



SUMMARY OF PROJECT IMPACTS AND COST SUMMARY

(Includes Life Cycle Costs for All Alternatives Considered)

December 6, 2018

NASA Causeway Bridge
PD&E Study
FPID: 440424-1-22-01
Brevard County, FL

NASA Causeway Bridge Alternatives							
Evaluation Criteria	No Build *	Alternative 1 *	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
Description	Maintenance and Repair (Assume Replacement after 10 years)	Complete Rehabilitation (Assume Replacement after 20 years)	Low-Level Moveable Bridge Replacement Center Alignment	Mid-Level Moveable Bridge Replacement Center Alignment	High-Level Fixed Bridge Replacement North Alignment	High-Level Fixed Bridge Replacement Center Alignment	High-Level Fixed Bridge Replacement South Alignment
General Information							
Number of Travel Lanes (Existing/Proposed)	4/4	4/4	4/4	4/4	4/4	4/4	4/4
Existing (2018) Annual Average Daily Traffic (AADT)	12,200	12,200	12,200	12,200	12,200	12,200	12,200
Future (2045) AADT	16,000	16,000	16,000	16,000	16,000	16,000	16,000
Number of Moveable Spans	1	1	1	1	0	0	0
Number of Fixed Spans	56	56	21	24	26	26	26
Minimum Vertical Clearance Above Water	28 feet Closed Position	28 feet Closed Position	17 feet Closed Position	44 feet Closed Position	65 feet Fixed	65 feet Fixed	65 feet Fixed
Minimum Horizontal Clearance (Navigational Channel)	90 feet	90 feet	125 feet	125 feet	125 feet	125 feet	125 feet
Maintains/Improves Bridge Load Rating within 5 years	No	No	Yes	Yes	Yes	Yes	Yes
Designated Hurricane Evacuation Route	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bridge Length (approximate)	3,000 feet	3,000 feet	3,000 feet	3,400 feet	4,000 feet	4,000 feet	4,000 feet
Total Project Length (approximate)	10,000 feet	10,000 feet	10,000 feet	10,000 feet	10,000 feet	10,000 feet	10,000 feet
Social Environment Impacts **							
Residential Land Uses	0	0	0	0	0	0	0
Commercial Land Uses	0	0	0	0	0	0	0
Community Facilities	0	0	0	0	0	0	0
Natural Environment Impacts **							
Wetlands (no. of acres)	0.15 Forested/Emergent 0.85 Estuarine	0.15 Forested/Emergent 0.85 Estuarine	0.15 Forested/Emergent 0.85 Estuarine	0.15 Forested/Emergent 0.85 Estuarine	0.15 Forested/Emergent 2.68 Estuarine	0.15 Forested/Emergent 0.85 Estuarine	0.15 Forested/Emergent 2.45 Estuarine
Floodplains (no. of acres) (Over Indian River)	0.85	0.85	0.85	0.85	2.68	0.85	2.45
Seagrasses	<0.1 acres	<0.1 acres	<0.1 acres	<0.1 acres	<0.1 acres	<0.1 acres	<0.1 acres
Other Essential Fish Habitat (Water Column and Substrate)	0.85	0.85	0.85	0.85	2.68	0.85	2.45
Wildlife Habitat (Endangered and Threatened Species)	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Cultural Environment Impacts **							
Historic Sites/Structures	1 Existing bridge	1 Existing bridge	1 Existing bridge	1 Existing bridge	1 Existing bridge	1 Existing bridge	1 Existing bridge
Archaeological Sites	Minimal to none	Minimal to none	Minimal to none	Minimal to none	Minimal to none	Minimal to none	Minimal to none
Physical Environment Impacts **							
Utilities	2 AT&T and FP&L	2 AT&T and FP&L	0	2 AT&T and FP&L	2 AT&T and FP&L	2 AT&T and FP&L	2 AT&T and Florida City Gas
Potential Contamination Sites	2	2	1	2	2	2	2
Traffic Control During Construction (no. of lanes open)	2 lanes (1 in each direction)	2 lanes (1 in each direction)	2 lanes (1 in each direction)	2 lanes (1 in each direction)	4 lanes (2 in each direction)	2 lanes (1 in each direction)	4 lanes (2 in each direction)
Estimated Project Cost (2018)							
Construction Cost Estimate							
Roadway ¹	\$9,745,000	\$11,879,000	\$5,180,000	\$6,745,000	\$13,182,000	\$7,994,000	\$11,829,000
Structures ²	\$63,621,000	\$97,233,000	\$88,222,000	\$91,419,000	\$52,191,000	\$52,191,000	\$52,191,000
Demolition	\$13,488,000	\$13,488,000	\$13,488,000	\$13,488,000	\$13,488,000	\$13,488,000	\$13,488,000
Life Cycle ³	\$21,352,000	\$42,704,000	\$16,875,000	\$16,875,000	\$1,875,000	\$1,875,000	\$1,875,000
Utility Relocation ⁴	\$2,100,000	\$2,100,000	\$0	\$2,100,000	\$3,150,000	\$2,100,000	\$2,000,000
Maintenance of Traffic (MOT) (10%) ⁵	\$8,685,000	\$12,260,000	\$10,689,000	\$11,165,000	\$7,886,000	\$7,367,000	\$7,751,000
Mobilization (8%) ⁶	\$7,643,000	\$10,789,000	\$9,406,000	\$9,825,000	\$6,940,000	\$6,483,000	\$6,821,000
Contingency (20%) ⁷	\$17,371,000	\$24,520,000	\$21,378,000	\$22,330,000	\$15,772,000	\$14,735,000	\$15,502,000
Subtotal	\$144,005,000	\$214,973,000	\$165,238,000	\$173,947,000	\$114,484,000	\$106,233,000	\$111,457,000
Construction Engineering and Inspection (CEI) ⁸	\$17,281,000	\$25,797,000	\$19,829,000	\$20,874,000	\$13,738,000	\$12,748,000	\$13,375,000
Right-of-Way	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Environmental Mitigation	TBD	TBD	TBD	TBD	TBD	TBD	TBD
TOTAL ESTIMATED COST	\$161,286,000	\$240,770,000	\$185,067,000	\$194,821,000	\$128,222,000	\$118,981,000	\$124,832,000

Notes:

- * For life cycle cost comparison, assume High-level Fixed Bridge replacement for No Build (in Year 11) and Rehabilitation (in Year 21).
- ** Environmental impacts for the No Build and Rehabilitation alternatives are anticipated to be similar to the Replacement alternatives.
- 1. Includes roadway approaches for all alternatives.
Assume 2% per year increase for future roadway costs for No Build and Rehabilitation alternatives.
Includes causeway reconstruction for Alternatives 4 and 6.
- 2. Initial bridge costs based on FDOT historical costs, modified for site conditions.
Estimates include initial rehabilitation and full replacement costs for No Build and Rehabilitation alternatives.
Assume 2% per year increase for future bridge costs for No Build and Rehabilitation alternatives.
For life cycle cost comparison, assume High-level Fixed Bridge replacement for No Build (in Year 11) and Rehabilitation (in Year 21).
- 3. Assume 75-year life span for all alternatives including No Build and Rehabilitation.
Operation & Maintenance (O&M) for fixed bridge = \$25,000/year (new bridge only).
O&M for moveable bridge = \$225,000/year (new bridge only).
O&M for No Build and Rehabilitation = \$2,135,197/year (based on historic data from NASA, 2011 - 2018).
- 4. Assume FP&L and Florida City Gas are reimbursable.
- 5. MOT is estimated at 10% of the Construction Cost including Roadway, Structures and Demolition.
- 6. Mobilization is estimated at 8% of the Construction Cost including Roadway, Structures, Demolition and MOT.
- 7. Contingency is estimated at 20% of Construction Cost including Roadway, Structures and Demolition.
- 8. CEI is estimated at 12% of Subtotal costs.