



**US Army Corps  
of Engineers®**

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

# OLD FORT NIAGARA, NIAGARA COUNTY, NEW YORK

## Continuing Authority Program Section 14

P2/Project Number: 468121

### **Review Plan-** Engineering & Design

PREPARED

BY:

Project Manager  
USACE, Buffalo District

RECOMMENDED

BY:

Chief, Design Branch  
USACE, Buffalo District

ENDORSED

BY:

Chief, Technical Services Division  
USACE Buffalo District  
Review Management Organization Representative

APPROVED

BY:

LTC, EN  
Commanding  
USACE, Great Lakes and Ohio River Division

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**REVIEW PLAN  
ENGINEERING AND DESIGN PRODUCTS  
CAP 14 OLD FORT NIAGARA  
BUFFALO DISTRICT  
Current Version Date: August 2022  
Mandatory Revision Date: August 2025**

**1. PURPOSE AND REFERENCES**

- a. Purpose. This review plan describes necessary quality reviews for engineering and design (E&D) products for the CAP 14 Old Fort Niagara project.
- 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 Buffalo District.

**3. PRODUCT SCOPE AND PRODUCTS.**

- a. Product Description and Scope of Work.

Project Number	468121
Business Line	CAP Section 14
Project Type	Emergency Streambank & Shoreline Erosion Protection
Geographic Location	Youngstown, Niagara County, New York (43.261753, -79.062798)
Main Project Features	Stone Revetment, mechanically stabilized earth, and vegetative stabilization
Estimated Construction Cost	
E&D Product Delivery Method	In-House Design
Construction Delivery Method	Fixed Price

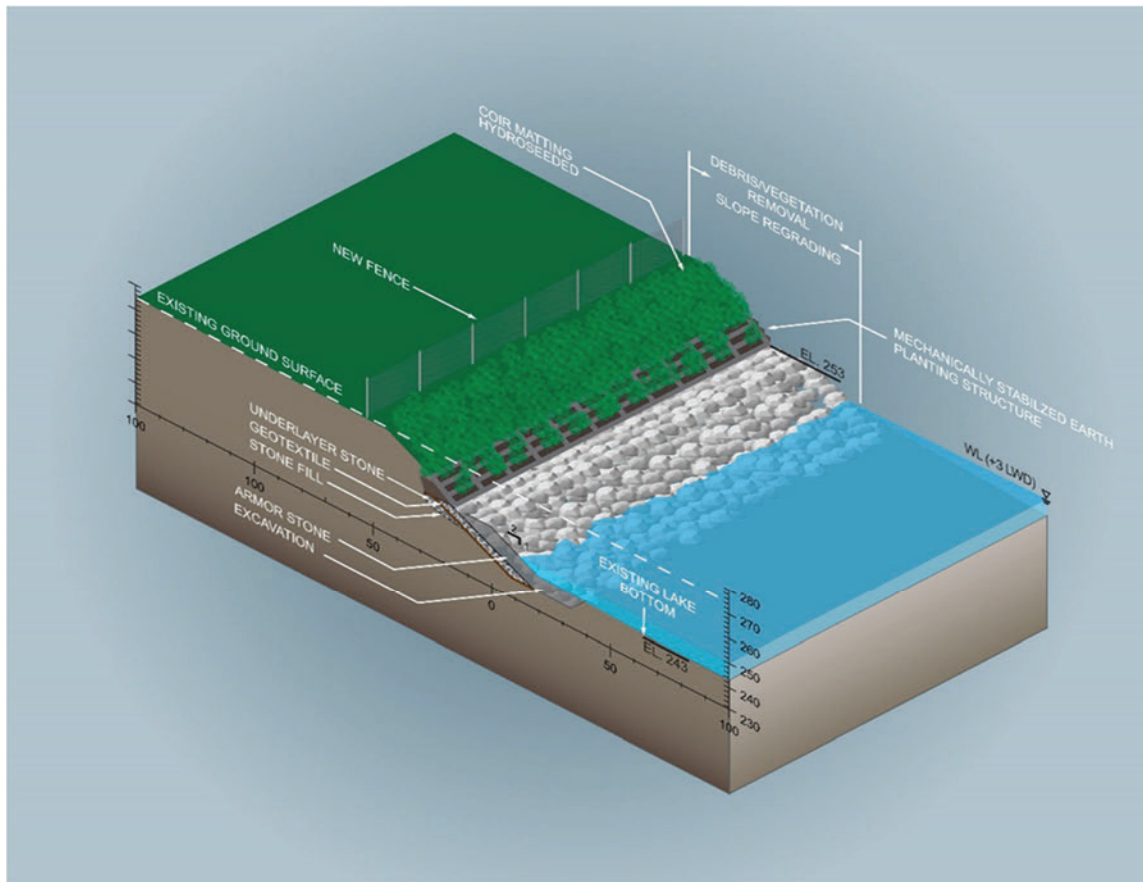
Old Fort Niagara (OFN) is in Niagara County in western New York, approximately 30 miles north of Buffalo, New York. OFN is located at the mouth of the Niagara River that flows into Lake Ontario. The proposed project would address 400 feet of degraded slope east of the masonry wall. The project location is included in Figure 1 below.



Figure 1- Aerial view of project location

It is recommended that 400 feet of shoreline protection consisting of a stone revetment, mechanically stabilized earth and vegetative stabilization be taken forward to the design and implementation phase. This alternative addresses the high rate of erosion and will protect OFN's historical structures and contributing elements to the National Historic Landmark. It is recommended that a 400-foot combination of stone revetment, mechanically stabilized earth and vegetative stabilization be chosen to protect the historically significant structures at OFN and be taken forward and implemented in the design phase. This alternative was identified as the least cost alternative and ranked highest in terms of the four evaluation criteria USACE uses to screen alternative plans (i.e., acceptability, completeness, effectiveness, and efficiency). The recommended plan consists of a stone revetment along the bluff base with a crest elevation approximately one-half the bluff height. Two-layer armor stone would be placed on top of underlayment stone and bedding stone on a 1V:2H slope in front of the eroding bluff. At the top of the armor stone revetment, a mechanically stabilized earth bench would be constructed that would serve as a splash pad and partial retaining

structure for the upper slope crest and to provide a platform for plantings.



*Rendering of Recommended Plan*

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. 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 operation activities and identified the following key technical complexities and risks. Quality reviews will be focused to manage these risks.

- (1) Sponsor cost share viability. Risk level is high. Sponsor is unwilling or unable to cost share complete desired project.
- (2) Project alternatives exceed federal authority limit. Risk level is moderate. Cost of the proposed measures could be greater than the \$5 million Federal Cost Limit, resulting in project being stopped.
- (3) Historic resource concerns. Risk level is moderate. Completion of Section 106 National Historic Preservation Act Process to address/mitigate adverse effect(s) to historic resources that may delay schedule.
- (4) State is listed in National Register of Historic Places. Project may result in direct or indirect adverse impacts to historic resources. Risk level is moderate. Determination of adverse effect(s) to historic resources could result in one or more project alternatives requiring modifications or being considered not feasible. The overall intent of the project is to help preserve the historic site; however, the project may directly or indirectly result in adverse effects to historic features. Avoidance or mitigation of effects to historic resources could result in project delay or modification if the Section 106 National Historic Preservation Act consultation process is unable to proceed quickly enough for project timeline.

## 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). PDT and review team leaders will collaborate to oversee and ensure effective execution.

Table 1. ATR Technical Disciplines and Required Expertise	
Technical Discipline	Expertise Required
ATR Lead / Geotechnical Engineering	The Technical Design Reviewer should be experienced with the design of slope stabilization projects and revetment designs. The reviewer will serve as the ATR Lead for the design. Various Geotechnical analyses and aspects are included within the planned design activities.
Coastal Engineering	The reviewer should have experience in coastal shoreline erosion and climate preparedness and resiliency guidance.
Disciplines not anticipated to be needed on ATR team	
HTRW	HTRW is not anticipated to be needed on ATR team. Risks of HTRW impact to project is low. HTRW is not anticipated.
Real Estate Reviewer	Expertise not anticipated to be required on ATR team. Low risk and complexity may be more appropriately accomplished in-house via DQC/Great Lakes Real Estate.

e. Safety Assurance Review (SAR): Per sub-section 4.a, an SAR is 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 describes 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 (\$)
DQC – DDR Review	09 NOV 2023	24 NOV 2023	
BCOES – DDR Review	09 NOV 2023	24 NOV 2023	
ATR – DDR Review	27 NOV 2024	07 DEC 2024	
DQC – Draft P&S	31 MAY 2024	13 JUN 2024	
BCOES – Draft P&S	30 JUL 2024	12 AUG 2024	
ATR – Draft P&S	30 JUL 2024	12 AUG 2024	
Certify Reviews	13 AUG 2024	03 SEP 2024	
P&S to Contracting	04 SEP 2024	04 SEP 2024	

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:
  - (2) Engineering Technical Lead:
- b. ATR Team Leader:
- c. Review Management Organization (RMO) Representative:

9. APPROVAL SIGNATURE:

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District Chief of Engineering

ATTACHMENT 1 – TEAM MEMBERS

PROJECT DELIVERY TEAM		
Function/Discipline	Name (Last, First)	Office
NYS Office of Parks, Recreation, and Historic Preservation		N/A
Project Manager		CELRB-PMP-PM
Technical Lead		CELRB-TDD-S
Cost Engineer		CELRB-TDD-E
Value Engineer		CELRB-TDDDE
Geospatial Lead		CELRB-PML-PA
Plan Formulator		CELRB-PML-PA
Program Analyst		CELRD-PDS
Safety & Occupational Health		CELRB-SO
Program Specialist		CELRB-PMP-O
Biologist, Environmental Analysis		CELRB-PM-EA
Archaeologist		CELRB-PL-E
Branch Chief, Contracting		CELRB-CECT
Assistant District Counsel		CELRB-OC
Realty Specialist		CELRB-RE
Public Affairs Officer		CELRB-PA
Geospatial Technician	CELRB-TD-EE	
DQC REVIEWERS		
Function/Discipline	Name (Last, First)	Office
DQC Lead – Chief Design		CELRB-TDD
Civil/Structural Design		CELRB-TDD-S
Coastal/Geotech		CELRB-TDD-C
Cost Engineering		CELRB-TDD-E
Environmental Analysis/Cultural Resources		CELRB-PML-E
Ecosystem Restoration		
Climate Preparedness Resiliency (CPR)		
BCOES REVIEWERS		
Function/Discipline	Name (Last, First)	Office
Biddability		CELRB-TDD-E
Constructability		CELRB-TDC-N
Operability		CELRB-TDD
Environmental		CELRB-PML-E
Sustainability		CELRB-TDD-S
Office of Counsel		CELRB-OC
Contracting		CELRB-CT
Real Estate		CELRB-RE



ATR REVIEWER		
Function/Discipline	Name (Last, First)	Office
ATR Leader – Geotechnical		CELRC-TS-D-G
Coastal Engineering		CELRC-TS-D-G