



US Army Corps
of Engineers

Louisville District
Great Lakes and Ohio River Division

Project Title: Johnson County Section 202 FRM Project

Authority: Section 202 of the 1981 Energy and Water
Development Appropriations Act

P2/Project Number: 475556

Review Plan

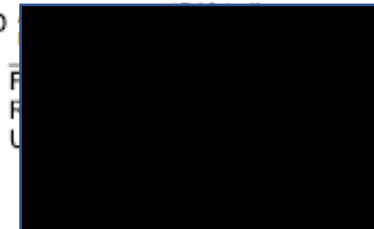
PREPARED
BY:



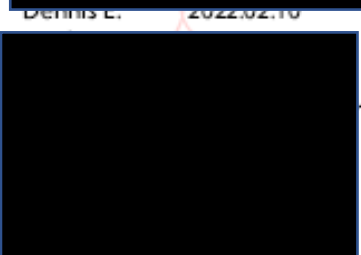
RECOMMENDED
BY:



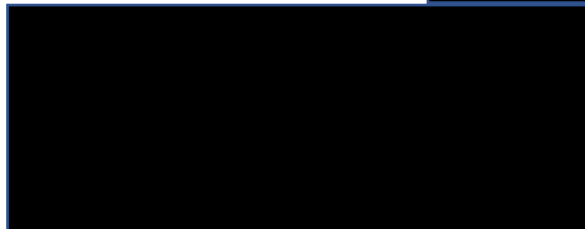
ENDORSED
BY:



ENDORSED
BY:



APPROVED
BY:



MSC APPROVAL DATE:

This information is distributed solely for the purpose of pre-dissemination review under applicable information quality guidelines. It has not been formally disseminated by USACE. It does not represent and should not be construed to represent any agency determination or policy.

**REVIEW PLAN
ENGINEERING AND DESIGN PRODUCTS
JOHNSON COUNTY SECTION 202 FRM PROJECT
LOUISVILLE DISTRICT
Current Version Date: 3 Feb 2022
Mandatory Revision Date: 3 Feb 2025**

1. PURPOSE AND REFERENCES

- a. Purpose. This review plan describes necessary quality reviews for engineering and design (E&D) products for the Johnson County Section 202 FRM Project – Phase III (North-South).
- b. References.
 - a. Engineering Regulation (ER) 415-1-11, Biddability, Constructability, Operability, Environmental and Sustainability (BCOES) Reviews
 - b. Engineering Regulation 1110-2-1156, Safety of Dams
 - c. Engineering Regulation (ER) 1165-2-217, Civil Works Review Policy
 - d. Qualtrax 08504 LRD, Supplemental Quality Procedures for Civil Works (CW) Engineering and Design (E&D) Products

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

3. PROJECT SCOPE AND PRODUCTS

- a. The work covered by this review plan include Phase III for the overall project. This phase includes approximately 7,500 feet and 4,200 feet of floodwall aligned north and south of Levisa Fork, respectively (see map at page 6.) The floodwall consists of connecting reaches of concrete T-wall and I-wall installed in native soils and earthen levees as shown on the map. The north floodwall ranges from 2 feet to 15 feet high. The south floodwall ranges from 1 foot to 8 feet high, while the earthen levees range from 20 feet to 30 feet high. Stop logs and roller gates will be installed at floodwall openings for streets and other ground access. For neighborhood aesthetics the surface grade of some streets will be raised to avoid floodwall installation. The project includes substantial real estate actions and utilities relocations. Real estate easement and property acquisitions are estimated to number 100. The project involves about 210 utilities relocations including: sanitary sewers (4-14" diameter); water lines (0.75-12" diameter); storm sewers (4-36" diameter); natural gas lines (0.75-3" diameter), as well as electrical and communications overhead lines.

Project Type	Local Flood Protection Structures
Location	City of Paintsville, KY
Purpose/Function	Flood Risk Management (FRM)

Key Physical Components	Concrete floodwalls, earthen levees, stop logs, roller closures, abutment levees and structures, street openings
Estimated Construction Cost	
E&D Product Delivery Method	In-House Design
Construction Delivery Method	Fixed Price Construction Contract(s)

- b. Products. The E&D products to be reviewed include the following:
- (1) Engineering Documentation Report/Supplemental Attachment (EDR/SA)
 - (2) Design Documentation Report (DDR)
 - (3) Plans and Specifications (P&S)
 - (4) TRG Risk Assessment Report (TRG)
 - (5) Safety Assurance Report (if required)
 - (6) Engineering Considerations and Instructions for Field Personnel (ECIFP)
 - (7) Major Construction Contract Modifications

4. DOCUMENTATION OF RISKS AND ISSUES

- a. Life Safety Risk Determination: The District Chief of Engineering has reviewed the project requirements and determined the reviews stipulated herein are appropriate to the level of life safety risks.
- b. Technical Complexities and Risks. The project delivery team (PDT) performed a risk analysis of for the project and identified technical complexities and risks. Quality reviews will be focused to address these risks.
- (1) Design Coordination
 - a) Due to project complexity, there are risks of schedule delays and contract modifications if design disciplines and project interfaces are not well coordinated and executed, including timely completion of a Tolerable Risk Guidelines (TRG) Risk Assessment and potential follow-on Safety Assurance Review (SAR).
 - b) Due to the necessity to design to native soil conditions, there is risk should geotechnical report design parameters not be properly applied to foundation designs.
 - (2) Floodwall Performance
 - a) Due to the possibility of design flood exceedance during actual storm events, there are risks the floodwall could be overtopped, or T-wall sections could overturn or slide.
 - b) Due to native soils having substandard soil bearing capacity, there are design and performance risks linked to potential excess foundation settlement for the concrete floodwall.
 - c) Due to acidic soil conditions, there is corrosion risk to the long-term integrity of metal sheet pile walls.
 - d) Due to having different cross sections, there is risk that connections at I-wall and T-wall transitions that are not properly completed could be points of floodwall failure.
 - e) Due to potential variation in source materials, there is risk to reinforced concrete performance if concrete mix design is not properly adjusted for changes to aggregates composition.
 - (2) Lands, Easements, Rights-of-Way Utility or Public Facility Relocations, and Dredged or Excavated Materials Disposal Areas (LERRDs)

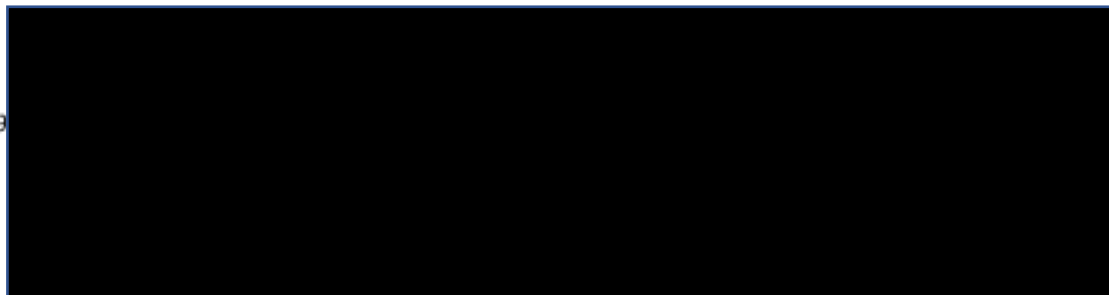
- a) Due to the large number of real estate actions required, there is risk for project delays relating to problems with easement and property acquisitions.
 - b) Due to the large number of utilities relocations and associated coordination needs, there is risk of project delays with schedule and cost impacts.
- (3) Construction
- a) Due to differing site conditions, there are risks of changed work requirements with schedule and cost impacts.
 - b) Due to limited site access or vehicle traffic in some construction zones, there is increased safety risk for construction operations and the community.
 - c) Due to supply chain issues for equipment and materials specified to meet Buy American Act provisions, there are procurement risks with schedule and cost impacts.

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. Follow ATR procedures in Chapter 5 of ER 1165-2-217. ATR will be focused on the technical risks described in paragraph 4.b. Qualified ATR team members with the necessary qualifications have been selected for this review and 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 \(army.mil\)](#)]. The Project Manager, Engineering Technical Lead DQC Lead, and ATR Team Leader will collaborate to oversee and ensure effective ATR execution.
 - e. Safety Assurance Review (SAR): The District Chief of Engineering has determined that performance of an SAR will be determined from an analysis of Tolerable Risk Guidelines as required by ER 1165-2-217, Section 7.4.1.2. A copy of the Chief's SAR determination memo is attached. Once the analysis of the TRG is complete, if a SAR is required is required, the SAR will be completed per Chapter 7 of ER 1165-2-217, and the RMO will transition from the MSC to the RMC.
 - f. Review Charge. Reviewers will perform ATR per Section 5.7 of ER 1165-2-217, Objectives, Scope and Review Criteria. Reviews shall check to confirm the design properly and adequately mitigates the project complexities and risks described in paragraph 4.b.
6. REVIEW SCHEDULE AND BUDGETS. The schedule and budgets for reviews are shown in Table 1.

Table 1. Review Schedule and Budgets			
Review Activity	Planned Start Date	Planned Finish Date	Budget
DQC – EDR	24JAN2022	11FEB2022	\$15K
ATR – EDR	14FEB2022	14MAR2022	\$20K
DQC – Interim Design	26APR22	02MAY22	\$15K
BCOES – Interim Design	26APR22	02MAY22	\$5K
ATR – Interim Design	10MAY22	10JUN22	\$25K
DQC – Final Design	20SEP22	14OCT22	\$10K
TRG Risk Assessment Report DQC	07MAR22	04APR22	\$10K
TRG Risk Assessment Report ATR	04APR22	14MAY22	\$10K
SAR Decision Point	14MAY22	15NOV22	\$10K
ATR – Final Design	15OCT22	15NOV22	\$25K
BCOES – Final Design	18NOV22	29NOV22	\$5K
BCOES/ATR - Backcheck	29NOV22	14DEC22	\$5K

7. CERTIFICATIONS. DQC certification and ATR certification and report documents will be completed and stored in the official project files. Copies or reports and review comments will be provided to the RMO for review approval.
8. REVIEW PLAN POINTS OF CONTACT. Questions and comments relating to this review plan can be directed to the following points of contact:



9

Louisville District

ATTACHMENT 1 – TEAM MEMBERS

PROJECT DELIVERY TEAM		
Function/Discipline	Name (Last, First)	Office
Customer		Johnson County Fiscal Court
Project Manager		CELRL-PM-C
Technical Lead		CELRL-ED-C
Cost Engineer (required)		CELRL-ED-M-C
Value Engineer (required)		CELRL-EDE
Geospatial Lead (required)		CELRL-EDD-G
Structural Engineer		CELRL-EDD-S
Hydraulic Engineer		CELRL-ED-T-H
Archaeologist		CELRL-PMC-PL
Geotechnical Engineer		CELRL-ED-T-G
Real Estate		CELRL-RE-C
Legal Counsel		CELRL-OC
Mechanical Engineer		CELRL-ED-D-M
Public Affairs		CELRL-PA
Climate Prep & Resiliency		CELRL-ED-T-H
Environmental Engineer		CELRH-EC-GW-G
Electrical Engineer		CELRL-ED-D-M
Planner		CELRH-PM-PD-F
Biologist		CELRE-PL-E
TRG Risk Assessment Lead		CELRD-DSPC
DQC REVIEWERS		
Levee Safety		CELRL-ED-T-G
H&H Engineer		CELRL-ED-T-H
Geotechnical Engineer		CELRL-ED-T-G
Civil Design		CELRL-ED-T-C
Cost Engineer		CELRL-ED-C
Structural Engineer		CELRL-EDD-S
Mechanical Engineer		CELRL-ED-D-M
Electrical Engineer		CELRL-EDE-E
Civil Engineer (QA)		CELRH-EC-DC
Structural Engineer (QA)		CELRH-ED-DS
Levee Safety (QA)		CELRH-ECG-D
BCOES		CELRH-EC-CM
BCOES		CELRH-EC-GW
LRL CONST Review Team		CELRL-CD-T-Q
ATR Leader / Civil Engineer		CEMVR-EC-DN
Biologist (EDR Review)		CELRP-PME-V
Geotechnical Engineer		CELRN-EC-CD-S
Structural Engineer		CELRH-DSPC-GE
H&H Engineer		CELRP-ECG-WH
Mechanical Engineer		CELRN-ECD-E
Cost Engineer (EDR Review)		CENWW-ECE
Real Estate Specialist		CEMVN-REE

Project Map – Johnson County Section 202 FRM Project Phase III (Paintsville, KY)

North Alignment: approx. 7,500 linear feet



South Alignment: approx. 4,200 linear feet

Legend:
Solid Line (White) – Concrete Floodwall
Polygons (Bright Green) – Earthen Levee

