



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
SOUTH PACIFIC DIVISION, CORPS OF ENGINEERS  
1455 MARKET STREET  
SAN FRANCISCO, CALIFORNIA 94103-1399

*18-Mar-2015*

CESPD-DE

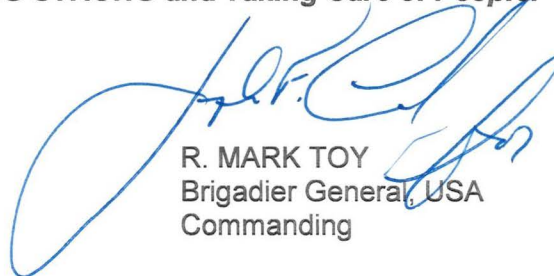
MEMORANDUM FOR Commander, US Army Corps of Engineers, Los Angeles District, (ATTN: CESPL-PM-N, Mr. James Fields)

Subject: San Pedro Bay Breakwater Repair Project, Los Angeles County, California, Review Plan Approval

1. San Pedro Bay Breakwater Repair Project, Los Angeles County, California, Review Plan that is enclosed is in accordance with Engineering Circular (EC) 1165-2-214, Review of Decision Documents, dated 15 Dec 2012. The South Pacific Division, Emergency Management Division, Planning and Policy Division, Regional Business Technical Division, and Los Angeles District Support Team have reviewed the Review Plan that has been submitted. The South Pacific Division approves the San Pedro Bay Breakwater Repair Project Review Plan.
2. With MSC approval the Review Plan will be made available for public comment via the internet and the comments received will be incorporated into future revisions of the Review Plans. The Review Plan does not require Independent External Peer Review Type II (SAR) for the plans and specifications development.
3. I hereby approve the Review Plan which is subject to change as study circumstances require. This is consistent with study and project development under the Project Management Business Process. Subsequent revisions to the Review Plan after public comment or during project execution will require new written approval from this office.
4. Points of contact for this action are Mr. Marc Goodhue, CESPD-RBT, 415-503-6568, [marc.j.goodhue@usace.army.mil](mailto:marc.j.goodhue@usace.army.mil) and Mr. Paul Bowers, CESPD-PDC, 415-503-6556, [paul.w.bowers@usace.army.mil](mailto:paul.w.bowers@usace.army.mil).

***BUILDING STRONG and Taking Care of People!***

Encl



R. MARK TOY  
Brigadier General, USA  
Commanding

# **Review Plan**

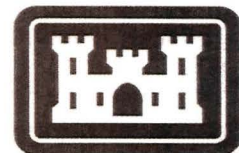
## **San Pedro Bay Breakwater Repairs**

**Los Angeles County, California**

for

**Plans & Specifications**

9 January 2015



**U.S. ARMY CORPS  
of ENGINEERS**  
Los Angeles District

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Review Plan: San Pedro Bay Breakwater Repairs - Plans & Specifications

Appendix A - Sample Statement of Technical Review for Plans & Specifications

Project Map – Los Angeles and Long Beach Harbors

## **1 PURPOSE**

The purpose of this Review Plan is to outline the review processes that will be executed for the San Pedro Bay Breakwater Repairs project, Los Angeles County, California, for the Plans & Specifications (P&S).

## **2 REFERENCES**

- 1) EC 1165-2-214, Civil Works Review Policy, 15 December 2012
- 2) ER 415-1-11, Biddability, Constructibility, Operability, Environmental and Sustainability (BCOES) Reviews, 1 January 2013
- 3) ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 Aug 1999
- 4) ER 1110-1-12, Quality Management, 30 Sep 2006
- 5) ER 1110-1-8159, Engineering and Design, DrChecks, 10 May 2001

## **3 PROJECT INFORMATION**

The three breakwater system protecting the Ports of Los Angeles and Long Beach consists of the San Pedro Breakwater, the Middle Breakwater, and the Long Beach Breakwater. The San Pedro Breakwater was authorized by the River and Harbor Act of 1896 and was completed prior to 1920. The Middle Breakwater project was authorized by the River and Harbor Act of July 1930 and was completed in 1942. The Long Beach Breakwater project was authorized by the River and Harbor Act of 1940 and was completed in 1948.

The breakwaters have been previously damaged by the 1939 hurricane, the winter storms of 1983, and the January 1988 storm. Repairs were conducted after all three damage events.

On 27 August 2014, a large southerly swell event generated by Hurricane Marie in the eastern Pacific Ocean impacted the three breakwaters. The Middle Breakwater experienced the brunt of the storm waves, with three complete breaches and many other significant areas of damage. The San Pedro and Long Beach breakwaters also suffered significant damages. This project will focus on repairing the significantly damaged areas of the Middle Breakwater, the Long Beach Breakwater, and the San Pedro Breakwater, based upon funds available.

The total lengths of repair areas are: Middle Breakwater - 1,230 linear feet; Long Beach Breakwater - 1,325 linear feet; and San Pedro Breakwater - 960 linear feet.

## **4 DESIGN CONSIDERATIONS**

### **4.1 Design Criteria**

Design criteria is based on considerable project construction history, standard engineering practice, and applicable engineering regulations, criteria, guides, memoranda, policies, and procedures.

#### **4.2 Design Complexity**

The project includes proposed construction features for which the engineering analyses and design is considered non-complex. These features include the placement of new rock, and the rehandling and resetting of existing rock.

#### **4.3 Construction Complexity**

Construction of the project components is considered non-complex, and is comprised of rock work.

#### **4.4 Special Considerations**

The San Pedro Breakwater was constructed using cut/fitted granite stones. This type of construction is extremely unique as a construction practice. It is imperative that the Coastal Engineering ATR team member (Sec 5.5.2) be very experienced and knowledgeable regarding breakwater design/construction techniques.

#### **4.5 Model Certifications / acceptance**

This project component will not utilize any modeling.

### **5 REVIEW PROCESS**

The review process will consist of multiple standard reviews of all work products. The work products for this phase include the final Plans and Specifications (P&S), and any environmental compliance documentation. The reviews to be conducted include a discipline quality check of each design discipline prior to District Quality Control (DQC), and an Agency Technical Review. Review information and processes are summarized below:

#### **5.1 Review Management Organization (RMO)**

The South Pacific Division (SPD) is designated as the RMO for this project.

#### **5.2 Design Review and Checking System (DrChecks)**

The DQC, ATR, BCOE, and Sponsor review teams will document all comments and recommendations in the DrChecks module in ProjNet in accordance with ER 1110-1-8159. Comments will be written to give a clear statement of the concern, basis of concern, and actions necessary to resolve the concern. Comments should cite appropriate references (ER, design memorandums, etc.). The PDT will evaluate and respond to each comment in DrChecks. Responses will clearly state concurrence or non-concurrence with the comment. Non-concurrence will include an explanation or a proposed alternative action to address the concern. Concurrence will include what corrective action will be taken, when, and where it will be done (plan sheet #, specifications section #, etc.). All comments shall be resolved and back-checked in the DrChecks project record prior to the corresponding review certification.

#### **5.3 Issue Resolution**

If issues cannot be resolved between the PDT team members and the reviewer counterpart, then the ATR lead shall resolve the issue. If the issue cannot be resolved by the ATR lead, it will be raised to the next level of management for both the PDT discipline and the review team discipline, and if necessary to the MSC or HQUSACE.

#### **5.4 District Quality Control (DQC)**

The District Quality Control (DQC) is conducted to include a comprehensive evaluation of correct application of methods, validity of assumptions, adequacy of basic data, completeness of documentation, compliance with guidance and standards, biddability, constructability, operability, and environmental considerations.

The DQC comments shall be provided in DrChecks in accordance with paragraph 5.2 above. The DQC team members, upon review of the revised final work products, shall complete the Statement of DQC Certification.

The DQC team members shall include district staff members not directly involved in the design; Section and/or Branch Chiefs; and/or their representative staff member to ensure consistency and effective coordination across all disciplines, and to assure overall coherence and integrity of the final products.

#### **5.5 Agency Technical Review (ATR)**

##### **5.5.1 Process**

Agency Technical Review (ATR) is undertaken to “ensure the quality and credibility of the government’s scientific information” is in accordance with EC 1165-2-214 and ER 1110-1-12. An ATR will be performed on the P&S.

ATR will be conducted by individuals and organizations that are external to the Los Angeles District. The ATR Team leader is a USACE employee from outside the South Pacific Division (SPD). The ATR Team required disciplines and experience are described below.

ATR comments are documented in the DrChecks review documentation database. DrChecks is a module within the ProjNet suite of tools.

At the conclusion of the ATR effort, the ATR team will prepare a Review Report summarizing the review. This Review Report will be considered an integral part of the ATR documentation and shall:

- Identify the document(s) reviewed and the purpose of the review;
- Disclose the names of the reviewers, their organization, their position, and relevant expertise;
- Include the charge to the reviewer;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issues (if any); and
- Include a verbatim copy of each reviewer’s comments, or represent the views of the group as a whole, including any disparate and dissenting views.

The ATR team, upon review of the revised final work products, shall complete the Statement of ATR Certification.

##### **5.5.2 ATR Team Members and Responsibilities**

As stipulated in ER 1110-1-12, ATR members will be sought from the following sources: regional technical specialists (RTS); appointed subject matter experts (SME) from other districts; senior level experts from other districts; Center of Expertise staff; experts from other USACE commands; contractors; academic or other technical experts; or a combination of the above. All Engineering and Construction ATR reviewers shall be certified in the Corps of

Engineers Review and Certification and Access Program (CERCAP). The ATR Team will be comprised of the following disciplines; knowledge, skills and abilities; and experience levels:

- Coastal Engineering: The team member should be a technical expert in coastal engineering and have at least 10 years experience in rock work / breakwater projects.
- ATR Team Leader. The ATR team Leader should have experience with breakwater or jetty rock work. The ATR Team Lead may be a co-duty to one of the above review disciplines.

## **5.6 Biddability, Constructability, Operability, and Environmental Review**

Biddability, Constructability, Operability, and Environmental (BCOE) Review are conducted to ensure that:

- contract documents can be understood, bid, administered, and executed;
- the designed project can be built with ease;
- the project can be operated and maintained with ease; and
- the air, water, land, animals, plants and other natural resources are protected from the effects of the construction and operation of the project.

### **5.6.1 Process**

The BCOE team members will review the work products for biddability, constructability, operability, and environmental in accordance with ER 415-1-11. All comments and responses shall be stated and provided in DrChecks in accordance with paragraph 5.2 above. The BCOE team, upon review of the revised final work products, shall complete the Statement of BCOE Certification.

## **5.7 Customer Review**

The customers for this project are the Port of Long Beach and the Port of Los Angeles. A customer review will be conducted to ensure the customer's expectations as agreed upon for the project are met. The customer review will take place concurrently with the ATR.

### **5.7.1 Process**

The Sponsor review team members will review the work products. All comments and responses shall be stated and provided in DrChecks in accordance with paragraph 5.2 above.

## **5.8 Cost Engineering**

District Quality Control (DQC) will be performed on cost engineering products.

## **6 TYPE II INDEPENDENT EXTERNAL PEER REVIEW (Safety Assurance Review)**

### **6.1 Life Safety**

A Type II Independent External Peer Review (IEPR) (Safety Assurance Review (SAR)) shall be conducted on design and construction activities for any project where: a) the Federal action is justified by life safety; b) potential hazards pose a significant threat to human life (public safety); or c) the failure of the project would pose a significant threat to human life. This applies to new projects and to the major repair, rehabilitation, replacement, or modification of



existing facilities. Any project where the Federal action would pose a significant threat to human life (public safety) requires a Type II review.

External panels will review the design and construction activities prior to initiation of physical construction and periodically thereafter until construction activities are completed. The review shall be on a regular schedule sufficient to inform the Chief of Engineers on the adequacy, appropriateness, and acceptability of the design and construction activities for the purpose of assuring that good science, sound engineering, and public health, safety, and welfare.

The District Chief of Engineering, as the Engineer-In-Responsible-Charge, needs to assess whether the threat is significant and document that in the Review Plan. A recommendation to not conduct a SAR shall (like any Review Plan recommendation) have the endorsement of the RMO prior to approval of the Review Plan.

When a Type II review is included in the project's approved Review Plan, the District Chief of Engineering, as the Engineer-In-Responsible-Charge, is responsible for ensuring the Type II review is conducted in accordance with this Circular, and will fully coordinate with the Chief of Construction, the Chief of Operations, and the project manager through the Pre-Construction, Engineering, and Design (PED) and construction phases.

## **6.2 Other Factors**

Other factors to consider for conducting a Type II IEPR (Safety Assurance Review) of a project or components of a project are:

(1) The project involves the use of innovative materials or techniques where 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;

(2) The project design requires redundancy, resiliency, and robustness.

(a) Redundancy. Redundancy is the duplication of critical components of a system with the intention of increasing reliability of the system, usually in the case of a backup or fail-safe.

(b) Resiliency. Resiliency is the ability to avoid, minimize, withstand, and recover from the effects of adversity, whether natural or manmade, under all circumstances of use.

(c) Robustness. Robustness is the ability of a system to continue to operate correctly across a wide range of operational conditions (the wider the range of conditions, the more robust the system), with minimal damage, alteration or loss of functionality, and to fail gracefully outside of that range.

(3) 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 (ECI) delivery systems.

## **6.3 Risk Informed Assessment**

In accordance with EC 1165-2-214, a risk informed assessment was made as to whether this project poses a significant threat to human life (public safety). The key factors considered are:

a. The breakwater projects were originally authorized for the principal purpose of protecting the Ports of Long Beach and Los Angeles from natural wave action. Life safety was not a justification in this Congressional authorization.

b. The constructed project will return the breakwaters to their initial design condition and provide the intended protection of the ports. There are little/no potential hazards due to the constructed project.

c. This project does not protect life essential and/or critical public facilities. The project does not protect a primary or intermediate storm evacuation route. All storm evacuations can be accomplished by other thoroughfares within the project area. Failure of the breakwaters would result in damages to the ports and impact port operations.

d. Previous rock work maintenance operations over the project life have resulted in no human injuries and/or deaths. It is similarly expected that this Federal action will pose no new hazards to public safety and/or threats to human life.

#### **6.4 Chief of Engineering Life Safety Assessment**

The Los Angeles District Chief of Engineering has determined that:

- a) the Federal action is not justified by life safety;
- b) potential hazards do not pose a significant threat to human life (public safety);
- c) the failure of the project would not pose a significant threat to human life;
- d) the Federal action would not pose a significant threat to human life (public safety); and
- e) the "Other Factors", cited in paragraph 6.2 above, to consider for conducting a Type II IEPR (Safety Assurance Review) of a project are not applicable to this project.

The Chief of Engineering Division determines that a Safety Assurance Review is not needed.

### **7 DOCUMENTATION**

The engineering technical team leader (ETL) will maintain a file of quality control records for the project. Documents to be stored in the project quality control file will include, but not be limited to: Review Plan, annotated DrChecks comments for all reviews, and review certifications. In addition, each PDT member is responsible for keeping adequate records of all design decisions, calculations, and process. Records should include applicable e-mails, meeting notes, telephone notes, and design notes.

### **8 PROJECT DELIVERY TEAM**

The Project Delivery Team will be comprised of the following personnel.

Project Manager	(CESPL-PM-N)	Jim Fields
Coastal Engineering	(CESPL-ED-DC)	Chuck Mesa
Geotechnical Engineering	(CESPL-ED-GG)	Jeffrey Devine
Environmental	(CESPL-PD-RN)	Lawrence Smith

## 9 ATR TEAM

The ATR Team will be comprised of Honolulu District (POH) personnel.

ATR Team Lead: Thomas Smith (POH-EC-T); 808-835-4141

## 10 REVIEW PLAN POINTS OF CONTACT

Project Manager (PM)

Jim Fields (213) 452-3403; [james.a.fields@usace.army.mil](mailto:james.a.fields@usace.army.mil)

Engineering Technical Lead (ETL)

Chuck Mesa (213) 452-3678; [chuck.mesa@usace.army.mil](mailto:chuck.mesa@usace.army.mil)

South Pacific Division (SPD)

Paul Bowers (415) 503-6556; [paul.w.bowers@usace.army.mil](mailto:paul.w.bowers@usace.army.mil)