DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, MISSISSIPPI VALLEY DIVISION
P.O. BOX 80
VICKSBURG, MISSISSIPPI 39181-0080

CEMVD-RB

24 Sept 2019

MEMORANDUM FOR Commander, MVN

SUBJECT: Approval of the Review Plan for Catfish Point Control Structure Sector Gate Replacement

1. References:

a. Memorandum, CEMVN-EDS, 2 July 2019, subject: Implementation Review Plan for Catfish Point Control Structure Sector Gate Replacement (encl).

b. EC 1165-2-217, Review Policy for Civil Works, 20 February 2018.

2. The enclosed Review Plan (RP) for the Catfish Point Control Structure Sector Gate Replacement has been prepared in accordance with EC 1165-2-217 and has been coordinated with MVD staff and the Inland Navigation Design Center, who concurred with the RP.

3. The MVD hereby approves this RP, which is subject to change as circumstances require, consistent with project development under the Project Delivery Business Process. Non-substantive changes to this RP do not require further approval. Substantive revisions to this RP or its execution will require new written approval from this office. The district should post the approved RP to its internal website with sensitive information removed.

4. The MVD point of contact for this action is Nicole Harris, CEMVD-PDM, (601) 634 5829.

BUILDING STRONG and Taking Care of People!

[redacted]

Encl

THOMAS A. HOLDEN, JR., P.E., SES
Director, Regional Business
Mississippi Valley Division

Gulf Intracoastal Waterway Calcasieu Lock 2019 Sector Gate Replacement

Review Plan

PREPARED BY:

[redacted]

David Lovett, P.E.
Lead Engineer, Engineering Division, Structures Branch
USACE, New Orleans District

ENDORSED BY:

[redacted]

Frederick R. Joers, P.E.
Director
Inland Navigation Design Center
USACE, Rock Island District

[redacted]

Michael A. Turner, P.E.
Chief, Business Technical Division

[redacted]

THOMAS A. HOLDEN, JR., P.E., SES
Director, Regional Business
Mississippi Valley Division

24 Sept 2019

Section 1
Introduction

1.1 Purpose

This Review Plan (RP) for Catfish Point Control Structure, Sector Gate Replacement will help ensure a quality-engineering project is developed by the Corps of Engineers in accordance with EC 1165-2-217, "Review Policy for Civil Works". As part of the Project Management Plan this RP establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products. It lays out a value added process and describes the scope of review for the current phase of work. The EC outlines five general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Biddability, Constructability, Operability, Environmental and Sustainability (BOCES) Review, Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. This RP will be provided to the Project Delivery Team (PDT), and the DQC, ATR, and BCOES. The technical review efforts addressed in this RP, DQC and ATR, are to augment and complement the policy review processes. The District Chief of Engineering has assessed that the life safety risk of this minor work to design and construct new sector gates to replace the existing gates at the Catfish Point Control Structure is not significant; therefore a Type II IEPR/Safety Assurance Review (SAR) will not be required, see Section 6.

1.2 References

- EC 1165-2-217, Review Policy For Civil Works, 20 February 2018
- ER 1110-1-12, Quality Management, 31 Mar 2011
- ER 415-1-11, Biddability, Constructability, Operability, Environmental and Sustainability (BCOES) Reviews, 1 January, 2013
- QMS Process 22800- MVN Quality Control (QC) for USACE Prepared E&D Products and Technical Engineering Work Items

1.3 Review Management Organization

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for this project is the Inland Navigation Design Center (INDC).

Section 2
Project Description

2.1 Project Description

The Catfish Point Control Structure was constructed under two contracts with T. L. James and Company. Excavation, sheet piling, concrete and appurtenant work was started on 6 November 1948 and was completed on 31 January 1950 at a cost of $724,236.08. The operating machinery and reservation facilities were constructed under an additional contract at a cost of $364,962.46. Work was started on 26 January 1950 and completed on 27 October 1950.

The control structure is located on the lower Mermentau River (approximately 24 miles from the Gulf of Mexico), just south of Grand Lake and about 30 miles southeast of Lake Charles in Cameron Parish, Louisiana. The structure is integral in preventing saltwater intrusion into the Mermentau River Basin where it would impact the irrigation of rice lands. Additionally, the structure provides prompt and efficient release of floodwaters that may occur within the basin and includes a navigational channel facilitating transportation and commerce. The structure is operated in conjunction with the Calcasieu and Leland Bowman Locks on the Gulf Intracoastal Waterway (GIWW) and the Schooner Bayou Control Structure on the east side of the basin.

The structure consists of three 56-foot wide reinforced concrete “U” frame gate bays each equipped with a pair of 60-degree steel sector gates. The sill elevation of gate bay No. 1 (West Gate Bay) is -10.0 feet mean low gulf level. The sill elevation of gate bays Nos. 2 and 3 is -15.0 feet mean low gulf level. The gates are spaced 60 feet center-to-center of pintles and were designed to operate against a six-foot differential head in either direction. The gates are individually operated by an electro-hydraulic system operating a mechanical drive. The gates are protected against corrosion with a sacrificial anode cathodic protection system.

The condition of the sector gates is considered poor as they are in an advanced state of deterioration. Therefore, three new sets of sector gates will be designed and fabricated. The gates will be modernized and detailing will be improved to minimize fatigue/fracture concerns. The design will also be updated as necessary with respect to materials and fabrication requirements consistent with current guidance. Each gate will consist of horizontal and vertical trusses supporting vertical ribs faced with a continuous skin plate. The gate assembly will be supported top and bottom by hinge assemblies as well as a bottom roller assembly immediately behind the skin plate framing. Gate leaves shall be completely shop fabricated. The fabricator must have the new AISC certification for HSS or the AISC bridge certification. The sector gate will be designed according to the Allowable Stress Design requirements of EM 1110-2-2105 and the AISC ASD 9th edition. The new sector gate will be designed to operate against a six-foot differential head in either direction in accordance with the original design requirements. However, it will be designed for a new boat impact load of 125 kips as specified by EM 1110-2-2703, instead of the original design load of 120 kips.

Section 3
Risk Informed Decisions on Appropriate Review

3.1 Project Risks

(1) Fracture Critical Member Fabrication
(2) Fabrication Sequencing to minimize warping and built-in stresses
(3) Delivery of large Hydraulic Steel Structures
(4) Design for longevity in saltwater environment
(5) Quality Control during fabrication
(6) Connection of new gate to existing hinge and pintle anchorage

3.2 Risk Analysis

The Catfish Point Control Structure Gate Fabrication project will require DQC and ATR level reviews to mitigate the potential risks related to the welding of hydraulic steel structures and fracture critical members. Each gate structure is composed of structural wide flange sections with wide flange horizontal beams supporting the vertical ribs and skin plate. The top and bottom chords of the sector gate will be the primary tension members of the structure and considered to be fracture critical members of the structure. Detailed analysis may indicate additional fracture critical members.

To mitigate these risks, all design methodology, weld procedure requirements, and weld detailing will undergo ATR review by technical experts from the Welding and Metallurgy Technical Center of Expertise and Inland Navigation Design Center (INDC). Additionally, risk will be addressed through the completion of formal DQC, BCOES, and Supervisory reviews. The New Orleans Engineering, Operations, and District Safety Officers will also review the fabrication plans and specifications to ensure requirements of EM 385-1-1 are met. These independent reviews will ensure project safety, quality and performance.

The delivery of similar gate structures has been successfully accomplished by barge within the past 10 years. Therefore, the risk of having the completed gates not delivered due to size or weight is mitigated by past successful deliveries.

The replacement gates are being placed in a severe saltwater environment and corrosion and section loss of the structural members is a major concern over time. To mitigate these concerns, the design team will investigate sacrificial steel thickness and impressed current monitoring systems during design to extend the life of the gates.

To ensure proper connections to the existing hinge and pintle anchorages, gate components tying into the existing components will be provided with extra machine stock. After New Orleans District Hired Labor Unit removes the existing gates, a service contract can be awarded to measure the surfaces of the existing hinge and pintle and then perform final machining on the new components to ensure proper match to the existing. Additionally, the gate design is being performed to maintain equivalent loading on the hinge and pintle anchorage assemblies to ensure they are not overloaded by the new gates.

Ensuring sufficient quality control/assurance during construction is a risk in all USACE projects. The complexity and criticality of Hydraulic Steel Structures (HSS) makes proper QC/QA an even bigger priority on this gate fabrication contract. The contract will require AISC certifications for the fabricator to set minimum qualifications of the fabricator from a QC standpoint. Additionally, all FCM welds will be required to be NDT tested along with a random sampling of other welds. QA will also be critical to ensuring a quality fabricated product. MVN will hire a third party testing firm to perform supplemental NDT testing on selected welds. MVN will work to staff a QA inspector who has sufficient technical background on steel

fabrication. These QA activities will also be supplemented with staff from the USACE Welding and Metallurgy Technical Center of Expertise.

Section 4
District Quality Control

4.1 Requirements

All implementation documents (including supporting data, analyses, reports, environmental compliance documents, water control manuals, etc.) shall undergo DQC in accordance EC 1165-2-217. MVN will manage the Mechanical and Electrical DQC reviews while NWP will manage the Structural DQC Reviews. The DQC reviews will not have a formal schedule, but will be certified and documented. See Attachment 5 for a sample certification sheet. Both NWP and MVN will develop a certification sheet separately for their design efforts. All computations, drawings or sketches shall undergo a rigorous independent check as part of the standard Quality Control (QC) process. Quality checks may be performed by staff responsible for the work, such as supervisors, work leaders, team leaders, designated individuals from the senior staff, or other qualified personnel. However, they should not be performed by the same people who performed the original work, including managing/reviewing the work in the case of contracted efforts. Quality Checks include a review of the alternatives considered, schedules, budgets, means and methods of construction, and have lessons learned been considered. DQC is assuring the math and assumptions are correct by having a checker initial each sheet of the computations. Checking is accompanied by a red dot, check mark or similar annotation next to the item that has been checked. For drawings the checker shall place a red dot, check mark or similar annotation on each dimension/elevation, note or reference showing concurrence with the correctness of the information show. Additionally, the PDT is responsible to ensure consistency and effective coordination across all project disciplines during project design and construction management. See Attachment 1 for PDT and DQC members and disciplines.

4.2 Documentation

Documentation of DQC activities is required and will be implemented by the process linked/described in paragraph 4.1. The checked versions of the documents that undergo DQC will be scanned and made an appendix to the DDR.

4.3 DQC Schedule and Estimated Cost

Although DQC is always seamless, the following milestone reviews are schedule in Table 1. The cost for the NWP Structural DQC is approximately $3,500. The cost for the MVN DQC is approximately $5,000.

Project Phase/Submittal	Review Start Date	Review End Date
DQC Final P&S Review	05/13/2019	05/24/2019

Table 1 DQC Schedule

Section 5
Agency Technical Review

5.1 Requirement

All implementation documents (including supporting data, analyses, reports, environmental compliance documents, water control manuals, etc.) shall undergo ATR in accordance EC 1165-2-217. ATR reviews will occur seamlessly at the scheduled milestones as shown in Section 5.7. A site visit will not be scheduled for the ATR Team.

5.1.1 Required ATR Team Expertise

ATR teams will be comprised of senior USACE personnel (Regional Technical Specialists (RTS), etc.), and may be supplemented by outside experts as appropriate. The disciplines represented on the ATR team will reflect the significant disciplines involved in the planning, engineering, design, and construction effort. This project will require review by structural engineers. Specifically, the ATR team shall have expertise related to design and fabrication of navigation lock components and hydraulic steel structures (HSS) such as gates. To assure independence, the leader of the ATR team will be outside of the MSC. A list of the ATR members and disciplines is provided below. The chief criterion for being a member of the ATR team is knowledge of the technical discipline.

5.2 General

ATR will be managed and performed outside of the New Orleans District. EC 1165-2-217 requires that the INDC is to serve as the RMO for this project. As required, there will be appropriate coordination and processing through CoPs; relevant PCXs, and other relevant offices to ensure that a review team with appropriate independence and expertise is assembled and a cohesive and comprehensive review is accomplished. The ATR shall ensure that the product is consistent 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 the results in a reasonably clear manner for the public and decision makers. Members of the ATR team will be from outside the New Orleans District. The ATR lead will be from outside the Mississippi River Valley Division.

5.3 Documentation of ATR

Documentation of ATR will occur using the requirements of EC 1165-2-217. This includes the four part comment structure and the use of DrChecks^{SM}. ATR may be certified when all ATR concerns are either resolved or referred to HQUSACE for resolution and the ATR documentation is complete. Certification of ATR should be completed, based on work reviewed to date, for the Design Documentation Report (DDR) and Plans and Specifications (P&S). A sample ATR certification form is included as Attachment 4.

5.4 Products to Undergo ATR

The 95% P&S and DDR will undergo ATR. While it is typically preferred to involve the ATR team at the front end of the design process, the design and fabrication of the sector gates will essentially be a replacement in kind using improved and tested materials. Therefore, there are no innovative materials or

construction techniques needed to complete the project. Also, members of the design team have recent experience with designing similar hydraulic steel structures. No precedent will be set by this project.

5.5 Required Team Expertise and Requirements

ATR teams will be established in accordance with EC 1165-2-217. ATR teams will be comprised of senior USACE personnel (Regional Technical Specialists (RTS), etc.), and may be supplemented by outside experts as appropriate. The disciplines represented on the ATR team will reflect the significant disciplines involved in the planning, engineering, design, and construction effort. This project will require review by structural engineers. Specifically, the ATR team shall have expertise related to design and fabrication of navigation lock components and HSS such as gates. To assure independence, the leader of the ATR team will be outside the MSC. A list of the ATR members and disciplines is provided below. The chief criterion for being a member of the ATR team is knowledge of the technical discipline.

ATR Lead: The ATR team lead is a senior professional outside the home MSC with extensive experience in preparing Civil Works documents and conducting ATRs. The lead has 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, in this case, Electrical Engineering, Mechanical Engineering, Structural Engineering or Welding/Fabrication Subject Matter Expert (SME).

Electrical Engineer – Reviewer should be a senior level, professionally registered engineer with extensive experience in cathodic protection for sector gate projects. The reviewer should have a minimum of 10 years of experience.

Mechanical Engineer – Reviewer should be a senior level engineer with extensive experience in the design of hinge and pintle components on large hydraulic steel structures such as sector and miter gates. The reviewer should have a minimum of 10 years of experience.

Structural Engineer – Reviewer shall have experience and be proficient in design of HSS structures. The structural engineer shall have specialized experience in the design, construction and analysis of sector gate projects with particular emphasis on fracture critical connection detailing.

Welding/Fabrication SME – Reviewer should be a senior level, with extensive experience in welding and fabrication of steel structures. The reviewer should have a minimum of 10 years of experience.

5.6 Statement of Technical Review Report

At the conclusion of each ATR effort, the ATR team will prepare a review report with a completion and certification memo. The report will be prepared in accordance with EC 1165-2-217.

5.7 ATR Schedule and Estimated Cost

Although ATR is always seamless, the preliminary ATR milestone schedule is listed in Table 2. The cost for the ATR is approximately $40,000.

Project Phase/Submittal	Review Start Date	Review End Date	Site Visit
ATR Final P&S Review	05/31/19	06/21/19	N/A

Table 2 ATR Schedule

Section 6
Independent External Peer Review (IEPR)

6.1 General

Type I and Type II IEPRs are conducted in accordance with the guidance promulgated in EC 1165-2-217. Type I IEPRs are accomplished for decision documents, such as project studies. It is of critical importance for those decision documents and supporting work products where there are public safety concerns, significant controversy, a high level of complexity, or significant economic, environmental and social effects to the nation. However, it is not limited to only those cases and most studies should undergo Type I IEPR. In accordance with EC 1165-2-217 a Type II IEPR (SAR) shall be conducted on design and construction activities for hurricane and storm risk management and flood risk management projects, as well as other projects where potential hazards pose a significant threat to human life. This applies to new projects and to the major repair, rehabilitation, replacement, or modification of existing facilities

6.2 Decision on Type II IEPR

In accordance with EC 1165-2-217, a Type II IEPR (SAR) is not required for the following reasons. The project is not a hurricane, storm risk management or flood risk management project. The purpose of the gates is to prevent saltwater intrusion into nearby agricultural land. Additionally, these gates operate under low head differentials. Failure of this element would not pose a significant threat to human life. While the gates serve to release floodwaters in the basin during a large rain event, there are 3 sets of gates that provide redundancy for this release in the event that one set of gates would fail. In addition, the following factors and evaluations were considered:

(i) 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.

Evaluation: The design and fabrication of the sector gates will essentially be a replacement in kind using improved and tested materials. Therefore, there are no innovative materials or construction techniques needed to complete the project. Also, members of the design team have recent experience with designing similar hydraulic steel structures. No precedent will be set by this project.

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

Evaluation: The project design requires appropriate levels of fracture toughness resiliency and robustness that are required by ETL 1110-2-584, Design of Hydraulic Steel Structures. The design concept has been utilized at multiple gate structures and has met all criteria.

(iii) 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.

Evaluation: It is anticipated that this project will be awarded using a standard design-bid-build approach with no unique construction sequencing requirements.

Based on the assessment of the above answers, a Type II IEPR will not be required. The signed memo justifying the rationale not to conduct a Type II IEPR/SAR is shown in Attachment 3.

6.3 Decision on Type I IEPR

Type I IEPR is used for decision, or study, documents. The documents to be reviewed in this plan include the Design Documentation Report (DDR), Plans, and Specifications, which are all implementation documents. Therefore, Type I IEPR is not required.

Section 7
BCOES Reviews

Reviews to assure solicitation documents are readily understood; the product can be bid, built, operated and maintained efficiently; environmental concerns are protected, and sustainability is addressed. A 95% BCOES review will be conducted for this project. Design team members will conduct the BCOES reviews utilizing DrChecks. All DrChecks comments must be resolved and closed out by the reviewer.

Prior to the start of the BCOES Review, the Project Lead or Technical Manager should contact each office element to ascertain the name(s) of their representative(s) participating in the review. The plans and specifications shall be distributed to the office elements by memorandum with email link to the appropriate ProjectWise folder. The solicitation package including the 95% plans and specifications and DDR is being reviewed from 30 April 2019 – 28 May 2019. A follow-up Backcheck meeting will be discussed as whether it will be required and scheduled if necessary. The TM's supervisor will have reviewed the 100% solicitation package prior to dissemination to the team.

Section 8
Public Involvement

There is no expectation of obtaining support from personnel outside of the USACE to conduct reviews.

Section 9
In-Kind Contribution By Sponsor

There is no sponsor for this project. The structure is owned and operated by USACE New Orleans District.

Section 10
Value Engineering

The total project costs are expected to well exceed $2M, therefore a VE Study or Low Opportunity VE Justification is required. A Programmatic Value Engineering Study for gate fabrication was completed for the New Orleans District in 2018. The proposals to consider sacrificial steel and modification to the existing cathodic protection system will be investigated. While not anticipated to provide any savings during fabrication, the VE proposals are expected to extend the required maintenance cycles of the sector gates.

Section 11
Public Posting of Review Plan

As required by EC 1165-2-217, the approved RP will be posted on the District public website (https://www.mvn.usace.army.mil/About/Offices/Programs-Project-Management/Project-Review-Plans/). This is not a formal comment period and there will be no set timeframe for the opportunity for public comment. If and when comments are received, the PDT will consider them and decide if revisions to the RP are necessary.

Section 12
Review Plan Approval and Updates

The MSC Commander, or delegated official, is responsible for approving this RP. The Commander's approval reflects vertical team input (involving the District, the RMO, and MVD Business Technical Division) as to the appropriate scope, level of review, and endorsement by the RMO. The RP is a living document and should be updated in accordance with 1165-2-217. All changes made to the approved RP will be documented in Attachment 2, Table 8 RP Revisions. The latest version of the RP, along with the Commanders' approval memorandum, will be posted on the District's webpage provided in Section 11 above, and linked to the HQUSACE webpage. The approved RP should be provided to the RMO.

Section 13
Engineering Models

EC 1105-2-412 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models, for the purposes of the EC, are defined as any models and analytical tools that planners use to define water resource management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision making. The use of certified/approved planning model does not constitute technical review of the planning product. The selection and application of the model and the input and output data still are the responsibility of the users and is subject to DQC and ATR reviews.

EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE-developed and commercially available engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC and ATR reviews. All appropriate reviews will be conducted in accordance with policy during the implementation phase of the project.

13.1 Model Certification/Approval Schedule and Cost

(1) Use of existing certified or approved design/planning models is encouraged. Where uncertified or unapproved models are used, approval of the model for use will be accomplished through the ATR process. The ATR team will apply the principles of EC 1105-2-412 during the ATR to ensure the model is theoretically and computationally sound, consistent with USACE policies, and adequately documented. If specific uncertified models are identified for repetitive use within a specific district or region, the appropriate PCX, MSC(s), and home District(s) will identify a unified approach to seek certification of these models.

(2) The models listed below may be used in the design of the Catfish Point Control Structure Sector Gate Replacement project.

Table 4 Engineering Models

Model Name	Model Description	Model Type
MCACES or MII	These are cost estimating models. This is a cost estimating model that was developed by Building System Design Inc. Crystal Ball risk analyses software will also be used.	Cost Engineering
Microsoft Excel	Computational Analysis	Engineering
STAAD.Pro V8i	Structural Analysis and Design	Engineering
Mathcad	Minor Structural Load Development and Design	Engineering

Section 14
Review Plan Points of Contact

Title	Organization	Phone
Fred Joers INDC Director	CEMVR-DC	Frederick.R.Joers@usace.army.mil (309) 794-5248
John Behrens INDC Technical Manager	CEMVR-DC	John.T.Behrens@usace.army.mil (309) 794-5620
David Lovett/Lead Engineer	CEMVN-EDS	David.P.Lovett@usace.army.mil 504-862-2680
Tracy Falk/Operations Manager	CEMVN-OD	Tracy.A.Falk@usace.army.mil 504-862-2971
Carl Harris/Lead Structural Design Engineer	CENWP-ENC-DS	Carl.M.Harris@usace.army.mil 503-808-3751

Table 5 RP POC's

ATTACHMENT 1
Team Rosters (FOUO)

Discipline/Role	Name	Description of Credentials
Technical Lead/Structural Engineer	[redacted]	[redacted]
Structural Engineer	[redacted]	[redacted]
Electrical Engineer	[redacted]	[redacted]
Mechanical Engineer	[redacted]	[redacted]

Table 6 PDT Members

Discipline/Role	Name	Description of Credentials
DQC Review Lead/ Structural	[redacted]	[redacted]
Electrical Engineer	[redacted]	[redacted]
Mechanical Engineer	[redacted]	[redacted]

Table 7 DQC Reviewers

Discipline/Role	Name	Description of Credentials
ATR Lead/Structural Engineer	[redacted]	[redacted]
Welding/Fabrication/ Structural Engineer	[redacted]	[redacted]
Electrical Engineer	[redacted]	[redacted]
Mechanical Lead Engineer	[redacted]	[redacted]
Mechanical Guest Reviewer	[redacted]	[redacted]

Table 8 ATR Team

ATTACHMENT 2
Review Plan Revisions

Revision Date	Description of Change	Page/Paragraph Number

Table 8 RP Revisions

ATTACHMENT 3: Rationale Not to Conduct a Type II IEPR/SAR

CEMVN-EDS

MAY 0 1 2019

MEMORANDUM FOR RECORD

SUBJECT: Rationale Not to Conduct Type II IEPR (SAR) for Catfish Point Control Structure Sector Gate Replacement

1. A Type II Independent External Peer Review (IEPR) Safety Assurance Review (SAR) is not recommended for this contract.

2. The contract consists of the design and construction of three new sets of sector gates to replace the existing three sets of gates at the Catfish Point Control Structure. The gates will be modernized and detailing will be improved to minimize fatigue/fracture concerns. The design will also be updated as necessary with respect to materials and fabrication requirements consistent with current guidance. Each gate will consist of a pintle socket pipe column and hinge pin housing integrally framed with horizontal and vertical trusses supporting vertical ribs faced with a continuous skin plate. Gate leaves shall be completely shop fabricated. The fabricator must have the new AISC certification for HSS or the AISC bridge certification. There is nothing in the design of the replacement gate that would be considered innovative or unusual, rather the design is a typical sector gate designed according to the Allowable Stress Design requirements of EM 1110-2-2105 and the AISC ASD 9th edition. Additionally, these gates operate under low head differentials. Failure of this element would not pose a significant threat to human life. Therefore, it is not recommended that a Type II IEPR SAR be conducted. The explanation of the rationale for this recommendation is included (Encl).

3. For any questions related to this project, please contact David Lovett Jr., P.E., at 504-862-2680; email: David.P.Lovett@usace.army.mil.

[redacted]

Encl

JEAN S. VOSSEN, P.E.
Chief, Engineering Division

CEMVN-EDS

MEMORANDUM FOR Chief, Mississippi Valley Division (CEMVD-RB-T/Mike Turner)

SUBJECT: Rationale Not to Conduct Type II IEPR (SAR) for Catfish Point Control Structure Sector Gate Replacement

1. A Type II Independent External Peer Review (IEPR) Safety Assurance Review (SAR) is not recommended for this contract.

2. The contract consists of the design and construction of three new sets of sector gates to replace the existing three sets of gates at the Catfish Point Control Structure. The gates will be modernized and detailing will be improved to minimize fatigue/fracture concerns. The design will also be updated as necessary with respect to materials and fabrication requirements consistent with current guidance. Each gate will consist of a pintle socket pipe column and hinge pin housing integrally framed with horizontal and vertical trusses supporting vertical ribs faced with a continuous skin plate. Gate leaves shall be completely shop fabricated. The fabricator must have the new AISC certification for HSS or the AISC bridge certification. There is nothing in the design of the replacement gate that would be considered innovative or unusual, rather the design is a typical sector gate designed according to the Allowable Stress Design requirements of EM 1110-2-2105 and the AISC ASD 9th edition. Additionally, these gates operate under low head differentials. Failure of this element would not pose a significant threat to human life. Therefore, it is not recommended that a Type II IEPR SAR be conducted. The explanation of the rationale for this recommendation is included (Encl).

3. For any questions related to this project, please contact David Lovett Jr., P.E., at 504-862-2680; email: David.P.Lovett@usace.army.mil.

Gayhead
EDS
[redacted]

Encl

JEAN S. VOSSEN, P.E.
Chief, Engineering Division

Catfish Point Control Structure Sector Gate Replacement

EXPLANATION OF RATIONALE FOR RECOMMENDATION TO NOT CONDUCT A TYPE II IEPR SAFETY ASSURANCE REVIEW (SAR)

Risk Based Determination of Need to NOT conduct a Type II IEPR (aka SAR)

Per EC 1165-2-214, two factors mandate an SAR and three additional factors should be considered in the determination whether or not an SAR should be conducted. These factors and their relevancy to this project are discussed below. If there is any lingering concern regarding the Rationale presented in the following table, a vertical team should be assembled upon request.

Factor		Relevancy to this Project
1) Is the project justified by life safety?	Mandate	No
2) Would the project's failure pose a significant threat to human life?	Mandate	No. The gates operate under low head differentials.
3) Does the project involve 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?	Consider	No. Standard construction procedures will be used.
4) Does the project design require redundancy, resiliency, or robustness?	Consider	No. No changes to existing features will not affect their existing redundancy, resiliency or robustness.
5) Does the project have unique construction sequencing or a reduced or overlapping design construction schedule?	Consider	No. This is a standard construction project.

ATTACHMENT 4: Sample DQC Certification

DISTRICT QUALITY CONTROL (DQC) REVIEW CERTIFICATION

(ER 1110-1-12 & EC 1165-2-214)

[THIS FORM IS TO BE COMPLETED WHEN THE DQC REVIEW IS FINISHED]

The MVN District has completed the (type of product or products) [e.g., Plans & Specifications and Design Documentation Report, Programmatic Cost Estimate, etc.] of (project name and location). Notice is hereby given that a District Quality Control (DQC) Review appropriate to the level of risk and complexity inherent in the project, has been conducted as defined in QMS 22800-MVN, Quality Control for USACE Prepared E&D Products and Technical Engineering Work Items.. During the review, compliance with established policy, principles and procedures, utilizing justified and valid assumptions, were verified. This included review of: assumptions; methods, procedures, and materials used in analyses; alternatives evaluated; the appropriateness of data used and level obtained; and reasonableness of the result, including whether the product meets the customer's needs and consistency with law and existing Corps' policy. The DQC review was accomplished by a review team independent of the PDT. All comments resulting from this DQC review have been resolved.

[Printed Name] Designer	Date
[Printed Name] District Quality Control Reviewer	Date
[Printed Name] Functional Team Leader	Date

ATTACHMENT 5: Sample ATR Certification

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the XXX Project. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-217. 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].

ATR Team Leader	Date
Operations Manager New Orleans District	Date
Frederick R. Joers, PE Review Management Office Representative Inland Navigation Design Center – CEMVR-DC	Date

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows:
1) *Concern:*.

Resolution:

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

Jean S. Vossen, PE Chief, Engineering Division New Orleans District – CEMVN-ED	Date