

PROJECT MANUAL FOR

**FLEMINGSBURG-FLEMING COUNTY INDUSTRIAL
DEVELOPMENT AUTHORITY**

FLEMING COUNTY, KENTUCKY

FLEMINGSBURG INDUSTRIAL PARK IV

**BUILD READY PAD AND ACCESS ROAD GRADE &
DRAIN**

MARCH 2024



OF KENTUCKY, INC.

624 Wellington Way, Lexington, KY 40503

859.223.5694

mseinc@mselex.com

www.mselex.com

Flemingsburg-Fleming County Industrial Development Authority
Industrial Park IV
Build Ready Pad and Access Road Grade & Drain
Flemingsburg, Fleming Co., Kentucky

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SECTION 00020 - ADVERTISEMENT FOR BIDS

Flemingsburg-Fleming Co. Industrial Development Authority Flemingsburg Industrial Park IV Build Ready Pad and Access Road Grade & Drain Flemingsburg, Fleming County, Kentucky

Sealed bids for the construction of the Flemingsburg Industrial Park IV - Build Ready Pad and Access Road Grade & Drain for the Flemingsburg-Fleming Co. Industrial Development Authority will be received by the Fleming County Judge Executive's Office, until 2:00 p.m., local time, the 23rd of April, 2024 and then will be publicly opened and read aloud. The bid opening address is the Fleming County Courthouse, 100 Court Square, Flemingsburg, KY 41041. Technical questions to MSE of Kentucky at 859-223-5694.

The work consists of earthwork and access for a 150,000-s.f. building pad and access road grade & drain at the Flemingsburg Industrial Park IV. The CONTRACT DOCUMENTS may be reviewed at the following locations:

MSE Web Site: mselex.com under Bid Opportunities
Fleming County Courthouse, 100 Court Square, Flemingsburg, KY 41041

Copies of the Contract Documents may be obtained at the office of Lynn Imaging, 328 E. Vine St. Lexington, KY 40507, (859) 226-5850. A shipping/printing fee of \$200 is required. All orders must be prepaid. There will be a 24-hour turn-around on all orders.

A certified check or bank draft, payable to the Flemingsburg-Fleming County Industrial Development Authority, government bonds, or a satisfactory bid bond executed by the bidder and acceptable sureties in an amount equal to five percent of the bid shall be submitted with bid. The successful bidder will be required to furnish and pay for the following: 1) 5% Bid Bond; and 2) A performance and payment bond for 100% of the contract price.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed. Minority bidders are encouraged to bid.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions of this advertisement and/or the specifications and may waive any informalities or reject any and all Bids. Any proposal received after the time and date specified shall not be considered and will be returned unopened to the proposer.

Sealed bid should be labeled "Flemingsburg Industrial Park IV Build Ready Pad and Access Road Grade & Drain". If mailed/shipped, bid should be enclosed in another envelope and addressed to: Flemingsburg-Fleming Co. Industrial Development Authority, Fleming County Judge Executive's Office, Fleming County Courthouse, 100 Court Square, Flemingsburg, KY 41041. No Bidder may withdraw his Bid for a period of sixty (60) days after the actual date of the opening thereof.

State and Federal Wage Rates **do not** apply to this project.

Award will be made to the lowest, responsive, responsible bidder. Bidding is for the sole benefit of the Flemingsburg-Fleming Co. IDA.

The Flemingsburg-Fleming Co. IDA is an Equal Employment Opportunity Employer.

End of Section

SECTION 00200 - INFORMATION FOR BIDDERS

Bids will be received by the Flemingsburg-Fleming County Industrial Development Authority, (herein called the "Owner") at the Fleming County Judge Executive's Office, Fleming County Courthouse, 100 Court Square, Flemingsburg, KY 41041, until the time and date stated on the Advertisement for Bids, and then at said location publicly opened and read aloud.

Each Bid must be submitted in a sealed envelope, addressed to Flemingsburg-Fleming Co. Industrial Development Authority. Each sealed envelope containing a Bid must be plainly marked on the outside as "Flemingsburg Industrial Park IV Build Ready Pad and Access Road Grade & Drain", and the envelope should bear on the outside the BIDDER'S name, address and license number if applicable. Sealed bid should be labeled "Flemingsburg Industrial Park IV Build Ready Pad and Access Road Grade & Drain". If mailed/shipped, bid should be enclosed in another envelope and addressed to: Flemingsburg-Fleming Co. Industrial Development Authority, Fleming County Judge Executive's Office, Fleming County Courthouse, 100 Court Square, Flemingsburg, KY 41041.

All Bids must be made on the required Bid Form. All blank spaces for Bid prices must be filled, in, in ink or typewritten, and the Bid Form must be fully completed and executed when submitted. Only one copy of the Bid Form is required.

The OWNER may waive any informalities or minor defects or reject any and all Bids. Any Bid may be withdrawn prior to the above scheduled time for the opening of Bids or authorized postponement thereof. Any Bid received after the time and date specified shall not be considered. No BIDDER may withdraw a Bid within sixty (60) days after the actual date of the opening thereof. Should there be reasons why the contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the OWNER and the BIDDER.

BIDDERS must satisfy themselves of the accuracy of the estimated quantities in the Bid Schedule by examination of the site and a review of the drawings and specifications including Addenda. After Bids have been submitted, the BIDDER shall not assert that there was a misunderstanding concerning the quantities of Work or of the nature of the Work to be done.

The OWNER shall provide to BIDDERS prior to bidding, all information which is pertinent to, and delineates and describes, the land owned and rights-of-way acquired or to be acquired.

The Contract Documents contain the provisions required for the construction of the project. Information obtained from an officer, agent, or employee of the OWNER or any other person shall not affect the risks or obligations assumed by the CONTRACTOR or relieve the CONTRACTOR from fulfilling any of the conditions of the contract.

Each Bid must be accompanied by a Bid bond payable to the OWNER for five percent of the total amount of the Bid. As soon as the Bid prices have been compared, the OWNER will return the bonds of all except the three lowest responsible BIDDERS. When the Agreement is executed the bonds of the two remaining unsuccessful BIDDERS will be returned. The Bid Bond of the successful BIDDER will be retained until the Payment Bond and Performance Bond have been executed and approved, after which it

will be returned. A certified check may be used in lieu of a Bid Bond.

A Performance Bond and a Payment Bond each in the amount of 100 percent of the Contract Price, with a corporate surety approved by the OWNER, will be required for the faithful performance of the contract.

Attorneys-in-fact who sign Bid Bonds or Payment Bonds and Performance Bonds must file with each Bond a certified and effective dated copy of their power of attorney.

The party(s) to whom the contract(s) are awarded will be required to execute the Agreement and obtain the Performance Bond and Payment Bond within ten (10) calendar days from the date when Notice of Award is delivered to the BIDDER. The Notice of Award shall be accompanied by the necessary Agreement and Bond forms. In case of failure of the BIDDER to execute the Agreement, the OWNER may consider the BIDDER in default, in which case the Bid Bond accompanying the proposal shall become the property of the OWNER.

The OWNER within ten (10) days of receipt of acceptable Performance Bond, Payment Bond and Agreement signed by the party to whom the Agreement was awarded shall sign the Agreement and return to such party an executed duplicate of the Agreement. Should the OWNER not execute the Agreement within such period, the BIDDER may by written notice withdraw the signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice by the OWNER.

The Notice to Proceed shall be issued within ten (10) days of the execution of the Agreement by the OWNER. Should there be reasons why the Notice to Proceed cannot be issued within such period, the time may be extended by mutual agreement between the OWNER and CONTRACTOR. If the Notice to Proceed has not been issued within the ten (10) day period or within the period mutually agreed upon, the CONTRACTOR may terminate the Agreement without further liability on the part of either party.

The OWNER may make such investigations as deemed necessary to determine the ability of the BIDDER to perform the Work, and the BIDDER shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any Bid if the evidence submitted by, or investigation of, such BIDDER fails to satisfy the OWNER that such BIDDER is properly qualified to carry out the obligations of the Agreement and to complete the WORK contemplated therein.

A conditional or qualified Bid will not be accepted.

Award will be made to the lowest responsible BIDDER.

All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the PROJECT shall apply to the contract throughout.

Each BIDDER is responsible for inspecting the site and for reading and being thoroughly familiar with the Contract Documents. The failure or omission of any BIDDER to do any of the foregoing shall in no way relieve any BIDDER from any obligation in respect to its Bid.

The low BIDDER shall supply the names and addresses of major material suppliers and subcontractors when required to do so by the OWNER.

End of Section

SECTION 00310 - BID FORM
FLEMINGSBURG-FLEMING CO. INDUSTRIAL DEVELOPMENT AUTHORITY

Proposal of _____ (hereinafter called "BIDDER"), organized and existing under the laws of the State of _____, doing business as _____ (insert "a corporation", "a partnership", or "an individual" as applicable) to the Flemingsburg-Fleming County Industrial Development Authority (hereinafter "OWNER").

In compliance with your Invitation to Bid, BIDDER hereby proposes to furnish all equipment, materials, and labor for the work required to construct the Build Ready Pad and Access Road Grade & Drain for Flemingsburg Industrial Park IV, in strict accordance with the Contract Documents, within the time set forth therein, and at the prices stated below.

<u>Item & Description</u>	<u>Estimated Quantity</u>	<u>Unit Price</u>	<u>Total</u>
1. Erosion Control Measures. Prepare "Best Management Practice" plan for erosion control and send "Notice of Intent" to the Natural Resources and Environmental Protection Cabinet. Implement erosion control measures. Remove erosion control structures after all work completed. Send "Notice of Termination" to the Cabinet upon completion of work.			
A. Silt Fence	2,335	L.F. \$ _____	\$ _____
B. Stone Filled Bag Silt Checks, Type D	26	Ea. \$ _____	\$ _____
C. Erosion Control Blanket	9,900	S.Y. \$ _____	\$ _____
D. Clean Silt Fence	2,335	L.F. \$ _____	\$ _____
E. Sediment Barrier, Type "B"	3	Ea. \$ _____	\$ _____
F. Silt Trap, Type "C"	2	Ea. \$ _____	\$ _____
G. All Other Erosion Control Requirements		L.S.	\$ _____
2. Construction Staking. Furnish all labor, equipment and materials and provide all necessary construction staking.			
Construction Staking		L.S.	\$ _____
3. Clearing and Grubbing. Furnish all labor, equipment and materials and clear grub prior to prior to earth and rock work. Obtain permit from fire department to burn trees. No trees to be burned on site.			
Clearing and Grubbing		L.S.	\$ _____
4. Strip and Stockpile Topsoil. Furnish all labor, equipment and materials and strip topsoil prior to earth and rock work. Provide silt fence around topsoil stockpiles. All topsoil will be reused or spread upon completion of earthwork.			
Strip and Stockpile Topsoil		L.S. \$ _____	\$ _____

5. Earth and Rock Work (Unclassified). Furnish all labor and equipment and excavate undercut, re-fill and construct fill to elevations shown. Proof roll pad for suitability for quality control.

A. Earth and Rock Work Building Pad	L.S.	\$ _____
B. Earth and Rock Work Access Road	L.S.	\$ _____

6. Undercut Excavation. Furnish all labor and equipment and excavate unsuitable soils as directed by Engineer.

Undercut Excavation	200	C.Y.	\$ _____	\$ _____
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7. Fill Undercut Areas. Furnish all labor and equipment and fill areas with stone or compacted fill where unsuitable soils have been excavated when directed by Engineer with No. 2 stone wrapped in Type IV geotextile fabric.

A. Geotextile Fabric	500	S.Y.	\$ _____	\$ _____
B. No. 2 Stone	450	Tons	\$ _____	\$ _____
C. Refill with Suitable Compacted Soil	180	C.Y.	\$ _____	\$ _____
D. Tensar TX-5 Geo-Grid	500	S.Y.	\$ _____	\$ _____

8. Crushed Stone Road. Furnish all labor, equipment and materials and place crushed stone aggregate for entrance road (includes filter fabric and paving of the entrance section).

A. 4" #2 Stone Base	980	Tons	\$ _____	\$ _____
B. DGA Base	600	Tons	\$ _____	\$ _____
C. Asphalt Base Course (0.75 PG 64-22)	70	Tons	\$ _____	\$ _____

9. Topsoil Spreading/Seeding. Utilize topsoil stockpiles to spread, place and compact topsoil on all exposed cut slopes, fill slopes and disturbed areas as shown on the typical road section. Any leftover stocks of topsoil will be used by spreading over low areas or filling borrow areas on-site by the contractor and seeded. Seed all final roadway slopes and any areas disturbed by topsoil placement activities or other construction activities including borrow areas.

Topsoil Spreading/Seeding	L.S.	\$ _____
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10. Channel Lining. Furnish all labor, equipment and materials and install class III channel lining with KYDOH filter fabric type IV, at locations directed by the Engineer.

Channel Lining	40	Tons	\$ _____	\$ _____
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11. Grassed Surface Restoration. Furnish all labor, equipment and materials to fertilize, seed and straw areas disturbed by earth and rock work including cut and fill side slopes. Includes spreading of any stockpiled topsoil/soil. Any large rocks or boulders removed by excavation are to be re-buried. The top soil storage area is to be smoothed and seeded. The finished pad surfaces are seeded, but not covered in top soil.

A. Re-Spread Topsoil	L.S.	\$ _____
B. Grassed Surface Restoration (Seeding)	L.S.	\$ _____

12. Quality Assurance Testing (Allowance). Owner will designate a qualified and independent firm or subcontractor to perform tests required for quality assurance to be paid by the contractor from this Allowance. Any unused allowance funds will be credited to the Owner.

Quality Assurance Testing (Allowance)	L.S.	\$ <u>18,000</u>
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13. Storm Drainage Pipe (RCP). Furnish all labor, materials and equipment and install reinforced concrete pipe storm drainage pipe.

A. 12" RCP	108	L.F.	\$ _____	\$ _____
B. 15" RCP	42	L.F.	\$ _____	\$ _____
C. 18" RCP	80	L.F.	\$ _____	\$ _____

14. Sloped and Flared Headwalls, KYDOH DWG. No. RDH-020-03. Furnish all labor, materials and equipment and install headwalls.

A. 12" Headwalls	6	Ea.	\$ _____	\$ _____
B. 15" Headwalls	2	Ea.	\$ _____	\$ _____
C. 18" Headwalls	1	Ea.	\$ _____	\$ _____

15. Temporary Signage for Entrance Construction and all other permit requirements per KYTC Entrance Permit Requirements. Includes Permanent Stop Sign.

Entrance Signage	L.S.	\$ _____
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16. Other Costs. Include mobilization, demobilization, project sign and other costs.

Other Costs	L.S.	\$ _____
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TOTAL BID		\$ _____
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The bid prices shall include all labor, materials, overhead, profit, insurance, and other costs necessary to install the finished work of the several items called for. Changes shall be processed in accordance with the General Conditions.

By submission of this Bid, the BIDDER certifies, and in the case of a joint Bid, each party thereto certifies as to its own organization, that this Bid has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this Bid with any other BIDDER or with any competitor.

BIDDER hereby agrees to commence Work under this contract on or before a date to be specified in the Notice to Proceed and to complete the work within one hundred twenty (120) days. BIDDER further agrees to pay as liquidated damages, the sum of \$500 for each consecutive calendar day thereafter as provided in the General Conditions and the Special Conditions.

Accompanying this Proposal is a certified check or standard Bid Bond in the sum of _____ Dollars (\$_____), in accordance with the Information for Bidders. The BIDDER, by submittal of this Bid, agrees with the OWNER that the amount of the bid security deposited with this Bid fairly and reasonably represents the amount of damages the OWNER will suffer due to the failure of the BIDDER to fulfill his agreements as provided in this Proposal.

BIDDER acknowledges receipt of the following Addenda:

No. _____ Date: _____ No. _____ Date: _____ No. _____ Date: _____
No. _____ Date: _____ No. _____ Date: _____ No. _____ Date: _____

BIDDER understands that the OWNER reserves the right to reject any or all Bids and to waive any informalities in the Bidding.

BIDDER agrees that this Bid shall be good and may not be withdrawn for a period of sixty (60) calendar days after the actual date of bid opening.

Within ten (10) calendar days after receiving written notice of the acceptance of this Bid by the OWNER, the Bidder will execute and deliver to the OWNER three (3) copies of the Agreement and such other required Contract Documents. This contract will be entered into with the Southeast Kentucky Industrial Development Authority.

BIDDER:

(Name of Company or Partnership)

By:

(Signature)

(Date)

(Print Name)

(Title)

(Address)

(City, State)

(Zip)

(Email Address)

(Phone Number)

Attested By:

(Signature)

(Date)

Seal (If bid is by a corporation)

End of Section

SECTION 00320 - BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____ as Principal, hereinafter called the Principal, and _____ as Surety, hereinafter called the Surety, are held and firmly bound unto _____, as Obligee, hereinafter called the Obligee, in the sum of _____ Dollars for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents. The Condition of the above obligation is such that whereas the Principal has submitted to _____, a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the construction of _____.

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or contract documents with good and sufficient surety for the faithful performance of said contract, and for the prompt payment of labor and materials furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this _____ day of _____ 20__.

Principal

Witness

By: _____

Surety

Witness

By: _____
Attorney-in-fact

IMPORTANT: SURETY companies executing BONDS must appear on the Treasury Department's most current list (circular 570 as amended) and be authorized to transact business in the state where the PROJECT is located.

End of Section

SECTION 00480 - NON-COLLUSION AFFIDAVIT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Non-Collusion Affidavit for the project shall be submitted with the bid proposal, and a copy of this document is bound herewith.
 - 1. When properly executed, this Document shall become a part of the successful bidder's Contract Document.

END OF SECTION

NON-COLLUSION AFFIDAVIT

The undersigned bidder, on behalf of its officers and agents or representatives being duly sworn, states that it has not in any way, directly or indirectly, entered into any arrangement or agreement with any other bidder, or with any other person or public officer whereby bidder has paid or is to pay to such other bidder or other person or public officer any sum or money, or has given or is to give to such other bidder or other person or public officer anything of value whatever, or such bidder or affiants or either of them has not, directly or indirectly, entered into any arrangement or agreement with any other bidder or bidders, which tends to or does lessen or destroy free competition in the letting of the contract sought for by the attached bids; that no inducement of any form or character other than that which appears upon the face of the bid will be suggested, offered, paid or delivered to any person whomsoever to influence the acceptance of the said bid or awarding of the contract, nor has this bidder any agreement or understanding of any kind whatsoever, with any person whomsoever to pay, deliver to, or share with any other person in any way or manner, any of the proceeds of the contract sought by this bid.

Subscribed and sworn to before me by _____ this
_____ day of _____, 20_____.

My Commission expires:

Notary Public

END OF AFFIDAVIT

SECTION 00490 - NOTICE OF AWARD

To: _____

PROJECT Description: Flemingsburg Industrial Park IV Build Ready Pad and Access Road Grade & Drain

The OWNER has considered the BID submitted by you for the above-described WORK in response to its Advertisement for Bids dated April 4, 2024 and Information for Bidders.

You are hereby notified that your BID has been accepted for items in the amount of \$_____.

You are required by the Information for Bidders to execute the Agreement and furnish the required CONTRACTOR’s Performance Bond, Payment Bond and Certificates of Insurance within ten (10) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said Bonds within ten (10) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER’s acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this _____ day of _____, 2024.

Flemingsburg-Fleming County Industrial Development
Authority

By:

William “Bill” Breeze, Chairman

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by _____ this

the _____ day of _____, 2024.

By:

Name/Title

SECTION 00500 - AGREEMENT

THIS AGREEMENT, made this _____ day of _____, 2024, by and between the Flemingsburg-Fleming County Industrial Development Authority, hereinafter called "OWNER" and _____, doing business as a corporation (insert "a corporation", "a partnership", or "an individual" as applicable) hereinafter called "CONTRACTOR".

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The CONTRACTOR will commence and complete all work as specified or indicated in the Contract Documents for the Flemingsburg Industrial Park IV Build Ready Pad and Access Road Grade & Drain.
2. The CONTRACTOR will furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of the project described herein.
3. The CONTRACTOR will commence the work required by the contract documents within 10 calendar days after the date of the Notice To Proceed and will complete the same within 120 calendar days unless the period for completion is extended otherwise by the Contract Documents. The CONTRACTOR further agrees to pay as liquidated damages, the sum of \$500 for each consecutive calendar day thereafter as provided in the Specifications.
4. The CONTRACTOR agrees to perform all of the work described in the Contract Documents and comply with the terms therein for the sum of \$_____, or as shown in the Bid Schedule.
5. The term "CONTRACT DOCUMENTS" means and includes the following:
 - A. Invitation to Bid
 - B. Information for Bidders
 - C. Bid Form
 - D. Bid Bond
 - E. Agreement
 - F. Performance Bond
 - G. Payment Bond
 - H. Notice of Award
 - I. Notice to Proceed
 - J. General Conditions
 - K. Administrative Provisions
 - L. Labor Regulations and Wage Rates (If Applicable)
 - M. Technical Specifications
 - N. Drawings and Plan Sheets
 - O. Addenda
6. The project has been designed by MSE of Kentucky, Inc. who will act as ENGINEER in connection with completion of the project in accordance with the Contract Documents.
7. CONTRACTOR shall submit Applications for Payment in accordance with the General Conditions. Applications for Payment will be reviewed by the ENGINEER as provided in the General Conditions.
8. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Application for Payment as approved by the ENGINEER, on or about the _____ of each month during construction as provided in the General Conditions. All progress payments will be on the basis of the progress of work measured by the schedule of values provided for in the General Conditions. Progress Payments, retainage, and withheld payments

shall all be done in compliance with the General Conditions. Upon final completion of the work and settlement of all claims, OWNER shall pay the remainder of the Contract Price.

- 9. Neither OWNER nor CONTRACTOR shall, without the prior written consent of the other, assign or sublet in whole or in part his interest under any of the Contract Documents; and, specifically, CONTRACTOR shall not assign any moneys due or to become due without the prior written consent of the OWNER.
- 10. OWNER and CONTRACTOR each binds himself, his partners, heirs, executors, administrators, successors, assigns and legal representatives to the other party hereto in respect to all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, the Agreement in four (4) copies, each of which shall be deemed an original on the date first above written.

Flemingsburg-Fleming County Industrial
 Development Authority

 (Owner)

 (Contractor)

By: _____
 (Signature) (Date)

By: _____
 (Signature) (Date)

William "Bill" Breeze, Chairman

 (Name, Title)

 (Name, Title)

Attest:

Attest:

By: _____
 (Signature) (Date)

By: _____
 (Signature) (Date)

 (Name, Title)

 (Name, Title)

End of Section

SECTION 00600 - PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a _____, hereinafter called Principal, and
(Corporation, Partnership or Individual)

_____, hereinafter called Surety, are held and firmly bound unto
(Name of Surety)

(Name of Owner)

(Address of Owner)

hereinafter called OWNER, in the penal sum of _____
_____ Dollars, (\$ _____)

in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

The CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____, 20____, a copy of which is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the by the OWNER, with or without notice to the Surety and during the one year guaranty period, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER, and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in four (4) counterparts, each one of which shall be deemed an original, this the _____ day of _____, 20_____.

SECTION 00600 - PERFORMANCE BOND

ATTEST:

Principal

(Principal) Secretary

By: _____

(SEAL)

(Witness as to Principal)

(Address)

(Address)

(Surety)

ATTEST:

(Surety) Secretary

(SEAL)

(Witness as to Surety)

Attorney-in-fact

(Address)

(Address)

Note: Date of BOND must not be prior to date of Contract.
If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: SURETY companies executing BONDS must appear on the Treasury Department's most current list (circular 570 as amended) and be authorized to transact business in the state where the PROJECT is located.

End of Section

SECTION 00602 - PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a _____, hereinafter called Principal, and
(Corporation, Partnership or Individual)

_____, hereinafter called Surety, are held and firmly bound unto
(Name of Surety)

(Name of Owner)

(Address of Owner)

hereinafter called OWNER, in the penal sum of _____

_____ Dollars,
(\$_____)

in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

The CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____, 20____, a copy of which is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall promptly make payments to all persons, firms, SUBCONTRACTORS, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment, and tools, consumed or used in connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor, performed in such WORK whether by SUBCONTRACTOR or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER, and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in four (4) counterparts, each one of which shall be deemed an original, this the _____ day of _____, 20_____.

ATTEST:

(Principal) Secretary

(SEAL)

(Witness as to Principal)

(Address)

Principal

By: _____

(Address)

(Surety)

ATTEST:

(Surety) Secretary

(SEAL)

(Witness as to Surety)

(Address)

Attorney-in-fact

(Address)

Note: Date of BOND must not be prior to date of Contract.
If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: SURETY companies executing BONDS must appear on the Treasury Department's most current list (circular 570 as amended) and be authorized to transact business in the state where the PROJECT is located.

End of Section

SECTION 00680 - NOTICE TO PROCEED

To:

Date:

Project: Flemingsburg Industrial Park IV
Build Ready Pad and Access Road Grade
& Drain

You are hereby notified to commence WORK in accordance with the Agreement dated _____, 2024 on or before _____ 2024, and you are to complete the WORK within 120 consecutive calendar days thereafter.

The date of completion of all work is therefore, _____ 2024.

Flemingsburg-Fleming Co. Industrial Development Authority
Owner
By:

William "Bill" Breeze, Chairman

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____
this the _____ day of _____, 2024.

By:

Name/Title

SECTION 00700 - GENERAL CONDITIONS

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1. Definitions

Wherever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

Addendum - Written or graphic instrument issued to the execution of the agreement which modifies or interprets the Contract Documents, drawings and specifications.

Agreement - The written agreement between Owner and Contractor covering the work to be performed; other Contract Documents are attached to the Agreement.

Application for Payment - the form furnished by Engineer which is to be used by Contractor in requesting progress payments and which is to include the schedule of values required by Article 42.

Engineer - The person, firm or corporation named as such in the Agreement.

Bid - The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the work to be performed.

Bidder - Any person, firm or corporation submitting a Bid for the work.

Bonds - Bid, performance and payment bonds and other instruments of security, furnished by Contractor and his surety in accordance with the Contract Documents.

Change Order - A written order to Contractor signed by Owner authorizing an addition, deletion or revision in the work, or an adjustment in the Contract Price or the Contract Time issued after execution of the Agreement.

Contract Documents - The Advertisement for Bids, Agreement, Addenda (whether issued prior to the opening of Bids or the execution of the Agreement), Instructions to Bidders, Contractor's Bid, the Bonds, the Notice of Award, these General Conditions, the Supplementary Conditions, the Specifications, Drawings and Modifications.

Contract Price - The total moneys payable to Contractor under the Contract Documents.

Contract Time - The number of days stated in the Agreement for the completion of the work.

Contractor - The person, firm or corporation with whom Owner has executed the Agreement.

Day - A calendar day of twenty-four hours measured from midnight to the next midnight.

Drawings - The drawings which show the character and scope of work to be performed and which have been prepared or approved by Engineer and are referred to in the Contract Documents. Included with the plan sheet drawings are Atmos Energy drawings and standard details.

Field Order - A written order issued by Engineer to the Contractor which clarifies or interprets the Contract Documents or orders minor changes in the work without involving a change in the contract price or time.

Modification - (a) A written amendment of the Contract Documents signed by both parties, (b) a Change Order, (c) a written clarification or interpretation issued by Engineer, or (d) a written order for a minor change or alteration in the work issued by Engineer. A Modification may only be issued after execution of the Agreement.

Notice of Award - The written notice by Owner to the apparent successful bidder stating that upon compliance with the conditions precedent to be fulfilled by him within the time specified Owner will execute the Agreement with him.

Notice to Proceed - A written notice given by Owner to Contractor (with a copy to Engineer) fixing the date on which the contract time will commence to run and on which Contractor shall start to perform his obligations under the Contract Documents.

Owner - A public body or authority, corporation, association, partnership, or individual for whom the work is to be performed.

Project - The entire construction to be performed as provided in the Contract Documents.

Resident Project Representative - The authorized representative of Engineer who is assigned to the Project site or any part thereof.

Shop Drawings - All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by Contractor, a Subcontractor, manufacturer, supplier or distributor and which illustrate the equipment, material or some portion of the work.

Specifications - Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the work. Included by reference are Atmos Energy gas system construction standards and specifications.

Subcontractor - An individual, firm or corporation having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the work at the site.

Substantial Completion - The date as certified by Engineer when the construction of the project or a specified part thereof is sufficiently completed, in accordance with the Contract Documents, so that the project or specified part can be utilized for the purposes for which it was intended.

Work - Any and all obligations, duties and responsibilities necessary to the successful completion of the project assigned to or undertaken by Contractor under the Contract Documents, including all labor, materials, equipment and other incidentals, and the furnishing thereof.

Written Notice - A notice in writing to any party of the Agreement and considered delivered and the service thereof completed, when posted by certified or registered mail to said party at his last given address or delivered in person to said party or his authorized representative.

2. Execution, Correlation and Intent of Documents

At least six copies of the Agreement and such other Contract Documents as practicable will be executed and delivered to the Owner by the Contractor within ten days of the Notice of Award. Owner shall execute and deliver one counterpart to Contractor within ten days after receipt of the executed Agreement from Contractor. Engineer will identify those portions of the Contract Document not signed and such identification will be binding on all parties.

Contractor shall also deliver to Owner such Bonds as he may be required to furnish when he delivers the executed agreement to Owner.

It is the intent of the Specifications and Drawings to describe a complete project to be constructed in accordance with the Contract Documents. The Contract Documents comprise the entire Agreement between Owner and Contractor. They may be altered only by a modification.

The Contract Documents are complementary; what is called for by one is as binding as if called for by all. If Contractor finds a conflict, error or discrepancy in the Contract Documents, he shall call it to Engineer's

attention in writing at once and before proceeding with the work affected thereby; however, he shall not be liable to Owner or Engineer for his failure to discover any conflict, error or discrepancy in the Specifications or Drawings. In resolving such conflicts, errors and discrepancies, the documents shall be given precedence in the following order: Agreement, Modifications, Addenda, Special Conditions, Information for Bidders, General Conditions, Specifications and Drawings. Figure dimensions on Drawings shall govern over general Drawings. Any work that may reasonably be inferred from the Specifications or Drawings as being required to produce the intended result shall be supplied whether or not it is specifically called for. Work, materials or equipment described in words which so applied have a well-known technical or trade meaning shall be deemed to refer to such recognized standards.

3. Starting the Project

Before undertaking each part of the work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. He shall at once report in writing to Engineer any conflict, error or discrepancy which he may discover; however, he shall not be liable to Owner or Engineer for his failure to discover any conflict, error or discrepancy in the Drawings or Specifications.

Within ten days after delivery of the executed Agreement by Owner to Contractor, Contractor shall submit to Engineer for approval, an estimated progress schedule indicating the starting and completion dates to the various stages of the Work, and a preliminary schedule of Shop Drawing submissions.

Before starting the Work at the site, Contractor shall furnish Owner and Engineer certificates of insurance as required by Article 7. Within twenty days after delivery of the executed Agreement by Owner to Contractor, but before starting the work at the site, a conference will be held to review the above schedules to establish procedures for handling Shop Drawings and other submissions and for processing Applications for Payment, and to establish a working understanding between the parties as to the Project. Present at the conference will be Owner or his representative, Engineer, Resident Project Representative, Contractor and his Superintendent.

Contractor shall start to perform his obligations under the Contract Documents on the date when the Contract Time commences to run. No Work shall be done at the site prior to the date on which the contract time commences to run.

4. Contract Documents

Unless otherwise provided in the Special Conditions, the Owner or his representative will furnish the Contractor, free of charge, up to six copies of drawings and specifications and other Contract Documents. Additional copies shall be provided for the cost of reproduction.

5. Contractor's Pre-Start Representations

Contractor represents that he has familiarized himself with, and assumes full responsibility for having familiarized himself with, the nature and extent of the Contract Documents. Work, locality, and with all local conditions and federal, state and local laws, ordinances, rules and regulations that may in any manner affect performance of the work, and represents that he has correlated his study and observations with the requirements of the Contract Documents. Contractor also represents that he has studied all surveys and investigation reports of subsurface and latent physical conditions referred to in the Plans and Specifications and made such additional surveys and investigations as he deems necessary for the performance for the work at the Contract Price in accordance with the requirements of the Contract Documents and that he has correlated the results of all such data with the requirements of the Contract Documents.

6. Indemnity

The Contractor shall indemnify and hold harmless the Owner and the Engineer and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the work, providing that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, diseases or death, or to injury to or destruction of tangible property (other than the work itself) including the loss of use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of the Contractor and Subcontractor, anyone directly or indirectly employed by any of them or any one for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

In any and all claims against the Owner or the Engineer or any of their agents or employees by any employee of the Contractor, any Subcontractor, any one directly or indirectly employed by any of them or any one for whose acts any of them may be liable, the indemnification obligation under these General Conditions shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under workmen's compensation acts, disability benefit acts or other employee benefit acts.

The obligations of the Contractor under these General Conditions shall not extend to the liability of the Engineer, his agents or employees arising out of (a) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications or (b) the giving of or the failure to give instructions or directions by the Engineer, his agents or employees provided such giving or failure to give is the primary cause of injury or damage.

7. Insurance

Contractor shall purchase and maintain such insurance as will protect him from claims under workmen's compensation laws, disability benefit laws or other similar employee benefit laws; from claims for damages because of bodily injury, occupational sickness or disease, or death of his employees, and claims insured by usual personal injury liability coverage; from claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees including claims insured by usual personal injury liability coverage; and from claims for injury to or destruction of tangible property, including loss of use resulting therefrom -- any or all of which arise out of or result from Contractor's operations under the Contract Documents, whether such operations be by himself or by any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be legally liable. This insurance shall include the specific coverages and be written for not less than any limits of liability and maximum deductibles specified in the Special Conditions or required by law, whichever is greater, shall include contractual liability insurance and shall include Owner and Engineer as additional insured parties. Before starting the Work, Contractor shall file with Owner and Engineer certificates of such insurance, acceptable to Owner; these certificates shall contain a provision that the coverage afforded under the policies will not be canceled or materially changed until at least fifteen days' prior written notice has been given to Owner and Engineer.

The Contractor shall procure and maintain, at his own expense, during the contract time, liability insurance as hereinafter specified; and in the amounts listed in the Special Conditions.

- a. Compensation Insurance - The Contractor shall take out and maintain during the life of this contract Workmen's Compensation Insurance for all of his employees employed at the site of the project, and, in case any work is sublet, the Contractor shall require the subcontractor similarly to provide Workmen's Compensation Insurance for all of the latter's employees unless such employees are covered by the protection afforded by the Contractor.
- b. Public Liability and Property Damage Insurance - The Contractor shall take out and maintain during the life of this contract such Public Liability and Property Damage Insurance as shall protect him and any subcontractor performing work covered by this contract, from claims for

damages for personal injury, including accidental death, as well as for claims for property damages which may arise from operations under this contract, whether such operations be by himself or by any subcontractor or by anyone directly or indirectly employed by either of them. The insurance will include as additional named insured: the Owner and Engineer and his Consultants; and each of their officers, agents and employees.

- c. Contingent Public Liability and Property Damage Insurance - If any subcontracts are awarded, subparagraph "b" above shall be interpreted to require that the General Contractor shall take out and maintain Contractor's contingent public liability and property damage insurance in the amounts required under the "Special Conditions".
- d. Builder's Risk Insurance or Installation Floater - The Contractor shall provide "All Risk" type Builder's Risk Insurance including coverage for fire, lightning, explosion, wind, hail, riot, aircraft, smoke, collapse, extended coverage, vandalism and malicious mischief. Unless specifically authorized by the Owner, the amount of such insurance shall not be less than the contract price totaled in the bid. Deductible amount shall not exceed \$250.

In case of pipeline contracts, this coverage shall be provided by an installation floater for the full cash value of materials and accessories on hand to be used in conjunction with the project. Coverage shall include insuring against transportation loss or damage. The policy shall name as the insured the Contractor, the Engineer and the Owner.

- e. Railroad Protective Liability Insurance - Where work on railroad rights-of-way is involved, the Contractor shall also be covered by Railroad Protective Liability Insurance with limits of liability as required by the railroad company on whose property the work is being performed.
- f. Flood Hazard Insurance - The Contractor will be required to acquire and maintain during the life of the Contract any flood insurance made available under the National Flood Insurance Act of 1968, as amended. The insurance shall be in an amount at least equal to the contract amount costs excluding cost of uninsurable improvements, or to the maximum limit of coverage made available under the National Flood Insurance Act of 1968, as amended, whichever is less.

8. Guaranty Bond

Contractor shall furnish performance and payment bond as security for the faithful performance and payment of all his obligations under the Contract Documents. These Bonds shall be in amounts at least equal to the contract price, and (except as otherwise provided in the Supplementary Conditions) in such form and with such sureties as are licensed to conduct business in the state where the project is located and are named in the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Federal Register by the Audit Staff Bureau of Accounts, U.S. Treasury Department.

If the surety on any Bond furnished by Contractor is declared a bankrupt or becomes insolvent or its rights to do business is terminated in any state where any part of the Project is located is revoked, Contractor shall within five days thereafter substitute another Bond and Surety, both of which shall be acceptable to Owner.

9. Additional Bonds and Insurance

Prior to delivery of the executed Agreement by Owner to Contractor, Owner may require Contractor to furnish such other Bonds and such additional insurance, in such form and with such sureties or insurers as Owner may require. If such other Bonds or such other insurance are specified by written instructions given prior to opening of bids, the premiums shall be paid by Contractor: if subsequent thereto, they shall be paid by Owner (except as otherwise provided in Article 15.)

10. Availability of Lands

Prior to issuance of Notice to Proceed, the Owner shall obtain all land and rights-of-way necessary for carrying out and for the completion of the work to be performed pursuant to the Contract Documents, unless otherwise mutually agreed.

The Owner shall provide the Contractor information which delineates and describes the land owned and rights-of-way acquired.

The Contractor shall provide at his own expense and without liability to the Owner any additional land and access thereto that the Contractor may desire for temporary construction facilities, or for storage of materials.

11. Unforeseen Physical Conditions

Contractor shall promptly notify Owner and Engineer in writing of any subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents. Engineer will promptly investigate those conditions and advise Owner in writing if further surveys or subsurface test are necessary. Promptly thereafter, Owner shall obtain the necessary additional surveys and tests and furnish copies to Engineer and Contractor. If Engineer finds that the results of such surveys or test indicate that there are subsurface or latent physical conditions which differ materially from those intended in the Contract Documents, and which could not reasonably have been anticipated by Contractor, a Change Order shall be issued incorporating the necessary revisions.

12. Reference Points

Owner shall provide engineering surveys for construction to establish reference points which in his judgment are necessary to enable Contractor to proceed with the work. Contractor shall be responsible for surveying and laying out the work (unless otherwise provided in the Special Conditions), and shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of Owner. He shall report to Engineer whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or location. Contractor shall replace and accurately relocate all reference points so lost, destroyed or moved.

13. Superintendence - Supervision

The Contractor shall keep on his work, during its progress, a competent Superintendent and any necessary assistants, all satisfactory to the Engineer. The Superintendent shall not be changed without written notice to the Owner and Engineer except under extraordinary circumstances. The Superintendent shall represent the Contractor in his absence and all directions given to him shall be as binding as if given to the Contractor.

The Contractor shall give efficient supervision to the Work, using his best skill and attention. He shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but he shall not be solely responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. Contractor shall be responsible to see that the finished Work complies accurately with the Contract Documents.

The Contractor shall see that for his own Work and for the Work of each subcontractor, proper templates and patterns necessary for the coordination of the various parts of the Work are prepared, and shall furnish, or require subcontractors to fit together and execute fully their respective portions of the Work.

14. Materials, Appliances, Employees

The Contractor shall provide and pay for all materials, labor, water tools, appliances, fuel, heat, sanitary facilities, equipment, light, power, telephone, transportation and other facilities necessary for the execution, testing, initial operation and completion of the Work.

Approval of manufacturer's Shop Drawings of materials and equipment shall not mean final acceptance, but they shall be subject to inspection and test or delivery and installation. The Contractor shall repair, replace, or adjust any materials or equipment found defective or not operating properly, due to improper materials, workmanship, and adjustment on his part, during the correction period.

Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the work. Stored materials and equipment to be incorporated in the work shall be located so as to facilitate prompt inspection.

Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directly by the manufacturer.

The Contractor shall provide competent, suitably qualified personnel to survey and lay out the work and perform construction as required by the Contract Documents. The Contractor shall at all times enforce strict discipline and good order among his employees, and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him.

15. Substitute Materials or Equipment

Wherever the words "or equal", appear in the Specifications or on the Drawings, they shall be interpreted to mean an item of material or equipment equal in quality to that named and which is suited to the same use and capable of performing the same function as that named.

The burden of proof of equal quality or service shall be on the Contractor. Proof of inequality is not implied by the Specifications and is not a burden of the Engineer. His duty shall be to properly weigh the proven facts of equality in fairness to all parties involved.

Inclusion of a certain make or type of materials or equipment in Contractor's bid or estimate shall not obligate the Owner to accept such material or equipment if it does not meet the requirements of the Plans and Specifications.

If the Contract, Specifications, law, ordinance or applicable rules or regulations permit Contractor to furnish or use a substitute that is equal to any material or equipment specified, and if Contractor wishes to furnish or use a proposed substitute, he shall prior to 30 days before such substitute is required make written application to Engineer for approval of such a substitute certifying in writing that the proposed substitute will perform adequately the functions called for by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function as that specified; stating whether or not its incorporation in or use in connection with the project is subject to the payment of any license fee or royalty; and identifying all variations of the proposed substitute from that specified and indicating available maintenance service. No substitute shall be ordered or installed without the written approval of Engineer who will be the judge of equality and may require Contractor to furnish such other data about the proposed substitute as he considers pertinent. No substitute shall be ordered or installed without such performance guarantee and bonds as Owner may require which shall be furnished at Contractor's expense.

In case where one or more specified brands, makes or manufacturers are named and these names are not qualified by the "or equal" clause, it is intended that the Contractor be restricted to one of those named unless otherwise set out.

16. Subcontracts

Contractor shall not employ any Subcontractor or other person or organization (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom Owner or Engineer may have reasonable objection.

The Contractor will not be permitted to sublet any portion of his contract to any individual, co-partnership or corporation without the prior written consent of the Owner and the approval of the Engineer.

The Contractor shall not sublet more than fifty percent (50%) of the work without the written consent of the Owner and approval of the Engineer prior to the receipt of bids.

Contractor shall be fully responsible for all acts and omissions of his Subcontractor and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that he is responsible for the acts and omissions of persons directly employed by him. Nothing in the Contract Documents shall create contractual relationship between Owner or Engineer and any Subcontractor or other person or organization having a direct contract with Contractor, nor shall it create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any Subcontractor or other persons or organization, except as may otherwise be required by law. Owner or Engineer may furnish to any Subcontractor or other person or organization, to the extent practicable, evidence of amounts paid to Contractor on account of specific Work done in accordance with the schedule of values.

The divisions and sections of the Specifications and the identifications of any drawings shall not control Contractor in dividing the Work among Subcontractors or delineating the Work to be performed by any specific trade.

Contractor agrees to bind specifically every Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of Owner.

All work performed for Contractor by a Subcontractor shall be pursuant to an appropriate agreement between Contractor and the Subcontractor which shall contain provisions that waive all rights the contracting parties may have against one another for damages caused by fire or other perils covered by insurance provided in accordance with Article 7, except such rights as they may have to the proceeds of such insurance held by Owner as trustee.

17. Patent Fees and Royalties

Contractor shall pay all license fees and royalties and assume all costs incidental to the use in the performance of the work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents. Contractor shall indemnify and hold harmless Owner and Engineer and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorney's fees) arising out of any infringement of patent rights or copyrights incidental to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

18. Permits, Laws and Regulations

Contractor shall obtain and pay for all construction permits and licenses and shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of

his bid. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall also pay all public utility charges.

Contractor shall give all notices and comply with all laws, ordinances, rules and regulations applicable to the Work. If Contractor observes that the specifications or drawings are at variance therewith, he shall give the Engineer prompt written notice thereof, and any necessary changes shall be adjusted by an appropriate modification. If Contractor performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to Engineer, he shall bear all costs arising therefrom; however, it shall not be his primary responsibility to make certain that the Specifications and Drawings are in accordance with such laws, ordinances, rules and regulations.

19. Taxes

Contractor shall pay all sales, consumer use and other similar taxes required to be paid by him in accordance with the law of the place where the Work is to be performed.

20. Safety and Protection

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. He shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

- a. All employees on the Work and other persons who may be affected thereby.
- b. All the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site.
- c. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

The Contractor shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. He shall erect and maintain, as required by the conditions and progress of the Work, all necessary safeguards for its safety and protection. He shall notify owners of adjacent utilities when prosecution of the work may affect them. All damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by Contractor; except damage or loss attributable to the fault of Owner or Engineer or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor. Contractor's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor that the Work is acceptable.

Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be Contractor's Superintendent unless otherwise designated in writing by Contractor to Owner

In emergencies affecting the safety of persons or the Work or property at the site or adjacent thereto, Contractor, without special instruction or authorization from Engineer or Owner, is obligated to act, at his discretion, to prevent threatened damage, injury or loss. He shall give Engineer prompt written notice of injury or loss. He shall give Engineer prompt written notice of any significant changes in the Work or deviations from the Contract Documents caused thereby, and Change Order shall thereupon be issued covering the changes and deviations involved. If Contractor believes that additional Work done by him in an emergency which arose from causes beyond his control entitles him to an increase in the Contract

Price or an extension of the Contract Time, he may make a claim therefor as provided in these Specifications.

21. Shop Drawings and Samples

After checking and verifying all field measurements, the Contractor shall submit with such promptness as to cause no delay in the Work two (2) copies of all Shop Drawings and schedules required for the Work, and the Engineer will pass upon them with reasonable promptness, making necessary corrections. The Contractor shall then revise the drawings as required by the Engineer and file with him five (5) corrected copies for final approval (or one (1) reproducible copy).

Drawings shall have been checked by and stamped with the approval of Contractor and identified as Engineer may require. The data shown on the Shop Drawings will be complete with respect to dimensions, design criteria, materials of construction and the like to enable Engineer to review the information as required.

The Contractor shall also submit to Engineer for approval with such promptness as to cause no delay in work, all samples required by the Contract Documents. All samples will have been checked by and stamped with the approval of Contractor, identified clearly as to material, manufacturer, any pertinent catalog numbers and the use for which intended.

At the time of each submission, Contractor shall in writing call Engineer's attention to any deviations that the Shop Drawings or sample may have from the requirement of the Contract Documents.

The Engineer will review and approve with reasonable promptness Shop Drawings and samples, but his review and approval shall be only for conformance with the design concept of the project and for compliance with the information given in the Contract Documents. The approval of a separate item as such will not indicate approval of the assembly in which the item functions. Contractor shall make any corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and resubmit new samples until approved. Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections called for by Engineer on previous submissions. Contractor's stamp of approval on any Shop Drawing or sample shall constitute a representation to Owner and Engineer that Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data or he assumes full responsibility for doing so, and that he has reviewed or coordinated each Shop Drawing or sample with the requirements of the Work and the Contract Documents.

Where a Shop Drawing or sample submission is required by the Specifications, no related Work shall be commenced until the submission has been approved by Engineer. A copy of each approved Shop Drawing and each approved sample shall be kept in good order by Contractor at the site and shall be available to Engineer.

The following items of Work and other such items as required shall have Shop Drawings submitted:

- a. All concrete reinforcement, water stops, pre cast concrete and location of construction joints.
- b. Structural steel, miscellaneous metal and fencing.
- c. Windows and doors.
- d. Piping layouts, including small piping layouts.
- e. Mechanical equipment.
- f. Pumps and related equipment, including pump control equipment.

- g. Building service equipment.
- h. Control and instrumentation, metering equipment.
- i. Electrical equipment and wiring diagrams.
- j. Plumbing, heating, ventilating and air conditioning equipment.

No fabrication, erection, installation or construction shall commence until drawings and details have been approved by the Engineer.

Engineer's approval of Shop Drawings or samples shall not relieve the Contractor from his responsibility for any deviations from the requirements of the Contract Documents unless Contractor has in writing called Engineer's attention to such deviation at the time of submission and Engineer has given written approval to the specific deviation, nor shall any approval by Engineer relieve Contractor from responsibility for errors or omissions in the Shop Drawings.

22. Record Drawings

The Contractor shall keep an accurate record of the location, size, and material for all piping, both interior and exterior, concealed and exposed; size and routing of conduits, size and location of pull boxes and number and size of conductors installed therein; and changes in equipment dimensions, structural openings, foundations and any other variations between the Work actually provided and that shown on the Contract Drawings. The representation of such variations shall conform to standard drafting practices and shall include such supplementary notes, legends and details as may be necessary for legibility and clear portrayal of the as-built construction. Upon completion, the Contractor shall have these drawings and records certified as to their completeness and correctness by the Resident Inspector and deliver them to the Engineer for incorporation into the tracings. Final As-Built alignment, invert elevations and locations including the location of service connections for water and sewer lines are to be supplied by the Contractor.

As-Built information shall be provided monthly to the Engineer and submitted with the partial pay request.

23. Use of Premises

The Contractor shall confine his apparatus, the storage of materials and the operation of his workmen to limits indicated by law, ordinances, permits or direction of the resident Engineer and shall not unreasonably encumber the premises with his materials.

The Contractor shall not load or permit any part of any structure to be loaded with weights that will endanger the structure, nor shall he subject any part of the Work to stresses or pressures that will endanger it.

The Contractor shall enforce all applicable regulations and any additional requirements of the Owner regarding signs, advertisements, fires and smoking.

24. Cleaning

Contractor shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work, and at the completion of the Work he shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by Owner. Contractor shall restore to their original condition those portions of the site not designated for alteration by the Contract Documents.

25. Work By Others

The Owner reserves the right to perform additional work related to the project by himself or to let other contracts in connection with the Work. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs.

If any part of the Contractor's Work depends on proper execution or results upon the Work of any other Contractor, the Contractor shall inspect and promptly report to the Engineer any defects in such Work that render it unsuitable for such proper execution and results. His failure to inspect and report shall constitute an acceptance of the other Contractor's Work as fit and proper for the reception of his Work, except as to defect which may develop in the other Contractor's Work after the execution of his Work.

To ensure the proper execution of this subsequent Work, the Contractor shall measure Work already in place and shall at once report to the Engineer any discrepancy between the executed Work and the Drawings.

Whenever Work being done by the Owner's forces or by other Contractors is contiguous to Work covered by this Contract, the respective rights of the various interest involved shall be established by the Engineer, to secure the completion of the various portion of the Work in general harmony.

The Contractor shall do all cutting, fitting and patching of his Work that may be required to make its several parts come together properly and fit it to receive or be received by such other Work. Contractor shall not endanger any Work of others by cutting, excavating or otherwise altering their Work and will only cut or alter their Work with the written consent of Engineer and of the other Contractors whose Work will be affected.

If the performance of additional Work by other Contractors or Owner is not noted in the Contract Documents prior to the execution of the contract, written notice thereof shall be given to Contractor prior to starting any such additional Work. If Contractor believes that the performance of such additional Work by Owner or others involves him in additional expense or entitles him to an extension of the Contract Time, he may make a claim thereof as provided in these Specifications.

26. Engineer's Status During Construction

The Engineer will be the Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of the Engineer as Owner's representative during construction as defined in these General Conditions shall not be extended without written consent of the Owner and the Engineer.

The Engineer will make periodic visits to the site to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. He will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. His efforts will be directed toward providing assurance for Owner that the completed project will conform to the requirements as an experienced and qualified design professional, he will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defects and deficiencies in the Work of Contractors.

The Engineer will issue with reasonable promptness such written clarifications or interpretations of the Contract Documents (in the form of Drawings or otherwise) as he may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If Contractor believes that a written clarification and interpretation entitles him to an increase in the Contract Price, he may make claim therefore, as provided in these Specifications.

The Engineer will have authority to disapprove or reject Work which is "defective" (which term is hereinafter used to describe Work that is unsatisfactory, faulty or defective, or does not conform to the requirements of the Contract Documents or does not meet the requirements of any inspection, test or approval referred to in these Specifications or has been damaged prior to approval of final payment.) He will also have authority to require special inspection or testing of the Work as provided in these specifications whether or not the Work is fabricated, installed or completed.

The Engineer is responsible for review and approval of Shop Drawings and samples in accordance with Article 21 of these General Conditions.

The Engineer has responsibilities for preparation of Change Orders for execution by the Owner in accordance with Article 29 of these General Conditions.

In accordance with Article 27 of these General Conditions, the Engineer shall decide claims of the Owner or Contractors and interpret the Contract Documents.

The Engineer shall faithfully discharge his responsibilities with regard to Applications for Payment as described in Articles 42, 43, 44 and 46 of these General Conditions.

If Owner and Engineer agree, the Engineer will furnish a Resident Project Representative and/or inspector to assist the Engineer in carrying out his responsibilities at the site. The duties, responsibilities and authority of any such representative shall be as set forth in Article 28 of these General Conditions.

Neither Engineer's authority to act under this Article 26 or elsewhere in the Contract Documents nor any decision made by him in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of Engineer to Contractor, any Subcontractor, any material man, fabricator, supplier, or any of their agents or employees or any other person performing any of the work.

The Engineer will not be responsible for Contractor's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and he will not be responsible for Contractor's failure to perform the work in accordance with the Contract Documents.

The Engineer will not be responsible for the acts or omissions of Contractor, or any Subcontractors, or any of his or their agents or employees, or any other persons at the site or otherwise performing any of the work.

27. Engineer's Decision on Disagreements

Engineer will be the interpreter of the requirements of the Contract Documents and the judge of the performance thereunder. In his capacity as interpreter and judge, he will exercise his best efforts to insure faithful performance by both Owner and Contractor. He will not show partiality to either and will not be liable for the result of any interpretation or decision rendered in good faith. Claims, disputes and other matters relating to the execution and progress of the work or the interpretation of or performance under the Contract Documents shall be referred to Engineer for decision; which he will render in writing within a reasonable time.

Either Owner or Contractor may request arbitration with respect to any such claim, dispute or other matter that has been referred to Engineer, except any which have been waived by the making or acceptance of final payment as provided in Article 46, such arbitration to be in accordance with Article 50. However, no request for arbitration of any such claim, dispute or other matter shall be made until the earlier of (a) the date on which Engineer has rendered his decision, or (b) the tenth day after parties have presented their evidence to Engineer if he has not rendered his written decision before that date. No request for arbitration shall be made later than thirty days after the date on which Engineer rendered his written decision in respect of the claim, dispute or other matter as to which arbitration is sought; and the failure to request arbitration within said thirty days' period shall result in Engineer's decision being final and binding upon Owner and Contractor. If Engineer renders a decision after arbitration proceedings have been

initiated, such decision may be entered as evidence but shall not supersede the arbitration proceedings, except where the decision is acceptable to the parties concerned.

28. Status of Engineer's Project Representative

Resident Project Representative is Engineer's Agent and shall act as directed by and under the supervision of Engineer. He shall confer with Engineer regarding his actions. His dealings in matters pertaining to the on-site work will in general be only with Engineer and Contractor. His dealings with Subcontractors will only be through or with the full knowledge of Contractor or his Superintendent. He shall generally communicate with Owner only through or as directed by Engineer.

Resident Project Representative shall:

- a. Schedules: Review the progress schedule, schedule of Shop Drawing submissions, schedule of values and other schedules prepared by Contractor and consult with Engineer concerning their acceptability.
- b. Conferences: Attend pre construction conferences. Arrange a schedule of progress meetings and other job conferences as required in consultation with Engineer and notify in advance those expected to attend. Attend meetings, and maintain and circulate copies of minutes thereof.
- c. Liaison:
 1. Serve as Engineer's liaison with Contractor working principally through Contractor's Superintendent and assist him in understanding the intent of the Contract Documents. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-site operations.
 2. As requested by Engineer, assist in obtaining from Owner additional details or information, when required at the job site for proper execution of the work.
 3. In the interest of preserving the proper channels of communication, advise Engineer of any direct communication between Owner and Contractor.
- d. Shop Drawings and Samples:
 1. Receive and record date of receipt of Shop Drawings and samples which have been approved by Engineer.
 2. Receive samples which are furnished at the site by Contractor for Engineer's approval, and notify Engineer of their availability for examination.
 3. Advise Engineer and Contractor or his Superintendent immediately of the commencement of any Work requiring a Shop Drawing or sample submission if the submission has not been approved by Engineer.
- e. Review of Work, Rejection of Defective Work, Inspections and Tests:
 1. Conduct on-site observations of the Work in progress to assist Engineer in determining that the project is proceeding in accordance with the Contract Documents and that completed Work will conform to the Contract Documents.
 2. Report to Engineer whenever he believes that any Work is unsatisfactory, faulty or defective or does not conform to the Contract Documents, or has been damaged, or does not meet the requirements of any inspections, tests or approvals required to be made;

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and advise Engineer when he believes Work should be corrected or rejected or should be uncovered for observation, or requires special testing or inspection.

3. Verify that tests, equipment and system's startups and operating and maintenance instructions are conducted as required by the Contract Documents and in presence of the required personnel, and that Contractor maintains adequate records thereof; observe, record and report to Engineer appropriate details relative to the test procedures and startups.
 4. Accompany Owner and visiting inspectors representing public or other agencies having jurisdiction over the Project, record the outcome of these inspections and report to Engineer.
- f. Interpretation of Contract Documents: Transmit to Contractor clarification and interpretation of the Contract Documents as issued by Engineer.
- g. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report them with recommendations to Engineer.
- h. Records:
1. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and sample submissions, reproductions of original Contract Documents including all addenda, change orders, field orders, additional Drawings issued subsequent to the execution of the Contract, Engineer's clarifications and interpretations of the Contract Documents, progress reports and other project-related documents.
 2. Keep a diary or log book, recording hours on the job site, weather conditions, data relative to questions of extras or deductions, list of principal visitors, daily activities, decisions, observations in general and specific observations in more detail as in the case of observing test procedures. Send Copies to Engineer.
 3. Record names, address and telephone numbers of all Contractors, Subcontractors and major suppliers of equipment and materials.
 4. Advise Engineer whenever Contractor is not currently maintaining an up-to-date copy of Record Drawings at the site.
- i. Reports:
1. Furnish Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the approved progress schedule, schedule of Shop Drawing submissions and other schedules.
 2. Consult with Engineer in advance of scheduled major tests, inspections or start of important phases of the Work.
- j. Payment Requisitions: Review Applications for Payment with Contractor for compliance with the established procedure for their submission and forward them with recommendations to Engineer, noting particularly their relation to the schedule of values, Work completed and materials and equipment delivered at the site.
- k. Guarantees, Certificates, Maintenance and Operation Manuals: During the course of the Work verify that guarantees, certificates, maintenance and operation manuals and other data required to be assembled and furnished by Contractor are applicable to the items actually installed and

deliver these data to Engineer for his review and forwarding to Owner prior to final acceptance of the Project.

I. Completion:

1. Before Engineer issues a Certificate of Substantial Completion, submit to Contractor a list of observed items requiring correction.
2. Conduct final inspection in the company of Engineer, Owner and Contractor and prepare a final list of items to be corrected.
3. Verify that all items on final list have been corrected and make recommendations to Engineer concerning acceptance.

Except upon written instructions of Engineer, Resident Project Representative:

- a. Shall not authorize any deviation from the Contract Documents or approve any substitute materials or equipment.
- b. Shall not undertake any of the responsibilities of Contractor, Subcontractor or Contractor's Superintendent.
- c. Shall not expedite Work for the Contractor.
- d. Shall not advise on or issue directions relative to any aspect of the means, methods, techniques, sequences or procedures of construction unless such is specifically called for in the Contract Documents.
- e. Shall not advise on or issue directions as to safety precautions and programs in connection with the Work.
- f. Shall not authorize Owner to occupy the Project in whole or in part.
- g. Shall not participate in specialized field or laboratory tests or inspections conducted by others.
- h. Shall not assist Contractor in maintaining up-to-date copy of Record Drawings.

29. Changes in the Work

Without invalidating the Agreement, Owner may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by Change Orders. Upon receipt of a Change Order, Contractor shall proceed with the Work involved. All such Work shall be executed under the applicable conditions of the Contract Documents. If any Change Order causes an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, an equitable adjustment will be made as provided in Article 30 on the basis of a claim made by either party.

Engineer may authorize minor changes or alterations in the Work not involving extra cost and not inconsistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order. If Contractor believes that any minor change or alteration authorized by Engineer entitles him to an increase in the Contract Price, he may make a claim therefore, as provided in Article 30.

Additional work performed by Contractor without authorization of a Change Order will not entitle him to an increase in the Contract Sum or an extension of the Contract Time, except in the case of an emergency as provided in Article 20.

Owner shall execute appropriate Change Orders prepared by Engineer covering changes in the Work to be performed, work performed in an emergency and any other claim of the Contractor for a change in the Contract Time or the Contract Sum which is approved by the Engineer.

It is the Contractor's responsibility to notify his surety of any changes affecting the general scope of the Work or change in the Contract Sum and the amount of the applicable bonds shall be adjusted accordingly. Contractor shall furnish proof of such adjustment to Owner.

30. Changes of Contract Price

The Contract Price constitutes the total compensation payable to Contractor for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at his expense without change in the Contract Price.

The Contract Price may only be changed by a Change Order. Any claim for an increase in the Contract Price shall be based on written notice delivered to Owner and Engineer within fifteen days of the occurrence of the event giving rise to the claim. Notice of the amount of the claim with supporting data shall be delivered within forty-seven days of such occurrence unless Engineer allows an additional period of time to ascertain accurate cost data. All claims for adjustment in the Contract Price shall be determined by Engineer if Owner and Contractor cannot otherwise agree on the amount involved. Any change in the Contract Price resulting from any such claim shall be incorporated in a Change Order.

The value of any Work covered by a Change Order shall be determined in one or more of the following ways:

- a. By estimate and mutual acceptance in a lump sum.
- b. By unit prices named in the Contract or subsequently agreed upon.
- c. On the basis of the cost of the Work plus a Contractor's fee for overhead and profit as provided in this Article.

In Case "c", the Contractor shall keep and present in such form as the Engineer may direct, a correct account of all items comprising the net cost of such work, together with vouchers. The determination of the Engineer shall be final upon all questions of the amount and cost of extra work and changes in the work.

The term Cost of the Work means the sum of all costs necessarily incurred and paid by the Contractor in the proper performance of the Work. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 30.6.

30.1 Payroll cost for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foreman at the site. The expenses of performing work after regular working hours, on Sunday or legal holidays shall be included in the above to the extent authorized by Owner.

30.2 Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and manufacturer's field service required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and

refunds, and all returns from sale of surplus materials and equipment shall accrue to Owner and Contractor shall make provisions so that they may be obtained.

30.3 Payments made by Contractor to the Subcontractors for work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from Subcontractors acceptable to him and shall deliver such bids to Owner who will then determine with the advice of Engineer, which bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work, plus a Fee, the Cost of the Work shall be determined in accordance with paragraphs 30.4 and 30.5. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

30.4 Cost of special consultants (including, but not limited to, Engineers, architects, testing laboratories, surveyors, lawyers and accountants) employed for services specifically related to the Work.

30.5 Supplemental costs including the following:

The proportions of necessary transportation, traveling and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

Costs, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workmen, which are consumed in the performance of the work, and cost less market value of such items used but not consumed which remain the property of Contractor.

Rentals of all construction equipment and machinery and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer and the costs of transportation (shall not exceed 100 miles), loading, unloading, installation, dismantling and removing thereof ; all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

Sales, use or similar taxes related to the Work, and for which Contractor is liable, imposed by any governmental authority.

Deposits lost for causes other than Contractor's negligence, royalty payments and fees for permits and licenses.

Losses, damages and expenses, not compensated by insurance or otherwise, sustained by Contractor in connection with the execution of, and to, the Work, provided they have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's Fee. If, however, any such loss or damage requires reconstruction and Contractor is placed in charge thereof, he shall be paid for his services a fee proportionate to that stated in paragraph 30.6.

The cost of utilities, fuel and sanitary facilities at the site.

Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

Cost of premiums for bonds and insurance which Owner is required to pay.

30.6 The term Cost of the Work shall not include any of the following:

Payroll costs and other compensation of Contractor's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, lawyers, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by

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Contractor whether at the site or in his principal or a branch office for general administration of the work and not specifically included in the schedule referred to in subparagraph 30.1 -- all of which are to be considered administrative costs covered by the Contractor's Fee.

Expenses of Contractor's principal and branch offices other than his office at the site.

Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the work and charges against Contractor for delinquent payments.

Cost of premiums for all bonds and for all insurance policies whether or not Contractor is required by the Contract Documents to purchase and maintain the same (except as otherwise provided in subparagraph 30.5).

Cost due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including, but not limited to, the correction of defective work, disposal of materials or equipment wrongly supplied and making good any damage to property.

Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraphs 30.1 - 30.5.

30.7 The Contractor's Fee which shall be allowed to Contractor for his overhead and profit shall be determined as follows:

A mutually acceptable fixed fee; or if none can be agreed upon,

A fee based on the following percentages of the various portions of the Cost of the Work:

- a. For costs incurred under paragraph 30.1 and 30.2, the Contractor's Fee shall be ten (10%) percent.
- b. For costs incurred under paragraph 30.3, the Contractor's Fee shall be five (5%) percent; and if a subcontract is on the basis of Cost Plus a Fee, the maximum allowable to the subcontractor as a fee for overhead and profit shall be ten (10%) percent.
- c. No fee shall be payable on the basis of costs itemized under paragraph 30.4, 30.5 and 30.6.

The amount of credit to be allowed by Contractor to Owner for any such change which results in a new decrease in cost will be the amount of the actual net decrease. When both additions and credits are involved in any one change, the combined overhead and profit shall be figured on the basis of the net increase, if any.

Whenever the cost of any work is to be determined pursuant to Article 30, Contractor will submit in form prescribed by the Engineer an itemized cost breakdown together with supporting data.

In all cases where Extra Work or Changes are covered by unit prices set forth in the Contract, the value of such Extra Work or Changes shall be determined only upon the basis of such unit prices.

Pending final determination of value, payments on accounts of Extra Work or Changes shall be made only upon the estimate of the Engineer.

30.8 All Change Orders to the construction contract (if required) must be negotiated pursuant to 40 CFR 35.938.5.

31. Cash Allowance

The Contractor shall include in the contract sum all allowances named in the Contract Documents and shall cause the Work so covered to be done by such Contractors and for such sums as the Engineer may direct, the contract sum being adjusted in conformity therewith. The Contractor declares that the contract sum includes such sums for expenses and profit on account of cash allowance as he deems proper. No demand for expense or profit other than those included in the contract sum shall be allowed.

32. Delays and Extension of Time

The Contract Time may only be changed by a Change Order. Any claim for an extension in the Contract Time shall be based on written notice delivered to Owner and Engineer within fifteen (15) days of the occurrence of the event giving rise to the claim. Notice of the extent of the claim with supporting data shall be delivered within forty-five (45) days of such occurrence unless Engineer allows an additional period of time to ascertain more accurate data. All claims for adjustment in the Contract Time shall be determined by Engineer if Owner and Contractor cannot otherwise agree. Any change in the Contract Time resulting from any such claim shall be incorporated in a Change Order.

The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of Contractor if he makes a claim therefore as provided in this Article. Such delays shall include, but not be restricted to, acts or neglect by any separate Contractor employed by Owner, fires, floods, labor disputes, epidemics, abnormal weather conditions, or acts of God.

All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article shall not exclude recovery for damages (including compensation for additional professional services) for delay by either party.

33. Warranty and Guarantee

Contractor warrants and guarantees to Owner and Engineer that all materials and equipment will be new unless otherwise specified and that all work will be of good quality and free from faults or defects and in accordance with the requirements of the Contract Documents and of any inspections, tests or approval referred to in Article 34. All unsatisfactory Work, all faulty or defective Work, and all Work not conforming to the requirements of the Contract Documents at the time of acceptance thereof or of such inspection, tests or approvals, shall be considered defective. Prompt notice of all defects shall be given to Contractor. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in these Contract Documents.

34. Tests and Inspections

If the Contract Documents, Laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any Work to specifically be inspected, tested, or approved by some public body, Contractor shall assume full responsibility therefor, pay all costs in connection therewith and furnish Engineer the required certificates of inspection, testing or approval. All other inspections, tests and approvals required by the Contract Documents shall be performed by organizations acceptable to Owner and Contractor and the costs thereof shall be borne by Owner unless otherwise specified.

The Contractor shall give Engineer timely notice of readiness of the Work for all inspections, tests or approvals. If such Work required so to be inspected, tested or approved is covered without written approval of Engineer, it must, if requested by Engineer, be uncovered for observation, and such uncovering shall be at Contractor's expense unless Contractor has given Engineer timely notice of his intention to cover such Work and Engineer has not acted with reasonable promptness in response to such notice.

Neither observations by Engineer nor inspections, tests or approvals by persons other than Contractor shall relieve Contractor from his obligations to perform the Work in accordance with the requirements of the Contract Documents.

35. Access to Work

Engineer and his representatives and other representatives of Owner will at reasonable times have access to the work. Contractor shall provide proper and safe facilities for such access and observation of the Work and also for any inspection or testing thereof by others.

36. Uncovering Work

If any Work should be covered contrary to the written request of the Engineer, it must, if required by the Engineer be uncovered for examination and replace at the Contractor's expense.

If any Work has been covered which Engineer has not specifically requested to observe prior to its being covered, or if Engineer considers it necessary or advisable that covered Work be inspected or tested by others, Contractor at Engineer's request, shall uncover, expose or otherwise make available for observation, inspection or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, Contractor shall bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including compensation for additional professional services, and an appropriate deductive Change Order shall be issued. If, however, such Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction if he makes a claim therefore as provided in these Specifications.

37. Stopping the Work

If the Work is defective, or Contractor fails to supply sufficient skilled workmen or suitable materials or equipment, or if Contractor fails to make prompt payments to Subcontractors or for labor, materials or equipment, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor or any other party.

38. Correction of Work Before Final Payment

If required by Engineer prior to approval of final payment, Contractor shall promptly, without cost to Owner and as specified by Engineer, either correct any defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by Engineer, remove it from the site and replace it with non-defective Work. If Contractor does not correct such defective Work or remove and replace such rejected Work within a reasonable time, all as specified in a written notice from Engineer, Owner may have the deficiency corrected or the rejected Work removed and replaced. All direct or indirect costs of such correction or removal and replacement, including compensation for additional professional services, shall be paid by Contractor and an appropriate deductive Change Order shall be issued. Contractor shall also bear the expense of making good all Work of others destroyed or damaged by his correction, removal or replacement of his defective Work.

39. One Year Correction Period

If, after the approval of final payment and prior to the expiration of one year after the date of substantial completion or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents, any Work is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions, either correct such defective Work, or, if it has been rejected by Owner, remove it from the site and replace it with non-defective Work. If Contractor does not promptly comply with the terms of such instructions, Owner may

have the defective Work corrected or the rejected Work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, shall be paid by Contractor.

40. Acceptance of Defective Work

If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to approval of final payment, also Engineer) prefers to accept it, he may do so. In such case, if acceptance occurs prior to approval of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Price; or, if the acceptance amount shall be approval of final payment, an appropriate amount shall be paid by Contractor to Owner.

41. Neglected Work By Contractor

If Contractor should fail to prosecute the work in accordance with the Contract Documents, including any requirements of the progress schedule, Owner, after seven (7) days' written notice to Contractor may, without prejudice to any other remedy he may have, make good such deficiencies and the cost thereof (including compensation for additional professional services) shall be charged against Contractor if Engineer approved such action, in which case a Change Order shall be issued incorporating an appropriate reduction in the Contract Price. If the payments then or thereafter due Contractor are not sufficient to cover such amount, Contractor shall pay the difference to Owner.

42. Application for Payment

At least ten days prior to submitting the first Application for a progress payment, Contractor shall submit a progress schedule, a final schedule of Shop Drawing submission and a schedule of values of the Work. These schedules shall be satisfactory in form and substance to Engineer. The schedule of values shall include quantities and unit prices aggregating the Contract Price, and shall subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Upon approval of the schedules of values by Engineer, it shall be incorporated into the form of Application for Payment furnished by Engineer.

At least ten days before each progress payment falls due (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such data and schedules as Engineer may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by such data, satisfactory to Owner, as will establish Owner's title to the material and equipment and protect his interest therein, including applicable insurance. Each subsequent Application for Payment shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied to discharge in full all of Contractor's obligations reflected in prior Applications for Payment.

Retainage shall be an amount equal to 10% of the Work completed until 50% of the Work has been completed. At 50% completion, further partial payments shall be made in full to the Contractor and no additional amounts may be retained unless the Engineer certifies that the job is not proceeding satisfactorily, but amounts previously retained shall not be paid to the Contractor. At 50% completion or any time thereafter when the progress of the Work is not satisfactory, additional amounts may be retained but in no event shall the total retainage be more than 10% of the value of the work completed. Upon substantial completion of the work, any amount retained may be paid to the Contractor. When the Work has been substantially completed except for Work which cannot be completed because of weather conditions, lack of materials or other reasons which in the judgment of the Owner are valid reasons for non-completion, the Owner may make additional payments, retaining at all times an amount sufficient to cover the estimated cost of the Work still to be completed.

Contractor warrants and guarantees that title to all Work, materials and equipment covered by any Application of Payment, whether incorporated in the Project or not, will pass to Owner at the time of payment free and clear of all liens, claims, security interests and encumbrances (hereafter in these General Conditions referred to as "Liens").

43. Approval of Payments

Engineer will, within ten days after receipt of each Application for Payment, either indicate in writing his approval of payment and present the Application to Owner, or return the Application to Contractor indicating in writing his reasons for refusing to approve payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application. Owner shall, within thirty days of presentation to him of an approved Application for Payment, pay Contractor the amount approved by Engineer.

Engineer's approval of any payment requested in an Application for Payment will constitute a representation by him to Owner, based on Engineer's on-site observations of the Work in progress as an experienced and qualified design professional and on his review of the Application for Payment and the accompanying data and schedules that the Work has progressed to the point indicated; that, to the best of his knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning Project upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents and any qualifications stated in his approval); and that Contractor is entitled to payment of the amount approved. However, by approving any such payment Engineer will not thereby be deemed to have represented that he made exhaustive or continuous on-site inspections to check the quality or the quantity of the Work, or that he has reviewed the means, methods, techniques, sequences, and procedures of construction, or that he has made any examination to ascertain how or for what purpose Contractor has used the moneys paid or to be paid to him on account of the Contract Price, or that title to any Work, materials or equipment has passed to Owner free and clear of any Liens.

Engineer's approval of final payment will constitute an additional representation by him to Owner that the conditions precedent to Contractor's being entitled to final payment as set forth in Article 46 has been fulfilled.

Engineer may refuse to approve the whole or any part of any payment if, in his opinion, it would be incorrect to make such representation to Owner. He may also refuse to approve any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously approved, to such extent as may be necessary in his opinion to protect Owner from loss because:

- a. The Work is defective, or completed Work has been damaged requiring correction or replacement.
- b. Claims or Liens have been filed or there is reasonable cause to believe such may be filed.
- c. The Contract Price has been reduced because of Modifications.
- d. Owner has been required to correct defective Work or complete the Work in accordance with Article 41.
- e. Unsatisfactory prosecution of the Work, including failure to furnish acceptable submittals or to clean up.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

44. Substantial Completion

Prior to final payment, Contractor may, in writing to Owner and Engineer, certify that the entire Project is substantially complete and request that the Engineer issue a certificate of Substantial Completion. Within a reasonable time thereafter, Owner, Contractor and Engineer shall make an inspection of the Project to determine the status of completion. If Engineer does not consider the Project substantially complete, he will notify Contractor in writing giving his reasons therefore. If Engineer considers the Project substantially complete, he will prepare and deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion and the responsibilities between Owner and Contractor for maintenance, heat and utilities. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment, and the certificate shall fix the time within which such items shall be completed or corrected, said time to be within the Contract Time. Owner shall have seven (7) days after receipt of the tentative certificate during which he may make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the project is not substantially complete, he will within fourteen days (14) days after submission of the tentative certificate to Owner notify Contractor in writing, stating his reasons therefore. If, after consideration of Owner's objections, Engineer considers the project substantially complete, he will within said fourteen days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as he believes justified after consideration of the objections from Owner. The Owner may reduce the retainage to five (5%) percent of the total Contract Price after substantial completion. Owner shall have the right to exclude Contractor from the Project after the date of Substantial Completion, but Owner shall allow Contractor reasonable access to complete or correct items on the tentative list.

45. Partial Utilization

Prior to final payment, Owner may request Contractor in writing to permit him to use a specified part of the Project which he believes he may use without significant interference with construction of other parts of the Project. If Contractor agrees, he will certify to Owner and Engineer that said part of the Project is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Project. Within a reasonable time thereafter Owner, Contractor and Engineer shall make an inspection of that part of the Project to determine its status of completion. If Engineer does not consider that it is substantially complete, he will notify Owner and Contractor in writing giving his reasons therefore. If Engineer considers that part of the Project to be substantially complete, he will execute and deliver to Owner and Contractor a certificate to that effect, fixing the date of Substantial Completion as to that part of the Project, attaching thereto a tentative list of items to be completed or corrected before final payment and fixing the responsibility between Owner and Contractor for maintenance, heat and utilities as to that part of the Project. Owner shall have the right to exclude Contractor from any part of the Project which Engineer has so certified to be substantially complete, but Owner shall allow Contractor reasonable access to complete or correct items on the tentative list.

Insurance carrier shall be informed by the Contractor of occupancy and adjustments made so that coverage of construction will not be invalidated.

46. Final Payment

Upon written notice from Contractor that the Project is complete, Engineer will make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to remedy such deficiencies.

After Contractor has completed all such corrections to the satisfaction of Engineer and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection and other documents -- all as required by the Contract Documents, he may make Application for final Payment

following the procedure for progress payments. The final Application for Payment shall be accompanied by such date and scheduling as Engineer may reasonably require, together with complete and legally effective releases or waivers (satisfactory to Owner) of all Liens arising out of the Contract Documents and the labor and services performed and the material and equipment furnished hereunder. In lieu thereof and as approved by Owner, Contractor may furnish receipts or releases in full, an affidavit of Contractor that the releases and receipts include all labor, services, material and equipment for which a Lien could be filled, and that all payrolls, material and equipment bills, and other indebtedness connected with the work for which Owner or his property might in any way be responsible, have been paid or otherwise satisfied; and consent of the Surety, if any, to final payment. If any Subcontractor, material man, fabricator or supplier fails to furnish a release or receipt in full, Contractor may furnish a Bond or other collateral satisfactory to Owner to indemnify him against any Lien.

If, on the basis of his observation and review of the Work during construction, his final inspection and his review of the final Application for Payment -- all required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor has fulfilled all of his obligations under the Contract Documents, he will, within ten (10) days after receipt of the final Application for Payment, indicate in writing his approval of payment and present the Application to Owner for payment. Thereupon Engineer will give written notice to Owner and Contractor that the Work is acceptable. Otherwise, he will return the Application to Contractor, indicating in writing his reasons for refusing to approve final payment, in which case Contractor shall make the necessary corrections and resubmit the Application. Owner shall, within ten (10) days of presentation to him of an approved final Application for Payment, pay Contractor the amount approved by Engineer.

If after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of Contractor and Engineer so confirms, Owner shall, upon certification by Engineer and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work is not fully completed or corrected and is less than the retainage stipulated in the Agreement, and if Bonds have been furnished, the written consent of the Surety to the payment of the balance due for that portion of the Work fully completed and accepted, shall be submitted by the Contractor to the Engineer prior to certification of such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

The making and acceptance of final payment shall constitute:

- a. a waiver of all claims by Owner against Contractor other than those arising from unsettled Liens, from defective Work appearing after final inspection or from failure to comply with the requirements of the Contract Documents or the terms of any special guarantees specified therein, and
- b. a waiver of all claims by Contractor against Owner other than those previously made in writing and still unsettled.

Contractor's obligation to perform the Work and complete the Project in accordance with the Contract Documents shall be absolute. Neither approval of any progress or final payment by Engineer, nor the issuance of a certificate of Substantial Completion, nor any payment by Owner to Contractor under the Contract Documents, nor any use or occupancy of the Project or any part thereof by Owner, nor any act of acceptance by Owner nor any failure to do so, nor any correction of defective Work by Owner shall constitute an acceptance of Work not in accordance with the Contract Documents.

47. Owner's Right to Suspend Work

Owner may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety (90) days by notice in writing to Contractor and Engineer which shall fix the date on which Work shall be resumed. Contractor shall resume the Work on the date so fixed. Contractor will be

allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if he makes a claim therefore as provided in these Contract Documents.

48. Owner's Right to Terminate Contract

If the Contractor should be adjudged a bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should persistently or repeatedly refuse or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workmen or proper material, or if he should fail to make prompt payment to subcontractors or for material or labor, or persistently disregard laws, ordinances or the instruction of the Engineer, or otherwise be guilty of a substantial violation of any provision of the Contract, then the Owner, upon the certificate of the Engineer that sufficient cause exists to justify such action, may without prejudice to any other right or remedy and after giving the Contractor and his Surety a minimum of seven (7) days from delivery of a written notice, take possession of the premises and of all materials, tools and appliances thereof and finish the Work by whatever method he may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price shall exceed the expense of finishing the Work including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If any such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the Owner. The expense incurred by the Owner as herein provided, and the damage incurred through the Contractor's default, shall be certified by the Engineer and incorporated in a Change Order.

Where the Contractor's services have been so terminated by the Owner, said termination shall not affect any right of the Owner against the Contractor then existing or which may thereafter accrue. Any retention or payment of moneys by the Owner due the Contractor will not release the Contractor from compliance with the Contract Documents.

After ten (10) days from delivery of a written notice to the Contractor and the Engineer, the Owner may, without cause and without prejudice to any other right or remedy, elect to abandon the Project and terminate the Contract. In such case, the Contractor shall be paid for all Work executed and any expense sustained plus reasonable profit.

49. Contractor's Right to Stop Work or Terminate

If, through no act or fault of Contractor the Work is suspended for a period of more than ninety (90) days by Owner or under an order of court or other public authority, or Engineer fails to act on any Application for Payment within thirty (30) days after it is submitted, or Owner fails to pay Contractor any sum approved by Engineer or awarded by arbitrators within thirty (30) days of its approval and presentation, then Contractor may, upon fifteen (15) days' written notice to Owner and Engineer, terminate the Agreement and recover from Owner payment for all Work executed and any expense sustained plus a reasonable profit. In addition, and in lieu of terminating the Agreement, if Engineer has failed to act on an Application for Payment or Owner has failed to make any payment as aforesaid, Contractor may upon fifteen (15) days' notice to Owner and Engineer stop the Work until he has been paid all amounts then due.

50. Arbitration by Mutual Consent

All claims, disputes and other matters in question arising out of, or relating to, this Agreement or the breach thereof except for claims which have been waived by the making or acceptance of final payment, may be decided by arbitration if the parties mutually agree. Any agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.

Notice of the request for arbitration shall be filed in writing with the other party to the Agreement and a copy shall be filed with Engineer. Request for arbitration shall in no event be made on any claim, dispute or other matter in question which would be barred by the applicable statute of limitations.

The Contractor will carry on the Work and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed in writing.

51. Computation of Time

When any period of time is referred to in the Contract Documents by days, it shall be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day shall be omitted from the computation.

52. Assignments

Neither the Contractor nor the Owner shall sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or of his right, title of interest herein, or his obligations thereunder, without written consent of the other party.

53. Ownership of Drawings

All Drawings, Specifications and copies thereof furnished by the Engineer are the property of the Engineer. They are not to be used on other work and, with the exception of the signed Contract set, are to be returned to the Engineer or his representative upon request, at the completion of the Work.

54. Compliance With Prevailing Wage Law (Where Applicable)

Full compliance by the Contractor and any Subcontractor as to their duties prescribed by the applicable State or Federal Minimum Wage Laws is required in the performance of Work under this Contract.

The Contractor will be required to accept liability for payment of all payroll taxes or deductions required by local and federal law, including old age pension, social security or annuities. Workmen's Compensation Insurance shall be carried to the full amounts as required by local statutes.

Incorporated within the Labor Regulations and Wage Rates is a classified list of labor positions used in this work. Opposite the positions are shown the general prevailing hourly rates of wages as ascertained for this contract.

In case it shall become necessary for the Contractor or any Subcontractor to employ on the work under this contract any person in a trade or occupation (except executive, administrative or supervisory workers) for which no wage rates are specified herein, the Contractor shall immediately notify the Engineer who will promptly thereafter furnish the Contractor with the general prevailing rates. The rates thus furnished shall be applicable for such trade or occupation from the time of initial employment of the person or persons affected and during the continuance of such employment.

The Contractor and any Subcontractor shall post and keep posted in a conspicuous place at the site of the Work a copy of the prevailing rates of wages and work hours for each classification of laborers employed in the performance of this Contract.

55. Measurement and Computation of Quantities

Computation of quantities that will be the basis for payment estimates, both monthly and final, will be made by the Engineer. In general, all payment-estimates will be checked and approved by a representative of the funding agency before payment.

No extra measurements of any kind, unless specially noted shall be allowed in measuring the Work under these Specifications; but the length, area solid contents or number only shall be considered as the basis for payment as hereinafter specified.

SECTION 00700 - GENERAL CONDITIONS

Where the computation of areas or volumes by exact geometric methods is unduly laborious or refined, the planimeter shall be held an instrument of precision and may be used in the determination of quantities upon which payments are based.

The measurements of the Engineer as to the amount of Work done shall be final and conclusive. Payments shall be made upon the Work done within the lines prescribed by the Drawings or Specifications and in accordance with the unit prices for the items under which the Work is done.

56. Project Signs

The Contractor shall erect a project sign at a prominent location on the Project. The sign shall be four feet by eight feet, two colors and shall contain the name of the Project, the Owner, the Engineer, and the Contractor. The lettering shall be approved by the Engineer prior to making the signs.

End of Section

Construction Sign

**Flemingsburg Industrial Park IV Build Ready Pad and Access
Road Grade & Drain PDI Project**

**Owner: Flemingsburg-Fleming Co. Industrial Development Authority
Flemingsburg, KY**

**Engineer: MSE of Kentucky, Inc.
Lexington, KY 41041
859-223-5694**



Contractor:

SECTION 00800 - SPECIAL CONDITIONS

1. Description of the Work and Designation of the Owner
2. Available Funds
3. Time of Completion and Liquidated Damages
4. Insurance
5. Performance and Payment Bond
6. Additional Bonds and Insurance
7. Sequence of Work
8. Site Dimensions
9. Damage to Equipment Stored and/or In Place Prior to Initial Operations
10. Equipment Rental - Charges for Extra Work
11. Salvaged Materials and Equipment
12. Sanitary Facilities
13. Utilities
14. Cash Allowances
15. Nondiscrimination in Employment
16. Minimum Wage Rates
17. Property Protection
18. Rock Excavation
19. Extra Fill Material
20. Layout of the Work
21. Conflict With or Damage to Existing Utilities and Facilities
22. Personal Liability of Public Officials
23. Blasting
24. Control of Erosion
25. Occupational Safety and Health
26. Construction Warning Signs
27. Pipeline Right-of-way
28. Responsibility for Trench Settlement
29. Permission to Use Property Other Than That Provided by Owner
30. Resolving Conflicts in Contract Documents
31. Access to the Work
32. Lubrication
33. Labor Regulations
34. Preconstruction Conference
35. Record Drawings

1. Description of the Work and Designation of the Owner

These specifications and accompanying plans describe the work to be done and the materials to be furnished for the construction of the Flemingsburg Industrial Park IV Build Ready Pad and Access Road Grade & Drain Project for the Flemingsburg-Fleming County Industrial Development Authority.

All references to the Owner in these specifications, Contract Documents and plans shall mean the Flemingsburg-Fleming County Industrial Development Authority.

2. Available Funds

The attention of all bidders is directed to the fact that the funds will be made available for the award of the contract from the Owner.

3. Time of Completion and Liquidated Damages

The time allowed for completion of the contract is one hundred twenty (120) calendar days. The time allowed for completion shall begin at midnight, local time, on the date which the Owner shall instruct the Contractor, in writing, to start work, but not later than 10 days after Notice to Proceed.

The Contract completion time stipulated above includes an allowance for an average number of inclement weather days as follows:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Precip.	7	7	9	8	8	8	8	7	6	5	6	7
Freeze	10	6	1								1	5

When number of days (including Saturdays, Sundays and Holidays) of precipitation in excess of 0.1" per day or maximum daily temperatures of 32 degrees F exceed those shown above in any month, the Contractor shall be entitled to an equal number of additional days for Contract Completion.

It is understood that time is the essence of this contract and that the Owner will sustain damages, monetary and otherwise, in the event of delay in completion of the work hereby contracted.

Therefore, if the said Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as part consideration for the awarding of this contract, to pay the Owner the amount specified in the contract, not as a penalty, but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the contract for completing the work.

The said amount is fixed and agreed upon by and between the Contractor and the Owner because of the extreme difficulty in fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain and said amount shall be retained from time to time by the Owner from current periodical estimates.

Liquidated damages are fixed at \$500 per day for each calendar day of overrun beyond the date set for completion or authorized extension thereof for the contract.

4. Insurance

Insurance is to be furnished by the Contractor for the benefit of the Owner, Contractor and subcontractors as their interests may appear. The minimum amounts of insurance coverage to be furnished under these contracts, in accordance with the applicable provisions of the General Conditions are:

- (a) Workmen's Compensation -----Statutory
- (b) Comprehensive General Liability - Including coverage for the explosion, collapse, and underground hazards where applicable; also including contractual liability and also products and/or completed operations liability coverage (no deductible clauses are acceptable for these coverages):

Bodily Injury Liability	\$1,000,000 Each Person \$3,000,000 Each Occurrence \$500,000 Aggregate Products
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Property Damage Liability	\$1,000,000 Each Occurrence \$2,000,000 General Aggregate \$1,000,000 Aggregate Products \$1,000,000 Aggregate Contractual \$3,000,000 Excess/Umbrella Property Insurance
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- (c) Comprehensive Automobile Liability - Including hired car and employers' non-ownership liability coverage:

Bodily Injury Liability	\$1,000,000 Each Person \$3,000,000 Each Occurrence \$3,000,000 Excess/Umbrella Property Insurance
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Property Damage Liability	\$1,000,000 Each Occurrence
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- (d) Builder's Risk (Building Construction) - Including coverage for fire, extended coverages, vandalism, and malicious mischief; 100% of insurable values.
- (e) Installation Floater (Non-Building Construction): 100% of insurable values.
- (f) Flood Hazard Insurance - In accordance with General Conditions.

All policies shall provide for a minimum of fifteen (15) days written cancellation notice with notice to be given both to the Owner and the Engineer. The Owner and Engineer shall be included as additional insured parties.

5. Performance and Payment Bond

The Contractor shall furnish separate performance and payment bonds issued by an approved bonding company (in accordance with the General Conditions) in an amount at least equal to one hundred (100%) percent of the contract price, as security for the faithful performance of this contract and for the payment of persons performing labor and furnishing materials in connection with this contract. These bonds shall be executed by a company authorized to do business in the State of Kentucky and shall be signed or countersigned by a Kentucky resident agent. Bonds shall remain in effect for one year after date of final acceptance of the work.

6. Additional Bonds and Insurance

Prior to delivery of the executed Agreement by the Owner to the Contractor, the Owner may require the Contractor to furnish such other Bonds and such additional insurance, in such forms and with such sureties or insurers as the Owner may require. If such other Bonds or such other insurance are specified by written instructions given prior to opening of the bids, the premium shall be paid by the Contractor; if subsequent thereto, they shall be paid by the Owner (except as otherwise provided for bonding of substitute materials or equipment).

7. Sequence of Work

Contractor shall apply their forces as necessary to complete the project within the allowed time.

8. Site Dimensions

All Contractors furnishing materials and equipment for this contract shall obtain exact dimensions at the site. Scale or figure dimensions on the drawings and details show the correct size under ideal conditions and shall not, under any circumstances, be so construed as to relieve the Contractor from responsibility for taking measurements at the site and furnishing materials or equipment of the correct size.

9. Damage to Equipment Stored and/or In Place Prior to Initial Operations

Any equipment damaged or which has been subjected to possible damage by reason of

inundation, improper storage and/or protection during the construction period of a project, shall be replaced with new equipment, or with the approval of the Engineer, be returned to the manufacturer of the equipment, or his authorized repair agency, for inspection and repair; provided, however, that such repair after inspection will place the equipment in new condition and restore the manufacturer's guarantee the same as for new equipment.

10. Equipment Rental - Charges for Extra Work

Equipment rental charges by the Contractor for rented equipment units used on "Extra Work" or "Changes in Work" as may be ordered and authorized by the Owner shall not exceed those charges listed in the latest edition of the "Green Book," compiled and distributed by Associated Equipment Distributors, 615 West 22nd Street, Oak Brook, Illinois 60523.

11. Salvaged Materials and Equipment

All materials and/or equipment to be removed from existing structures and not specifically specified to be reused shall remain the property of the Owner. Such materials and/or equipment shall be stored on site by the Contractor as directed by the Owner.

12. Sanitary Facilities

Each Contractor shall construct and maintain, in a sanitary condition, sanitary facilities for his employees and also employees of his subcontractors. At completion of the contract work, these sanitary facilities shall be properly disposed of.

13. Utilities

Obtaining utilities for construction, including power and water, shall be the responsibility of the Contractor and he shall bear the cost of all utilities used for construction. Cost of all connections and facilities for use of utilities shall be borne by the Contractor.

14. Cash Allowances

No cash allowances are included in this project. However, the Contractor is required to make labor and material allowances for unforeseen repairs, to the existing improvements as described in these specifications.

15. Nondiscrimination in Employment

During the performance of this contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, creed, color or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, creed, color or national

origin.

16. Minimum Wage Rates

If available, the prevailing minimum wage rates are contained in these specifications. However, applicable wage rates may be provided at any time before bids are received. In that event the wage rates will be provided by addendum to these specifications.

The Contractor will be required to pay not less than the higher of the State or Federal minimum wage rate for each job classification as and if set forth in these specification or in an addendum to the specifications. The stipulated wage rates represent prevailing minimum rates of pay allowable as determined by the appropriate governing agency and shall not be construed to mean that the Contractor may not have to pay higher rates to secure labor. No contract adjustment is permissible should this condition become applicable.

17. Property Protection

Care is to be exercised by the Contractor in all phases of construction to prevent damage and injury to the Owner's or other property.

In connection with work performed on "private property" (property other than that belonging to the Owner), the Contractor shall confine his equipment and stored materials to lands and rights-of-way provided for the project by the Owner and shall take every precaution to avoid damage to the private property owner's buildings, grounds and facilities.

Fences, hedges, shrubs, etc., within the construction limits shall be carefully removed, preserved and replaced when the back filling has been completed. If sod is damaged or not handled properly, it shall be replaced with new sod equal to existing sod at the Contractor's expense. Grassed areas, other than lawns, shall be graded, fertilized and seeded when construction is completed. When construction is completed the private property owner's facilities and grounds shall be restored to as good or better condition than found as quickly as possible at the Contractor's expense.

When directed by the Engineer, large trees or other facilities that cannot be replaced or preserved shall be removed by the Contractor. The Owner will assume responsibility for settling with the property owner for such loss. The Contractor shall be solely and entirely responsible for any damage to all other trees or facilities.

The Contractor, in the use of easements and rights-of-way, will comply with any and all agreements between the Owner and the property owner.

Carelessness on the part of the Contractor or his employees in leaving gates open, parking cars, trucks or vehicles in such a way as to interfere with farming operations will not be tolerated. Contractor shall use existing roads to transport pipe, materials and workmen to and from the job.

Foundations, adjacent to where an excavation is to be made below the bottom of the foundation,

shall be supported by shoring, bracing and underpinning as long as the excavation shall remain open and the Contractor shall be held strictly responsible for any damage to said foundation.

Highway rights-of-way, railroad rights-of-way, public parks, school yards and other such properties shall be considered "private properties" for the purpose of this section.

18. Rock Excavation

It is specifically noted that separate payment for solid rock excavation will not be made under this contract, all excavation being considered "unclassified."

19. Extra Fill Material

Extra fill material required to complete the finished grading to the line and grade shown on the plans shall be obtained by the Contractor at no extra cost to the Owner above that included in the unit price bid.

20. Layout of the Work

The layout of the work shall be the responsibility of the Contractor and shall be subject to checking by the Engineer. All instruments, stakes, batter boards, barricades, traffic signs, flags and other materials necessary and personnel needed for establishing and marking lines, grades and structure location during construction, shall be furnished and paid for by the Contractor. The Contractor's personnel engaged in the layout work described herein and any aides used shall be fully capable of performing the duties set out herein.

21. Conflict With or Damage to Existing Utilities and Facilities

Insofar as location data is available to the Engineers, existing underground utilities (such as water lines, sewer lines, gas lines, telephone conduits, etc.) are accurately located on the drawings. Due, however, to the approximate nature of much of this data, the location of any particular facility cannot be certified to be correct. In general, locations and elevations shown are approximate only.

Repair to existing utilities and facilities damaged by the Contractor's construction forces shall be considered as a part of the Contract covered only by the price bid for the new construction. The only exceptions to this provision, wherein extra compensation will be authorized, are relocation of an existing facility due to direct conflict with the new pipeline, and relocation (outside of limits of maximum allowable trench widths) of an existing facility presently located within the bounds of maximum allowable trench width, where necessitated for assurance against future damage due to settlement or to permit reasonable access to the new work.

Before proceeding with the work, the Contractor shall confer with all public or private companies, agencies, or departments that own and operate utilities in the vicinity of the

construction work to verify the location of and possible interference with, the existing utilities that are shown on the Plans, arrange for necessary suspension of service and make arrangements to locate and avoid interference with all utilities (including house connections) that are not shown on the Plans.

Where the existing utilities must be disturbed during construction under this contract, their operation and function shall be maintained by the Contractor to such a degree that service to customers will be interrupted for minimum time periods only. Such disturbances and any maintenance use of these lines shall constitute no cost to the Owner. The Owner shall be notified of interruptions in sufficient time to prepare for them and shall agree to the hour, date and duration of them before they are undertaken.

Should shutdowns in service be in excess of the time of duration agreed upon and such excessive shutdown time be due to the Contractor's negligence, faulty work and/or inability to perform, then and in that event, the Contractor shall be held liable to the Owner, by reason of such excessive shutdown periods.

When existing utilities or appurtenant structures, either underground or above ground, are encountered, they shall not be displaced or disturbed unless necessary and in such case shall be replaced in as good or better condition that found, as quickly as possible. Temporary relocation and replacement of all utilities and appurtenant structures to accommodate the construction work shall be at the Contractor's expense and permanent relocation of such facilities as described herein to accommodate the construction work shall be at the Owner's expense, unless such temporary or permanent relocation and replacement is by statute or agreement the responsibility of the Owner. It is expected that the Contractor will be diligent in his efforts and use every possible means to locate existing utilities.

Payment for necessary disconnection and reconnection of utility services shall be included as a part of the Contractor's bid and no extra compensation will be made for same.

The Contractor shall at all times maintain on hand an adequate supply of repair materials and tools with which to make repair to damaged water, gas and sewer lines. Should the Contractor inadvertently damage existing utilities, he shall make immediate repair thereto and in no event shall he leave the site before such repair has been made and proven to be successful. Repair to damaged utilities must meet the requirements of the agency in charge of that particular utility.

The intent of this article is to assure compensation to the Contractor for changes in existing utilities reasonably necessary and at the same time, to protect the Owner against excessive damage due to carelessness of the Contractor's construction force.

22. Personal Liability of Public Officials

In carrying out any of the provisions of the Contract or in exercising any power or authority

granted to them thereby, there shall be no personal liability upon the Engineer, or its authorized agents or employees, or upon any other officer or employee of the Owner, it being understood that in such matters they act as the agent and representative of that Owner.

23. Blasting

All blasting operations shall be conducted in strict accordance with Kentucky Revised Statutes 351.320 to 351.340 and the rules and regulations promulgated under KRS 351.320 to 351.340, effective October 6, 1972, which shall be deemed to be included in these Specifications the same as though herein written out in full. The Contractor shall also comply with applicable municipal ordinances, Federal safety regulations and Section 9 of the Manual of Accident Prevention in Construction published by the Associated General Contractor's of America, Inc. All explosives shall be stored in conformity with said ordinances, laws and safety regulations. No blasting shall be done within five feet of any water mains, except with light charges of explosives. Any damage done by blasting is the responsibility of the Contractor and shall be promptly and satisfactorily repaired by him.

To implement these requirements and unless otherwise required by ordinance or law, each excavation crew shall be provided with two metal boxes equipped with suitable locks. One of these boxes shall be for storing explosives and one for caps. The boxes shall always be locked except when in actual use. They shall be painted a bright color and stenciled with appropriate warning signs. At night explosives and caps shall be stored in separate magazines.

All shots shall be covered with heavy timber, steel or rope blasting mats to prevent flying material. Unless otherwise specified or directed, delay caps shall be used to reduce earth vibration and noise. In sparsely populated areas, the Engineer may permit the Contractor to use regular type caps.

The Contractor shall keep a blasting log and, for each blast, shall record the date, time of blast, number of holes, type of explosive, number of delays, amount of charge per delay, stemming and number and type of caps. An inventory of all explosives handled and stored shall also be kept. Blasting operations shall be covered by comprehensive general liability insurance or separate public liability insurance to cover blasting as set forth in the General Conditions.

24. Control of Erosion

The Contractor shall be responsible for control of siltation and erosion from the project work. Control shall include all necessary ditching, check dams, mulching, etc. to prevent deposition of materials in roadside ditches. The Owner shall incur no extra costs from such work.

25. Occupational Safety and Health

It shall be the Contractor's responsibility to be informed of and comply with all Kentucky

Department of Labor, Division of Occupational Safety and Health requirements for this type of construction. He shall also comply with all reporting requirements of the Occupational Safety and Health Law. The Contractor shall provide adequate protection against accidents due to special hazards caused by blasting, deep trenches, excavations, heavy equipment or vehicle operation, electrical work, work in dangerous atmospheres, work above the ground, traffic control, work with augering and drilling equipment and any other construction work which he might undertake as a part of this project.

The Contractor shall provide safety controls for protection of the life and health of employees. He will utilize precautionary methods for the prevention of damage to property, materials, supplies and equipment and for avoidance of work interruptions in the performance of this contract. In order to provide such safety controls aforesaid, the Contractor shall comply with all pertinent provisions of the Kentucky Safety Standards of the Division of Occupational Safety, Department of Labor, that are in effect at the time this contract is entered into and during the period in which the contract is to be performed. The Contractor shall also take or cause to be taken such additional measures as the Division of Occupational Safety may determine to be reasonably necessary for the purpose.

The Contractor shall maintain an accurate record of, and shall report to the Division of Occupational Safety in the manner and on the forms prescribed by the Division; exposure date and all accidents resulting in death, traumatic injury, occupational disease and/or damage to property, materials, supplies and equipment incident to work performed under this contract.

The Division of Occupational Safety will notify the Contractor through the Owner of any noncompliance with the foregoing provisions and the action to be taken. The Contractor shall, after receipt of such notice, immediately correct conditions. Such notice when delivered to the Contractor or his representative at the site of the work shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the work until satisfactory or corrective action has been taken. Failure or refusal to comply with the order will be grounds for stopping all payments due under the contract to the Contractor. No part of the time lost due to any such stop order shall be made the subject of claim or extension of time or for excess cost or damages to the Contractor.

Compliance with the provisions of the foregoing sections by subcontractors will be the responsibility of the prime Contractor.

The Contractor shall provide necessary first aid facilities and employees trained to provide first aid as required by the Occupational Safety and Health Law. In addition to the reporting requirements of other agencies, the Contractor must report promptly in writing to the Engineer all accidents whatsoever arising out of, or in connection with, the performance of the work, whether on or adjacent to the site, which caused death, personal injury, or property damages, giving full details and statements of witnesses. In addition, if death or serious injuries or serious damages are caused, such shall be reported to both the Engineer and the Owner.

26. Construction Warning Signs

The Contractor shall provide construction warning signs for each location where he is working in the highway right-of-way. Safety rules, including size, type and placement of construction signs, shall be equal to those required by the Kentucky Department of Highways.

27. Pipeline Right-of-way

The Owner will attempt to obtain all pipeline right-of-way before construction is begun. However, the Contractor must be prepared to work in right-of-way which have been acquired and shall not be entitled to a time extension due to delay over lack of particular right-of-way unless he has been provided no other place to work.

28. Responsibility for Trench Settlement

Where the pipelines installed under this contract are located within existing or proposed street right-of-way the Contractor shall be responsible for any settlement of the street surfacing, curbs, or sidewalks caused by the pipeline construction, that occurs within one year after the final acceptance of this contract. Repair of any damage caused by settlement shall meet the approval of the Owner.

29. Permission to Use Property Other Than That Provided by Owner

Should the Contractor desire or elect to use, pass over and/or encroach on private property title or right-of-way for a specific purpose, he shall obtain such rights and permission at his own expense and risk.

30. Resolving Conflicts in Contract Documents

Anything called for in the specifications and not shown on the drawings or shown on the drawings and not called for in the specifications shall be included in the Contractor's work, the same as if included in both. Where the details and general drawings do not agree, the Contractor shall notify the Engineer at least five (5) days before the date of the receipt of bids and the Engineer will have the Owner issue an addendum to all Contractors as to which of the two methods of construction shall be followed. Failure to make this determination shall make the Contractor subject to furnishing either method as may be later called for by the Engineer. In case of discrepancies between the various parts of the plans and the specifications, the detailed drawings shall take precedence over the general layouts or elevations and the written specifications shall take precedence over all other documents.

Figure dimensions on the drawings shall govern over scale dimensions. Work, materials or equipment described in words which so applied have a well-known technical or trade meaning shall be deemed to refer to such recognized standards.

In resolving conflicts, errors and discrepancies in the Contract Documents, the documents shall be given precedence in the following order: Agreement, Modifications, Addenda, Funding Agency Specifications or Contract Documents, Special Conditions, Special Provisions, Supplementary General Conditions, Information for Bidders, General Conditions, Technical Specifications and Drawings.

31. Access to the Work

The Engineer and the Owner shall have access to the work wherever it is in preparation or progress, and the Contractor shall provide proper facilities for such access and inspection.

32. Lubrication

The Contractor shall make suitable provision for the proper lubrication of all equipment furnished under this Contract. Accessible grease fittings shall be provided where required. A supply of oil, grease and other lubricants of proper quality, as recommended by the manufacturer of the equipment, shall be furnished. Lubricants shall be furnished in their original, unopened containers, in sufficient quantity for initial fillings and for at least one (1) year of operation.

33. Labor Regulations

All public works projects bid and constructed in the State of Kentucky are subject to the provisions of Chapter 337 of the Kentucky Revised Statutes entitled Wages and Hours. In addition, if the project to which these specifications apply is funded in whole or in part by a Federal grant program whereby the U.S. Department of Labor is required to prescribe predetermined prevailing minimum wages, compliance with the applicable Federal labor regulations is also required.

All Contractors and subcontractors on the work will be required to comply with all applicable provisions of State and Federal regulations as outlined in the Supplemental General Conditions.

34. Pre construction Conference

A pre-construction conference may be held prior to issuance of notice to proceed. The Contractor shall be represented by at least one (1) principal of the firm and the job superintendent. The Contractor shall at that time present the construction schedule, progress payment format and estimates, any available subcontractor approval requirements, required insurance and any other documents deemed necessary.

35. Record Drawings

The Contractor shall keep an accurate record of the location, size and material for all piping and changes in dimensions, and any other variations between the work actually provided and that shown on the Contract Drawings. The representation of such variations shall conform to

standard drafting practice and shall include such supplementary notes, legends and details as may be necessary for legibility and clear portrayal of the construction. This requirement shall not be deleted regardless of the record keeping practices of the Engineer or the Owner.

End of Section

SECTION 01005 - ADMINISTRATIVE PROVISIONS

PART 1. GENERAL

1.1 Requirements Included

- A. Title of Work, and Type of Contract.
- B. Work Sequence.
- C. Applications for Payment
- D. Coordination.
- E. Field Engineering.
- F. Reference Standards.

1.2 Work Covered by Contract Documents

- A. Work of this Contract is comprised of Build Ready Site Preparation for Lot 12 in the Greer Industrial Park.

1.3 Contract Method

Construct the Work under a single unit price contract.

1.4 Work Sequence

- A. Coordinate construction schedule and operations with Engineer.

1.5 Applications for Payment

- A. Submit five copies of each application under procedures of Section 01300 on Application for Payment form supplied by the Engineer.
- B. Content and Format: That specified for Schedule of Values in Section 01300.

1.6 Coordination

- A. Coordinate work of the various Sections of Specifications to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items installed later.
- B. Verify characteristics of elements of interrelated operating equipment are compatible; coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

1.7 Field Engineering

- A. Provide field engineering services; establish grades, lines, and levels, by use of recognized engineering survey practices.
- B. Control datum for survey is shown on Drawings. Locate and protect control and reference points.

SECTION 01005 - ADMINISTRATIVE PROVISIONS

1.8 Reference Standards

- A. For products specified by association or trade standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. The date of the standard is that in effect as of the Bid date except when a specific date is specified.
- C. Obtain copies of standards when required by Contract Documents. Maintain copy at jobsite during progress of the specific work.

PART 2. PRODUCTS

Not Used

PART 3. EXECUTION

Not Used

End of Section

SECTION 01200 - PROJECT MEETINGS

PART 1. GENERAL

1.1 Requirements Included

- A. Contractor participation in pre-construction conferences, progress meetings, pre-final inspection and final inspection.
- B. Contractor administration of pre-installation conferences and pre-final inspection.

1.2 Related Requirements

- A. Section 01300 - Submittals: Progress Schedules.
- B. Section 01300 - Submittals: Shop drawings, product data, and samples.
- C. Section 01400 - Quality Control.
- D. Section 01700 - Contract Close-out: Project record documents.
- E. Section 01700 - Contract Close-out: Operation and maintenance data.

1.3 Pre-construction Conferences

- A. Engineer will administer pre-construction conference for execution of Owner-Contractor Agreement and exchange of preliminary submittals.

1.4 Progress Meetings

- A. Attend progress meetings.
- B. Review of Work progress, status of progress schedule and adjustments thereto, delivery schedules, submittals, maintenance of quality standards, pending changes and substitutions, and other items affecting progress of Work.

1.5 Pre-installation Conferences

- A. When required in individual specification Section, convene a pre-installation conference prior to commencing work of the Section.
- B. Require attendance of entities directly affecting, or affected by, work of the Section.
- C. Review conditions of installation, preparation and installation procedures, and coordination with related work.

1.6 Pre-final Inspection

- A. When work is substantially complete, convene a pre-final inspection.
- B. Require attendance of Owner, Engineer and funding agency officials.
- C. Review installation, cleanup and operation of work.
- D. Review record drawings, operation and maintenance materials, and other close-out documents.

1.7 Final Inspection

- A. When punch list work is complete, attend a final inspection.
- B. Review completion of punch list items.

PART 2. PRODUCTS

Not Used

PART 3. EXECUTION

Not Used

End of Section

SECTION 01300 - SUBMITTALS

PART 1. GENERAL

1.1 Requirements Included

- A. Procedures.
- B. Construction Progress Schedules.
- C. Shop Drawings.
- D. Product Data.
- E. Manufacturer's Instructions.
- F. Manufacturer's Certificates.
- G. Record Drawings.

1.2 Related Requirements

- A. Section 01005 - Administrative Provisions: Applications for Payment.
- B. Section 01400 - Quality Control: Testing laboratory reports.
- C. Section 01400 - Quality Control: Manufacturers' field service reports.
- D. Section 01700 - Contract Close-out: Close-out submittals.

1.3 Procedures

- A. Deliver submittals to Engineer at address listed on cover of Project Manual.
- B. Identify Project, Contractor, major supplier; identify pertinent Drawing sheet and detail number, and Specification Section number, as appropriate. Identify deviations from Contract Documents. Provide space for Contractor and Engineer review stamps.
- C. Submit initial progress schedule in duplicate within 15 days after date established in Notice to Proceed. After review by Engineer revise and resubmit as required. Submit revised schedule with each second Application for Payment, reflecting changes since previous submittal.
- D. Comply with progress schedule for submittals related to Work progress. Coordinate submittal of related items.
- E. After Engineer review of submittal, revise and resubmit as required, identifying changes made since previous submittal.
- F. Distribute copies of reviewed submittals to concerned persons. Instruct recipients to promptly report any inability to comply with provisions.

1.4 Construction Progress Schedules

- A. Submit horizontal bar chart or network analysis system using the critical path method, showing complete sequence of construction by activity, identifying work of separate stages and other logically grouped activities. Show projected percentage of completion for each item of Work as of time of each Application for Progress Payment.
- B. Show submittal dates required for shop drawings, product data, and samples, and product delivery dates.

1.5 Shop Drawings

A. Submit the number of copies which Contractor requires, plus two copies which will be retained by Engineer.

1.6 Product Data

A. Mark each copy to identify applicable products, models, options, and other data; supplement manufacturers' standard data to provide information unique to the Work.

B. Submit the number of copies which Contractor requires, plus two copies which will be retained by Engineer.

1.7 Manufacturer's Instruction

A. When required in individual Specification Section, submit manufacturer's printed instructions for delivery, storage, assembly, installation, startup, operation, maintenance, adjusting, and finishing, in quantities specified for product data.

1.8 Record Drawings

A. Maintain accurate records of any variations between the work actually provided and that shown on the Contract Drawings. The representation of such variations shall conform to standard drafting practice and shall include such supplementary notes, legends and details as may be necessary for legibility and clear portrayal of the construction.

B. Submit one copy of all such records to the Engineer.

PART 2. PRODUCTS

Not Used

PART 3. EXECUTION

Not Used

End of Section

SECTION 01400 - QUALITY CONTROL

PART 1. GENERAL

1.1 Requirements Included

- A. General Quality Control.
- B. Workmanship.
- C. Manufacturer's Instructions.
- D. Manufacturer's Certificates.
- E. Manufacturers' Field Services.

1.2 Related Requirements

- A. Document 00700 - General Conditions: Inspection and testing required by governing authorities.
- B. Section 01005 - Administrative Provisions: Applicability of specified reference standards.
- C. Section 01300 - Submittals: Submittal of Manufacturer's Instructions.

1.3 Quality Control, General

- A. Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

1.4 Workmanship

- A. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. Perform work by persons qualified to produce workmanship of specified quality.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1.5 Manufacturer's Instructions

- A. Comply with instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

1.6 Manufacturer's Certificates

- A. When required by individual Specifications Section, submit manufacturer's certificate, in duplicate, that products meet or exceed specified requirements.

1.7 Manufacturer's Field Services

- A. When specified in respective Specification Sections, require supplier or manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, startup of equipment, test, adjust and balance of equipment as applicable, and to make appropriate recommendations.
- B. Representative shall submit written report to Engineer listing observations and recommendations.

PART 2. PRODUCTS

Not Used

PART 3. EXECUTION

Not Used

End of Section

SECTION 01420 - INSPECTION OF THE WORK

PART 1. GENERAL

1.1 The Engineer's Duties

It is not the Engineer's function to supervise or direct the manner in which the work under this Contract is carried on or conducted.

The Engineer is not responsible for construction means, methods, techniques, sequences, or procedures, nor for safety precautions and programs in connection with the work.

The Engineer will not be responsible for the Contractor's failure to carry out the work in accordance with the Contract Documents.

1.2 The Contractor's Duties

The Contractor shall perform no work in the absence of the Engineer or his assistants, without prior approval.

The Contractor shall use no material of any kind until it has been inspected and accepted by the Engineer.

The Contractor agrees that any method or procedure, which in the opinion of the Engineer does not achieve the required results or quality of the work specified, shall be discontinued immediately upon the order of the Engineer.

The Contractor shall remedy all materials or workmanship found at any time to be defective or not of the quality required by the Plans and Specifications, regardless of previous inspection of the materials and workmanship.

The Engineer's inspection does not relieve the Contractor from any obligation to perform the work specified, strictly in accordance with the Drawings and Specifications. Any work not so constructed shall be removed and made good by the Contractor free of all expense to the Owner.

Upon completion, the Contractor shall have Record Drawings and certified as to their completeness and correctness by the Resident Inspector and delivered to the Engineer for incorporation in the Drawings.

At Contract close-out, deliver Record Documents to the Engineer for the Owner.

Accompany submittal with transmittal letter in duplicate, containing:

Date. Project title and number. Contractor's name and address. Title and number of each Record Document. Signature of the Contractor or his authorized representative.

PART 2. PRODUCTS

Not Used.

PART 3. EXECUTION

Not Used.

End of Section

SECTION 01500 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1. GENERAL

1.1 Requirements Included

- A. Barriers
- B. Protection of Installed Work.
- C. Security.
- D. Water Control.
- E. Cleaning During Construction.
- F. Project Identification.

1.2 Related Requirements

- A. Section 01005 - Administrative Provisions: Work sequence. Contractor use of premises.
- B. Section 01700 - Contract Close-out: Final cleaning.

1.3 Barriers

- A. Provide as required to prevent public entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide barricades and covered walkways as required by governing authorities for public rights-of-way and for public access to existing building or site.

1.4 Protection of Installed Work

- A. Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.
- B. Where applicable, follow project traffic control plan as required by state or local authorities having jurisdiction over roads or streets. Provide required signage, markings, cones, barriers, flaggers or other controls as may be required by the jurisdictional agency.

1.5 Cleaning During Construction

- A. Control accumulation of waste materials and rubbish; periodically dispose of off-site.

1.6 Project Identification

- A. Provide Project identification sign of wood frame and exterior grade plywood construction, painted with required design and colors. List title of Project, names of Owner, Engineer, Contractor.
- B. Erect on site at location established by Engineer.

1.7 Removal

- A. Remove temporary materials, equipment, services, and construction prior to Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary facilities.

PART 2. PRODUCTS

SECTION 01500 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

Not Used

PART 3. EXECUTION

Not Used

End of Section

SECTION 01700 - CONTRACT CLOSE-OUT

PART 1. GENERAL

1.1 Requirements Included

- A. Close-out Procedures.
- B. Project Record Documents.
- C. Operation and Maintenance Data.
- D. Warranties and Bonds.
- E. Spare Parts and Maintenance Materials.

1.2 Related Requirements

- A. Document 00700 - General Conditions: Fiscal provisions, legal submittals, and other administrative requirements.
- B. Section 01500 - Construction Facilities and Temporary Controls: Cleaning during construction.

1.3 Close-out Procedures

- A. Comply with procedures stated in General Conditions of the Contract for issuance of Certificate of Substantial Completion.
- B. When Contractor considers Work has reached final completion, submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's inspection.
- C. In addition to submittals required by the conditions of the Contract, provide submittals required by governing authorities, and submit a final statement of accounting giving total adjusted Contract Sum, previous payments, and sum remaining due.
- D. Engineer will issue a final Change Order reflecting approved adjustments to Contract Sum not previously made by Change Order.

1.4 Project Record Documents

- A. Store documents separate from those used for construction.
- B. Keep documents current; do not permanently conceal any work until required information has been recorded.
- C. At Contract close-out, submit documents with transmittal letter containing date, Project title, Contractor's name and address, list of documents, and signature of Contractor.

1.5 Operation and Maintenance Data

- A. Provide data for pump stations.
- B. Submit two sets prior to final inspection, bound in 8-1/2 x 11 inch (216 x 279 mm) three-ring side binders with durable plastic covers.

1.6 Warranties and Bonds

A. Provide duplicate, notarized copies. Execute Contractor's submittals and assemble documents executed by subcontractors, suppliers, and manufacturers. Provide table of contents and assemble in binder with durable plastic cover.

B. Submit material prior to final application for payment. For equipment put into use with Owner's permission during construction, submit within 10 days after first operation. For items of Work delayed materially beyond Date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

1.7 Spare Parts and Maintenance Materials

A. Provide products, spare parts, and maintenance materials in quantities specified in each Section, in addition to that used for construction of Work. Coordinate with Owner, deliver to project site and obtain receipt prior to final payment.

PART 2. PRODUCTS

Not Used

PART 3. EXECUTION

Not Used

End of Section

SECTION 01720 - PROJECT RECORD DOCUMENTS

PART 1. GENERAL

1.1 Work Included

The Contractor shall maintain at the site for the Owner one record copy of:

- A. Drawings.
- B. Specifications.
- C. Addenda.
- D. Change orders and other modifications to the Contract.
- E. Engineer field orders or written instructions.
- F. Approved shop drawings, product data and samples.
- G. Field test records.

1.2 Related Requirements

- A. Section 01200 - Project Meetings
- B. Section 01340 - Shop Drawings, Product Data and Samples
- C. Section 01500 - Construction Facilities and Temporary Controls

1.3 Recording

- A. Each document shall be labeled "PROJECT RECORD" in large printed letters.
- B. Record information shall be kept current with construction progress.

1.4 Submittals

- A. Sketches showing the "Record" information shall be provided monthly to the Engineer and submitted with the partial pay request. Copies of quality control test results notes shall be supplied weekly and all test results shall be submitted with close-out documents.
- B. Upon completion, the Contractor shall have Record Drawings and certified as to their completeness and correctness by the Resident Inspector and delivered to the Engineer for incorporation in the Drawings.
- C. At Contract close-out, the Contractor shall deliver Record Documents to the Engineer for the Owner.
- D. The Contractor shall accompany the submittal with a transmittal letter containing:
 - 1. Date.
 - 2. Project title and number.
 - 3. Contractor's name and address.
 - 4. Title and number of each Record Document.
 - 5. Signature of the Contractor or his authorized representative.

PART 2. PRODUCTS

Not Used.

PART 3. EXECUTION

Not Used.

End of Section

SECTION 02100 - EROSION CONTROL

PART 1. GENERAL

1.1 Work Included

Submit KPDES Notice of Intent (NOI) and all follow-up information. Take responsibility for locating, furnishing, installing, and maintaining temporary sediment and erosion control best management practices for earth disturbing activity areas and developing a Best Management Practices (BMP) Plan using good engineering practices as required by the Kentucky Pollutant Discharge Eliminating System (KPDES) Permit. Make and record inspections of BMPs and areas as required by the KPDES Permit. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other Federal, State or Local agencies, adhere to the more restrictive laws, rules, or regulations. A template for the Contractor's use in preparing the BMP Plan is supplied in these documents.

1.2 Related Work

- A. Section 02110 - Site Clearing
- B. Section 02200 - Earth and Rock Work
- C. Section 02936 - Seeding

PART 2. PRODUCTS

Not used

PART 3. EXECUTION

As the permittee, submit the KPDES Notice of Intent (NOI) form to the Division of Water. Additionally, delegate in writing to Manager, KPDES Branch, who will have signature authority for reports. Provide the Engineer a copy of the NOI and a BMP Plan to represent and warrant compliance with the Kentucky Division of Water (KDOW) KPDES Permit, related rules, and specifications prior to starting work.

Locate, furnish, install, and maintain temporary sediment and erosion control best management practices (BMP) to represent and warrant compliance with the Clean Water Act, (33 USC Section 1251 et seq.), the 404 permit, the 401 Water Quality Certification, local government agency requirements, and other related rules and permits until the project has a formal release issued.

Provide the Engineer a copy of all weekly and rainfall event inspections as they are completed. Ensure all reports are signed by the delegated authority. Keep a current BMP Plan and all inspection records available for public inspection as required by the KPDES Permit.

These provisions survive the completion and/or termination of the contract. The following provisions must be followed:

1. Take full responsibility and make all corrections when a governmental agency or a local governmental authority finds a violation of the above noted requirements; that the BMPs are incomplete; that the BMP Plan is incomplete; or that the implementation of the BMP Plan is not being performed correctly or completely.
2. Make payment to the Owner for the full amount, within 10 Calendar Days of notification, when a governmental agency or a local governmental authority furnishes an assessment, damage judgment or finding, fine, penalty, or expense for a violation of the above noted requirements; the BMPs being incomplete; or the BMP Plan being incomplete or its implementation not being performed correctly or completely. The Owner may withhold the amount of money requested for the above from the next pay estimate and deliver that sum to the governmental agency or local governmental authority issuing the assessment, damage judgment or finding, fine, penalty or expense.
3. Indemnify and hold harmless the Department, and reimburse the Department for any assessments, damage judgment or finding, fine, penalty, or expense as a result of the failure of performing this portion of the Contract. The Owner may withhold the amount of any assessments, damage judgments or finding, fine, penalty or expense from the next pay estimate.

4. The Owner will find the Contract in default if a governmental agency or a local governmental authority furnishes a stop work order for any of the following: a violation of the above noted requirements, that the BMPs are incomplete, that the BMP Plan is incomplete, that the implementation of the BMP Plan is not being performed correctly or completely.

5. When the Owner or any government regulatory agency finds a violation of the above noted requirements, or that the BMPs are incomplete, or that the "BMP Plan is incomplete or that the implementation of the BMP Plan is not being performed correctly or completely, correct and mitigate the conditions within 48 hours of notification by the Owner or regulatory agency. Failure to correct non-compliant site conditions will result in the Owner applying a penalty of \$500 per day until corrective actions are completed.

Upon completion of the project, provide the Engineer with a copy of the submitted KPDES Notice of Termination (NOT) form. Retain all records for 2 years.

6. Maintenance of all BMPs at the site will be handled by a Contractor's employee or sub-contractor, who has been trained on construction site BMPs at workshops sponsored by the KY DOW and the Kentucky Erosion Protection and Sediment Control (KEPSC) Program. Other workers on-site will be trained in BMP installation, maintenance, and good housekeeping by this employee or sub-contractor.

These are the inspection and maintenance practices that will be used to maintain erosion and sediment controls:

- Areas at final grade will be seeded and mulched within 14 days.
- All measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of being reported. This information will be logged on the SWPPP/BMP Plan.
- Silt fences will be inspected for bypassing, overtopping, undercutting, depth of sediment, tears, and to ensure attachment to secure posts. Bypasses will be repaired immediately.
- Built-up sediment will be removed from behind the silt fence before it has reached halfway up the height of the fence.
- The inlet sediment protection devices will be inspected for depth of sediment, and built-up sediment will be removed when it impairs flow into the inlet and at the end of the job.
- Diversion dikes and berms will be inspected and any breaches promptly repaired. Areas that are eroding or scouring will be repaired and re-seeded / mulched as needed.
- Temporary and permanent seeding and mulching will be inspected for bare spots, washouts, and healthy growth. Bare or eroded areas will be repaired as needed.

7. Inspection Procedures (Stormwater, Erosion, and Sediment Control Inspection Practices). Inspection of all BMPs at the site will be handled by the Contractor's qualified employee or sub-contractor, who has been trained on inspecting construction site BMPs at workshops sponsored by the KY DOW and the Kentucky Erosion Protection and Sediment Control (KEPSC) Program.

- All erosion prevention and sediment control measures will be inspected at least once each week and following any rain of one-half inch or more.
- The Contractor's erosion control inspector will train three other people who will be responsible for assisting in the inspections and installing, maintaining, and repairing the controls on the site.
- Inspection reports will be written, signed, dated, and kept on file for two years.

End of Section

**Special Note for Erosion Prevention and Sediment Control
Flemingsburg Industrial Park IV Build Ready Pad and Access Road Grade & Drain**

The contractor shall be responsible for filing the Kentucky Pollution Discharge Elimination System (KPDES) KYR10 permit Notice of Intent (NOI) with the Kentucky Division of Water (DOW). The NOI shall name the contractor as the Facility Operator and include the Owner Contract ID Number for reference.

The Contractor shall perform all temporary erosion/sediment control functions including: providing a Best Management (BMP) Plan, conducting required inspections, modifying the BMP plan documents as construction progresses and documenting the installation and maintenance of BMPs in conformance with the KPDES KYR10 permit effective on August 1, 2009 or a permit reissue to replace that KYR10 permit. This work shall be conducted in conformance with the requirements of Section 213 of KYTC 208 Department of Highway, Standard Specifications for Road and Bridge Construction.

In addition to the requirements of Section 213.03.03, paragraph 2, the Engineer may conduct inspections as needed to verify compliance with Section 213 of KYTC 2019 Department of Highway, Standard Specification for Road and Bridge Construction. The Engineer's inspections shall be performed a minimum of once per month and within seven days after a storm of ½ inch or greater. Copies of the Engineer's inspections shall not be provided to the Contractor unless improvements to the BMP's are required. The contractor shall initiate corrective action within 24 hours of any reported deficiency and complete the work within 5 days. The Engineer shall use Form TC 63-61 A for this report. Inspection performed by the Engineer do not relieve the Contractor of any responsibility for compliance with the KPDES permit.

Contrary to Section 213.05, bid items for temporary BMPs may not be listed and will be replaced with one lump sum item for their services. Payment will be prorated based on the Project Schedule as submitted by the Contractor and as agreed by the Engineer.

The contractor shall provide the Engineer copies of all documents required by the KPDES permit at the time they are prepared.

The contractor shall be responsible for the examination of the soils to be encountered and make his own independent determination of the temporary BMPs that will be required to accomplish effective erosion prevention and sediment control.

The Contractor shall be responsible for filling the KPDES permit Notice of Termination (NOT) with the Kentucky DOW. The NOT shall be filed after the Engineer agrees that the project is stabilized or the project has been formally accepted.

SECTION 02110 - SITE CLEARING

PART 1. GENERAL

1.1 Work Included

- A. Furnish all labor and equipment required and perform all clearing, grubbing and stripping of topsoil complete as shown on the Drawings and as specified herein.
- B. Protect existing improvements and vegetation indicated to remain.

1.2 Related Work

- A. Section 02200 - Earth and Rock Work.

PART 2. PRODUCTS

Not used.

PART 3. EXECUTION

3.1 Protection

- A. Protect existing improvements, bench marks, monuments and other reference points.
- B. Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning of bark, piling construction materials or excavated materials within drip line, excess traffic or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to remain.

3.2 Site Clearing

- A. Remove trees, shrubs, grass and other vegetation, improvements, or obstructions, interfering with installation of new construction. All stumps, roots, and root clusters shall be grubbed out to a depth of at least two feet below subgrade elevation.
- B. Strip topsoil to whatever depths encountered in a manner to prevent mixing with subsoil or other material.

3.3 Removal

- A. Remove waste materials and unsuitable topsoil from to location designated by the Engineer.

End of Section

SECTION 02200 - EARTH AND ROCK WORK

PART 1. GENERAL

1.1 Work Included

- A. This section includes all labor, materials, equipment, and related items to complete all earth and rock work.
- B. The extent of earth and rock work is shown on drawings. The following work is included:
 1. Strip top soil and vegetation from the work area.
 2. Undercut the pad area as shown on the drawing.
 3. Perform earthwork to achieve the required grades. Re-use suitable undercut materials by re-compacting in layers in the undercut excavation.
 4. Establish and maintain horizontal and vertical ground control throughout the work.
 5. Locate and clearly mark all utilities (if any) on or adjacent to the site.

1.2 Related Work Specified Elsewhere

- A. Section 02100 - Erosion Control
- B. Section 02110 - Site Clearing
- C. Section 02936 - Seeding

1.3 Excavation Classification

- A. All mass, structural, and trench excavation shall be considered unclassified. No adjustments will be allowed to the contract price for rock encountered during mass or structural excavation.

1.4 Quality Assurance

- A. Codes and Standards: Perform earth and rock work in compliance with applicable requirements of governing authorities having jurisdiction. Applicable references include the following:
 - ASTM D422 Particle Size Analysis of Soils.
 - ASTM D423 Test for Liquid Limit of Soils.
 - ASTM D424 Test for Plastic Limit and Plasticity Index of Soils.
 - ASTM D698 Laboratory Compaction Characteristics of Soil Using Standard Effort
 - ASTM D3017 Moisture content of Soil Aggregates in Place by Nuclear Methods (Shallow Depth).
- B. Testing and Inspection Service: A testing laboratory will be employed using the allowance in the bid, to perform soil testing and inspection services for quality control testing during earth and rock work operations. Testing laboratory employed is to observe, test and report to the Engineer that the compaction requirements specified herein have been obtained.

1.5 Submittals

- A. Test Reports-Excavating: Coordinate and schedule in a timely manner the following quality related items. The following reports shall be submitted directly to the Engineer from the testing services, with copy to the Contractor:
 - Test reports on borrow material.
 - Field density test reports of sufficient number to verify compaction of structural fill.
 - One optimum moisture-density curve for each type of soil encountered. Determine particle size, liquid limit, plastic limit, plasticity index and maximum density of each type of soil.
 - Observe proof-rolling.

1.6 Job Conditions

- A. Site Information. Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that the Owner will not be responsible for interpretations or conclusions drawn by the Contractor. The data is made available for the convenience of the Contractor and is not guaranteed to represent all condition that may be encountered. No claim for extra compensation, or for extension of time, will be allowed on account of subsurface conditions inconsistent with the data shown. Additional test borings and other site examination and exploratory operations may be made by Contractor at no cost to Owner. Notify Owner prior to making any subsurface exploration.
- B. Groundwater. Groundwater may be encountered during the excavation. Control the ground water to a level at least three feet below the top of the subgrade or bottom of the excavation as appropriate.
- C. Explosives. Blasting shall only be conducted by licensed blasters and shall be in accordance with state and local requirements, and after conducting a thorough pre-blast survey.
- D. Protection of Persons and Property. Barricade open excavations occurring as part of this work and post with warning lights.
- E. Bench Marks and Monuments. Maintain carefully all bench marks, monuments and other reference points. If disturbed or destroyed, replace as directed at no cost to the owner.
- F. Notify the Engineer 48 hours prior to the beginning of any excavation work.

PART 2. PRODUCTS

2.1 Materials

- A. Satisfactory soil. Satisfactory soils are materials complying with Unified Soil Classification System (USCS), ASTM D 2487-93, soil classification group SP, SM, SC, ML, MH and CL.

PART 3. EXECUTION

3.1 Excavation

- A. Excavation consists of removal and disposal of material encountered when establishing required finish grade elevations. For the purpose of this contract, mass, structural and trench excavation of all materials shall be considered unclassified. Adjustments for rock or similar materials will not be considered.
- B. Unauthorized excavation. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Engineer.
 - Unauthorized excavation, as well as remedial work directed by Engineer, shall be at Contractor's expense.
 - Backfill and compact unauthorized excavations, as specified for authorized excavations of same classification, unless otherwise directed by Engineer.

- C. Additional Excavation. When excavation has reached required subgrade elevations, notify Engineer who will make an inspection of conditions.
- If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed by Engineer.
 - Removal of unsuitable bearing material and its replacement as directed will be paid on basis of contract conditions relative to changes in work.
- D. Stability of Excavations. Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restriction or stability of material excavated. Maintain sides and slopes of excavations in safe condition until completion of backfilling.
- E. Shoring and Bracing. Provide materials for shoring and bracing, such as sheet piling, uprights, stringers, and cross-braces, in good serviceable condition.
- Establish requirements for trench shoring and bracing to comply with local codes and authorities having jurisdiction.
 - Maintain shoring and bracing in excavations, regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.
- F. Dewatering. Prevent surface water and subsurface or ground water from flowing into excavations and flooding project site and surrounding area.
- Do not allow water to accumulate in excavations. Remove water to prevent softening of excavation bottoms and soil changes detrimental to stability of subgrades. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.
 - Convey water removed from excavations and rain water to collecting or run-off areas. Establish and maintain temporary drainage ditches and other diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches. Site grading should be maintained during construction so that positive drainage of the site is promoted at all times.
- G. Material Storage. Stockpile satisfactory excavated materials, where directed by Engineer, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.
- Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain. Do not fill in or disturb wetland areas.
 - Dispose of excess soil material and waste materials as herein specified. Maximum rock size allowed in fill is 12" in any one direction.
- H. Cold Weather Protection. Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F (1 degree C).
- I. Proofrolling. After excavation and before any fill placement, entire subgrade shall be proof-rolled with a loaded pneumatic tired vehicle, such as a dual axle dump truck with a gross weight of 16 to 20 tons, or similar equipment. Remove any soft, organic, or highly plastic soil encountered during proof-rolling and replace it with properly compacted fill. The exposed undercut subgrade shall then be densified through the use of caterpillar C-443C Compactor, or equivalent, by a minim of six passes over the entire undercut area.

3.2 Compaction

- A. General. Control soil compaction during construction, providing minimum percentage of density specified for each area classification.
- B. Lift Thickness. Soil used for structural fill construction should be placed in layers no greater than eight (8) inches in loose placement for heavy equipment placement, or 5 inches for hand operated whacker or vibratory plate placement. Normal density testing can not usually be accomplished with any degree of accuracy in rocky fills. Observation and monitoring of the fill performance in those areas is required.
- C. Percentage of Maximum Density Requirements. Compact soil to within 98% of optimum maximum dry density as measured by the Standard Proctor Test. The contractor shall provide 2 samples of the excavated material for performance of Standard Proctor Tests for compaction control. These tests will be paid for in the testing allowance..
- D. Moisture Control. Maintain soil moisture to + or – 2% of optimum moisture content. Where soil must be moisture conditioned before compaction, uniformly apply water to prevent free water from appearing on surface during or subsequent to compaction operations. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by disking, harrowing or pulverizing until moisture content is reduced to a satisfactory value.

3.3 Backfill and Fill

- A. General. Place acceptable soil material in layers to required subgrade elevations.
- B. Backfill excavations as promptly as work permits, but not until acceptance of construction below finish grade and removal of trash and debris.
- C. Ground Surface Preparation. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.
- D. Placement and Compaction. Place backfill and fill materials in layers to provide lift thickness.

3.4 Grading

- A. Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

3.5 Field Quality Control

- A. Quality Control Testing During Construction. Allow testing service to inspect and approve subgrades and fill layers before further construction work is performed. It shall be the Contractor's responsibility to notify the testing agency at least 24 hours prior to beginning any work which requires testing.
- B. If in opinion of Engineer, based on testing service reports and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction and testing at no additional expense to the Owner.

3.6 Maintenance

- A. Protection of Graded Areas. Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and reestablish grades in settled, eroded and rutted areas to specified tolerances.
- B. Reconditioning Compacted Areas. Where completed compacted areas are disturbed by subsequent construction operations or weather, scarify surface, reshape and compact to required density prior to further construction.
- C. Settling. Where settling is measurable or observable at excavated areas during general project warranty period, add backfill material, compact, and replace surface treatment. Restore appearance, quality and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.
- D. Desiccation. Where desiccation cracks are observable, remove and replace soil to restore appearance, quality and condition of surface.

3.7 Disposal of Excess and Waste Materials

- A. Excess excavated material shall be re-spread, uniformly graded and seeded at a location near the site designated by the Engineer.

End of Section

SECTION 02511 - HOT-MIXED ASPHALT PAVING

PART 1. GENERAL

1.1 Work Included

- A. This Section includes provisions for hot-mixed asphalt paving over prepared subbase.
- B. Prepared subbase is specified in Section 02200 - Earth and Rock Work.

1.2 Submittals

- A. Submit certificates that each material item meets or exceeds specified requirements.

1.3 Site Conditions

- A. Weather Limitations: Apply prime and tack coats when ambient temperature is above 50 degrees F (10 deg. C) and when temperature has not been below 35 degrees F (1 deg. C) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.
- B. Construct hot-mixed asphalt surface course when atmospheric temperature is above 40 degrees F (4 deg. C) and when base is dry. Base course may be placed when air temperature is above 30 degrees F (-1 deg. C) and rising.
- C. Grade Control: Establish and maintain required lines and elevations.

1.4 Quality Assurance

- A. Codes and Standards: Comply with State Department of Transportation standard specifications, latest edition, and with local governing regulations if more stringent than herein specified.

PART 2. PRODUCTS

2.1 Materials

- A. General: Use locally available materials and gradations that exhibit a satisfactory record of previous installations.
- B. Coarse Aggregate: Sound, angular crushed stone, crushed gravel, complying with ASTM D 692-88.
- C. Fine Aggregate: Sharp-edged natural sand or sand prepared from stone complying with ASTM D 1073.
- D. Asphalt Cement: ASTM D 3381 for viscosity-graded material; ASTM D 946 for penetration-graded material.
- E. Prime Coat: Cut-back asphalt type, ASTM D 2027; MC-30, MC-70 or MC-250.
- F. Tack Coat: Emulsified asphalt, ASTM D 977.
- G. Subgrades shall be in accordance with applicable provisions of "Kentucky Standard Specifications for Road & Bridge Construction" .
- H. Dense Graded Aggregate Base shall be in accordance with Section 303 of "Kentucky Standard Specifications for Road and Bridge Construction."

I. Lane Marking Paint: Chlorinated rubber-alkyd type, ready-mixed, complying with AASHTO M 248, (FS TT-P-115), Type III. Color shall be White.

J. Asphalt - Aggregate Mixture: Bituminous Concrete shall be Class 1 and shall be in accordance with "Kentucky Standard Specifications for Road and Bridge Construction".

PART 3. EXECUTION

3.1 Systems Defined

A. Refer to the Drawings for thickness of base and surfacing.

3.2 Surface Preparation

A. General: Remove loose material from compacted subbase surface immediately before applying herbicide treatment or prime coat.

B. Proofroll prepared subbase surface to check for unstable areas and areas requiring additional compaction.

C. Notify Engineer of unsatisfactory conditions. Do not begin paving work until deficient subbase areas have been corrected and are ready to receive paving.

D. Prime Coat: Apply at rate of 0.20 to 0.50 gallons per square yard, over compacted subgrade. Apply material to penetrate and seal, but not flood, surface. Cure and dry as long as necessary to attain penetration and evaporation of volatile.

E. Tack Coat: Apply to contact surfaces of previously constructed asphalt or Portland cement concrete and surfaces abutting or projecting into hot-mixed asphalt pavement. Distribute at rate of 0.05 to 0.15 gallons per square yard of surface.

F. Exercise care in applying bituminous materials to avoid smearing of adjoining concrete surfaces. Remove and clean damaged surfaces.

3.3 Placing Mix

A. General: Place hot-mixed asphalt mixture on prepared surface, spread, and strike off. Spread mixture at minimum temperature of 225 degrees F (107 deg. C). Place areas inaccessible to equipment by hand. Place each course to required grade, cross-section and compacted thickness.

B. Paver Placing: Place in strips not less than 10 feet wide, unless otherwise acceptable to Engineer. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete base course for a section before placing surface course.

C. Immediately correct surface irregularities in finish course behind paver. Remove excess material forming high spots with shovel or lute.

D. Joints: Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture, density, and smoothness as other sections of hot-mixed asphalt course. Clean contact surfaces and apply tack coat. At joining of new paving with existing, cut out and trim existing paving to straight lines. Prime or seal existing edges prior to placement of new material so as to produce bonded, watertight joining.

3.4 Rolling

SECTION 02511 - HOT-MIXED ASPHALT PAVING

- A. General: Begin rolling when mixture will bear roller weight without excessive displacement.
- B. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.
- C. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling and repair displaced areas by loosening and filling, if required, with hot material.
- D. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been evenly compacted.
- E. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained 95 percent laboratory density.
- F. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut out such areas and fill with fresh, hot, hot-mixed asphalt. Compact by rolling to specified surface density and smoothness.
- G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.5 Traffic and Lane Markings

- A. Cleaning: Sweep and clean surface to eliminate loose material and dust.
- B. Striping: Use chlorinated-rubber base traffic lane-marking paint, factory-mixed, quick-drying, and non-bleeding. Color shall be White.
- C. Do not apply traffic and lane marking paint until layout and placement have been verified with Engineer.
- D. Apply paint with mechanical equipment to produce uniform, straight edges. Apply at manufacturer's recommended rates to provide minimum 12 to 15 mils. dry thickness.

3.6 Field Quality Control

- A. General: Test in-place hot-mixed asphalt courses for compliance with requirements for thickness and surface smoothness. Repair or remove and replace unacceptable paving as directed by Engineer.
- B. Thickness: In-place compacted thickness tested in accordance with ASTM D 3549 will not be acceptable if in excess of the following variations:
 - 1. Base Course: Plus or minus 1/2 inch.
 - 2. Surface Course: Plus or minus 1/4 inch.
- C. Surface Smoothness: Test finished surface of each hot-mixed asphalt course for smoothness, using 10-foot straightedge applied parallel with and at right angles to centerline of paved area. Surfaces will not be acceptable is in excess of the following tolerances for smoothness:
 - 1. Base Course Surface: 1/4 inch.
 - 2. Wearing Course Surface: 3/16 inch.
 - 3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

- D. Check surface areas at intervals as directed by Engineer.

SECTION 02511 - HOT-MIXED ASPHALT PAVING

End of Section

SECTION 02720 - STORM DRAINAGE SYSTEMS

PART 1. GENERAL

1.1 Work Included

- A. Storm drainage pipe fittings, and accessories.
- B. Storm water structures

1.2 Submittals

- A. Submit product data under provisions of Section 01300.

PART 2. PRODUCTS

2.1 Reinforced Concrete Pipe

- A. Reinforced concrete pipe shall meet requirements of ANSI/ASTM C76, Class I with Wall Type A; B; C; mesh reinforcement; inside nominal diameter as required; bell and spigot end joints.
- B. Joint device shall meet requirements of ANSI/ASTM C443, rubber compression gasket joint.
- C. Fittings shall be of the same material as pipe, molded or formed to suit pipe size and end design, in required 'T', bends, elbows, cleanouts, reducers, traps, and other configurations required.

2.2 HDPE Pipe

HDPE pipe shall meet the following requirements:

- ASTM D1248 Standard Specification for Polyethylene Plastics Molding and Extrusion Materials
- ASTM F405 Standard Specification for Corrugated Polyethylene (PE) Tubing and Fittings
- ASTM F667 Standard Specification for Large Diameter Corrugated Polyethylene Tubing and Fittings.

2.3 Storm Water Structures

Storm water structures shall meet the following requirements, as applicable:

- ACI 304 - Guide for Measuring, Mixing, Transporting and Placing Concrete
- ACI 318 - Building Code Requirements for Reinforced Concrete
- ASTM C478 - Specification for Precast Reinforced Concrete Manholes Sections
- ASTM 1433 - Standard Specification for Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers
- ASTM C1478 - Standard Specification for Storm Drain Resilient Connectors Between Reinforced Concrete Storm Sewer Structures, Pipes and Laterals
- ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals
- ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealant
- CRSI Manual of Standard Practice

PART 3. EXECUTION

3.1 Pipe Installation

A. Verify that trench cut is ready to receive work, and excavations, dimensions, and elevations are as indicated on Drawings.

B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal joints watertight.

C. Lay pipe to slope gradients noted on drawings, with maximum variation from true slope of 1/8 inch in 10 feet.

3.2 Storm Water Structure Installation

A. Precast concrete products shall be installed to the lines and grades shown in the contract documents or otherwise specified.

B. Products shall be lifted by suitable lifting devices at points provided by the precast concrete producer.

C. Products shall be installed per the precast concrete producer's recommendation.

End of Section

SECTION 02937 – SEEDING FOR PASTURE TYPE AREAS

PART 1. GENERAL

1.1 Work Included

The work described herein shall consist of application of seed, fertilizer and agricultural limestone to establish turf on all areas shown on the drawings and disturbed by the construction work and not intended to receive other surfaces.

1.2 Submittals

Submit certificates of analysis and weight for all fertilizers to the Engineer.

PART 2. PRODUCTS

2.1 Seed

Seed shall be certified seed to be the latest season's crop and shall be delivered in original sealed packages bearing the producer's guaranteed analysis for percentages of mixtures and pure live seed. Seed shall be labeled in conformance with U.S. Department of Agriculture rules and regulations under the Federal Seed Act and applicable state seed laws. Seed that has become wet, moldy, or otherwise damaged will not be acceptable.

Seed Mixture	Lbs./Acre PLS
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For permanent cover:

Kentucky 31 Tall Fescue	12
Birdsfoot Trefoil	7

For temporary cover during application period from February 15 to May 15 and August 1 to November 1:

Either	
Annual Ryegrass	5
or	
Perennial Ryegrass	10

For temporary cover during application period from May 15 to August 1:

Either	
Foxtail Millet	12
Pearl Millet	10
Japanese Millet	15
Weeping Lovegrass	2.5
or Bermuda Grass	4

For temporary cover for application period from November 1 to February 15:

Winter Wheat	100
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SECTION 02936 - SEEDING

2.2 Agricultural Limestone

Agricultural limestone shall have a minimum calcium carbonate equivalent of not less than 85 percent and shall be ground to such a fineness that at least 90 percent will pass a 20-mesh sieve and at least 50 percent will pass a 100-mesh sieve.

2.3 Fertilizer

Fertilizer shall be commercial grade, free flowing, uniform in composition.

Fertilizer shall be 10-10-10.

2.4 Mulch

Mulch shall be clean straw.

PART 3. EXECUTION

3.1 General

Seed all areas disturbed by the construction work not scheduled for other surfaces.

3.2 Preparation for Planting Lawns (N/A)

The finished surface shall be free of bumps, depressions or other irregularities or foreign materials. Spread topsoil evenly. Ground limestone shall be applied evenly at a rate of 50 pounds per 1,000 square feet. Fertilizer shall be applied evenly at a rate of 20 pounds per 1,000 square feet.

3.3 Seeding

A. Sowing of Seed. Immediately before any seed is to be sown, the ground shall be scarified as necessary and shall be dragged until the surface is smooth, friable and of uniform texture.

B. Mulching. All seeded areas shall be mulched with a straw and asphalt mat or netting or with a spray mulch of an approved material. Straw and asphalt mat shall be applied at the rate of eighty (80) pounds of straw and eight (8) gallons of asphalt per one thousand square feet. Asphalt shall either be emulsified RS1 grade or cutback RC1 grade. The type and method of mulching may be varied at the discretion of the Contractor on his own responsibility to establish a uniform turf free of erosion.

3.4 Maintenance

Seeded areas shall be protected and maintained by watering and replanting as may be necessary to produce a uniform stand of grass. Maintenance shall continue until a dense, uniform turf is established composed of the grasses specified and until acceptance, and shall include repair of damage caused by erosion.

End of Section



Andy Beshear
Governor

COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET
Department of Highways, District 9 Office
822 Elizaville Avenue
Flemingsburg, Kentucky 41041
(606) 845-2551
www.transportation.ky.gov/

Jim Gray
Secretary

March 27, 2024

Flemingsburg-Fleming County IDA
P.O. Box 460
Maysville, Kentucky 41056

Subject: Permit #: 09-2024-00059
Permit Type: Entrance - Commercial
Approval

Dear Applicant:

Attached is your permit approval and documentation for the subject permit.

Be advised that all work must be done in conformity with permit and application conditions. As stated in the signed permit application, a traffic study may need to be performed when new businesses occupy the development and the commercial traffic (box trucks, semi-trucks, etc.) increases. Also please note that, as a result of the traffic study, this entrance is subject to upgrades such as the installation of turning lanes, widening of the roadway/shoulder, and any other component that will ensure driver safety for both industrial park traffic and motorist traffic on KY-11. These upgrades will be at the discretion of but not funded by KYTC and it will be up to the businesses/the industrial park authorities to carry out these upgrades. If you have any questions, please contact the Permits Section at this office.

Sincerely,

A handwritten signature in blue ink that reads "Steve Gunnell".

Steve Gunnell
D9 - Chief District Engineer

Attachments



An Equal Opportunity Employer M/F/D



Kentucky Transportation Cabinet
 Department of Highways
 Division of Maintenance
 Permits Branch

ENCROACHMENT PERMIT

KYTC KEPT #: 09-2024-00059

Permittee: Flemingsburg-Fleming County IDA

Permit Type / Subtype: Entrance / Commercial

Work Completion Date: 7/19/2024

INDEMNITIES		
Type	Amount Required	Tracking Number
Performance Bond	\$0.00	
Cash / Check	\$0.00	
Self-Insured	\$0.00	
Payment Bond	\$0.00	
Liability Insurance	\$0.00	

This permit has been: **APPROVED** **DENIED**

Steve Gunnell	D9 - Chief District Engineer	3/27/2024
SIGNATURE	TITLE	DATE

The TC 99-1(B), including the application TC-99 1(A) and all related and accompanying documents and drawings make up the permit. It is not a permit unless both the TC 99-1(A) and TC 99-1(B) are both present.

LOCATION(S)			
Description	County - Route	Latitude	Longitude
Proposed Entrance Upgrade	Fleming - KY 11	38.460375	-83.751398
Proposed Entrance Upgrade	Fleming - KY 11	38.460375	-83.751398



To Submit a Locate Request
 24 Hours a Day, Seven Days a Week:
 Call 811 or 800-752-6007



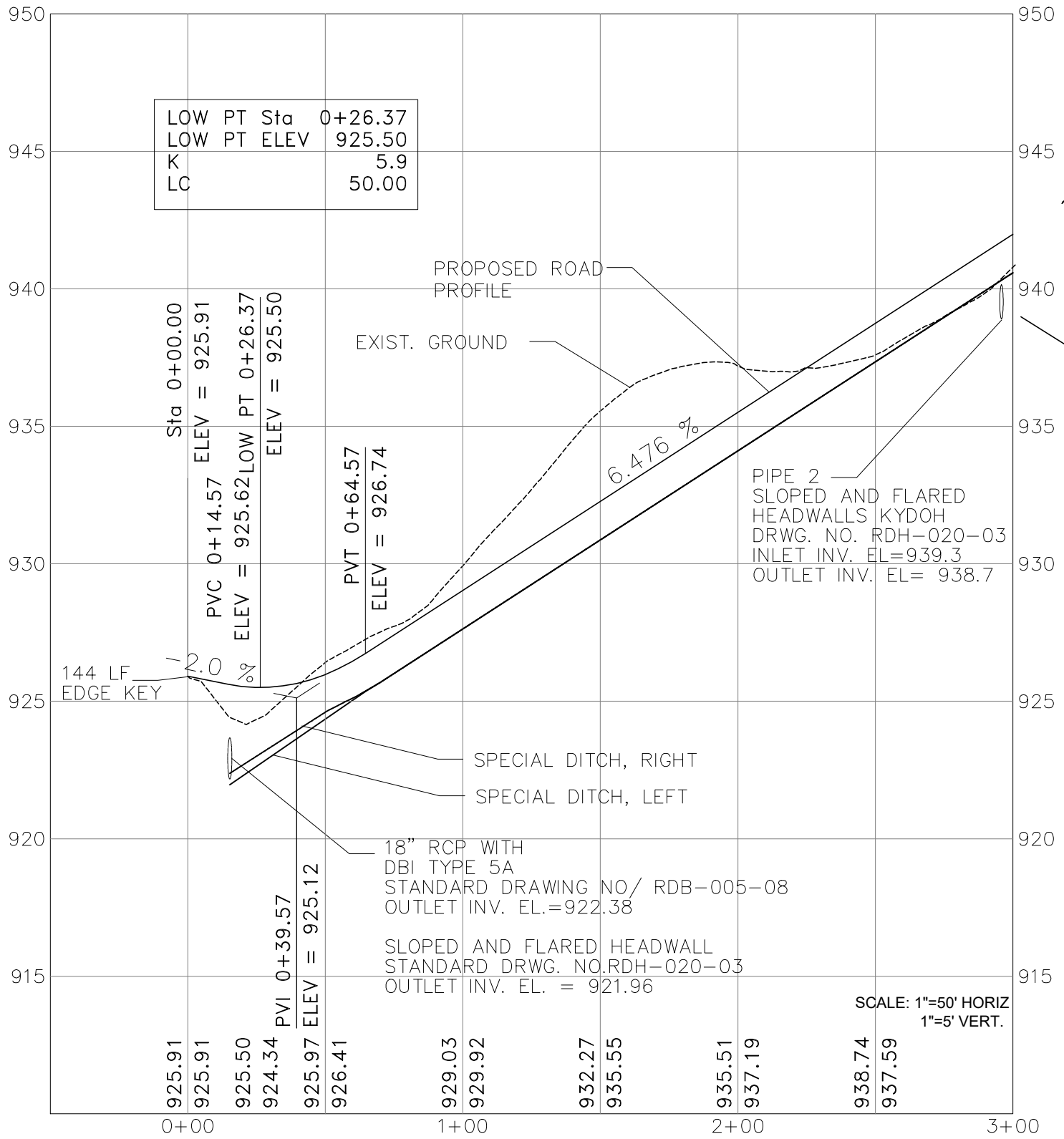
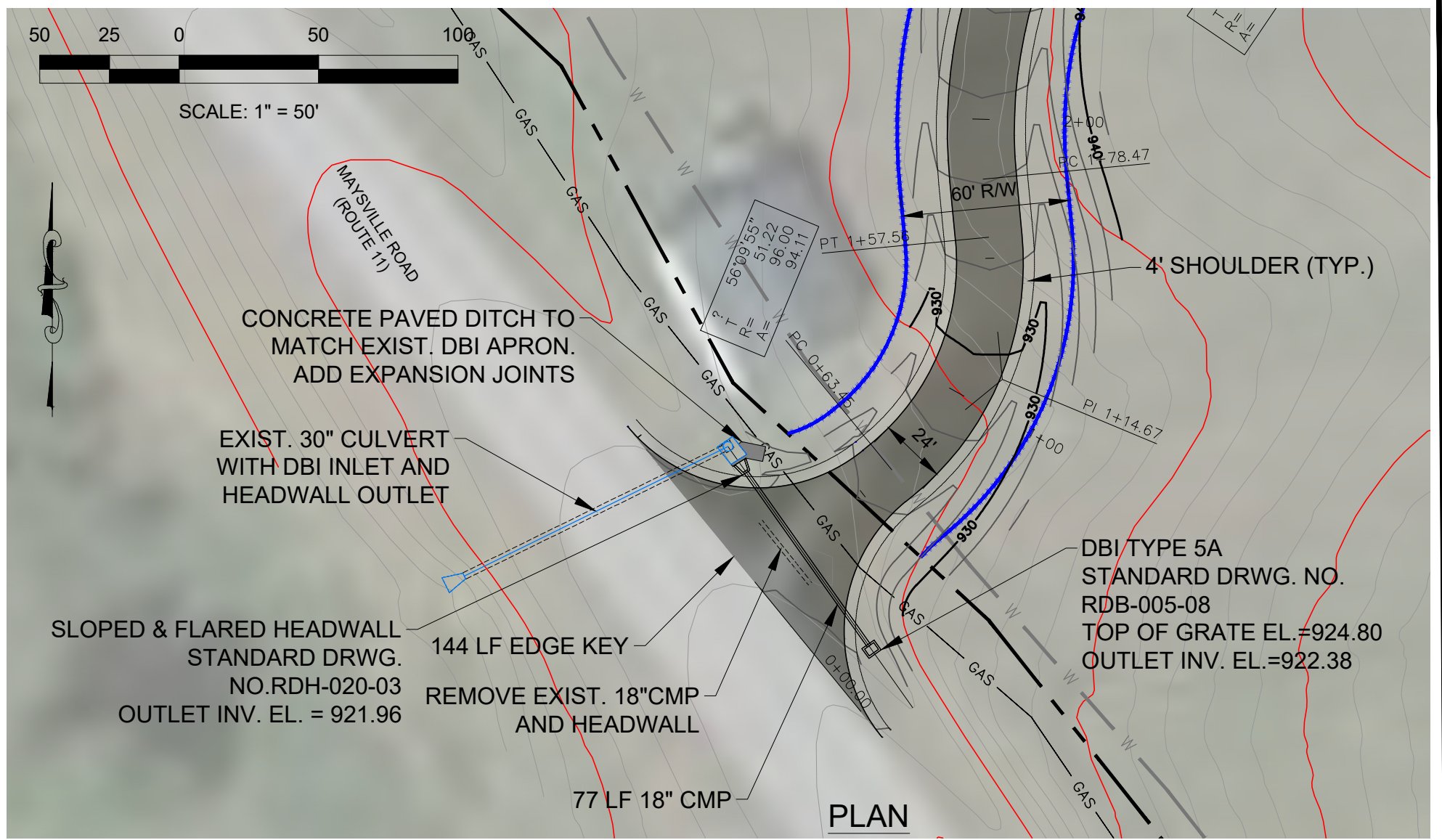
**ENCROACHMENT PERMIT GENERAL NOTES &
SPECIFICATIONS**

KYTC KEPT # 09-2024-00059

X SAFETY	
X	All signs and control of traffic shall be in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways, latest edition, Part VI, and safety requirements shall comply with the Permits Manual. Federal law requires that traffic control shall be implemented in accordance with MUTCD standards and Kentucky Transportation Cabinet Department of Highways Standard Specifications for Road and Bridge Construction (Standard Specifications) under the supervision of a certified Work Zone Traffic Control Supervisor.
X	All work necessary in shoulder or ditch line areas of a state highway shall be scheduled to be promptly completed so that hazards adjacent to the traveled way are kept to an absolute minimum.
X	No more than one (1) traveled-lane shall be blocked or obstructed during normal working hours. All signs and flaggers during lane closure shall conform to the MUTCD.
X	When necessary to block one (1) traveled-lane of a state highway, the normal working hours shall be as directed by the Department. No lanes shall be blocked or obstructed during adverse weather conditions (rain, snow, fog, etc.) without specific permission from the Department.
X	The traveled-way and shoulders shall be kept clear of mud and other construction debris at all times during construction of the permitted facility.
X	No non-construction equipment or vehicles or office trailers shall be allowed on the right of way at any time.
X	The right of way shall be left free and clear of equipment, material, and vehicles during non-working hours.
X	Before You Dig: The contractor is instructed to call 1-800-752-6007 to reach KY 811, the One-Call system for information on the location of existing underground utilities. The call is to be placed a minimum of two (2) and no more than ten (10) business days prior to excavation. The contractor should be aware that the owners of underground facilities are not required to be members of the KY 811 One-Call Before U-Dig (BUD) service. The contractor must coordinate excavation with the utility owners, including those whom do not subscribe to KY 811. It may be necessary for the contractor to contact the County Clerk to determine what utility companies have facilities in the area.
X	Working hours shall be non "peak traffic" flow hours.
X	Date and time restrictions pertaining to this permit are as follows: Proposed work should be completed during daylight hours. Proposed work should not impede the arrival & dismissal periods for the local school district or impede snow/ice removal efforts for KYTC.
X	No explosive devices or explosive material shall be used within state right of way without proper license and approval of the Kentucky Department of Mines and Minerals, Explosive Division.
X	The permittee shall meet all applicable federal Occupational Safety and Health Administration standards and Kentucky Occupational Safety and Health standards.
X GENERAL	
X	The permittee shall be responsible for any damage to existing utilities, and any utility modifications or relocations within state right of way necessary, as determined by the Department or by the owner of the utility.

X	Whenever materials of an archaeological nature are discovered during the course of construction work or maintenance operations, contact shall be made immediately with the Division of Environmental Analysis. Following this consultation, further action shall be decided on a case-by-case basis by the Department.
X	If the activity to which this permit related disturbs one acre or more of land, you must obtain Kentucky Pollutant Discharge Elimination System KYR10 permit. Information can be found at http://water.ky.gov/permitting/Pages/GeneralPermits.aspx
X	Other general requirements pertaining to this permit are as follows: Applicant/Contractor should have on hand and available all essential personal protective equipment/signage necessary for the safe completion of the proposed work. If not on hand, no work should begin or be completed until those items have been obtained.
X	UTILITIES
X	For Non-Fully Controlled Access Highways
X	Overhead crossing of an utility line shall have a minimum clearance of 18 feet or greater per NESC guidelines or applicable codes.
X	To the extent possible, maintain at least a 30' clear zone.
X	Other Utility Requirements
X	Other utility requirements pertaining to this permit are as follows: The applicant is liable for any damage to KYTC facilities and/or municipally or privately owned utilities resulting from this proposed work.
X	RIGHT-OF-WAY RESTORATION
X	All disturbed portions of the right of way shall be restored to grass as per the Standard Specifications. A satisfactory turf, as determined by the Department, shall be established by the permittee prior to release of indemnity. Sodding or seeding per the specified seed mix shall be used. For urban areas, the seed mix will be modified to only include Fescue and Ryegrass.
X	For seeding on slopes 3:1 or less, apply seed mix Type I at a minimum application rate of 100 pounds per acre. Seed Mix Type I: 90% Kentucky 31 Tall Fescue, 10% White Dutch Clover
X	Existing concrete right of way markers shall not be disturbed, but if damaged in any way, they shall be entirely replaced by the permittee, with new markers to match the original markers, in accordance with the Standard Specifications. Markers that are entirely removed shall be re-established in the proper locations by the permittee and to the satisfaction of the Department. All right of way markers shall be installed by a licensed Land Surveyor.
X	DRAINAGE
X	Any negative impacts to existing drainage structures will be the permittee's responsibility to repair in accordance with the Standard Specifications.
X	TRAFFIC
X	The permittee must maintain all Department roadway signage that is impacted by the permitted work. In the event that any signs have to be moved to accommodate the scope of the permit, it is the permittee's responsibility to mark the sign's location before removal and install the original or new sign per Department standards for sign installation. All Department roadway signs must be restored to original condition before the permit will is released.
X	MISCELLANEOUS

X	<p>Miscellaneous requirements pertaining to this permit are as follows: Be advised that the applicant is responsible for obtaining and complying with all federal, state and local agency requirements and applicable permits separate from the Transportation Cabinet. Additionally, on the day of work, notify the local E.M.S., police, and fire so they will know there may be closures on that road at that time. If any questions arise concerning the approved work, please contact Chandler Otis at the Transportation Cabinet's District Office in Flemingsburg at 1-606-845-2551 and thank you.</p>
<p>NOTICE TO PERMITTEE</p>	
<p>THE PERMITTEE AGREES THAT ALL WORK WITHIN THE EXISTING RIGHT OF WAY SHALL BE DONE IN ACCORDANCE WITH PLANS AS APPROVED AND PERMITTED BY AN ENCROACHMENT PERMIT. THE PERMITTEE SHALL MEET ALL DEPARTMENT POLICIES, STANDARD DRAWINGS, AND STANDARD SPECIFICATIONS. ANY CHANGES OR VARIANCES MADE AT THE TIME OF CONSTRUCTION WITHOUT WRITTEN APPROVAL FROM THE DEPARTMENT OF HIGHWAYS SHALL BE REMOVED BY THE PERMITTEE AT NO EXPENSE TO THE DEPARTMENT OF HIGHWAYS AND SHALL BE REDONE BY THE PERMITTEE TO CONFORM WITH THE APPROVED PLANS.</p>	



PROFILE

DRAWING NO.



Engineers
Architects
Planners

624 Wellington Way
Lexington, KY 40503
www.nselex.com

PHONE: (859)223-5694
FAX: (859)223-2607

REVISED MARCH 2024
PROPOSED ENTRANCE PERMIT
FLEMING COUNTY INDUSTRIAL PARK NO. 4
FLEMINGSBURG, KENTUCKY

SHEET OF

M:\PROJECTS\Fleming County - McIntyre Industrial Park\Flemingsburg-Fleming Co.IDA\Working\Flemingsburg-Fleming County IDA for entrance permit revised 3-20-24.dwg, 3/20/2024 3:47:50 PM, DWG To PDF.c3



APPLICATION FOR ENCROACHMENT PERMIT

KYTC
 KEPT #:

SECTION 1: APPLICANT CONTACT INFORMATION

APPLICANT ADDRESS
 FLEMINGSBURG-FLEMING CO. C/O BUFFALO TRACE ADD, PO BOX 460
 IDA INDUSTRIAL AUTHORITY

EMAIL CITY STATE ZIP
 akennedy@btadd.com MAYSVILLE KY 41056

CONTACT NAME 1 EMAIL PHONE #
 Bill Breeze bbreeze@windstream.net 606-564-6894

CELL # 606-748-0844

CONTACT NAME 2 (if applicable) EMAIL PHONE #

CELL #

SECTION 2: PROPOSED WORK LOCATION

ADDRESS CITY STATE ZIP
 2200 MAYSVILLE ROAD FLEMINGSBURG Kentucky 41041
COUNTY ROUTE # MILE POINT LONGITUDE (X) LATITUDE (Y)
 FLEMING 11 14.55 83.751388 38.460328

ADDITIONAL LOCATION INFORMATION:

FOR KYTC USE ONLY

PERMIT TYPE: Air Right Entrance Utilities Vegetation Removal Other:

LOCATIO

ACCESS: Full Partial by Permit N: Left Right Crossing

SECTION 3: GENERAL DESCRIPTION OF WORK

Improve an existing farm entrance in order to access a build ready industrial site. The improvements are currently requested to upgrade to the industrial entrance on the Industrial property to allow for marketing and the future prospect of industry locating within the park. The Industrial Authority is aware that future upgrades may be required as industry and traffic increases and will then petition the state for additional improvements such as acceleration and deceleration lanes. The Industrial Authority is a public agency as an extension of the City and County Governments.

The Industrial Authority confirms that when industry is locating within the park a traffic study will need to be completed to determine traffic pattern needs.

THE UNDERSIGNED APPLICANT(s), being duly authorized representative(s) or owner(s), DO AGREE TO ALL ORIGINAL UNEDITED TERMS AND CONDITIONS ON THE TC 99-1A, pages 1-4.

Bill Breeze
 SIGNATURE

3-6-2024
 DATE

This is not a permit unless and until the applicant(s) receives an approved TC 99-1B from KYTC. This application shall become void if not approved by the cancellation date. The cancellation date shall be a minimum of one year from the date the applicant submits their application.

NOTICE OF COMPLETION OF ENCROACHMENT PERMIT WORK

PERMITTEE

Name: Flemingsburg-Fleming County IDA
Contact Person:
Address: P.O. Box 460
City: Maysville
State: Kentucky
Zip: 41056
Telephone: (606) 748-0844

PROJECT IDENTIFICATION

Permit Number: 09-2024-00059

I wish to notify the Department of Highways that the above mentioned permit work and any necessary right-of-way restoration have been completed and are ready for final inspection.

Permittee

Please return this form to the address below when work is completed and ready for final inspection.

Please Return to: Permit Engineer
Department of Highways, District 9 Office
822 Elizaville Avenue
Flemingsburg, Kentucky 41041
(606) 845-2551
www.transportation.ky.gov/

LOCATION(S)			
Description	County - Route	Latitude	Longitude
Proposed Entrance Upgrade	Fleming - KY 11	38.460375	-83.751398
Proposed Entrance Upgrade	Fleming - KY 11	38.460375	-83.751398



Preliminary Geotechnical Exploration
for

Greenfield Industrial Park

Flemingsburg, Kentucky

February 22, 2021

Flemingsburg - Fleming County Industrial Authority
Flemingsburg, Kentucky

CSI Project Number LX210016



February 22, 2021

Flemingsburg - Fleming County Industrial Authority
c/o Buffalo Trace ADD
201 Government Street, Suite 300
Maysville, Kentucky 41056

Attention: Ms. Amy Kennedy
e-mail: akennedy@btadd.com

Subject: Preliminary Geotechnical Exploration
Greenfield Industrial Park
Flemingsburg, Kentucky
CSI Project Number LX210016

Dear Ms. Kennedy:

Consulting Services Incorporated of Kentucky (CSI) is pleased to present our *Preliminary Geotechnical Exploration* for the proposed industrial development located on Highway 11 in Flemingsburg, Kentucky.

BACKGROUND

Project information was provided to us via e-mail dated December 11, 2020 from Mr. Glenn Ross, PE of MSE of Kentucky. We were provided with an aerial map and a "Master Plan" drawing. Additional information was provided to us from Ms. Amy Kennedy on January 21, 2021. We were provided with a drawing indicating additional borings expanding to the south of the original site and an aerial image annotated by Mr. Glenn Ross, PE.

The project site is located to the east of KY Highway 11, between (but not directly bordering) Industrial Drive (to the south) and Sunset Memorial Park Drive (to the north). Please reference the attached Site Location Plan in the Appendix for further details.

The project site includes approximately 260 acres of undeveloped land with rolling terrain. The site is currently utilized as livestock pasture with barns and a residence. The majority of this project area is cleared, but there are a few tree lines and several fence lines. Also, there are a few farm ponds across the site with larger ponds located on the northern and southern ends of the site.

We understand that the northern approximately 120 acres are exploring options for development of two 30 acre greenhouses with two 3.5 acre ponds, while the southern approximately 140 acres are for potential future development. Since this project will likely include industrial buildings, we have assumed that extensive site grading will be required. However, the exact number, type, and sizes of potential buildings (or other site improvements) has not yet been established. Additionally, grades have not been established since our preliminary work will likely be used to help provide information for the development of this industrial park.

If any of the aforementioned information is in error or if the information changes during the course of the project, please contact our office so that we can re-evaluate the new information with respect to our preliminary findings and recommendations.

AREA/SITE INFORMATION

The site is located in the Outer Bluegrass region of the Blue Grass Physiographic Region of Kentucky. This area consists of gently rolling topography and rich, fertile soils. Published topographic mapping by the United States Geological Survey (USGS) indicates the elevations in the site vicinity range from 820 feet to 1,000 feet. Figure 1 depicts the location of the site with respect to the regional physiography.

A review of the USGS Geologic Map of the Elizaville and Flemingsburg Quadrangles, Kentucky (dated 1971 and 1969 respectively), indicates the project site is located in an area underlain by Upper Ordovician aged rock deposits. Specifically, the project site is underlain by the Bull Fork Formation.



Figure 1. Kentucky Physiographic Map (site vicinity shown in the circle)

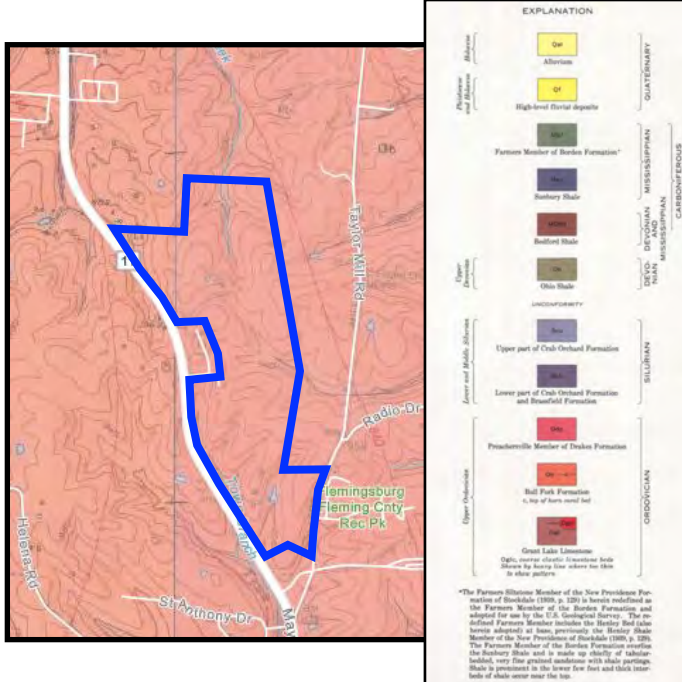


Figure 2. USGS Elizaville and Flemingsburg Quadrangles, Kentucky, dated 1971 and 1969 (approximate site perimeter outlined in blue)

As mapped, the Bull Fork Formation consists of interbedded shale and limestone with shale content increasing from approximately 30 percent at the base to approximately 70 percent at the top. The shale is generally described as gray grading to grayish-green, weathering dusky yellow, and plastic when wet. The limestone is generally described as medium-light gray to bluish-gray, weathering grayish orange, thin to medium bedded, locally cross bedded and ripple marked, and fossiliferous.

No faults are mapped within the project area. The geologic dip in the area of the project site is shown to be less than 1 percent to the east-northeast. Figure 2 depicts the location of the site with respect to the area geology.

As with most of the geology of this portion of Kentucky, Karst (sinkholes, weathered bedrock, caverns, erratic bedrock, etc.) is associated with the site geology. The surrounding areas of the site have not been majorly developed. However, within the developed areas karst activity may have been regraded. Thus, obvious signs of sinkhole activity may have been filled or otherwise occluded.

The Karst Potential Map published by the Kentucky Geological Survey (KGS) indicates that the project site is in an area with low karst potential. The KGS sinkhole map indicates no mapped sinkholes in the vicinity of project site. Figure 3 indicates the likelihood of Karst occurrence.

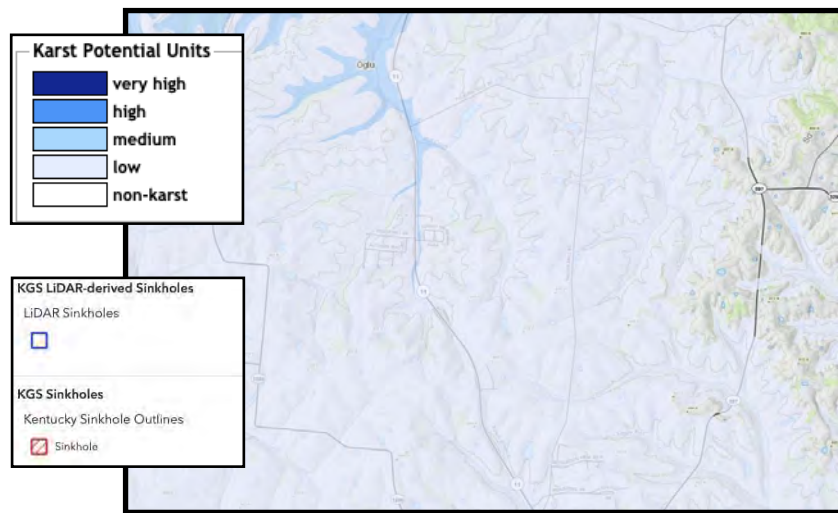


Figure 3. Fleming County Karst Areas Map, KGS

During our field operations, CSI observed several karst features across the site. Some streams crossing the site disappeared as they flowed below the surface. Additionally, there were several small dropouts observed on top of ridges and in the bottoms of drainage swales. See Photos 1 through 4 for examples of karst features observed at the site.



Photo 1: View of a Sinking Stream with a dropout



Photo 2: View of a small dropout beside a silo on the south end of the site



Photo 3: View of a dropout located along a ridge in a closed depression



Photo 4: View of a dropout approximately 4 feet wide and 2 feet deep

Published Site Soil Conditions

According to the USDA Soil Survey of Fleming County (NRCS website), the soils underlying the site vicinity consist of the following series:

- Cynthiana-Faywood complex , very rocky (CyE2), 12 to 36 percent slopes, eroded
- Faywood silt loam (FwB), 2 to 6 percent slopes
- Lowell-Faywood silt loams (uLfc), 6 to 12 percent slopes
- Lowell-Faywood silt loams (uLfd), 12 to 20 percent slopes
- Lowell-Sandview silt loams (uLsoB), 2 to 6 percent slopes

The following are issues listed as characteristics of these series, which we believe could be of interest to the project:

- All of the soil series are listed as being well drained with a depth to water table of greater than 80 inches.
- The uLfc, uLfd, and uLsoB are listed as having a depth to restrictive layer (i.e. - bedrock) as greater than 55 inches, where the FwB soil series is listed as greater than 30 inches and the CyE2 soil series as less than 20 inches
- These soil series are listed as being somewhat to very limited to the construction of small commercial buildings. Particular issues affecting construction include slope, shrink-well, and depth to hard bedrock.
- These soil series are listed as being somewhat to very limited to the construction of shallow excavations. Particular issues affecting construction include depth to hard bedrock, slope, dusty, unstable excavation walls, and too clayey.

- These soil series are listed as being very limited to the construction of local roads and streets. Particular issues affecting construction include depth to hard bedrock, low strength, slope, shrink-swell, dusty, and frost action.

Due to the potential to areas of previous site grading and the development of the surrounding site vicinity, the soil survey information listed above may no longer be useful since the site soils may have been altered. Thus, the soils described above may be on-site but not in their natural condition. Figure 4 is the soils map from the USDA website.

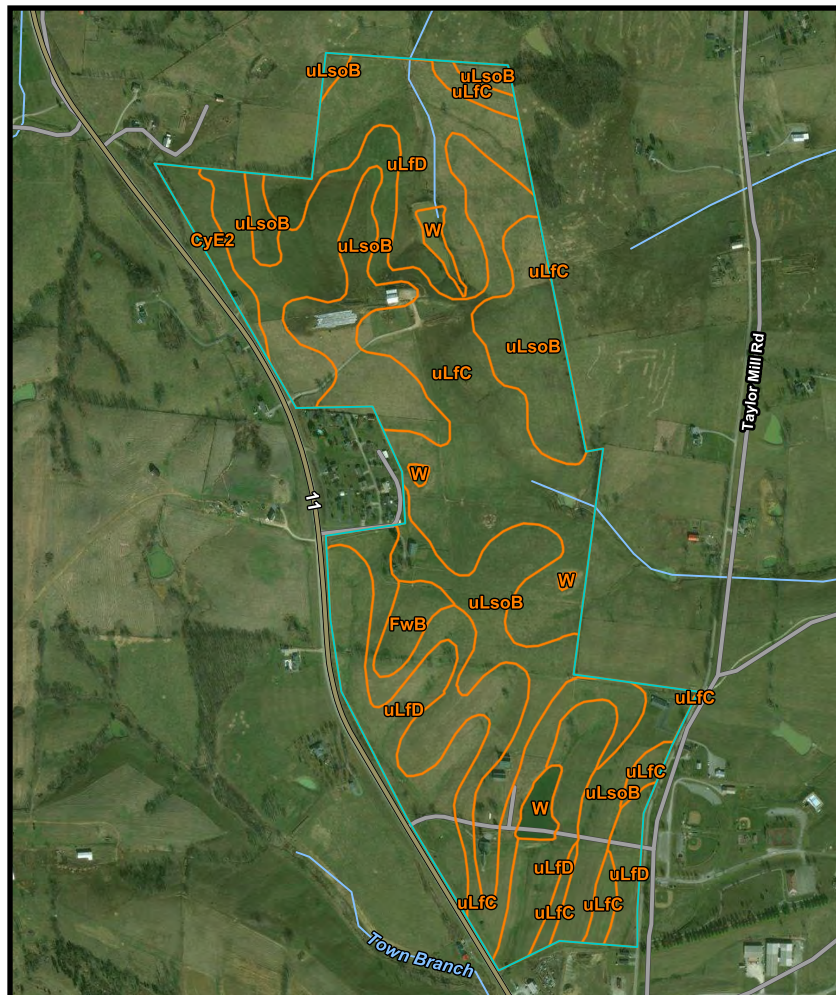


Figure 4: USDA Soil Survey Map of Project Site (site vicinity outlined in green)

Other Published Site Information

We have reviewed aerial photographs of the site dating back to February 1995. The February 1995 aerial photograph indicates the project site consisted of grazing pasture land. It appears the southern sections of the site may have been mowed periodically for hay production or simply cleared of high vegetation. Few developments have occurred surrounding the site since 1995. Reference the following figures for more details.



Figure 5: Aerial photograph dated February 1995 from Google Earth (site is outlined in yellow)



Figure 6: Aerial photograph dated June 2003 from Google Earth (site is outlined in yellow)



Figure 7: Aerial photograph dated June 2010 from Google Earth (site is outlined in yellow)



Figure 8: Aerial photograph dated September 2016 from Google Earth (site is outlined in yellow)



OBSERVATIONS AND FINDINGS

SITE OBSERVATIONS

Mr. Connor Jackson, EIT of CSI conducted a site visit, performed a field reconnaissance, and staked the borings on February 3, 2021. The drilling operations were performed on February 8 and February 9, 2021. CSI personnel observed and documented site surface conditions that could have an impact on the proposed construction. Please note, the intent of our drilling advanced during this preliminary geotechnical exploration was to obtain general knowledge about the soil subsurface conditions and bedrock depths across the site.

The project site is enclosed with fencing along the property boundary and is divided into separate gated fields with 4 gated entrances from Maysville Road (KY-11) along the western perimeter of the site. The project site is bordered by farmland to the north and east, and by commercial properties to the south.

The majority of the site is rolling topography consisting of hills and valleys with slopes generally around 5 to 10 percent with steep sections up to 20 percent. As much as 80 feet of vertical relief exists across the entire site (from our top of boring elevations). Ground cover generally consisted of grassy vegetation less than 1 foot high with trees along fence lines and in some swales. Several small streams collect on the site creating up to a 2 foot cut into the soil where the streams have eroded the landscape. Multiple scarps were observed across the site along the creek banks from stream erosion into the surrounding hills.



Photo 5: Typical photo of a swale between two hills with eroded stream channels.

Multiple large barns were observed across the western side of the site near access points to KY-11. Additionally, structures such as feeding troughs, grain silos, watering structures, and other livestock structures were observed across the site, mainly in areas near the barns. On the northern edge of the site (near sounding S-4), there is a swale which is filled with gravel. This

gravel is throughout the swale on the hills as well as in the bottom area until the stream crosses the fence at the property edge to the north. See Photo 6 for a view of this swale.

Underground utilities were marked by the Before-U-Dig public utility locating service (i.e. - gas, electric, sewer, etc.) prior to our field services. A gas line runs along the western edge of the property for approximately 200 yards. South of Ledan Street and east of KY-11, a steep sloped swale appears to have two fenced stormwater drains which flow into the property. These drains are on the northern end of this swale and then flows to the south off the site. A water line supplies the barn on the southern end of the site. Overhead electricity extends from KY-11 to the northern barn. Additionally, overhead electric utilities traversed the site along the western perimeter. The following photographs depict the site conditions as they existed at the time of our preliminary geotechnical exploration.



Photo 6: View of the swale filled with gravel on the north end of the site, looking southwest.



Photo 7: View of the central and southern barns with the southernmost pond at the site, looking west.



Photo 8: View of the drainage outlets, looking east into the site from KY-11.



Photo 9: View of the southern barn with a feeding trough, looking north adjacent to sounding S-17.



SUBSURFACE CONDITIONS

We performed 10 borings and 17 soundings (borings without sampling) across the project site on February 8 and 9, 2021. Reference the attached Boring and Sounding Location Plan for further details. In general, we encountered a layer of topsoil, overlying residual soils, overlying weathered rock (where applicable), overlying bedrock.

At the surface of all our borings, we encountered a layer of topsoil. The encountered topsoil thicknesses ranged from approximately 4 inches to 14 inches.

Underlying the topsoil, residual soils were encountered ranging in thickness from approximately 6 feet to 18.8 feet. The residual soils generally consisted of brown to tan, lean (CL) to fat (CH) clays with rock fragments, some black oxide nodules, and fine roots near the surface.

Weathered rock was encountered at 2 of our 10 borings and 8 of our 17 soundings, ranging in thickness from 1.5 feet to 9.8 feet. Auger refusal was encountered in all of our borings and soundings ranging from depths of 5.0 feet to 19.8 feet. We have interpreted auger refusal to be the top of the bedrock surface. Groundwater was not observed in any of our borings or soundings upon completion of our soil augering.

The subsurface conditions encountered at our boring locations are shown on the attached Boring Logs. These logs represent our interpretation of the subsurface conditions based on the field logs and visual examination of soils by an engineer. It should be noted that the stratification lines shown on the Boring Logs represent approximate transitions between material types. In-situ stratum changes could occur gradually or at slightly different depths.

LABORATORY TESTING

Laboratory tests were performed on selected recovered samples from our borings. Detailed descriptions of these tests and the results of our testing are attached in the Appendix. Tests performed included:

- Natural moisture contents
- Atterberg limits
- Percent fines analyses

PRELIMINARY GEOTECHNICAL CONCERNS

Based on our experience with similar projects and the conditions observed during our preliminary geotechnical exploration, we believe this site can be adapted for the proposed construction. Please note that final building locations and site grading will significantly affect your budget and our final geotechnical recommendations. The primary geotechnical concerns for this site are:

- Grade Selection/Building Locations
- Differing Bearing Conditions
- Lack of Soil for Use as Fill



- Settlement
- High Plasticity (Fat) Clay Soils
- Karst

The following sections of this report discuss each issue.

Grade Selection/Building Locations

The site is located on rolling hills with up to 80 feet of vertical relief across the entire site (based upon our top of hole elevations). Since this project is early in design, we do not know building or pavement locations, or site grades. These considerations along with lack of soil for use as fill should be considered when the industrial park design moves forward.

Differing Bearing Conditions

Depending upon the selected final grades and building locations, we expect that there will be the likelihood of some foundations bearing on soil while others may bear on bedrock. Bearing project foundations on any combination of both soil and rock will likely result in unwanted differential settlement. Therefore, building foundations should either be entirely rock bearing -OR- entirely soil bearing, not a combination of both.

Lack of Soil for Use as Fill

Due to the large vertical relief across the valleys on-site, leveling the area would require a large amount of fill material. Due to the encountered thickness of the residual soils in our borings, we do not believe that the existing soil volume will be sufficient for level grading purposes. We would envision using shot rock fill in deep fill areas and soil fill for the upper 5 feet or so to finish grade. Therefore, grade selection will have a major impact on your construction budget, as balancing site grading will be crucial to avoid/lessen expensive rock removal.

Settlement

Due to the large vertical relief across the site (up to 80 feet), we expect that settlement may be an issue in deep (greater than 10 feet) fill areas. In general, short-term settlement (i.e. - initial consolidation) occurs as the fill is being placed. This initial consolidation is not of concern to a building since it occurs during the fill placement (before building construction begins). However, long-term settlement can be of concern to the building since settlement (especially differential settlement) can cause damage to a structure. Controlled fill operations should take place as regrading of the site occurs to limit risk of settlement to future developments. A settlement analysis will likely be required for the final geotechnical exploration. Also, settlement plates may be required during/after fill placement to measure site settlement in the deepest fill areas.

High Plasticity (Fat) Clay Soils

The site geology, as well as our laboratory data indicates that Fat Clay soils are present at the site. These soils can be susceptible to shrinking and swelling. Atterberg limits testing was performed on two representative residual soil samples. Our laboratory testing indicated that one sample was lean



clay (CL) while the other was fat clay (CH). The atterberg limits testing on the representative samples indicated Plasticity Indices (PI's) of 23 and 25 percent, which falls within the low susceptibility range. Soils with a PI above 30 percent can have a tendency to shrink/swell with changes in moisture content. Soils with a PI greater than 50 are generally highly susceptible to volume change. However, a PI less than 30 is not a guarantee that this soil does not shrink or swell. Please note that a swell pressure test was not performed on any of the collected samples. Thus, we cannot comment on the observed high plasticity clay's specific propensity for swelling at this time. However, our experience in this area indicates that these fat clay soils may swell significantly, even with a low PI. A swell pressure test should be performed in any final geotechnical analyses if the on-site high plasticity clays are utilized for engineered fill (i.e. - beneath foundations, floor slabs or pavements).

Shrinking and swelling of foundation and bearing soils are generally not as severe in the central Kentucky area as in other areas because long periods of excessively wet or dry weather do not normally occur. However, if site grading takes place during the dry summer or fall months, significant drying of the exposed subgrade soils may occur. If these soils re-saturate after completion of construction, structural distress may be experienced. Also, moisture content loss typically results in settlement of soil supported building components. Where the soil moisture fluctuates, movement may be ongoing throughout the building's life, resulting in deterioration and building distress. Strength loss may also affect building components, but is more likely to adversely affect parking lots - especially flexible asphalt pavements. Accumulation of water beneath pavement followed by repeated traffic loads, may result in the failure of both pavement and the subgrade materials. Therefore, the volume change potential of the soils should be considered for this project.

Generally, methods to control the adverse effects of these soils include soil modification methods (i.i. - undercut/replace, lime stabilization, etc.), providing efficient drainage around the building and pavements, geogrid reinforcement of the pavement subgrade, and implementing more stringent fill specifications (compaction and moisture control) for new fill placement.

Karst

Karst is common in this area of Kentucky and typically includes, sinkholes, caverns, erratic/irregular (pinnacle and rock channels) bedrock surfaces, and "floater" type boulders or rock cobbles in the native soil overburden. The prominent topographic feature of Karst regions in Central Kentucky is the sinkhole. This is defined as areas underlain by carbonate rocks that are characterized by closed surface depressions and internal drainage systems. According to the Kentucky Geological Survey (KGS), the site is in a low karst risk area. Please note that Karst features (slots, troughs, conduits, etc.) can also contribute to spring activity.

The topography of the site consists of rolling hills with ridges at the higher elevations, and swales through the lower elevations. This topography leads to channelling rain water into these swales at the lower elevations, typically fostering Karst activity in these areas. This was observed in many of the swales on-site where several small dropouts exist. Additionally, disappearing streams were a common observation across the site.



PRELIMINARY RECOMMENDATIONS

Earthwork

Historically, more change orders (in total number and costs) occur during the earthwork portion of construction than in almost any other part of the project. Further, the site preparation phase of construction always affects the future performance of project structures and pavements. Additionally, earthwork is the portion of work most influenced by wet weather and unknown conditions. Again, it should be noted that no grading information was supplied to us for this project.

Based on our preliminary exploration, on-site soils, processed rock, or shot rock fills are likely suitable for earthwork operations. Our limited laboratory testing for this phase of the project indicate the on-site soils consist of low and high plasticity lean (CL) and fat (CH) clay soils. Any large rock fragments or deleterious material (if encountered) will need to be separated from the new fill and wasted off site. Alternatively, large rock fragments can be broken down or crushed to an acceptable size for new fill placement. In deep cut areas, shallow bedrock may be encountered. If so, blasting, hoe-ramming, etc. may be required to remove bedrock to desired grades. For large projects, we typically recommend that shot rock fill be placed to within 5 feet of subgrade, then compacted soil fill to subgrade elevation. This allows all foundations and most utilities to be excavated into compacted soil fill.

Special considerations (remedial efforts) such as selective filling (burying the fat clay in deep fills), moisture control, or lime stabilization are some examples of remedial efforts to control cyclic shrinking and swelling of the high plasticity clays (if present). These efforts are particularly important in fills from surface grade to the bottom of foundation grade. Alternatively, high plasticity soils can be utilized in non structural areas.

For excavations during construction, most free water could likely be removed via sump pumps and open channel flow (ditches) at or near the source of seepage. Since existing fill is present on-site, you should expect to find "pockets" of perched (i.e. - trapped) water. Typically, these "pockets of trapped water" bleed out relatively quickly. As such, the contractor should be prepared to provide temporary sumps and sump pumps when these are encountered. If normal dewatering measures prove insufficient (not expected), CSI should be retained to provide recommendations on the issue.

Based on the vertical relief across the site (up to 80 feet observed), the general depth to hard bedrock across the site, and potential lack of soil for use as structural fill, we would expect some of the fill used on-site may consist of shot rock or processed rock fill produced from site blasting. As previously mentioned, the use of shot rock fill may be preferential in a large earthwork project (as with a large industrial site such as this) because it is less prone to be affected by weather events and seasonal changes common to Kentucky. Additionally, the likelihood of settlement (both differential and total) is greatly reduced with shot rock fills overlying hard bedrock. The lowered risk of settlement is of particular importance when considering the increased loading from industrial structures and equipment, as well as the



decreased tolerance for settlement in some equipment, as well as industrial and mechanical processes.

Foundations

We have not been provided grading plans or proposed finished floor elevations, therefore the following recommendations are general in scope as preliminary recommendations. We expect shallow spread foundations bearing either on soil or rock will be used for this project. However, each structure will need to be evaluated independently for foundation type. Within the same structure, all foundations should bear on soil -OR- bear on rock, not a combination of the two. Preliminary foundation recommendations are as follows.

Structures/elements constructed with shallow foundations (continuous, isolated, or combination thereof) bearing on stiff residual soil or newly compacted structural fill, an allowable bearing capacity of 2,000 to 3,000 psf (pounds per square foot) would likely be assigned. Please note in this scenario, if rock is encountered within 2 feet of the bottom of the foundation (BOF) elevation, we recommend that the rock be undercut at least 2 feet below bottom of footing and the excavation backfilled with compacted soil up to the design BOF elevation to provide a "cushion".

Structures/elements constructed with shallow spread foundations bearing on bedrock directly, an allowable bearing capacity of 5,000 to 10,000 psf should be expected depending on the particular type of bedrock underlying the structure (i.e. - shale or limestone or both). If the structures are constructed with shallow spread foundations bearing on bedrock indirectly (i.e. - bearing on shot rock fill bearing on bedrock) an allowable bearing capacity of around 5,000 psf should be expected. Please note that in this scenario, if rock is selected as the bearing material, the foundations should exclusively bear on bedrock. If any soil is encountered in the foundation excavations, it must be over excavated to hard bedrock, and backfilled with flowable fill or lean concrete to the required bottom of foundation (BOF) elevation.

Structures/elements with heavy loads or little to no tolerance for settlement may be constructed on drilled shaft foundations. The allowable bearing capacity for drilled shaft foundations socketed into hard bedrock would be between 20,000 and 60,000 psf (20 to 60 ksf). Please note the variation in the recommended allowable bearing capacity will partially depend on the type of bedrock observed underlying the structure (i.e. - shale or limestone or both), the depth of the rocket socket for the drilled shaft (likely 1 to 2 feet) and the quality of the bedrock below the rock socket (mud seams, voids, etc.).

Once building locations and final grades have been selected and after a final geotechnical exploration has been performed, we will be able to give formal recommendations for an allowable bearing capacity for soil or rock bearing foundations (as applicable).

Seismic Site Classification

Seismic site classification will be highly dependent on new site grading and the selection of either rock bearing foundations or soil bearing foundations. The subsurface conditions and information reviewed to date and our understanding of the possible grading scenarios lead us to



recommend using either a seismic site classification of "B" for rock bearing foundations - OR - "C" for soil bearing foundations for this project.

Grade Supported Slabs

Slab-on-grade concrete floor slabs are suitable for this project provided the concrete slabs bear completely on soil (stiff residual or newly placed engineered fill). If swelling clay soils are present on-site, then special construction considerations may be required in slab-on-grade concrete areas.

If rock is encountered within 1 foot of finished subgrade elevation for floor slab areas, we recommend to undercut the rock 1 foot and backfill with properly compacted soil up to the design slab subgrade elevation to provide a "cushion".

Pavements

We expect asphalt pavement (for drive lanes and parking areas) and concrete pavement (for turning areas and dock aprons) bearing on stiff residual, new engineered fill, processed rock fill, or shot rock fill will be used for this project. Thicker than normal pavement sections are likely for this project due to the likelihood of low CBR values for the on-site soils. We expect a low California Bearing Ratio (CBR) value (likely around 3 percent) for the soils encountered at this project site. Please note that a CBR test was not included in our scope of work for this preliminary exploration.

ADDITIONAL WORK

This geotechnical exploration was preliminary in nature and was not focused in any certain area.

Formal geotechnical engineering recommendations cannot be provided unless a full geotechnical exploration is performed which will include soil borings/soundings in the building footprints and in new parking areas, and rock coring. We expect that the final geotechnical exploration would also include laboratory testing (moisture content tests, Atterberg limits testing, standard Proctor test, remolded swell test, etc.). This work should be performed once the building/site improvement locations and grades have been selected in order to focus our efforts on these areas. Obviously, we can include the data obtained from this preliminary geotechnical exploration into our final geotechnical report.

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CLOSURE

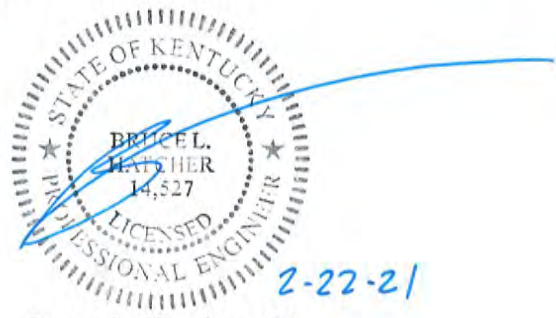
Thank you for allowing CSI to provide our engineering services for your projects. If you have any questions or if we can provide any additional information or services, please call us and we would be happy to propose another contract for such services.

Sincerely,



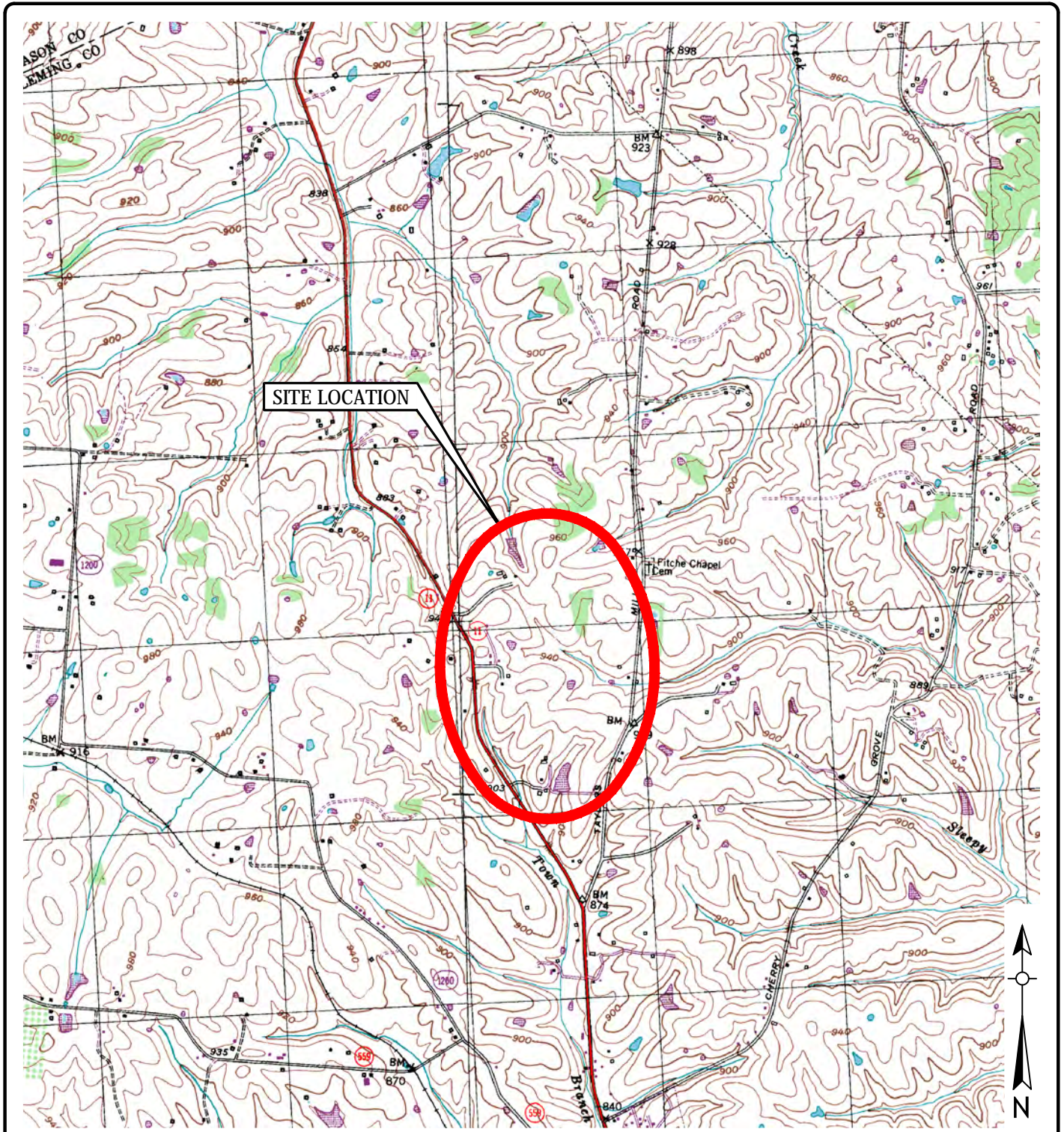
Consulting Services Incorporated of Kentucky,

Connor Jackson, EIT
Staff Engineer



Bruce L. Hatcher, PE
Chief Engineer
Licensed Kentucky 14,527

- Attachments:
- Site Location Plan
 - Boring Location Plan
 - Boring Logs
 - Sounding Summary Table
 - Borings Profile View
 - Soundings Profile View
 - Section A-A'
 - Section B-B'
 - Section C-C'
 - Summary of Laboratory Results
 - Liquid and Plastic Limits Test Report



Site Location Plan adapted from USGS Elizaville and Flemingsburg Topographic Quadrangle maps (dated 1971 and 1969 respectively), with further adaptation by CSI personnel.

FOR ILLUSTRATION PURPOSES ONLY



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 www.csikentucky.com

SITE LOCATION PLAN

Greenfield Industrial Park
 Flemingsburg, Kentucky

Project No:
 LX210016

Date:
 02/22/2021

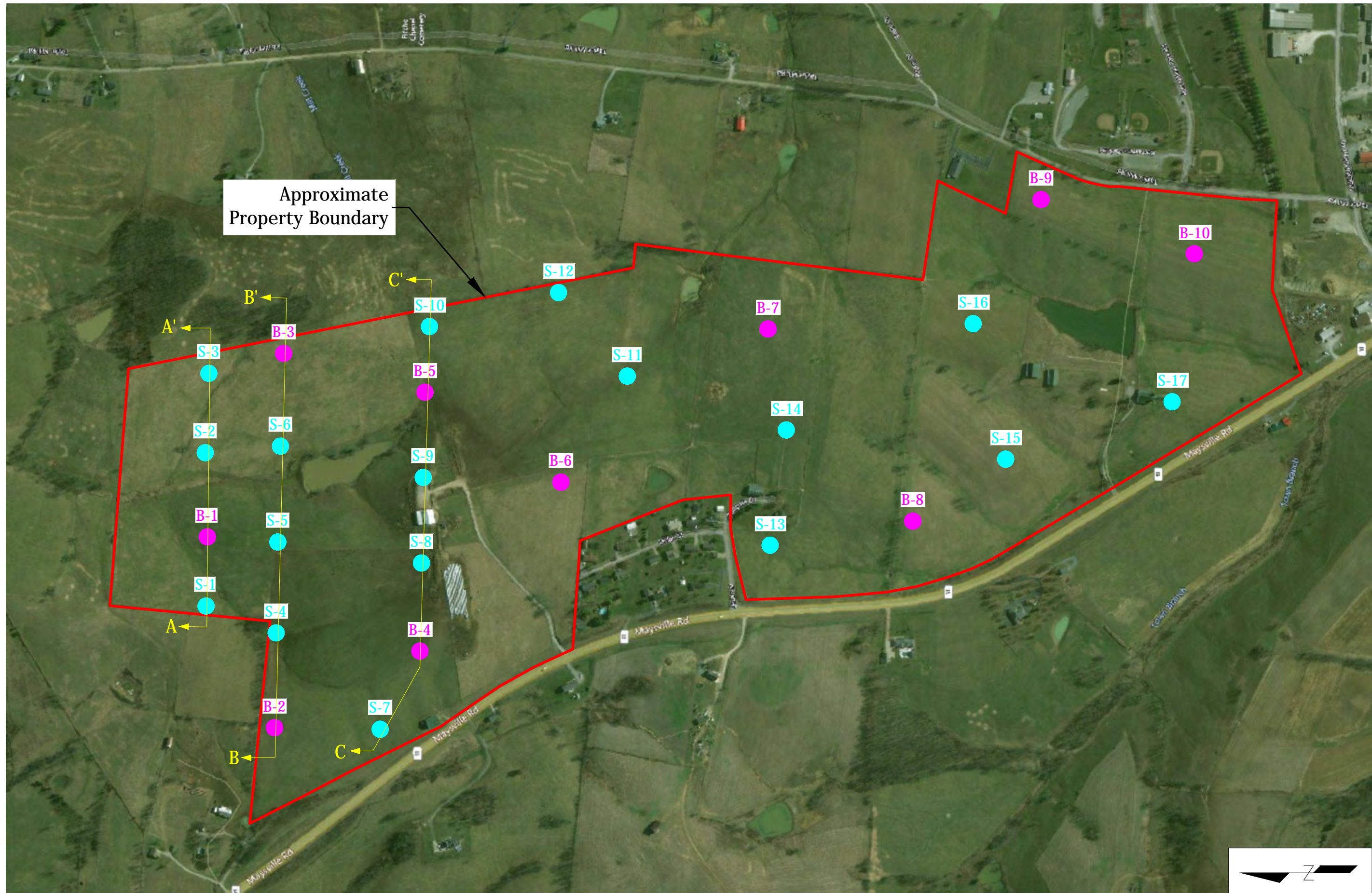
Scale: Not To Scale

Drawn By:
 CJ

Checked By:
 BH

Drawing No:
 SLP - 1

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Approximate
Property Boundary

Boring and Sounding Location Plan adapted from provided Site Plan and aerial imagery, with further adaptation by CSI personnel.
Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

FOR ILLUSTRATION PURPOSES ONLY


























Consulting Services Incorporated of Kentucky 858 Contract Street Lexington, Kentucky 40505 859.309.6021 Office 888.792.3121 Fax www.csikentucky.com		BORING AND SOUNDING LOCATION PLAN Greenfield Industrial Park Flemingsburg, Kentucky		Project No: LX210016		Drawn By: CJ	
				Date: 02/22/2021		Checked By: BH	
				Scale: Not To Scale		Drawing No: BLP - 1	
				LEGEND B-XXX BORING LOCATIONS S-XXX SOUNDING LOCATIONS			



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Geotechnical Boring Information Sheet

Sample Type Symbols	Definitions
Splitspoon (SPT)  Shelby Tube  Grab  Rock Core  Auger Cuttings 	<p>SPT-"Splitspoon" or standard penetration test. Blow counts are number of drops required for a 140 lb hammer dropping 30 inches to drive the sampler 6 inches.</p> <p>N-value is the addition of the last two intervals of the 18-inch sample.</p> <p>Shelby tubes are often called "undisturbed samples". They are directly pushed into the ground, twisted, allowed to rest for a small period of time and then pulled out of the ground. Tops and bottoms are cleaned and then sealed.</p> <p>Sample classification is done in general accordance with ASTM D2487 and 2488 using the Unified Soil Classification System (USCS) as a general guide.</p>
Surface Symbols	
Topsoil  Asphalt  Concrete  Lean Clay  Fat Clay  Glacial Till  Sandy Clay  Silt  Elastic Silt  Lean Clay to Fat Clay  Gravelly Clay  Sandy Silt  Gravelly Silt  Sand  Gravel  Fill  Limestone  Sandstone  Shale/Siltstone  Weathered Rock 	<p>Soil moisture descriptions are based on the recovered sample observations. The descriptors are dry, slightly moist, moist, very moist and wet. These are typically based on relative estimates of the moisture condition of a visual estimation of the soils optimum moisture content (EOMC). Dry is almost in a "dusty" condition usually 6 or more percent below EOMC. Slightly moist is from about 6 to 2 percent below EOMC at a point at which the soil color does not readily change with the addition of water. Moist is usually 2 percent below to 2 percent above EOMC and the point at which the soil will tend to begin forming "balls" under some pressure in the hand. Very moist is usually from about 2 percent to 6 percent above EOMC and also the point at which it's often considered "muddy". Wet soil is usually 6 or more percent above EOMC and often contains free water or the soil is in a saturated state.</p> <p>Silt or Clay is defined at material finer than a standard #200 US sieve (<0.075mm) Sand is defined as material between the size of #200 sieve up to #4 sieve. Gravel is from #4 size sieve material to 3". Cobbles are from 3" to 12". Boulders are over 12".</p> <p>Rock hardness is classified as follows: Very Soft: Easily broken by hand pressure Soft: Ends can be broken by hand pressure; easily broken with hammer Medium: Ends easily broken with hammer; middle requires moderate blow Hard: Ends require moderate hammer blow; middle requires several blows Very Hard: Many blows with a hammer required to break core</p> <p>Rock Quality Designation (RQD) is defined as total combined length of 4" or longer pieces of core divided by the total core run length; defined in percentage.</p>
Samples Strength Descriptors	
Cohesive Soils: N Very Soft 0-1 Soft 2-4 Firm 5-8 Stiff 9-15 Very Stiff 16-30 Hard 31+ Non-cohesive Soils: Very Loose 0-4 Loose 5-10 Firm 11-20 Very Firm 21-30 Dense 30-50 Very Dense 51+	<p>Water or cave-in observed in borings is at completion of drilling each boring unless otherwise noted.</p> <p>Strata lengths shown on borings represents a rough estimate. Transition may be more abrupt or gradual. Soil borings are representative of that estimated location at that time and are based on recovered samples. Conditions may be different between borings and between sample intervals. Boring information is not to be considered stand alone but should be taken in context with comments and information in the geotechnical report and the means by which the borings are logged, sampled and drilled.</p>

BORING LOG

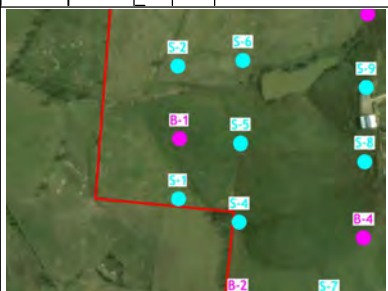
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 858 Contract Street
 Lexington, Kentucky 40505
 Phone: 859.309.6021
 Fax: 888.792.3121



BORING: B-1

Project Number: LX210016 Name: Greenfield Industrial Park Client: Buffalo Trace ADD Location: Flemingsburg, Kentucky Logged By: C. Jackson, EIT	Weather: Sunny, 20s *Elevation (ft): 908.7 Date Started: 2/8/21 Date Completed: 2/8/21 Checked By: B. Hatcher, PE	Contractor: Strata Group Drill Rig: CME - 550 Method: SFA Hole Size (in): 4"
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Elev. (ft)	Depth (ft)	Symbol	Description	Blow Counts (N Value)	Recov. (in)	WC (%)	LL	PL	PI	%<#200	Water Level	Remarks
908			TOPSOIL - 8 inches	4-5-5 (10)	15							Dry upon completion of soil augering
	2	CH	FAT CLAY (CH) - STIFF to VERY STIFF, brown, with some tan mottling, with black oxide nodules, with some red oxide nodules, with rock fragments below 4.5 feet, moist	5-7-9 (16)	10	24.3	51	26	25	88		
906	4			4-7-9 (16)	18							
904	6			6-6-9 (15)	18							
902	8			FAT CLAY (CH) - VERY STIFF, brown and tan, with some gray mottling, with some red oxide staining, with black oxide nodules, with rock fragments, moist	5-7-13 (20)	16						
900	10											
898			Auger Refusal at 11.3 feet									
896	12											
894	14											
892	16											
890	18											
888	20											



*Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

Left Photo: Photo of Approximate Boring Location
 Right Photo: Photo of Boring

BORING LOG

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 Fax: 888.792.3121



BORING: B-2

Project Number: LX210016 Name: Greenfield Industrial Park Client: Buffalo Trace ADD Location: Flemingsburg, Kentucky Logged By: C. Jackson, EIT	Weather: Sunny, 30s *Elevation (ft): 921.7 Date Started: 2/8/21 Date Completed: 2/8/21 Checked By: B. Hatcher, PE	Contractor: Strata Group Drill Rig: CME - 550 Method: SFA Hole Size (in): 4"
---	---	---

Elev. (ft)	Depth (ft)	Symbol	Description	Blow Counts (N Value)	Recov. (in)	WC (%)	LL	PL	PI	%<#200	Water Level	Remarks
920	2	CL	TOPSOIL - 4 inches	6-6-9 (15)	15							Dry upon completion of soil augering
			LEAN CLAY (CL) - STIFF to HARD, light brown, with gray and tan mottling, with black oxide nodules, with some fine roots near surface, moist	13-17-23 (40)	12							
918	4				10-23-49 (72)	18						
916	6		Auger Refusal at 6.3 feet									
914	8											
912	10											
910	12											
908	14											
906	16											
904	18											
902	20											
900												



*Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

Left Photo: Photo of Approximate Boring Location
 Right Photo: Photo of Boring

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BORING: B-3

Project Number: LX210016 Name: Greenfield Industrial Park Client: Buffalo Trace ADD Location: Flemingsburg, Kentucky Logged By: C. Jackson, EIT	Weather: Overcast, 30s *Elevation (ft): 941.3 Date Started: 2/8/21 Date Completed: 2/8/21 Checked By: B. Hatcher, PE	Contractor: Strata Group Drill Rig: CME - 550 Method: SFA Hole Size (in): 4"
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Elev. (ft)	Depth (ft)	Symbol	Description	Blow Counts (N Value)	Recov. (in)	WC (%)	LL	PL	PI	%<#200	Water Level	Remarks
940	2	CL	TOPSOIL - 11 inches	4-5-8 (13)	15							Dry upon completion of soil augering
		CL	LEAN CLAY (CL) - STIFF, brown, with some dark brown mottling, with fine roots, wet	4-5-7 (12)	7	31.7						
938	4	CL	LEAN CLAY (CL) - VERY STIFF, brown and tan, with some orange mottling, with some chert, moist	5-10-8 (18)	14	22.3						
936	6		Floater observed from 6.5 feet to 8.5 feet									
934	8											
932	10	CL	LEAN CLAY (CL) - VERY STIFF, orangish-brown, with gray and tan mottling, with black oxide nodules, with some red oxide staining, moist	7-9-14 (23)	18	24.8	49	26	23	98		
930	12											
928	14		Auger Refusal at 13.8 feet									
926	16											
924	18											
922	20											
920												



*Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

Left Photo: Photo of Approximate Boring Location
 Right Photo: Photo of Boring

BORING LOG

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BORING: B-4

Project Number: LX210016 Name: Greenfield Industrial Park Client: Buffalo Trace ADD Location: Flemingsburg, Kentucky Logged By: C. Jackson, EIT	Weather: Sunny, 30s *Elevation (ft): 962.5 Date Started: 2/8/21 Date Completed: 2/8/21 Checked By: B. Hatcher, PE	Contractor: Strata Group Drill Rig: CME - 550 Method: SFA Hole Size (in): 4"
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Elev. (ft)	Depth (ft)	Symbol	Description	Blow Counts (N Value)	Recov. (in)	WC (%)	LL	PL	PI	%<#200	Water Level	Remarks
962	0		TOPSOIL - 5 inches	4-5-6 (11)	15							Dry upon completion of soil augering
960	2	CL	LEAN CLAY (CL) - STIFF to VERY STIFF, brown, with tan mottling, with black oxide nodules, with some fine roots, moist	6-11-13 (24)	5	25.8						
958	4	CL	LEAN CLAY (CL) - VERY STIFF to HARD, light brown, with gray and tan mottling, with some fine roots, with black oxide nodules, moist	7-11-18 (29)	12							
956	6	CL		7-12-19 (31)	8							
954	8	CH	FAT CLAY (CH) - HARD, tan, with brown mottling, with weathered rock fragments, moist	8-13-18 (31)	18	23.0						
952	10		Auger Refusal at 11.1 feet									
950	12											
948	14											
946	16											
944	18											
942	20											



*Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

Left Photo: Photo of Approximate Boring Location
 Right Photo: Photo of Boring

BORING LOG

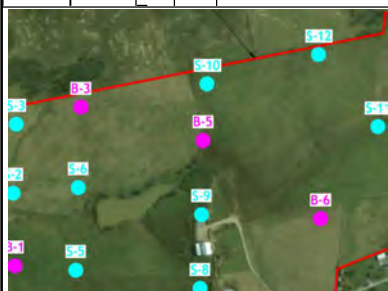
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 Fax: 888.792.3121



BORING: B-5

Project Number: LX210016 Name: Greenfield Industrial Park Client: Buffalo Trace ADD Location: Flemingsburg, Kentucky Logged By: C. Jackson, EIT	Weather: Overcast, 30s *Elevation (ft): 954.3 Date Started: 2/8/21 Date Completed: 2/8/21 Checked By: B. Hatcher, PE	Contractor: Strata Group Drill Rig: CME - 550 Method: SFA Hole Size (in): 4"
---	--	---

Elev. (ft)	Depth (ft)	Symbol	Description	Blow Counts (N Value)	Recov. (in)	WC (%)	LL	PL	PI	%<#200	Water Level	Remarks
954	0		TOPSOIL - 4 inches	4-3-5 (8)	10							Dry upon completion of soil augering
952	2	CH	FAT CLAY (CH) - FIRM, brown, with orange mottling, with some tan mottling, with a little black oxide nodules, with fine roots, with rock fragments, moist	6-5-10 (15)	10							
950	4	CH	FAT CLAY (CH) - STIFF to HARD to VERY STIFF, tannish-gray, with some black oxide nodules, with some red oxide nodules, with some rock fragments, moist	7-10-23 (33)	10	19.5						
948	6	CH		20-10-15 (25)	5							
946	8		WEATHERED ROCK									
944	10											
942	12		Auger Refusal at 12.2 feet									
940	14											
938	16											
936	18											
934	20											



*Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

Left Photo: Photo of Approximate Boring Location
 Right Photo: Photo of Boring

BORING LOG

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BORING: B-6

Project Number: LX210016 Name: Greenfield Industrial Park Client: Buffalo Trace ADD Location: Flemingsburg, Kentucky Logged By: C. Jackson, EIT	Weather: Overcast, 30s *Elevation (ft): 972.1 Date Started: 2/8/21 Date Completed: 2/8/21 Checked By: B. Hatcher, PE	Contractor: Strata Group Drill Rig: CME - 550 Method: SFA Hole Size (in): 4"
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Elev. (ft)	Depth (ft)	Symbol	Description	Blow Counts (N Value)	Recov. (in)	WC (%)	LL	PL	PI	%<#200	Water Level	Remarks
			TOPSOIL - 8 inches									
970	2	CL	LEAN CLAY (CL) - FIRM to HARD to VERY STIFF, tan, with gray mottling, with fine roots near surface, with some chert, with black oxide nodules, with rock fragments below 1.5 feet and increasing with depth, moist	4-4-4 (8)	18							Dry upon completion of soil augering Note: zone with abundant chert encountered at 7.8 feet
968	4			7-23-32 (55)	5							
966	6			7-10-19 (29)	18	27.1						
964	8	CL	LEAN CLAY (CL) - VERY STIFF, orangish-brown, with gray and tan mottling, with some black oxide nodules, with some red oxide nodules, with chert (increasing with depth), moist	5-9-12 (21)	16	17.6						
962	10			10-10-31 (41)	13							
960	12		LEAN CLAY (CL) - HARD, tannish-gray, with light brown mottling, with black oxide nodules, with relic structure, with some sand (increasing with depth), moist									
958	14		Auger Refusal at 13.6 feet									
956	16											
954	18											
952	20											



*Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

Left Photo: Photo of Approximate Boring Location
 Right Photo: Photo of Boring

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BORING: B-7

Project Number: LX210016 Name: Greenfield Industrial Park Client: Buffalo Trace ADD Location: Flemingsburg, Kentucky Logged By: C. Jackson, EIT	Weather: Overcast, 30s *Elevation (ft): 958.7 Date Started: 2/9/21 Date Completed: 2/9/21 Checked By: B. Hatcher, PE	Contractor: Strata Group Drill Rig: CME - 550 Method: SFA Hole Size (in): 4"
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Elev. (ft)	Depth (ft)	Symbol	Description	Blow Counts (N Value)	Recov. (in)	WC (%)	LL	PL	PI	%<#200	Water Level	Remarks
958	0		TOPSOIL - 4 inches	4-6-9 (15)	15							Dry upon completion of soil augering
	2		LEAN CLAY (CL) - STIFF to HARD to VERY STIFF, tan, with zones of brown, with some black oxide nodules, with fine roots near surface, with some rock fragments below 2 feet, moist	13-25-50/2"	4							
956	4											
954	6				5-7-11 (18)	17						
952	8				6-10-18 (28)	18	24.4					
950	10		LEAN CLAY (CL) - HARD, tannish-gray, with some sand, with relic structure, with weathered rock fragments, moist	13-50/5"	11							
948	12		Auger Refusal at 11.5 feet									
946	14											
944	16											
942	18											
940	20											
938												



*Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

Left Photo: Photo of Approximate Boring Location
 Right Photo: Photo of Boring

BORING LOG

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BORING: B-8

Project Number: LX210016 Name: Greenfield Industrial Park Client: Buffalo Trace ADD Location: Flemingsburg, Kentucky Logged By: C. Jackson, EIT	Weather: Overcast, 20s *Elevation (ft): 943.7 Date Started: 2/9/21 Date Completed: 2/9/21 Checked By: B. Hatcher, PE	Contractor: Strata Group Drill Rig: CME - 550 Method: SFA Hole Size (in): 4"
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Elev. (ft)	Depth (ft)	Symbol	Description	Blow Counts (N Value)	Recov. (in)	WC (%)	LL	PL	PI	%<#200	Water Level	Remarks
			TOPSOIL - 14 inches	2-3-5 (8)	18							Dry upon completion of soil augering
942	2	CL	LEAN CLAY (CL) - FIRM to STIFF, brown, with tan mottling, with black oxide nodules, with little chert, moist	6-7-7 (14)	18	28.7						
940	4											
938	6	CL	LEAN CLAY (CL) - VERY STIFF to HARD, tan and brown, with some chert, with little black oxide nodules, with rock fragments increasing in abundance and size with depth, moist	7-7-15 (22)	16	25.7						
936	8			18-20-18 (38)	18							
934	10		LEAN CLAY (CL) - HARD, tannish-gray, with some sand, with relic structure, with rock fragments (increasing with depth), moist	16-19-21 (40)	18	16.0						
932	12											
930	14	CL										
928	16			15-19-18 (37)	13							
926	18											
924	20		Auger Refusal at 18.5 feet									
922												



*Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

Left Photo: Photo of Approximate Boring Location
 Right Photo: Photo of Boring

BORING LOG

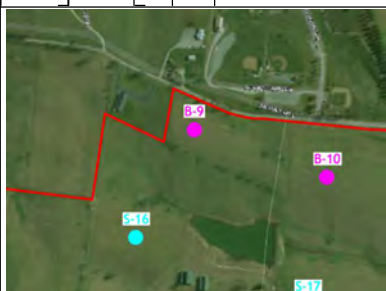
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BORING: B-9

Project Number: LX210016 Name: Greenfield Industrial Park Client: Buffalo Trace ADD Location: Flemingsburg, Kentucky Logged By: C. Jackson, EIT	Weather: Overcast, 20s *Elevation (ft): 954.5 Date Started: 2/9/21 Date Completed: 2/9/21 Checked By: B. Hatcher, PE	Contractor: Strata Group Drill Rig: CME - 550 Method: SFA Hole Size (in): 4"
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Elev. (ft)	Depth (ft)	Symbol	Description	Blow Counts (N Value)	Recov. (in)	WC (%)	LL	PL	PI	%<#200	Water Level	Remarks
954			TOPSOIL - 8 inches	3-3-6 (9)	15							Dry upon completion of soil augering
	2	CL	LEAN CLAY (CL) - STIFF to HARD, brown, with tan mottling, with black oxide nodules, with fine roots, with trace rock fragments, moist	50/5"	3							
952												
	4	CL	LEAN CLAY (CL) - VERY STIFF, tannish-brown, with gray mottling, with black oxide nodules, with some fine roots, with few rock fragments, wet	5-6-10 (16)	18	32.2						
950												
	6	CL	LEAN CLAY (CL) - VERY STIFF, tan, with gray mottling, and some brown mottling, with black oxide nodules, with rock fragments, with trace sand, moist	13-17-9 (26)	18							
948												
	8	CL										
946												
	10	CL										
944												
	12	CL										
942												
	14	CL	LEAN CLAY (CL) - HARD, tannish-gray, with relic structure, with some sand, with rock fragments, moist	23-50/1"	7							
940												
	16	CL										
938												
	18	CL										
936												
	20	CL	Auger Refusal at 19.8 feet									
934												



*Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

Left Photo: Photo of Approximate Boring Location
 Right Photo: Photo of Boring

BORING LOG

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BORING: B-10

Project Number: LX210016 Name: Greenfield Industrial Park Client: Buffalo Trace ADD Location: Flemingsburg, Kentucky Logged By: C. Jackson, EIT	Weather: Overcast, 20s *Elevation (ft): 924.4 Date Started: 2/9/21 Date Completed: 2/9/21 Checked By: B. Hatcher, PE	Contractor: Strata Group Drill Rig: CME - 550 Method: SFA Hole Size (in): 4"
---	--	---

Elev. (ft)	Depth (ft)	Symbol	Description	Blow Counts (N Value)	Recov. (in)	WC (%)	LL	PL	PI	%<#200	Water Level	Remarks
924			TOPSOIL - 7 inches									
	2	CL	LEAN CLAY (CL) - FIRM to VERY STIFF, brown, with some tan mottling, with black oxide nodules, with fine roots, moist	3-4-4 (8)	18							Dry upon completion of soil augering
922				4-8-10 (18)	13							
	4	CL	LEAN CLAY (CL) - VERY STIFF, tan, with brown mottling, with some orange mottling, with rock fragments, with some black oxide nodules, with some fine root hairs, moist	10-11-11 (22)	18							
918				4-13-13 (26)	8							
916		CL	LEAN CLAY (CL) - VERY STIFF, tannish-gray, with some brown and orange mottling, with rock fragments, with black oxide nodules, moist	8-10-8 (18)	16							
914	10											
	12		Auger Refusal at 11.0 feet									
912												
	14											
910												
	16											
908												
	18											
906												
	20											
904												



*Elevations were determined using Real Time Kinematic Differential GPS referencing the KYCORS network.

Left Photo: Photo of Approximate Boring Location
 Right Photo: Photo of Boring



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Geotechnical & Materials Engineering | IBC Special Inspection | Material Testing

SOUNDING SUMMARY TABLE

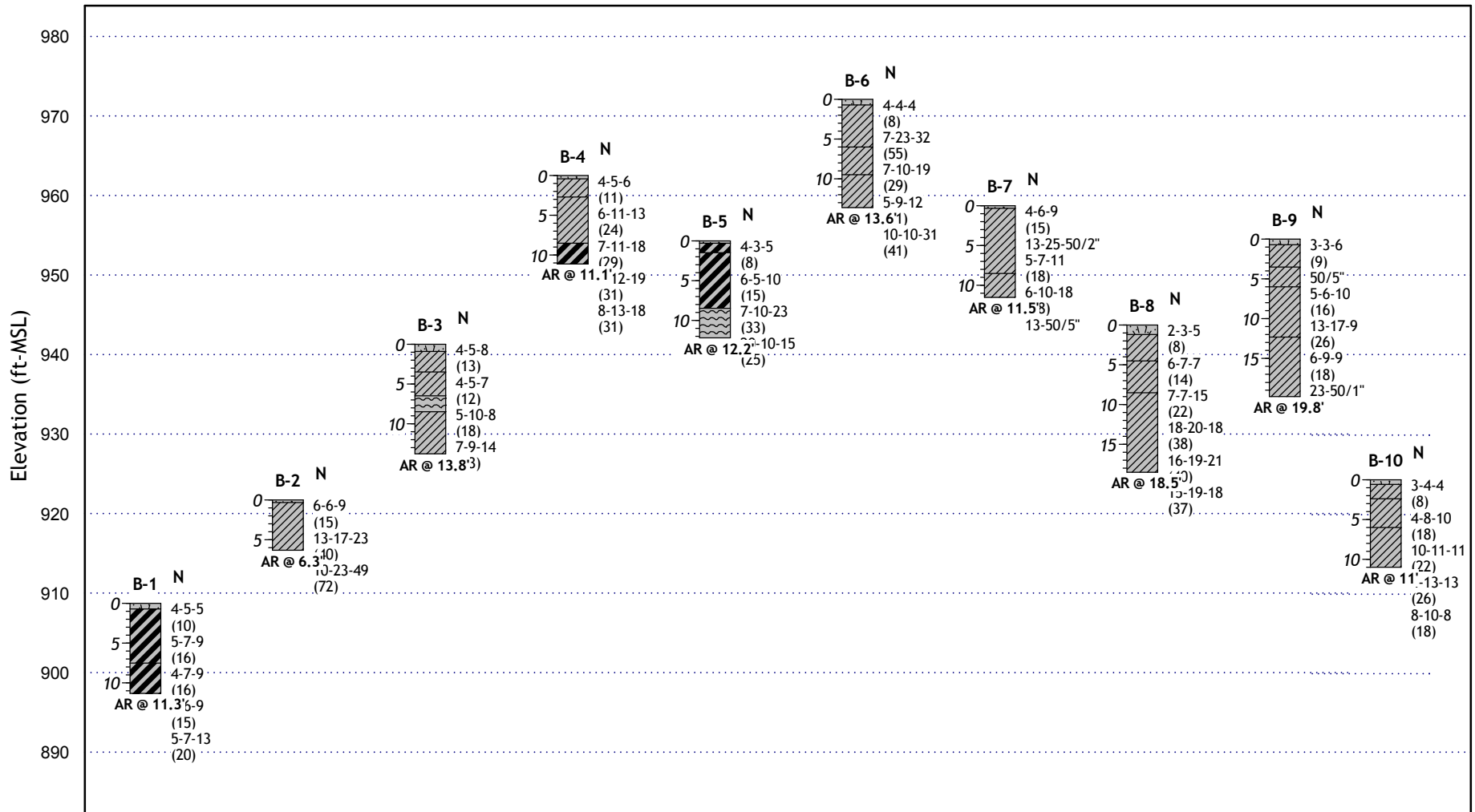
Greenfield Industrial Park

Flemingsburg, Kentucky

CSI Project No. LX210016

Sounding No.	Auger Refusal Depth (ft.)	Notes
S-1	9.4	
S-2	10.5	Top of weathered rock observed at 6.5 feet
S-3	10.0	Top of weathered rock observed at 8.0 feet
S-4	10.5	
S-5	13.7	
S-6	10.7	Top of weathered rock observed at 8.9 feet
S-7	6.0	
S-8	5.0	
S-9	10.3	
S-10	13.0	Top of weathered rock observed at 11.5 feet
S-11	8.8	
S-12	6.4	Top of weathered rock observed at 4.1 feet
S-13	11.5	Top of weathered rock observed at 7.8 feet
S-14	9.9	Top of weathered rock observed at 5.7 feet
S-15	13.8	Top of weathered rock observed at 6.0 feet
S-16	18.8	
S-17	12.2	

Borings Profile View



BT = Boring Terminated
 AR = Auger Refusal
 CT = Coring Terminated
 = Water Depth

SOIL TYPES

(Shown in Graphic Log)

- Fill
- Asphalt

- | | | | |
|---------|-------------|-------------|-----------|
| Topsoil | Lean Clay | Sandy Silt | Limestone |
| Gravel | Fat Clay | Clayey Silt | Sandstone |
| Sand | Silty Sand | Sandy Clay | Siltstone |
| Silt | Clayey Sand | Silty Clay | Shale |

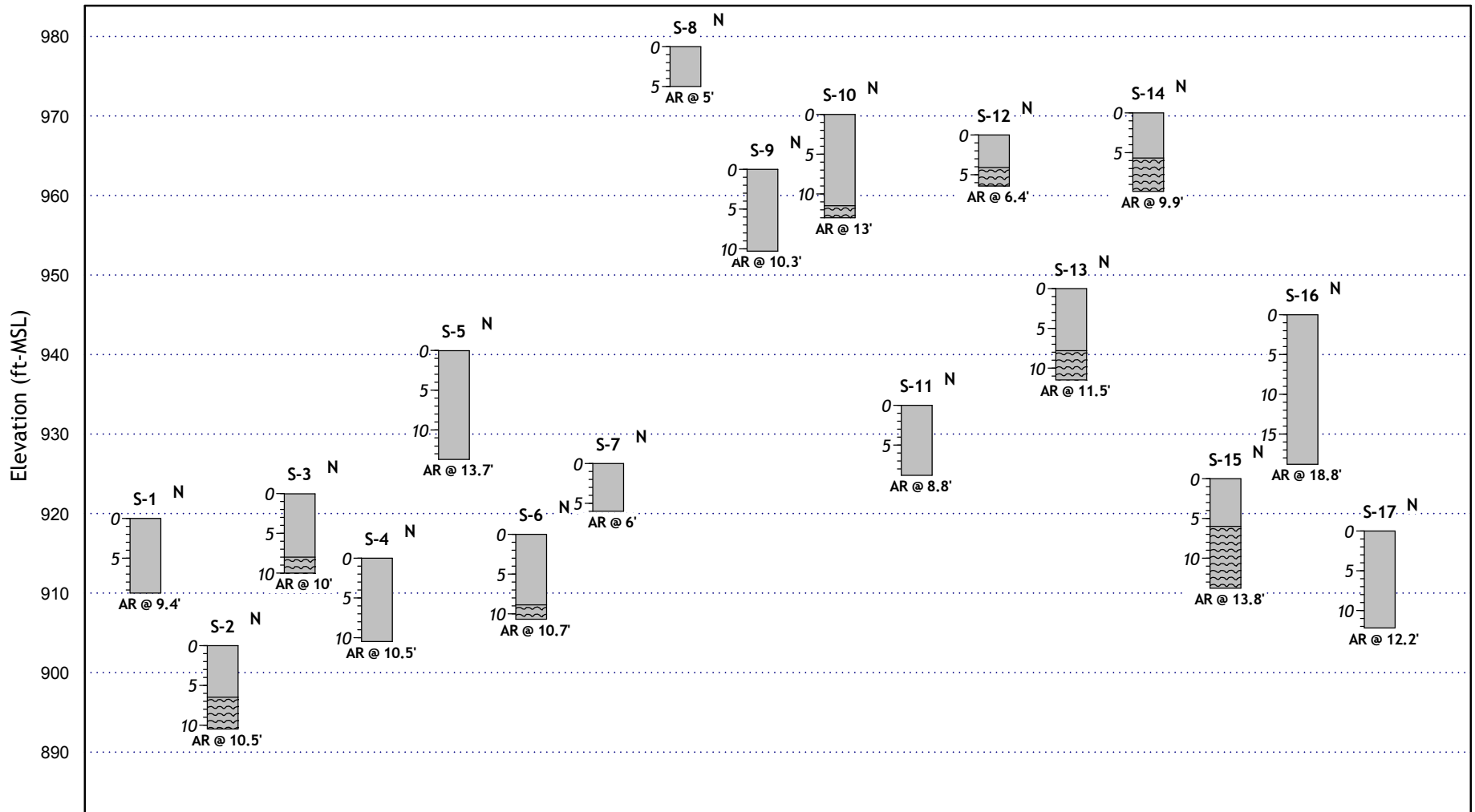
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BORING PROFILE
 Fig. 1

Soundings Profile View



BT = Boring Terminated
 AR = Auger Refusal
 CT = Coring Terminated
 = Water Depth

SOIL TYPES

(Shown in Graphic Log)

Fill
 Asphalt

Topsoil	Lean Clay	Sandy Silt	Limestone
Gravel	Fat Clay	Clayey Silt	Sandstone
Sand	Silty Sand	Sandy Clay	Siltstone
Silt	Clayey Sand	Silty Clay	Shale

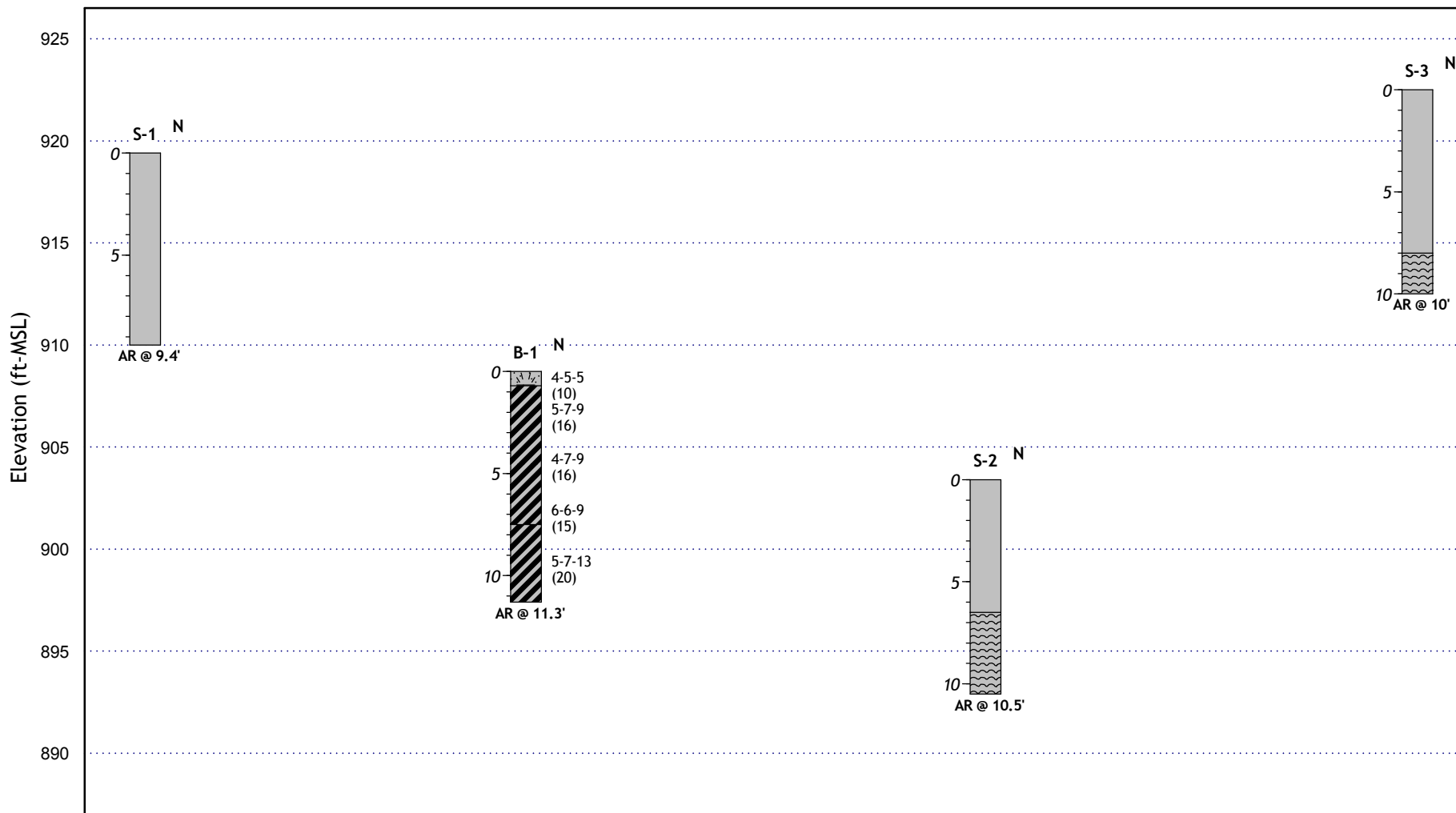
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BORING PROFILE
 Fig. 1

Section A - A'



BT = Boring Terminated
 AR = Auger Refusal
 CT = Coring Terminated
 = Water Depth

SOIL TYPES

(Shown in Graphic Log)

- Fill
- Asphalt

- | | | | |
|---------|-------------|-------------|-----------|
| Topsoil | Lean Clay | Sandy Silt | Limestone |
| Gravel | Fat Clay | Clayey Silt | Sandstone |
| Sand | Silty Sand | Sandy Clay | Siltstone |
| Silt | Clayey Sand | Silty Clay | Shale |

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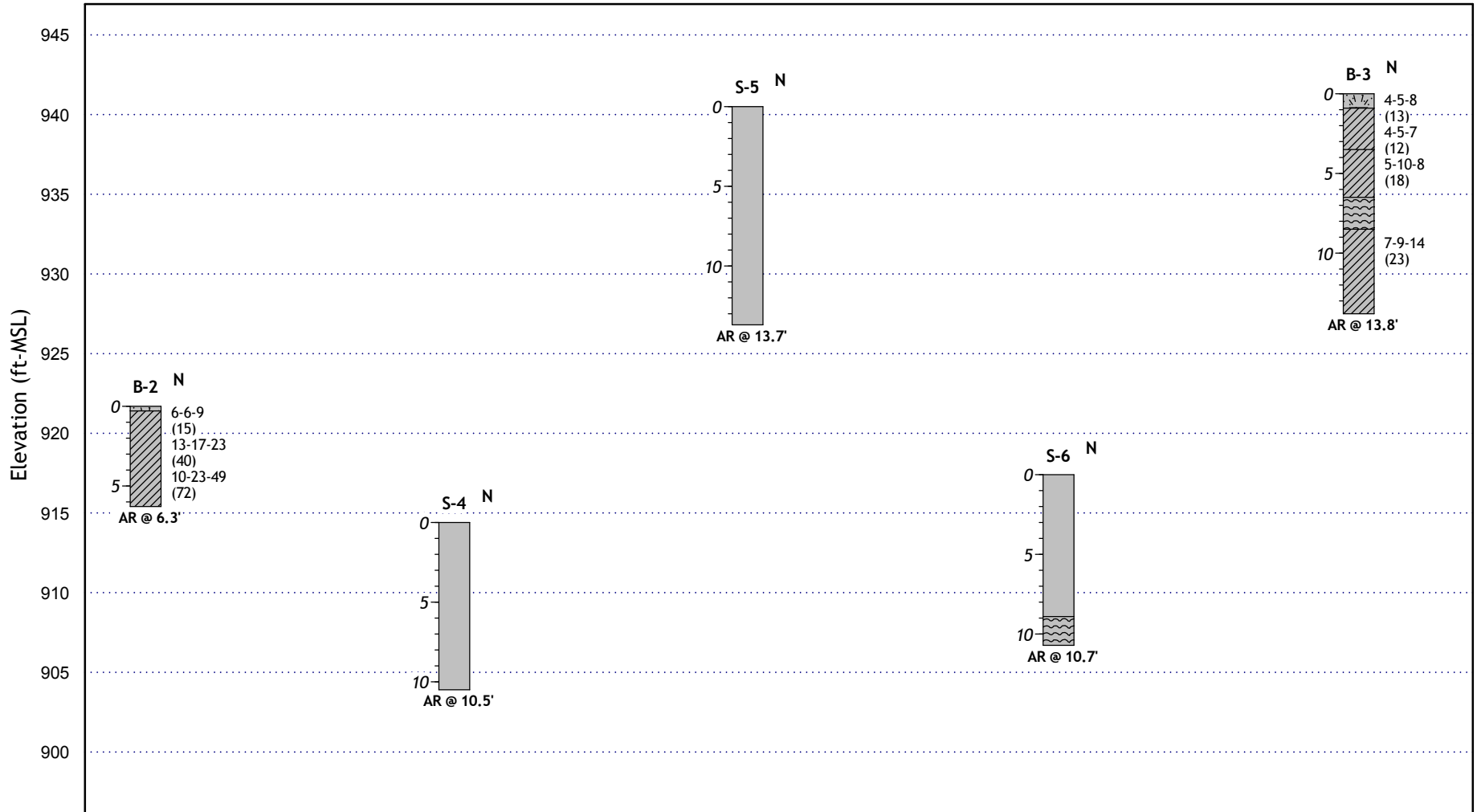


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BORING PROFILE

Fig. 1

Section B - B'



BT = Boring Terminated
 AR = Auger Refusal
 CT = Coring Terminated
 = Water Depth

SOIL TYPES

(Shown in Graphic Log)

- Fill
- Asphalt

- | | | | |
|---------|-------------|-------------|-----------|
| Topsoil | Lean Clay | Sandy Silt | Limestone |
| Gravel | Fat Clay | Clayey Silt | Sandstone |
| Sand | Silty Sand | Sandy Clay | Siltstone |
| Silt | Clayey Sand | Silty Clay | Shale |

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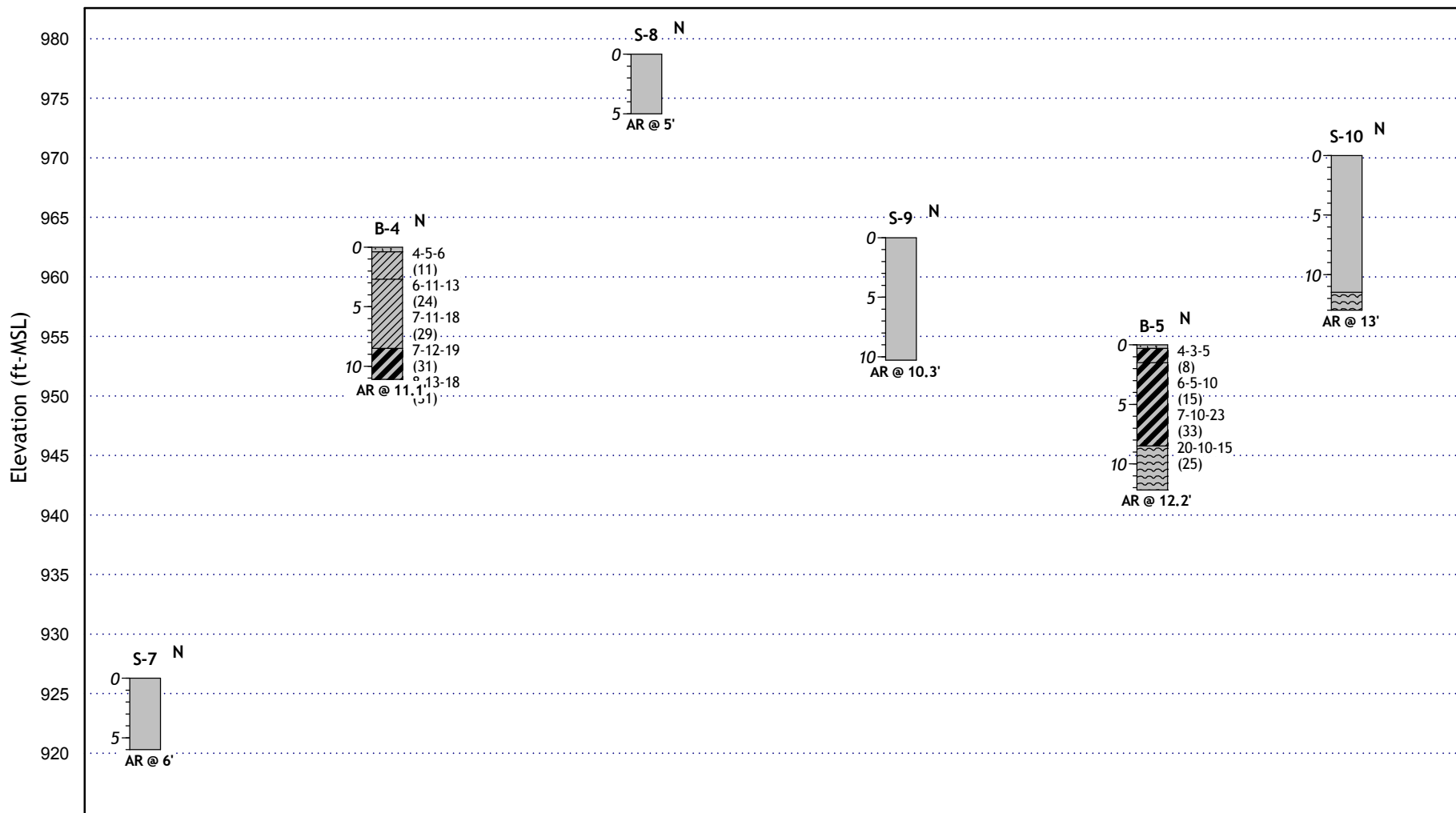


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BORING PROFILE

Fig. 1

Section C - C'



BT = Boring Terminated
 AR = Auger Refusal
 CT = Coring Terminated
 = Water Depth

SOIL TYPES

(Shown in Graphic Log)

Fill
 Asphalt

Topsoil	Lean Clay	Sandy Silt	Limestone
Gravel	Fat Clay	Clayey Silt	Sandstone
Sand	Silty Sand	Sandy Clay	Siltstone
Silt	Clayey Sand	Silty Clay	Shale

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BORING PROFILE

Fig. 1

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FIELD TESTING PROCEDURES

Field Operations: The general field procedures employed by CSI are summarized in ASTM D 420 which is entitled "Investigating and Sampling Soils and Rocks for Engineering Purposes." This recommended practice lists recognized methods for determining soil and rock distribution and ground water conditions. These methods include geophysical and in situ methods as well as borings.

Borings are drilled to obtain subsurface samples using one of several alternate techniques depending upon the subsurface conditions. These techniques are:

- a. Continuous 2-1/2 or 3-1/4 inch I.D. hollow stem augers;
- b. Wash borings using roller cone or drag bits (mud or water);
- c. Continuous flight augers (ASTM D 1425).

These drilling methods are not capable of penetrating through material designated as "refusal materials." Refusal, thus indicated, may result from hard cemented soil, soft weathered rock, coarse gravel or boulders, thin rock seams, or the upper surface of sound continuous rock. Core drilling procedures are required to determine the character and continuity of refusal materials.

The subsurface conditions encountered during drilling are reported on a field test boring record by the chief driller. The record contains information concerning the boring method, samples attempted and recovered, indications of the presence of various materials such as coarse gravel, cobbles, etc., and observations between samples. Therefore, these boring records contain both factual and interpretive information. The field boring records are on file in our office.

The soil and rock samples plus the field boring records are reviewed by a geotechnical engineer. The engineer classifies the soils in general accordance with the procedures outlined in ASTM D 2488 and prepares the final boring records, which are the basis for all evaluations and recommendations.

The final boring records represent our interpretation of the contents of the field records based on the results of the engineering examinations and tests of the field samples. These records depict subsurface conditions at the specific locations and at the particular time when drilled. Soil conditions at other locations may differ from conditions occurring at these boring locations. Also, the passage of time may result in a change in the subsurface soil and ground water conditions at these boring locations. The lines designating the interface between soil or refusal materials on the records and on profiles represent approximate boundaries. The transition between materials may be gradual. The final boring records are included with this report.

The detailed data collection methods using during this study are discussed on the following pages.

Soil Test Borings: Soil test borings were made at the site at locations shown on the attached Boring Plan. Soil sampling and penetration testing were performed in accordance with ASTM D 1586.

The borings were made by mechanically twisting a hollow stem steel auger into the soil. At regular intervals, the drilling tools were removed and soil samples obtained with a standard 1.4 inch I.D., 2 inch O.D., split tube sampler. The sampler was first seated 6 inches to penetrate any loose cuttings, then driven an additional foot with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot was recorded and is designated the "penetration resistance". The penetration resistance, when properly evaluated, is an index to the soil strength and foundation supporting capability.

Representative portions of the soil samples, thus obtained, were placed in glass jars and transported to the laboratory. In the laboratory, the samples were examined to verify the driller's field classifications. Test Boring Records are attached which graphically show the soil descriptions and penetration resistances.

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Core Drilling: Refusal materials are materials that cannot be penetrated with the soil drilling methods employed. Refusal, thus indicated, may result from hard cemented soil, soft weathered rock, coarse gravel or boulders, thin rock seams or the upper surface of sound continuous rock. Core drilling procedures are required to determine the character and continuity of refusal materials.

Prior to coring, casing is set in the drilled hole through the overburden soils, if necessary, to keep the hole from caving. Refusal materials are then cored according to ASTM D 2113 using a diamond-studded bit fastened to the end of a hollow double tube core barrel. This device is rotated at high speeds, and the cuttings are brought to the surface by circulating water. Core samples of the material penetrated are protected and retained in the swivel-mounted inner tube. Upon completion of each drill run, the core barrel is brought to the surface, the core recovered is measured, the samples are removed and the core is placed in boxes for storage.

The core samples are returned to our laboratory where the refusal material is identified and the percent core recovery and rock quality designation is determined by a soils engineer or geologist. The percent core recovery is the ratio of the sample length obtained to the depth drilled, expressed as a percent. The rock quality designation (RQD) is obtained by summing up the length of core recovered, including only the pieces of core which are four inches or longer, and dividing by the total length drilled. The percent core recovery and RQD are related to soundness and continuity of the refusal material. Refusal material descriptions, recoveries, and RQDs are shown on the "Test Boring Records".

Hand Auger Borings and Dynamic Cone Penetration Testing: Hand auger borings are performed manually by CSI field personnel. This consists of manually twisting hand auger tools into the subsurface and extracting "grab" or baggie samples at intervals determined by the project engineer. At the sample intervals, dynamic cone penetration (DCP) testing is performed. This testing involves the manual raising and dropping of a 20-pound hammer, 18 inches. This "driver" head drives a solid-1 $\frac{3}{4}$ inch diameter cone into the ground. DCP "counts" are the number of drops it takes for the hammer to drive three 1 $\frac{3}{4}$ inch increments, recorded as X-Y-Z values.

Test Pits: Test pits are excavated by the equipment available, often a backhoe or trackhoe. The dimensions of the test pits are based on the equipment used and the power capacity of the equipment. Samples are taken from the spoils of typical buckets of the excavator and sealed in jars or "Ziploc" baggies. Dynamic Cone Penetration or hand probe testing is often performed in the upper few feet as OSHA standards allow. Refusal is deemed as the lack of advancement of the equipment with reasonable to full machine effort.

Water Level Readings: Water table readings are normally taken in conjunction with borings and are recorded on the "Test Boring Records". These readings indicate the approximate location of the hydrostatic water table at the time of our field investigation. Where impervious soils are encountered (clayey soils) the amount of water seepage into the boring is small, and it is generally not possible to establish the location of the hydrostatic water table through water level readings. The ground water table may also be dependent upon the amount of precipitation at the site during a particular period of time. Fluctuations in the water table should be expected with variations in precipitation, surface run-off, evaporation and other factors.

The time of boring water level reported on the boring records is determined by field crews as the drilling tools are advanced. The time of boring water level is detected by changes in the drilling rate, soil samples obtained, etc. Additional water table readings are generally obtained at least 24 hours after the borings are completed. The time lag of at least 24 hours is used to permit stabilization of the ground water table, which has been disrupted by the drilling operations. The readings are taken by dropping a weighted line down the boring or using an electrical probe to detect the water level surface.

Occasionally the borings will cave-in, preventing water level readings from being obtained or trapping drilling water above the caved-in zone. The cave-in depth is also measured and recorded on the boring records.

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LABORATORY TESTING PROCEDURES

Soil Classification: Soil classifications provide a general guide to the engineering properties of various soil types and enable the engineer to apply past experience to current problems. In our investigations, samples obtained during drilling operations are examined in our laboratory and visually classified by an engineer. The soils are classified according to consistency (based on number of blows from standard penetration tests), color and texture. These classification descriptions are included on our "Test Boring Records."

The classification system discussed above is primarily qualitative and for detailed soil classification two laboratory tests are necessary: grain size tests and plasticity tests. Using these test results the soil can be classified according to the AASHTO or Unified Classification Systems (ASTM D 2487). Each of these classification systems and the in-place physical soil properties provides an index for estimating the soil's behavior. The soil classification and physical properties obtained are presented in this report.

Rock Classification: Rock classifications provide a general guide to the engineering properties of various rock types and enable the engineer to apply past experience to current situations. In our explorations, rock core samples obtained during drilling operations are examined in our laboratory and visually classified by an engineer. The rock cores are classified according to relative hardness and RQD (see Guide to Rock Classification Terminology), color, and texture. These classification descriptions are included on our Test Boring Records.

Atterberg Limits: Portions of the samples are taken for Atterberg Limits testing to determine the plasticity characteristics of the soil. The plasticity index (PI) is the range of moisture content over which the soil deforms as a plastic material. It is bracketed by the liquid limit (LL) and the plastic limit (PL). The liquid limit is the moisture content at which the soil becomes sufficiently "wet" to flow as a heavy viscous fluid. The plastic limit is the lowest moisture content at which the soil is sufficiently plastic to be manually rolled into tiny threads. The liquid limit and plastic limit are determined in accordance with ASTM D 4318.

Moisture Content: The Moisture Content is determined according to ASTM D 2216.

Percent Finer Than 200 Sieve: Selected samples of soils are washed through a number 200 sieve to determine the percentage of material less than 0.074 mm in diameter.

Rock Strength Tests: To obtain strength data for rock materials encountered, unconfined compression tests are performed on selected samples. In the unconfined compression test, a cylindrical portion of the rock core is subjected to increasing axial load until it fails. The pressure required to produce failure is recorded, corrected for the length to diameter ratio of the core and reported.

Compaction Tests: Compaction tests are run on representative soil samples to determine the dry density obtained by a uniform compactive effort at varying moisture contents. The results of the test are used to determine the moisture content and unit weight desired in the field for similar soils. Proper field compaction is necessary to decrease future settlements, increase the shear strength of the soil and decrease the permeability of the soil.

The two most commonly used compaction tests are the Standard Proctor test and the Modified Proctor test. They are performed in accordance with ASTM D 698 and D 1557, respectively. Generally, the Standard Proctor compaction test is run on samples from building or parking areas where small compaction equipment is anticipated. The Modified compaction test is generally performed for heavy structures, highways, and other areas where large compaction equipment is expected. In both tests a representative soil sample is placed in a mold and compacted with a compaction hammer. Both tests have three alternate methods.

Summary of Laboratory Results

Borehole	Depth	Sample Type	Liquid Limit	Plastic Limit	Plasticity Index	Classification	Water Content (%)	Unconfined Compressive Strength (tsf)	Dry Density (pcf)	Wet Density (pcf)	Max. Dry Density (pcf)	Opt. Water Content (%)	CBR	Swell (%)	RQD	Percent Recovery	k (cm/sec)	% Finer #200
B-1	1.5	SS	51	26	25	CH	24.3											88
B-3	1.5	SS					31.7											
B-3	4.0	SS					22.3											
B-3	9.0	SS	49	26	23	CL	24.8											98
B-4	1.5	SS					25.8											
B-4	9.0	SS					23.0											
B-5	4.0	SS					19.5											
B-6	4.0	SS					17.6											
B-6	6.5	SS					27.1											
B-7	6.5	SS					24.4											
B-8	1.5	SS					28.7											
B-8	4.0	SS					25.7											
B-8	9.0	SS					16.0											
B-9	4.0	SS					32.2											
B-9	9.0	SS					22.9											



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SS - Split Spoon Sample
 GRAB - Bulk Grab Sample
 k - Coefficient of Permeability
 - See Attached test Results

PROJECT INFORMATION

Client: Buffalo Trace ADD
 Project Name: Greenfield Industrial Park
 Project Number: LX210016
 Project Location: Flemingsburg, Kentucky

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Test	Method	Hammer Wt./ Fall	Mold Diam.	Run on Material Finer Than	No. of Layers	No. of Blows/ Layer
Standard D 698	A	5.5 lb./12"	4"	No. 4 sieve	3	25
	B	5.5 lb./12"	4"	3/8" sieve	3	25
	C	5.5 lb./12"	6"	3/4" sieve	3	56

Test	Method	Hammer Wt./ Fall	Mold Diam.	Run on Material Finer Than	No. of Layers	No. of Blows/ Layer
Modified D 15557	A	10 lb./18"	4"	No. 4 sieve	5	25
	B	10 lb./18"	4"	3/8" sieve	5	25
	C	10 lb./18"	6"	3/4" sieve	5	56

The moisture content and unit weight of each compacted sample is determined. Usually 4 to 5 such tests are run at different moisture contents. Test results are presented in the form of a dry unit weight versus moisture content curve. The compaction method used and any deviations from the recommended procedures are noted in this report.

Laboratory California Bearing Ratio Tests: The California Bearing Ratio, generally abbreviated to CBR, is a punching shear test and is a comparative measure of the shearing resistance of a soil. It provides data that is a semi-empirical index of the strength and deflection characteristics of a soil. The CBR is used with empirical curves to design pavement structures.

A laboratory CBR test is performed according to ASTM D 1883. The results of the compaction tests are utilized in compacting the test sample to the desired density and moisture content for the laboratory California Bearing Ratio test. A representative sample is compacted to a specified density at a specified moisture content. The test is performed on a 6-inch diameter, 4.58-inch-thick disc of compacted soil that is confined in a cylindrical steel mold. The sample is compacted in accordance with Method C of ASTM D 698 or D 1557.

CBR tests may be run on the compacted samples in either soaked or unsoaked conditions. During testing, a piston approximately 2 inches in diameter is forced into the soil sample at the rate of 0.05 inch per minute to a depth of 0.5 inch to determine the resistance to penetration. The CBR is the percentage of the load it takes to penetrate the soil to a 0.1 inch depth compared to the load it takes to penetrate a standard crushed stone to the same depth. Test results are typically shown graphically.

Consolidation Tests: Consolidation tests are conducted on representative soil samples to determine the change in height of the sample with increasing load. The results of these tests are used to estimate the settlement and time rate of settlement of structures constructed on similar soils. A consolidation test is performed according to ASTM D2435 on a single section of an undisturbed sample extruded from a sample tube. The sample is trimmed into a disc 2.5 inches in diameter and 0.75 inch thick. The disc is confined in a stainless steel ring and sandwiched between porous plates. It is then subjected to incrementally increasing vertical loads, and the resulting deformations are measured with a micrometer dial gauge. Void ratio are then calculated from these deformation readings. The test results are typically provided in tabular form or in the form of plots of void ratio versus applied stress (e-log p curves).

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Organic Content: The Organic Content is determined according to ASTM D2974. The moisture content is first determined by drying portions of the sample at 105 degrees Celsius. The ash content is then determined by igniting the oven-dried sample from the moisture content determination in a muffle furnace at 440 degrees Celsius. The substance remaining after ignition is the ash. The organic content is expressed as a percentage by subtracting the percent ash from one hundred.

Direct Shear Tests: Direct shear tests are performed according to ASTM D3080 to determine the shear strength parameters of the soil. The specimen of soil is placed in a rigid box that is divided horizontally into two frames. The specimen is then confined under a vertical or normal stress and horizontal force is applied to fail the specimen along a horizontal plane at its mid-height.

Because drainage of the soil specimen cannot be easily controlled, undrained tests (i.e., UU and CU tests) are possible only on impervious soils and pore pressure measurements cannot be made. Drained tests (i.e., CD tests), however, are possible on all soil types. Since the drainage paths through the specimen are short and pore water pressures are dissipated fairly rapidly, the direct shear test is well suited to the CD test.

A minimum of three test specimens are required to establish the strength envelope of a soil. The soil parameters obtained are the cohesion and angle of internal friction.

Unconfined Compression Tests: The unconfined compression test is an unconsolidated-undrained triaxial shear test with no lateral confining pressure. This test is used to determine the shear strength of clayey soils. An unconfined compression test is performed according to ASTM D2166 on a single section of an undisturbed sample extruded from a sampling tube. The sample is trimmed to a length-to-diameter ratio of about 2 and placed in the testing device. Incrementally increasing vertical loads are applied until the sample fails. Test results are provided in the form of a stress-strain curve or a value representing the unconfined compressive strength of the sample.

Grain Size Tests: Grain Size Tests are performed to determine the soil classification and the grain size distribution. The soil samples are prepared for testing according to ASTM D421 (dry preparation) or ASTM D2217 (wet preparation). The grain size distribution of soils coarser than a number 200 sieve (0.074 mm opening) is determined by passing the samples through a standard set of nested sieves. Materials passing the number 200 sieve are suspended in water and the grain size distribution calculated from the measured settlement rate. These tests are conducted in accordance with ASTM D422.

Triaxial Shear Tests: Triaxial shear tests are used to determine the strength characteristics and friction angle of a given soil sample. Triaxial tests are also used to determine the elastic properties of the soil specimen. Triaxial shear tests are performed on several sections of a relatively undisturbed sample extruded from the sampling tube. The samples are trimmed into cylinders 1.4 to 2.8 inches in diameter and encased in rubber membranes. Each is then placed in a compression chamber and confined by all around water pressure. Samples are then subjected to additional axial and/or lateral loads, depending on the soil and the field conditions to be simulated. The test results are typically presented in tabular form or in the form of stress-strain curves and Mohr envelopes or p-q plots.

Three types of triaxial tests are normally performed. The most suitable type of triaxial test is determined by the loading conditions imposed on the soil in the field and the soil characteristics.

1. Consolidated-Undrained (designated as a CU or R Test).
2. Consolidated-Drained (designated as a CD or S Test).
3. Unconsolidated-Undrained (designated as a UU or Q Test).