

SUPPLEMENTAL INFORMATION
ADDENDUM NO. 1

PROJECT: RFQ 18-008
Abercorn Creek and Steel Bridge Boat Landing Improvements

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DATE ISSUED: February 15, 2017

RFQ No. 18-008 dated January 30, 2018 is hereby amended as noted herein: BIDDER TO ACKNOWLEDGE RECEIPT OF ADDENDUM BY SIGNING ON THE SIGNATURE LINE BELOW AND INCLUDING A COPY WITH SUBMITTED BID. FAILURE TO DO SO MAY, AT THE OWNER'S DISCRETION, SUBJECT THE BIDDER TO DISQUALIFICATION

- 1) QUESTION: Please confirm that the scope of work is only the demolition of a portion of the existing boat ramps, the new 35 ft. long concrete slabs, and corresponding grading, stone, and riprap for the boat ramps.
ANSWER: Please consider this confirmed.
- 2) QUESTION: Will the county require the contractor to provide a bid bond and performance bond for this project if the accepted bid total is above a certain \$ amount?
ANSWER: Yes. If the bid amount is above \$100,000 total, a bid bond (5% of total) and also payment and performance bonds will be required.
- 3) QUESTION: will the county provide surveying, staking and testing services if necessary for this project? Or should this be included in the contractors bids?
ANSWER: Please include this in the contractor's bid.
- 4) QUESTION: Depending on area rainfall and spring tides, Abercorn Landing especially could have higher than normal water elevations this year. Will there be any extensions to the contract completion date for extreme weather days or higher than normal river levels?
ANSWER: No, EPD has enforced a March 1st to May 31st time frame to complete construction due to the presence of an endangered species.
- 5) QUESTION: Would the permit for this job allow for sheet piling if deemed necessary for installing either of the two push slabs?
ANSWER: Yes, but only if it is within the disturbed area.
- 6) QUESTION: Do you plan on releasing any type of specifications package for concrete, soils, steel, bio-retention soils, finish schedule?
ANSWER: Please refer to section 03300 of the County specifications for information on cast in place concrete and section 02200 for information on filling and grading – both located at the end of this Addendum. The county does not have any other specifications apart from those listed in the details of the plans.

- 7) QUESTION: Since the river will be up during spring this will make the construction a lot more expensive; would it be possible to have the completion date moved to be able to work when the river is down?
ANSWER: The Dates have been set by DNR due to a possibility of sturgeon presence near the development site. EPD believes these dates will have the least effect upon their breeding season and therefore they cannot be changed.
- 8) QUESTION: The Abercorn Creek drawings show existing and planned contours; however, the Steel Bridge does not have any way to come up with how much material will be needed to fill/cut and build up for the ramp. Should we use the same information given in the Abercorn Creek for estimating the Steel Bridge site?
ANSWER: Grading for Steel Bridge will likely remain similar to predevelopment conditions. The survey conducted on Steel Bridge did not reach past the extent of the proposed boat ramp. The design engineer has stated he visits the site periodically and believes there will not be any significant fill needed to extend the ramp.
- 9) QUESTION: Will it be possible to extend the bid date for another week to be able to look at the sites more closely and provide you with a more accurate and better proposal?
ANSWER: No. As time is of the essence, due to the dates set by DNR due to a possibility of sturgeon presence near the development site, the winning bidder will need to commence work as soon as the contract has been approved and awarded by the Board of Commissioners.
- 10) QUESTION: Apparently the water level at Abercorn Creek is quite high and will continue to rise until about August. This will necessitate putting in bulk heads and draining the water in order to correctly install the ramp. Can the County please ensure that the County is aware of this and that it is addressed in the Addendum
ANSWER: Yes, the County is aware of the potentially high water levels at Abercorn Creek and understands the installation of bulk heads may be required.

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SECTION 03300
CAST-IN-PLACE CONCRETE

1. SCOPE:

Furnish all labor, materials and equipment necessary for cast-in-place concrete construction and cement work in accordance with the Drawings and Specifications and for all other work specified in this Section.

2. DETAILS AND DIMENSIONS:

The Drawings show the design requirements and dimensions for structural strength, but do not show detail dimensions to fit intricate architectural, mechanical, equipment, and electrical details. The concrete work shall be constructed so that it will conform to the clearances required by the architectural, electrical, mechanical and equipment designs and shall at Contractor's expense do all cutting and patching necessary.

3. TEST REPORTS AND CERTIFICATES:

Certified copies of test reports and certificates or other satisfactory evidence where so specified shall be furnished before delivering certified or tested materials to the project site.

4. GENERAL:

All concrete shall be normal weight with 28-day compressive strength not less than 4,000 psi except where concrete of lesser strength is specified for use as noted on the Drawings.

Concrete shall be composed of cement, admixtures (if required), fine aggregate, coarse aggregate, and water. Concrete shall be classified as "A" or "B", and shall have 28 day compressive strengths not less than those listed below except that concrete containing high early strength cement shall have 7 day compressive strengths not less than those listed below.

Class "A" concrete shall have a compressive strength of not less than 4,000 psi, and shall be used for all reinforced concrete work, unless otherwise specified.

Class "B" concrete shall have a compressive strength of not less than 3,000 psi, and shall be used for concrete sub-foundations, concrete fill, pipe envelopes, thrust blocks and where so indicated on the Drawings.

5. CEMENT:

Cement shall be a standard brand of Portland Cement which conforms to the requirements of ASTM C150, Type II. Cement shall be delivered in original unopened sacks bearing the brand and manufacturer's name or in properly documented bulk shipments. Cement

shall be stored in a weather tight building, and shall be protected at all times from moisture. The same brand of cement shall be used throughout the work.

6. TESTS OF CEMENT:

Tests of cement shall be made on the entire cement requirements, on car or warehouse samples or bin (sealed) samples in accordance with ASTM C150. No cement shall be used until tests have demonstrated that the cement complies with the Specifications.

7. CONCRETE AGGREGATES:

Concrete aggregates shall comply with the requirements of ASTM C33, except as otherwise specified hereinafter. Both coarse and fine aggregates shall be obtained from a source producing aggregates with a record of having no alkali-aggregate reaction causing "pop-outs" and the like; the aggregate producer shall submit a certification of such record.

8. FINE AGGREGATES:

Fine aggregates shall consist of screened and washed, well graded natural sand having clean, hard, strong, durable, un-coated particles, and shall be free from injurious amounts of dust, lumps, soft or flaky particles, shale, alkali, organic matter, loam or other deleterious substances and shall comply with ASTM C33 except as may be otherwise specified herein.

9. COARSE AGGREGATES:

Coarse aggregates shall consist of screened and washed, well graded crushed stone or gravel having clean, hard, strong, durable, un-coated particles free from injurious amounts of soft, friable, thin, elongated or laminated pieces, alkali, organic or other deleterious matter. The grading shall be in accordance with ASTM C33 and as follows.

Aggregates size 467 (1-1/2 inches to No. 4) shall be used for the heavier sections where reinforcement is not closely spaced or close to forms, and aggregates sizes 57 (1 inch to No.4) and 67 (3/4 inch to No. 4) shall be used for thinner sections, heavily reinforced work, and all parts where the coarser aggregate might cause honeycombing, poor bond or exposed reinforcement.

10. TESTS OF AGGREGATES:

Tests of aggregates shall be performed in accordance with ASTM C33 and shall be made before work starts and at such times as may be necessary to determine whether or not the materials delivered comply with the Specifications. No aggregate shall be used which does not comply with the Specifications.

11. STORAGE OF AGGREGATES:

Aggregates shall be stored in such a manner as to prevent deterioration and/or intrusion of foreign matter and/or segregation. Any material which has deteriorated or which has been damaged shall not be used for concrete. The aggregates shall be stockpiled at least 24 hours prior to use.

To avoid unnecessary or haphazard changes in consistency, the aggregates shall be obtained from a source which will insure uniform quality and grading and they shall be delivered to the work and handled in such a manner that variations in moisture content will not interfere with the steady production of concrete of uniform quality and consistency.

12. WATER:

Water shall be potable and free of substances that may be deleterious to concrete or steel.

13. ADMIXES:

Admixes for concrete are specified hereinafter.

14. TESTS OF CONCRETE:

Standard 6-inch diameter compression test cylinders shall be made in the field and tested in the laboratory in accordance with ASTM C31, C39 and C172. Test cylinders shall be made in forms provided by the testing laboratory.

Advance tests of the concrete shall be made. Six standard 6-inch compression cylinders, 3 to be tested in 7 days and 3 at 28 days, shall be made with the proportioning and materials proposed to be used for each of the principal mixes required for the work. The slump shall not be less than the greatest slump expected to be used in the structure for each of the mixes. The tests made on the aggregates, as required above, may be made a part of these tests, if suitably referenced on the reports, which shall be issued for 7 and 28 day tests. These tests shall be repeated, if necessary, because of channel in material or unsatisfactory results. The advance testing may be waived at the request of the Contractor and with the Engineer's approval if the concrete is being produced by an established ready-mix plant with suitable records of mixes and testing and if the plant certifies that it will continue to use the same materials involved in the recorded testing.

During the progress of the work, and for each different mix of concrete, a set of three standard 6-inch concrete cylinders shall be made and tested for each and every day's operation (or 8-hour shift) where more than 5 cubic yards of concrete are placed. Make an additional set of three cylinders for each additional 50 cubic yards of concrete where more than 50 cubic yards are placed in one day for 8-hour shift). The Contractor shall be responsible for seeing that these cylinders are made; cast the cylinders if testing laboratory personnel are not available. The cylinders of each set shall be molded from the same sample of concrete and tested; one at 7 days and one at 28 days. If high-early strength cement is used, then the tests shall be made at 3 and 7 days instead of at 7 and 28 days.

Also, from each sample of concrete used for test cylinders, make one slump test in accordance with ASTM C143 and make one entrained air content test in accordance with ASTM C231. Samples shall be collected in accordance with ASTM C172.

Each cylinder shall be marked with job name, Contractor's name, location of pour and date of pour. Ship cylinders to the laboratory as soon as practicable. Keep cylinders in heavy, tightly sealed, plastic bags.

Tests of concrete shall be made as required in this Section. If any test cylinder shows a strength of less than that required at 28 days, then the concrete represented by such cylinder shall be further tested in accordance with Article 17.3 of ACI 301, except that Paragraph 17.3.2.3 shall not apply. If such further tests show a compressive strength less than required, then the concrete shall be rejected and shall be replaced with new work at the specified strength by the Contractor at his own expense.

15. MEASUREMENT OF MATERIALS:

Each of the constituent materials shall be proportioning in each batch. Method of operation and scales shall be such as to obtain an accuracy of not less than 99 percent correct for each batch. Water may be measured by volume, in which case the apparatus shall be calibrated to insure the proper quantity in each batch.

Unless bulk cement is used and is weighed and dispensed to the accuracy specified hereinbefore, batches shall be of such size that there will be no splitting of sacks of cement. Each sack shall contain 94 pounds of cement.

16. PROPORTIONING OF CONCRETE MIXES:

a) Design.

Trial design batches and testing to meet requirements of the concrete specified shall be provided. The design mix shall contain aggregates representative of those proposed for use in the work and shall be in accordance with ACI 211.1. Tests for slump, unit weight, and air content shall be performed in the field.

b) Entrained Air Content.

Air entrainment shall be produced by adding an air entraining agent at the mixer. Air content shall be based on measurements made in concrete mixtures at point of discharge at the job site.

c) Air Content.

Air content by volume of concrete shall be maintained at 5 to 6 percent as determined in conformance with ASTM C231.

d) Water-Cement Ratio.

Mixes shall be proportioned by weight except that water and admixture may be by volume or by weight. Specimens shall be made and cured in conformance with ASTM C192

and tested in conformance with ASTM C39 or C78, as applicable. Curves representing relation between the water-cement ratio and the average 28 day compressive or flexural strength, or earlier strength at which the concrete is to receive its full working load, shall be established for a range of values including the compressive and flexural strengths indicated or specified. Curves shall be established by at least 3 points, each point representing average values from at least 3 test specimens. The maximum allowable water-cement ratio shall be that shown by these curves to produce an average compressive strength or an average flexural strength of 15 percent greater than indicated or specified.

e) Slump.

Slump shall be determined in conformance with ASTM C143, and shall be within the following limits, provided the required strength is obtained: Maximum 4 inches. When climatic conditions require the use of hot weather concreting practices, the slump shall have a range of 2-1/2 inches maximum and 2 inches minimum and the mix design shall be adjusted to provide the specified strength of concrete.

When water-reducing, high range (ASTM C494, Type F) and water-reducing, high range and retarding (Type G) admixture (superplasticizer) is used, the following shall apply. Admixture shall be compatible with cement, aggregate and other admixtures in concrete. Laboratory trial mixes shall be required to determine correct proportions and dosage to prevent bleeding and segregation of aggregates. The manufacturer's representative shall be present to provide technical assistance during mix design, and during initial field mixing, and placement of concrete when this additive is used.

Since the plasticizing effects last approximately 30 to 60 minutes, depending on job conditions, the admixture shall be added at the project site to delivered concrete having an approximate slump of 2.5 inches, but not more than 3 inches. The maximum slump, after applied dosage and with proper mixing, shall not exceed 3 inches.

17. MIXING CONCRETE:

Mixing concrete shall be done in a rotary batch mixing machine. The volume of each batch shall not exceed the rated capacity of the mixer. The batch materials shall be delivered to the mixer measured accurately to the required proportions and shall be mixed continuously for not less than one and one-half minutes after all materials including water are in the mixer, during which time the mixer shall rotate at the speed recommended by its manufacturer. The entire batch shall be discharged before recharging the mixer. Mixer shall be cleaned frequently.

Truck mixed concrete shall conform to ASTM C94. A concrete delivery ticket for each batch delivered shall be furnished to the Engineer before unloading with the following additional information:

- a) Reading of revolution counter at first addition of water.
- b) Type, brand and amount of each admixture.

- c) Total water content of batch, or total water content per cubic yard of batch.
- d) Design slump.

If water is added at the site, additional test cylinders will be required and the additional cylinders shall be at the Contractor's expense.

18. PLACING CONCRETE:

Concrete shall be placed as soon as practicable after mixing. No concrete which has commenced to set, nor any re-tempered concrete shall be used. It shall be deposited in such manner as to cause no separation or segregation of the ingredients. Methods of conveying concrete shall not cause excessive slump losses. Do not use aluminum pipes to convey concrete. Concrete shall not be dropped over 4 feet through space. It shall not be deposited in large quantities at one place and be permitted to run or to be worked any considerable distance, but shall be deposited in its final position as nearly as practicable.

The coarse aggregate shall be worked back from the forms with a suitable tool so as to bring a full surface of mortar against the form, without the formation of excessive surface voids.

All concrete shall be consolidated by mechanical vibration augmented as necessary by spading, rodding, or forking so that the concrete is thoroughly worked around the reinforcement, around embedded items, and into corners of forms, eliminating all air or stone pockets which may cause honeycombing, pitting, or planes of weakness. Mechanical vibrators shall have a minimum frequency of 7,000 revolutions per minute and shall be operated by competent workmen. Over-vibrating and use of vibrators to transport concrete within forms shall not be allowed. Vibrators shall be inserted and withdrawn at many points, from 18 to 30 inches apart. At each insertion, the duration shall be sufficient to consolidate the concrete but not sufficient to cause segregation, generally from 5 to 15 seconds duration. Spare vibrator shall be kept on the job site during all concrete placing operation.

In vertical parts of small cross-section, the concrete shall be placed in small quantities to facilitate tamping and compaction. Concrete shall not be deposited in such manner as to shake or jar concrete in the process of setting. Wheeling over forms or concrete in such manner as to jar green concrete shall not be permitted. No wood spreaders shall be concreted in.

The Contractor shall plan the amount of concrete work to be completed in each run. Concreting shall not be started until sufficient material and working force are available to complete the part of the work designated as a run. Concreting shall continue uninterrupted until the completion of the run, so that in no place will concrete be deposited in contact with concrete that has attained its initial set, except at construction joints.

Concrete shall not be deposited in or through water.

19. SPOUTING:

Chutes for conveying concrete shall be of metal or metal lined, and their slope shall be such that there will be no segregation. Handling the concrete at the discharge end of chutes

shall be such that no segregation develops. Do not use aluminum for chute liner or for chutes. Chutes shall be thoroughly flushed with water before and after each run. The water used for this purpose shall be discharged outside the forms.

20. PLACING CONCRETE AGAINST OTHER CONCRETE:

Before depositing new concrete on or against concrete that has hardened, re-tighten forms as necessary and roughen, clean and moisten the hardened concrete. The new concrete placed in contact with hardened or partially hardened concrete shall contain an excess of mortar to insure bond, and the cleaned and moistened surfaces of the hardened concrete shall first be slushed with a coating of neat cement grout against which the concrete shall be placed before the grout has attained its initial set.

21. LEVELING:

Slabs shall be struck off with a straightedge smooth and even to screeds set accurately at the required elevations and slopes. Slopes, depressions, etc., shall be formed as required by the Drawings. Depress the slabs as shown for sumps and the like.

Immediately after the slab has been struck off, the screeds and screed supports shall be removed and the recessed and holes left by them shall be filled with concrete and carefully worked and tamped into place so as to leave no weakness.

22. WORK BUILT IN:

This Section shall include the concreting in of all pipes, conduits, junction boxes, inserts, thimbles, anchor bolts, sleeves, steps, castings, manhole frames, and other items as shown on the Drawings or as directed. The concreting includes items set or installed by the mechanical, electrical and other subcontractors and/or other contractors. Special care shall be taken to place and maintain them to the proper lines and grades and to tamp concrete thoroughly around them to prevent the passage of water. They shall be placed before placing concrete, as far as possible, and secured to prevent any movement during the work.

Timely notice shall be given to all other Contractors and subcontractors and allow them a reasonable time for the placing of their portion of the work required to be embedded. No concrete shall be placed until all work to be concreted in had been placed and inspected by the Engineer.

Wrap pipes with foam insulation where shown, using Armstrong Armaflex-22 or Dow Ethafoam, or equal, in order to prevent concrete from bonding to the pipes and also to allow some relative movement.

23. ANCHORS:

Build in anchors and sleeves as required for items furnished under other Sections and as may be furnished by other Contractors.

24. CURING AND CARE OF CONCRETE:

a) General.

Concrete shall be protected against moisture loss, rapid temperature change, mechanical injury, and injury from rain or flowing water, for a period of 7 days. Concrete shall be maintained in a moist condition at temperatures above 50 degrees F. throughout the specified curing period and until remedial work is started under Article 30, Finishes of Concrete. Concrete shall be protected from local applications of heat, rapid temperature change and rapid drying for the first 24 hours following the removal of temperature protection. During activities shall be started as soon as free water has disappeared from the surface of the concrete after placing and finishing. Curing, except during hot weather concreting, shall be accomplished by any of the following methods or combination thereof, as approved:

1. Moist Curing.

Unformed surfaces shall be covered with burlap or mats, wetted before placing, and overlapped at least 6 inches. Burlap or mats shall be kept continually wet and in intimate contact with the surface. Sand or sawdust will also be acceptable if kept uniformly spread and wet. Where formed surfaces are cured in the forms, the forms shall be kept continually wet. If the forms are removed before the end of the curing period, curing shall be continued as on unformed surfaces, using suitable materials.

2. Impervious-Sheet Curing.

All surfaces shall be thoroughly wetted with a fine spray of water and be completely covered with water-proof paper, polyethylene sheeting, or with polyethylene-coated burlap having the burlap thoroughly water-saturated before placing. Covering shall be laid with light colored side up. Covering shall be lapped not less than 12 inches and securely weighted down or shall be lapped not less than 4 inches and taped to form a continuous cover with completely closed joints. Sheets shall be weighted down to prevent displacement or billowing from winds. Coverings shall be folded down over exposed edges of slabs and secured by approved means. Sheets shall be immediately repaired or replaced if tears or holes appear during the curing period.

3. Membrane Forming Compound Curing.

The compound shall be applied on damp surfaces as soon as the moisture film has disappeared. The curing compound shall be applied by power spraying equipment using a spray nozzle equipped with a wind guard. The compound shall be applied in a 2 coat continuous operation at a coverage of not more than 400 square feet per gallon for each coat or at the manufacturer's recommended coverage, whichever is less. When application is made by hand sprayers, the second coat shall be applied in a direction approximately at right angles to the direction of the first coat. The compound shall form a uniform, continuous, adherent, film that shall not crack, check or peel, and shall be free from pinholes or other imperfections. Surface subjected to heavy rainfall within 3 hours after compound has been applied, or surfaces damaged by subsequent construction operations within the curing period shall be re-sprayed at the rate specified above. Membrane curing compound shall not be used on surfaces that are to receive and subsequent treatment that depend on adhesion or bonding to the concrete. Where

membrane forming curing compounds are used, permanently exposed surfaces shall be cured by use of a non-pigmented membrane forming curing compound containing a fugitive dye. Where non-pigmented type curing compounds are used, the concrete surface shall be shaded from the direct rays of the sun for the curing period. Surfaces coated with curing compound shall be kept free of foot and vehicular traffic and from other surfaces of abrasion and contamination during the curing period.

b) Hot Weather Curing.

Curing for hot weather concreting shall be limited to moist curing methods. All exposed concrete and all forms shall be covered with burlap or carpet mats, wetted before placing, and overlapped at least 6 inches. Fog sprays shall be used during finishing operations and until the burlap or carpet mats are placed. protective mats shall remain in place in a wet condition for 7 days. Protective mats shall remain in place for an additional 4 days without the application of water to permit gradual drying of the concrete surfaces. Forms may be removed after 3 days of moist curing provided that Protective mats, in a wet condition, are replaced so as to cover all exposed concrete.

25. COLD WEATHER:

No concrete shall be deposited in cold weather, unless materials are heated and suitable protection and heat are provided. Weather shall be considered cold weather whenever the temperature is as low as or lower than 40 degrees F., or when there is a probability that such temperature will occur during the curing period.

Calcium chloride shall not be used.

All equipment, enclosures, protection, heating and method of carrying on the work shall be the responsibility of the Contractor.

For concrete to be placed during cold weather, aggregates and water shall be heated to a temperature such that the concrete when mixed and when deposited shall have a temperature of not less than 60 degrees F. and not more than 80 degrees F. and shall be continuously kept at a temperature of 60 degrees to 80 degrees for a curing period of not less than 72 hours for concrete with Type 1 Cement, and not less than 48 hours for high-early strength concrete, after which maintain the temperature above 40 degrees F. for not less than four additional days. Keep concrete moist. Leave protection in place so that temperature of concrete will not drop at a faster rate than 20 degrees F. in 24 hours. Before depositing concrete, the forms, reinforcement and other objects with which concrete will come in contact, shall have been heated to a temperature of 60 degrees F. to 80 degrees F. Frozen concrete shall be immediately removed, and replaced with new work by the Contractor at his own expense. in order to maintain the temperature specified above, the Contractor shall entirely enclose the work with tarpaulins or other suitable material and shall furnish fuel and suitable heating equipment and the necessary labor and supervision. Heating devices shall exhaust all combustion gases outside of the enclosures. Full responsibility for the protection of the work shall rest with the Contractor. During cold weather, temperature records shall be kept, showing the temperature at 4 hour intervals of the outside air, of the air in the coldest part of the enclosure near the concrete, of the

concrete as it is placed, and of the concrete in place at such points as the Engineer may direct. During freezing weather, such temperature records shall be kept night and day.

26. HOT WEATHER:

Concrete materials shall be placed at the lowest practicable temperature except as specified hereinbefore for cold weather. When hot weather conditions exist that would seriously impair the quality and strength of the concrete, the concrete shall be placed in accordance with recommendations of ACI 305 except as otherwise specified herein.

During hot weather conditions, the temperature of the concrete immediately before it is placed in the forms shall be between 50 degrees F. and 80 degrees F. Cement shall not be used when it has a temperature higher than 140 degrees F.

Shaved ice may be used in the mixing water to reduce the temperature of the concrete at the mixer, but there shall be no ice in the concrete when it is discharged from the mixer.

Retarder admixes may be used to control the setting time of the concrete. However, it must be demonstrated that the retarder admix will not change the specified requirements for the concrete, including strength, air entrainment, minimum shrinkage, etc. if such retarders are used, new concrete mix designs shall be made by the testing laboratory, at the Contractor's expense. Additional cement, if required by such new mix designs, shall be furnished by the Contractor at his own expense. No reduction in the specified amount of cement will be permitted.

27. CONSTRUCTION JOINTS:

Construction joints shall be as shown. Additional construction joints shall be made only at places where necessary. The location, detail and workmanship shall be such as to produce tight joints and no structural weakness and such as not to mar the appearance of the finished work. Key all joints for maximum shear value except as otherwise directed. Each construction joint shall be level or plumb, as the case may be.

a) Expansion Joint Filler.

Provide cork expansion joint material, ASTM D1752, Type II, in expansion joints for interior work as shown. Provide fiber expansion joint material conforming to ASTM D1751 in expansion joints for exterior work such as walks, etc., as shown and/or specified. Seal over interior expansion joints with sealant material conforming to ANSI A116.1 and over exterior expansion joints with sealant material conforming to Federal Specification TT-S-227E. Install materials as recommended by the manufacturers.

b) Slip Joints.

Where indicated, build in two layers of tar paper to prevent bond and to allow joints to slip.

28. WATERSTOPS:

Provide waterstops where shown. Also provide water stops in all expansion joints and in construction joints as required to make structures watertight.

Except as otherwise shown, provide neoprene rubber waterstops where contact will be with sewage, sludge and/or the like. Neoprene waterstop for expansion joints shall be center bulb type equal to No. 5318-91 by W. R. Grace and Company, or No. 3290-3 by Williams Products, Inc., or equal, and as specified herein. Neoprene waterstops for construction joints shall be No. 5318-60 by W. R. Grace and Company or No. 3066-3 by Williams, or equal, and as specified herein. Neoprene waterstops shall contain not less than 70 percent of the base neoprene polymer by volume and shall meet the following properties:

Tensile Strength (ASTM D412)	2500 psi min.
Elongation (ASTM D412)	450 percent
Specific Gravity	
Shore "A" Durometer (ASTM D2240)	
Compression Set, Method B (ASTM D395)	30 Percent
Tensile Strength After Aging 7 Days @ 158 Degrees F. (ASTM D572)	80 Percent of Original

Except as otherwise shown, provide polyvinylchloride waterstops where contact will not be with sewage, sludge and/or the like. Polyvinylchloride waterstops for expansion joints shall be center-bulb type equal to No. 7C by W. R. Grace and Company, or No. 9380LB by Sonneborn-Contech, or equal and as specified. Polyvinylchloride waterstops for construction joints shall be No. 3 by W. R. Grace and Company, or No. 4316 by Sonneborn-Contech, or equal, and as specified here in. Polyvinyl chloride waterstops have the following properties.

Tensile Strength (ASTM D412)	2000 psi min.
Ultimate Elongation (ASTM D412)	350 Percent min
Low Temperature Brittleness (ASTM D746)	-35 Degrees F.

Make splices in waterstop and provide for tees, crosses, ells and the like, all as recommended by the manufacturer and so as to make watertight and workable joints. Where boots or unions are used, they shall be of the make material and manufacture and shall fit the waterstop section snugly.

Provide certification of testing and that materials being furnished are identical to those tested.

Install waterstop in accordance with the manufacturer's recommendations and to make watertight joints. Concrete shall be solid and completely embed waterstop.

29. FINISHES OF CONCRETE:

Within 12 hours after forms are removed, surface defects shall be repaired as specified herein. Temperature of the concrete, ambient air, and mortar during repair work including curing shall be above 50 degrees F. Fine and loose material shall be removed. Honeycombs, aggregate pockets, voids over 2 inch in diameter, and holes left by tie rods or bolts shall be cut out to solid concrete, reamed, thoroughly wetted, brush coated with neat cement grout, and filled with mortar. Mortar shall be a stiff mix of 1 part Portland cement to not more than 2 parts fine aggregate passing the No. 16 mesh sieve, and minimum amount of water using White Portland Cement for all or part of the cement so that when dry, the color of the mortar shall approximately match the adjoining concrete color. Mortar shall be thoroughly compacted in place. Holes passing entirely through walls shall be completely filled from the inside face by forcing mortar through to the outside face. Holes that do not pass entirely through the wall shall be packed full. Patch work shall be finished flush and in the same plane as adjacent surfaces. Exposed patchwork shall be finished to match adjoining surfaces in texture and color. Patchwork shall be damp-cured for 72 hours.

After the above operations have been completed, a smooth finish shall be given to exterior concrete surfaces that are to be exposed to view. The smooth finish shall consist of thoroughly wetting and then brush coating the surfaces with cement grout composed by volume of 1 part Portland cement to not more than 2 parts fine aggregate passing the No. 30 mesh sieve and mixed with water to the consistency of thick paint. White Portland cement shall be used for all or part of the cement, proportioned as determined by trial mixes, so that the final color of grout, when dry, will be approximately the same as the color of the surrounding concrete. Grout shall be cork or wood floated to fill all pits, air bubbles, and surface holes. Excess grout shall be scraped off with a trowel and the surface rubbed with burlap to remove any visible grout film. The grout shall be kept damp by means of for spray during setting period. The finish of any area shall be completed in the same day and the limits of a finished area shall be made at natural breaks in the finished surface.

Surfaces of slabs on grade shall be float finished after the concrete has been placed, struck-off, consolidated, and leveled. Floating shall begin when the water sheen has disappeared and the set is sufficient to permit operation of a power driven float. The surface shall then be consolidated with power driven floats. Hand floating shall be done in locations not accessible to power floats. No sand, cement, or other substance shall be applied to the surface to absorb water. Excess surface water may be removed by applying burlap or cloth to absorb water. After one floating operation the trueness of the surface shall be checked with a 10 foot straightedge at not less than 2 different angles. All high spots shall be cut down and low spots filled during this procedure so that the maximum variation from a plane surface is 1/4 inch or less. A final floating shall then be done to a uniform, smooth, granular texture. After final floating, the surface shall be scored by drawing a broom or burlap belt across the surface in the

direction indicated by the Engineer and to the finish as shown on the Drawings. Water shall not be added to concrete surfaces at any time.

30. WALKS, CURBS, GUTTERS AND OTHER SIMILAR EXTERIOR CONCRETE:

Walks, curbs, gutters and other similar exterior concrete shall be Provided as required by the Drawings.

Air entraining admix, conforming to ASTM C260, shall be added in accordance with the manufacturer's directions so as to produce concrete containing from 4-1/2 percent to 6-1 /2 percent of entrained air. The slump shall be not more than 3 inches and not less than 2 inches. The concrete shall have a compressive strength of not less than 4,000 pounds per square inch and the cement content shall be not less than 611 pounds per cubic yard.

Walks and other exterior concrete shall be cured by covering first with sprayed-on curing compound applied immediately after finishing and then also completely covered with an impermeable fiber filled paper for a period of not less than 72 hours.

Membrane curing compound shall comply with ASTM C309 for Type I and paper shall comply with ASTM C171.

Exterior concrete work constructed during hot weather shall be protected, in addition to the curing specified above, with Spencer Kellogg Anti-Spalling Compound, or Carter-Waters "Dek-Seal," or equal, applied as soon as conditions will permit after curing and when the concrete is clean and dry. The mixture shall be applied uniformly in two applications, in accordance with the manufacturer's recommendations. The second application shall not be made until after the first coat has been completely absorbed by the concrete.

Concrete walks and other exterior concrete shall be placed on subgrades prepared as specified in Section 02200, and shall be built to the grades and lines shown and as required to meet adjoining and/or existing work. Dampen subgrades before applying concrete.

Expansion joints shall be provided in walks where shown and at intersection walks and buildings. Expansion joints in walks shall be made with 2-inch thick premolded, non-extruding expansion joint filler, "Flexcell," or "Meadows," or equal, extending through the full thickness of the concrete except the upper 1/4-inch. There shall be set accurately in place to straight lines and concreted in. Edges of grooves, expansion joints and edges of Walks shall be rounded to a 1/4-inch radius with suitable grooving and edging tools. Walks shall be finished as specified for troweled concrete except that final finishing shall be with wood floats or broomed, as directed, to produce non-slippery surfaces. Direction of final floating or brooming shall be at right angles to the length unless otherwise directed. Completed work shall be finished true to line and grade when tested with a 10 foot straightedge shall not show a variation of more than 1/4-inch from a straight line.

31. MISCELLANEOUS CONCRETE WORK:

Miscellaneous concrete work shall be done as required by the Drawings and/or as specified.

32. READY MIXED CONCRETE:

Ready mixed concrete if used shall comply with these Specifications in all respects and with ASTM C94, except as specified otherwise.

33. CONCRETE FILL:

Concrete fill to form slopes in channels, hopper bottom shapes in pits, and similar usage, shall be provided as shown and shall conform to all applicable requirements in this Section. Take special care to get good bond to the structural concrete. Surfaces to receive fill shall be thoroughly cleaned of all latence, droppings and dirt, by sandblasting or chipping, then washed and swept to produce a clean concrete surface free of all foreign matter and all loose particles. Surfaces shall be damp but not wet. Cover surfaces, horizontal and vertical, with sand-cement grout before applying the fill concrete. Finish sand-cement grout before applying the fill concrete. Finish surfaces with a steel trowel finish with sufficient accuracy to prevent liquids from forming puddles on the finished surfaces.

34. FLOWABLE FILL:

The mixture of dry material per cubic yard shall be 50 pounds cement, 600 pounds fly-ash, and 2,500 pounds sand. Depending on the slump requested for the specific job, water added shall be 65 gallons (541 pounds) for a 6-inch slump, to 55 gallons (458 pounds) for a 3-inch slump. One cubic yard of 6-inch slump will contain more than 27 cubic feet due to the additional water. Unconfined compressive strength will be 80 psi at 7 days and 150 psi at 28 days.

END OF SECTION 03300

SECTION 02200
EXCAVATION, FILLING AND GRADING

1. SCOPE:

Under this heading shall be included the following:

- a) Excavation required for structures.
- b) Sub-cut excavation as required or designated.
- c) Excavation as required for roadways.
- d) Shoring, sheeting and bracing as required.
- e) Wasting and disposal of excess or unsuitable materials.
- f) Furnishing and placing borrow material.
- g) Furnishing and placing granular foundation material.
- h) Compaction of all materials.
- i) Dewatering or unwatering as necessary to complete the excavations to the required depths and as necessary to maintain the excavation sufficiently dry so that all work can be accomplished.
- j) Site grading as required, including excavation and backfill.
- k) Preparation of subgrades.
- l) All other work specified herein.

2. GENERAL:

The Contractor shall accept the site in its existing condition, and shall assume the risk of encountering whatever materials as may occur.

3. SOILS:

The Contractor shall make his own determination of the soil structure and site conditions as it may affect the work. If soils information is provided by the Owner it is for guidance only and shall not serve as relief for the Contractor in complying with the previous statement.

4. DEWATERING AND PROTECTION AGAINST WATER:

The Contractor shall remove water from the site and shall lower the ground water level as necessary to complete the excavations to the required depths and as required to maintain the excavations sufficiently dry so that all required work can be accomplished. The Contractor shall do such well construction, well pointing, sheeting, ditching, diking and pumping and shall construct necessary drains, channels, sumps and cofferdams to keep his excavations and new structures clear of ground water, storm water or sewage and to keep his construction areas dry during the progress of the work and until the finished work is accepted by the Owner, except as otherwise specified.

The Contractor shall be responsible for the effect of dewatering operations on adjacent property and for the effect on water supplies located in the vicinity of the project.

Adequate measures and protection shall be provided by the Contractor to protect his work from damage from uplift due to ground water, storm water, or flood water. Any damages which may result shall be the Contractor's responsibility.

The Contractor shall accept all responsibility for damage to the work of this Contract because of floods and water pressures and other water damages and shall accept all risks of floods and other events which may occur.

All water discharged by pumping operations shall be discharged so as not to interfere with work under this Contract or with existing structures and operations. Route of dewatering pipe shall be subject to the Engineer's review. Discharge facilities and water quality shall comply with applicable regulations of State and Federal agencies.

Dewatering operations shall be uninterrupted and continuous during the course of the work so as not to endanger any construction in place or to present a hazard to workmen in and around the site. The Contractor shall take all measures necessary including, but not limited to, standby equipment and constant attendance to ensure that the dewatering system remains operational and effective throughout the period of time that it is required.

5. MATERIALS:

a) Earth Fill.

Earth fill, including pavement subgrades, shall consist of all suitable materials from required excavations. Suitable materials for earth fill shall generally be composed of sands, clay-sand mixtures and silt-sand mixtures. Clay-sand and silt-sand mixtures shall be approved by the soil technician prior to being incorporated in fills. Clays, silts, and organic soils will be considered as unsuitable materials.

b) Excavated Materials.

All suitable materials from excavations shall be used in the permanent construction required under these Specifications. Suitable materials shall be excavated separately from materials to be wasted and the suitable materials shall be segregated by loads during the excavation operations and shall be placed in temporary stockpiles and later placed in the designated locations. Excavated materials, which, after drainage, are suitable for the embankment but which, when excavated are too wet for immediate compaction in the embankment, shall be placed temporarily in stockpiles until the moisture content is reduced sufficiently to permit them to be placed in the earth fills.

c) Excess Materials.

All excess material from required excavations shall be removed from the site unless written authorization is given by the Owner to stockpile the material on the site.

6. EXCAVATION:

Excavation shall include the loosening, loading, removing, transporting, stockpiling and disposing of all materials, wet or dry, necessary to be removed to construct all structures included in this Contract to the lines and grades, and at the locations, shown on the Contract Drawings.

Excavation for structures shall conform to the depth and dimensions necessary for the proper installation of all structures detailed on the Contract Drawings. Unless shown on the Drawings excavation shall not be carried below the elevations shown on the Drawings. Where bottoms of excavations are slightly unstable and the Drawings do not require a stabilized granular backfill and the Owner=s representative does not direct additional excavation and replacement, the Contractor may provide a gravel course, but such work will be considered as for the Contractor's convenience and will not be considered as extra work.

Where any unauthorized excavation is made below the elevation indicated on the Contract Drawings, the excavation shall be restored to the proper elevation with compacted, well graded granular backfill. Such backfill shall be compacted as specified in the Article entitled "Compaction".

Excavations shall be made to the required depths, grades, alignment, and trench widths required for the installation of the pipe. Temporary sheeting and bracing shall be used as required to confine the trench size and width.

Excavation shall be made for roadways and other site work to the required depths, grades and alignment.

Excavations, where conditions require, shall be properly shored, sheeted and braced by the Contractor to maintain excavation in a condition to permit the safe and efficient installation of all items of Contract work. Upon completion of the various Contract items, all temporary forms, shores and bracing shall be removed. While being withdrawn, all voids left by the sheeting and bracing shall be carefully filled with sand and compacted.

7. UNSUITABLE MATERIAL:

Where material encountered is unsuitable for subgrade construction of roads, buildings and walks, such material shall be excavated to the required depth of compaction (generally two feet below pavement base course or finished floor elevation), disposed of off the site and property of the Owner and replaced with suitable material. Unsuitable materials are those classified as MH, CH, OH, OL, and Peat in accordance with the Unified Soil Classification System. Excess water in material will not be a basis for establishing unsuitable material regardless of gradation. The Owner=s representative shall be notified immediately upon encountering of unsuitable material.

8. BORROW:

It is anticipated that some suitable material for required fill and backfill can be obtained from required excavation. Additional suitable materials shall be secured by the Contractor from off-site sources acceptable to the Owner.

9. BACKFILLING:

All excavation shall be backfilled to the lines and grades shown on the Contract Drawings. Backfill adjacent to structures shall not be placed until forms, form lumber and all debris from construction has been entirely removed from around the work. No backfilling shall be done in unsuitable weather or over ground that is frozen or too wet.

Backfill shall not be placed against structures until the concrete has cured at least 7 days. Backfill, in general, shall be placed in horizontal layers not in excess of 12 inches in thickness, except in the cases of embankment construction around structures and under roadway and piping locations, where backfill shall be placed in 6 inch layers, with each layer thoroughly compacted as specified hereinafter, prior to the addition of the succeeding layer.

Fill immediately adjacent to walls shall be hand tamped and special care shall be taken to prevent any wedging action or eccentric loading against the walls.

Fill material shall be suitable material taken from the excavation. All sticks, debris, organic matter, frozen material, stones or cobbles over 6 inches in maximum dimension, and other deleterious material shall be removed from the backfill material prior to its use.

10. COMPACTION:

a) General.

Compaction of earth fill and all pavement subgrades shall be performed to the percentages of maximum standard or modified dry densities and to the depths as shown on the drawing or as follows:

1. Subgrades Under Paved Areas, Sidewalks and Structures.

100 Percent Standard (ASTM Test D698) 24 inches

2. Unpaved Areas To Be Grassed Or Sodded.

Match existing undisturbed soil compaction.

b) Moisture Content.

All compaction shall be performed at material moisture contents within 3 percentage points, plus or minus of optimum. Compaction and proof rolling equipment shall be as outlined in Section 02500 or as may be required for the type of fill being compacted.

11. TESTING:

a) General.

The Contractor will select a qualified independent testing laboratory for the purpose of identifying soils, checking densities, and classifying soils materials during construction. Payment for the testing will be by Contractor with the cost included in other items of the work.

The Contractor shall include the cost of one compaction test per 500 cubic yards of fill material, 300 linear feet of curb, 200 linear feet of subgrade along pavement centerline and 1,500 square yards of base and one "proctor" test for each type of fill material to determine if the proper compaction has been attained.

b) Moisture-Density Tests.

Testing shall be in accordance with ASTM Methods D698 or such other test as approved by the Engineer. A test shall be performed on each type of material used in the work regardless of source. Tests will be accompanied by particle-size analyses of the soils tested (ASTM Methods D421 and D422). Changes in color, gradation, plasticity or source of fill material will require the performance of additional tests. Copies of all test results shall be furnished to the Owner=s representative.

c) Field Density Tests.

Tests shall be made in accordance with ASTM Method D1556 or such other test as may be approved by the Owner. If any compaction test reveals that fill or backfill is not compacted as specified, the Contractor shall scarify and re-compact as required to achieve the specified density. Additional compaction tests shall be made to verify proper compaction.

d) Submittals.

The soils technicians will submit formal reports of all compaction tests and retests to the Contractor and the Owner as soon as possible upon completion of the required tests.

This report information is to include but not be limited to the following:

1. Date of the test and date submitted.
2. Location of test.
3. Wet weight, moisture content and dry weight of field sample.
4. Description of soil.
5. Maximum dry density and moisture content of the lab sample which best matches the field sample in color, texture, grain size and maximum dry density.
6. Ratio of field dry density to maximum lab dry density expressed as a percentage.
7. Comments concerning the field density passing or failing the specified compaction.
8. Comments about re-compaction if required.

e) Compaction Results.

The soils technician is to advise the Owner=s representative and Contractor immediately of any compaction tests failing to meet the specified minimum requirements. No additional lift is to be placed on a lift with any portion failing.

12. GRADING:

Upon completion of other construction operations, the entire site, within the limits shown on the Drawings, shall be brought to the finished grades shown. All surfaces shall be sloped to the grades indicated and which will provide proper drainage. All surfaces shall be raked smooth and shall be free of all vegetable matter, debris and stones larger than 2-1/2 inches. Allow for thickness of required topsoil.

END OF SECTION 02200

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Addendum No.1
RFQ 18-008 – Abercorn Creek and Steel Bridge Boat Landing

All other terms and conditions in RFQ 18-008 remain unchanged.

Effingham County reserves the right to reject any and all proposals, to waive any technicalities or irregularities and to award the offer based upon the most responsive, responsible submission.

Please sign receipt of this Addendum No. 1 below:

Print Name

Signature

Date

END OF ADDENDUM NO. 1