



OFFICE OF THE COUNTY ADMINISTRATOR

M E M O R A N D U M

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

FROM: Mark S. Woodard, County Administrator *MSW*

SUBJECT: AECOM Scope for Sea Level Rise Evaluation for Dunedin Causeway Bridge

DATE: March 15, 2017

At the January 24th meeting, the Board directed the modification of the existing contract with AECOM (formally URS) to provide additional evaluation for the Dunedin Causeway Bridge. The attached scope will specifically look at the potential impacts of Sea Level Rise (SLR) on the proposed alternatives identified in the Project Development and Environmental (PD&E) Study, including the no-build scenario.

The scope will provide a review of current climate science data and guidance for new bridge construction. This will provide a summary of the combined effects of bridge design criteria, storm surge, wave crest elevations, and SLR over the life of the bridge structure, the approaches and surrounding area.

The data collected will be used to identify the impacts to the natural and built environment of each bridge alternative, including the no-build option and corresponding mitigation strategies. The study will also include estimates for additional costs due to the impacts of SLR.

The additional cost for this proposed work task and the time extension for the PD&E Study is a total of \$40,148.13 (see attached fee estimate). This will be processed as delegated item. We anticipate completing this additional analysis within three (3) months and will provide the information to the Board upon completion.

Attachments

Exhibit A

Pinellas County

First Amendment

Scope of Services

Sea Level Rise Evaluation for the Dunedin Causeway Bridges

February 20, 2017

Public Works Department

Prepared By:

URS

7650 West Courtney Campbell Causeway
Tampa, FL 33607
Phone: (813) 286-1711

List of Acronyms

BCC	Pinellas County Board of County Commissioners
CIP	Capital Improvement Project
DPW	Department of Public Works
FDOT	Florida Department of Transportation
MPO	Metropolitan Planning Organization
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
PD&E	Project Development and Environment
PSA	Professional Service Agreement
SLR	Sea Level Rise
SOW	Scope of Work
QA/QC	Quality Assurance/Quality Control
TBCSAP	Tampa Bay Climate Science Advisory Panel
URS	URS Corporation Southern
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USGS	United States Geological Survey

Pinellas County
Public Works Department
FIRST AMENDMENT
Scope of Services
Sea Level Rise Evaluation for the Dunedin Causeway Bridges

1 INTRODUCTION & BACKGROUND

URS is currently conducting a Project Development and Environment (PD&E) Study for the Dunedin Causeway Bridges in Pinellas County. The study is evaluating options for the tide relief bridge at the western end of the Causeway and the main bascule bridge at the eastern end of the Causeway. For the tide relief bridge, a no build alternative and a low-level fixed span replacement alternative with the alignment shifted slightly south of the existing bridge are being investigated. For the main bascule bridge, a no-build alternative and three replacement alternatives are being considered; a low-level bascule bridge, a mid-level bascule bridge and a high-level fixed bridge.

For the main bascule bridge, three preliminary alignments were investigated at a conceptual level; an alignment shifted to the north, an alignment shifted to the south and an alignment following the existing bridge. Replacement on the existing alignment will require a temporary bridge to carry traffic while the new bridge is built. A preliminary screening of the nine main bridge build alternatives was conducted and, based on an evaluation of preliminary impacts and input from the public, the center alignments with a temporary bridge were selected for further development.

At the Pinellas County Board of County Commissioners' (BCC) meeting on January 24, 2017, the board requested information about the effects of Sea Level Rise (SLR) on the bridge alternatives to assist in their selection of a Recommended Alternative for the PD&E Study. This study is intended to provide that information to the BCC.

The no-build alternative and the rehabilitation option do not meet the stated purpose and need of the project from a National Environmental Policy Act (NEPA) perspective. However, they will be included in the SLR evaluation to provide a comparison between the build and the no build scenarios. The new bridges are estimated to have a 75-year design life.

2 SCOPE OF SERVICES

URS developed this scope of work to determine the effects of potential SLR on the alternatives being developed for the Dunedin Causeway Bridges PD&E Study. The intent of this SLR evaluation is to provide additional information about potential impacts and costs to the project for the various increases in sea level predicted by the Tampa Bay Climate Science Advisory Panel (TBCSAP).

The Scope of Work for this study will include the following:

Task 1. Review of Climate Data and Design Criteria

The review of existing climate science data from TBCSAP and agency design criteria is foundational for this study as it sets the parameters or boundaries for the assessment. For the Dunedin Causeway, it is understood that SLR, storm surge and wave crest elevation should be considered for the replacement options.

The URS team will prepare a Climate Data and Design Criteria memo incorporating the latest information and recommendations about SLR from TBCSAP. Current FDOT, USACE and USCG design requirements will be compiled, as will the storm surge and wave crest elevations determined by the coastal engineer for the Dunedin Causeway bridge sites. This will include:

1. A review of other available existing reports from NOAA, the USACE, the USCG, the USGS, the FDOT, the Tampa Bay Regional Planning Council, the Hillsborough County MPO, and others addressing the issue of climate change and SLR. The review is intended to summarize the actions being taken by other agencies as a point of reference.
2. Development of tables to summarize the existing FDOT, USACE and USCG design criteria for new bridges over navigable water.
3. Development of tables to summarize the combined effects of design criteria, storm surge, wave crest elevation and SLR for each of the TBCSAP scenarios.
4. Determination of the appropriate time horizons to be considered in evaluating impacts on each of the alternatives, including the no-build and major rehabilitation options, due to SLR.
5. Meet with County staff to review and validate the scenarios to be used in the evaluation of impacts and costs.

Deliverables

1. Climate Data and Design Criteria Memo that will include a summary of the design criteria and the climate scenarios and a recommendation of the time horizons to be utilized in the evaluation of future impacts.

Purpose

Task 1 provides the parameters for estimates of the amount of SLR at various points in the future and provides a total estimate of the combined effects of SLR, storm surge and wave crest elevation. Task 1 also compiles all of the design criteria currently in use by FDOT, USCG and other agencies and stakeholders for the design and construction of bridges over navigable waters.

Task 2. Mitigation Strategies

The data obtained in Task 1 will be used to develop possible scenarios for mitigation or implementation. The scenarios to be investigated include:

1. A discussion of impacts if the bridge alternatives are constructed following today's criteria with no allowance for SLR. Tables and text will be developed to illustrate potential impacts to the various design criteria under the sea level rise scenarios at the selected time horizons.
2. A discussion of the design changes that would be required today to accommodate the various SLR scenarios projected for the future. In this scenario, each of the three bridge replacement alternatives under consideration for the main bridge and the replacement alternative under consideration for the tide relief bridge will be evaluated for each of the SLR scenarios to determine any adjustments required in the final design to meet current design standards for the year 2100 and for each of the relevant time horizons developed in Task 1.

This task will include revising the vertical profiles of each of the three replacement alternatives under consideration for the main bridge and the replacement alternative under consideration for the tide relief bridge.

At the conclusion of this task, URS will meet with County staff to review and validate the mitigation strategies proposed for each of the alternatives.

Deliverables

1. Mitigation Strategies Memo summarizing the two mitigation strategies and their overall impacts to the project.
2. Roll plots for each of the three bridge replacement alternatives under consideration for the main bridge and the replacement alternative under consideration for the tide relief bridge outlining the impacts to natural and physical resources as a result of raising the bridge profiles.

Purpose

Task 2 provides the footprint of the physical impacts of SLR on the three bridge replacement alternatives under consideration for the main bridge and the replacement alternative under consideration for the tide relief bridge, as well as for the no-build and major rehabilitation options.

Task 3. Impacts

The mitigation strategies developed in Task 2 will be used to determine impacts to the natural and physical environment. The vertical profiles of each of the build replacement alternatives will be raised to accommodate storm surge, wave crest elevation and SLR in the future. The impacts of raising the bridge profiles on adjacent properties, wetlands, seagrasses, or parks will be shown graphically. Modifications to intersections and access roads as a result of changes to the vertical profiles will also be shown.

Any additional right-of-way requirements for walls, access roads and intersection modifications will be identified. Any additional impacts to Rotary Park will be identified. Any additional impacts to recreational areas and to areas of wetlands or seagrasses will be identified.

Costs for the additional impacts of SLR to the three bridge replacement alternatives under consideration for the main bridge and the replacement alternative under consideration for the tide relief bridge will be developed to a conceptual level using historical available data. Additional costs to be considered include:

1. Bridge construction cost due to higher, longer bridges
2. Right-of-way
3. Loss of wetlands
4. Loss of seagrass
5. Loss of recreational areas under and adjacent to the bridges

SLR is also expected to impact the usable recreational areas of the Causeway and Honeymoon Island State Park. The impacts will vary depending on the SLR scenario and the time horizon. Graphics will be prepared for each of the time horizons established in Task 1 that show the impacts of SLR on the usable areas of the Causeway and Honeymoon Island.

Deliverables

1. Roll plots for each of the three bridge replacement alternatives showing additional impacts to natural and other resources as a result of raising the bridge profiles.
2. Impacts Memo describing the additional estimated costs to incorporate the effects of SLR into each of the build replacement alternatives.
3. PDFs for each time horizon showing the impacts of SLR on the usable areas of the Causeway and Honeymoon Island.

Purpose

Task 3 provides an estimate of the additional costs due to the physical impacts of SLR on the three bridge replacement alternatives under consideration for the main bridge and the replacement alternative under consideration for the tide relief bridge, as well as for the no-build and major rehabilitation options. Task 3 also provides a visual representation of the effect of SLR on the usable areas of the Causeway and Honeymoon Island.

Task 4. Attendance at Meetings

URS will attend a meeting of the Pinellas BCC to present the findings of the study to the Board. A powerpoint presentation summarizing the key points of the study will be prepared.

Deliverables

1. Powerpoint presentation summarizing the key points of the study.

Purpose

Task 4 provides an opportunity for the results of the study to be disseminated to the Board for their consideration and offers an opportunity for the Board to ask questions of the design team.

FIRST AMENDMENT
Sea Level Rise Evaluation for the Dunedin Causeway Bridges
Staff-Hour Fee Estimate

Staff Classification	Project Manager	Senior Engineer	Senior Designer	Senior Planner	Senior Surveyor	Landscape Architect	Engineer	Planner	Surveyor	Environ. Scientist	Technician	Admin.	TOTAL
Approved Wage Rates	\$185.67	\$169.56	\$144.73	\$137.36	\$124.10	\$114.49	\$102.52	\$92.03	\$86.01	\$83.03	\$81.13	\$64.36	
Task 1 – Review of Climate Data & Design Criteria													
1.1 Review/summarize other available climate change/SLR reports	4			4				8					16
1.2 Develop tables of existing available design criteria	4			2				4					10
1.3 Develop tables of the combined effects for TBCSAP scenarios	4			2				4					10
1.4 Determine time horizons for SLR impacts evaluation	2			2									4
1.5 Meet w/ County staff to validate impact/cost evaluation scenarios	4			4									8
1.6 Prepare Deliverable 1: Climate Data and Design Criteria Memo	2			4				8				4	18
Subtotal	20	0	0	18	0	0	0	24	0	0	0	4	66
	\$ 3,713.40	\$ -	\$ -	\$ 2,472.48	\$ -	\$ -	\$ -	\$ 2,208.72	\$ -	\$ -	\$ -	\$ 257.44	\$ 8,652.04
Task 2 – Mitigation Strategies													
2.1 Evaluate bridge alternatives using existing design criteria (No SLR)	4												4
2.2 Modify vertical profiles of bridge alternatives to accommodate storm surge, wave crest elevation & SLR using scenarios/time horizons from Task 1	2			2									4
2.3 Modify intersections/access roads to account for raised vertical profiles	2			2									4
2.4 Meet w/ County staff to review/validate mitigation strategies	4			4									8
2.5 Prepare Deliverable 2: Mitigation Strategies Memo	2			4				8					14
Subtotal	14	0	0	12	0	0	0	8	0	0	0	0	34
	\$ 2,599.38	\$ -	\$ -	\$ 1,648.32	\$ -	\$ -	\$ -	\$ 736.24	\$ -	\$ -	\$ -	\$ -	\$ 4,983.94
Task 3 – Impacts													
3.1 Evaluate impacts to natural & physical environment due to raised vertical profiles/changes to intersections/access roads in Task 2	2			2									4
3.1(a) Prepare graphics depicting impacts for scenarios/time horizons							16						16
3.2 Develop conceptual-level costs for the modified bridge alternatives	4			6			16						26
3.3 Prepare Deliverable 3: Concept plans (roll plots) for modified bridge alternatives							4						4
3.4 Prepare Deliverable 4: Impacts Memo	4			4				16				8	32
3.5 Prepare Deliverable 5: Graphics of SLR impacts on usable areas of Causeway/Honeymoon Island	2			2			16						20
Subtotal	12	0	0	14	0	0	52	16	0	0	0	8	102
	\$ 2,228.04	\$ -	\$ -	\$ 1,923.04	\$ -	\$ -	\$ 5,331.04	\$ 1,472.48	\$ -	\$ -	\$ -	\$ 514.88	\$ 11,469.48
Task 4 - Miscellaneous/Other Items													
4.1 Prepare presentation materials and attend BCC meeting	8			8				8					24
Subtotal	8	0	0	8	0	0	0	8	0	0	0	0	24
	\$ 17,824.32	\$ -	\$ -	\$ 15,384.32	\$ -	\$ -	\$ -	\$ 11,779.84	\$ -	\$ -	\$ -	\$ -	\$ 44,988.48
Total Hours	46	0	0	44	0	0	52	48	0	0	0	12	202
Total Labor \$ (Hours x Hourly Rate)	\$ 8,540.82	\$ -	\$ -	\$ 6,043.84	\$ -	\$ -	\$ 5,331.04	\$ 4,417.44	\$ -	\$ -	\$ -	\$ 772.32	\$ 25,105.46

SUBTOTAL PRIME: \$ 25,105.46
 SUBTOTAL SUBCONSULTANT (Lochner) \$ 15,032.67
 SUBTOTAL FEE: \$ 40,138.13
 CONTINGENCY \$ -
TOTAL FEE: \$40,138.13

ESTIMATE OF WORK EFFORT AND COST - SUBCONSULTANT

Name of Project: Dunedin Causeway Bridges PD&E Study - SLR Analysis
 County: Pinellas
 FPN: 134-0092-NC (PID 000423A)
 FAP No.: TBD

Consult. Name: H.W. Lochner, Inc.
 Consult. No.
 Date: 2/25/2017
 Estimator: **H.W. Lochner, Inc.**

Staff Classification	Total Staff Hours From "SH Summary - Firm"	Chief Engineer	Senior Engineer	Project Engineer	Engineer	Engineering Technician	Clerical							SH	Salary	Average
		\$224.87	\$199.82	\$134.85	\$88.00	\$65.19	\$60.85	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	By Activity	Cost By Activity
Public Involvement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	#DIV/0!
Engineering Analysis & Report	120	6	24	30	41	18	1	0	0	0	0	0	0	120	\$15,033	\$125.27
Environmental Analysis & Reports	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	#DIV/0!
Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	#DIV/0!
Total Staff Hours	120	6	24	30	41	18	1	0	0	0	0	0	0	120		
Total Staff Cost		\$1,349.22	\$4,795.68	\$4,045.50	\$3,608.00	\$1,173.42	\$60.85	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$15,032.67	\$125.27

Check = \$15,032.67

SALARY RELATED COSTS:		\$15,032.67
OVERHEAD:	0.00%	\$0.00
OPERATING MARGIN:	0.00%	\$0.00
FCCM (Facilities Capital Cost Money):	0.000%	\$0.00
EXPENSES (Note 2):	0.00%	\$0.00
SALARY RELATED SUBTOTAL:		\$15,032.67
Survey (Field - if by Sub)	0.00 4-man crew days @ \$ - / day	\$0.00
SUBTOTAL - SUBCONSULTANT		\$15,032.67
Optional Services (Note 3)		\$0.00
SUBCONSULTANT TOTAL ESTIMATED FEE:		\$15,032.67

Note:

- This sheet to be used by Subconsultant to calculate its fee.
- Provide backup for the expense calculation in a format acceptable to the Department.

Included in Overhead

ENGINEERING ANALYSIS Lochner

Estimator: Name		Dunedin Causeway Bridges PD&E Study - SLR Analysis 134-0092-NC (PID 000423A)				
Task No.	Task	Units	# of Units	Hours / Unit	HOURS	Comments
2.0	ENGINEERING ANALYSIS and REPORTS					
	DATA COLLECTION					
2.1	Field Review	L.S.	1	0	0	
2.2	Aerial Photography	L.S.	1	0	0	
2.3	Survey Coordination	L.S.	1	0	0	
2.4	Existing Roadway Characteristics	L.S.	1	0	0	
2.5	Existing Structures Characteristics	per structure	0	0	0	
2.6	Traffic Data	L.S.	1	0	0	
2.7	Crash Data	L.S.	1	0	0	
2.8	Existing Signage Inventory	L.S.	1	0	0	
2.9	Utilities and Railroads	per agency	0	0	0	
2.10	Transportation Plans	L.S.	1	0	0	
2.11	Soils	L.S.	1	0	0	
2.12	Base map *	per sheet	0	0	0	
	NEEDS					
2.13	Safety *	L.S.	1	0	0	
2.14	Analysis of Existing Conditions *	L.S.	1	0	0	
2.15	Purpose and Need Statement *	L.S.	1	0	0	
	DESIGN ANALYSIS					
2.16	Corridor Analysis *	L.S.	1	0	0	
2.17	Traffic Analysis		Item total	----->	0	
	Design Traffic *	L.S.			0	
	Traffic Operational Analysis *	L.S.			0	
	Design Traffic Documentation *	L.S.			0	
2.18	Typical Section Analysis *	per typ section	0	0	0	
2.19	Roadway Design Alternatives *	L.S.	1	44	44	Assume development of 1 revised bridge profile and approach design for each of the 3 main bridge alternatives and 1 tide relief alternative. (4 alts x 11 hrs/alt = 44 hrs)
2.20	Prepare Concept Plans *	per sheet	1	58	58	4 roll plots for meetings (16 hrs) + 4 sets of .pdf plan sheet and profile graphics for the Task #2 & #3 memos (3 alts x 3 sheets = 9 main bridge plan sheets + 1 tide relief bridge = 10 plan sheets) (3 main span alt profiles + 1 tide relief profile = 4 profile sheets) (14 total sheets x 3 hrs/sheet = 42hrs)

Lochner

Lochner only hours, Add to URS hours

Task No.	Task	Units	# of Units	Hours / Unit	HOURS	Comments
2.21	Drainage and Floodplain Analyses	Item	total	----->	0	
	Drainage and Floodplain Analyses and Pond Siting Report *	per basin	0	0	0	
	Location Hydraulic Report *	L.S.	0	0	0	
2.22	Structures *	per structure	0	0	0	
2.23	Access Management *	L.S.	1	0	0	
2.24	Multi-modal Accommodations *	per agency	1	0	0	
2.25	Maintenance of Traffic Analysis *	L.S.	1	0	0	
2.26	Geotechnical Coordination	L.S.	1	0	0	
2.27	Intelligent Transportation Systems *	L.S.	1	0	0	
2.28	Utilities and Railroads *	L.S.	1	0	0	
2.29	Other Engineering Services *	L.S.	1	0	0	
COMPARATIVE ANALYSIS OF ALTERNATIVES						
2.30	Comparative Analysis and Evaluation Matrix *	L.S.	1	0	0	
2.31	Selection of Alternative(s) *	L.S.	1	0	0	
2.32	Conceptual Design Plans (preferred) *	per sheet	0	0	0	
2.33	Identify Construction Segments *	L.S.	1	0	0	
2.34	Value Engineering	per study	0	0	0	
2.35	Construction Cost Estimates *	L.S.	1	12	12	Updating Cost Estimates to determine incremental cost increases due to SLR Lochner only hours, Add to URS hours
2.36	Right of Way Cost Estimates	Item	total	----->	0	
	Notes and Maps for Estimate *	L.S.			0	
	Preparation Cost Estimate *	L.S.			0	
2.37	Typical Section Package *	L.S.	1	0	0	
2.38	Design Exceptions and Variations *	L.S.	1	0	0	
2.39	Preliminary Engineering Report (PER)	Item	total	----->	0	
	Draft *	L.S.			0	
	Final *	L.S.			0	

ENGINEERING ANALYSIS Lochner

Task No.	Task	Units	# of Units	Hours / Unit	HOURS	Comments
			Sub total	----->	114	
	*Subject to QC		% QC			
2.40	Quality Control	L.S.	5	%	6	Lochner only hours, Add to URS hours
	ENGINEERING TOTAL HOURS			----->	120	

Exhibit A

Pinellas County

First Amendment

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ENGINEERING ANALYSIS Lochner

Task No.	Task	Units	# of Units	Hours / Unit	HOURS	Comments
			Sub total	----->	114	
	*Subject to QC		% QC			
2.40	Quality Control	L.S.	5	%	6	Lochner only hours, Add to URS hours
	ENGINEERING TOTAL HOURS			----->	120	