



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
SOUTH ATLANTIC DIVISION  
60 FORSYTH STREET SW, ROOM 10M15  
ATLANTA, GA 30303-8801

CESAD-RBT

26 NOV 2012

MEMORANDUM FOR COMMANDER, CHARLESTON DISTRICT (CESAC-PM-M/  
DAVID WARREN)

SUBJECT: Approval of Review Plan for Plans and Specifications for Periodic Nourishment of Folly Beach Shore Protection Project, City of Folly Beach, South Carolina

1. References:

a. Memorandum, CESAC-PM-M, 24 October 2012, Subject: Approval of Review Plan for Periodic Nourishment Implementation Document for Folly Beach Shore Protection Project, City of Folly Beach, South Carolina (Enclosure).

b. EC 1165-2-209, Civil Works Review Policy, 31 January 2010.

2. The enclosed Review Plan for Plans and Specifications for Periodic Nourishment of Folly Beach Shore Protection Project, City of Folly Beach, South Carolina, has been reviewed by this office. As a result of this review, minor changes were coordinated with your staff. The enclosed Review Plan with the coordinated changes incorporated is hereby approved in accordance with references 1.b above.

3. We concur with the conclusion of the District Chief of Engineering that Type II Independent External Peer Review (Type II IEPR) is not required for this periodic nourishment of the Folly Beach Shore Protection Project. The primary basis for our concurrence that a Type II IEPR is not required is that the failure or losses of the beach fill does not pose a significant threat to human life. We also concur with the conclusion that Agency Technical Review (ATR) is not required on this periodic nourishment effort since the design duplicates previous editions of the Plans and Specification that have been successfully used in the past.

4. The District should take steps to post the Review Plan to its web site and provide a link to CESAD-RBT. Before posting to the web site, the names of Corps/Army employees should be removed. Subsequent significant changes to this Review Plan, should they become necessary, will require new written approval from this office.

5. The SAD point of contact is Mr. James Truelove, CESAD-RBT, 404-562-5121.

DONALD E. JACKSON, JR.  
COL, EN  
Commanding

Encl



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
CHARLESTON DISTRICT, CORPS OF ENGINEERS  
69A HAGOOD AVENUE  
CHARLESTON, SOUTH CAROLINA 29403-5107

24 OCT 2010

CESAC-PM-M

MEMORANDUM FOR U.S. Army Engineer Division, South Atlantic, (CESAD-RBT/Truelove)  
60 Forsyth Street, Room 10M15, Atlanta, Georgia 30303-8801

SUBJECT: Approval of Review Plan for Periodic Nourishment Implementation Document for  
Folly Beach Shore Protection Project, City of Folly Beach, South Carolina

1. REFERENCE:

- a. EC 1165-2-209, Civil Works Review Policy, 31 January 2010
- b. WRDA 2007 H.R. 1495 Public Law 110-114, 08 November 2007

2. I hereby request approval of the enclosed Review Plan and concurrence with the conclusion that Agency Technical Review (ATR) and Type II Independent External Peer Review (IEPR) of this project are not required. The ATR and Type II IEPR determinations were based on the EC 1165-2-209 Risk Informed Decision Process as presented in the Review Plan. Approval of this plan is for the Periodic Nourishment Work Product Documents. The Review Plan complies with applicable policy, provides District Quality Control and has been coordinated with the CESAD. It is my understanding that non-substantive changes to this Review Plan, should they become necessary, are authorized by CESAD.

3. The district will post the CESAD approved Review Plan to its website and provide a link to the CESAD for its use. Names of Corps/Army employees are withheld from the posted version, in accordance with guidance.

4. If you have any questions, please contact Mr. Bubber Hutto at (843) 329-8085 or Mr. David Warren at (843)-329-8146.

EDWARD P. CHAMBERLAYNE, P.E.  
LTC, EN  
Commanding

2 Encls

# REVIEW PLAN

**Folly Beach Shore Protection Project  
Folly Beach, South Carolina  
(Plans & Specifications)**

**Charleston District**

**MSC Approval Date: Pending**

**Last Revision Date: (enter date of last revision or 'none' if no changes since last approved by MSC)**



**US Army Corps  
of Engineers®**

**REVIEW PLAN**

**Folly Beach Shore Protection Project, Folly Beach, S.C.  
Other work product Document Type (Plans & Specifications)**

**TABLE OF CONTENTS**

1. PURPOSE AND REQUIREMENTS .....1

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION .....1

3. STUDY INFORMATION .....1

4. DISTRICT QUALITY CONTROL (DQC) .....3

5. AGENCY TECHNICAL REVIEW (ATR).....4

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR).....5

7. POLICY AND LEGAL COMPLIANCE REVIEW.....7

8. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION.....7

9. MODEL CERTIFICATION AND APPROVAL.....7

10. REVIEW SCHEDULES AND COSTS.....7

11. PUBLIC PARTICIPATION .....7

12. REVIEW PLAN APPROVAL AND UPDATES.....7

13. REVIEW PLAN POINTS OF CONTACT.....7

ATTACHMENT 1: TEAM ROSTERS.....9

ATTACHMENT 2: REVIEW PLAN REVISIONS .....10

## 1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the Folly Beach Shore Protection /Plans & Specifications. The review activities consist of District Quality Control (DQC). The project is in the Periodic Nourishment Phase and related documents are Plans and Specifications and Design Documentation Report (DDR). Upon approval, this review plan will be included into the Project Management Plan as an appendix to the Quality Management Plan.

### b. References

- (1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010 expires 31 January 2013
- (2) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Mar 2011
- (3) PMP for design
- (4) District Quality Management Plan

c. **Requirements.** This review plan was developed in accordance with EC 1165-2-209, 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 (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, other work product documents are subject to cost engineering review and certification (per EC 1165-2-209) and planning model certification/approval (per EC 1105-2-412).

## 2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for the peer review effort described in this Review Plan is **South Atlantic Division**.

## 3. PROJECT INFORMATION AND BACKGROUND

### a. 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 1940's and 50's 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 (5.34 miles) 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. 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).

The project was constructed in 1993 at a cost of \$11.7 million. Approximately 2.8 million cubic yards of material was placed in the project area and nine wooden groins north of the Folly Beach Holiday Inn were rebuilt using steel sheet pile with concrete caps. The first renourishment of the project would have been 2001, based on the 8-year cycle. Since the project held up better than expected the first renourishment was scheduled for December 2005.

As a result of the 2004 hurricane season, Folly Beach was approved for PL 84-99 assistance for beach rehabilitation. The City of Folly Beach elected to request that the project be fully renourished in conjunction with the emergency rehabilitation. A dredging contract was awarded on 4 March 2005 in the amount of \$12,115,200 for placement of 2,338,000 cubic yards over 5.34 miles of shoreline. The borrow site utilized for this contract was Borrow Site A, located approximately 3 miles offshore of the eastern end of Folly Island. The contract was subsequently modified to extend the project an additional 670 feet to the east with an increase of 57,213 cubic yards. Project dredging commenced on 24 May 2005 and completed on 3 December 2005.

Construction of the nourishment project initiated in May of 2005 was approaching the halfway point when Hurricane Ophelia subjected Folly Beach to several days of high surf and wave action. Damages to the completed portion of the 2005 renourishment project resulted in a loss of approximately 470,000 cubic yards of material on the eastern 1.92 miles of the authorized project. The portion eligible for Flood Control and Coastal Emergency Act (P.L. 84-99) Rehabilitation Assistance was the amount of sand necessary to restore the project to pre-storm conditions. A Project Information Report (PIR) was prepared by Charleston District showing the benefit of the emergency placement exceeded the cost of emergency placement and that such construction should be completed before the start of the 2007 hurricane season. The PIR was approved on 18 October 2006. The P.L. 84-99 Cooperation Agreement between the Corps of Engineers and the City of Folly Beach was executed on 22 November 2006.

A dredging contract was awarded to Great Lakes Dredge and Dock Company on 23 February 2007. Sand placement was performed by hydraulic cutter head dredge with pipeline running along the beach from 16 May – 28 June 2007, placing 486,100 cubic yards of material from Borrow Site B over a project length of approximately 1.92 miles.

**SUMMARY:** Folly Beach Shore Protection Project was authorized by Section 501 of the Water Resources development Act of 1986 (Public Law 99-662) and was modified by the Energy and Water Development

Appropriations Act of 1992 (Public Law 102-104). The project goal is to provide beach compatible sand to Folly Beach in accordance with the project template. The project's current dimensions are 28,200 linear feet (5.34 miles) and a protective berm 15 feet wide at an elevation 9 feet NGVD. The estimated cost of the project is \$25 million. The project sponsor is the City of Folly Beach. The cost share is 85% Federal and 15% City of Folly Beach. The cost share was adjusted since the Charleston Harbor jettys are a major cause of the erosion on the beach. The periodic nourishment period is 8 years and numerous storms have had an impact on the shore dimensions since the last sand placement in 2007. The City of Folly Beach has a need to restore the beach to protect property and provide access to the citizens of South Carolina.

The Charleston District PDT has determined that the Plans and Specifications and Design Documentation Report (DDR) for this renourishment effort are for replacement-in-kind and are "other work products" under EC 1165-2-209 since the project is in the Periodic Nourishment Phase, is a routine shore protection project that has twice previously been executed to the approved template, the project has performed as intended between renourishments and the project design will use this previously approved template and standard construction methodology for this renourishment effort.

**b. Factors Affecting the Scope and Level of Review.** This section discusses the factors affecting the risk informed decision on the appropriate scope and level of review.

- This project is a routine shore protection project that has already been executed twice to the approved template.
- A preliminary assessment of the project risk identified a minimal risk of the possibility of not finding sufficient beach compatible sand in the approved barrow area
- The project is justified by the impacts of the Charleston Harbor jetty's on the beach's ability to provide sufficient protection to buildings that have been constructed in the City of Folly Beach.
- There has not been a request by the Governor of an affected state for a peer review by independent experts.
- The project is likely not to involve significant public dispute as to the economic or environmental cost or benefit of the project.
- The project design will use a template and construction methodology that is the industry standard and has already been executed two times.
- The project design will only require the use of tried and true construction techniques and equipment.

**c. In-Kind Contributions. NONE**

#### **4. DISTRICT QUALITY CONTROL (DQC)**

All other work product documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. All DQC activities will be conducted in accordance with ER 1110-1-12 Engineering & Design Quality Management and EC 1165-2-209 as well as the district quality manual.

a. **Documentation of DQC.** The DQC will be documented in Dr. Checks and the responses will be reviewed and approved by the DQC lead engineer.

b. **Products to Undergo DQC.** The Plans and Specifications and DDR will undergo DQC.

**Required DQC Expertise.** DQC reviews will be conducted by technically qualified personnel who did not perform the original work.

## 5. AGENCY TECHNICAL REVIEW (ATR)

Review of the answers to the following questions from Paragraph 15.b of EC 116+5-2-209 help with the risk based determination that ATR is not warranted since the project areas have been dredged and the same portion of the beach has been renourished in the past with the same methods and means as envisioned for the subject P&S.

Below is the justification not to require and ATR:

(1) Does it include any design (structural, mechanical, hydraulic, etc)? Yes. The design duplicates previous editions of P&S that have been used successfully in the past.

(2) Does it evaluate alternatives? No.

(3) Does it include a recommendation? No.

(4) Does it have a formal cost estimate? Yes, an Independent Government Estimate for the contract.

(5) Does it have or will it require a NEPA document? Yes. The project uses existing Environmental Assessments and South Carolina Water Quality Certificates.

(6) Does it impact a structure or feature of a structure whose performance involves potential life safety risks? No. There is no life safety risk associated with this dredging/beach renourishment project.

(7) What are the consequences of non-performance? Should the project fail and/or not perform as intended, the beach would require renourishment prior to its next planned renourishment in order to provide the planned/expected level of protection.

(8) Does it support a significant investment of public monies? Yes.

(9) Does it support a budget request? No. The project implements appropriated funds.

(10) Does it change the operation of the project? No.

(11) Does it involve ground disturbances? Yes, dredging and beach placement are in areas that have been disturbed in accordance with authorized purposes in the past.

(12) Does it affect any special features, such as cultural resources, historic properties, survey markers, etc, that should be protected or avoided? No. All project areas have appropriate clearances.



(13) Does it involve activities that trigger regulatory permitting such as Section 404 or stormwater/NPDES related actions? Yes, however the project uses existing Environmental Assessments and Water Quality Certificates.

(14) Does it involve activities that could potentially generate hazardous wastes and/or disposal of materials such as lead based paints or asbestos? No.

(15) Does it reference use of or reliance on manufacturers' engineers and specifications for items such as prefabricated buildings, playground equipment, etc? No.

(16) Does it reference reliance on local authorities for inspection/certification of utility systems like wastewater, stormwater, electrical, etc? No.

(17) Is there or was there expected to be any controversy surrounding the Federal action associated with the work product? No.

**Additional Information:**

- The beach template and design has already been successfully used with the initial construction and the first periodic nourishment.
- Plans and Specifications will undergo DQC.
- EA will be updated by the District lead environmental engineer to ensure environmental compliance.

**6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)**

IEPR may be required for other work product 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 1165-2-209, is made as to whether 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. There are two types of IEPR:

- **Type I IEPR.** Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire other work product document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-209.
- **Type II IEPR.** 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.

**a. Decision on IEPR.**

- Type I IEPR. The P&S, DDR and supporting documents addressed by this Review Plan are not decision type documents and would not significantly benefit from Type I IEPR. Based on this and the answers to the questions presented in paragraph 5 above the PDT has made the risk-informed determination that a Type I IEPR is not needed for this renourishment effort.
  
- This shore protection project does not trigger WRDA 2007 Section 2035 factors for Safety Assurance Review (termed Type II IEPR in EC 1165-2-209). . The factors in determining whether a review of design and construction activities of a project is necessary as stated under Section 2035 along with this review plans applicability statement are presented below. Based on an assessment of the items below and the answers to the questions in paragraph 5 above, the PDT has made the risk-informed determination that a Type II IEPR is not required on this renourishment effort.

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

*This project will perform a periodic nourishment 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 techniques.

*This project will utilize methods and procedures used by the Corps of Engineers on other similar works.*

(3) The project design lacks redundancy.

*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 a unique construction sequencing or a reduced or overlapping design construction schedule.

*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 Corps of*

*Engineers on other similar works.*

- b. Products to Undergo Type I and/or Type II IEPR. NOT APPLICABLE**
- c. Required Type I and/or Type II IEPR Panel Expertise. NOT APPLICABLE**
- d. Documentation of Type I and/or Type II IEPR. NOT APPLICABLE**

#### **7. POLICY AND LEGAL COMPLIANCE REVIEW**

DQC will augment and complement the policy review processes by addressing compliance with pertinent published Army policies.

#### **8. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION**

The Shore Protection Project will have an Independent Government Estimate prepared by the District Cost Engineering team and will not require support from the DX.

#### **9. MODEL CERTIFICATION AND APPROVAL**

This Shore Protection Project design does not use any engineering models that have not been approved for use by USACE.

#### **10. REVIEW SCHEDULES AND COSTS**

##### **a. Project Milestones:**

- Completion of 95% Submittal-3/13
- District Quality Control-3/13 thru 4/13

#### **11. PUBLIC PARTICIPATION NOT APPLICABLE**

#### **12. REVIEW PLAN APPROVAL AND UPDATES**

The South Atlantic Division Commander is responsible for approving this Review Plan. 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 other work product document. Like the PMP, the Review Plan is a living document and may change as the effort progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval will be documented in Attachment 2. Significant changes to the Review Plan (such as changes to the scope and/or level of review) must be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, will be posted on the Home District's webpage. The latest Review Plan will also be provided to the RMO and home MSC.

#### **13. REVIEW PLAN POINTS OF CONTACT**

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

- Review Plan and QM Process  
SAC Bubber Hutto  
843-329-8085
  
- Project Information  
SAC Project Manager David Warren  
843-329-8142
  
- South Atlantic Division  
SAD James Truelove  
843-329-8142

**ATTACHMENT 1: TEAM ROSTERS**

<b>Name/Position</b>	<b>Phone Number</b>	<b>Role &amp; Responsibility</b>	<b>E-mail</b>
David Warren	843-329-8142	PM	michael.d.warren @usace.army.mil
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Bubber Hutto	8085	Engineering Team Lead	clarence.hutto@usace.army.mil
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Jeff Fersner	8147	Cost Estimator	jeffery.w.fersner@usace.army.mil
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Brandan Scully	8144	Navigation Team Lead	brandan.m.scully@usace.army.mil
Glenn Jefferies	8123	CCO	glenn.e.jeffries@usace.army,mil

**ATTACHMENT 2: REVIEW PLAN REVISIONS**

<b>Revision Date</b>	<b>Description of Change</b>	<b>Page / Paragraph Number</b>

