

U.S. Army Corps of Engineers South Atlantic Division Charleston District (SAC)

Hurricanes Harvey, Irma and Maria Emergency Supplemental

Folly Beach Shore Protection Project
City of Folly Beach, Charleston County, South Carolina
(P2#: 113064)

Implementation Documents

Review Plan

MSC Approval Date: 12 July 2019

Last Revision Date: 11 June 2019

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SECTION 1

Introduction

1.1 Purpose

This Review Plan (RP) defines the scope and level of review activities for preparing implementation documents for the Folly Beach Shore Protection Project and will help ensure a quality engineering project is developed by the U.S. Army Corps of Engineers (USACE) in accordance with EC 1165-2-217, "Review Policy for Civil Works." As described in more detail below, the review activities consist of a District Quality Control (DQC) review and a Biddability, Constructability, Operability, Environmental and Sustainability (BCOES) review. Also, as described in more detail later in the plan, an Independent External Peer Review (IEPR) is not recommended. The implementation documents to be addressed under this RP are as follows:

- Engineering Documentation Report (EDR)
- Plans and Specifications (P&S)
- Update to the Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) Manual

The technical review efforts addressed in this RP and DQC are to augment and compliment the policy review processes. Upon approval, this RP will be included in an Appendix to the Project Management Plan (PMP) and posted to the District website. The plan will be provided to the Project Delivery Team (PDT) and DQC teams and posted to the District website and included as an Appendix to the Project Management Plan (PMP).

1.2 References

- EC 1165-2-217, Review Policy For Civil Works, 20 February 2018
- ER 1110-1-12, Quality Management, 31 Mar 2011
- ER 415-1-11, Biddability, Constructability, Operability, Environmental and Sustainability (BCOES) Reviews, 1 January, 2013
- Folly Beach Shore Protection Project, Supplemental Work, PMP DATE 12-Dec-2017

1.3 Requirements

This RP was developed in accordance with EC 1165-2-217, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation. The EC provides the procedures for ensuring the quality and credibility of USACE decision, implementation, and operations and maintenance documents and other work products. The EC outlines five levels of review: DQC, Agency Technical Review (ATR), IEPR, Policy and Legal Review, and BCOES. The Review Plan identifies the most important skill sets needed in the reviews, the objective of the reviews, and the specific advice sought; thus, setting the appropriate scale and scope of review for the individual project.

1.4 Review Management Organization

The South Atlantic Division (SAD), the Major Subordinate Command (MSC), is designated as the Review Management Organization (RMO) for this project. Contents of this RP have been coordinated with SAD. In Progress Review (IPR) team meetings with SAD and Charleston District will be scheduled on an “as needed” basis to discuss programmatic, policy, and technical matters. Charleston District is the Designer of Record (DOR) for this project and will assist the RMO with assembling the ATR team, managing the ATR review, and developing the charge to reviewers.

SECTION 2

Project Description

2.1 Project Description

Folly Beach is continually subjected to the erosive forces of the Atlantic Ocean and is situated in a sand-starved environment. During the 1940s and 50s local residents constructed bulkheads and riprap revetments to curtail the erosive forces. The South Carolina Highway Department also constructed and maintained 41 timber and rock groins along the developed portion of the island’s shoreline. Local interests, through their Congressional representatives, requested a study of their problem. Recognizing the economic importance of beaches, the Senate Committee on Public Works adopted a resolution on 15 June 1972, requesting the Secretary of Army direct the Chief of Engineers to conduct a study of Folly Beach and vicinity. A study was completed in August 1979, recommending a structural plan consisting of a 16,860 foot-long beach berm having a width of 25 feet at an elevation of 4 feet NGVD and a gradually sloping beach face to provide a combined recreational beach width of 61 feet at time of placement. The prospective beach would be maintained by periodic sand renourishment every five years. This plan was adopted by the passage of Section 501 of WRDA 1986.

In August 1987 a Section 111 report was prepared by Charleston District recognizing that the Charleston Harbor Jetties have contributed to the erosion occurring at Folly Island. This report determined that 57% of the erosion occurring at Folly Beach was attributable to the jetties. A reevaluation report subsequently prepared in August 1988 showed the recommended plan was still economically justified. Additionally, the report recommended that the authorized project be reformulated to provide a higher degree of storm damage protection and that consideration be given to extending project limits both upcoast and downcoast within the limits of incremental economic justification.

The 1991 General Design Memorandum (GDM) recommended that the project be lengthened from 16,860 linear feet to 28,200 linear feet (5.35 miles) (figure 1) and the protective berm be adjusted from 25 feet wide at elevation 4 feet NGVD to 15 feet wide at elevation 9.0 feet NGVD (figure 2). The GDM further recommended that nine groins be rehabilitated and the renourishment cycle be changed from every 5 years to every 8 years with the final renourishment being for a 10-year period. This plan was approved with passage of the Energy and Water Development Appropriations Act of 1992 (Public Law 102- 104).



Figure 1. Map of the Folly Beach Shore Protection Project Area

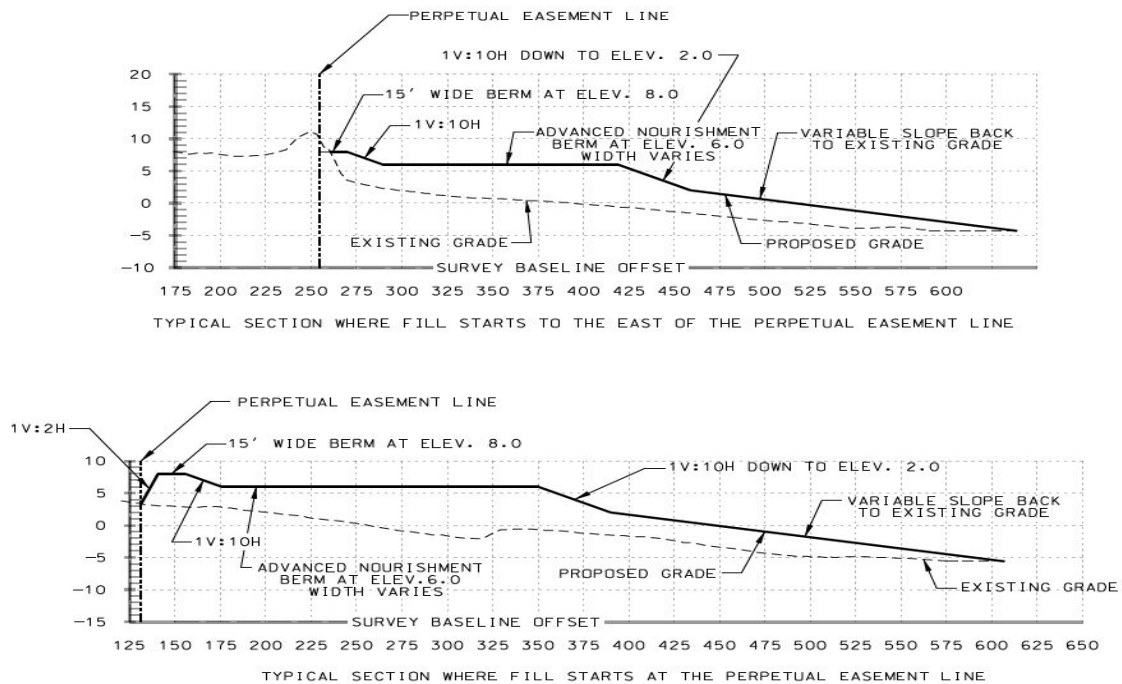


Figure 2. Renourishment Template for Advanced Nourishment

2.2 Proposed Work Descriptions

The Folly Beach Shore Protection Project (SPP) is required to conduct all activities needed to provide a full template renourishment with resiliency features. An Engineering Documentation Report (EDR) will be developed to document a modification to incorporate resiliency features into the template of the federal project. Incorporation of existing dune resiliency features within the federal project would include approximately 28,200 linear feet of existing dunes meeting the requirements of the modified template along the Front Beach renourishment area. Recommended dune construction within the federal project includes approximately 5,000 linear feet of the Front Beach renourishment area addressing hot spots identified in the Project Information Report (PIR).

2.3 Factors Affecting the Scope and Level of Review

- 1) The project does not have any significant technical, institutional, or social challenges.
- 2) The project is not highly controversial as it consists of continuing federal participation in periodic renourishments of the projects. It is not anticipated that there will be a significant public dispute as to the size, nature, or effects of the project.
- 3) No life safety issues are anticipated as the project will only continue construction to the previously authorized and constructed design limits.
- 4) A risk reduction in flood control benefits is not anticipated as reformulation of the authorized project design is not being considered in the Folly Beach SPP EDR, Plans and Specifications, or the update to the OMRR&R Manual.
- 5) The project is not publicly controversial.
- 6) A determination will be made by USACE, Charleston District, in the EDR to identify if construction of dunes through the remaining life of the project is consistent with the design of the current authorization. If the EDR indicates results that change the scope of this review, this RP will be updated.
- 7) The project is a typical beach renourishment project involving traditional methods of dredging and traditional methods of placement of dredged material. There is ample experience within USACE developing Coastal Storm Risk Management (CSR) reports and executing this type of dredging and material placement.
- 8) All technical areas have methods to identify and mitigate inherent risks.
- 9) Preliminary analysis indicates that impacts to fish and wildlife, including threatened and endangered species, are expected not to be significant. To the extent practicable, environmental concerns can be addressed through mitigation measures of avoidance, minimization, or compensation, and through public education and outreach efforts. An Environmental Assessment (EA) will be completed to document the environmental effects of the proposed design.
- 10) The project is not justified by life safety requirements and does not involve significant threat to human life/safety assurance.
- 11) The Governor of South Carolina has not requested a peer review by independent experts.
- 12) The final EDR and supporting documentation will contain standard engineering and environmental analyses and information.

2.4 Project Sponsor

The Folly Beach SPP is 100% federally funded for the activities needed to provide a full template renourishment with resiliency features; therefore, there will not be in-kind contributions for this effort. The project sponsor is the City of Folly of Beach.

SECTION 3

District Quality Control

3.1 Requirements

All implementation documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo a seamless DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the PMP and ER 1110-1-12, Engineering & Design Quality Management. The subject project EDR, P&S, and OMRR&R will be prepared by Charleston District. Charleston District will manage the DQC process.

3.2 Documentation

DQC includes documenting and maintaining records for internal audits of proper DQC implementation. DQC will be performed on the P&S, EDR, and the OMRR&R Manual in accordance with the Charleston District's Engineering Division Quality Management Plan. DrCheckssm review software will be used to document all DQC comments, responses and associated resolutions accomplished throughout the review process; the respective team member will respond to comments noting concurrence or non-concurrence and provide an explanation of revised work and its location in the reviewed document. The review leader will compile all the comments and responses, note if the review and responses are comprehensive, and note significant issues and responses and unresolved issues before signing the DQC statement of technical review. The project manager will also sign and date the statement. Subsequently, the Chiefs of Planning and Engineering will describe the significant concerns and resolutions, and will sign a certification of Quality Control Review.

3.3 DQC Schedule and Estimated Cost

The below table identifies milestone reviews. The estimated cost for the DQC review is \$10,000.

Description of Product	Review Start Date	Review End Date
EDR	1 Aug 2019	15 Aug 2019
35% P&S	15 Oct 2019	22 Oct 2019
95% P&S	15 Nov 2019	22 Nov 2019

SECTION 4

Agency Technical Review

4.1 Requirements

ATR is mandatory for all implementation documents (including supporting data, analyses, environmental compliance documents, etc.). The modifications investigated and proposed within the EDRs will be focused on measures that would increase the resiliency, robustness and reliability of the current federal projects. The focus was on measures that could be implemented within the existing footprint of each of the authorized projects. No efforts were made to reformulate or redesign the authorized projects. Each of the authorized projects was originally formulated to prevent shoreline erosion but did not assess the integrated nature of dunes and berms. The project will add existing dunes to the project boundaries and/or building to dune dimensions already present. As such, the EDRs cover minor modifications that would add to the resilient performance of each project; therefore, an ATR is not recommended. However, the EDR will undergo a Quality Assurance (QA) review by the SAD prior to approval from the District Commander.

4.2 Documentation of ATR – not applicable

4.3 Products to Undergo ATR – not applicable

4.4 Required Team Members and Requirements – not applicable

4.5 Statement of Technical Review Report – not applicable

4.6 ATR Schedule and Estimated Cost – not applicable

SECTION 5

Independent External Peer Review / Safety Assurance Review

5.1 Requirements

An IEPR may be required for implementation documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-217, is made as to whether an IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted.

Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

5.2 Decision / Determination

- **Type I IEPR Determination**

Type I IEPR is generally for decision documents. No decision documents or other applicable Section 2034 products are addressed by this RP. Therefore, a Type 1 IEPR is not applicable to the implementation documents addressed by this RP.

- **Type II IEPR / SAR Determination**

For any design and construction activities that are justified by life safety or for which the failure of the project would pose a significant threat to human life a SAR is required. A recommendation for an exclusion from this requirement must be documented in the RP with a thorough discussion of why there are no potential failure modes for the project that would pose a significant threat to human life. A project is determined to have a "significant threat to human life" if at any time during the construction or operation, failure could result in a substantial life safety concern. The consequences of failure and the population at risk are paramount for the SAR determination. Existing risk information, including risk assessments, should be used to facilitate and inform this determination.

A risk-informed decision was made as to whether conducting a Type II IEPR is appropriate based on the below consideration factors as outlined in EC 1165-2-217, Section 12 (h) thru (i).

- (1) The failure of the project would pose a significant threat to human life;

This project will perform a periodic nourishment and construct dune features that will re-establish a beach. The beach is designed to protect structures through its sacrificial nature and is continually monitored and renourished in accordance with program requirements and constraints. Failure or loss of the beach fill will not pose a significant threat to human life.

In addition, the prevention of loss of life within the project area from hurricanes and severe storms is via public education about the risks, warning of potential threats and evacuations before hurricane landfall.

- (2) The project involves the use of innovative materials or technique and the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent-setting methods or models, or presents conclusions that are likely to change prevailing practices;

This project will utilize methods and procedures used by the USACE on other similar works.

- (3) The project design requires redundancy, resiliency, and robustness;

The beach fill design is in accordance with the USACE Coastal Engineering Manual. The manual does not employ the concept of redundancy for beach fill design.

- (4) The project has unique construction sequencing or a reduced or overlapping design construction schedule; for example, significant project features accomplished using the Design-Build or Early Contractor Involvement delivery systems.

This project's construction does not have unique sequencing or a reduced or overlapping design. The installation sequence and schedule has been used successfully by the USACE on other similar works.

Based on the discussion above, the District Chief of Engineering, as the Engineer-In-Charge, does not recommend a Type II IEPR.

5.3 Products to Undergo SAR – not applicable

5.4 Required Panel Expertise – not applicable

5.5 Documentation – not applicable

5.6 Scope, Schedule, and Estimated Cost – not applicable

SECTION 6

Policy and Legal Compliance Review

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy and warrant approval or further recommendation to higher authority by the SAD Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

SECTION 7

Biddability, Constructability, Operability, Environmental, and Sustainability Review

The value of a BCOES review is based on minimizing problems during the construction phase through effective checks performed by knowledgeable, experienced personnel prior to advertising for a contract. BCOES requirements must be emphasized throughout the planning and design processes for all programs and projects, including during planning and design. This will help to ensure that the government's contract requirements are clear, executable, and readily understandable by private sector bidders or proposers. It will also help ensure that the construction may be done efficiently and in an environmentally sound manner, and the construction activities and projects are sufficiently sustainable. Effective BCOES reviews of design and contract documents will reduce risks of cost and time growth, unnecessary changes and claims, as well as support safe, efficient, sustainable operations and maintenance by the facility users and maintenance organization after construction is complete. A BCOES Review will be conducted for this project at the Final Design Phase. BCOES will be managed by the Charleston District with team members from Charleston District.

SECTION 8

Public Posting of Review Plan

As required by EC 1165-2-217, the approved Review Plan will be posted on the District public website <https://www.sac.usace.army.mil/Missions/Civil-Works/Peer-Review-Plans/>. The public will have 30 days to provide comments on the documents; after all comments have been submitted, the comments will be provided to the technical reviewers. This is not a formal comment period and there is no set timeframe for the opportunity for public comment. If and when comments are received, the PDT will consider them and decide if revisions to the RP are necessary. This engagement will ensure that the peer review approach is responsive to the wide array of stakeholders and customers, both within and outside the federal government.

SECTION 9

Review Plan Approval and Updates

The South Atlantic Division is the MSC for this RP. The SAD Commander is responsible for approving this RP. The Commander's approval reflects vertical team input (involving District, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the implementation documents. Like the PMP, the RP is a living document and may change as the design progresses. The home district is responsible for keeping the RP up to date. Minor changes to the RP since the last MSC Commander approval are documented in Attachment 3. Significant changes to the RP (such as changes to the scope and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the RP, along with the Commander's approval memorandum, should be posted on the Home District's webpage. The latest RP should be provided to the RMO and the home MSC as well as the PDT, DQC, and ATR Teams.

SECTION 10

Engineering Models

The use of certified or approved engineering models is required for all activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on USACE studies and these models should be used whenever appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

No engineering models are required for the products referenced in this RP.

SECTION 11

Review Plan Points of Contact

Public questions and/or comments on this review plan can be directed to the following points of contact:

- District Contact, Project Manager: (843) 329-8054
- Review Management Organization: SAD
- RMO Contact: (404) 562-5121

ATTACHMENT 1

Team Rosters (FOUO)

Project Delivery Team:

Project Manager	
Economics	
Design Engineer	
Environmental	
Real Estate	
Geotechnical	
Cost Engineering	
GIS	
O&M Manual	
Engineering Chief	
Survey Chief	

District Quality Control (DQC) Team:

Engineering	
Environmental	
Cost Engineering	

ATTACHMENT 2

Review Plan Revisions

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 3

Acronyms and Abbreviations

<u>Term</u>	<u>Definition</u>	<u>Term</u>	<u>Definition</u>
AFB	Alternative Formulation Briefing	NED	National Economic Development
ASA(CW)	Assistant Secretary of the Army for Civil Works	NER	National Ecosystem Restoration
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CSDR	Coastal Storm Damage Reduction	O&M	Operation and maintenance
DPR	Detailed Project Report	OMB	Office and Management and Budget
DQC	District Quality Control/Quality Assurance	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DX	Directory of Expertise	OEO	Outside Eligible Organization
EA	Environmental Assessment	OSE	Other Social Effects
EC	Engineer Circular	PCX	Planning Center of Expertise
EIS	Environmental Impact Statement	PDT	Project Delivery Team
EO	Executive Order	PAC	Post Authorization Change
ER	Ecosystem Restoration	PMP	Project Management Plan
FDR	Flood Damage Reduction	PL	Public Law
FEMA	Federal Emergency Management Agency	QMP	Quality Management Plan
FRM	Flood Risk Management	QA	Quality Assurance
FSM	Feasibility Scoping Meeting	QC	Quality Control
GRR	General Reevaluation Report	RED	Regional Economic Development
Home District/MSD	The District or MSD responsible for the preparation of the decision document	RMC	Risk Management Center
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMO	Review Management Organization
IEPR	Independent External Peer Review	RTS	Regional Technical Specialist
ITR	Independent Technical Review	SAR	Safety Assurance Review
LRR	Limited Reevaluation Report	USACE	U.S. Army Corps of Engineers
MSD	Major Subordinate Command	WRDA	Water Resources Development Act