US Army Corps of Engineers®

Pittsburgh District
Great Lakes and Ohio River Division

Project Title: ***ALLEGHENY RIVER LOCK AND DAM NO. 4 PERMANENT CULVERT IMPROVEMENTS PROJECT***

Authority: ***RIVER AND HARBOR ACT - 3 MARCH 1909***

P2/Project Number: [redacted]

Review Plan

PREPARED BY: CHRISTNER.PAUL.ROBERT [redacted]
Paul Christner, P.E.
Civil Engineer
USACE, Pittsburgh District

RECOMMENDED BY: JONES.MARK.C. [redacted]
Mark Jones, P.E., PMP
Chief of Engineering and Construction Division
USACE, Pittsburgh District

ENDORSED BY: APPELFELLER.FRAN [redacted]
Frank A. Appelfeller, P.E.
Senior Regional Engineer
Review Management Organization Representative
USACE, Great Lakes and Ohio River Division

APPROVED BY: FISCHER.STEVEN.A [redacted]
Steven A. Fischer,
Acting Regional Business Director
USACE, Great Lakes and Ohio River Division

MSC APPROVAL DATE:

REVIEW PLAN
ENGINEERING AND DESIGN PRODUCTS
ALLEGHENY RIVER LOCK AND DAM NO. 4
PERMANENT CULVERT IMPROVEMENTS PROJECT
PITTSBURGH DISTRICT

Current Version Date: 18 February 2022
Mandatory Revision Date:

1. PURPOSE AND REFERENCES

a. Purpose. This review plan describes necessary quality reviews for engineering and design (E&D) products for the Permanent Culvert Improvements Project at Allegheny River Lock and Dam No. 4. An A-E is developing design documents, in which subsequent efforts in the project's life cycle will be handled by USACE Pittsburgh District.

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

This project consists of an A-E providing engineering services to perform investigations, calculations, and other analyses needed to develop the design; prepare plans, technical specifications, quantities and supporting documents pertaining to designing a permanent culvert conveyance system from the location of the existing temporary junction box to the lock land wall penstock by means of the penstock access hatch; designing in-situ restoration from MH C to the temporary junction box; designing the decommission plan for Reach E1 and Reach E2; and designing the removal of the temporary diversion of water measure, various site restorations, and other associated features.

Project Number	[redacted]
Business Line	Navigation
Project Type	Culvert and Lock Wall
Geographic Location	Harrison Township, Allegheny County, Pennsylvania
Main Project Features	Culverts and junctions, lock land wall, site restorations
Estimated Construction Cost	$2.0 - $3.0 million
E&D Product Delivery Method	A-E Design
Construction Delivery Method	Fixed Price

a. Products. A-E design deliverables include the following.

(1) Design Documentation Report (DDR)
(2) Plans and Specifications (P&S)
(3) Quantity Take-Off
(4) Estimated Construction Schedule
(5) Engineering Considerations and Instructions for Field Personnel (ECIFP) Report
(6) Phase I Environmental Site Assessment (ESA)

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:

i. Item: Permanent culvert conveyance system tie-in with the lock land wall penstock, by means of the penstock access hatch.
ii. Risk: Negative impact to the lock land wall's structural adequacy and/or stability and/or capacity, during and/or after construction activities.
iii. Mitigation Measure: A-E to adhere to SOW and execute QC reviews during design. USACE to perform QA, BCOES, and ATR reviews at respective A-E design submissions.

5. REVIEW EXECUTION

a. Quality Assurance (QA): QA reviewers are listed in Attachment 1. QA reviewers will work collaboratively to ensure effective execution of quality reviews pertaining to the A-E SOW and corresponding A-E design deliverables.

b. Quality Control (QC): The A-E is responsible for including a QC Certification signed by each team member performing quality reviews as part of the submission, for each the 95% Submission and 100% Submission.

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 O&M Team Lead Engineer will collaborate to oversee and ensure effective BCOES execution.

d. Agency Technical Review (ATR): ATR is required for this project 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)].

Table 1. ATR Technical Disciplines and Required Expertise	
Technical Discipline	Expertise Required
Structural Engineer (also ATR Team Leader)	Lock wall structural adequacy, stability, and capacity.
Civil Engineer	Installation, in-situ restoration, and decommissioning of culverts and/or junctions of differing materials and sizes; hydrologic and hydraulic calculations for sizing culverts; various site restorations.

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.

Table 2. Review Schedule and Budgets			
Review Activities	Start Date	Finish Date	Budget ($)
BCOES – 30% Submission	12/13/21	12/23/21	$15,000
QA – 30% Submission	12/13/21	12/23/21	(Note 1)
ATR – 60% Submission	03/08/22	03/28/22	$10,000
QA – 60% Submission	03/08/22	03/28/22	(Note 1)
ATR – 95% Submission	06/06/22	06/24/22	$10,000
BCOES – 95% Submission	06/06/22	06/24/22	$30,000
QA – 95% Submission	06/06/22	06/24/22	(Note 1)
Note 1: Is included within overall budget for respective disciplines.			

7. REVIEW DOCUMENTATION. The ATR Team 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, (412) 395-7419

(2) Technical Lead: Paul Christner, CELRP-ECD-C, Paul.R.Christner@usace.army.mil, (412) 395-7292

b. ATR Team Members:
(1) ATR Team Leader (Structural Engineer): Frederick Sheffield, CENWK-EDD-S, frederick.r.sheffield@usace.army.mil, (816) 389-3015

(2) Civil Engineer: Frank Mills, CELRN-ECE-S,
Frank.C.Mills@usace.army.mil, (615) 736-5676

c. RMO
Representative: Frank A. Appelfeller, CELRD-RBE,
frank.a.appelfeller@usace.army.mil, (513) 684-6200

9. APPROVAL SIGNATURE:

[redacted]

District Chief of Engineering

ATTACHMENT 1 – USACE TEAM MEMBERS		
CUSTOMER		
Function/Discipline	Name (Last, First)	Office
Technical Support Branch Chief	Schneller, Beth	CELRP-OPT
QA REVIEWERS		
Function/Discipline	Name (Last, First)	Office
Project Manager	Saadoon, Mayss	CELRP-PMP-M
Technical Lead (Civil)	Christner, Paul	CELRP-ECD-C
Civil Design Section Chief	Rother, Matt	CELRP-ECD-C
O&M Team Lead Engineer	Burstynowicz, Bob	CELRP-ECD-T
Cost Engineer	Moore, Patrick	CELRP-ECD-T
Structural Design Section Chief	Meyer, Greg	CELRP-ECD-S
Lead Geotechnical Engineer	James, Jim	CERLP-ECG-G
Lead Realty Specialist	Horneman, Jeff	CELRP-RE
Realty Specialist	Smith, Nakita	CELRP-RER
BCOES REVIEWERS		
Function/Discipline	Name (Last, First)	Office
Biddability / Constructability	Polizzano, James	CELRP-EC-NC
Biddability / Constructability	Conrad, Dave	CELRP-ECC-O
Operability	Dubinsky, Joseph	CELRP-OPT-M
Environmental	Stuart, Erin	CELRP-PME-V
Environmental	McClain, Bobbi Jo	CELRP-PME-V
Sustainability	Anderson, Neil	CELRP-OPT-M
ATR REVIEWERS		
Function/Discipline	Name (Last, First)	Office
ATR Team Leader (Structural)	Sheffield, Frederick	CENWK-EDD-S
Civil Engineering	Mills, Frank	CELRN-ECE-S