US Army Corps of Engineers®

Pittsburgh District
Great Lakes and Ohio River Division

Project Title: ***MOSQUITO CREEK DAM UPSTREAM EMBANKMENT RIPRAP EXTENSION***

Authority: ***FLOOD CONTROL ACT OF 1938***

P2/Project Number: [redacted]

Review Plan

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MSC APPROVAL DATE:

REVIEW PLAN
ENGINEERING AND DESIGN PRODUCTS
MOSQUITO CREEK DAM UPSTREAM EMBANKMENT RIPRAP EXTENSION
PITTSBURGH DISTRICT

Current Version Date: 7 March 2022
Mandatory Revision Date: 7 March 2025

1. PURPOSE AND REFERENCES

a. Purpose. This review plan describes necessary quality reviews for engineering and design (E&D) products for the Upstream Embankment Riprap Extension at Mosquito Creek Dam in Cortland, Ohio.

b. References.

(1) Engineering Regulation (ER) 415-1-11, Biddability, Constructability, Operability, Environmental and Sustainability (BCOES) Reviews
(2) Engineering Regulation (ER) 1165-2-217, Civil Works Review Policy
(3) Qualtrax 08504 LRD, Supplemental Quality Procedures for Civil Works (CW) Engineering and Design (E&D) Products
(4) Project Management Plan (PMP)

2. REVIEW MANAGEMENT ORGANIZATION (RMO). The RMO for this project is the MSC (Great Lakes and Ohio River Division).

3. PROJECT SCOPE AND PRODUCTS

a. Project Description and Scope of Work. The purpose of this project is to place riprap above the existing riprap to the dam crest on the upstream embankment. Based on preliminary, conceptual design efforts, an aggregate filter material will be keyed into the dam embankment and overlain by riprap. The Pittsburgh District (LRP) will perform the design and prepare contract ready construction plans, specifications, and supporting documents (DDR and ECIFP), with the exception of Civil Design, which will be performed by Nashville District (LRN).

Project Number	[redacted]
Business Line	Flood Risk Management
Project Type	Dam embankment protection
Geographic Location	Cortland, Ohio; 41.30022°N, 80.75672°W
Main Project Features	Earthen embankment dam
Estimated Construction Cost	$2.5 million
E&D Product Delivery Method	In-House Design
Construction Delivery Method	Fixed Price

b. Products. The E&D products to be reviewed include the following:

(1) Design Documentation Report (DDR)
(2) Plans and Specifications (P&S)
(3) Engineering Considerations and Instructions for Field Personnel (ECIFP)

(4) E&D Products for Construction Contract Modifications

4. DOCUMENTATION OF RISKS AND ISSUES

a. Life Safety Assessment: The District Chief of Engineering has reviewed the project requirements and determined there is not a significant threat to human life if the project were to fail.

b. Technical Complexities and Risks. The project delivery team (PDT) performed a thorough risk analysis of the anticipated project construction and operations activities and identified the following key technical complexities and risks. Quality reviews will be focused to manage these risks.

(1) OH SR 305 runs along the dam crest. Inherent risks exist when a cut is made into an embankment adjacent to a roadway.
(2) Excavation into the embankment temporarily decreases slope stability and leaves the dam embankment in a vulnerable state with respect to external hazards (e.g. erosion).
(3) A historic septic system is located in the area of maintenance buildings and proposed laydown area. The Contractor may encounter system when constructing laydown area.
(4) Loading of dam conduit due to construction vehicles.
(5) Excavation near and/or adjacent to the existing service bridge abutment could result in deformations or movement of the abutment.

5. REVIEW EXECUTION

a. Project Delivery Team (PDT): PDT members are listed in Attachment 1. PDT members will work collaboratively with review team members to ensure effective execution of quality reviews.

b. District Quality Control (DQC): DQC is required for all products. Follow DQC procedures in Chapter 4 of ER 1165-2-217 and District local work instructions. The Engineering Technical Lead and DQC Lead will collaborate to oversee and ensure effective DQC execution.

c. Biddability, Constructability, Operability, Environmental, Sustainability (BCOES): BCOES reviews are required for all products. Follow BCOES review procedures in ER 415-1-11 and District local work instructions. The Engineering Technical Lead and DQC Lead will collaborate to oversee and ensure effective BCOES execution.

d. Agency Technical Review (ATR): ATR is required for all products and will follow ATR procedures in Chapter 5 of ER 1165-2-217. ATR will address the technical risks described in sub-section 4.b. Required senior technical disciplines and expertise needed for ATR are shown in Table 1. Assigned ATR team members are listed in Attachment 1. ATR members in engineering disciplines are verified as certified in the Corps of Engineers Review and Certification Access Program (CERCAP) [Command Training Plan & CERCAP Tool (CTP) – PROD v2.5.2 – Home (army.mil)]. PDT and review team leaders will collaborate to oversee and ensure effective execution.

Table 1. ATR Technical Discipline(s) and Required Expertise	
Technical Discipline	Expertise Required
ATR Team Leader	Senior Engineering Staff[1]
Geotechnical Engineering	Filter and riprap design, Embankment Dam Design & Construction,

Table 1. ATR Technical Discipline(s) and Required Expertise	
Structural Engineering	Loads applied to dam conduit and intake tower bridge foundation by construction equipment and riprap
[1] ATR Team Lead Role to be performed by Geotechnical Engineer	

e. Safety Assurance Review (SAR): Per sub-section 4.a, an SAR is not required. When required, SAR will be performed per Chapter 6 of ER 1165-2-217.

f. Review Charge. Reviewers will refer to and perform ATR per Section 5.7 of ER 1165-2-217, Objectives, Scope and Review Criteria. Reviews shall check to confirm the design addresses the technical complexities and risks described in paragraph 4.b.

6. REVIEW SCHEDULE AND BUDGETS. The schedule and budgets for reviews are shown in Table 2. BCOES reviews will not be scheduled performed concurrently with DQC and ATR review periods.

Table 2. Review Schedule and Budgets			
Review Activities (Note 1)	Start Date	Finish Date	Budget ($)
BCOES – Concept Design	12/13/2021	12/17/2021	$2,000
DQC – Intermediate Design	2/5/2022	2/12/2022	(Note 2)
ATR – Intermediate Design	2/12/2022	2/26/2022	$5,000 (Note 3)
DQC – Final Design	4/9/2022	4/16/2022	(Note 2)
ATR – Final Design	4/16/2022	5/7/2022	$7,500 (Note 3)
BCOES – Final Design	4/23/2022	5/7/2022	$3,000
BCOES - Backcheck	5/7/2022	5/14/2022	(Note 2)
Notes: (1) Review activities may be scaled to project size and scope; (2) Inherent to the design effort and cost is not tracked separately; (3) One ATR reviewer from Division office does not require funds.			

7. REVIEW DOCUMENTATION. The ATR leader will prepare an ATR report per Section 5.10 of ER 1165-2-217. The ATR report with certification form will be provided to the approval signatories, including the RMO representative. Review documents will be stored with the official project records.

8. REVIEW PLAN POINTS OF CONTACT. Questions and comments relating to this review plan can be directed to the following points of contact:

a. District Project Leaders
   (1) Project Manager: Joshua Shaffer, CELRP-PMP-M, Joshua.D.Shaffer@usace.army.mil, (412) 395-7121
   (2) Engineering Technical Lead: Audrey Wingate, CELRP-ECG-G, Audrey.B.Wingate@usace.army.mil, (412) 395-7318

b. ATR Team Leader: Glen M. Bellew, CENWD-RBT, 816-389-3553, Glen.M.Bellow@usace.army.mil

c. Review Management Organization (RMO) Representative: Frank Appelfeller, CELRD-RBE, (513) 684-6200.

9. APPROVAL SIGNATURE:

JONES.MARK.[redacted]
C.[redacted]

District Chief of Engineering

ATTACHMENT 1 – TEAM MEMBERS

PROJECT DELIVERY TEAM		
Function/Discipline	Name (Last, First)	Office
Customer	Hough, Timothy	CELRP-OPN-M
Project Manager	Shaffer, Joshua	CELRP-PMP-M
Technical Lead	Wingate, Audrey	CELRP-ECG-G
O&M Lead Engineer	Burstynowicz, Bob	CELRP-ECD-T
Geotechnical Engineer	Neupane, Deepak	CELRP-ECG-G
Cost Engineer	Oladapo, Oluwadare	CELRP-ECD-C
Value Engineer	Sakmar, Benjamin	CELRP-ECD-T
Geospatial/Survey	Hass III, John	CELRP-ECG-I
CADD Lead	Thompson, Stuart	CELRN-ECD-S
Civil Design Engineer	Fangman, Abraham	CELRN-ECE-S
H&H Engineer	Georgetson, Gabrielle	CELRP-ECG-WH
Dam Safety	Czelusta, Diane	CELRP-ECG-D
Structural Engineer	Hayes, Anna	CELRP-ECN-S
Geologist	Aceves, Andrew	CELRP-ECG-G
Real Estate	Smith, Nakita	CELRP-RER
DQC REVIEWERS		
Function/Discipline	Name (Last, First)	Office
DQC Lead, Geotechnical Engineer	Itani, Prem	CELRP-ECG-G
Civil Design Engineer	Pagani, Greg	CELRN-ECE-S
CADD	Baker, Brian	CELRP-ECG-I
Civil CADD	Sumner, Richard	CELRN-ECD-S
Specifications Engineer	Legaspi, Chelsea	CELRP-ECD-T
Structural Engineer	Meyer, Greg	CELRP-ECD-S
Geospatial/Survey	Price, Bob	CELRP-ECG-I
Geologist	Larson, Chris	CELRP-ECG-G
Real Estate	Horneman, Jeff	CELRP-RE
BCOES REVIEWERS		
Function/Discipline	Name (Last, First)	Office
Biddability	McMillen, Joe	CELRP-ECC-O
Constructability	McMillen, Joe	CELRP-ECC-O
Operability	Anderson, Neil	CELRP-OPT-M
Environmental	McClain, Bobbi Jo	CELRP-PME-V
Sustainability	Anderson, Neil	CELRP-OPT-M
ATR REVIEWER(S)		
Function/Discipline	Name (Last, First)	Office
ATR Leader (Geotechnical)	Bellow, Glen	CENWD-RBT
Structural	Sosna, Matt	CENAP-EC-EBI