Illinois Department of Transportation
2300 South Dirksen Parkway / Springfield, Illinois / 62764

June 4, 2025

SUBJECT: FAP Route 303 (IL 251)
Section (1,1-1,1-2) RS-1
Winnebago County
Contract No. 64M38
Item No. 31, June 13, 2025 Letting
Addendum A

NOTICE TO PROSPECTIVE BIDDERS:

Attached is an addendum to the plans or proposal. This addendum involves revised and/or added material.

1. Revised page iv of the Table of Contents to the Special Provisions.
2. Added pages 82-85 to the Special Provisions.

Prime contractors must utilize the enclosed material when preparing their bid and must include any changes to the Schedule of Prices in their bid.

Very truly yours,

Jack A. Elston, P.E.
Bureau Chief, Design and Environment

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HELICAL GROUND ANCHORS
Effective: February 7, 2003
Revised: December 30, 2015

Description. This work shall consist of designing, furnishing, installing, and testing helical ground anchors according to the plans and these special provisions. The helical ground anchor consists of helical lead sections, helical extensions, plain extensions, coupling hardware, adapter section, thread bars, lock-off nuts and plate washers, and all corrosion protection as required by this special provision.

Submittals. The Contractor shall submit the following:

(a) Qualifications. At the time of the preconstruction conference, the Contractor shall provide the following documentation:

(1) A list containing at least three (3) projects completed within the three (3) years prior to this project's bid date which the Sub-contractor performing this work has installed Helical Ground Anchors of similar design loads and in comparable subsurface conditions to those shown in the plans. The list of projects shall contain names and phone numbers of owner's representatives who can verify the Contractor's participation on those projects.

(2) Name and experience record of the engineer responsible for helical anchor design and the on site installation supervisor who will be assigned to this project. The engineer and on site installation supervisor shall each have a minimum of 3 years experience in the design and installation of Helical Ground Anchors.

(3) Manufacturers shall have a minimum of three (3) years of production experience and evidence that their helical ground anchor systems have been used in similar construction projects over the last three (3) years.

(b) Shop Drawings. The contractor shall submit complete design calculations and shop drawings for the proposed helical ground anchor system(s) to the Engineer for review and approval no later than 90 days prior to the proposed anchor installation. All submittals shall be sealed by a Illinois Licensed Structural Engineer and shall include all details, dimensions, quantities, cross sections, and construction notes necessary to order materials, install, test, and connect the helical ground anchors to the wall and shall include, but not be limited to, the following items:

(1) A helical anchor schedule giving:
  (a) Anchor number
  (b) Anchor design load
  (c) Minimum required installation torque
  (d) Type, size, and number of helical lead sections and helical extensions used in anchorage length.
  (e) Type, size and number of plain extension sections used.
  (f) Type and size of adapter connection, thread bar, couplings, plates, and lock-off nuts.
  (g) Angle of anchor inclination.
  (h) Type of capacity verification (Performance test, Proof test, or Installation torque)

(2) Drawings of the wall showing:
(a) Plan view of the wall indicating the spacing orientation and overall length of the helical anchors. This view shall show all obstructions and ROW to demonstrate how the anchors will be installed to miss these items.
(b) Elevation view of the wall showing locations of anchors with their anchor numbers labeled. The locations of the performance test and proof test anchors shall be indicated.
(c) A detailed description of the construction procedures and installation sequence proposed including anchor assembly, installation, testing and anchor lock-off. Also an overall site plan indicating the general order of anchors to be installed.
(d) List of equipment proposed for installation, stressing, testing, and torque monitoring.

(4) Detail Drawings of the Helical Anchor elements showing:
(a) Connection details indicating sizes, dimensions and hardware necessary to connect the helical anchor to the wall.
(b) Connection details between helical lead, helical extensions, plain extensions, adapters and thread bars.
(c) Any modifications to wall plans required to accommodate the helical anchor system proposed.
(d) Typical elevation section of complete the Helical ground anchor including helical lead sections, helical extensions, plain extensions sections, adapter, thread bar, plates, and lock-off nuts.

(5) Calculations for the Helical Anchor Design including:
(a) Geotechnical calculations supporting the proposed extension length and helical anchor configurations proposed.
(b) Structural calculations supporting the member sizes and corrosion protections used.
(c) Calculations, research data, field testing and other data to support the empirical relationship proposed for use on this project between ultimate helical anchor capacity and installation torque resistance.
(d) Calculations supporting any modifications to the wall required to accommodate the helical anchor system.

No helical anchor installation work or orders for materials shall be permitted until the supplier qualifications and shop drawing have been reviewed and accepted in writing by the Engineer.

Materials. The helical plates shall conform to AASHTO M270 (M270M), ASTM A656 (A656M), or ASTM A1018 (A1018M). Each section shall be fabricated by steel plates welded to the central steel shaft anchor sections. Each fabricated section shall be hot dipped galvanized in accordance with AASHTO M232 (M232M).

The central steel shaft, consisting of lead sections, helical extensions, and plain extensions shall be hot rolled steel conforming to AASHTO M270 (M270M) and shall be hot dip galvanized according to AASHTO M111 (M111M).

The bolts used to connect the central steel shaft sections together shall conform to ASTM A193 (A193M) or A320 (A320M) and shall be hot dip galvanized according to AASHTO M232 (M232M).

Couplings, threaded bars, anchorages, adapters and other miscellaneous components shall meet the requirements as set forth in the manufacture's specifications and shall be hot dip galvanized according to AASHTO M232 (M232M).

All welded connections shall conform to the requirements of the American Welding Society, "Structural Welding Code, AWS D1.1" and applicable revisions.

Design Criteria. Each helical ground anchor shall be designed to carry the design load indicated along the inclination angle shown on the contract plans. Any changes in inclination angle, design load, anchor location, construction sequence or other contract plan modification proposed by the contractor shall be included as part of the shop drawings design submittal.

The contractor's design shall include sufficient extension length to ensure that the anchorage length (consisting of helical lead and helical extensions) is located beyond the minimum extension length shown on the plans. The design may use additional extension length and various helical lead and helical extensions to resist the design load shown on the contract plans with a minimum factor of safety of 2.0 against pull out using the soil boring data included in the contract plans. To assist in the helical anchor design as well as supplement the installation torque vs. capacity relationship proposed, the contractors may install a pre-production anchor and performance test the anchor according to the manufactures specifications at no additional cost to the Department.

All elements of the anchor and it's connection to the wall shall be structurally sized to carry the design and test loadings as well as the installation stresses. Individual helical anchors shall be designed so that the maximum test loading will not exceed 90% of the minimum ultimate tension capacity of the central steel shaft material. The thread bar shall be sized so the design load does not exceed 60% of the guaranteed ultimate tensile strength of the thread bar. In addition, the thread bar shall be sized so the maximum test load does not exceed 80% of the guaranteed ultimate tensile strength of the thread bar.

The design service life of each helical anchor is 75 years. The anchor elements shall be sized to be at or below allowable stress levels at the end of the above stated design life by use of galvanization, sacrificial steel, or grout encapsulation. The galvanization loss rate and the steel thickness required to be sacrificial shall be determined using the loss rates provided in AASHTO for Mechanically Stabilized Earth inextensible soil reinforcement. Portions of the anchor within 5 ft. (1.5 m) of the lock-nut shall be designed to withstand a more aggressive environment by sizing them for a design life of 125 years using the same AASHTO depletion rates.

Construction. The Contractor shall conduct installation torque resistance on all production anchors as set forth below:

(a) Installation Torque Testing. A torque indicator capable of providing continuos torque readings is required for the installation of each helical ground anchor. The contractor shall calibrate the torque measurement equipment at the project site in the presents of the Engineer or provide documentation from an independent testing agency that the equipment has been calibrated prior to use production work. The equipment shall provide readings in increments of at least 500 ft.-lbs. (678 kN-m). The contractor shall record the torque readings at each 1 ft. (300 mm) intervals as the anchor is installed. The torque reading along with the date, time, anchor number, and any other installation observations shall be submitted to the Engineer for review and approval. The average of the last 3 torque resistance readings recorded in the end of penetration shall be used as the basis of comparison with the minimum required torque resistance indicated on the shop drawings.

(b) Installation Torque Acceptance Criteria. The torque as measured during the installation shall not exceed the torsional strength rating of the helical anchor steel. The minimum installation torque and minimum extension length criteria as shown on the working drawings shall be satisfied prior to accepting the helical anchor installation.

If the torsional strength rating of the anchor has been reached prior to achieving the minimum free-length required, the contractor may remove the deficient helical anchor and install a new one with fewer and/or smaller helixes to a depth such that the top most helix is at least 3 ft. (915 mm) beyond the location of the deficient anchor. The material used in the deficient anchor may not be reused unless inspected by the Engineer and determined to have not been damaged.

If the minimum installation torque shown on the shop drawings is not achieved at the proposed installation length, the contractor may:

(1) Add additional extensions to increase the overall length to increase the torque resistance.
(2) Remove the deficient helical anchor and install a new one with more and/or larger helixes to a depth such that the top most helix is at least 3 ft. (915 mm) beyond the location of the deficient anchor.
(3) Performance test the deficient anchor to obtain is allowable capacity and use an additional anchor to carry the remaining design load.

(c) Lock-off. Once an anchor installation capacity has been successfully verified by performance, proof, or torque testing, the anchors thread bar lock-off nut shall be tightened to a torque of 200 ft.-lbs. (271 kN-m) unless otherwise indicated on the contract or approved shop drawings.

(d) Tolerances. The anchor shall be installed such that the thread bar location at its intersection with the wall is no more that 3 in. (75 mm) from plan location. The angular tolerance between the installed anchor angle and inclination angle shown on the design plans or approved shop drawings shall not exceed +/- 3 degrees.

Method of Measurement. This work will be measured per each HELICAL GROUND ANCHORS, installed according to the plans or as approved by the Engineer, and passing the testing program(s) required in this Special Provision.

Basis of Payment. This work will be paid for at the contract unit price each for HELICAL GROUND ANCHORS.