U.S. ARMY CORPS OF ENGINEERS
JACKSONVILLE DISTRICT

116680 LIDO KEY HURRICANE AND STORM DAMAGE REDUCTION PROJECT (Preconstruction, Engineering and Design Phase) SARASOTA COUNTY, FL

VALUE ENGINEERING REPORT

31 October 2013

DOD SERVICE: USACE **VALUE ENGINEERING OFFICER:** Jimmy Matthews, PE, CVS
CONTROL NO: CESAJ-VE-2014-001C

REPORT INFORMATION

VALUE ENGINEERING FIRM: U. S. Army Corps of Engineers
Jacksonville District
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VALUE ENGINEERING WORKSHOP CONDUCTED: 7-11 October 2013

VALUE ENGINEERING STUDY TEAM LEADER: Jimmy Matthews, P.E., CVS

VALUE ENGINEERING STUDY TEAM MEMBERS: Team member names and contact information are in Appendix B.

STUDY RESULTS:

Evidence of Unfettered Creativity: 69 ideas generated, several ideas were combined into alternatives and comments

Number of Proposals: 7
Number of Accepted Proposals: 7

Number of Comments: 12
Number of Comments Accepted: 12

Maximum Cost Avoidance (Gross): $3,627,000
Accepted Cost Avoidance (Gross): $2,866,000 to 3,627,000, tbd after award

Study Cost to Government: $28,000 (total)
Return on Investment: *102:1*

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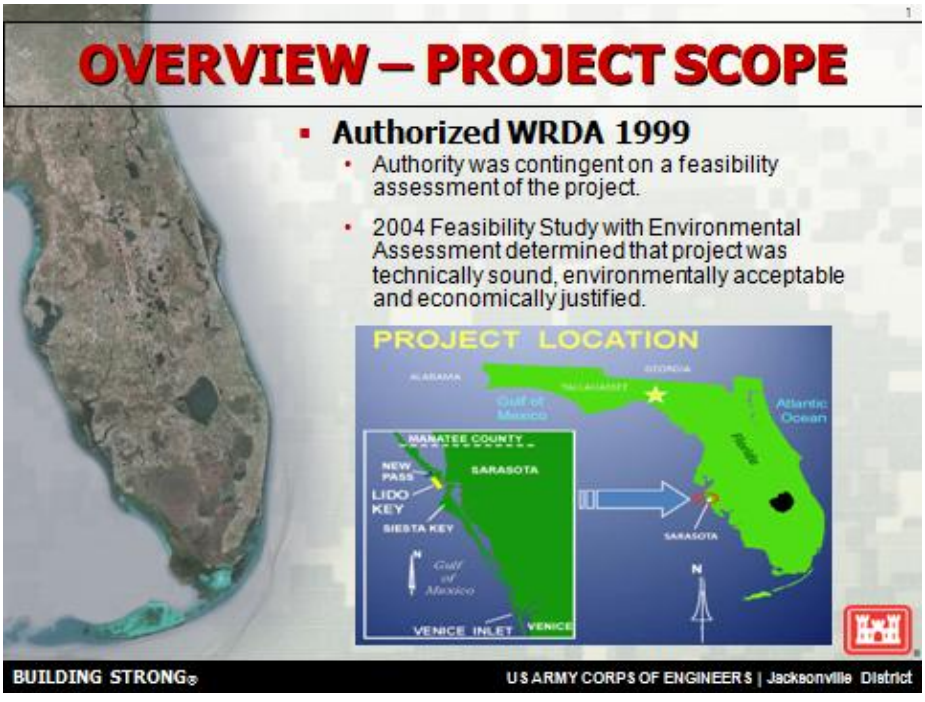
INTRODUCTION

This Value Engineering (VE) Report documents the completion of the Lido Key Hurricane and Storm Damage Reduction Project (Preconstruction, Engineering and Design Phase), Sarasota County, FL, October 2013.value analysis. The project is at the Preconstruction, Engineering and Design (PED) phase, preliminary phase of development for the Plans and Specifications (P&S). Value improvements proposed herein will be addressed during further P&S refinements.

PROJECT DESCRIPTION (on date of VE Study, 7-11Oct13)

The Hurricane and Storm Damage Reduction (HSDR) Project, Lido Key, Sarasota County, Florida (Lido Key Project) is described in a Final Integrated Project Implementation Report and Environmental Impact Statement dated October 2002 with April 2004 Addendum. The Chief of Engineers Report was signed 22 December 2004. Congress re-authorized the project in Section 364 of the Water Resources Development Act of 1999, Public Law 106-53. The non-Federal sponsor is the City of Sarasota. A Design Agreement for the Lido Key Project was signed 12 September 2007 between The Department of the Army and The City of Sarasota, Florida.

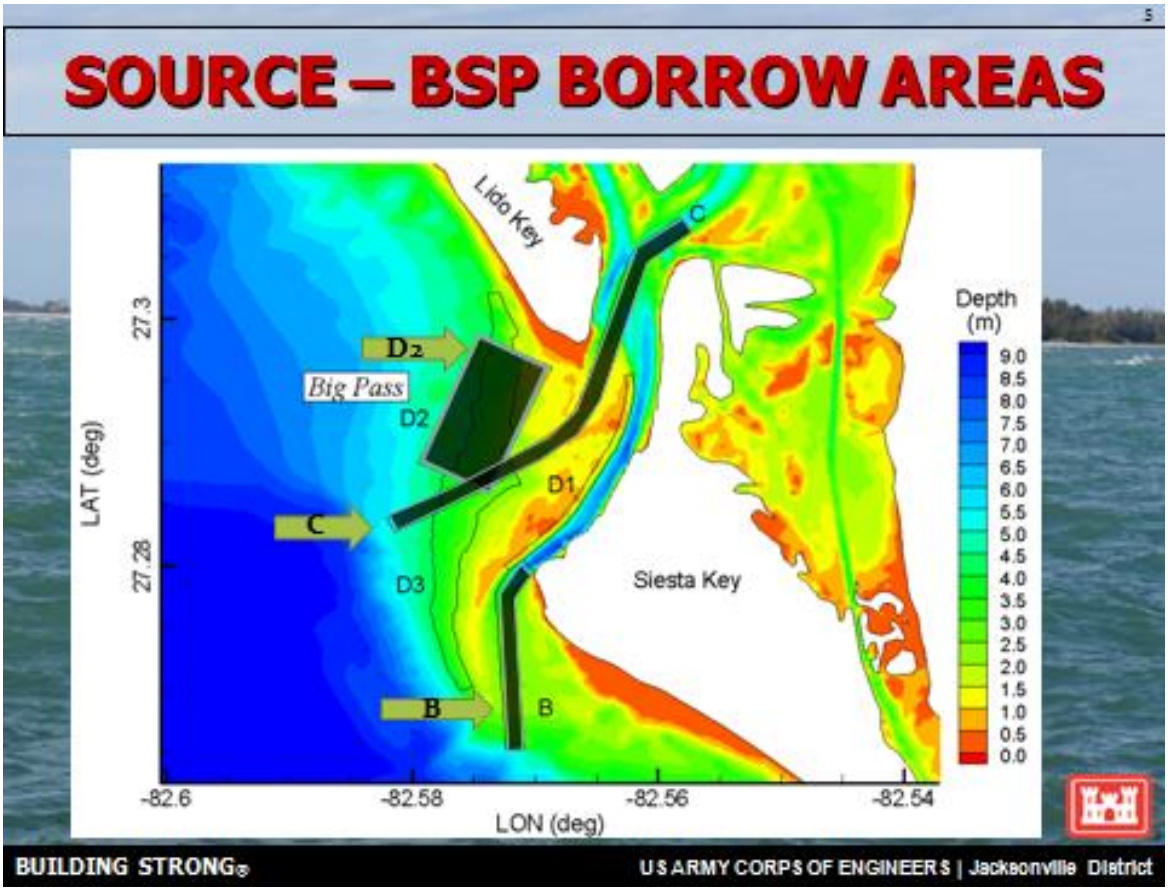
The Lido Project consists of a set of features that will improve shore protection while reducing coastal erosion and wave or surge impacts to upland development for 8,280 ft segment of the Lido Key Gulf of Mexico shoreline. The authorized plan as recommended in the Chief's Report includes construction of an 80-foot-wide beach berm at elevation +5 feet National Geodetic Vertical Datum (NGVD) over 8,200 ft. of shoreline, with 3 groins located near the southern limits of the project. Periodic nourishment, at a five (5) year interval, would optimize the net benefits over the 50 year period of analysis. Construction of the project would require placement of approximately 460,200 cy of design fill and 614,500 cy of advanced fill material. Three borrow areas, delineated for use, are located between 7.2 and 9.5 nautical miles offshore. The Lido Key shoreline is made up of private and extensively used public beaches. The project will improve storm damage prevention to coastal development and existing structures, while providing recreational benefits to Lido Key. A vicinity map and the recommended plan are displayed below.



2004 Feasibility Study Features

- Project Length (ft) = 8,280 (R-35 to R43)
- Design berm elevation = +5 ft NGVD
- Approximately 460,000 cy of design and 615,000 cy of advance material (1,075,000 cy)
- Three Borrow areas were delineated (5, 6 & 7)
- 5-year nourishment interval over 50-year life
- 615,000 cy required for each re-nourishment
- Three groins are part of the project along the southern portion
- Initial Estimated Construction cost = $22,708,000 (62.4%/37.6%)

Subsequent to the Chiefs Report, borrow area clearances were updated to protect habitats of concern. The result was the borrow areas in the decision document needed to replaced or augmented. Further detailed analyses and coordination changed the borrow area to Big Shoal Pass. The current alternative borrow alternatives at Big Pass are depicted on the following graphic.



PROJECT ISSUES, CONCERNS AND VALUE IMPROVEMENT OPPORTUNITIES

The Project Delivery Team identified the follow topics that could be improved via a Value Analysis. These topics were discussed and improvement ideas vetted during this VE study.

- Cost versus 902 Limits
- Use of Groins and Optimization
- Project schedule needs
- PED activities and costs
- NEPA and Permitting
- Non-Federal Sponsor Concerns
- Navigability of Big Pass
- Dredging of B/A
- Prevention of erosion on south end of Lido Key
- Bay side erosion, South Lido Park Area

VALUE METHODOLOGY

This report documents the VE workshop conducted 11-17 October 2013. The workshop was conducted using the six-phase Value Engineering Job Plan as sanctioned by USACE and the Society of American Value Engineers International (SAVE). This process, as explained below, was executed as part of daily activities as described in the Workshop Agenda exhibited in Appendix A. The VE Team was comprised of USACE Team Members from the Jacksonville District. The roster is located in Appendix B.

The VE Workshop culminated in the development phase where ideas were captured and refined into proposals or design comments. Design comments are topics that warrant consideration but their savings were not computable (quantitative) with current information. Appendix E contains the related documentation.

Information Phase

At the beginning of the study, the project team presents current planning and design status of the project. This includes a general overview and various project requirements. Project details are presented as appropriate. Discussion with the VE Team enhances the Team's knowledge and understanding of the project.

Function Analysis Phase

Key to the VE process is the Function Analysis. Analyzing the functional requirements of a project is essential to assuring an owner that the project has been designed to meet the stated criteria and its need and purpose. The analysis of these functions is a primary element in a value study, and is used to create ideas and develop proposals. This procedure is beneficial to the team, as it forces the participants to think in terms of functions. For this study, team members developed a function list and then considered the list in regards to the report's recommended plan features. This facilitated a deeper understanding of the project. The function analysis is presented in Appendix C.

Creativity Phase

The Creativity Phase involves identifying and listing creative ideas. During this phase, the team participates in a brainstorming session to identify as many means as possible to provide the necessary project functions. Judgment of the ideas is not permitted in order to generate a broad range of ideas. The creative phase continues through the other phases as ideas can, and often times do, create other ideas.

Evaluation Phase

The purpose of the Evaluation Phase was to systematically assess the potential impacts of ideas generated during the Creativity Phase relative to their potential for value improvement. Each idea is evaluated in terms of its potential impact to cost and overall project performance. Once each idea is fully evaluated, it is given a rating to identify whether it would be carried forward and/or developed as an alternative, combined with other ideas, presented as a design suggestion, dismissed from further consideration or that it is already being done by Project Delivery Team. Appendix D lists those ideas

with their evaluation disposition. The appendix tables also display the evolution of ideas from creation through their embodiment into proposals or comments.

Development Phase

During the Development Phase, ideas passing evaluation are expanded and developed into comments. The development process considers such things as the impact to performance, cost, constructability, and schedule of the alternative concepts relative to the baseline concept. This analysis is prepared as appropriate for each alternative, and the information may include an initial cost and/or life cycle cost comparisons. Each alternative or idea describes the baseline concept and proposed changes and includes a technical discussion.

Presentation Phase

The VE Workshop concluded with a preliminary presentation of the value team's assessment of the project and value alternatives and ideas. The presentation provides an opportunity for the owner, project team, and stakeholders to preview the alternatives and develop an understanding of the rationale behind them. The presentation is also used to refine proposal justification to include the corporate perspective. The presentation was conducted 4Nov13.

STUDY RESULTS AND RECOMMENDATIONS

Study results are summarized below in proposals where quantitative cost avoidance opportunities can be realized and in comments where those ideas are captured that warrant further consideration by the PDT. Related cost avoidance will be developed for awarded contract and reported in the Value Engineering Reporting System (VERS). Should ideas/comments result in quantifiable cost avoidance, those ideas/comments will be documented as proposals and appended to this report.

The VE team developed seven proposal alternatives that warrant more detailed investigation. In general, VE team proposals centered on:

- Updating the beach fill erosion rates with post 2004 information; and
- Optimizing groin design.

PROPOSALS

The following proposals and potential cost avoidance will be evaluated by the PDT for incorporation into the project's design.

P1. Base beachfill quantities and erosion rates on P&S scope development and include post 2004 information instead of using 2004 report alone, $1,476,000.

P2A. Groin Optimization (Optimize dimensions, use local stone in marine mattresses, reduce sheet pile lengths), $1,139,000.

P2B. Groin Optimization (Optimize dimensions, use local stone in marine mattresses, replace sheet pile with grouted chinking stone), $1,390,000.

P2C. Groin Optimization (Optimize dimensions, use local stone in marine mattresses, reduce sheet pile lengths, selectively shorten groins), $1,422,000.

P2D. Groin Optimization (Optimize dimensions, use local stone in marine mattresses, replace sheet pile with grouted chinking stone, selectively shorten groins), $1,661,000.

P2E1. Eliminate the grouting from the chinking for P2B, $1,910,000.

P2E2. Eliminate the grouting from the chinking for P2D, $2,151,000.

COMMENTS

The following comments are offered for consideration by the PDT during further P&S and Design Documentation Report development. Should comments result in quantitative cost avoidance, this report will be appended with the proposal.

C1. Consider allowing the use of truck hauled sand.

C2. Reevaluate the use of T-groins (other alternatives to rubble mound groins).

C3. Revisit the northwest borrow area for contour dredging/backpassing for beachfill.

C4. Reconsider the equipment assumptions in the current estimate and address sequencing in the order of work.

C5. Check environmental windows for piping plover versus construction period.

C6. Consider RFP for acquisition.

C7. Plant dune vegetation.

C8. Use park for staging area.

C9. Reuse any remnant stone from the beach in groins.

C10. Revisit Current Working Estimate construction period for groins.

C11. Recommend reviewing the Cost and Schedule Risk Analysis for related VE improvements.

C12. Using sheet pile to the top elevation in the groins will pose a safety hazard to the public. Reduce several feet below top of groin or do not use.

APPENDIX A: VALUE ENGINEERING WORKSHOP AGENDA

APPENDIX B: WORKSHOP PARTICIPANT ROSTER

APPENDIX C: FUNCTION ANALYSIS

APPENDIX D: CREATIVITY AND EVALUATION

APPENDIX E: PROPOSAL AND RECOMMENDATION DOCUMENTATION