

## **City of Clearwater Harbor Marina Wave Attenuator**

### **Engineering Services – Erickson Consulting Engineers, Inc (PO ST114701 – Amendment 2)**

**Task 8 - Design Changes to Gangway Design** original type/length of 5 ft and evaluate varying options and design requirements/implications on performance at 18-20 ft due to need to move the attenuator resulting north (20 ft) and curved vs flat gangway plates. Increased space/distance between docks and attenuator required that the gangway design options evaluate the impacts of the wave attenuator under wave conditions on the gangway movement and decisions on the best options for ADS, price implications, supplier. Also, the fishing station location and pipes were identified with lighting. Analysis balanced the performance vs potential for damage to docks during high wave conditions. Review of alternatives was performed in discussions with Marintek. Types and locations of the lighting for aesthetics and conforming to existing lighting, navigation lighting options and required distance from GIWW. Identify suppliers and manufacturers working with City, upon request for serviced from the Prime Contractor.

**Cost \$4,500**

### **Task 8B - Modifications to the Attenuator Design and Evaluate Alternative Pile Diameters and Embedment**

Contract is At Risk Contract with Kokolakis using a specialized marine construction company that was based on the original design assumptions prior to new geotechnical borings and calculations, with meetings and proposals from the local contractor (Speller) developed and evaluated. Changes were required to the pile diameter as a result of the findings of the two new deep core borings and testing provided by the Geotechnical Company and engineering calculations by the attenuator manufacturer and ECE's structural engineer, with additional time expenditures to validate all options and assumptions on the sub-surface soils/rock strata encountered and in attempts to minimize cost increases, it was determined that the original Marine Contractor's available equipment was insufficient to perform the required work when the pile size changed from 24 inch to 28 inch and also evaluated varying numbers of piles. Final pile availability and costs resulted in changes to 30 inch diameter steel. Documents sufficient for soliciting an available experienced contractor and work was performed to identify marine contractors and interview these contractors to assess their qualifications and ability to conduct the required work. Costs include structural engineer's fees for new calculations based on the varying means and methods utilizing grouts and larger drill/auger holes to meet design wave loads/requirements.

**Cost \$7,200**

**Task 8A - Negotiate with 2 Bidders to Determine Basis and Assumptions of Cost Proposals and Means/Methods, and Evaluate Changes to Reduce Costs and Revise Contract Scope of Work and Amendments to Contract Documents to Value Engineer Work**

In addition, due to the difficulty/cost and delivery time for 28 inch piles, required substantially more effort including calculations of required embedment and grouting, predrilling methods and other questions during Prime contractors procurement phase as to acceptable and final construction means and methods to meet required loads for attenuator system.

Communications with prospective marine contractors to evaluate the methods of drilling, grout requirements and evaluation of varying/reducing length, location of delivery and methods, availability to identify work items that significantly reduce costs for electrical, plumbing, delivery using local company's contracting directly. Review changes to the Contract documents, drawings, and specifications and supplemental conditions to modify work based on completing work in City best interest. Identify responsibilities of each Contractor to clarify and prevent potential conflicts during construction phase.

**Cost: \$9,500**

TASK	8	\$4500
	8B	\$7200
	8A	\$9500
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		\$21,200