

 Hollywood, FL

 June 13-14, 2024

2024 TRANSPORTATION SYMPOSIUM

Jupiter US-1 Bridge Replacement Project from CR A1A to CR 707

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H&H

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FDOT

jupiter
US-1 bridge



Jupiter US-1 Bridge Replacement



TARGET
ZERO
FATALITIES & SERIOUS INJURIES



Acknowledgements



Johnson Brothers - Contractor



Our subconsultant partners

- Arehna
- ASA Consulting
- BCC Engineering
- Eland
- Kimley Horn
- Sakoian International
- WGI
- VIA Engineering

Project Location



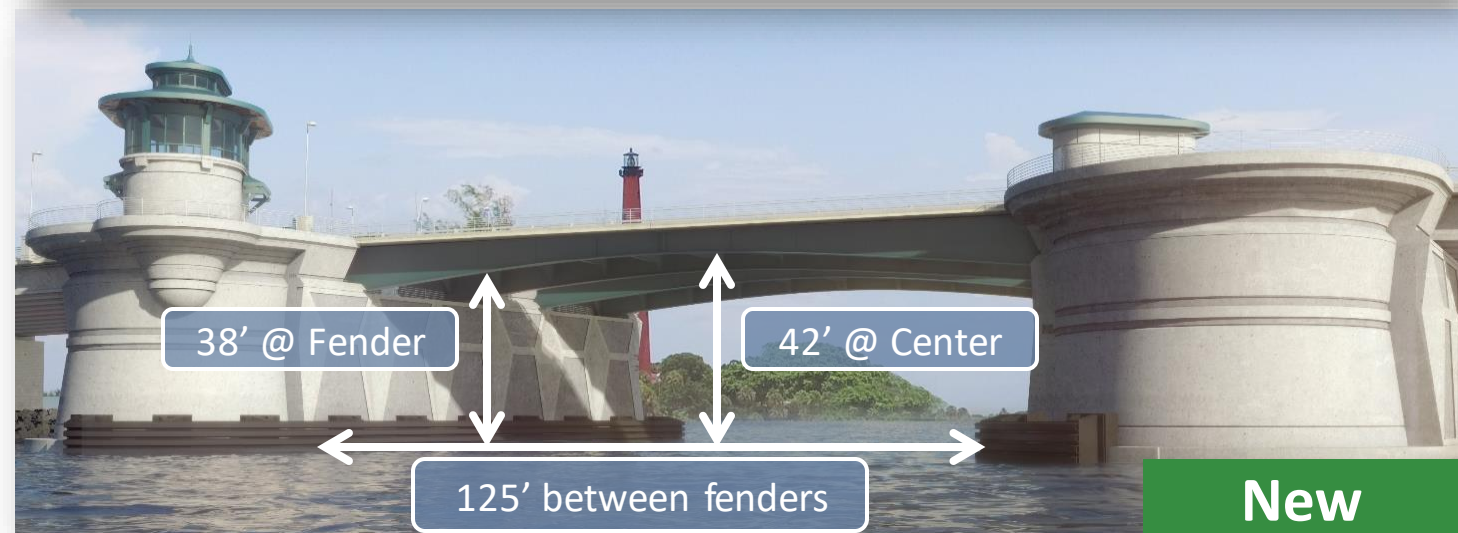
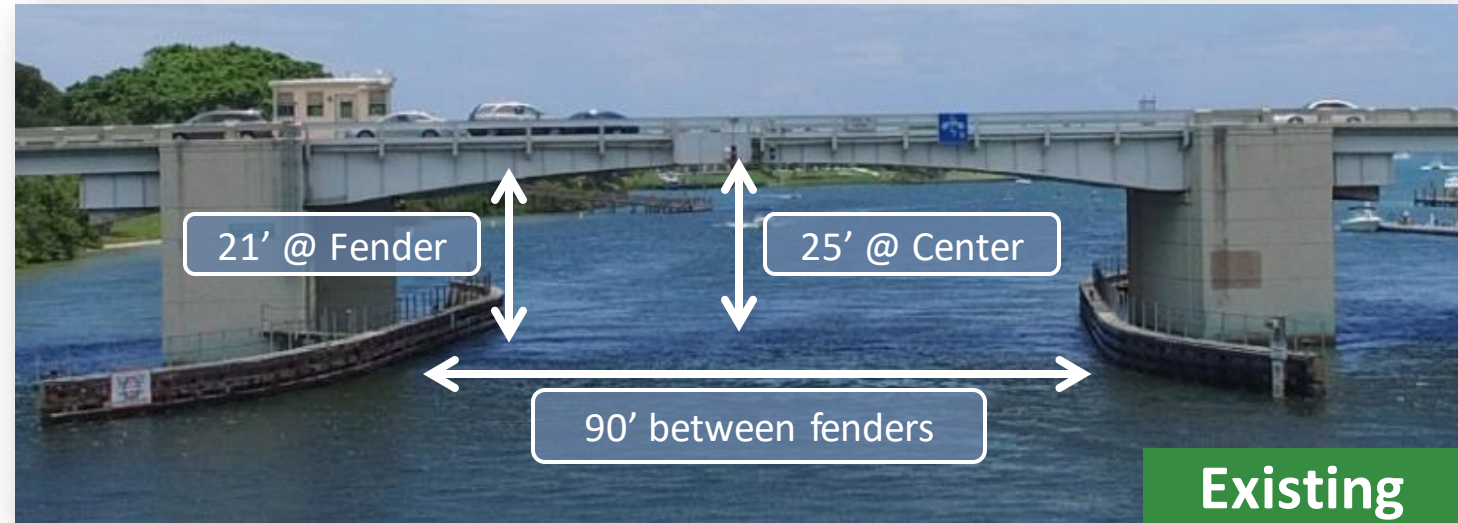
Purpose and Need

- Lack of facilities for pedestrians and bicyclists
- Structural deficiencies of the existing bridge built in 1958



Purpose and Need

- Substandard horizontal clearance at the navigable waterway channel
- Increase vertical clearance to reduce frequency of bridge openings



Timeline





Project is currently
in construction at

62

%



Winning
Bid

\$122

M

Jupiter US-1 Bridge Replacement



Environment

- Natural Resources
- Cultural Resources
- Sociocultural Resources



Public Involvement

- Detour
- Bridge Aesthetics



Engineering

- Bascule Span Innovations
- Construction Innovations



Jupiter Inlet and Surrounding Area

environment



Jupiter Outstanding Natural Area



Jupiter Inlet and Surrounding Area

environment



The Inlet

**Cultural
Resources**

**Outstanding Natural
Area**

Outstanding National Area (ONA)

environment



Outstanding Natural Area (ONA)

**“Wild and Scenic”
Loxahatchee River—
designated estuary**

Protection of Natural Resources



**Indigenous Peoples,
the Second World
War, a Lighthouse,
and a French Civil
Engineer**



**Augustin Fresnel
(1788-1827)**

Jupiter Lighthouse & Museum

cultural resources

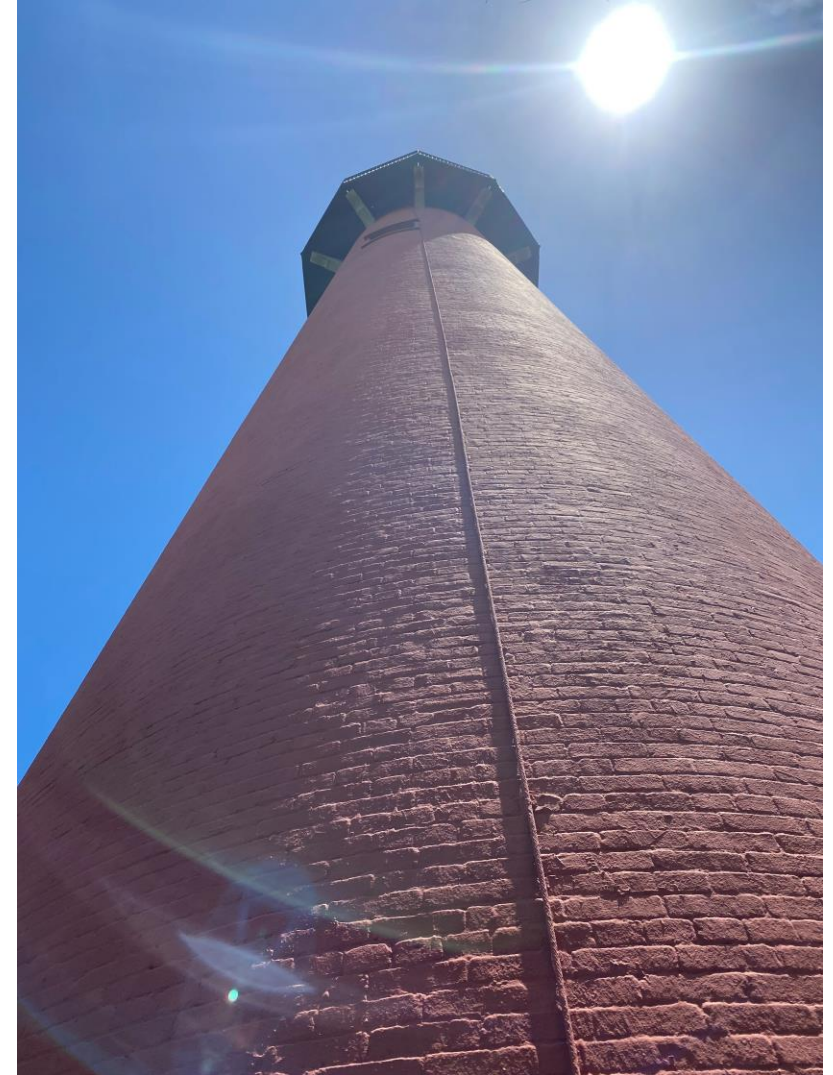


Design and Construction Considerations

- Protection of Jupiter Inlet Lighthouse & WWII Married Men's Quarters Building
- New bridge will enhance community cohesion, emergency response, and mobility

Jupiter Inlet and Surrounding Area

cultural resources



US-1 Bridge over the ICWW

cultural resources



US-1 Bridge over the ICWW/Loxahatchee River

- Built in 1958 and NRHP eligible
- Twin double leaf bascule span opens on demand
- Connected bascule piers for each set of leaves
- Two lanes in each direction
- Structurally deficient

Jupiter, Florida Community

sociocultural resources



Bridge Replacement

engineering

- 5 span bridge including twin double leaf trunnion bascule span
- Two lanes, 8 ft sidewalks, 8 ft shoulders/bike lanes with solid deck
- 38 ft vertical clearance
- 125 ft horizontal clearance
- Reduce openings by 44%
- 5% profile no permanent impacts to adjacent properties



Replacement Bridge

engineering

- Multi-level control house with enhanced visibility of channel, sidewalks, roadway



- Rounded piers per preferred by the USCG
- Pier mounted fender system
- Enhanced maintenance access
- Barrier mounted span locks
- Overlooks at pier locations (8 total)

Ubiquitous and Unique

engineering

- Florida bascule bridges are ubiquitous
- 50+ movable bridges in Palm Beach, Broward, and Miami-Dade Counties
 - Many states have 0 !
- Reliable, safe precision control of 2-million-pound structure



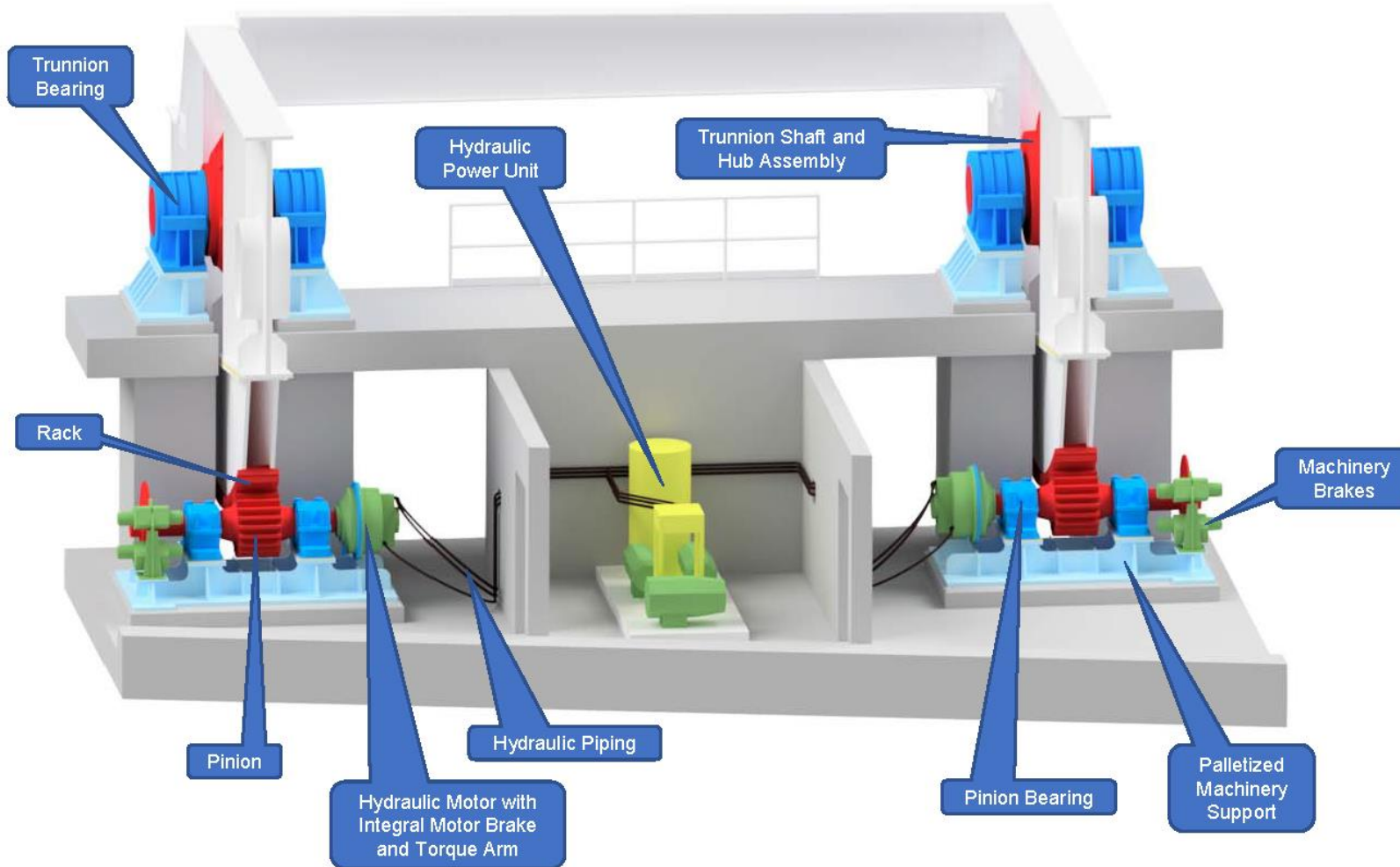
What's Under the Hood?

engineering



What's Under the Hood?

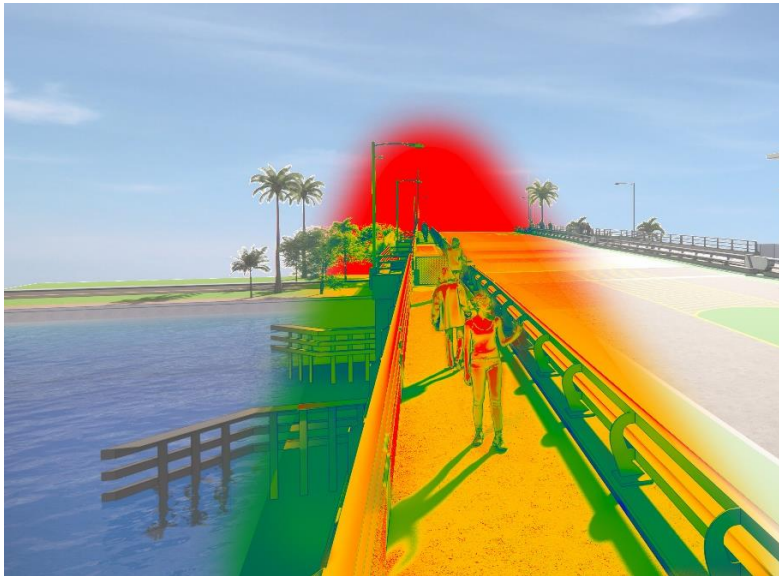
engineering



What's Under the Hood?

engineering

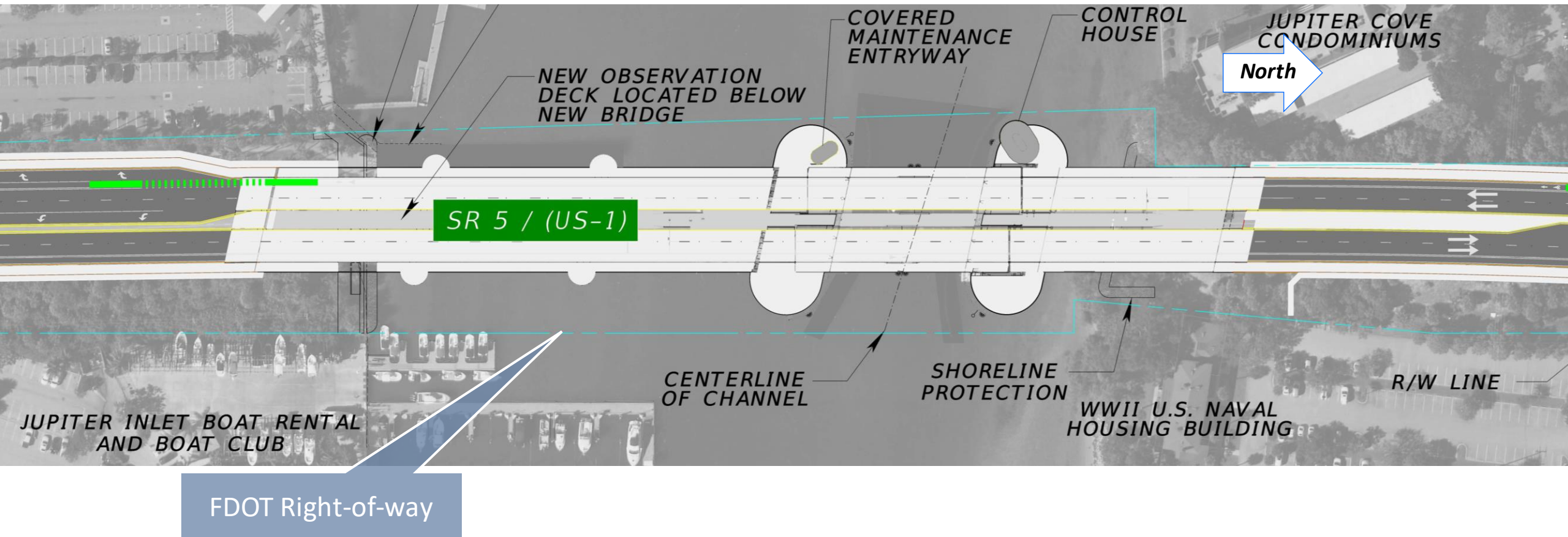
- Enhanced pedestrian safety using LiDar/Thermal system integrated with bridge controls



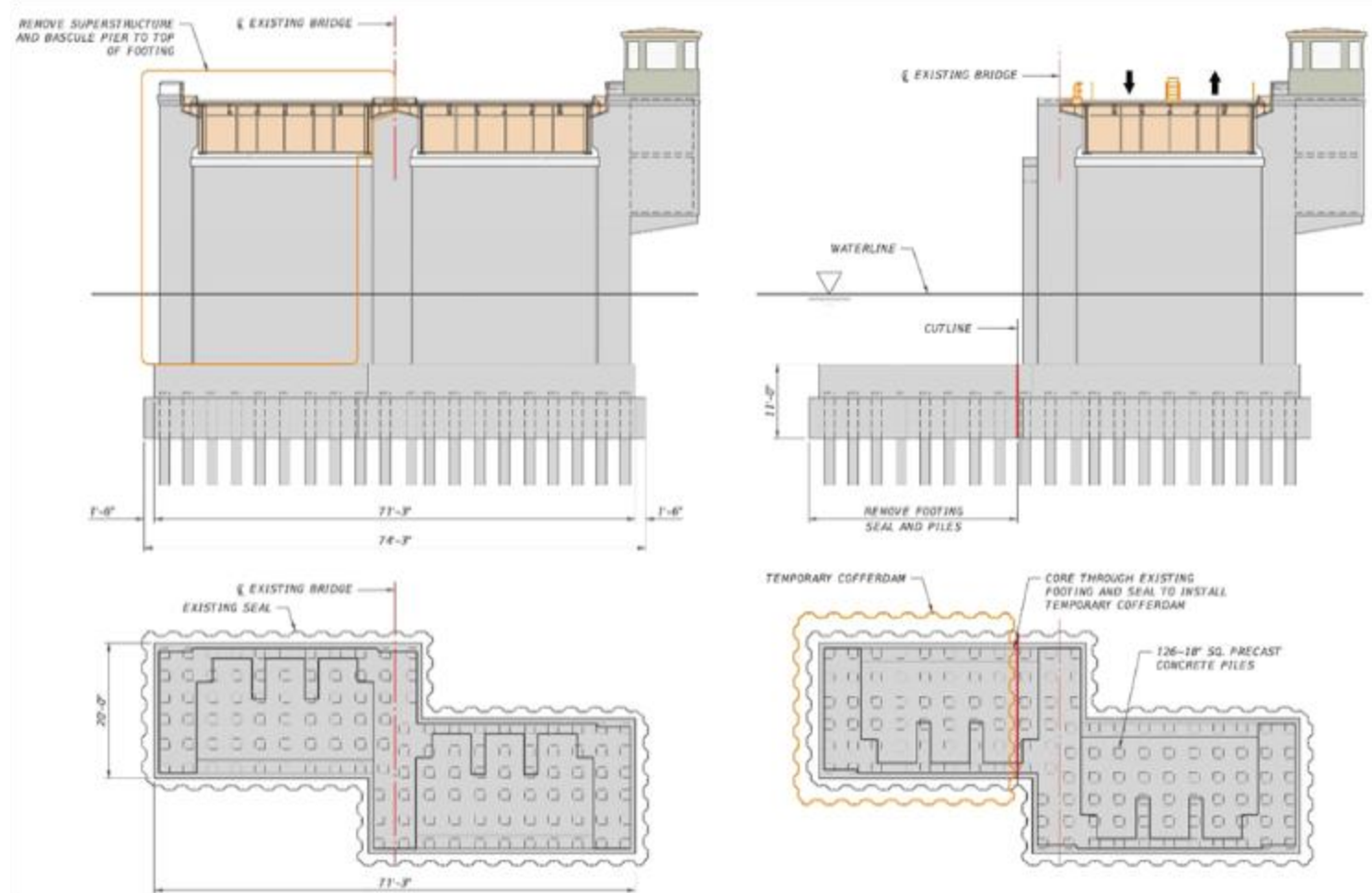
Construction Matters

engineering

No Room for Temporary Bridge



Risk of Using Half of Existing Bridge

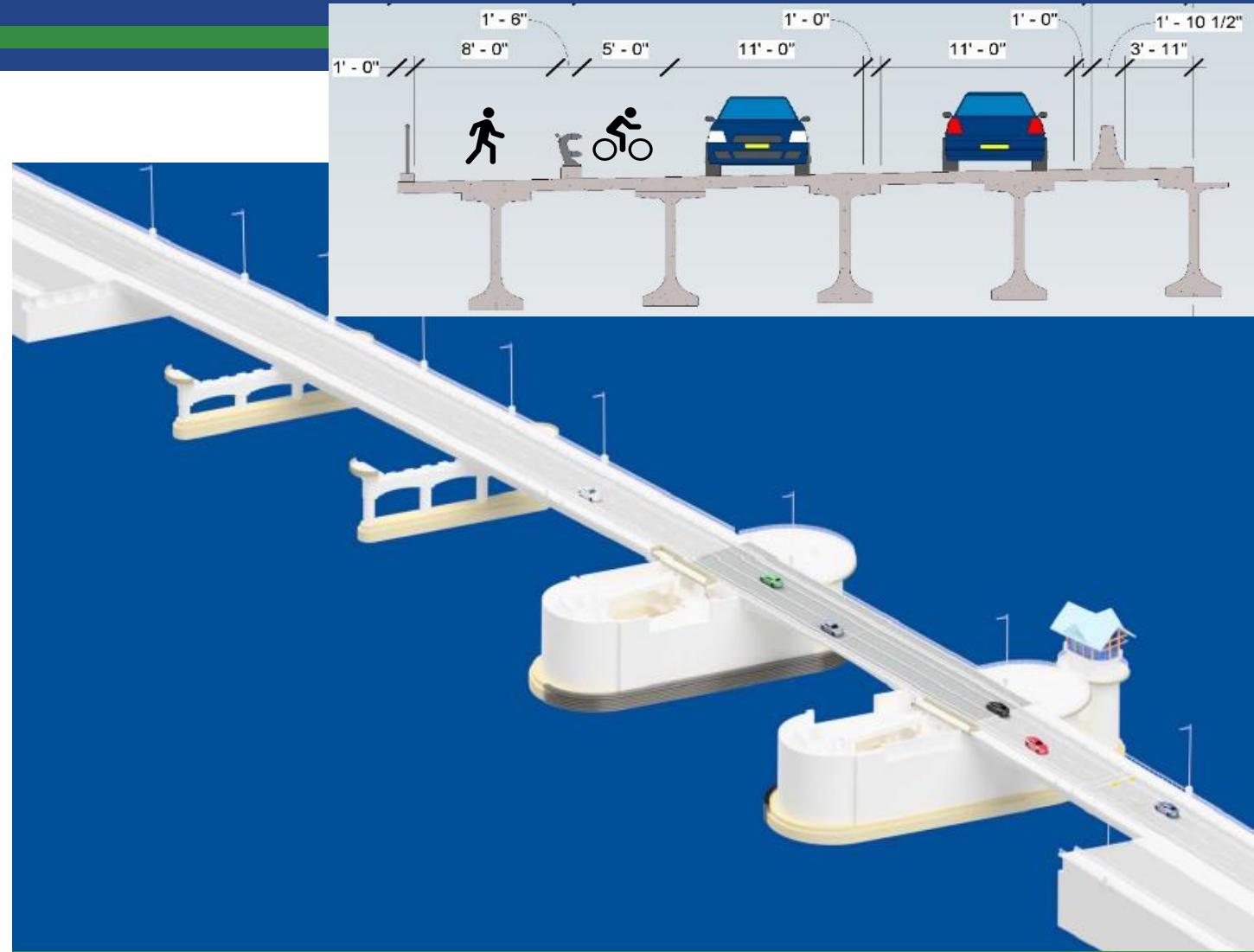


Hybrid Phased Construction

engineering

- **Pre-Detour** - intersection improvements, ITS installation, and construct parts of new bridge
- **Detour to CR A1A** - Construct half of new bridge superstructure and complete substructure
- **Post-Detour** – Construct remaining half of new bridge superstructure with 2 lanes of traffic and bike/ped facilities

18-month shorter construction relative to fully phased



Post-Detour

Pre-Detour Improvements

engineering

- ❑ Mitigate community impacts during detour
- ❑ Intersection improvements along detour route
- ❑ Conducted detailed traffic studies at following intersections:
 - US-1 at Beach Rd/Alt A1A at Old Dixie Hwy
 - Alt A1A at Old Dixie Hwy
 - Alt A1A at SR 706
 - US-1 at SR 706
- ❑ New Intelligent Traffic Systems features along detour route
- ❑ Traffic management to maintain mobility during construction in coordination with Palm Beach County



Pre-Detour Improvements

engineering



Alt A1A at SR 706



US-1 at SR 706

Pre-Detour Improvements

engineering



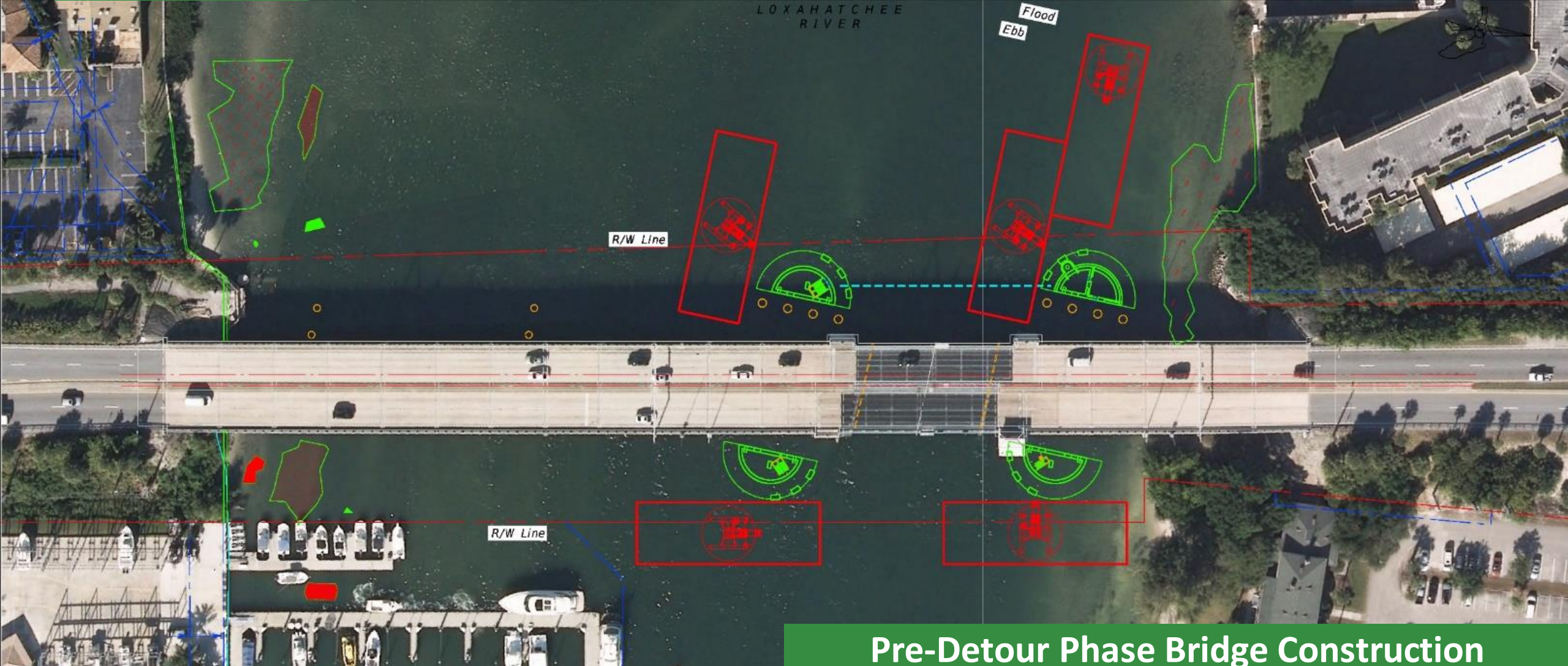
Alt A1A at Old Dixie Hwy (SR 811)



SR 811 (Alt. A1A) Bridge Rehabilitation

Pre-Detour Bridge Construction

engineering



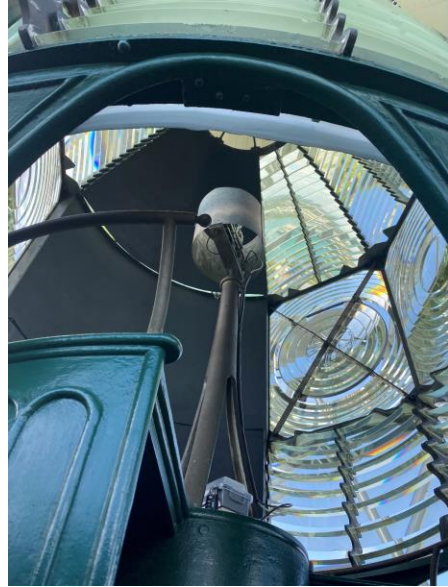
Pre-Detour Phase Bridge Construction

Pre-Detour Bridge Construction



Protection of Museum & Lighthouse

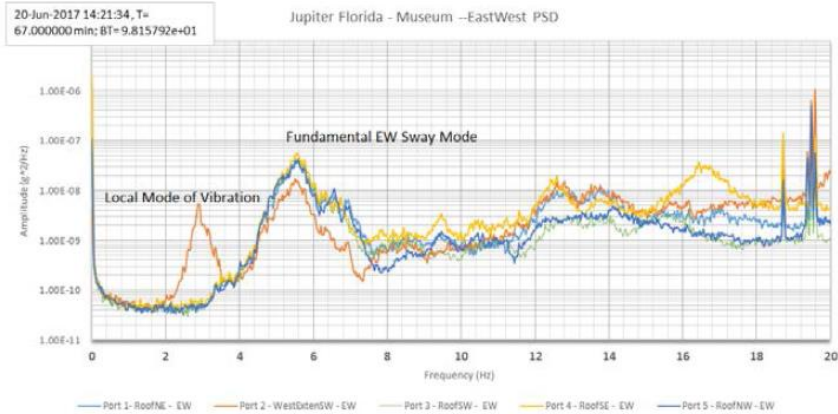
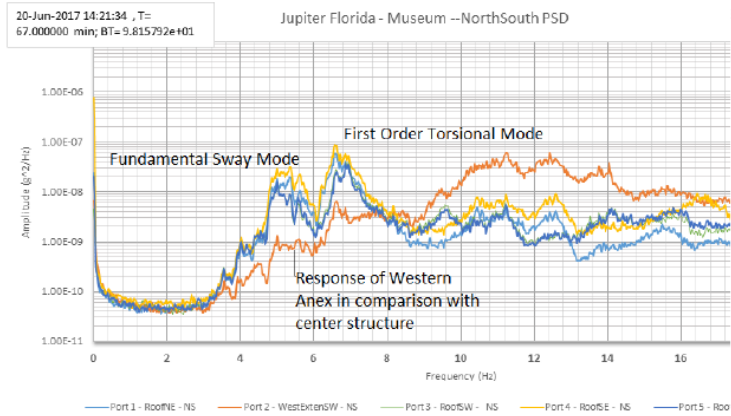
engineering



Protection of Museum & Lighthouse

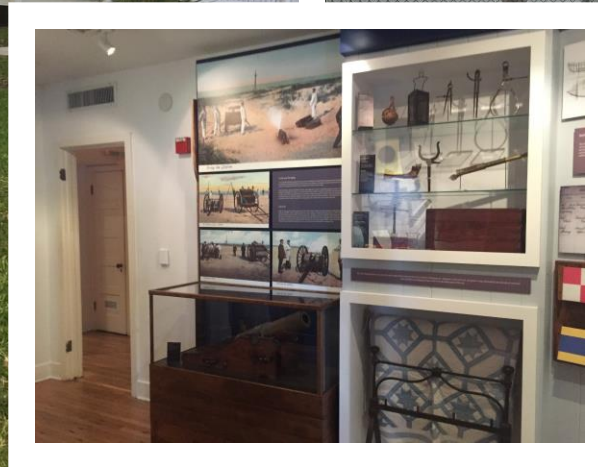
engineering

STRAAM Baseline Dynamic Signature Frequencies of Resonance



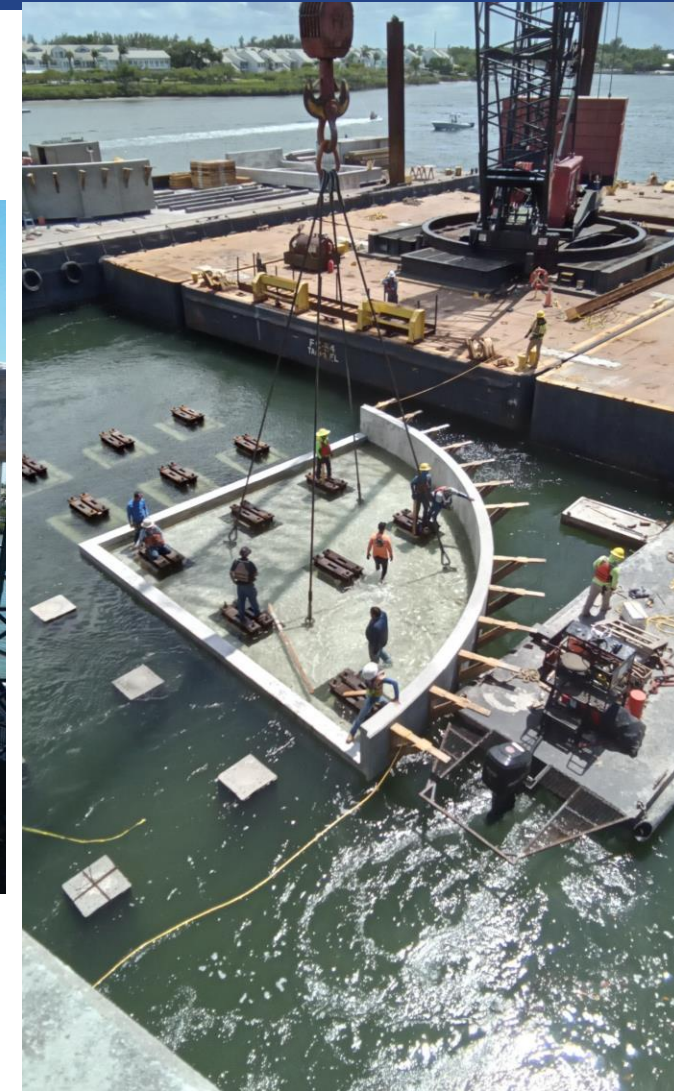
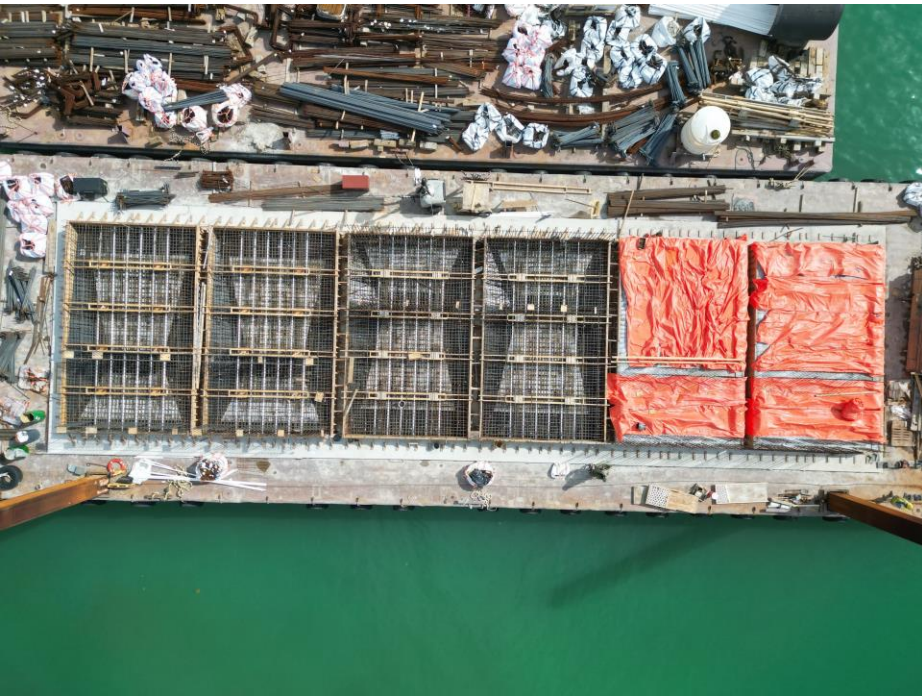
Protection of Museum & Lighthouse

engineering



Accelerate the Construction

engineering



Accelerate the Construction

engineering

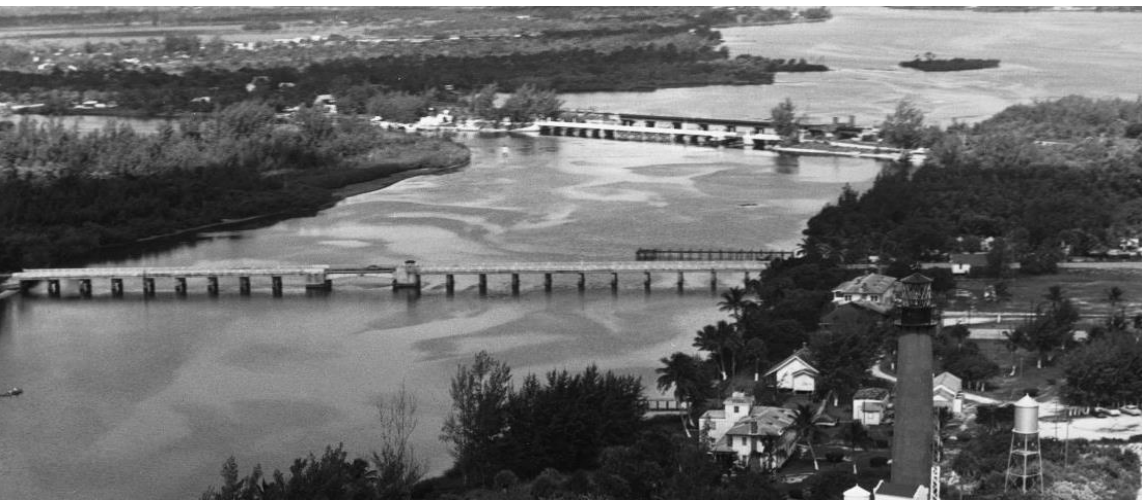


Accelerate the Construction

engineering

Opportunities from
the Past

Temporary Channel



Bridge Foundations

engineering

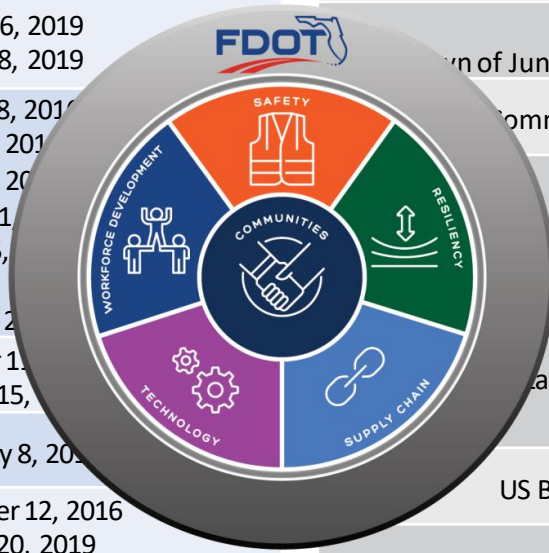
- Protect museum, lighthouse, bridge and aquatic species
- Substrata/geotechnical
- Construction impact of drilled shafts
- Drilled Shafts vs. Driven piles in preformed holes
- Test pile program during design



Stakeholder Engagement

Public Involvement

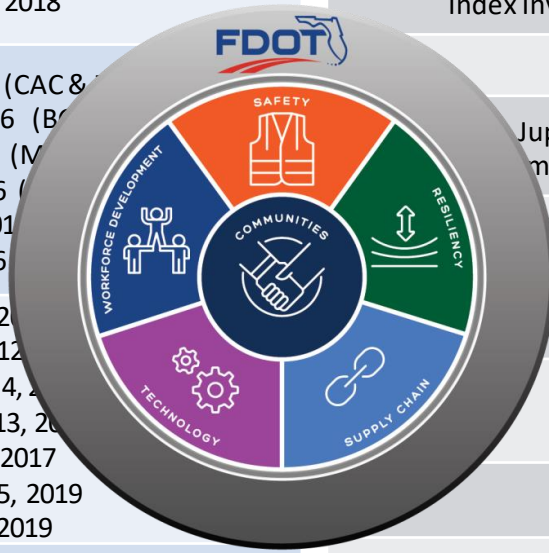
STAKEHOLDER	DATE	STAKEHOLDER	DATE
Town of Jupiter Staff	January 12, 2016 September 12, 2016 October 11, 2017 March 15, 2018	Village of Tequesta Staff	March 25, 2019 July 22, 2019
Town of Jupiter Council	April 16, 2019 June 18, 2019	Village of Tequesta Utility Coordination	October 4, 2018
Town of Jupiter Individual Council Meetings	February 8, 2016 April 21, 2016 April 25, 2016 October 11, 2016 March 15, 2017 May 29, 2017 May 30, 2017	Town of Juno Beach Individual Council Meetings	June 26, 2019 (5)
Town of Jupiter Town Manager and Town Engineer	October 1, 2016 March 15, 2017	Community Redevelopment Agency (CRA)	January 11, 2017
Town of Jupiter Town Engineer	February 8, 2016	Jupiter Inlet District	August 10, 2016 October 19, 2016 July 10, 2019
Town of Jupiter Staff	September 12, 2016 March 20, 2019	Jupiter Inlet Village	April 26, 2016 October 19, 2016
Town of Jupiter Police Department	April 26, 2016	Land Management (BLM) and Jupiter Inlet Lighthouse	May 6, 2016 September 23, 2016 May 3, 2017
Town of Jupiter Utilities	September 18, 2019	US Bureau of Land Management	February 27, 2019
Village of Tequesta Council Meeting	May 9, 2019	Loxahatchee River Management Coordinating Council (LRMCC)	March 27, 2017
		North County Intergovernmental Committee (NCIC)	May 22, 2017
		United States Coast Guard (USCG)	August 17, 2016 April 5, 2019 July 26, 2019



Stakeholder Engagement

Public Involvement

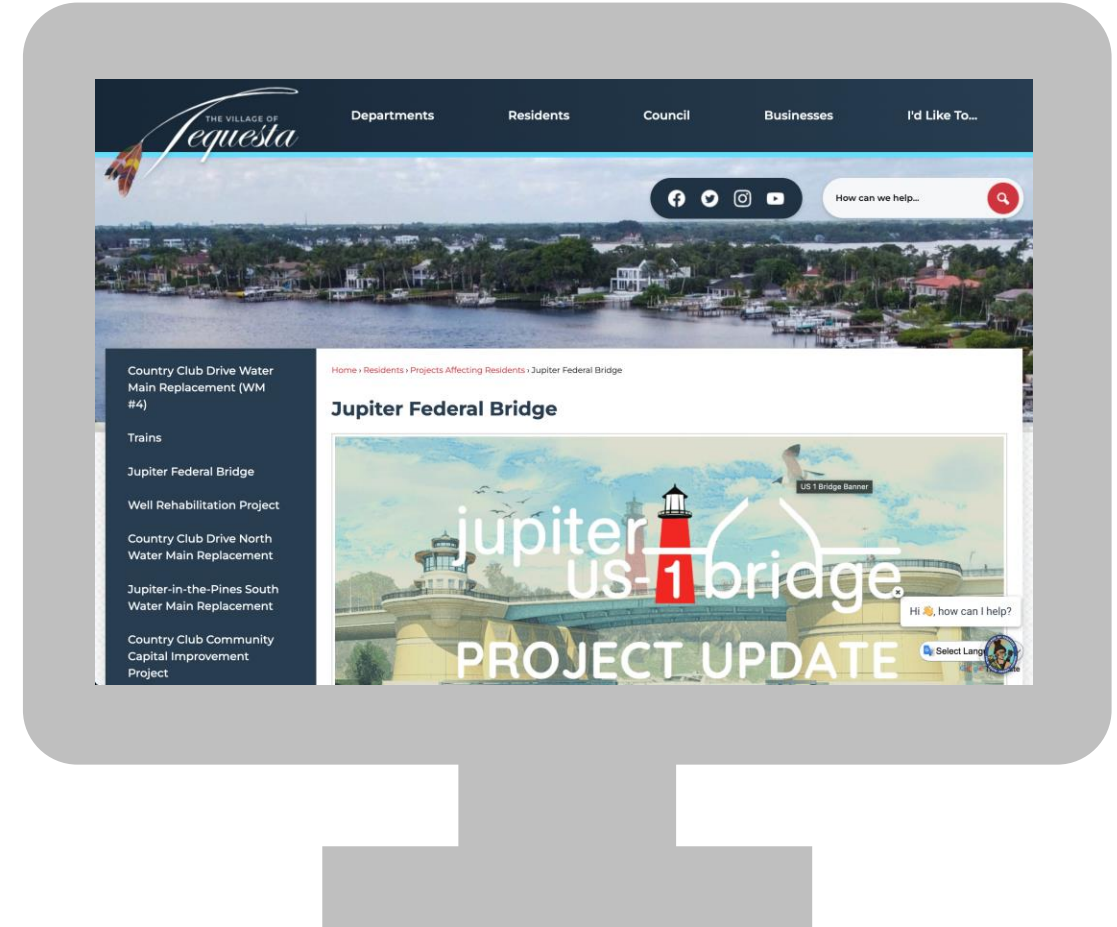
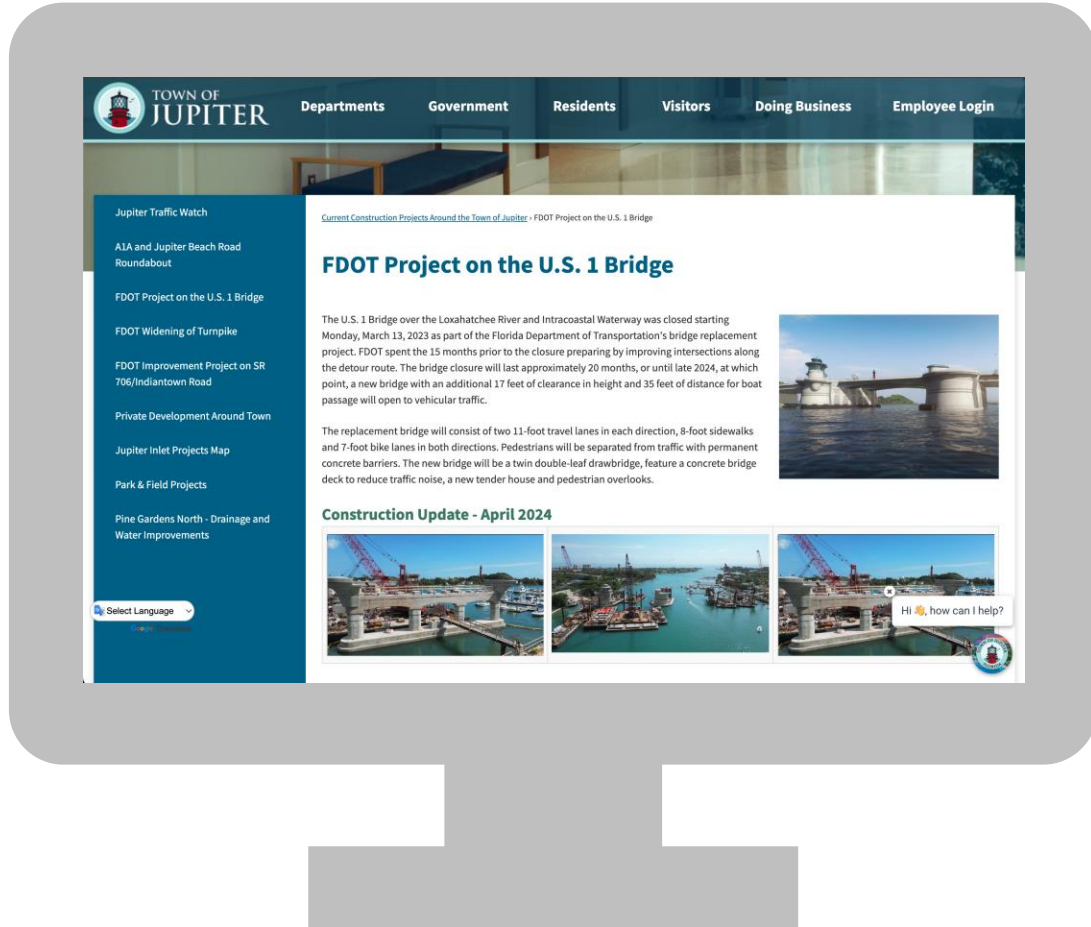
STAKEHOLDER	DATE	STAKEHOLDER	DATE
Palm Beach County Fire Rescue	April 26, 2016	Interagency Meeting	January 17, 2019
Palm Beach North Chamber of Commerce	March 9, 2018	FPL and TECO	December 6, 2018
Palm Beach MPO / TPA and Committees	February 3, 2016 (CAC & February 4, 2016 (B February 18, 2016 (M September 7, 2016 (C September 8, 2016 (C December 12, 2016 (C	Index Investment (1000 North Developer)	February 2, 2017
Bridge Aesthetics Committee	July 19, 2016 September 12, 2016 November 4, 2016 December 13, 2016 June 27, 2017 February 25, 2019 July 22, 2019	Jupiter Restaurants	March 14, 2017
Cultural Resources Committee	May 4, 2016 August 23, 2016 August 30, 2017 June 28, 2018	Jupiter Dunes, Ocean Trails and Ocean Parks Homeowners' Associations (HOAs)	December 5, 2016
Environmental Technical Advisory Team (ETAT)	April 26, 2019	Jupiter Inlet Colony HOA	December 20, 2016 June 11, 2019
		Jupiter Cove HOA	January 30, 2017
		Jupiter Cove HOA Staff	December 5, 2016 August 6, 2019
		Jupiter Harbour HOA	January 15, 2017 February 15, 2017
		Passages Condos	December 3, 2018
		Public Hearing	October 24, 2017
		Design Public Meeting	Scheduled for March 5, 2020



Community Engagement



Public Involvement



Community Engagement

Public Involvement



- ❑ Conducted 7 Bridge Aesthetics Committee (BAC) meetings
- ❑ BAC provided input and direction for bridge aesthetics

Community Engagement

Public Involvement



Community Engagement

Public Involvement



Final Bridge



Final Bridge



Construction Progress



Speaker Contact Information

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