US Army Corps of Engineers®

Pittsburgh District
Great Lakes and Ohio River Division

Project Title: ***TIONESTA OUTFLOW LEFT BANK LONG-TERM REPAIR***

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
Tionesta Outflow Left Bank Long-Term Repair
PITTSBURGH DISTRICT

Current Version Date: 25 March 2022
Mandatory Revision Date: 25 March 2025

1. PURPOSE AND REFERENCES

a. Purpose. This review plan describes necessary quality reviews for engineering and design (E&D) products for the Tionesta Outflow Left Bank Long-Term Repair.

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 the project is to provide long-term repairs to a section of streambank failure along Tionesta Creek. The failure negatively impacts the District's ability to respond to a dam safety emergency and conduct dam safety inspections. Repairing the bank failure will prevent further erosion which in turn prevent more significant and more costly repairs being required in the future. During 2019, a slip along the left stream bank occurred approximately 3,500 feet downstream of the Reservoir Outflow. The slip progressed to the edge of the pavement, compromising the stability of the Campground Access Road, which provides to sole means of vehicular access to the toe of the dam. Project personnel performed a temporary repair by excavating the failed bank and stabilizing the stream bank using gravel and HESCO baskets. As a result of this temporary repair, roadway between the repair and the fee booth building was reduced from two lanes to one lane. The purpose of the long-term repair is to establish long-term support of the existing lane and proposed sidewalk, and to provide long term protection of the slope from future erosion.

Project Number	[redacted]
Business Line	Flood Risk Management
Project Type	Stream Bank Slip Long-Term Repair
Geographic Location	Tionesta, Pennsylvania; 41.484393, -79.448995
Main Project Features	Stream bank, access road, sheet pile wall
Estimated Construction Cost	$0.75 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) An obstruction, such as a boulder or bedrock at a higher elevation than anticipated, may be encountered during construction and the sheet piles will not be able to be installed to the design depth.
(2) The sheet pile wall will support the roadway and sidewalk and will also function as an erosion cutoff wall. No additional erosion protection will be added to the existing slope on the water side of the proposed sheet pile wall. Therefore, some erosion of this material is expected to occur in the future and therefore reducing the passive resistance of the wall. This will be considered in design. T
(3) Endangered mussels exist in the stream at the project site and working within the stream limits will impact the mussels which is not desirable. However, a portion of the slope that needs to be protected from erosion is within the stream limits. Therefore, developing a repair solution that does not require work within the stream and also provides adequate protection against future erosion adds complexity to this project.
(4) The site is approximately 45 feet wide and bound by the existing stream and fee booth building. The site is steeply sloping in some areas, which limits the space for large equipment to work without constructing level working surfaces. These constraints add complexity to the selection process of choosing a repair option.

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/Geotechnical Engineer	Streambank repairs, Sheet pile wall design and construction

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	2 FEB 2022	9 FEB 2022	$2,500
DQC – Intermediate Design	14 FEB 2022	16 FEB 2022	See Note 2
ATR – Intermediate Design	21 FEB 2022	28 FEB 2022	$5,000
DQC – Final Design	21 MAR 2022	4 APR 2022	See Note 2
ATR – Final Design	21 MAR 2022	4 APR 2022	$5,000
BCOES – Final Design	11 APR 2022	25 APR 2022	$7,500
BCOES - Backcheck	26 APR 2022	29 APR 2022	See 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.			

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: Mayss Saadoon, CELRP-PMP-M, Mayss.Saadoon@usace.army.mil
   (2) Engineering Technical Lead: Jonathan Niemiec, CELRP-ECG-G, Jonathan.M.Niemiec@usace.army.mil

b. ATR Team Leader: Earl Fisher, CENAP-ECE-G, (215) 656-6700, earl.m.fisher@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	Bowers, Jason	CELRP-OPN-T
Project Manager	Saadoon, Mayss	CELRP-PMP-M
Technical Lead	Niemiec, Jonathan	CELRP-ECG-G
Cost Engineer (required)	Grumski, Kassandra	CELRP-ECD-T
Value Engineer	Sakmar, Benjamin	CELRP-ECD-T
Geospatial Lead (required)	Baker, Brian	CELRP-ECG-I
Civil Engineer	Lee, Caeman	CELRP-ECD-C
H&H Engineer	Duffy, Michael	CELRP-ECG-W
Environmental	Stuart, Erin / McClain, Bobbi Jo	CELRP-PME-V
Real Estate Specialist	Miller, Julie	CELRP-RER
DQC REVIEWERS		
Function/Discipline	Name (Last, First)	Office
DQC Lead (Geotechnical)	Neupane, Deepak	CELRP-ECG-G
Civil CADD	Baker, Brian	CELRP-ECG-I
Civil Engineer	Christner, Paul	CELRP-ECD-C
Civil CADD	McNierney, Kevin	CELRP-ECD-C
Cost Engineer	Legaspi, Chelsea	CELRP-ECD-T
H&H Engineer	Moyer, Chris	CELRP-ECG-W
Specification Engineer	Legaspi, Chelsea	CELRP-ECD-T
Real Estate	Horneman, Jeff	CELRP-RER
BCOES REVIEWERS		
Function/Discipline	Name (Last, First)	Office
Biddability	McMillen, Joe	CELRP-ECC-N
Constructability	McMillen, Joe	CELRP-ECC-N
Operability	Bowers, Jason / Ostrosky, Joe	CELRP-OPT-X / 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	Fisher, Earl	CENAP-ECE-G