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## Proposed Work Plan – Design of Concrete Repairs for Ann Arbor Dams

Geosyntec Consultants of Michigan, Inc. (Geosyntec) is pleased to present this proposal to the City of Ann Arbor (City) for the detailed design of concrete repairs for Barton and Superior Dams. Currently, we are finalizing concrete repair plans for the City in which repairs are identified and prioritized based on the criticality (i.e., the combination of the observed condition and the importance of the component to prevent an uncontrolled release of the reservoir) of each dam component. The concrete repair plans also include recommended repairs with conceptual designs, cost estimates for the recommended repairs, and a recommended schedule for implementing the repairs in future fiscal years (FY).

We will prepare design documents for the recommended concrete repairs at Barton and Superior Dams, including the following deliverables:

- Design drawings;
- Technical specifications;
- Estimated construction schedule; and
- Engineer's opinion of probable cost (EOPC).

We will also provide bidding assistance to the City during the construction contractor (CC) selection process and will coordinate with the Federal Energy Regulatory Commission (FERC) and other regulatory bodies during design and CC selection.

Our detailed design will include repairs of the following concrete components at the request of the City:

### Barton Dam

- Left downstream retaining wall of the powerhouse tailrace
- Powerhouse right exterior wall
- Powerhouse intake and forebays and left upstream retaining wall
- Spillway interior piers
- Right end wall of spillway interior

### Superior Dam

- Concrete-encased steel struts within sluiceway
- Sluiceway downstream retaining walls
- Spillway crest columns and the crest beams
- Upstream side of the spillway piers supporting the walkway

The following sections present additional details of our proposed scope of work.

### **Design Documents**

For each dam, Geosyntec will prepare design drawings, technical specifications, an EOPC, and an estimated construction schedule (collectively referred to as design documents) for three design steps: (1) 50 Percent, (2) Issued for Bid (IFB) (i.e., 100 Percent), and (3) Issued for Construction (IFC).

Geosyntec will be prepared to promptly begin work on July 1, 2026 in anticipation of notice to proceed. We will perform a structural analysis for each repair design for each concrete component using simplified methods and models. Our team will perform the structural analyses with input from a technical advisor and review by a senior engineer for quality assurance. We will perform the analyses concurrently with our preparation of the design drawings and technical specifications to reduce the overall schedule.

At the 50 Percent design step, we will submit the design documents to the City for review and to FERC via the E-file system. Upon receipt of a single set of consolidated comments from the City and their consultant, we will review the comments and lead a meeting with the City to resolve any questions. We will revise the design documents to address the comments from the City for the IFB design documents submittal.

We will also lead an initial Construction Potential Failure Modes Analysis (CPFMA) workshop with FERC to discuss FERC comments and potential failure modes (PFMs) prior to submitting the IFB design documents. More information regarding the CPFMA workshop is presented in the Regulatory Coordination task of this proposal. We will strive to address all FERC comments in the IFB design documents submittal. However, given the accelerated project schedule, any comments that cannot reasonably be addressed within the project timeline will be documented and incorporated in the IFC design documents.

We will prepare a set of IFC design drawings and technical specifications, sealed by the Design Engineer (DE) who will be a Professional Engineer licensed in the State of Michigan. We will address comments from the City and their consultant regarding the IFB design documents in this deliverable. We will also address any unresolved comments from FERC in the IFC design documents. We will prepare a bulletin summarizing all revisions made to the IFC documents after the IFB submittal.

Geosyntec's CAD designers will prepare the design drawings under the direction of the DE sealing the IFC drawings with support from a task leader familiar with Barton and Superior Dams. The design documents will be reviewed by technical advisors with experience in preparing drawings and specifications for similar concrete repairs. A senior review of the design documents will be provided for quality assurance before submitting to the City. The 50 Percent and IFB design drawings will be provided to the City in .pdf format and the IFC drawings will be provided to the City in .pdf and .dwg formats. The other 50 Percent design documents will be provided to the City in .docx format. The IFB and IFC design documents will be provided to the City in .docx and .pdf formats.

#### *Assumptions for Design Documents*

We have made the following assumptions when preparing this proposal:

- Geosyntec will be ready to begin work on July 1, 2026, the anticipated date the City will provide the Notice to Proceed.
- The drawings will be developed by digitizing existing .pdf files of design and repair drawings and details for the dams.
- Geosyntec will perform field measurements of structures, as needed. A survey to measure all concrete structures will not be performed.
- If confined space entry is required to obtain field measurements, the City will provide the necessary personnel, equipment, and monitoring. One Geosyntec representative, trained in confined space entry, will make entry and collect the required measurements.
- This is a repair project and, therefore, the standard milestone submittals for FERC (i.e., 30%, 60%, 90%, and 100%) and a Basis of Design Report will not be required.
- The EOPC and construction schedule will not be required for the IFC submittal as these will be provided by the CC during the bidding process.
- The City will provide the General Conditions portion of the specifications.
- Geosyntec will lead two meetings with the City and the City's consultant to resolve comments; one after the 50 Percent submittal and one after the IFB submittal.
- Geosyntec will lead an update meeting with the City or their designee every week for the duration of this task (i.e., completion of IFC design documents).

## Regulatory Coordination

In addition to regulatory oversight of the dams by FERC, work performed below the water line (e.g., left downstream retaining wall for Barton Dam) will require a Joint Permit, administered by the State of Michigan Department of Environment, Great Lakes, and Energy (EGLE) and the U.S. Army Corps of Engineers. After the 50 Percent design document submittal, we will prepare a Joint Permit Application for any repairs to be performed below the water line. We will finalize and submit the Joint Permit Application to the City for submittal to EGLE after receiving comments from the City on the 50 Percent design documents. Geosyntec and our subcontractors will perform a wetland delineation survey as well as a threatened and endangered species survey at each dam to facilitate the Joint Permit Application.

Geosyntec is experienced in navigating the challenges associated with FERC hydropower regulation at Barton Dam. We will implement that experience and be proactive in communicating and collaborating with FERC for this project. Based on our experience and understanding of the scope for this project, we propose the following activities and approximate schedule to engage FERC throughout the project and mitigate the impacts of FERC comments:

- We will prepare a letter to inform FERC of the development of concrete repairs and present conceptual details of the repairs.
- We will lead a virtual Kickoff Meeting with the City, FERC, and the City's consultant to discuss the conceptual design of the repairs and FERC's concerns.
- Approximately 70 days after submitting the 50 Percent design documents, and before submitting the IFB design documents, we will lead a virtual CPFMA workshop with FERC. We will discuss FERC comments on the 50 Percent design documents as well as PFMs and associated risk reduction measures (RRMs).
  - We will prepare a list of relevant background documents for each participant to review before the CPFMA workshop.
  - We will prepare Microsoft Powerpoint slides to be used by our facilitator during the CPFMA workshop.
  - We will identify likely PFMs before the CPFMA to expedite the workshop.
  - During the workshop, we will populate the FERC PFM tables with input from the workshop attendees.
  - After the workshop, we will prepare a CPFMA report for submittal to FERC via the E-file system.
  - We will incorporate RRM identified during the workshop into the design documents and other FERC-required plans (described below).
- We expect FERC-required plans will include a Quality Control Inspection Plan (QCIP), Temporary Conditions Emergency Action Plan (TCEAP), and Construction Dam Safety Surveillance and Monitoring Plan (CDSSMP). We will prepare drafts of these documents for submittal to FERC and inclusion with the City's Request for Bids. This will expedite FERC comments and provide prospective CCs with a general understanding of the associated requirements.
- After the City selects a CC, we will lead a second virtual CPFMA workshop with FERC and the selected CC. We will discuss FERC comments on the IFB design documents and the draft FERC-required plans. We will review the previously identified PFMs and associated RRM with the CC and FERC to solicit CC feedback and identify any appropriate changes to the PFMs or RRM.
  - We will prepare a list of updates made since the initial CPFMA workshop.
  - We will prepare Microsoft Powerpoint slides to be used by our facilitator during the CPFMA workshop.
  - During the workshop, we will update FERC PFM tables with input from the workshop attendees.
  - After the workshop, we will prepare a CPFMA report for submittal to FERC via the E-file system.
- We will prepare final versions of the QCIP, TCEAPs, and CDSSMPs following the second CPFMA workshop to include the RRM identified during the CPFMA as well as the quality control personnel and their

qualifications. We will submit the final FERC-required plans to the City with the IFC design documents for submittal to FERC via the E-file system.

#### *Assumptions for Regulatory Coordination*

We have made the following assumptions when preparing this proposal:

- A single QCIP will be prepared to include both dams because the quality control and inspection requirements and procedures are expected to be similar for both dams. However, a separate CDSSMP and TCEAP will be prepared for each dam.
- The virtual CPFMA workshops will each require up to 3 days (24 hours) to complete.

#### **Bidding Assistance and FERC Follow-Up Efforts**

We will provide bidding assistance to the City during the CC selection process to evaluate the qualifications of each potential CC and the submitted bids. We recognize the repair construction project may be advertised as a single contract for both dams or as two separate contracts, one for each dam. We will prepare our IFB documents to suit the City's chosen option. As part of this task, we will review and provide comments on the City's request(s) for bids before the bid period is opened. We will respond to requests for information (RFIs) submitted by potential bidders.

Once the bids are opened, two members of the Geosyntec team will review the bids. We will identify items of concern, prepare draft questions for the bidders, and other general comments for discussion with the City. For each contract, we will:

- Meet with the City and their consultant in person to review the bids and identify a short list of up to two bidders for interviews;
- Schedule an interview with each short-list bidder and prepare appropriate questions;
- Interview each short-list bidder with the City and their consultant; and
- Meet with the City and their consultant to evaluate the bidders using the City's bid evaluation matrix.

Once the CC(s) is selected, we will assist the City with submitting CC qualifications, submittals, and engineering recommendations to FERC for review.

#### *Assumptions for Bidding Assistance and FERC Follow-Up Efforts*

We have made the following assumptions when preparing this proposal:

- The repair construction project will be advertised as two separate contracts, one for each dam.
- If necessary, we will prepare a bid addendum summarizing any significant changes that would influence the ability of the CC to perform the repairs or significantly impact costs.

## Project Team

Figure 1 presents the organization of the Geosyntec project team. For quality assurance and control, we will engage a senior reviewer for the structural design and design documents. We have also identified technical advisors for the structural design, design documents, and coordination with regulatory bodies (e.g., FERC). Drafting resources will develop the detailed design drawings and support staff will be utilized to support all project tasks, where appropriate.

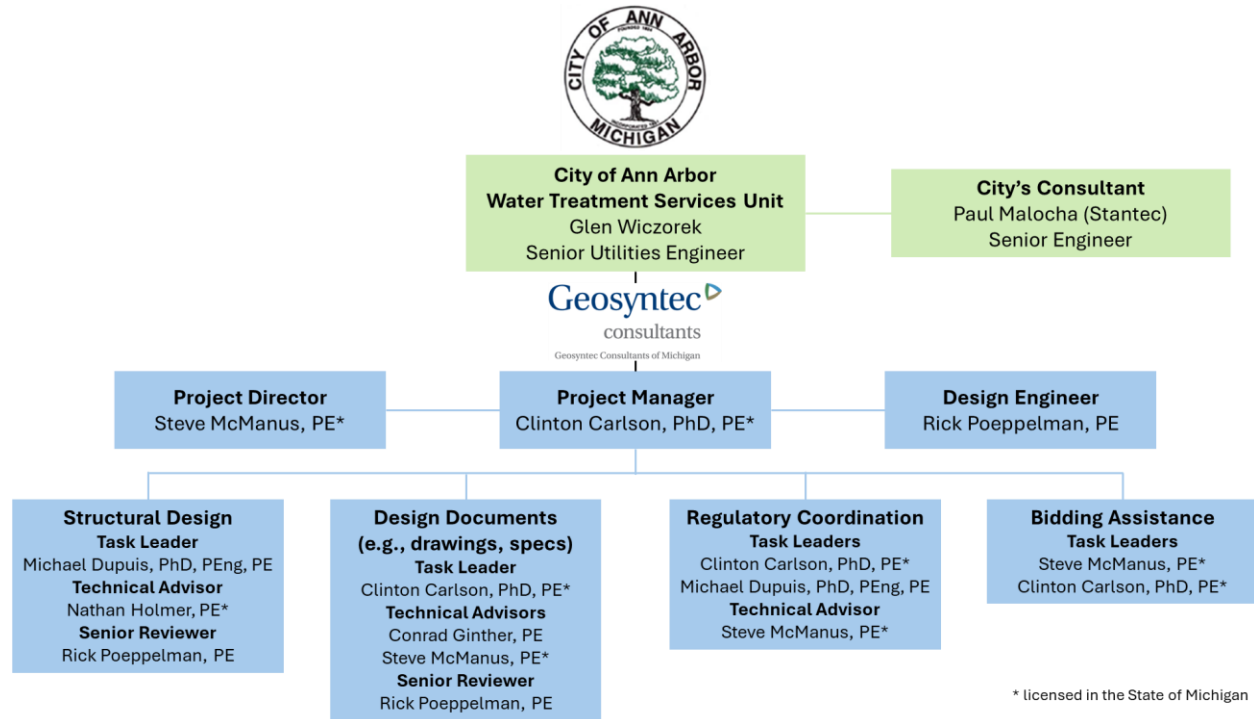


Figure 1 – Geosyntec Project Team Organization Chart

Brief biographies for the project team members are presented below. Resumes can be provided upon request.



**Clinton Carlson, Ph.D., P.E. – Project Manager** - Clinton is a senior geotechnical engineer with 11 years of experience in dam safety projects and is based in Geosyntec's Detroit office. He will serve as Geosyntec's project manager, drawing on his prior leadership managing the 2023 FERC Part 12D Periodic Inspections (FY23 and FY24) and the Concrete Repair Plan (FY25 and FY26) for Barton and Superior Dams. Clinton will also serve as the task leader for design document development and co-lead regulatory coordination and the bidding assistance, using his extensive knowledge of Barton and Superior Dams, recommended concrete repairs, and proximity to the sites. He is a licensed professional engineer in the State of Michigan.



**Steve McManus, P.E.\* - Project Director** - Steve is a principal geotechnical engineer with more than 18 years of experience and is based in Geosyntec's Ann Arbor office. He has in-depth knowledge of Barton Dam, having served as the FERC-approved Engineer of Record for the Right Embankment Remediation project, overseeing both design and construction. Steve's extensive background includes preparing design documents, providing construction oversight, and coordinating directly with FERC, equipping him with a thorough understanding of FERC procedures and expectations. Steve will serve as project director, a technical advisor for design

documents and regulatory coordination, and co-lead for the bidding experience, building on his previous experience at Barton Dam.



**Rick Poepelman, P.E. – Design Engineer** - Rick is a senior principal structural engineer with an emphasis on hydraulic structures. He has more than 40 years of experience in general dam safety, levee safety, flood risk management projects, and the various levels of risk assessments and risk informed design. Rick was the senior reviewer for the structural analyses performed for the concrete components of Barton and Superior Dams to develop the concrete repair plans. He will continue to provide senior review of the concrete repair designs for this project. Rick will be the Design Engineer for the concrete repair designs and provide a senior review for the design documents.



**Michael Dupuis, Ph.D., P.Eng., P.E.** - Michael is a senior structural engineer and engineering seismologist with 11 years of consulting experience focused on dam safety projects. Building on his role as a member of the Independent Consultant team for the 2023 FERC Part 12D Periodic Inspections of Barton and Superior Dams, Michael most recently served as the lead for developing the concrete repair plans for these facilities. His direct involvement in both the inspections and the concrete repair recommendations has provided him with in-depth knowledge of these dams and their specific repair needs. Michael will lead the effort to prepare the structural designs for the recommended repairs and will co-lead coordination with the regulatory bodies.



**Nathan Holmer, P.E.\*** - Nathan is a senior structural engineer and the leader of the structural design efforts within Geosyntec's geotechnical and construction engineering practice group. He has developed an expertise in the structural design and evaluation of concrete and steel structures through 15 years of professional practice. Nathan has over 13 years of design experience including reinforced concrete retaining walls, reinforced concrete culverts, and structural rehabilitation. He is familiar with structural steel design, pre-stressed pre-cast concrete design, and reinforced concrete design. Nathan will draw upon his design experience with similar structural repairs and serve as a technical advisor for the structural designs of the repairs. Nathan is a licensed professional engineer in the State of Michigan.



**Conrad Ginther, P.E.** - Conrad is a senior principal civil engineer with over 21 years of experience in dam safety and rehabilitation, specializing in advanced dam safety and seepage barrier projects. His expertise includes geotechnical construction, dam safety, design, quality assurance/quality control, materials testing, mix designs, and remediation for embankment and concrete dams. Conrad's experience with dam safety repairs provided insight when developing the concrete repair plans for Barton and Superior Dams. Conrad will serve as a technical advisor for the design documents, drawing on his experience with recommended repairs for Barton and Superior Dams as well as his background in developing similar documentation for other projects.

## Proposed Project Schedule

Geosyntec assumes the City will provide notice to proceed on July 1, 2026. Geosyntec recognizes the City would like to begin construction of the repairs on July 1, 2027 (FY 2028). The City typically needs 20 weeks (5 months) from the advertisement for bids to the Notice to Proceed to the CC.

Geosyntec has prepared an accelerated design schedule to accommodate these requirements, as presented in **Table 1** and **Figure 2**.

**Table 1 – Project Milestone Dates**

Milestone	Date
Notice to Proceed from the City	July 1, 2026
Letter to Inform FERC of Project	July 1, 2026
Kickoff Meeting with FERC	August 4, 2026
50 Percent Design Documents Submittal	November 10, 2026
Meeting with the City to Discuss 50 Percent Design Documents	Week of November 30, 2026
Initial CPFMA with FERC	Week of January 18, 2027
IFB Design Documents Submittal	February 2, 2027
Draft QCIP, TCEAPs, CDSSMPs Submittal	February 2, 2027
Meeting with the City to Discuss IFB Design Documents	February 9, 2027
Advertise Request for Bids	February 16, 2027
Close Bid Period	March 16, 2027
Notice of Award for Bid(s)	March 30, 2027
IFC Documents Submittal	April 11, 2027
Second CPFMA with FERC and Selected CC(s)	Week of May 11, 2027
Final QCIP, TCEAPs, CDSSMPs Submittal	June 10, 2027
Approval of Selected CC(s)	June 30, 2027
Start of Construction for Concrete Repairs	July 1, 2027

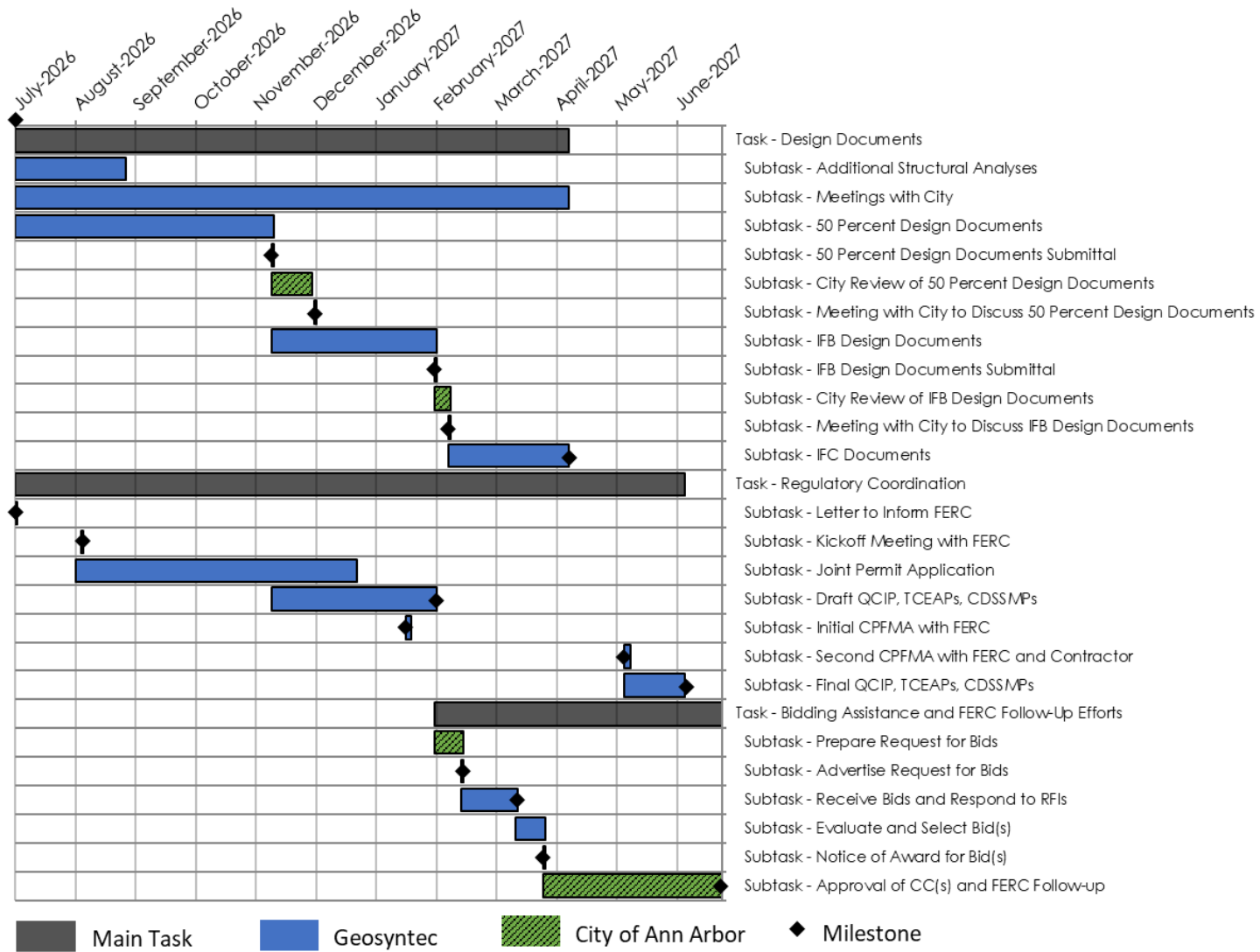


Figure 2 – Proposed Project Schedule

## Cost Estimate

The total cost estimate to complete the tasks detailed in the scope is **\$556,000** on a time and materials basis not to exceed the proposed amount. The estimate includes **\$356,000** specifically for Barton Dam and **\$200,000** specifically for Superior Dam. A breakdown of estimated costs for each task by dam is presented in **Table 2** below.

**Table 2 – Detailed Summary of Estimated Costs**

Task	Task Description	Labor Hours	Labor	Expenses	Total Cost
	<b>TOTAL</b>	<b>2,128</b>	<b>\$540,600.00</b>	<b>\$15,400.00</b>	<b>\$556,000.00</b>
<b>1</b>	<b><i>Design Documents</i></b>	<b>1391</b>	<b>\$341,900.00</b>	<b>\$0.00</b>	<b>\$341,900.00</b>
<b>2</b>	<b><i>Regulatory Coordination</i></b>	<b>573</b>	<b>\$152,500.00</b>	<b>\$15,400.00</b>	<b>\$167,900.00</b>
<b>3</b>	<b><i>Bidding Assistance and FERC Follow-up Efforts</i></b>	<b>164</b>	<b>\$46,200.00</b>	<b>\$0.00</b>	<b>\$46,200.00</b>