

**AMENDMENT NUMBER 1 TO
PROFESSIONAL SERVICES AGREEMENT BETWEEN
GEOSYNTEC CONSULTANTS OF MICHIGAN, INC.
AND THE CITY OF ANN ARBOR**

This Amendment Number ("Amendment") is to the agreement between the City of Ann Arbor, ("City") and GEOSYNTEC CONSULTANTS OF MICHIGAN, INC., ("Contractor") for Professional Engineering Services, which is dated January 1, 2023 ("Agreement"). City and Contractor agree to amend the Agreement as follows:

- 1) Article III, SERVICES, is amended to read as follows:
 - A. The Contractor agrees to provide Professional Engineering Services ("Services") in connection with the Project as described in Exhibit A, and as amended for additional tasks by Amendment Number 1 (Exhibit A-1). The City retains the right to make changes to the quantities of service within the general scope of the Agreement at any time by a written order. If the changes add to or deduct from the extent of the services, the compensation shall be adjusted accordingly. All such changes shall be executed under the conditions of the original Agreement.
 - B. Quality of Services under this Agreement shall be of the level of quality performed by persons regularly rendering this type of service. Determination of acceptable quality shall be made solely by the Contract Administrator.
 - C. The Contractor shall perform its Services for the Project in compliance with all statutory, regulatory, and contractual requirements now or hereafter in effect as may be applicable to the rights and obligations set forth in the Agreement. The Contractor shall also comply with and be subject to the City of Ann Arbor policies applicable to independent contractors.
 - D. The Contractor may rely upon the accuracy of reports and surveys provided to it by the City (if any) except when defects should have been apparent to a reasonably competent professional or when it has actual notice of any defects in the reports and surveys.
- 2) Article V, COMPENSATION, is amended to read as follows:
 - A. The Contractor shall be paid in the manner set forth in Exhibit B, and as amended by Amendment Number 1 (Exhibit B-1). The total fee to be paid the Contractor for the Services shall not exceed \$215,700.00. The original contract amount was \$100,000.00. The Amendment No. 1 amount is \$115,700.00. Payment shall be made monthly, unless another payment term is specified in Exhibit B or Exhibit B-1, following receipt of invoices submitted by the Contractor, and approved by the Contract Administrator.
 - B. The Contractor will be compensated for Services performed in addition to the

Services described in Article III, only when the scope of and compensation for those additional Services have received prior written approval of the Contract Administrator.

- C. The Contractor shall keep complete records of work performed (e.g. tasks performed, hours allocated, etc.) so that the City may verify invoices submitted by the Contractor. Such records shall be made available to the City upon request and submitted in summary form with each invoice.

All terms, conditions, and provisions of the Agreement, unless specifically amended above, shall apply to this Amendment and are made a part of this Amendment as though expressly rewritten, incorporated, and included herein.

City and Contractor agree that for this Amendment and any documents related to the Agreement: 1) signatures may be delivered electronically in lieu of an original signature; 2) to treat electronic signatures as original signatures that bind them; and 3) signatures may be executed and delivered by facsimile and upon such delivery, the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other party.

This Amendment to the Agreement shall be binding on the Parties' heirs, successors, and assigns.

[SIGNATURE PAGE FOLLOWS]

For _____

Contractor Name

By _____

Name: _____

Title: _____

Date: _____

For City of Ann Arbor

By _____

Christopher Taylor, Mayor

By _____

Jacqueline Beaudry, City Clerk

Date: _____

Approved as to substance

Milton Dohoney Jr., City Administrator

Brian Steglitz, Public Services Area
Administrator

Approved as to form and content

Atleen Kaur, City Attorney

EXHIBIT A-1
SCOPE OF SERVICES

SCOPE OF SERVICES CHANGES

The additional Professional Engineering Services included in this Amendment No. 1 is provided below.

Proposed Work Plan – Phase 2

The overall project goal is to perform topographic and bathymetric surveys, dive inspections, and an audit of the Owner’s Dam Safety Program (ODSP) for Barton and Superior Dams in Ann Arbor, Michigan. Slope stability analyses will also be performed for earthen embankment at Superior Dam as part of the project. This project is being completed to address recommendations from the Federal Energy Regulatory Commission (FERC) inspections required under the Code of Federal Regulations (CFR) Title 18, Part 12, Subpart D (Part 12D). The FERC Ninth Part 12D inspections are being performed by Geosyntec Consultants of Michigan, Inc. (Geosyntec) in 2023.

The following sections provide a detailed scope of work to complete the project objectives for the City of Ann Arbor (the City).

Topographic and Bathymetric Surveys

Geosyntec will subcontract Michels Marine to perform the requested bathymetric and topographic surveys for Barton and Superior Dams.

Bathymetric surveys will be performed upstream and downstream of the spillway and powerhouse at both dams. Michels Marine will use a multi-beam echosounder to perform the bathymetric surveys in areas that can be accessed by the echosounder, but also plans to bring equipment to perform land surveys in regions where a surface vessel cannot be used due to shallow water (e.g., spillway apron of Barton Dam). Geosyntec proposes performing the bathymetric surveys prior to the dive inspections. The surveys will be reviewed by Geosyntec prior to the dive inspections to identify any areas of potential concern (i.e., areas exhibiting settlement or scour) to be evaluated further during the dive inspections.

Surveys of existing settlement and alignment monuments on the spillway, powerhouse, and embankments will be performed to measure horizontal and vertical positions of the monuments at Barton (12 monuments) and Superior Dams (nine monuments). In addition to the monuments at Barton Dam, the approximate centerline of the crest of the embankment will be surveyed for northing, easting, and elevation every 50 feet (maximum) along with any visible low areas for a length of approximately 1,500 feet from the right abutment. The tops of the existing piezometer casings at Barton (ten casings) and Superior Dams (four casings) will also be surveyed for northing, easting, and elevation. These surveys will be performed to an accuracy of 0.01 ft in both the horizontal and vertical directions.

LiDAR surveys will be performed at Superior Dam to develop a high-resolution topography of the earthen embankments. The surveys will extend from the waterline on the upstream side of the dam to the wood line or edge of water on the downstream side of the dam.

A local engineer from Geosyntec with dam safety experience will provide oversight during the surveys. The surveys will be completed by Michels Marine prior to the dive inspections. The surveys are expected to take one week to complete. Data from the surveys will be made available to Geosyntec within approximately three weeks of completing the surveys. The surveys are currently proposed to start in October 2023 in the project schedule.

Amendment – Over \$75K Rev. 2022

Dive Inspections

Geosyntec will subcontract Michels Marine to perform dive inspections for Barton and Superior Dams to inspect the following locations at a minimum.

- Upstream and downstream sides of the spillways, sluiceway, and powerhouses.
- Barton Dam
 - Tailrace training wall from powerhouse to pier of railroad bridge.
 - Powerhouse tailwater forebay.
 - Powerhouse draft area and discharge apron.
 - Powerhouse headwater forebay.
 - Right abutment retaining/training wall.
- Superior Dam
 - Spillway interior.
 - Concrete and sheetpile retaining walls within the powerhouse discharge bay.
 - The upstream side of the left earthen embankment adjacent to the penstock.
 - Penstock inlet.
 - Right abutment retaining/training wall.

The bypass tunnel at Barton Dam will also be inspected by Michels Marine using a remotely-operated vehicle with an umbilical length of 1,000 linear feet and accessing the tunnel from the discharge apron. Some of these features may not need to be inspected during the dives based on the findings from the bathymetric surveys.

Michels Marine is experienced with safely performing underwater structural inspections, provides live audio/video link to observers on the shore, provides recordings after dives are complete, and details information such as measurements and conditions real time to observers on the shore. Michels Marine will provide a dive plan to Geosyntec for each dam, including features that will be inspected and health and safety procedures, prior to the dive inspections. The dive plans will be shared with the City prior to the inspections.

A local engineer from Geosyntec with dam safety experience will provide oversight during the dive inspections to make observations and provide feedback on features to inspect based on audio and video information. For the inspection of the spillway interior at Superior Dam, Michels Marine will provide their own confined space equipment and personnel. A dive inspection report will be provided by Michels Marine to Geosyntec for each dam.

Geosyntec will coordinate with Michels Marine, the City, and the FERC to perform the dive inspections when the flows at the dams are low to provide a safer environment for the inspections.

Slope Stability Analyses

Slope stability analyses for the left and right earth embankments of Superior Dam will be performed using the computer program Slide2D (or equivalent) in accordance with Chapter 4 (Embankment Dams) of FERC's Engineering Guidelines. Historical site investigations, laboratory test results, piezometer data, and previous slope stability analyses will be reviewed to develop one cross section each for the left and right embankments. The models will incorporate updated topographic survey data from the results of the proposed surveys and recent piezometer data measurements. Results of the slope stability analyses will be used to adjust the water levels within Amendment – Over \$75K Rev. 2022

the embankment and develop threshold and action levels for the water elevations measured by the piezometers.

A report will be prepared to summarize the slope stability analyses, provide the threshold and action levels for the piezometers, and provide recommended actions if threshold and action levels are exceeded. The slope stability analyses report will be provided to the City as a hard copy and electronic PDF. No slope stability analyses are proposed for the earthen embankments of Barton Dam.

Geosyntec expects the slope stability analyses and report can be completed within two months of the completion of the surveys. The completion of the slope stability analyses is proposed for December 2023 in the project schedule.

Audit of Owner's Dam Safety Program

An audit of the City's ODSP covering Barton and Superior Dams will be performed by Geosyntec, which satisfies the qualification requirements in the *FERC Guidance for ODSP External Audits*. The auditors within Geosyntec will have experience in dam safety design, operation, and maintenance for dams similar to Barton and Superior Dams and expertise in dam and hydro safety management, design, and dam safety engineering. Although using the same contractor to perform the FERC Part 12D inspections and audit of the ODSP is discouraged in the FERC guidance, Geosyntec's involvement in the Part 12D Periodic Inspections, including review of relevant project information and the performance of inspections, will allow Geosyntec to perform an efficient and comprehensive audit of the ODSP. Furthermore, Geosyntec has completed many of the recommended scope items in the FERC guidance for the ODSP audit as part of the Part 12D Periodic Inspections. Finally, Geosyntec has not previously performed an audit of the City's ODSP. Geosyntec will prepare a summary report for the ODSP audit and provide to the City as a hard copy and electronic PDF.

Geosyntec will conduct the audit once the proposed scope of work is approved by the City. Geosyntec expects the ODSP audit to be completed prior to the end of the current FY (FY2024). The completion of the ODSP audit and report is proposed for March 2024 in the project schedule.

Proposed Schedule

It is assumed that approval from the City for this project will be received on or before October 31, 2023. Services are expected to begin in October 2023 and be completed before the end of FY2024 (i.e., June 30, 2024).

**EXHIBIT B-1
FEE SCHEDULE**

Contractor shall be paid for those Services performed pursuant to this Amendment inclusive of all reimbursable expenses (if applicable), in accordance with the terms and conditions as set in the original Contract. The Compensation Schedule included herein states natures and amount of compensation the Contractor may charge the City and replaces the schedule

The total amount of fees to be paid under the amended Agreement shall not exceed \$215,700.00. The original contract amount was \$100,000.00. The Amendment No. 1 amount is \$115,700 and is broken down in the table below:

Fee Proposal – Phase 2

A breakdown of estimated costs for each task to be performed as part of the Phase 2 work is provided in Table 1 below. The Geosyntec team estimated the total cost of project tasks outlined in the RFP to be \$115,700 (\$42,250 for Barton Dam and \$73,450 for Superior Dam).

Table 1
Detailed Summary of Estimated Costs
COST PROPOSAL FOR FERC PART 12D INSPECTIONS AND OTHER ENGINEERING SERVICES
BARTON AND SUPERIOR DAMS
City of Ann Arbor

Task	Task Description	Geosyntec Labor Hours	Geosyntec Labor	Geosyntec Expenses	Subcontractor Expenses	Total Cost
	<i>Dive Inspections</i>	54	\$10,800	\$300	\$38,700	\$49,800
	Barton Dam	27	\$5,400	\$150	\$19,350	\$24,900
	Superior Dam	27	\$5,400	\$150	\$19,350	\$24,900
	<i>Surveys - Topographic</i>	21	\$4,000	\$100	\$12,300	\$16,400
	Barton Dam	6	\$1,100	\$0	\$0	\$1,100
	Superior Dam	15	\$2,900	\$100	\$12,300	\$15,300
	<i>Surveys - Bathymetric</i>	12	\$2,200	\$100	\$12,300	\$14,600
	Barton Dam	6	\$1,100	\$50	\$6,150	\$7,300
	Superior Dam	6	\$1,100	\$50	\$6,150	\$7,300
	<i>Slope Stability Analyses (Superior Dam only)</i>	104	\$16,400	\$600	\$0	\$17,000
	<i>Audit of Owner's Dam Safety Program</i>	82	\$17,400	\$500	\$0	\$17,900
	Barton Dam	41	\$8,700	\$250	\$0	\$8,950
	Superior Dam	41	\$8,700	\$250	\$0	\$8,950
	Total	273	\$50,800	\$1,600	\$63,300	\$115,700
	Barton Dam	80	\$16,300	\$450	\$25,500	\$42,250
	Superior Dam	193	\$34,500	\$1,150	\$37,800	\$73,450