



DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS, NORTH ATLANTIC DIVISION  
FORT HAMILTON MILITARY COMMUNITY  
302 GENERAL LEE AVENUE  
BROOKLYN, NY 11252-6700

CENAD-RBT

JL 6 2016

MEMORANDUM FOR Dam Safety Officer, New York District, US Army Corps of Engineers (CENAN-E/ Mr. Connolly), Jacob K. Javits Federal Building, 26 Federal Plaza, New York, NY 10278-0090

SUBJECT: Approval of the Review Plan for the Troy Lock and Dam Miter Gate Replacement Project, Troy, NY (NID #NY00951)

1. References:

- a. Review Plan for the Miter Gate Replacement, Troy Lock and Dam, Troy, NY (NID #NY00951), 6 Jun 2016
- b. Email, Mr. D Herr, 15 Jun 2016, subject: Troy Lock Miter Gates Review Plan – NAD Approval
- c. EC 1165-2-214, Water Resources Policies and Authorities – Civil Works Reviews.

2. The enclosed Review Plan for the Troy Lock and Dam Miter Gate Replacement project has been prepared in accordance with Reference 1.c. The North Atlantic Division and the Risk Management Center have reviewed the Review Plan, and it is satisfactory.

3. The NAD Business Technical Division will be the Review Management Organization (RMO) for the Agency Technical Review (ATR). The Review Plan does not include Type II Independent External Peer Review since New York District has determined that the project does not include potential hazards which pose a significant threat to human life.

4. The Review Plan for the Troy Lock and Dam Miter Gate Replacement project is approved. Subsequent revisions to this Review Plan or its execution will require new written approval from this office.

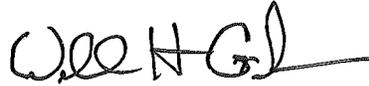
5. In accordance with Reference 1.b, Appendix B, Paragraph 6, this approved Review Plan shall be posted on your district website for public review and comment. The plan will also be posted on NAD's website.

CENAD-RBT

SUBJECT: Approval of the Review Plan for the Troy Lock and Dam Miter Gate Replacement Project, Troy, NY (NID #NY00951)

6. The point of contact for this action is Mr. Daniel Rodriguez at 347-370-4595 or [daniel.j.rodriguez@usace.army.mil](mailto:daniel.j.rodriguez@usace.army.mil).

Encl

A handwritten signature in black ink, appearing to read 'W. H. G.', with a long horizontal stroke extending to the right.

WILLIAM H. GRAHAM  
Brigadier General, USA  
Commanding



**DEPARTMENT OF THE ARMY**  
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT  
JACOB K. JAVITS FEDERAL BUILDING  
26 FEDERAL PLAZA  
NEW YORK NY 10278-0090

CENAN-EN

9 JUN 2016

MEMORANDUM FOR Commander, North Atlantic Division, ATTN: Business  
Technical/Engineering & Construction Division

SUBJECT: Review Plan for Troy Lock & Dam Miter Gate Replacement

1. In accordance with EC 1165-2-214 (Civil Works Review Policy), enclosed for your review and approval is the subject document.
2. If there are any questions in regards to this, please contact Ross Hiner, Dam & Levee Safety Program Manager at (917)790-8379.

ENCL

  
DAVID A. CALDWELL  
COL, EN  
Commanding



**US Army Corps  
of Engineers®  
New York District**

**Review Plan for  
Troy Lock and Dam (NID NY00951)  
Troy, NY  
Miter Gate Replacement Project**

**June 2016**

## Table of Contents

1. PURPOSE AND REQUIREMENTS .....	1
2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION.....	1
3. PROJECT INFORMATION.....	2
4. DISTRICT QUALITY CONTROL (DQC) AND BIDDABILITY, CONSTRUCTABILITY, OPERABILITY, ENVIRONMENTAL AND SUSTAINABILITY (BCOES) REVIEWS .....	2
5. AGENCY TECHNICAL REVIEW (ATR) .....	3
6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR).....	5
7. POLICY AND LEGAL COMPLIANCE REVIEW .....	6
8. COST ENGINEERING DIRECTORATE OF EXPERTISE (DX) REVIEW AND CERTIFICATION.....	6
9. MODEL CERTIFICATION AND APPROVAL.....	6
10. REVIEW SCHEDULES AND COSTS.....	6
11. PUBLIC PARTICIPATION .....	7
12. REVIEW PLAN APPROVAL AND UPDATES.....	7
13. REVIEW PLAN POINTS OF CONTACT .....	14
ATTACHMENT 1: TEAM ROSTERS.....	15
ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW.....	10
ATTACHMENT 3: ACRONYMS AND ABBREVIATIONS .....	12
ATTACHMENT 4: MFR ON RISK INFORMED ASSESSMENT OF SIGNIFICANT THREAT TO HUMAN LIFE BY CENAN C, ENGINEERING DIVISION.....	20

## 1. PURPOSE AND REQUIREMENTS

**a. Purpose.** This Review Plan defines the scope and level of peer review for the minor lock rehabilitation work and the design, fabrication, and construction of the miter gates for Troy Lock and Dam located in Troy, New York.

### **b. References**

- (1) EC 1165-2-214, Civil Works Review, 15 December 2012
- (2) ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 Aug 1999
- (3) ER 1110-1-12, Engineering and Design Quality Management, 31 Jul 2006, as revised through 31 Mar 2011
- (4) ER 415-1-11 – Biddability, Constructability, Operability, Environmental and Sustainability (BCOES) Reviews, 1 Jan 2013
- (5) WRDA 2007 H. R. 1495 Public Law 110-114, 8 Nov 2007
- (6) ER 1110-2-8157, Responsibility for Hydraulic Steel Structures, 15 Jun 2009
- (7) ETL 1110-2-2105, Design of Hydraulic Steel Structures, 30 Jun 2014

**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) and BCOES (Biddability, Constructability, Operability, Environmental and Sustainability), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review.

## 2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The North Atlantic Division (NAD), the Major Subordinate Command (MSC), is the Review Management Organization (RMO) for this project. In-Progress Review (IPR) team meetings with the RMO will be scheduled on an “as needed” basis to discuss programmatic, policy, and technical matters. This review plan will be updated for each new project phase as necessary.

## 3. PROJECT INFORMATION

**a. Implementation Documents.** This Review Plan has been prepared for Design Documentation Reports (DDR), Engineering Documentation Reports (EDR) as needed, plans and specifications (P&S) for the project. The purpose of these documents is to provide a record of final design for the project. Approval of the implementation documents are at the District Command level.

**b. Project Description.** The scope of this project consists of construction work to fabricate and install new miter gates and associated components for Troy Lock and

Dam located in the New York District of the U.S. Army Corps of Engineers (USACE). The lock and dam was constructed from 1913 to 1915. Contracts for various repairs, maintenance and upgrades have been performed since being built. The downstream miter gates were replaced in the late 1970's following a barge collision. The upstream miter gates were replaced in the early 1960's. The gates have structural deficiencies that require extensive repairs that would exceed the cost of replacement. The construction work will be done onsite during the annual winter lock closure. The new gates will be fabricated off site and delivered via truck or barge. Handling of the gates, on-site fabrication, and installation will be performed by a contractor as part of the project.

**c. Project Sponsor.** There is no project sponsor for this project. Troy Lock and Dam is owned and operated by USACE.

**d. Factors Affecting the Scope and Level of Review.** The focus of this Review Plan is on the implementation documents for the fabrication and construction of the miter gate replacement project.

An assessment of the need for a Type II Independent External Peer Review, Safety Assurance Review, is documented in Section 6 of this Review Plan. This assessment by the New York District Chief of Engineering Division considered life safety and other factors including whether the project involves the use of innovative materials or techniques; whether project design includes redundancy, resiliency, and robustness; and whether the project has unique construction sequencing.

#### **4. DISTRICT QUALITY CONTROL (DQC) AND BIDDABILITY, CONSTRUCTABILITY, OPERABILITY, ENVIRONMENTAL AND SUSTAINABILITY (BCOES) REVIEWS**

All implementation documents will 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 will manage the DQC. The DQC process will be performed in two phases. The initial phase will be the day-to-day production reviews performed by the designers' Supervisor, Team Leader, or senior engineer as the product is being developed. The second phase in the process will be an independent district review. Qualified Engineers/Scientists not affiliated with the development of the product will be selected commensurate with the complexity of the product to be reviewed.

**a. Documentation of DQC and BCOES.** DQC (independent) and BCOES comments will be documented through the use of DrChecks<sup>sm</sup> and DQC/BCOES certificates. A sample Statement of District Quality Control Review is included in Attachment 2.

**b. Products to Undergo DQC and BCOES.** Products that will undergo DQC include DDR, EDR (as needed), Plans and Specifications and Cost Estimate. The BCOES review will focus on the Plans and Specifications.

**c. Required DQC and BCOES Expertise.** DQC and BCOES will be performed by staff in the home district that is not involved in preparing the implementation documents. The required disciplines for review are similar to the PDT disciplines listed in Attachment 1. The DQC supplements the reviews provided by the Project Delivery Team during the course of completing the design.

**d. Reviews During Fabrication and Construction.** The Engineer, as defined in ER 1110-2-8157, for design, fabrication, and installation of the Troy Lock miter gates is identified in PDT roster included in Attachment 1. As required in ETL 1110-2-584, the Engineer shall review all fabrication and erection submittals to ensure that the intended quality and design are achieved. The Engineer, with the assistance of qualified inspection personnel, will conduct sufficient quality assurance visits to the fabrication shop and construction site to ensure the gates are fabricated and erected in accordance with the design assumptions and requirements.

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

ATR is mandatory for all 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. 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. 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.

**a. Products to Undergo ATR.** The products that will undergo ATR include the DDR, EDR (as needed), and Plans and Specifications. No site visits by the ATR team and no ATR effort during construction are anticipated to be needed.

**b. Required ATR Team Expertise.**

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead shall be a senior professional with extensive experience in designing Hydraulic Steel Structures (HSS) and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline.
Structural Engineering	Team member shall have expertise in structural engineering design and review of HSS and other

	navigation projects and shall be a registered professional engineer.
--	--

**c. Documentation of ATR.** DrChecks<sup>sm</sup>, Design Review and Checking System, 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 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.

If reviewers encounter incomplete or unclear information, they shall seek clarification in order to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks<sup>sm</sup> 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/MS, 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 ER 1110-1-12. Unresolved concerns can be closed in DrChecks<sup>sm</sup> with a notation that the concern has been elevated to the vertical team for resolution.

**d. Review Report.** 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:

- (1) Identify the document(s) reviewed and the purpose of the review;
- (2) Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- (3) Include the charge to the reviewers;
- (4) Describe the nature of their review and their findings and conclusions;
- (5) Identify and summarize each unresolved issue (if any); and
- (6) Include a copy of each ATR comment, the PDT response, a brief summary of the pertinent points in the follow on discussion, including any vertical coordination, and the agreed upon resolution.

**e. ATR Certification.** ATR will 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 Statement of Technical Review should be completed for all implementation documents. A sample Statement of Technical Review is included in Attachment 2.

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

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 1165-2-214, 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.

**a. Types of IEPR.** There are two types of IEPR:

1. **Type I IEPR.** Type I IEPRs 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.
2. **Type II IEPR.** Type II IEPRs, or Safety Assurance Reviews (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.

**b. Decision on IEPR.**

- (1) Type I IEPR is not applicable as per EC 1165-2-214, Civil Works Review Policy, since the Troy Lock Miter Gate Replacement project is in the implementation phase.
- (2) Type II Independent External Peer Review, Safety Assurance Review, is required by EC 1165-2-214 for any hurricane and storm risk management projects, as well as other projects, where existing and potential hazards pose a significant threat to human life.
- (3) It has been determined that Troy Lock Miter Gate Replacement project does not pose a significant threat to human life (public safety). Troy Lock and Dam is a Significant Hazard dam, meaning it has minimal life-loss potential in the event of breach or other catastrophic failure. The project is a navigation project and does not serve any flood risk management purposes. The project will use conventional materials and techniques to replace the gates similar to the existing.

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

All implementation documents will be reviewed for their compliance with law and policy. These reviews culminate in determinations that the designs and the supporting analyses and coordination comply with law and policy. DQC and ATR facilitate the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of results in implementation documents.

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

This is not applicable since a decision document requiring Congressional authorization is not being prepared. The project has already been authorized for construction. Therefore, cost certification is not required per ER 1110-2-1302.

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

Not applicable because no hydrologic or hydraulic modifications are being made to the existing navigation project.

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

- a. **ATR Schedule and Cost.** The schedule and costs budgeted for ATR reviews of the Phase II DDR, EDR (as needed), Plans & Specifications are as follows:
  - 90% ATR Review: April 2016 (\$10,000)
- b. **IEPR Schedule and Cost.** Not applicable.
- c. **Model Certification/Approval Schedule and Cost.** Not applicable.

## **11. PUBLIC PARTICIPATION**

Due to the nature of the project and its limited impact on the public, no public participation is anticipated.

As required by EC 1165-2-214, the approved Review Plan will be posted on the District's public website (<http://www.nan.usace.army.mil/Missions/CivilWorks/ReviewPlansandDocuments.aspx>) Information will be conveyed to the public through the use of press releases and media interviews, as necessary, and through the use of posting information to the New York District's website. 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.

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

The North 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 implementation documents. Like the PMP, the Review Plan is a living document and may change as the engineering and design progresses. The home district is responsible for keeping the Review Plan up to date. 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. The latest version of the Review Plan, along with the Commanders' approval memorandum, shall be posted on the Home District's webpage (<http://www.nan.usace.army.mil/Missions/CivilWorks/ReviewPlansandDocuments.aspx>).

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

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

Ross Hiner, Dam & Levee Safety Program Manager, New York District, 917-790-8379, [Ross.D.Hiner@usace.army.mil](mailto:Ross.D.Hiner@usace.army.mil)

**ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW**

**Troy Lock and Dam  
Troy, NY  
Miter Gate Replacement Project**

**STATEMENT OF DISTRICT QUALITY CONTROL REVIEW**

The New York District has completed a District Quality Control (DQC) review of the Design Documentation Report and Plans and Specifications for the Troy Lock Miter Gate. This included review of assumptions; methods, and procedures used in analyses; the appropriateness of data used and level of data obtained; and reasonableness of the results. The DQC reviewers below worked in collaboration with the Project Development Team to discuss and to resolve technical comments and issues.

\_\_\_\_\_ Date \_\_\_\_\_  
*Name*  
Civil Engineer, CENAN-EN

\_\_\_\_\_ Date \_\_\_\_\_  
*Name*  
Coastal Engineer, CENAN-EN-S

\_\_\_\_\_ Date \_\_\_\_\_  
*Name*  
Hydraulic Engineer, CENAN-EN-H

\_\_\_\_\_ Date \_\_\_\_\_  
*Name*  
Hydrologist, CENAN-EN-H

\_\_\_\_\_ Date \_\_\_\_\_  
*Name*  
Electrical Engineer, CENAN-EN-DB

\_\_\_\_\_ Date \_\_\_\_\_  
*Name*  
Geotechnical Engineer, CENAN-EN-DC

\_\_\_\_\_ Date \_\_\_\_\_  
*Name*  
Mechanical Engineer, CENAN-EN-DB

\_\_\_\_\_ Date \_\_\_\_\_  
*Name*  
Structural Engineer, CENAN-EN-DC

\_\_\_\_\_ Date \_\_\_\_\_  
*Name*  
Environmentalist, CENAN-PL-E

\_\_\_\_\_ Date \_\_\_\_\_  
*Name*  
Chief, Design Branch, CENAN-EN-D

\_\_\_\_\_ Date \_\_\_\_\_  
*Name*  
Chief, Hurricane Sandy Relief Branch, CENAN-EN-S

**COMPLETION OF AGENCY TECHNICAL REVIEW**

The Agency Technical Review (ATR) has been completed for the <type of product> for <project name and location>. 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<sup>sm</sup>.

SIGNATURE \_\_\_\_\_

Name

ATR Team Leader

Office Symbol/Company

\_\_\_\_\_ Date

SIGNATURE \_\_\_\_\_

Name

Project Manager

Office Symbol

\_\_\_\_\_ Date

SIGNATURE \_\_\_\_\_

Name

Architect Engineer Project Manager<sup>1</sup>

Company, location

\_\_\_\_\_ Date

SIGNATURE \_\_\_\_\_

Nathan Snorteland

Review Management Office Representative

RMC

\_\_\_\_\_ Date

### 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

Chief, Engineering Division

Office Symbol

\_\_\_\_\_ Date

SIGNATURE \_\_\_\_\_

Name

Architect Engineer Principal

Office Symbol

\_\_\_\_\_ Date

<sup>1</sup> Only needed if some portion of the ATR was contracted

**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/MS	The District or MSC 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
MSC	Major Subordinate Command	WRDA	Water Resources Development Act

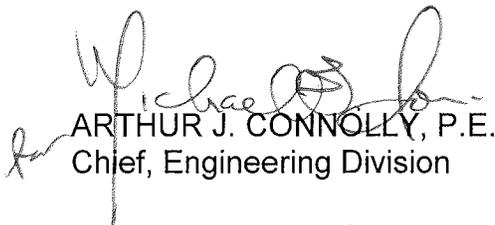
## MEMORANDUM FOR RECORD

SUBJECT: Troy Lock Miter Gate Replacement – Assessment of IEPR Requirement

1. Project Description – The scope of this project consists of construction work to fabricate and install new miter gates and associated components for Troy Lock and Dam located in the New York District of the U.S. Army Corps of Engineers (USACE). The lock and dam was constructed from 1913 to 1915. Contracts for various repairs, maintenance and upgrades have been performed since being built. The downstream miter gates were replaced in the late 1970's following a barge collision. The upstream miter gates were replaced in the early 1960's. The gates have structural deficiencies that require extensive repairs that would exceed the cost of replacement. The construction work will be done onsite during the annual winter lock closure. The new gates will be fabricated off site and delivered via truck or barge. Handling of the gates, on-site fabrication, and installation will be performed by a contractor as part of the project.

2. IEPR Determination – As defined in EC 1156-2-214, a Type II IEPR is required for any project that would pose a significant threat to human life (public safety). A Hazard Potential Analysis of Troy Lock and Dam was performed in 2003 and concluded that if the Troy Lock and Dam were to fail, based upon the dam break analysis, the flood wave would remain within the banks of the Hudson and not pose a certain threat to life. That said, catastrophic failure of miter gates leading to a loss of damming surface would be an extremely unlikely event. Additionally, the project involves use of traditional materials and techniques and will follow strict adherence to USACE standards and traditional design concepts. The project does not require redundancy, resiliency, and robustness beyond the requirements of USACE design criteria. The sequencing of the project will be standard for this type of work and does not have an overlapping design and construction schedule. It is therefore determined that a Type II IEPR SAR is not required for this project.

3. If you have any questions, please contact Ross Hiner, P.E., at 917-790-8379.

  
ARTHUR J. CONNOLLY, P.E.  
Chief, Engineering Division