DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DIVISION, GREAT LAKES AND OHIO RIVER
CORPS OF ENGINEERS
550 MAIN STREET
CINCINNATI, OH 45202-3222

CELRD-PD-G

AUG 13 2014

MEMORANDUM FOR Commander, U.S. Army Engineer District, Chicago (Susanne Davis/CELRC-PM-PL), 231 South La Salle Street, Suite 1500, Chicago, IL 60604

SUBJECT: Decision Document Review Plan for Chicago Harbor Breakwater Repair Project

1. The attached Review Plan (RP) for Chicago Harbor Breakwater Repair was presented to the Great Lakes and Ohio River Division for approval in accordance with EC 1165-2-214 "Civil Works Review" dated 15 December 2012.

2. The Chicago Harbor Breakwater is located approximately 2,300 linear feet (lf) east of the Chicago Harbor Lock and Navy Pier in Lake Michigan, Chicago, Illinois. The Federal channel within the harbor is 2.20 miles and is at authorized depths. The project area is located 450 lf northwest of the bend along the north-west leg of the breakwater. A section of the existing breakwater's concrete blocks have collapsed due to sand washing away underneath causing the timber cribs to fail. This project will replace the failed section with approximately 125 lf of new cast-in-place concrete blocks supported with steel beams, sheet pile walls along both sides of the breakwater, and re-use of existing breakwater stone/boulders. The estimated total construction cost is $3M.

3. The RP defines the scope and level of peer review for the activities to be performed for the subject project. The USACE LRD Review Management Organization (RMO) has reviewed the attached RP and concurs that it describes the scope of review for work phases and addresses all appropriate levels of review consistent with the requirements described in EC 1165-2-214.

4. I concur with the recommendations of the RMO and approve the enclosed RP for the Chicago Harbor Breakwater Repair project.

5. The District is requested to post the RP to its website. Prior to posting, the names of all individuals identified in the RP and the dollar values of all project costs should be removed.

6. If you have any questions please contact Dr. Hank Jarboe, CELRD-PDP, at (513) 684-6050, or Ms. Jennifer Baffi, CELRD-PDG, at (513) 684-3068.

Encl
Review Plan

STEVEN J. ROEMHILDT, P.E.
Colonel, EN
Commanding

IMPLEMENTATION PHASE REVIEW PLAN

For

Chicago Harbor Breakwater Repair FY14

Chicago District

MSC Approval Date: 13 August 2014

Last Revision Date: None

US Army Corps
of Engineers ®

TABLE OF CONTENTS

1. PURPOSE AND REQUIREMENTS

a. Purpose. This Review Plan defines the scope and level of peer review for the repair of the Chicago Harbor Breakwater in Chicago, IL, project implementation.

Additional Information on this program can be found in Engineering Regulation 1105-2-100, Planning Guidance Notebook, Appendix F.

b. References

(1) Engineering Circular (EC) 1165-2-214, Civil Works Review, 15 Dec 2012
(2) Director of Civil Works' Policy Memorandum #1, Jan 19, 2011
(3) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
(4) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
(5) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
(6) MFR, Chicago Harbor Breakwater Repair – P&S AAR, 20 Sep 2009
(7) Chicago Harbor Breakwater Repair FY14 – Quality Control Plan, 28 Oct 2013

c. Requirements. This review plan was developed in accordance with EC 1165-2-214, 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, decision documents are subject to cost engineering review and certification (per EC 1165-2-214) and ensuring that planning models and analysis are compliant with Corps policy, theoretically sound, computationally accurate, transparent, described to address any limitations of the model or its use, and documented in study reports (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 home District will post the approved review plan on its public website. The MSC will serve as the RMO for ATR reviews of the design and construction activities.

3. PROJECT INFORMATION

a. Project Description. The Chicago Harbor Breakwater is located approximately 2300 linear feet (lf) east of the Chicago Harbor Lock and Navy Pier in Lake Michigan, Chicago, Illinois. The Federal channel within the harbor is 2.20 miles and is at authorized depthsThe project area is located 450 lf northwest of the bend along the north-west leg of the breakwater. A section of the existing breakwater's concrete blocks have collapsed due to sand washing away underneath causing the timber cribs to fail. This project will replace the failed section with approximately 125 lf of new cast-in-place concrete blocks supported with steel beams, sheet pile walls along both sides of the breakwater, and re-use of existing breakwater stone/boulders. The estimated total construction cost is $3M.

b. Products. In 2009, plans and specifications were prepared and a contract subsequently awarded to help stabilize the existing breakwater structure through the use of pumped grout. The existing timber crib structure was constructed around 1890 and the concrete caps were constructed in the 1930's. Plans and specifications for the proposed breakwater repair, includes work to support the failed existing breakwater.

c. Factors Affecting the Scope and Level of Review.

- Absence of current bathymetry creates uncertainty to the depths of the lake bed. This unknown affects the height of the sheet pile wall driven alongside the breakwater. The proposed plans and specifications can only rely on the most recent bathymetric data from 2009;
- Absence of a survey showing the current conditions of the failed structure below the water surface creates uncertainty to the extent of the damage. The proposed plans and specifications can only rely on as-built drawings of the breakwater structure;
- The project does not involve a significant threat to human life/safety assurance. This project is a typical maintenance repair project to restore the breakwater's functionality;
- There is no request by the Governor of an affected state for a peer review by independent experts;
- The project/study is not likely to involve significant public dispute as to the size, nature, or effects of the project. This project is a typical maintenance repair project to restore the breakwater's functionality;
- The project/study is not likely to involve significant public dispute as to the economic or environmental cost or benefit of the project. This project is a typical maintenance repair project to restore the breakwater's functionality;
- The information in the decision document or anticipated project design is not likely to be based on novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices. The proposed concrete caps will match the existing caps as close as possible for aesthetic and functional continuity. The proposed infrastructure standard material and installation methods to support the breakwater;
- The project design is not anticipated to require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule. Construction of the proposed project will occur in one phase and will not require a restoration criteria period;
- The total project cost is less than $45 million;
- There are no other circumstances where the Chief of Engineers or Director of Civil Works determines Type I IEPR is warranted.

d. In-Kind Contributions. No in-kind products are anticipated. This project is 100% Federally Funded.

4. DISTRICT QUALITY CONTROL (DQC)

All decision 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. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home MSC.

All designs will be checked and initialed by the reviewer. Comments and responses from reviewers and Chiefs for the design products shall be documented and maintained in shared electronic folders. The design product PDT member checklist will be completed and signed by the Chiefs. Upon completion of DQC and BCOES reviews, DQC and BCOES certification shall be completed by the District's functional Chiefs. A copy of the DQC and BCOES certification template is provided in Attachment 3

5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all decision documents (including supporting data, analyses, environmental compliance documents, etc.), as well as implementation documents. The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. ATR is managed within USACE by the designated RMO and is conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. Selection and management of the ATR team has been delegated from the Division to the District. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the home MSC. As indicated in the Director of Civil Works' Policy Memorandum #1, Jan 19, 2011,"the ATR lead will be outside the home MSC.

a. Products to Undergo ATR. ATR will be performed during the implementation phase in accordance with the District and MSC Quality Management Plans. Products to undergo ATR include Chicago Harbor Breakwater Repair FY14 plans and specifications.

b. Required ATR Team Expertise.

ATR Team Members/Disciplines	Expertise Required
ATR Lead – Structural Engineer	The ATR lead should be a senior professional preferably with experience in preparing Civil Works decision documents and conducting ATRs. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The structural engineer shall be a senior engineer, an expert in the field of structural engineering, and have thorough knowledge of stability analyses and structural design of cast-in-place concrete structures, and sheet pile walls. The structural engineer shall be familiar with current design software. The structural engineer shall be a licensed Professional Engineer and/or Structural Engineer. The ATR Lead MUST be from outside the Great Lakes and Ohio River Division.
Hydraulic Engineering	The hydraulic engineering reviewer will be an expert in the field of hydraulics and have a thorough understanding of application of breakwaters, and/or computer modeling techniques that will be used such as HEC-RAS, FLO-2D, UNET, TABS, etc. The hydraulic engineer shall be a licensed Professional Engineer.

Geotechnical Engineering	The Geotechnical Engineer shall be a senior engineer, an expert in the field of engineering, and have knowledge of advance engineering concepts, principles and practices of geotechnical engineering. The reviewer shall have thorough understanding of soil mechanics, subsurface investigation, slope stability analyses, and other geotechnical applications. The geotechnical engineer shall be a licensed Professional Engineer.

c. Documentation of ATR. DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

(1) The review concern – identify the product's information deficiency or incorrect application of policy, guidance, or procedures;
(2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed;
(3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
(4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in EC 1165-2-214, , ER 1110-2-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports 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 organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issue (if any); and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR may be required for decision 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 1165-2-214, 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 decision 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 1165-2-214.

- Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), is managed outside the USACE and is 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. Based on the information and analysis provided in the preceding paragraphs of this review plan, the project covered under this plan is excluded from Type II IEPR because it does not meet the mandatory IEPR triggers and does not warrant IEPR based on a risk-informed analysis.

b. Products to Undergo Type II IEPR. Not applicable.

c. Required Type II IEPR Panel Expertise. Not Applicable.

d. Documentation of Type II IEPR. Not Applicable.

7. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost.

ATR Schedule

Action	Date(s)
Begin 50% ATR Comments	January 24, 2014
End 50% ATR Comments	February 6, 2014
PDT Address 50% ATR Comments	February 7-27, 2014
50% ATR Backcheck	February 28 to March 13, 2014
Begin 100% ATR Comments	March 14, 2014
End 100% ATR Comments	March 27, 2014
PDT Address 100% ATR Comments	March 28 to April 10, 2014
100% ATR Backcheck	April 11 to April 17, 2014
ATR Certification	April 18, 2014

ATR Cost

Reviewer	Cost
3 Reviewers	$15,000 ($5,000 each)

b. Type II IEPR Schedule and Cost. Not applicable.

8. PUBLIC PARTICIPATION

State and Federal resource agencies may be invited to participate in the study covered by this review plan as partner agencies or as technical members of the PDT, as appropriate. Agencies with regulatory review responsibilities will be contacted for coordination as required by applicable laws and procedures. The ATR team will be provided copies of public and agency comments.

This project does not require public meetings, however, USACE is required to submit Section 401 Water Quality and NPDES permit applications to IEPA that will initiate a 30 day public notice review period for the project.

9. REVIEW PLAN APPROVAL AND UPDATES

The home MSC Commander is responsible for approving this review plan. The review plan is a living document and may change as the study progresses. The home district is responsible for keeping the review plan up to date. Minor and significant changes to the review plan since the last MSC Commander approval are documented in Attachment 4. Significant changes to the review plan (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. This project specific review plan was prepared and approved in accordance with EC 1165-2-214 and Director of Civil Works' Policy Memorandum #1. The latest version of the review plan, along with the Commanders' approval memorandum, will be posted on the home district's webpage.

10. REVIEW PLAN POINTS OF CONTACT

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

- Natalie Mills, Project Manager, Chicago District, 312-846-5561

ATTACHMENT 1: TEAM ROSTERS. Include contact information for the PDT, ATR team, and MSC. The credential and years of experience for the ATR team should be included when it is available.

Discipline	Name	Organization	Phone/Email
Design Team			
Project Manager		LRC-PM-PM	
Structural		LRC-TS-D-T	
Environmental		LRC-TS-D-HE	
Hydraulics		LRC-TS-D-HH	
Geotech		LRC-TS-D-G	
Civil Lead		LRC-TS-D-C	
Civil Cost		LRC-TS-D-C	
Civil Specifications		LRC-TS-D-C	
Contract Specialist		LRC-PM-CT	
Construction		LRC-TS-C-C	
Safety Office		LRC-SO	
Operations		LRC-TS-C-T	
Real Estate		LRE-RE	
ATR Team			
Structures/Lead		CEMVR-EC	
Coastal/Geotech		LRB-TD-DC	
Coastal/Hydraulics		LRB-TD-DC	

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the plans and specifications for Chicago Harbor Breakwater Repair. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks[sm].

SIGNATURE _____ _____

Name — Date
ATR Team Leader
Office Symbol/Company

SIGNATURE _____ _____

Name — Date
Project Manager (home district)
Office Symbol

SIGNATURE _____ _____

Name — Date
Architect Engineer Project Manager[1]
Company, location

SIGNATURE _____ _____

Name — Date
Review Management Office Representative (or Delegate)
Office Symbol

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: Describe the major technical concerns and their resolution.

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

SIGNATURE _____ _____

Name — Date
Chief, Engineering Division (home district)
Office Symbol

SIGNATURE _____ _____

Name — Date
Chief, Planning Division (home district)
Office Symbol

[1] Only needed if some portion of the ATR was contracted

ATTACHMENT 3

CHICAGO DISTRICT REVIEW CERTIFICATIONS
PROJECT NAME
PRODUCT TITLE

(Page 1 of 2)

I. CHIEFS' DQC AUTHENTICATION

We, as the functional chiefs with responsibility for respective portions of the subject document, authenticate by our signature below that: (1) quality control procedures have been followed, (2) the ATR and BCOES is complete, and (3) there are no outstanding issues. Further, we concur in the recommendation that the subject set of Plans and Specifications (P&S) are ready to be advertised.

_____ _____
Date

Chief, Civil Design, Cost Engineering, and Specification

_____ _____
Date

Chief, Geotechnical and Survey Section

_____ _____
Date

Chief, Technical Section

_____ _____
Date

Chief, Environmental and Hydraulics Section

II. STATEMENT OF ESTIMATED CONSTRUCTION COSTS AND DURATION

The estimated construction cost for the subject contract (including contingencies) is $_____

The estimated construction duration for the subject contract is _____days

_____ _____
Date

Chief, Civil Design, Cost Engineering, and Specification

ATTACHMENT 3 (CONT'D)
CHICAGO DISTRICT REVIEW CERTIFICATIONS
PROJECT NAME
PRODUCT TITLE

(Page 2 of 2)

III. BCOES CERTIFICATION

I, (the PM), certify that the Value Engineering process as required by ER 11-1-321, Army Programs Value Engineering has been completed for this procurement action. I certify compliance with Public Law 99-662 (33 USC 2288) and OMB Circular A-131. A VE study was (completed/waived) on (date) by the appropriate authority. All VE proposals indicating potential savings of over $1,000,000 have been resolved with approval of the MSC Commander.

[NAME]		[NAME]	
Project Manager	Date	Value Engineering Office	Date

The Bid or RFP Package has been reviewed for Biddability, Constructability, Operability, Environmental, and Sustainability (BCOES) requirements in accord with ER 415-1-11. The undersigned certify that all appropriate BCOES review comments have either been incorporated into the Bid or RFP Package or otherwise satisfactorily resolved. Comments, evaluations, and back checks are documented in DrChecks.

	Date
District Safety Officer	
	Date
Chief, Design Branch	
.	Date
Chief, Construction-Operations Branch	

IV. TECHNICAL SERVICES CERTIFICATION

I certify that the, DQC, Agency Technical Review, Value Engineering, and the BCOES Compliance Review for the subject set of P&S are complete and that there are no outstanding issues. I concur that the subject set of P&S is ready to be advertised.

	Date
Chief, Technical Services Division	

ATTACHMENT 4: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 5: ACRONYMS AND ABBREVIATIONS

Term	Definition	Term	Definition
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
BCOES	Biddability, Constructability, Operability, Environmental, Sustainability	NPDES	National Pollutant Discharge Elimination System
CAP	Continuing Authorities Program	O&M	Operation and maintenance
CSDR	Coastal Storm Damage Reduction	OMB	Office and Management and Budget
DPR	Detailed Project Report	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DQC	District Quality Control/Quality Assurance	OEO	Outside Eligible Organization
DX	Directory of Expertise	OSE	Other Social Effects
EA	Environmental Assessment	PCX	Planning Center of Expertise
EC	Engineer Circular	PDT	Project Delivery Team
EIS	Environmental Impact Statement	PAC	Post Authorization Change
EO	Executive Order	PMP	Project Management Plan
ER	Ecosystem Restoration	PL	Public Law
FDR	Flood Damage Reduction	QMP	Quality Management Plan
IEPA	Illinois Environmental Protection Agency	QA	Quality Assurance
FEMA	Federal Emergency Management Agency	QC	Quality Control
FRM	Flood Risk Management	RED	Regional Economic Development
FSM	Feasibility Scoping Meeting	RMC	Risk Management Center
GRR	General Reevaluation Report	RMO	Review Management Organization
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RTS	Regional Technical Specialist
IEPR	Independent External Peer Review	SAR	Safety Assurance Review
ITR	Independent Technical Review	USACE	U.S. Army Corps of Engineers
LRR	Limited Reevaluation Report	WRDA	Water Resources Development Act
MSC	Major Subordinate Command		