



**US Army Corps
of Engineers®**

**Chicago District
Great Lakes and Ohio River Division**

Calumet Harbor and River, Dredged Material Disposal Facility DMDF - Vertical Expansion Phase I Project

P2/Project Number: 402569

Review Plan

PREPARED

BY: _____
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USACE, Chicago District

RECOMMENDED

BY: _____
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District Engineer
USACE, Chicago District

ENDORSED

BY: _____
Frank Appelfeller, P.E.
Senior Regional Engineer
USACE, Great Lakes and Ohio River Division

APPROVED

BY: _____
Joseph M. Savage, P.E, PMP, SES
Regional Business Director
USACE, Great Lakes and Ohio River Division

MSC APPROVAL DATE:

**REVIEW PLAN
ENGINEERING AND DESIGN PRODUCTS
PROGRAMMATIC DREDGING (O&M)
CHICAGO DISTRICT**

Version Date: June 09, 2021

1. PURPOSE AND REQUIREMENTS

- a. Purpose. This programmatic review plan defines levels and scopes of review required for the engineering and design (E&D) products for the Calumet Harbor and River, Dredged Material Disposal Facility DMDF– Vertical Expansion Phase I Project.
- b. References. This review plan is prepared per the regional business process QMS 08504 LRD (*QC/QA Procedures for Civil Works Engineering and Design Projects*) and latest versions of the guidance documents listed below.
 - (1) Engineering Regulation (ER) 415-1-11, Biddability, Constructability, Operability, Environmental and Sustainability (BCOES) Reviews
 - (2) ER 1110-1-12, Quality Management
 - (3) Engineering Circular (EC) 1165-2-217, Civil Works Review Policy
- c. Requirements. The design and construction activities and documents for the Calumet Harbor and River, DMDF– Vertical Expansion Phase I Project are required to be reviewed by independent technical experts in accordance with ER 1110-1-12 and EC 1165-2-217. Review requirements may include district quality control/assurance (DQC), agency technical review (ATR) and independent external peer (IEPR) review as indicated below.

2. REVIEW MANAGEMENT ORGANIZATION (RMO)

The RMO for this project is the Great Lakes and Ohio River Division. The RMO has provided the District with an email stating concurrence with this review plan.

3. PROJECT SCOPE AND PRODUCTS

- a. Project Description and Scope of Work. The construction will be subdivided into Phase I and Phase II, with Phase III and Phase IV occurring more than ten years in the future. Phase I work will be awarded in FY21 and includes: earthwork to construct 11-ft high berm and liner, drying pad, new chain link fence, drainage features to capture runoff from the site, new access road, inspection of the force main, and new filter media placed in the filter cells. Some mechanical repair work may be done for the filter cells (new valves, piping, etc.). Phase II will include construction of the loading dock, and this will be done under a separate contract to be awarded in FY22. Phase III will include construction of the second lift – 11ft high berm. Phase IV will include construction of the cap and all features associated with closing the site. Phases III and IV are not scheduled at this time and will be completed in the future.
- b. The review plan will be amended for the follow-on contracts as needed. The focus of this review plan is Phase I.

Project Summary	
Project Type:	Civil Works
Locations:	Chicago, IL
Purpose/Function:	The project will increase the capacity of the current DMDF to avoid the need for a new site. Phase I project will complete design for one of two lifts (11ft high).
Key Physical Components:	Berm construction, drainage, and access road.
Estimated Construction Cost:	\$16M
E&D Product Method Delivery:	In-House Design
Construction Delivery Method:	Invitation for Bids (IFB)

c. Engineering and Design Products. The engineering and design products to be prepared and reviewed include the following:

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

d. Required Quality Reviews.

- (1) District Quality Control (DQC): DQC procedures will be performed for all E&D products following local business processes.
- (2) Agency Technical Review (ATR): The District Chief of Engineering has determined based on Tables 3 and 4 of QMS 08504 LRD that ATR *is* required.
- (3) Type II Independent External Peer Review (IEPR), Safety Assurance Review (SAR): The District Chief of Engineering has determined that the project *does not* pose significant life safety risks and a Type II IEPR (SAR) *is not* required.

e. Technical Risk Analysis and Review Charge: ATR *is* required and the review charge to be issued to the review team is shown below. According to paragraph 7.4 d and Table 4 of QMS 08504 LRD, the reviews will focus on the following primary project complexities and risks:

- (1) *The ATR team will focus on the layout, operations, and dike design to ensure technical adequacy, stability, environmental protection, and practicality.*
- (2) *The ATR team will also consider the construction sequence challenges.*
- (3) *The site contains non-uniform material with differing strength properties, and the berms will be built on compacted and non-compacted soils. Concerns exist regarding differential settlement. With differential settlement, longitudinal cracking could occur with the embankment material sloughing inward, or transverse cracking could occur leading to the spillage of confined material.*

4. PROJECT DELIVERY TEAM (PDT)

The project delivery team members are listed in Attachment A.

5. AGENCY TECHNICAL REVIEW TEAM (ATR) – requirements and expertise.

The project technical review team members are listed in Attachment A. Based on complicated geotechnical design and heavy earth moving requirements, the PDT recommends the same ATR team from FY20 Indiana Harbor Dike Raise Project. Each team member is very knowledgeable with this type of design and are truly experts with many years of experience.

ATR teams will be established in accordance with EC 1165-2-217. The following disciplines will be required for ATR of this project:

ATR Lead: The ATR team lead is a senior professional 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, Geotechnical Engineer.

Geotechnical Engineer - The geotechnical engineer will have experience in the design, construction, and evaluation of embankment dams, potential failure mode analysis, and dam safety risk analysis. The geotechnical engineer shall have experience in subsurface investigations, rock and soil mechanics, internal erosion (seepage and piping), slope stability evaluations, erosion protection design, and earthwork construction. The geotechnical engineer shall have knowledge and experience in the forensic investigation of seepage, settlement, stability, and deformation problems associated with high head dams and appurtenances constructed on soil foundations.

Construction Engineer – Reviewer should be a senior level, professionally registered engineer with extensive experience in the engineering construction field with particular emphasis on dam safety projects. The Construction reviewer should have a minimum of 10 years of experience.

6. REVIEW EXECUTION

District quality control (DQC) will be performed per Chapter 3 of ER 1110-1-12 and Section 8 of EC 1165-2-217.

ATR shall be performed in accordance with Section 9 of EC 1165-2-217. Based on the review charge in paragraph 3.e, the technical discipline(s) and expertise required for the ATR are shown in Table 1. ATR reviewers are listed Attachment 1.

Discipline	Name	Description of Credentials
ATR Lead	Mike Robinette (DSMMCX)	The ATR team lead is a senior professional with extensive experience in preparing Civil Works documents and conducting ATRs.
Civil Engineer	Ben Caldwell (MVK)	Senior Professional with extensive experience in the field of civil engineering, analysis, design.
Geotechnical Engineering	Todd Loar (DSMMCX)	PE that has many years of experience in the field of geotechnical engineering, analysis, design, subsurface investigations, rock and soil mechanics, internal erosion (seepage and piping), slope stability evaluations, erosion protection design, and construction of earthen levees.
Construction	Bill DeBruyn (LRH)	PE with extensive experience in the engineering construction field with particular emphasis on dam safety projects.

7. REVIEW SCHEDULE AND BUDGET

The schedule and budgets for reviews are shown in Table 2. Note that review dates are tentative, and dependent on other phases of work which are being conducted by other entities. Review dates must be updated if the work by others slips, or if the scope changes.

Review	Start Date	Finish Date	Budget (\$)
60% Design DQC	May 6, 2021	1 week after start	\$5,000/occurrence
60% ATR	May 25, 2021	1 week after start	\$5,000/occurrence
90% Design DQC	June 22, 2021	1 week after start	\$5,000/occurrence
90% ATR	July 7, 2021	2 weeks after start	\$10,000/occurrence
90% BCOE	July 7, 2021	2 weeks after start	\$5,000/occurrence
ATR BackCheck	July 21, 2021	1 week after start	\$5,000/occurrence
BCOE BackCheck	Aug 3, 2021	1 week after start	\$5,000/occurrence

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: Michael Padilla, CELRC-PDP-P, (312) 846-5427, Michael.C.Padilla@usace.army.mil
 - (2) Chief of Design Branch: John Groboski, CELRC-ENG, (312) 846-5417, John.A.Groboski@usace.army.mil
- b. Review Management Organization (RMO) Representative: Frank Appelfeller, RMO, 513-684-6200, Frank.A.Appelfeller@usace.army.mil

8. DISTRICT

Technical Risk Analysis has been completed for this project and the required quality reviews have been determined.

RECOMMEND FOR APPROVAL:

John A. Groboski, P.E.
Chief, Design Branch

DISTRICT APPROVAL:

Ian F. Mitchell, P.E.
Chief, Engineering and Construction Division

Attachment A – TEAM MEMBERS

PROJECT DELIVERY TEAM		
Function/Discipline	Name (Last, First)	Office
Customer	Jurca, Vasile	City of Chicago
Customer	White, Sarah	Port Authority
Project Manager	Padilla, Michael	CELRC-PDP-P
Technical Lead/ Civil	Kluza, Witold	CELRC-ENG-C
Cost Engineer	Chartouni, George	CELRC-ENG-C
Value Engineer	Ansari, Mike	CELRC-ENG-C
Geospatial Lead	Ennis, J.D.	CELRC-ENG-J
Geotechnical Engineer	Ferris, Daniel	CELRC-ENG-G
Geotechnical Engineer	Lenhardt, Eugene	CELRB-TD-DC
Environmental Engineer	Saichek, Richard	CELRC-ENG-H
Hydraulic Engineer	Kiel, Dave	CELRC-ENG-H
Structural Engineer (if necessary)	Harris, Jeremy	CELRC-ENG-T
Mechanical Engineer	Lombardi, Jeremy	CELRC-ENG-T
DQC REVIEWERS		
Function/Discipline	Name (Last, First)	Office
DQC Lead / Environmental	Miller, Jennifer	CELRC-ENG-H
Civil	Mishra, Rana	CELRC-ENG-C
Cost	Druzicki, David	CELRC-ENG-C
Geotechnical	Rochford, Bill	CELRC-ENG-G
Structural (if necessary)	Leffler, Faye	CELRC-ENG-T
Hydraulics	Schmidt, Joel	CELRC-ENG-H
Geotechnical	Hammer, Gregory	MCX
BCOES REVIEWERS		
Function/Discipline	Name (Last, First)	Office
Biddability	Blair, Regina	CECT-GAT
Constructability	Stavrides, Phil	CELRC-ECD
Operability	Kroll, Tim	CELRC-ORB
Environmental	Schmidt, Joel and Miller, Jennifer	CELRC-ENG-H
Safety	Flanagan, Pete	CELRC-GAO
Legal	Jerbi, Kevin	CELRC-GAC
ATR REVIEWERS		
Function	Name	Office
Lead	Michael Robinette	LRH
Civil	Benjamin Caldwell	MVK
Construction	Bill DeBruyn	LRH
Geotechnical	Todd Loar	LRP