corrosion
- Estimated Cost: \$9.3 million



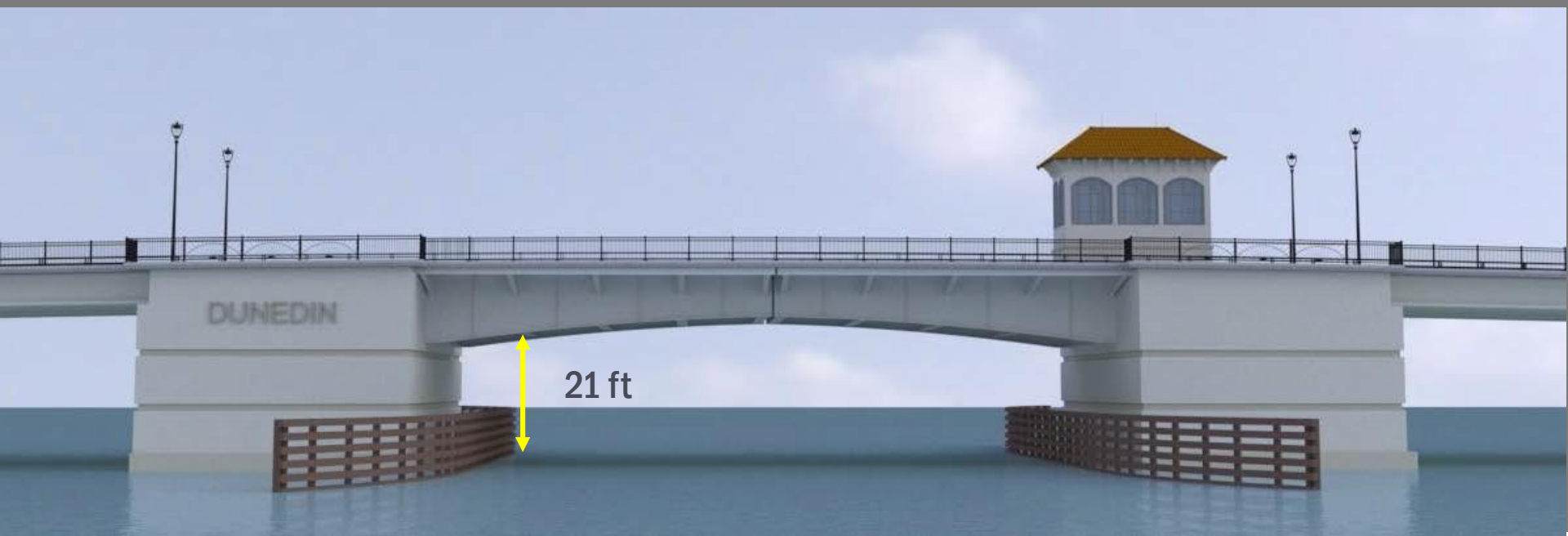
Main Bridge Alternatives

- On Existing Alignment with Temporary Bridge
- Low-Level Movable Bridge - 21 ft Vertical Clearance
- Mid-Level Movable Bridge - 35 ft Vertical Clearance
- High-Level Fixed Bridge - 65 ft Vertical Clearance



Main Bridge: Low-Level Movable Alternative

- Vertical Clearance - 21 ft
- Maximum Grade - 3% [same as existing bridge]
- Minimal Visual Impacts
- Cost Estimate - \$67.7 Million



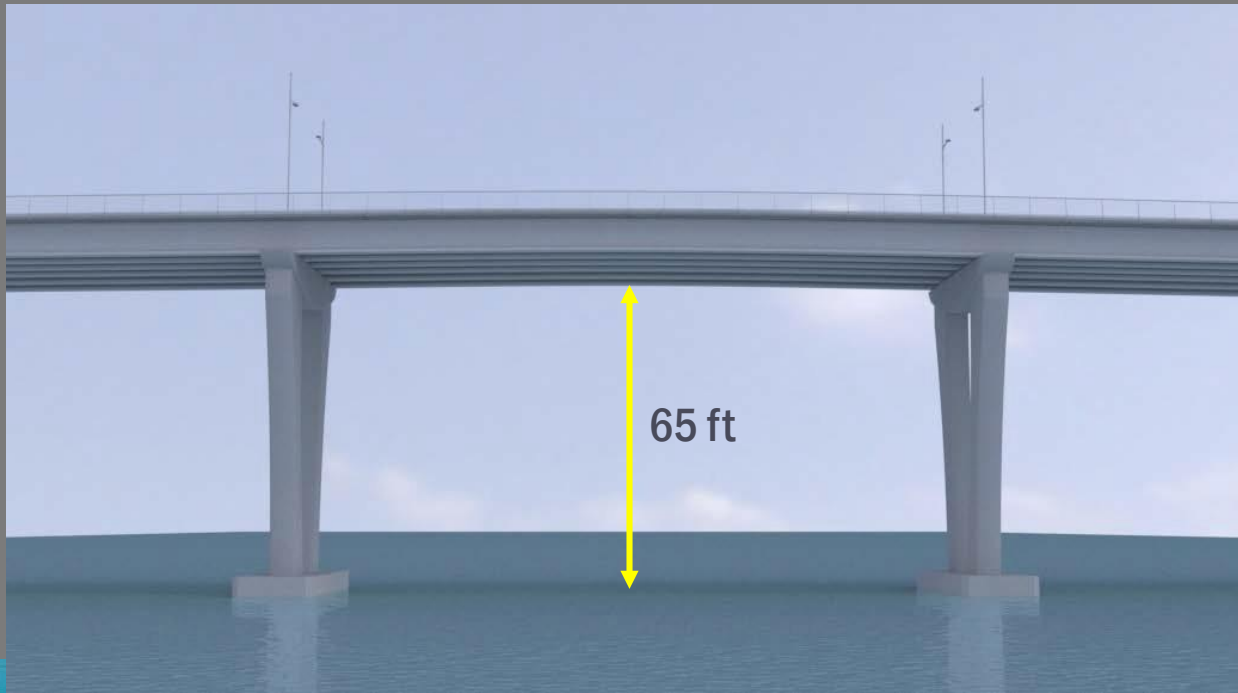
Main Bridge: Mid-Level Movable Alternative

- Vertical Clearance - 35 ft [50% reduction in bridge openings]
- Maximum Grade - 3% [same as existing bridge]
- Reduced Potential Damage from Storm Waves and Corrosion
- Estimated Cost - \$71.9 Million



Main Bridge: High-Level Fixed Alternative

- Vertical Clearance - 65 ft [bridge openings eliminated]
- Maximum Grade - 4.75%
- Reduced Potential Damage from Storm Waves and Corrosion
- Estimated Cost - \$50.7 Million



Public Participation

364 Attendees at Public Alternatives Workshop

Website

- 304 Respondents
 - 297 Questionnaires
 - 72 Comments

Other*

- 3 Questionnaires
- 88 Comments

*Other input received at the workshop, by mail or email

NOTE: As of 5/19/2016



Public Input Results – Main Bridge

Rank Alternative	1	2	3	4	Total Responses	Score
Low-Level Movable Bridge	33.86%	27.53%	35.13%	3.48%		
	107	87	111	11	316	2.92
Mid-Level Movable Bridge	31.70%	43.79%	22.22%	2.29%		
	97	134	68	7	306	3.05
High-Level Fixed Bridge	35.65%	9.46%	14.51%	40.38%		
	113	30	46	128	317	2.40
No-Build	20.48%	10.92%	17.41%	51.20%		
	60	32	51	150	293	2.01

- Approximately 75% of respondents ranked the Mid-Level Movable Bridge as #1 or #2
- Approximately 61% ranked the Low-Level Movable Bridge as #1 or #2

Public Input Results – Main Bridge

Rank Alternative	1	2	3	4	Total Responses
Movable Bridge (Low/Mid)	32.80%	35.53%	28.78%	2.89%	
	204	221	179	18	622
Fixed Bridge (High)	35.65%	9.46%	14.51%	40.38%	
	113	30	46	128	317
No-Build	20.48%	10.92%	17.41%	51.20%	
	60	32	51	150	293

Public Input Results – Main Bridge

- Limited support for No-Build Alternative (>50% ranked it last)
- Majority of No. 1 and 2 rankings are in support of the Low- and Mid-Level Movable Bridge Alternatives
- High-Level Fixed Bridge Alternative received the most polarized results (Highest No. 1 rankings/Highest No. 4 rankings out of all Build Alternatives)
- Mid-Level Movable Bridge received highest “Score” based on weighted ranking results (3.05)

Public Input Results – Tide Relief Bridge

Alternative \ Rank	1	2	Total Responses	Score
Low-Level Fixed Bridge	74.65%	25.35%		
	212	72	284	1.75
No-Build	29.89%	70.11%		
	84	197	281	1.30

Bridge Aesthetics Options

- Two Themes
 - Florida Vernacular
 - Modern



Public Input Results – Bridge Aesthetics

Alternative	Florida Vernacular	Modern	Total
Percent	82.15%	17.85%	
Responses	244	53	297

Public Input Results – Vehicle Turnarounds*

Vehicle Turnarounds	In Favor of	Opposed to	Total
Percent	67.35%	32.65%	
Responses	196	95	291

*Vehicular turnarounds are being proposed under the east end of the Tide Relief Bridge and under both ends of the Mid-Level Movable and High-Level Fixed Bridge alternatives for the Main Bridge.

Main Bridge - Notable Public Comments

Recreation

- High-Level Fixed Bridge would be difficult for pedestrians, bicyclists and joggers, especially senior citizens
- Allow fishing from bridges and provide adequate lighting

Safety

- Movable bridges impede safe transport of Fire Rescue and ambulances
- Turnarounds need barriers to avoid cars driving into the water

Traffic

- Consider some sort of traffic calming devices
- Important not to cut off access to small businesses on opposite side of Gary Circle



Main Bridge – Notable Public Comments

Bridges

- High-Level Fixed Bridge would eliminate need for bridge operator
- Do not want a bridge like Clearwater

Environmental

- Keep as natural as possible to protect wildlife
- Temporary Bridge and new access road would encroach on Rotary Park

Aesthetics/Quality of Life

- Keep old Florida charm and aesthetic appearance for Dunedin
- High-Level Fixed Bridge would take away the local beach feeling/obstruct views

Main Bridge – Notable Public Comments

Other

- Would like better breakdown of expenses
- Make sure time considerations are a key point for RFQs and selection of contractors
- Consider tolling the bridge
- Need communication between bridge operator and EMS staff in emergencies

Tide Relief Bridge – Notable Public Comments

- Keep the height of the west end of the bridge (near condos) as low as possible
- Don't hinder fishing



Alternatives Evaluation Matrix

IMPACT EVALUATION CRITERIA		MAIN BRIDGE				TIDE RELIEF BRIDGE	
		NO BUILD	LOW-LEVEL MOVABLE BRIDGE	MID-LEVEL MOVABLE BRIDGE	HIGH-LEVEL FIXED BRIDGE	NO BUILD	LOW-LEVEL FIXED BRIDGE
ROADWAY/BRIDGE ISSUES							
Overall Bridge Width		40'1"	62'7"	62'7"	62'7"	40'1"	62'7"
Width of Vehicular Travel Lanes		11'	11'	11'	11'	11'	11'
Shoulders (both sides)		2'	8'	8'	8'	2'	8'
Sidewalks		3' 6" (north side)	5' (north side)	5' (north side)	5' (north side)	3' 6" (north side)	5' (north side)
Pinellas Trail Spur		6' (south side)	15' (south side)	15' (south side)	15' (south side)	6' (south side)	15' (south side)
Vertical/Horizontal Clearance		20*/90'	21'/100'	35'/100'	65'/100'	12.5'/45'	14.5'/144'
Meets Current Design/Safety Standards?		No	Yes	Yes	Yes	No	Yes
Structural Deficiencies Corrected?		No	Yes	Yes	Yes	No	Yes
Bridge Openings		No Change	No Change	50% Reduction	N/A	N/A	N/A
SOCIAL & ENVIRONMENTAL IMPACTS							
Private Property/Land Acquisition		None	None	None	None	None	None
Relocations		None	None	None	None	None	None
Visual Impacts		None	Minimal	Moderate	High	None	Minimal
Parks/Recreation	Temporary	None	0.93 acres	0.93 acres	1.48 acres	None	None
	Permanent	None	None	Gain 0.31 acres	Gain 0.94 acres	None	Lose 0.36 acres
Historic & Archaeological Resources		None	None	None	None	None	None
Wetlands (Temporary/Permanent)		None	0.21/0.11 (acres)	0.21/0.11 (acres)	0.24/0.27 (acres)	None	None
Seagrasses (Temporary/Permanent)		None	0.04 acres/None	0.04 acres/None	0.04 acres/None	None	None
Wildlife		None	Minimal	Minimal	Minimal	None	Minimal
Major Utilities		None	None	None	None	None	None
Potential Noise Impacts (Residential/Recreation)		None	None/Minimal	None/Minimal	None/Minimal	None	None/Minimal
COSTS							
Total Project Costs** (millions)		N/A	\$74.9	\$76.0	\$48.9	N/A	\$9.25
CONSTRUCTION IMPACTS							
Temporary Bridge Required		N/A	Yes	Yes	Yes	N/A	No***
Total Construction Time		N/A	4 years****	4 years****	4 years****	N/A	18 months
Anticipated Service Life		15 years	75 years	75 years	75 years	15 years	75 years

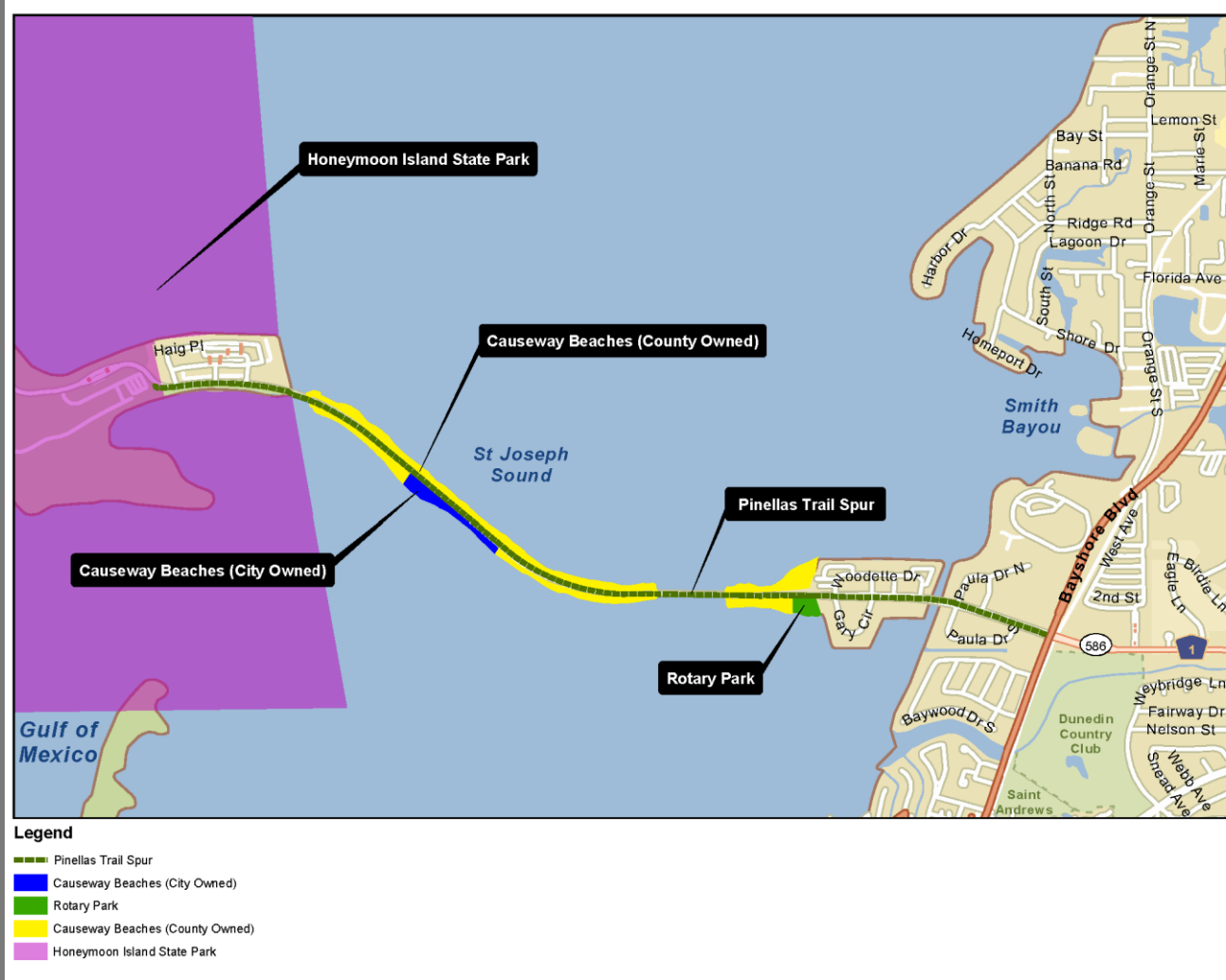
* Does not meet United States Coast Guard vertical clearance requirements (21 feet)

** Costs include demolition, roadway and bridge construction, mobilization, maintenance of traffic, aesthetic enhancements, engineering design, construction engineering inspection (CEI) and contingency.

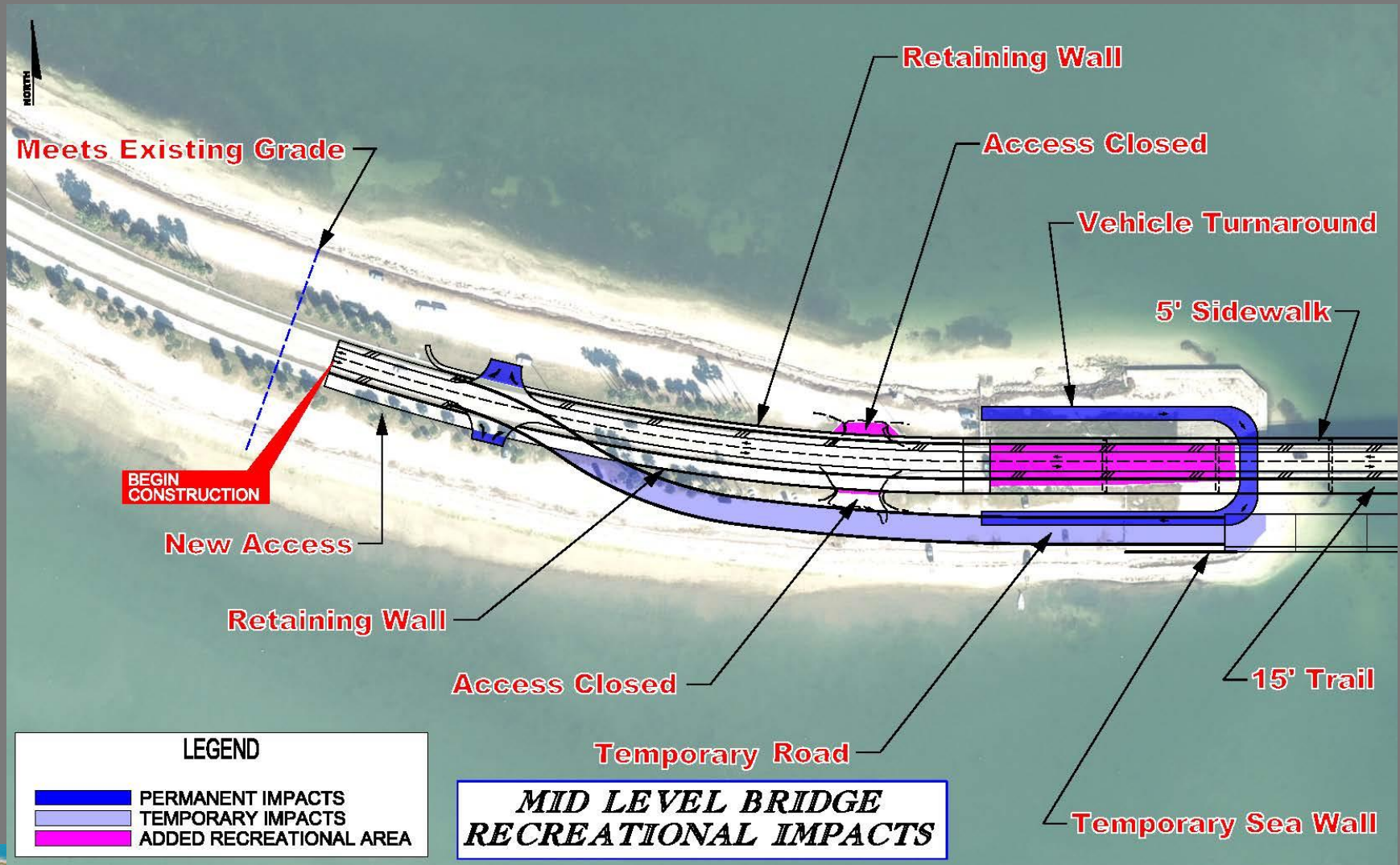
*** Phased construction (traffic will be maintained)

**** Disruption to traffic and recreational areas is anticipated to only occur for 2.5 years

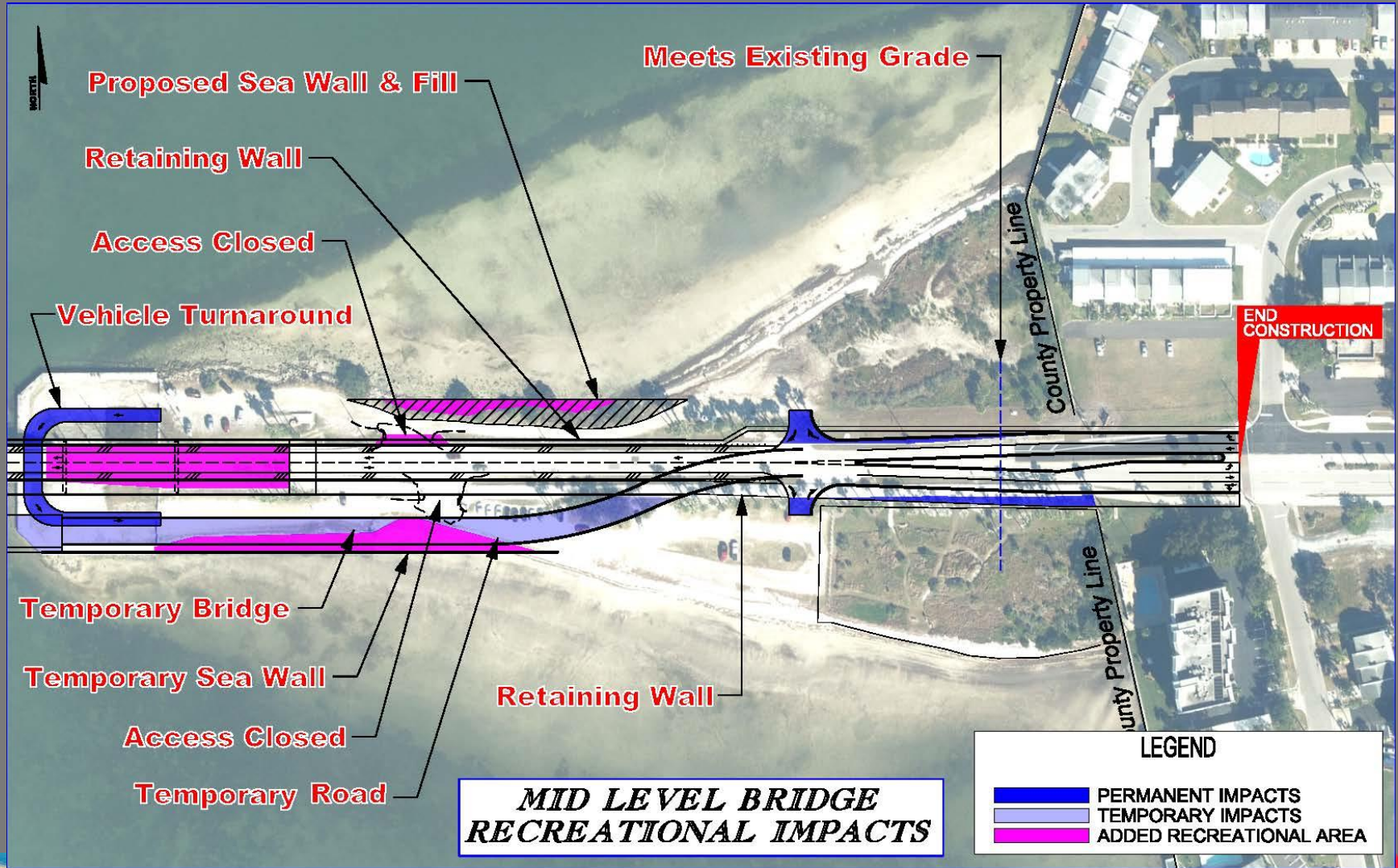
Park/Recreation Areas



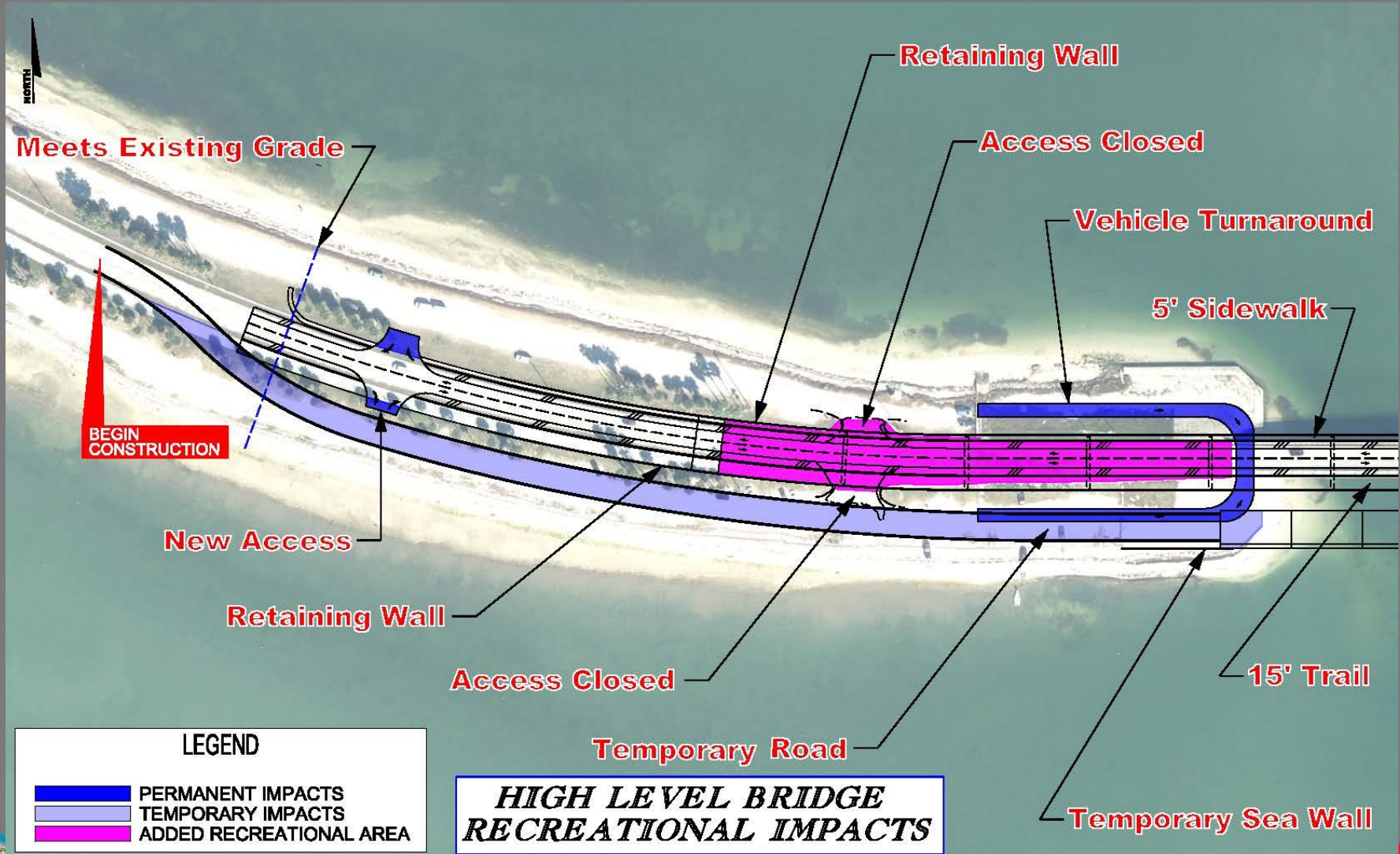
Park/Recreation Area Impacts Mid-Level Movable Bridge (West Side)



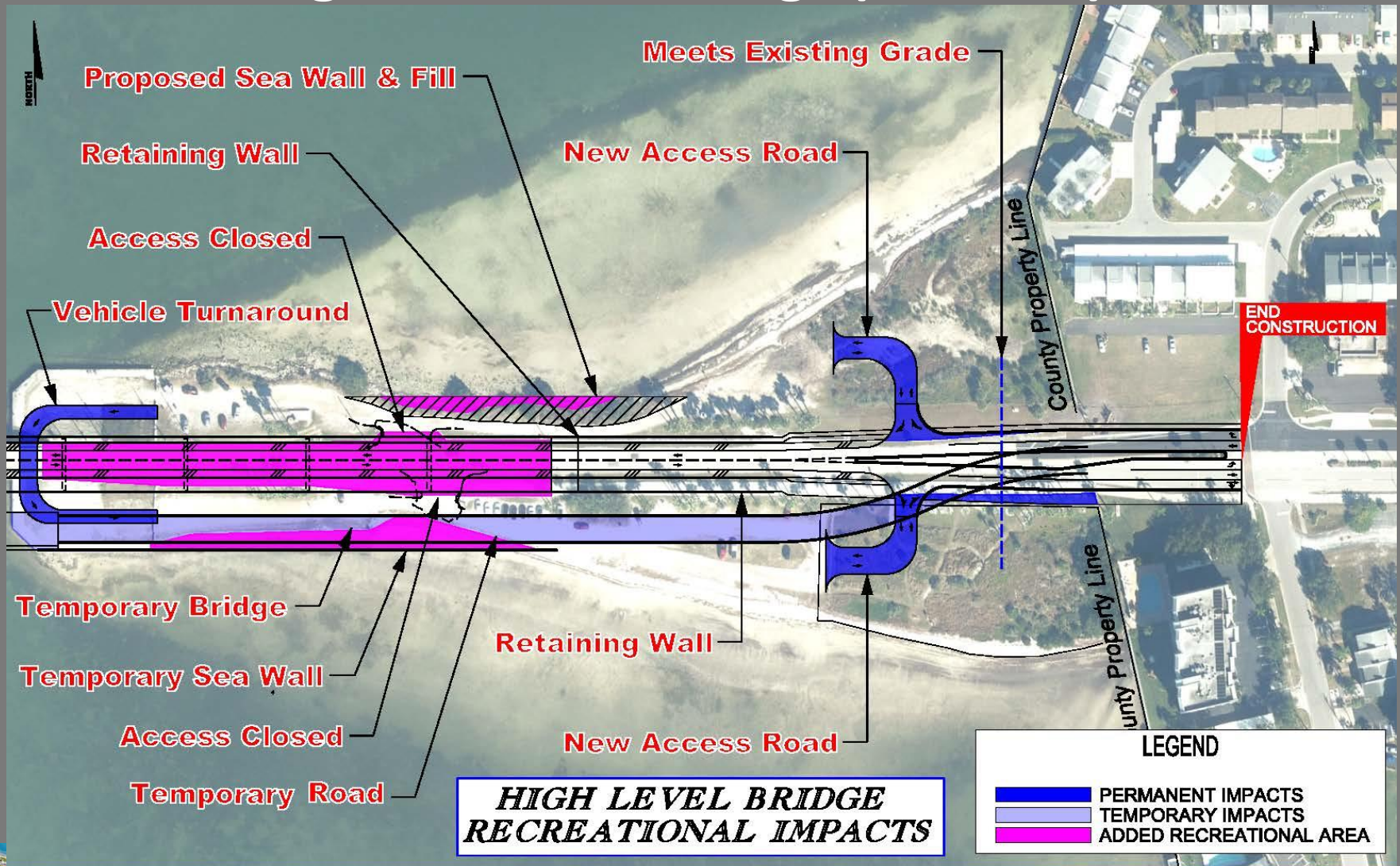
Park/Recreation Area Impacts Mid-Level Movable Bridge (East Side)



Park/Recreation Area Impacts High-Level Fixed Bridge (West Side)



Park/Recreation Area Impacts High-Level Fixed Bridge (East Side)



Construction Costs

BREAKDOWN OF COSTS			
COMPONENT	HIGH-LEVEL FIXED BRIDGE	MID-LEVEL MOVABLE BRIDGE	LOW-LEVEL MOVABLE BRIDGE
Bridge Construction	\$27,180,000	\$45,130,000	\$41,530,000
Temporary Bridge	\$16,767,000	\$17,070,000	\$17,070,000
Engineering/CEI	\$6,713,000	\$9,650,000	\$9,060,000
TOTAL	\$50,660,000	\$71,850,000	\$67,660,000

Life Cycle Cost Analysis

- Present Worth Method
 - All future expenditures brought back to present dollars
- Annual Worth Method
 - Costs converted to an equivalent annual expense over the life of the project

Life Cycle Cost Analysis

- Relative comparison of the total cost of a project
 - Initial construction cost
 - Operational costs
 - Maintenance costs
- Discount rate equates future dollars to present dollars

Life Cycle Cost Analysis

- Project Cost
 - High-Level Fixed Bridge - \$50.7 million
 - Mid-Level Movable Bridge - \$71.9 million
 - Low-Level Movable Bridge - \$67.7 million
- Operation and Maintenance Costs
 - Currently - \$300,000 per year
 - Projected - \$225,000 per year
- Discount rates
 - 1%, 3%, 7% and 10%

Life Cycle Cost Analysis - Present Worth Method

COMPARISON OF LIFE CYCLE COSTS - PRESENTWORTH METHOD

INTEREST RATE	HIGH-LEVEL FIXED BRIDGE	MID-LEVEL MOVABLE BRIDGE	LOW-LEVEL MOVABLE BRIDGE
1%	\$68,131,036	\$117,460,317	\$116,927,529
3%	\$47,496,138	\$75,412,787	\$72,222,161
7%	\$33,562,755	\$49,683,576	\$46,892,913
10%	\$27,544,329	\$40,000,624	\$37,749,362

RATIO OF LIFE CYCLE COSTS - PRESENT WORTH METHOD

INTEREST RATE	HIGH-LEVEL FIXED BRIDGE	MID-LEVEL MOVABLE BRIDGE	LOW-LEVEL MOVABLE BRIDGE
1%	1.00	1.72	1.72
3%	1.00	1.59	1.52
7%	1.00	1.48	1.40
10%	1.00	1.45	1.37
AVERAGE:	1.00	1.56	1.50

Life Cycle Cost Analysis - Annual Worth Method

COMPARISON OF LIFE CYCLE COSTS - ANNUAL WORTH METHOD

INTEREST RATE	HIGH-LEVEL FIXED BRIDGE	MID-LEVEL MOVABLE BRIDGE	LOW-LEVEL MOVABLE BRIDGE
1%	\$1,076,237	\$1,858,883	\$1,850,430
3%	\$1,493,877	\$2,377,346	\$2,276,373
7%	\$2,332,455	\$3,462,214	\$3,266,642
10%	\$2,727,358	\$3,973,078	\$3,747,935

RATIO OF LIFE CYCLE COSTS - ANNUAL WORTH METHOD

INTEREST RATE	HIGH-LEVEL FIXED BRIDGE	MID-LEVEL MOVABLE BRIDGE	LOW-LEVEL MOVABLE BRIDGE
1%	1.00	1.73	1.72
3%	1.00	1.59	1.52
7%	1.00	1.48	1.40
10%	1.00	1.46	1.37
AVERAGE:	1.00	1.56	1.50

Project Funding

Project Total Costs

- High-Level Fixed & Tide Relief Bridge = \$60.0 million
- Mid-Level Movable & Tide Relief Bridge = \$81.2 million
- Low-Level Movable & Tide Relief Bridge = \$77.0 million

Potential Funding Sources

- Design
 - Penny for Pinellas (Current Extension 2010-2020)
- Construction
 - FHWA Grant Funds (if approved) with County participation using post-2020 Penny for Pinellas funds

Additional Considerations

Trail Component

- Project includes the Honeymoon Island Spur of the Pinellas Trail
- Dunedin Causeway designated a “Significant Pinellas County Greenway” and an integral addition to the overall Pinellas County Greenway system*
- Trail is an integral piece of the “Dunedin Causeway Master Plan”

*Per Resolutions by the City of Dunedin (08-15) & Pinellas County BOCC (08-126) on June 5, 2008

Additional Considerations

Recreational Usage

- Bike/Ped usage of the Dunedin Causeway is very high
 - 250+ users during am/pm peak periods (typical weekday)
- 5% is the maximum allowable grade per ADA requirements
 - Best practice recommends using the most gradual slope possible on shared-use paths and trails

Additional Considerations

Comparable Bridges

- Courtney Campbell Multi-Use Pedestrian Bridge
 - 4% maximum grade at approaches
 - 2.74% grade for remainder
 - At no point do the grades reach 5%
- Belleair Bridge
 - Grades - 4.736% and 4.995% at each approach
 - Vertical clearance - 75 feet
- Clearwater Memorial Causeway
 - Grade - 5% maximum
 - Vertical Clearance - 74 feet

Stakeholder Coordination

June 8, 2016

- **County Staff, MPO, City of Dunedin, Ad Hoc Committee Chair**

June 13, 2016

- **Ad Hoc Committee**

June 16, 2016

- **Dunedin City Commission**

August 4, 2016

- **BCC Workshop**

August 23, 2016

- **BCC Selects Recommended Alternative**



Thank You!