

**DOWNTOWN MONTAUK**  
**DOWNTOWN MONTAUK STABILIZATION PROJECT**

**HURRICANE SANDY LIMITED REEVALUATION REPORT**  
**Evaluation of a Stabilization Plan for Coastal Storm Risk Management**  
**in Response to Hurricane Sandy**  
**&**  
**Public Law 113-2**

**COST APPENDIX**

**U.S. ARMY CORPS OF ENGINEERS**

**New York District**



**August 2014**

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## **1.0 INTRODUCTION**

This appendix provides a detailed cost estimate for the Downtown Montauk Stabilization Project. The selected plan stabilizes and reinforces the existing dune along 3,100 ft of shoreline in Downtown Montauk. Construction includes excavation and re-grading of the existing dune, fill and placement of Geotextile Sand Containers (GSC), and beach fill placement. The construction work is expected to be completed in a single contract.

The following sections provide a summary of the construction costs by code of account, abbreviated risk analysis, construction schedule, and fully funded and cost apportionment. Additional cost-backup is provided in Attachment A and B, which include the abbreviated risk analysis and M2 summary.

Details of the cost estimates prepared for the four other conceptual alternatives at Downtown Montauk are not presented in this appendix. Due to the relatively high annualized costs of these alternatives selection as one-time stabilization project was not possible. The annualized costs of these four alternatives over a 50 year period of performance are as follows: Beach Restoration (\$5,377,000), Beach Restoration & Buried Seawall (\$4,133,000), Feeder Beach (\$2,912,000), and Feeder Beach & Dune Reinforcement (\$3,262,000).

## **2.0 ACCOUNT SUMMARY**

### **2.1 Basis for Estimates**

Cost estimates were developed at an April 2014 price level for labor, material, and equipment. The material quantities for the project have been developed from the detailed plans shown in the Main Report.

### **2.2 Work Breakdown Structure**

The detailed estimate was compiled using MCACES MII ver. 4.1, and patterned after the Civil Works Template as a model. The estimate makes use of five reporting levels available in the following format:

- Level 1 – Construction Element: One of two major account codes used to estimate the total project cost.
- Level 2 – Sub Element / Segment: An individual segment of construction activity comprising one or more categories of work or features (cost account).
- Level 3 – Feature: A subcomponent of a major type of work (cost account).
- Levels 4 through 5 – Sub Feature, Bid Item, Assembly: Increasingly detailed levels of descriptions, assembly, and estimating dependent on the information and design level developed for the Feasibility Report.



### **2.3 Project Component Details and Associated Basis of Costs**

Labor costs reflect Davis Bacon labor rates for heavy dredging work in New York (General Decision No. NY130001). Equipment costs are derived from the MII 2011 Equipment Library, Region 01. Other costs such as sales tax, labor adjustment factor, freight and other local area factors are derived from the USACE publication EP 1110-1-8, Vol. 1.

#### Code of Account 01 – Lands and Damages

The Federal Government is required to acquire all Lands, Easements, Rights-of-way, and Relocations (LERR) that are necessary for construction of the Stabilization Project. Additional detail is provided in the Real Estate Plan, attached as Appendix F of the Downtown Montauk HSLRR.

The Real Estate requirements, for this project, include certain lands, easements, relocations and rights of way (LERR). The total LER required in support of the Project is approximately 13.46 acres; approximately 2.33 acres required in perpetual easements, and approximately 12.37 acres required in access agreements over public land. The Project impacts 22 parcels, impacting 16 private owners and 6 public owners. This project will not require relocation of property or utilities. The combined easement costs are estimated at \$498,800 (including contingency). Since the cost estimate for this account already includes contingency it was not included in the Abbreviated Risk Analysis (ARA).

#### Code of Account 17 – Beach Replenishment

Beach Replenishment includes the work required to construct the reinforced dune: mobilization/demobilization; excavation; sand fill; geotextile filter layer; and furnish, fill, and place GSCs.

The beachfill quantities are estimated from a profile survey conducted on November 24, 2013 at Ocean Beach Motel. The cost of obtaining and transporting the sand fill to project location is based on several quotes from local upland sand suppliers. Labor rates and overhead costs are adjusted to reflect the Davis Bacon labor rates for heavy dredging work in New York (General Decision No. NY130001). The cost of furnishing, filling, and placing the GSC are based on quotes from a potential manufacturer of the GSCs.

Mobilization includes assembling and transfer all the necessary crew and equipment at the project site. Sand fill will be obtained from one of the local upland suppliers and transported to from the upland supplier to a stockpile on site with dump trucks or tractor-trailers. The flat (unfilled) GSC will be placed in location by hand and hydraulically filled in place. A sand slurry will be mixed and pumped from the stock pile to each individual GSC using a mini-hopper, high pressure pump, and hydraulic power pack. Dozers will be used to shape the sand fill to the required design profile.

The estimated cost for beach replenishment is \$5,416,341.



### Code of Account 30 – Engineering & Design

An estimated cost was developed for all activities related with the engineering and design effort. The engineering and design cost includes project planning, environmental compliance, preparation of Plans and Specifications, as well as pre-construction monitoring and engineering support through project construction. The monitoring costs include beach physical monitoring conducted over a 15 year period.

Engineering and design fees were calculated to be 12% of total construction cost. The operation maintenance, repair, and replacement costs over a 15 year period are the responsibility of the local stakeholder and not included in the First Costs.

The estimated cost for engineering and design is \$650,000.

### Code of Account 31 – Construction Management

A cost was developed for all construction management (supervision and administration) activities from pre-award requirements through final contract closeout. Construction management fees were calculated to be 9.40% based on the standard S&A calculator for civil works.

The estimated cost for construction management is \$509,000.

## **2.4 First Costs**

First costs include charges arising from the acquisition or construction of each individual component, as well as the cost of easements, planning and environmental compliance, engineering and design, monitoring, engineering during construction, construction management (supervision & administration), and contingencies. The project first cost is \$8,860,000 as discussed below.

### Unit Costs

Unit costs for material and equipment were developed and based on the MII English Cost Book 2012 related with MCACES; actual costs and productions on projects and construction of a similar nature; current Davis Bacon labor rates for heavy dredging work; quotes from local upland sand suppliers and potential GCS manufacturer; and cost estimating judgment based on experience.

### Labor Rates

The labor rates including fringe benefits for the CEDEP and MCACES estimates were taken from the Davis Bacon labor rates for heavy dredging work in New York (General Decision No. NY130001).



## Lands and Damages

In order to construct the beach fill project, the Federal Government will be required to provide lands, easements and rights-of-way. The extent and value of the lands required for project implementation are provided in the Real Estate Plan Appendix.

## Contingencies

A risk based contingency was developed for the Stabilization Project with an Abbreviated Risk Analysis (ARA). The ARA was performed with the involvement of the PDT and cost engineer. The contingency factor is used to identify the uncertainty associated with the work or task, forecast the risk/cost relationship, and assign a value that would limit the cost risk to an acceptable level. Contingency factors were assigned to the various project/construction elements, real estate, engineering and design, and construction management based on the level of detail in the degree of confidence. Based on the abbreviated risk analysis (Attachment A) performed by the project development team, the following contingencies were assigned to the various project construction elements:

- 01 Land & Damages – 0% (Already built in to cost estimate)
- 17 Beach Replenishment – 27.62%
- 30 Engineering & Design – 12.82%
- 31 Construction Management – 12.82%

## Summary

Detail project first costs for the selected plan are presented in Table 1.



**Table 1: Project First Costs**

Notes: 2015Q1 Price Level

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)					
WBS NUMBER <i>A</i>	Civil Works Feature & Sub-Feature Description <i>B</i>	COST (\$K) <i>C</i>	CNTG (\$K) <i>D</i>	CNTG (%) <i>E</i>	TOTAL (\$K) <i>F</i>	ESC (%) <i>G</i>	COST (\$K) <i>H</i>	CNTG (\$K) <i>I</i>	TOTAL (\$K) <i>J</i>	Program Year (Budget EC):	FIRST COST (\$K)
										2015	
						Effective Price Level Date:				1 OCT 14	
										6/3/2014	
17	BEACH REPLENISHMENT	\$5,416	\$1,491	28%	\$6,907	1.6%	\$5,501	\$1,514	\$7,014	\$0	\$7,014
<b>CONSTRUCTION ESTIMATE TOTALS:</b>		\$5,416	\$1,491		\$6,907	1.6%	\$5,501	\$1,514	\$7,014	\$0	\$7,014
01	LANDS AND DAMAGES	\$499	\$0	0%	\$499	1.6%	\$507	\$0	\$507	\$0	\$507
30	PLANNING, ENGINEERING & DESIGN	\$650	\$83	13%	\$733	2.2%	\$664	\$85	\$749	\$0	\$749
31	CONSTRUCTION MANAGEMENT	\$509	\$65	13%	\$574	2.2%	\$520	\$67	\$587	\$0	\$587
<b>PROJECT COST TOTALS:</b>		\$7,074	\$1,639	23%	\$8,713		\$7,191	\$1,666	<b>\$8,857</b>	\$0	<b>\$8,857</b>





### **3.0 CONSTRUCTION SCHEDULE**

The pre-construction and construction sequence and time schedule of the Stabilization Project is dependent on the timeliness of this report's approval, the foregoing construction procedures, and the ability of local interests to implement items of local cooperation. These items of local cooperation are principally the furnishing of the required shoreline real estate easements by the State of New York.

The construction schedule is based on a Notice To Proceed (NTP) for construction on January 2, 2015. The total duration of construction is 122 days (4 months), with construction completed on May 4, 2015.

### **4.0 FULLY FUNDED & COST SHARING**

The Total Project Cost Summary is provided in Table 2. The estimated fully funded project cost is \$8,900,000. The costs are escalated to the midpoint of construction (described above).

The Downtown Montauk Stabilization Project has 100% Federal funding. Therefore, the Federal cost apportionment is \$8,860,000. The non-Federal partner is responsible for 0% of the total project cost. Operation and maintenance costs and administrative costs for real estate acquisition will be 100% non-Federal.



**Table 2: Total Project Costs Summary**

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)					TOTAL PROJECT COST (FULLY FUNDED)				
WBS NUMBER <i>A</i>	Civil Works Feature & Sub-Feature Description <i>B</i>	COST (\$K) <i>C</i>	CNTG (\$K) <i>D</i>	CNTG (%) <i>E</i>	TOTAL (\$K) <i>F</i>	Program Year (Budget EC): Effective Price Level Date: 2015 1 OCT 14				Spent Thru: <b>6/3/2014</b> (\$K)	FIRST COST (\$K)	ESC (%)	COST (\$K) <i>M</i>	CNTG (\$K) <i>N</i>	FULL (\$K) <i>O</i>
						ESC (%) <i>G</i>	COST (\$K) <i>H</i>	CNTG (\$K) <i>I</i>	TOTAL (\$K) <i>J</i>						
17	BEACH REPLENISHMENT	\$5,416	\$1,491	28%	\$6,907	1.6%	\$5,501	\$1,514	\$7,014	\$0	\$7,014	0.5%	\$5,528	\$1,521	\$7,049
<b>CONSTRUCTION ESTIMATE TOTALS:</b>		\$5,416	\$1,491		\$6,907	1.6%	\$5,501	\$1,514	\$7,014	\$0	\$7,014	0.5%	\$5,528	\$1,521	\$7,049
01	LANDS AND DAMAGES	\$499	\$0	0%	\$499	1.6%	\$507	\$0	\$507	\$0	\$507	0.0%	\$507	\$0	\$507
30	PLANNING, ENGINEERING & DESIGN	\$650	\$83	13%	\$733	2.2%	\$664	\$85	\$749	\$0	\$749	0.0%	\$664	\$85	\$749
31	CONSTRUCTION MANAGEMENT	\$509	\$65	13%	\$574	2.2%	\$520	\$67	\$587	\$0	\$587	0.5%	\$523	\$67	\$589
<b>PROJECT COST TOTALS:</b>		\$7,074	\$1,639	23%	\$8,713		\$7,191	\$1,666	<b>\$8,857</b>	\$0	<b>\$8,857</b>	0.4%	\$7,221	\$1,673	\$8,894
<b>Mandatory by Regulation</b>		CHIEF, COST ENGINEERING, Mukesh Kumar									ESTIMATED FEDERAL COST: <b>100%</b>		<b>\$8,857</b>		
<b>Mandatory by Regulation</b>		PROJECT MANAGER, Frank Verga									ESTIMATED NON-FEDERAL COST: <b>0%</b>		<b>\$0</b>		
<b>Mandatory by Regulation</b>		CHIEF, REAL ESTATE, Noreen Dresser									<b>ESTIMATED TOTAL PROJECT COST: \$8,857</b>				
		CHIEF, PLANNING, Frank Santomauro													
		CHIEF, ENGINEERING, Arthur Connolly													
		CHIEF, OPERATIONS, Thomas Creamer													
		CHIEF, CONSTRUCTION, Timothy Yarger													
		CHIEF, CONTRACTING, Francis Cashman													
		CHIEF, PM-PB, xxxxx													
		CHIEF, DPM, Joseph Seebode													



**ATTACHMENT A**

**ABBREVIATED RISK ANALYSIS**

