PROJECT MANUAL

FOR

COLUMBIA-ADAIR COUNTY ECONOMIC DEVELOPMENT AUTHORITY

ADAIR COUNTY, KENTUCKY

Green River Commerce Park South Access Road Entrance Grade, Drain and Paving

October 2024

MSE OF KENTUCKY, INC.
624 Wellington Way, Lexington, KY 40503
859.223.5694
mseinc@mselex.com
www.mselex.com

COLUMBIA-ADAIR COUNTY ECONOMIC DEVELOPMENT AUTHORITY
ADAIR COUNTY, KENTUCKY
Green River Commerce Park South Access Road Entrance
Grade, Drain and Paving

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SECTION 00020 - INVITATION TO BID

Separate sealed bids for Green River Commerce Park – South Access Road Entrance Grade, Drain and Paving, will be received by Larry Walker, Chairman, at the Chamber of Commerce Building located at 216 Burkesville St. in Columbia, KY until 2:00 PM local (CT) time on Wednesday, November 6, 2024. The bid opening address is 201 Burkesville Street (rear entrance), Columbia, KY 42728. Early bids can be received at the Judge's office at 424 Public Square, Suite 1, Columbia, Kentucky, 42728 until 1:30 PM local (CST) time, Wednesday, November 6, 2024. Bids will be opened and read publicly. Bid results will be made available to all bidders.

The project consists of approximately 155 feet of industrial access road entrance, grade and drain construction and paving per KYTC entrance permit requirements.

The CONTRACT DOCUMENTS may be reviewed at the following locations:

Adair County Judge Executive's Office, 424 Public Square, Columbia, KY 42728 (270) 384-4703

MSE of Kentucky, Inc., 624 Wellington Way, Lexington, KY 40503. (859) 223-5694

McGraw-Hill/F W Dodge, 2321 Fortune Dr., Suite 112A, Lexington, KY 40509
(859) 425-6630

Printed copies of the Contract Documents may be obtained at the office of Lynn Imaging, 328 Old Vine Street, Lexington, KY 40507 (859) 255-1021 upon receipt of a nonrefundable printing and shipping charge of $125.00.

Each bidder must deposit with his bid, security in the amount, form, and subject to the conditions provided in the Information for Bidders.

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.

Federal and State Prevailing Wage Rates are **Not** applicable.

No Bidder may withdraw his Bid for a period of sixty (60) days after the actual date of the opening thereof.

Award will be made to the lowest responsive, responsible Bidder.

EEO requirements apply to this project.

End of Section

SECTION 00200 - INFORMATION FOR BIDDERS

Bids will be received by the Columbia-Adair County Economic Development Authority, (herein called the "Owner") at the office of the Adair County Judge Executive, 424 Public Square, Suite 1, Columbia, Kentucky, 42728, until the time and date stated on the Invitation to Bid, and then at said location publicly opened and read aloud.

Separate sealed bids for the Green River Commerce Park – South Access Road Entrance Grade, Drain and Paving, will be received by Larry Walker, Chairman, at the Welcome & Development Center located at 201 Burkesville St. in Columbia, KY on Wednesday, November 6, 2024, 1:30 PM - 2:00 PM local (CT) time. Early bids can be received at the Adair County Judge-Executive's office located at 424 Public Square, Suite 1, Columbia, Kentucky, 42728 until 1:30 PM local (CT) time, Wednesday, November 6, 2024. The bid opening address is 201 Burkesville Street, Columbia, KY 42728. Bids will be opened and read publicly at 2:00 PM local (CT) time. Each sealed envelope containing a Bid must be plainly marked on the outside as Bid for Columbia-Adair County Economic Development Authority, Green River Commerce Park South Access Road Entrance Grade, Drain and Paving, and the envelope should bear on the outside the BIDDER'S name, address and license number if applicable, and the name of the project for which the Bid is submitted. If forwarded by mail, the sealed envelope containing the Bid must be enclosed in another envelope addressed to the OWNER at the office of the Adair Co. Judge Executive, 424 Public Square, Suite 1, Columbia, KY 42728.

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 to whom the contract is 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.

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

COLUMBIA-ADAIR COUNTY ECONOMIC DEVELOPMENT AUTHORITY
Green River Commerce Park – South Access Road Entrance Grade, Drain and Paving

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 Colombia-Adair County Economic 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 Green River Commerce Park South Access Road Entrance Grade, Drain and Paving, in strict accordance with the Contract Documents, within the time set forth therein, and at the prices stated below.

BID SCHEDULE

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1.	EROSION CONTROL MEASURES. Prepare "Best Management Practice" plan for erosion control and submit "Notice of Intent" to Natural Resources and Environmental Protection Cabinet. Implement erosion control measures. Remove erosion control measures after all work completed. Send "Notice of Termination" to the Cabinet upon completion of work.				
	A. STONE BAG INLET PROTECTION. Furnish all labor, equipment and materials and install Type B culvert inlet sediment barrier				
	1. 15" culvert inlet sediment barrier Type B	1	EACH	$_____	$_____
	B. SILT TRAP (Silt Check Dam). Furnish all labor, equipment and materials and install silt trap Type D.				
	1. Type D	6	EACH	$_____	$_____
	C. CLEAN CULVERT INLET SEDIMENT BARRIER TYPE B AND TYPE D SILT TRAP. Furnish all labor, equipment and materials and clean inlet culvert sediment Barrier Type B and silt trap Type D.				
	1. Type B	1	EACH	$_____	$_____
	2. Type D	6	EACH	$_____	$_____
	D. TEMP SILT FENCE. Furnish all labor, equipment and materials and install temporary silt fence.	375	LF	$_____	$_____
	E. CLEAN SILT FENCE. Furnish all labor, equipment and materials and clean temporary silt fence.	375	LF	$_____	$_____

F. EROSION CONTROL BLANKET. Furnish all labor, equipment and materials and install erosion control blanket.

520 SQ YD $_____ $_____

G. TEMP SEEDING AND PROTECTION. Furnish all labor, equipment and materials and apply temporary seeding and protection.

2,800 SQ YD $_____ $_____

H. All Other Erosion Control Costs.

1 LS $_____

2. DEMOLITION – Including Saw Cut and Remove Existing Paved Ditch, Remove Existing Temporary Road, Pipe and Headwalls.

1 LS $_____

3. GRASS SURFACE RESTORATION. Furnish all labor, equipment and materials and seed grass for final surface restoration.

1 LS $_____

4. CLEARING & GRUBBING. Furnish all labor, equipment and materials and clear and grub construction area. Clear and dispose properly any trees, rubbish encountered in the construction area.

1 LS $_____

5. STAKING. Furnish all labor, equipment and materials and provide construction staking.

1 LS $_____

6. TOPSOIL STRIPPING. Furnish all labor, equipment and materials and strip, stockpile and respread topsoil.

1 LS $_____

7. ROADWAY EXCAVATION. Furnish all labor, equipment and materials and excavate roadway to lines and grades shown on plans. Excavation is unclassified. Includes required undercut shown in the plans. Contractor is to perform his own estimate for the quantity of work in this item.

1 LS $_____ $_____

8. WATER. Furnish all labor, equipment and water for modifying soil moisture.

400 GAL (1000) $_____ $_____

9. CULVERT PIPE-15 IN. Furnish all labor, equipment and materials and install 15-inch, HDPE.

78 LF $_____ $_____

10. "MITERED" ENTRANCE PIPE CONCRETE HEADWALLS – 15-inch. Furnish all labor, equipment and materials and install 15-inch entrance headwalls.

A. 15" pipe	2	EACH	$_____	$_____

11. EDGE KEY. Install Edge Key on connection to State Highway.

	74	LF	$_____	$_____

12. DGA. Furnish all labor, equipment and materials and install DGA base.

A. 8" DGA Base	200	TON	$_____	$_____
B. CRUSHED STONE BASE Shoulders	60	TON	$_____	$_____

13. ASPHALT PAVING. Furnish all labor, equipment and materials and install asphalt paving.

A. 2" Asphalt Surface	50	TON	$_____	$_____
B. 4" Asphalt Base	100	TON	$_____	$_____

14. ALLOWANCE FOR QUALITY ASSURANCE TESTING. A qualified firm designated by the Engineer will provide testing and inspection services. Payment for these services shall be made by the Contractor to the designated firm from the stated allowance. Any unused portion of the allowance will be retained by the Owner.

1	LS		$ 5,000

15. TRAFFIC CONTROL SIGNAGE. Install traffic control signage in compliance with permit and KYTC requirements.

1	LS		$_____

16. STOP SIGN. Furnish all labor, equipment and materials and install stop sign in compliance with KYTC Sign Requirements.

1	LS		$_____

17. 02569 MOBILIZATION/DEMOBILIZATION. Furnish all labor, equipment and materials and demobilize.

1	LS		$_____

TOTAL BID – GRADE, DRAIN & PAVING $_____

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 fully complete the Project within 90 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 four (4) copies of the Agreement and such other required Contract Documents.

BIDDER:_____
(Name of Company or Partnership)

By: _____
(Signature) (Date)

_____
(Print Name)

_____
(Title)

_____
(Address)

_____
(Phone Number)

_____
(Email Address

Attested By: _____
(Signature) (Date)

Seal (If bid is by a corporation)

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 of is to give to such other bidder or other person or public officer anything of value whatever, or such avant 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 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 00490 - NOTICE OF AWARD

To:

Project Description: GRCP South Access Road Entrance Grade, Drain and Paving

The Owner has considered the Bid submitted by you for the above-described Work in response to its Advertisement for Bids dated _____, 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 to 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.

Columbia-Adair County Economic Development Authority
Owner

By:

_____
Larry Walker, 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 Columbia-Adair County Economic Development Authority, hereinafter called "OWNER" and _____, doing business as an _____ (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 construction of Green River Commerce Park South Access Road Entrance Grade, Drain and Paving.

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 90 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.

Columbia-Adair Co. Economic Development Authority	
(Owner)	(Contractor)
By: _____	By: _____
(Signature)	(Signature)
Larry Walker, Chairman	
(Name, Title)	(Name, Title)
Attest:	Attest:
By: _____	By: _____
(Signature)	(Signature)
_____	_____
(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_____.

ATTEST:

_____
Principal

_____
(Principal) Secretary

By: _____

(SEAL)

_____
(Witness as to Principal)

_____
(Address)

_____
(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

_____ By: _____
(Principal) Secretary

(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 00680 - NOTICE TO PROCEED

To:

Date:
Project: Green River Commerce Park South Access Road Entrance Grade, Drain and Paving

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 90 consecutive calendar days thereafter.

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

By: Columbia-Adair Co. Economic Development Authority
Owner

_____
Larry Walker, 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 havethe 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 thework 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 Contractorand 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 ofthe 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 executethe 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 theProject 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 theproject 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 causedin 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 orany 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 maybe 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 theFederal 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 forcarrying 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 responsiblefor 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 withoutthe 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 Superintendentshall represent the Contractor in his absence and all directions given to him shall be as binding as if givento 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 interpretedto mean an item of material or equipment equal in quality to that named and which is suited to the sameuse 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 tofurnish 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 asthat 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 withoutthe 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 mayotherwise 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 byinsurance provided in accordance with Article 7, except such rights as they may have to the proceeds ofsuch 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 tothe 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 inaccordance 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, injuryor 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 byany 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 inan 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 therequirements 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 responsibilityfor 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 shallproperty 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 onlycut 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 tostarting any such additional Work. If Contractor believes that the performance of such additional Work byOwner 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 theOwner 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 ofthe 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 inaccordance 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 torequest arbitration within said thirty days' period shall result in Engineer's decision being final and bindingupon 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;

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.

l. 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 inthe 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 determinedby 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 followingways:

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 ofthe 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 andContractor 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 Contractoror 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, expediters, timekeepers, clerks and other personnel employed by

Contractor whether at the site or in his principal or a branch office for general administration of the workand 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 byany 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 andexpressly 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 faculty 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 suchnotice.

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 ofthe 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 ofthe 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 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 interesttherein, 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 ofpayment 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, tothe 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 themeans, 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 toany 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 thatcoverage 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 connectedwith 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 theApplication 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 completedand 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 Suretyto 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 tosubcontractors 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 prejudiceto 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, disputeor 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 arbitrationproceedings, 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 orany 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 tobe returned to the Engineer or his representative upon request, at the completion of the Work.

54. Compliance With Prevailing Wage Law (**Not Applicable**)

Full compliance by the Contractor and any Subcontractor as to their duties prescribed by the applicableState 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 bemade 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.

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

PROJECT: GREEN RIVER COMMERCE PARK

SOUTH ACCESS ROAD ENTRANCE GRADE, DRAIN & PAVING

Owner: Columbia-Adair Co. Economic Development Authority, Inc.
Columbia, KY 42728

Engineer: MSE of Kentucky, Inc.
Lexington, KY 40503
859-223-5694

Contractor:

Sign Dimensions: 1200mm x 2400mm x 19 mm (app. 4’ x 8’ x ¾”) Plywood Panel (APA Rated A-B grade – Exterior)

SECTION 00800 - SPECIAL CONDITIONS

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 Green River Commerce Park South Access Road Entrance Grade, Drain and Paving for Columbia-Adair County Economic Development Authority.

All references to the Owner in these specifications, Contract Documents and plans shall mean the Columbia-Adair County Economic 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 90 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 contractor shall procure and maintain the following insurance in addition to the insurance required by law:

(a) Commercial General Liability-Occurrence form-not less than $2,000,000 General Aggregate, $2,000,000 Products & Completed Aggregate, $1,000,000 Personal and Advertising, $1,000,000 each occurrence.

(b) Automobile Liability - $1,000,000 per accident

(c) Employers Liability:

(1) $100,000 Each Accident Bodily Liability
(2) $500,000 Policy Limit Bodily Injury by Disease
(3) $100,000 Each Employee Bodily Injury by Disease

(d) The insurance required above must be evidenced by a Certificate of Insurance and this Certificate of Insurance must contain one of the following statements:

(1) “policy contains no deductible clauses”.
(2) “policy contains _____ (amount) deductible property damage clause but company will pay claim and collect the deductible from the insured.”

(d) Kentucky Workmen’s Compensation Insurance. The contractor shall furnish evidence of coverage of all his employees or give evidence of self-insurance by submitting a copy of a certificate issued by the Workmen’s Compensation Board.

The cost of insurance is incidental to all contract items. All subcontractors must meet the same minimum insurance requirements.

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 of all 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. Currently, State or Federal prevailing wages do **not** apply to this project.

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 Part V of 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 can not 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, l972, 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. Preconstruction Conference

A preconstruction conference shall 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.

36. EEO Requirements

Discrimination (because of race, religion, color, national origin, sex orientation, gender identity, age, or disability) is prohibited. During the performance of this contract, the Contractor agrees as follows:

a. The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, national origin, sex, sexual orientation, gender identity, or age. The Contractor further agrees to comply with the provisions of the Americans with Disabilities Act (ADA), Public Law 101-336, and applicable federal regulations relating thereto prohibiting discrimination against otherwise qualified disabled individuals under any program or activity. The Contractor agrees to provide, upon request, needed reasonable accommodations. The Contractor will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, religion, color, national origin, sex, sexual orientation, gender identity, age or disability. Such action shall include, but not be limited to the following; employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination, rates or pay or other forms of compensations; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this non-discrimination clause.

b. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor; state that all qualified applicants will receive consideration for employment without regard to race, religion, color, national origin, sex, sexual orientation, gender identity, age or disability.

c. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice advising the said labor union or workers' representative of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment. The Contractor will take such action with respect to any subcontract or purchases order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance.

d. The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and by the rules, regulations and orders of the Secretary of Labor

e. The Contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, as amended, and permit access to his books, records and accounts b the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.

f. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations or orders, tis contract may be cancelled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further government contracts or federally-assisted construction contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, as amended, and such other sanctions may be imposed and remedies invoked as provided in or as otherwise provided by law.

g. The Contractor will include the provisions of paragraph (1) through (7) of section 202 of Executive Order 11246 in every subcontract or purchase order unless exempted by rules, regulations or orders of Secretary of Labor, issued pursuant to section 204 of Executive Order No. 11246 of September 24, 1965, as amended, so that such provisions will be binding upon each sub-contractor or vendor. The Contractor will take action with respect to any subcontract or purchase order as the administrating agency may direct as a means of enforcing such provisions including sanctions of noncompliance.

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

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 station.

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.

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
Green River Commerce Park – South Access Road Entrance Grade, Drain and Paving
Columbia – Adair County Economic Development Authority

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 2008 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. Perform earthwork to achieve the required grades.
3. Establish and maintain horizontal and vertical ground control throughout the work.
4. Locate and clearly mark all utilities 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 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.

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.
- Dispose of excess soil material and waste materials as herein specified.

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.

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 10 inches in loose placement for heavy equipment placement, or 5 inches for hand operated whacker or vibratory plate placement.

C. Percentage of Maximum Density Requirements. Compact soil as required by the Geotechnical Report to the required percentage of the maximum dry density.

D. Moisture Control. Maintain soil moisture to required range 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

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

Stockpile excess excavated material 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. Proof-roll 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

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.

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 02936 - SEEDING

PART 1. GENERAL

1.1 Work Included

The work described herein shall consist of replacing the surface soil, furnishing and incorporating the materials, for all exposed earth areas.

1.2 Submittals

Submit certificates of analysis and weight for all fertilizers to the Engineer. All seed shall be delivered in separate bags or packages according to species. The tags from each package shall be delivered 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
For permanent cover:	
Kentucky 31 Tall Fescue	15
Birdsfoot Trefoil	8

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

2.2 pH Adjusters

Agricultural limestone shall have a minimum calcium carbonate equivalent of 90 percent and shall be ground to such a fineness that at least 90 percent will pass a 10-mesh sieve and at least 50 percent will pass a 60-mesh sieve. Agricultural ground limestone shall be from quarries approved by the Kentucky Department of Agriculture.

2.3 Fertilizer

Fertilizer shall be a commercial grade ammonium nitrate (33.5-0-0), monocalcium phosphate (0-46-0), and potassium chloride (0-0-60). Where fertilizer is furnished from bulk storage, the Contractor shall furnish a supplier's certification of analysis and weight.

2.4 Mulch

Mulch shall consist of wheat or rye straw. The mulch material shall be air dry, reasonable light in color, and shall not be musty, moldy, caked, and shall not contain noxious weeds.

2.5 Inoculants

Inoculant for treating legume seeds shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species and shall not be used later than the date indicated on the container. A mixing medium, as recommended by the manufacturer, shall be used to bond the inoculant to the seed. Seed shall be sown within twenty four hours of treatment and shall not remain in a hydraulic seeder longer than four hours.

PART 3. EXECUTION

3.1 Delivery, Storage and Handling

Fertilizer and limestone shall be delivered to the site in the original, unopened containers bearing the manufacturer's guaranteed chemical analysis, name, trade name, trademark, and conformance to State and Federal laws. In lieu of containers, fertilizer and limestone may be furnished in bulk and a certificate indicating the above information shall accompany each delivery.

Seed, limestone and fertilizer shall be kept in dry storage away from contaminants,

insects and rodents.

3.2 Preparation of Seed and Planting Beds

A. Tillage: Soil shall be tilled to a depth of at least 4 inches. Tillage shall be accomplished by plowing, disking, or harrowing during periods when beneficial results are likely to be obtained. Undulations or irregularities in the surface shall be leveled before the next specified operations.

B. Placing topsoil: Topsoil shall be spread evenly with a minimum thickness of 2 inches. Surface irregularities resulting from topsoiling or other operations shall be leveled. Topsoil shall not be placed when the subgrade is frozen, excessively wet, extremely dry or excessively compacted.

C. Application of Soil Conditioners: Lime shall be applied by tillage at the rate of four tons per acre. Fertilizer shall be applied at the rate of 120 pounds per acre of each nutrient. Equivalent amounts are 353 pounds of ammonium nitrate (33.5-0-0), 261 pounds of monocalcium phosphate (0-46-0), and 200 pounds of potassium chloride (0-0-60). Lime and fertilizer rates may be adjusted with the approval of the Engineer based upon the results of soils testing of final cover material. All fertilizers, pH adjusters, and soil conditioners shall be incorporated into the soil to a depth of at least 2 inches.

3.3 Seeding

A. Seed shall be broadcast uniformly at the required rate. The seed shall be covered to an average depth of 1/4 inch by means of spike-tooth harrow, cultipacker, or other approved device. Seed shall not be broadcast when winds are above 10 mph.

B. Immediately after seeding, the entire area shall be firmed with a roller not exceeding 90 pounds for each foot of roller width and the soil moistened to a depth of 6-8 inches. If seeding is performed with a cultipacker-type seeder or if seed is applied in combination with hydromulching, rolling will not be required.

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

Kentucky Transportation Cabinet
Department of Highways
Permits Branch

ENCROACHMENT PERMIT

KEPTS No.: 08-2023-00135

Permittee: Columbia/Adair Econ Dev

Latitude:

Longitude:

Completion Date: 12/5/2021

Coordinates provided on the TC 99-1(B) are the approved location for this permit.

Indemnities		
Type	Amount Required	Tracking Number
Performance Bond	$0.00	
Payment Bond		
Liability Insurance		

This permit has been:

APPROVED ☒ **DENIED** ☐

Adam Dixon, P.E.	Transportation Engineer I
NAME	**TITLE**
Adam Dixon	07/15/2024
SIGNATURE	**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.

KY Transportation Cabinet – District 8
Permit Number 08-2023-00135

Applicant to install a 24-foot commercial entrance right of mile point 16.7 on KY 55 in Adair County with 60 foot radius north side and 75 foot radius south side as per entrance diagram and encroachment terms. Side slopes of the entrance shall be 6:1 or flatter as per KY Standard Drawing RPM-110-07. The existing paved ditch will be saw cut and attached to with inlet and outlet sloped and mitered headwalls, see attached detail. Entrance to be paved with 8 inches of DGA, 4 inches of Asphalt base, and 2 inches of asphalt surface as shown on the attached plans. 78 feet of 15 inch CMP will be utilized.

Construction of the entrance shall not interfere with any construction or maintenance operations by the Transportation Cabinet on KY 55.

No changes shall be made contrary to this permit and the applicant's plans without first notifying and being approved by the Permit Engineer.

All work and materials shall meet or exceed the Standard Specifications.

All disturbed portions of the right-of-way are to be restored to grass as per Kentucky Department of Highways Standard Specifications for Road and Bridge Construction, 2019 edition. A satisfactory turf, as determined by the Department, is to be established by the permittee prior to release of indemnity.

The minimum rate of application for seeding and protection method II per 1,000 square feet shall be applied as follows:

2.5 lbs of seed mixture
12 lbs of 20-10-10 fertilizer
150 lbs of agricultural limestone

Roadway drainage shall be maintained at all times, with silt checks placed in the roadway ditch where needed and near the inlet of all culvert and entrance pipe to control erosion and prevent silt from settling inside of pipe.

The applicant shall provide all necessary steps to contain all silting within the work area as specified in Section 212 and Section 213, Department's Standard Specifications for Road and Bridge Construction.

Work area within the Kentucky Department of Highways right of way shall be signed and flagged in accordance to the Manual on Uniform Traffic Control Devices before any work is to begin on the Kentucky Department of Highways right of way. All traffic control shall comply with the Manual on Uniform Traffic Control Devices (MUTCD), the Department of Highways (Department) Standard Drawings, Standard Specifications, and other required documents.

This permit will be terminated and work will stop immediately at any time the Department of Highways discovers or is notified of any unsafe or hazardous conditions until corrections have been made.

It shall be the responsibility of the applicant to contact the Kentucky Department of Highways District 8 Permits Office at 606-677-4017 a minimum of 2 working days before work begins on KY Transportation Cabinet right of way.

KENTUCKY TRANSPORTATION CABINET
Department of Highways
PERMITS BRANCH

TC 99-1A
Rev. 10/2020

APPLICATION FOR ENCROACHMENT PERMIT

KYTC KEPT #: 08-2023-00135

SECTION 1: APPLICANT CONTACT INFORMATION

APPLICANT	ADDRESS		
Columbia-Adair Co. Ec Dev Authority	201 Burkesville Street		
EMAIL	**CITY**	**STATE**	**ZIP**
bmorrison@aol.com	Columbia	KY	42728
CONTACT NAME 1	**EMAIL**	**PHONE #** 844-232-4726	
Bobby Morrison	bmorrison@aol.com	**CELL #** 270-378-1368	
CONTACT NAME 2 (*if applicable*)	**EMAIL**	**PHONE #**	
		CELL #	

SECTION 2: PROPOSED WORK LOCATION

ADDRESS	CITY		STATE	ZIP
HWY 55 N Green River Comm Park	Columbia		Kentucky	42728
COUNTY	**ROUTE #**	**MILE POINT**	**LONGITUDE** (*X*)	**LATITUDE** (*Y*)
Adair	ky 55	16.7	37°8.71'N	85° 18.25'W

ADDITIONAL LOCATION INFORMATION:

FOR KYTC USE ONLY

PERMIT TYPE: ☐ Air Right ☒ Entrance ☐ Utilities ☐ Vegetation Removal ☐ Other: _____

ACCESS: ☐ Full ☐ Partial ☒ by Permit **LOCATION:** ☐ Left ☒ Right ☐ Crossing

SECTION 3: GENERAL DESCRIPTION OF WORK

Proposed south entrance to the Green River Commerce Park off of HWY 55. The industrial authority is not permitted to cross the interstate gas pipeline easement in the Park which has necessitated a second entrance to access the south portion of the Park property.

A D

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.

Bobby D. Morrison
SIGNATURE

3-28-2022
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.

APPLICATION FOR ENCROACHMENT PERMIT

TERMS AND CONDITIONS

1. The permit, including this application and all related and accompanying documents and drawings making up the permit, remains in effect and is binding upon the Applicant/Permittee, its successors and assigns, as long as the encroachment(s) exists and also until the permittee is finally relieved by the Department of Highways from all its obligations.

2. Applicant shall meet all requirements of the Clean Water Act if the project will disturb one acre or more, the applicant shall obtain a KPDES KYR10 Permit from the Kentucky Division of Water. All disturbed areas shall meet the requirements of the Department of Highway's Standard Specifications, Sections 212 and 213, as amended.

3. **INDEMNITY:**

- **A.** PERFORMANCE BOND: The permittee shall provide to the Department a performance bond according to the Permits Manual, Section PE-203 as a guarantee of conformance with the Department's Encroachment Permit requirements.
- **B.** PAYMENT BOND: At the discretion of the department, a payment bond shall be required of the permittee to ensure payment of liquidated damages assessed to the permittee.
- **C.** LIABILITY INSURANCE: Liability insurance shall be required of the permittee (in an amount approved by the department) to cover all liabilities associated with the encroachment.
- **D.** It shall be the responsibility of the permittee, its successors and assigns, to maintain all indemnities in full force and effect until the permittee is authorized to release the indemnity by the Department.

4. A copy of this application and all related documents making up the approved permit shall be given to the applicant and shall be made readily available for review at the work site at all times.

5. Perpetual maintenance of the encroachment is the responsibility of the permittee, its successors and assigns, with the approval of the Department as required, unless otherwise stated.

6. Permittee, its successors and assigns, shall comply with and agree to be bound by the requirements and terms of (a) this application and all related documents making up the approved permit, (b) by the Department's Permits Manual, and (c) by the Manual on Uniform Traffic Control Devices, both manuals as revised to and in effect on the date of issuance of the permit, all of which documents are made a part thereof by this reference. Compliance by the permittee, its successors and assigns, with subsequent revisions to applicable provisions of either manual or other policy of the Department may be made a condition of allowing the encroachment to persist under the permit.

7. Permittee agrees that this and any encroachment may be ordered removed by the Department at any time, and for any reason, upon thirty days written notice to the last known address of the applicant or to the address at the location of the encroachment. The permittee agrees that the cost of removing and of restoring the associated right-of-way is the responsibility of the permittee, its successors and assigns.

8. Permittee, its successors and assigns, agree that if the Department determines that motor vehicular safety deficiencies develop as a result of the installation or use of the encroachment, the permittee, its successors and assigns, shall provide and bear the expenses to adjust, relocate, or reconstruct the facilities, add signs, auxiliary lanes, or other corrective measures reasonably deemed necessary by the Department within a reasonable time after receipt of a written notice of such deficiency. The period within which such adjustments, relocations, additions, modifications, or other corrective measures must be completed will be specified in the notice.

9. Where traffic signals are required as a condition of granting the requested permit or are thereafter required to correct motor vehicular safety deficiencies, as determined by the Department, the costs for signal equipment and installation(s) shall be borne by the permittee, its successors and assigns and the Department in its reasonable discretion and only in accordance with the Department's current policy set forth in the Traffic Operations Manual and Permits Manual. Any modifications to the permittee's entrance necessary to accommodate signalization (including necessary easement(s) on private property) shall be the responsibility of the permittee, its successors and assigns, at no expense to the Department.

APPLICATION FOR ENCROACHMENT PERMIT

10. The requested encroachment shall not infringe on the frontage rights of an abutting owner without their written consent as hereinafter described. Each abutting owner shall express their consent, which shall be binding on their successors and assigns, by the submission of a notarized statement as follows, "I (we), _____, hereby consent to the granting of the permit requested by the applicant along Route _____, which permit does affect frontage rights along my (our) adjacent real property." By signature(s) _____, subscribed and sworn by _____, on this date _____.

11. The permit, if approved, is subject to the agreement that it shall not interfere with any similar rights or permit(s) previously granted to any other party, except as otherwise provided by law.

12. Permittee shall include documentation which describes the facilities to be constructed. Permittee, its successors and assigns, agree as a condition of the granting of the permit to construct and maintain any and all permitted facilities or other encroachments in strict accordance with the submitted and approved permit documentation and the policies and procedures of the Department. Permittee, its successors and assigns, shall not use facilities authorized herein in any manner contrary to that prescribed by the approved permit. Only normal usage as contemplated by the parties and by this application and routine maintenance are authorized by the permit.

13. Permittee, its successors and assigns, at all times from the date permitted work is commenced until such time as all permitted facilities or other encroachments are removed from the right-of-way and the right-of-way restored, **shall defend, protect, indemnify and save harmless** the Department from any and all liability claims and demands arising out of the work, encroachment, maintenance, or other undertaking by the permittee, its successors and assigns, related or undertaken pursuant to the granted permit, due to any claimed act or omission by the permittee, its servants, agents, employees, or contractors. This provision shall not inure to the benefit of any third party nor operate to enlarge any liability of the Department beyond that existing at common law or otherwise if this right to indemnity did not exist.

14. Upon a violation of any provision of the permit, or otherwise in its reasonable discretion, the Department may require additional action by the permittee, its successors and assigns, up to and including the removal of the encroachment and restoration of the right-of-way. In the event additional actions required by the Department under the permit are not undertaken as ordered and within a reasonable time, the Department may in its discretion cause those or other additional corrective actions to be undertaken and the Department shall recover the reasonable costs of those corrective actions from the permittee, its successors and assigns.

15. Permittee, its successors and assigns, shall use the encroachment premises in compliance with all requirements of federal law and regulation, including those imposed pursuant to Title VI of the Civil Right Act of 1964 (42 U.S.C. § 2000d et seq.) and the related regulations of the U.S. Department of Transportation in Title 49 C.F.R. Part 21, all as amended.

16. Permittee, its successors and assigns, agree that if the Department determines it is necessary for the facilities or other encroachment authorized by the permit to be removed, relocated or reconstructed in connection with the reconstruction, relocation or improvement of a highway, the Department may revoke permission for the encroachment to remain under the permit and may order its removal, relocation or reconstruction by the permittee, its successors and assigns, at the expense of the permittee, except where the Department is required by law to pay any or all of those costs.

APPLICATION FOR ENCROACHMENT PERMIT

17. Permittee agrees that the authorized permit is personal to the permittee and shall remain in effect until such time as (a) the permittee's rights to the adjoining real property to have benefitted from the requested encroachment have been relinquished, (b) until all permit obligations have been assumed by appropriate successors and assigns, and (c) unless and until a written release from permit obligations has been granted by the Department. The permit and its requirements shall also bind the real property to have benefitted from the requested encroachment to the extent permitted by law. The permit and the related encroachment become the responsibility of the successors and assigns of the permittee and the successors and assigns of each property owner benefitting from the encroachment, or the encroachment may not otherwise permissibly continue to be maintained on the right-of-way. (Does not apply to utility encroachments serving the general public.)

18. If work authorized by the permit is within a highway construction project in the construction phase, it shall be the responsibility of the permittee to make personal contact with the Department's Engineer on the project in order to coordinate all permitted work with the Department's prime contractor on the project.

19. This permit is not intended to, nor shall it, affect, alter or alleviate any requirement imposed upon the permittee, its successors and assigns, by any other agency.

20. Permittee, its successors and assigns, agree to contain and maintain all dirt, mud, and other debris emanating from the encroachment away from the surrounding right-of-way and the travel way of the highway hereafter and at all times that its obligations under the permit remain in effect.

21. 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.

22. The undersigned Utility acknowledges ownership and control of the facilities proposed to be installed, modified, or extended by the Applicant/Permittee and agrees to be bound by the requirements and terms of this application and all related documents making up the approved permit, by the Department's Permits Guidance Manual, and by all applicable regulations and statutes in effect on the date of issuance of the permit. This information and application is certified correct to the best knowledge and belief of the undersigned Utility.

UTILITY

NAME (Utility Representative)

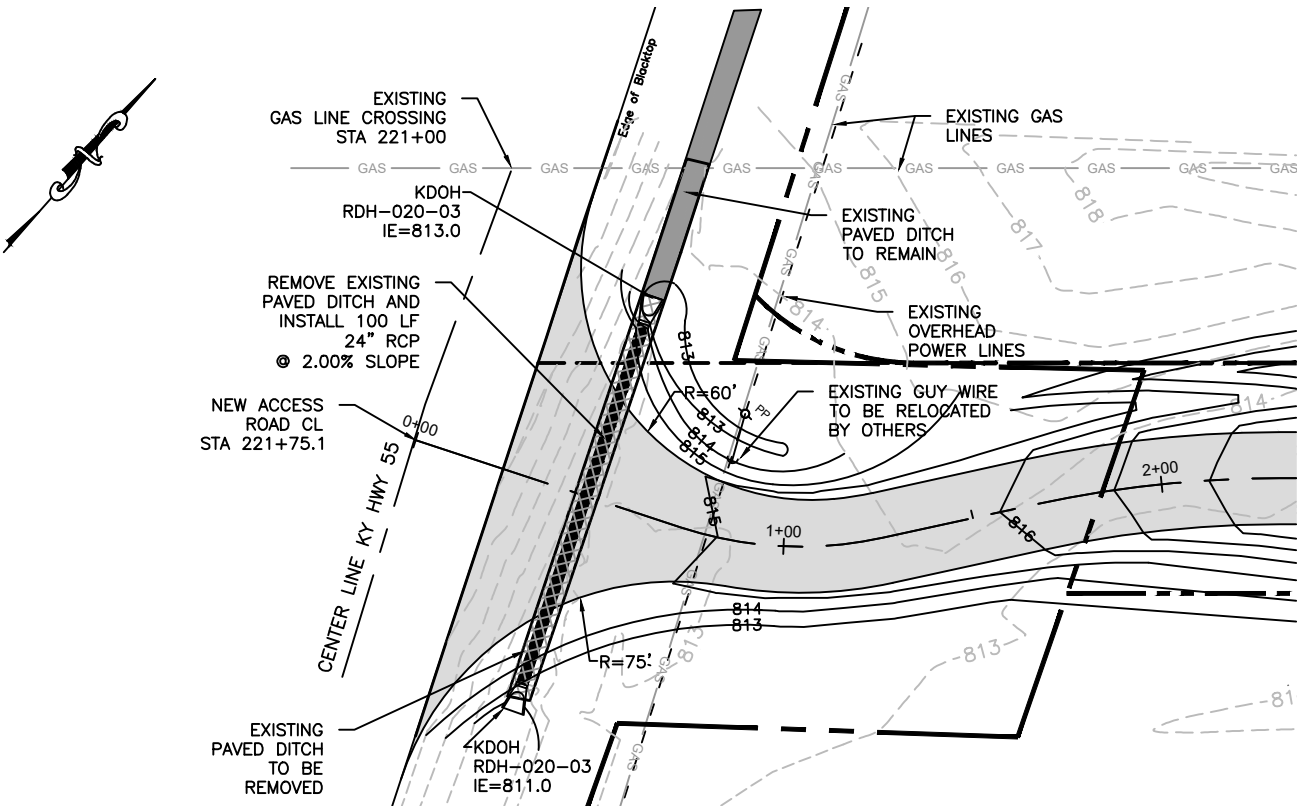
TITLE (Utility Representative)

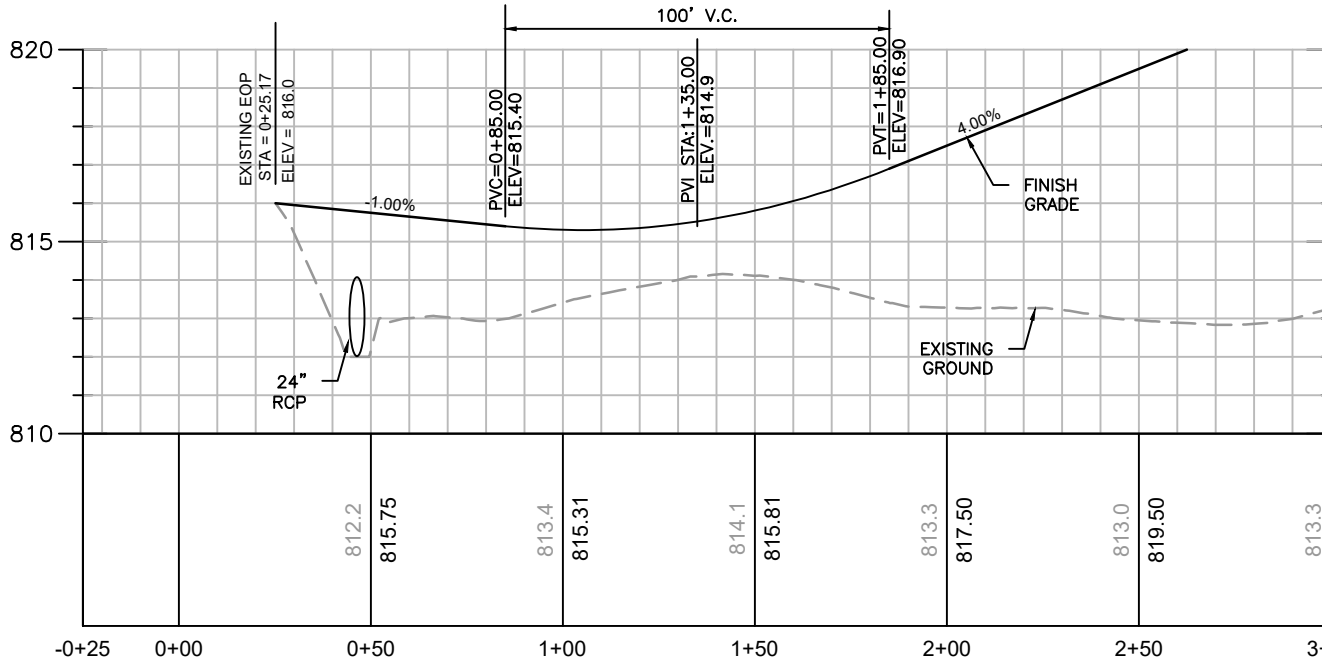
SIGNATURE (Utility Representative)

DATE

Kentucky 811 Know what's **below.** **Call** before you dig.

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





GREEN RIVER COMMERCE PARK

ACCESS ROAD ENTRANCE PLAN AND PROFILE

ADAIR COUNTY, KENTUCKY

50 25 0 50 100

SCALE: 1" = 50'

MARCH 22, 2022

Bobby Morrison PE

MSE OF KENTUCKY, INC.

Engineers
Architects
Planners

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

Phone: (859)223-5694
Fax: (859)223-2607

ENCROACHMENT PERMIT GENERAL NOTES & SPECIFICATIONS

Permit No. 08-2023-00135

I. SAFETY

A. General Provisions

☒ All signs and control of traffic shall be in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways, latest edition, Part VI, Kentucky Department of Highways Standard Drawings, and safety requirements shall comply with the Permits Manual.

☒ 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.

☒ 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 Manual on Uniform Traffic Control Devices and Kentucky Department of Highways Standard Drawings.

☒ 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. Working hours shall be between 8:30 AM and 4:00 PM

☒ The traveled-way and shoulders shall be kept clear of mud and other construction debris at all times during construction of the permitted facility.

☒ Non-construction equipment, vehicles, or office trailers shall not be allowed on the right of way during working hours.

☒ The right of way shall be left free and clear of equipment, material, and vehicles during non-working hours.

B. Explosives

☒ 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.

C. Other Safety Requirements

☒ All workers must wear OSHA conforming personal protection items at all times when work is performed on the KYTC right of way. All traffic control must conform to the latest edition of the Manual on Uniform Traffic Control Devices and Kentucky Department of Highways Standard Drawings

II. UTILITIES * Applies to Fully Controlled Access Highways **ONLY**

☐ *All work necessary within the right of way shall be performed behind a temporary fence erected prior to a boring operation.

☐ *The temporary woven wire fence shall be removed immediately upon completion of work on the right of way, and the control of access immediately restored to original condition, in accordance with applicable Kentucky Department of Highways Standard Drawings.

☐ *All vents, valves, manholes, etc., shall be located outside of the right-of-way.

☐ *Encasement pipe shall extend from right-of-way line to right-of-way line and shall be one continuous run of pipe. The encasement pipe shall be welded at all joints.

☐ The boring pit and tail ditch shall extend past the existing toe of slope or bottom of ditch line and shall be a minimum of 42 inches deep.

IV. RIGHT OF WAY RESTORATION

☐ Encasement pipe pipe shall conform to current standards for highway crossings in accordance with the Permits Manual.

☐ Parallel lines shall be constructed between back slope of ditch line and right-of-way line and shall have a minimum of 42-inch cover above top of pipe or conduit.

☐ All pavement cuts shall be restored per attached encroachment terms.

☐ Aerial crossing of this utility line shall have a minimum clearance of _____feet from the high point of the roadway to the low point of the line (calculated at the coefficient for expansion of 120 degrees Farenheit).

☐ The 30-foot clear zone requirement shall be met to the extent possible in accordance with the Permits Manual.

☐ Special requirements:

III. GENERAL

A. OSHA

☒ Kentucky Occupational Safety and Health Standards for the construction industry, which has the effect of law, states in part: (Page 52, 1926.651, Specific Excavation Requirements) "Prior to opening an excavation, effort shall be made to determine whether underground installations, (sewer, telephone, water, fuel, electric lines, etc.) will be encountered, and if so, where such underground installations are located. When the excavation approaches the estimated location of such an installation, the exact location shall be determined, and when it is uncovered, proper supports shall be provided for the existing installation. Utility companies shall be contacted and advised of proposed work prior to the start of actual excavation."

B. Archaeological

☒ 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, which maintains an archaeologist on staff, or with the Office of the State Archaeologist located at the University of Kentucky. Following this consultation, further action shall be decided on a case-by-case basis by the State Highway Engineer or the Transportation Planning Engineer or their designated representative.

C. Utilities in the Work Areas

☒ 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, shall be at the expense of the permittee and subject to the approval of the Department.

☐ All existing manholes and valve boxes shall be adjusted to be flush with finished grade.

D. Environmental

☒ If the activity to which this permit relates disturbs one acre or more of land, you must obtain a KPDES KYR10 permit.

Websites

https://eec.ky.gov/Environmental-Protection/Pages/default.aspx

IV. RIGHT OF WAY RESTORATION

☒ All disturbed portions of the right of way shall be restored to grass as per Kentucky Department of Highways Standard Specifications for Road and Bridge Construction (latest edition). A satisfactory turf, as determined by the Department, shall be established by the permittee prior to release of indemnity. Sodding or seeding shall be as follows:

Slopes 3:1 or flatter	90% Kentucky 31 Tall Fescue 10% White Dutch Clover
Slopes steeper than 3:1	70% KY 31 Fescue 30% Partridge Pea

☒ Two tons of clean straw mulch per acre of seeding.

☒ Prior to seeding, the ground shall be prepared in accordance with Kentucky Department of Highways Standard Specifications for Road and Bridge Construction (latest edition).

☐ Substitutes for sod such as artificial turf, rocked mulch, or paved areas may be acceptable if they are aesthetically pleasing.

☐ All ditch-flow lines and all ditch-side slopes shall be sodded.

☒ Existing 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 in accordance with Kentucky Department of Highways Standard Drawings. Markers that are entirely removed shall be re-established in the proper locations by the permittee and to the satisfaction of the Department.

☐ Other right of way restoration requirements are as follows:

V. DRAINAGE

☐ All pipe shall be laid in a straight alignment, to proper grades, and with all materials and methods of installation including bedding and joint seating in accordance with Department Standard Specifications for Road and Bridge Construction (latest edition). Pipe shall not be covered until inspected by the Department and express permission obtained to make backfill.

☐ All gutter lines at the base of new curbs shall be on continuous grades, and pockets of water along with curbs or in entrance areas or other paved areas within the right of way shall not be acceptable.

☐ All drainage structures and appurtenances (manholes, catch basins, curbing, inlet basins, etc.) shall conform to Department specifications and shall be constructed in accordance with the Department Standard Drawings. Type required:

VI. Paving

☒ No bituminous pavement shall be installed within the right of way between November 15 and April 1, nor when the temperature is below 40 degrees Farenheit, without the express consent of the Department. No bituminous pavement shall be installed when the underlying course is wet.

☒ Paving within the right of way shall be as follows:

☒ Base (Type) _____ (Thickness) 8 inches

☒ Surface Base (Type) Asphalt Base (Thickness) 4.0 inches

☒ Finished Surface (Type) Asphalt Surface (Thickness) 2.0 inches

☒ Existing pavement and shoulder material shall be removed to accommodate the above paving specifications.

☒ The finished surface of all new pavement within the right of way shall be true to the required slope and grade, uniform in density and texture, free of irregularities, and equivalent in riding qualities to the adjacent highway pavement or as determined by the Department of Highways.

☒ All materials and methods of construction, including base and subgrade preparation, shall be in accordance with Kentucky Department of Highways Standard Specifications for Road and Bridge Construction (latest edition).

☒ 48 hours notice to the Department is required prior to beginning paving operations.

Phone: 606-307-6273 Name: Adam Dixon, PE

☒ To ensure proper surface drainage, the new pavement shall be flush with the edge of existing highway pavement and shall slope away from the existing edge of the pavement as specified in drawings.

☒ Existing edge of pavement shall be saw-cut to provide a straight and uniform joint for new pavement. An approved joint sealer, in accordance with Kentucky Department of Highways Standard Specifications (latest edition), shall be applied between new and existing pavements.

VII. SIDEWALKS SPECIFICATIONS *This dimension should be equal to the width of the sidewalk.

A. New Sidewalks

☐ Sidewalks shall be constructed of Class A concrete (3,500 p.s.i. test), shall be * ___feet in width, 8 inches in thickness across the entrances, and 4 inches in thickness across the remaining sections.

☐ Sidewalks shall have tooled joints not less than 1 inch in depth at four foot intervals*, and 1/2 premolded expansion joints extending entirely through the sidewalk at intervals not to exceed 50 feet.

☐ All materials and methods of construction, including curing, shall be in accordance with the Kentucky Department of Highways Standard Specifications for Road and Bridge Construction (latest edition).

B. Existing Sidewalks

☐ **(Applicable if existing sidewalks are being relocated)** Use of the sidewalk shall not be blocked or obstructed, and a usable walkway shall be maintained across the construction area at all times.

☐ All damaged sections of the sidewalks shall be entirely replaced to match existing sections.

VIII. DENSE GRADED SHOULDERS

☐ Any existing dense-graded aggregate shoulders in the entire frontage within the construction area, which have been disturbed or damaged or on which dirt has been placed or mud has been deposited or tracked, shall be restored to original condition by removal of all contaminated material and replaced to proper grade with new dense-graded aggregate.

☐ All new aggregate shoulders as specified in the plan shall consist of 5 inches of compacted dense-graded aggregate, $2^{1/2}$ pounds per square yard of calcium chloride.

☐ All dense-graded aggregate shoulders shall slope away from the new edge of pavement at the rate of 3/4 inch per foot.

IX. CURBING

A. Bituminous Curbs

☐ Bituminous concrete curbs shall be given a paint coat of asphalt emulsion.

☐ The surface under the bituminous concrete curb shall be tacked with asphalt emulsion.

☐ All bituminous concrete curbs shall be constructed of a Class I bituminous concrete mixture as specified by official Department of Highways specifications.

☐ All bituminous curbs shall be rolled curb, with a minimum base width of 8 inches and a minimum height of _____ inches. The top of the curb shall be constructed in such a manner as to guarantee a uniform rolled effect throughout the entire run.

B. Concrete Curbs

☐ All curbs or curb and gutter shall be constructed of Class A concrete (3,500 p.s.i. test) and shall be uniform in height, width, and alignment, true to grade, and satisfactory in finish and appearance as determined by the Department. All materials and methods of construction, including curing, shall be in accordance with Department of Highways Standard Specifications for Road and Bridge Construction (latest edition).

☐ All concrete curbs shall be 6 inches in width, extend _____inches above finished grade and 12 inches below finished grade, with all visible edge rounded to 1/2 inch radii.

☐ All concrete curbs shall have expansion joints constructed at intervals of not more than 30 feet, and 1/2 inch premolded expansion joint material (cut to conform to the curb or to the curb and gutter section) shall be used in each expansion joint.

☐ The last _____feet of all concrete curbs are to be tapered down to finished grade.

X. RIGHT-OF-WAY FENCE REPLACEMENT

☐ The replacement fence shall be a height of at least 48 inches and shall be of sufficient density to contain all animals (if applicable).

☐ The replacement fence shall be a minimum of 1 foot outside the right-of-way line. The fence materials and design shall meet accepted industry standards.

☐ The permittee shall be required to maintain the fence in a high state of repair.

☐ The existing fence shall be removed by permittee and stored at the Department's maintenance storage yard for future reuse by the Department.

☐ The control of access shall not be diminished as a result of the removal or replacement of the fence.

IX. MISCELLANEOUS

☐ Miscellaneous:

NOTICE TO PERMITTEE

THE PERMITTEE AGREES THAT ALL WORK WITHIN THE EXISTING RIGHT OF WAY SHALL BE DONE IN ACCORDANCE WITH THE PLANS AS APPROVED AND PERMITTED BY AN ENCROACHMENT PERMIT. 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.

final report

June 2, 2023

Traffic Impact Study

Industrial Park Road
KY 55
Columbia, KY

Prepared for

Kentucky Transportation Cabinet

DIANE B. ZIMMERMAN
Traffic Engineering, LLC

12803 High Meadows Pike
Prospect, KY 40059
502.648.1858
dianebzim@att.net

Table of Contents

INTRODUCTION

The conceptual plan for the Columbia/Adair County Industrial Authority Industrial Park on KY 55 in Columbia, KY shows an industrial park with two access roads on KY 55. **Figure 1** displays a map of the site. The northern access road is constructed. There are two businesses within the park. The purpose of this study is to examine the traffic impacts of the development upon the adjacent highway system. For this study, the impact area was defined to be the intersection of KY 55 at Development Drive, and the proposed entrance on KY 55.

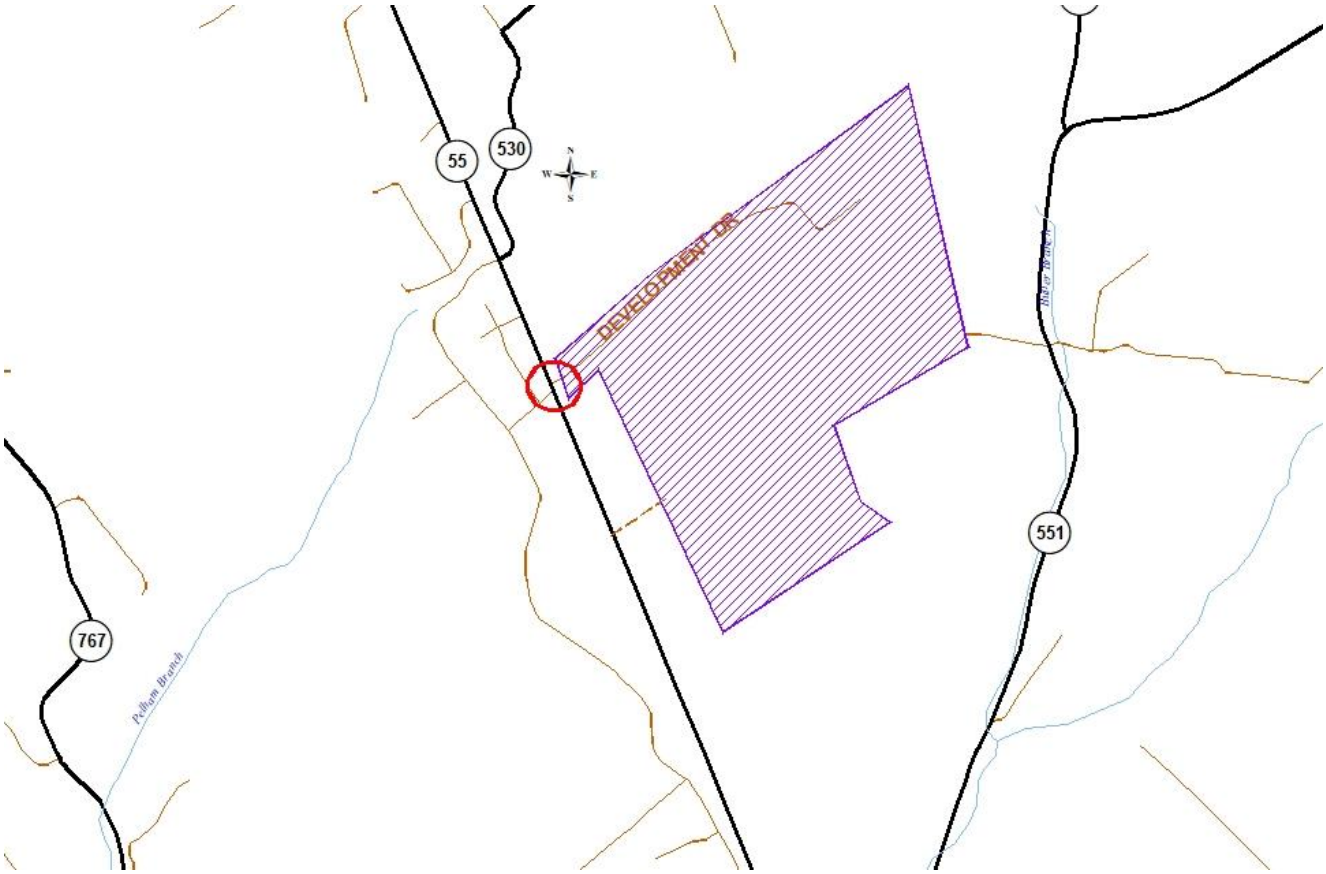


Figure 1. Site Map

EXISTING CONDITIONS

KY 55 is maintained by the Kentucky Transportation Cabinet (KYTC) with an estimated 2023 ADT 7,700 vehicles per day between KY 551 and the Taylor County Lines as estimated from the Kentucky Transportation Cabinet 2021 count at station 047. The route is a two-lane roadway with twelve-foot lanes, four-foot stabilized shoulders and no sidewalks through the study area. KY 55 southbound has a second twelve-foot lane in the study area. The posted speed limit is 55 mph.

Peak hour traffic counts for the intersections were obtained on Thursday, March 30, 2023. The a.m. peak hour was 7:00 to 8:00 and the p.m. peak hour was 4:00 to 5:00. Figure **2** illustrates the existing a.m. and p.m. peak hour traffic volumes. See the Appendix for the times and full count information.

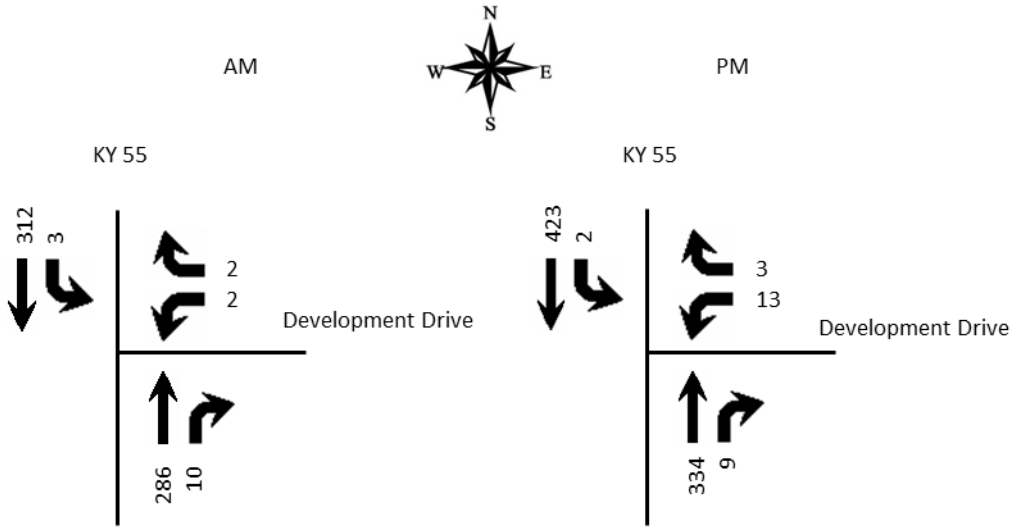


Figure 2. Existing Peak Hour Volumes

FUTURE CONDITIONS

The projected completion year for this project is 2027. To predict traffic volumes in 2027, one percent annual growth in traffic was added to the 2023 volumes. The growth rate is based upon a review of the historical growth at KYTC count station 047. For Development Drive the traffic was doubled to account for future development. **Figure 3** displays the 2027 No Build volumes.

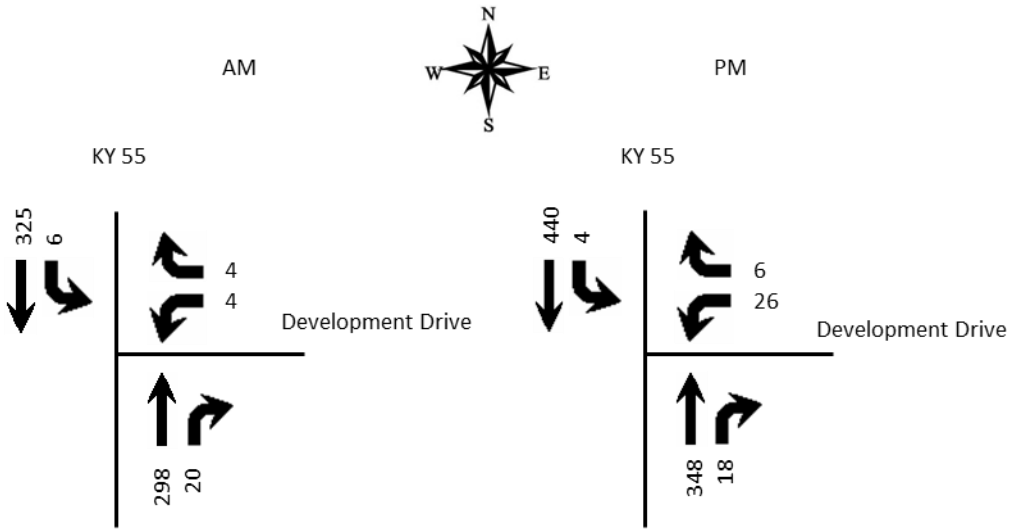


Figure 3. 2027 No Build Peak Hour Volumes

TRIP GENERATION

Trip generation for the occupant has been estimated from data provided by the occupant. The proposed land use of a distillery is not included in the Institute of Transportation Engineers Trip Generation Manual, 11th Edition, which contains trip generation rates for a wide range of developments. The trip generation results are listed in **Table 1**. **Figure 4** shows the trips distribution percentages for employee trips. **Figure 5** shows the trips generated by this development and distributed throughout the road network for the year 2027 during the peak hours. **Figure 6** displays the individual turning movements for the year 2027 for the peak hours when the development is completed.

Table 1. Peak Hour Trips Generated by Site

	A.M. Peak Hour			P.M. Peak Hour		
Land Use	Trips	In	Out	Trips	In	Out
Distillery	30	25	5	50	5	45

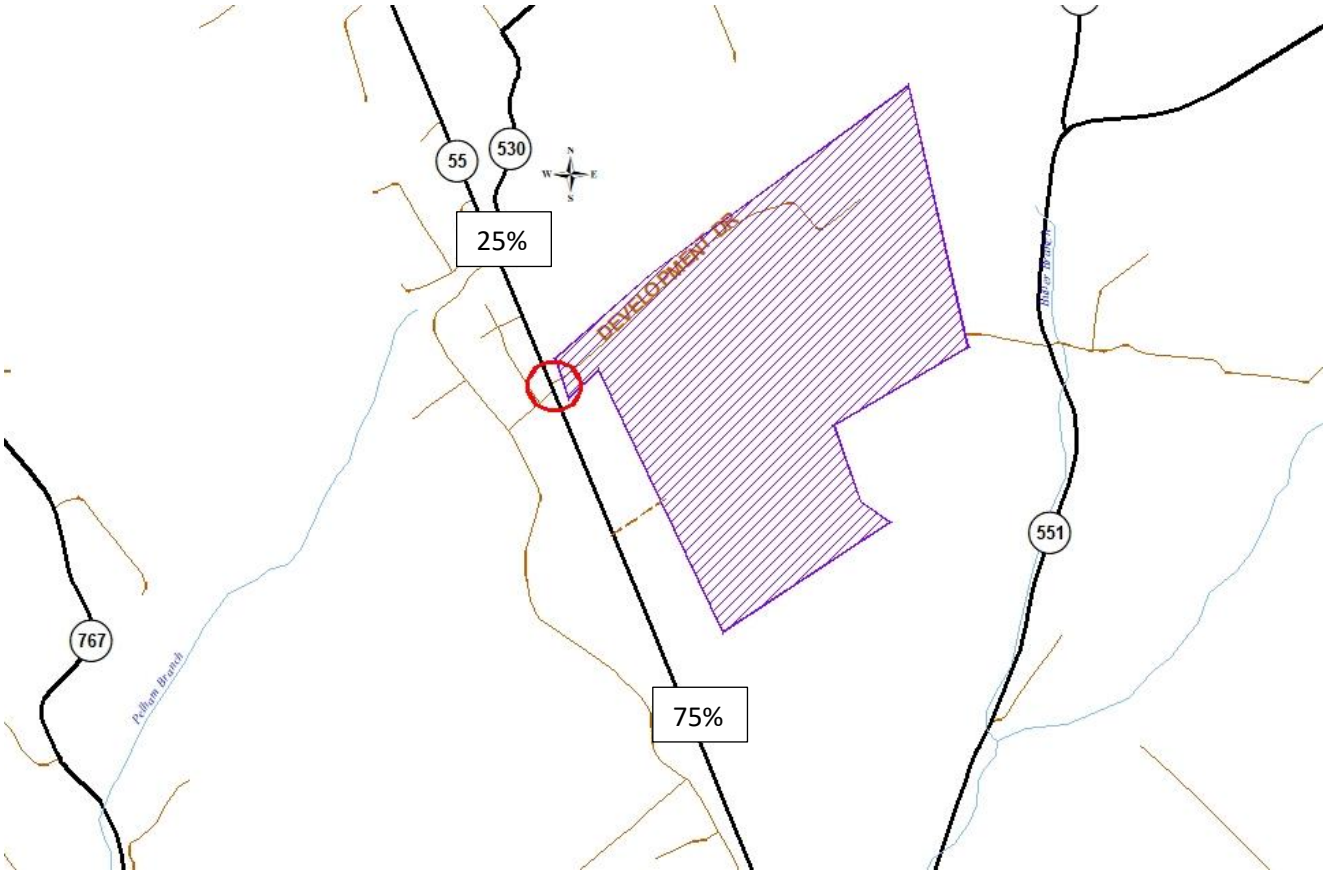


Figure 4. Trip Distribution Percentages

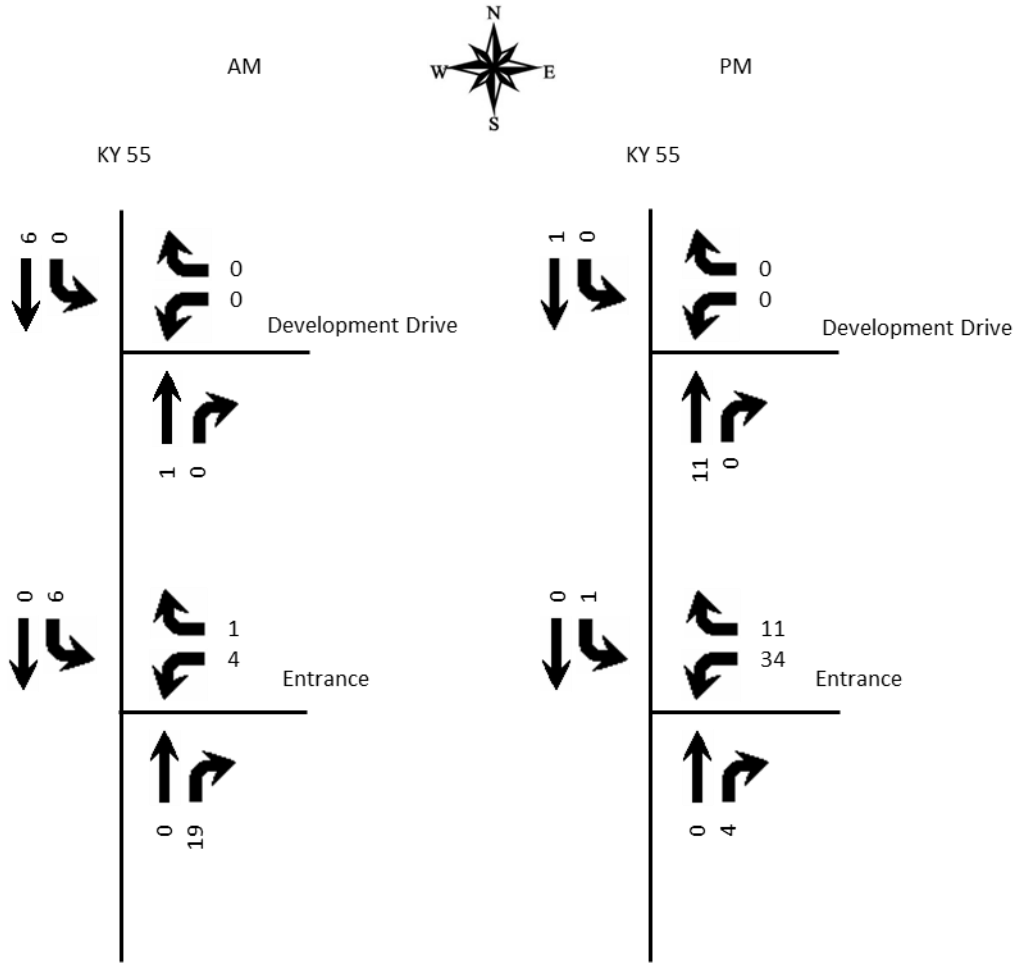


Figure 5. Peak Hour Trips Generated by Site

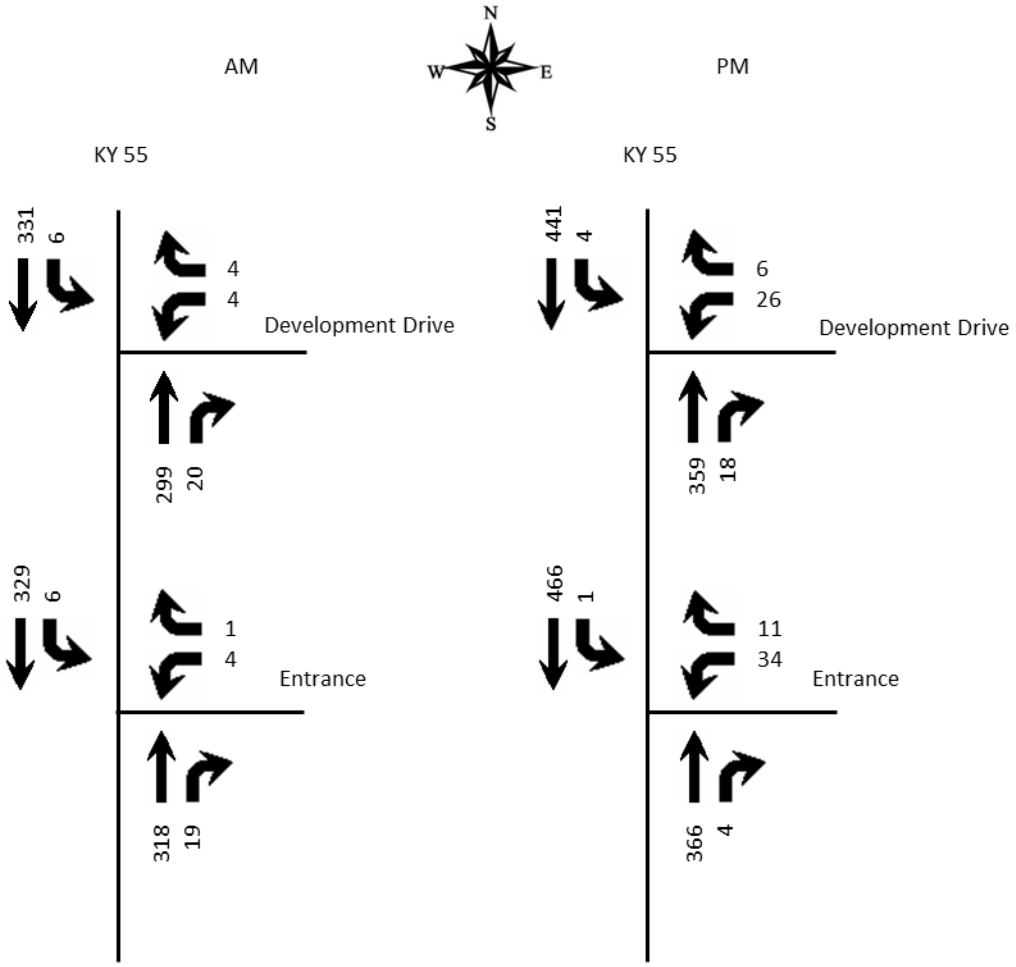


Figure 6. 2027 Peak Hour Build

ANALYSIS

The qualitative measure of operation for a roadway facility or intersection is evaluated by assigning a "Level of Service". Level of Service is a ranking scale from A through F, "A" is the best operating condition and "F" is the worst. Level of Service results depend upon the facility that is analyzed. In this case, the Level of Service is based upon the total delay experienced by lanes at stop-controlled intersections.

To evaluate the impact of the proposed development, the vehicle delays at the intersections were determined using procedures detailed in the Highway Capacity Manual, 7th edition. Future delays and Level of Service were determined for the intersections using the HCS software (version 2023). The delays and Level of Service are summarized in **Table 2**. The intersection reports are found in the appendix.

Table 2. Peak Hour Level of Service

	A.M.			P.M.		
Approach	2023 Existing	2027 No Build	2027 Build	2023 Existing	2027 No Build	2027 Build
KY 55 at Development Drive						
Development Drive Westbound	B 11.4	B 11.7	B 11.7	B 13.5	B 14.3	B 14.5
KY 55 Southbound	A 8.4	A 8.5	A 8.5	A 9.1	A 9.2	A 9.3
KY 55 at Entrance						
Entrance Westbound			B 12.0			B 14.5
KY 55 Southbound			A 8.0			A 8.2

Key: Level of Service, Delay in seconds per vehicle

The entrances were evaluated for turn lanes using the Kentucky Transportation Cabinet Highway Design Guidance Manual dated July, 2020. The volume warrant is not satisfied at the entrance for any turn lanes. The turn lane warrants are included in the appendix. The KYTC traffic impact policy requires using volumes for ten years beyond build-out, or 2037. The 2037 volumes were determined applying a one percent annual growth rate to the volumes. **Figure 7** illustrates the 2037 No Build volumes. **Figure 8** illustrates the 2037 Build Volumes. **Table 3** summarizes the delay and Level of Service for 2037.

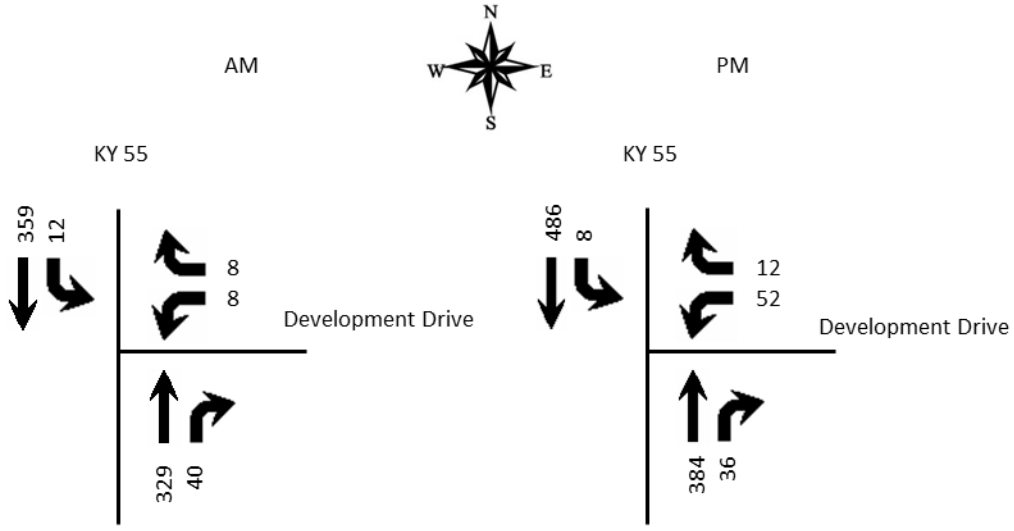


Figure 7. 2037 Peak Hour No Build

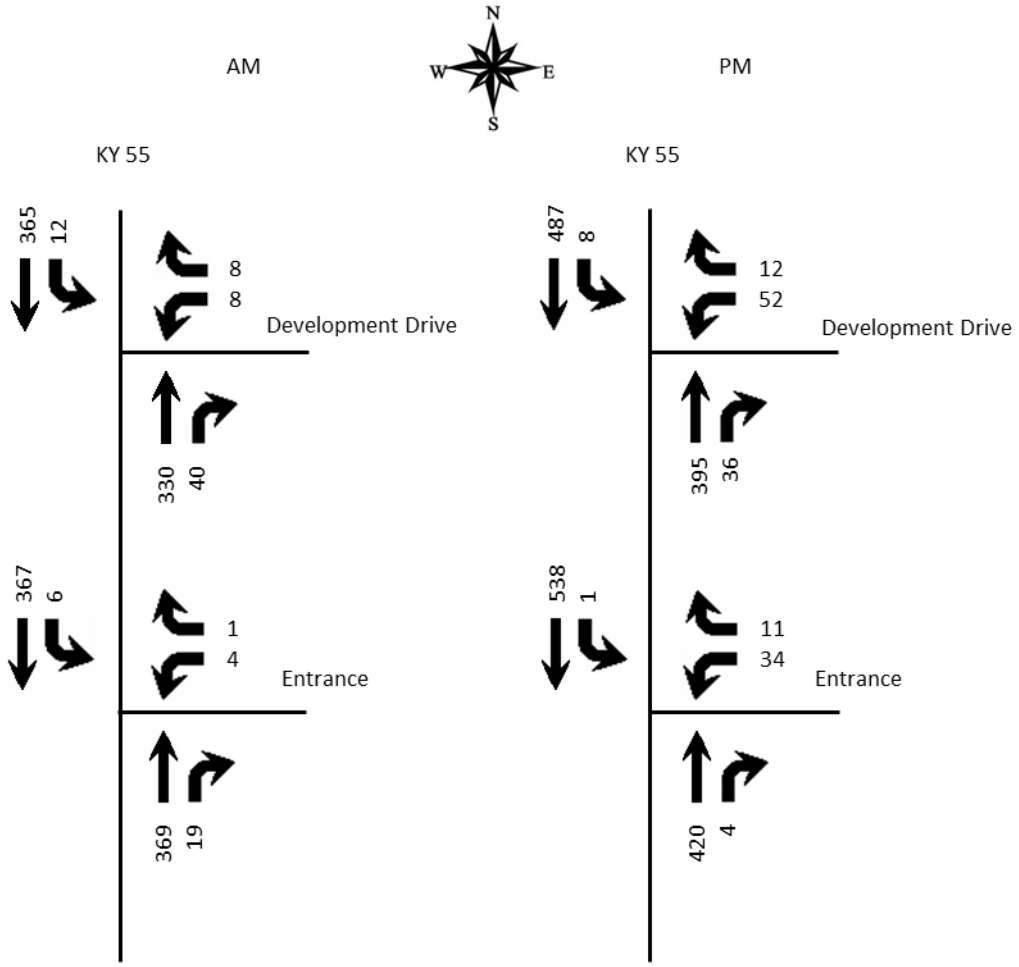


Figure 8. 2037 Peak Hour Build

Table 3. 2037 Peak Hour Level of Service

	A.M.			P.M.		
Approach	2023 Existing	2037 No Build	2037 Build	2023 Existing	2037 No Build	203 Build
KY 55 at Development Drive						
Development Drive Westbound	B 11.4	B 12.4	B 12.5	B 13.5	C 16.7	C 17.0
KY 55 Southbound	A 8.4	A 8.7	A 8.7	A 9.1	A 9.6	A 9.6

	A.M.			P.M.		
Approach	2023 Existing	2037 No Build	2037 Build	2023 Existing	2037 No Build	203 Build
KY 55 at Entrance						
Entrance Westbound			B 12.8			C 16.1
KY 55 Southbound			A 8.1			A 8.3

Key: Level of Service, Delay in seconds per vehicle

CONCLUSIONS

Based upon the volume of traffic generated by the development and the amount of traffic forecasted for the year 2027 and 2037, there will be a minimal impact to the existing highway network. The volume warrant for turn lanes is not satisfied at the entrance.

APPENDIX

Traffic Counts

Classified Turn Movement Count || All vehicles

Marr Traffic DATA COLLECTION
www.marrtraffic.com

Adair County, KY

Site 1 of 1
KY-55 Campbellsville Rd (South)
KY-55 Campbellsville Rd (North)

KY-55 Development Drive

Date
Thursday, March 30, 2023

Lat/Long
37.149266°, -85.306447°

Weather
Fair
50°F

0700 - 0900 (Weekday 2h Session) (03-30-2023)
All vehicles

	Northbound				Southbound				Westbound				
	KY-55 Campbellsville Rd (South)				KY-55 Campbellsville Rd (North)				KY-55 Development Drive				
TIME	Thru 1.1	Right 1.2	U-Turn 1.3	App Total	Left 1.4	Thru 1.5	U-Turn 1.6	App Total	Left 1.7	Right 1.8	U-Turn 1.9	App Total	Int Total
0700 - 0715	63	1	0	64	2	92	0	94	1	1	0	2	160
0715 - 0730	67	2	0	69	1	87	0	88	0	0	0	0	157
0730 - 0745	82	2	0	84	0	70	0	70	0	1	0	1	155
0745 - 0800	74	5	0	79	0	63	0	63	1	0	0	1	143
Hourly Total	286	10	0	**296**	3	312	0	**315**	2	2	0	**4**	**615**
0800 - 0815	61	2	0	63	0	59	0	59	0	1	0	1	123
0815 - 0830	55	1	0	56	0	65	0	65	1	0	0	1	122
0830 - 0845	58	4	0	62	0	67	0	67	2	0	0	2	131
0845 - 0900	61	2	0	63	0	60	0	60	2	0	0	2	125
Hourly Total	235	9	0	**244**	0	251	0	**251**	5	1	0	**6**	**501**
Grand Total	521	19	0	**540**	3	563	0	**566**	7	3	0	**10**	**1116**
Approach %	96.48	3.52	0.00	-	0.53	99.47	0.00	-	70.00	30.00	0.00	-	
Intersection %	46.68	1.70	0.00	48.39	0.27	50.45	0.00	50.72	0.63	0.27	0.00	0.90	
PHF	0.87	0.50	0.00	**0.88**	0.38	0.85	0.00	**0.84**	0.50	0.50	0.00	**0.50**	**0.96**

1600 - 1800 (Weekday 2h Session) (03-30-2023)
All vehicles

	Northbound				Southbound				Westbound				
	KY-55 Campbellsville Rd (South)				KY-55 Campbellsville Rd (North)				KY-55 Development Drive				
TIME	Thru 1.1	Right 1.2	U-Turn 1.3	App Total	Left 1.4	Thru 1.5	U-Turn 1.6	App Total	Left 1.7	Right 1.8	U-Turn 1.9	App Total	Int Total
1600 - 1615	93	2	0	95	1	125	0	126	6	0	0	6	227
1615 - 1630	79	2	0	81	1	109	0	110	1	1	0	2	193
1630 - 1645	91	5	0	96	0	101	0	101	2	0	0	2	199
1645 - 1700	71	0	0	71	0	88	0	88	4	2	0	6	165
Hourly Total	334	9	0	**343**	2	423	0	**425**	13	3	0	**16**	**784**
1700 - 1715	99	0	0	99	0	86	0	86	3	1	0	4	189
1715 - 1730	71	0	0	71	0	80	0	80	1	1	0	2	153
1730 - 1745	69	1	0	70	0	67	0	67	2	0	0	2	139
1745 - 1800	60	0	0	60	0	46	0	46	0	0	0	0	106
Hourly Total	299	1	0	**300**	0	279	0	**279**	6	2	0	**8**	**587**
Grand Total	633	10	0	**643**	2	702	0	**704**	19	5	0	**24**	**1371**
Approach %	98.44	1.56	0.00	-	0.28	99.72	0.00	-	79.17	20.83	0.00	-	
Intersection %	46.17	0.73	0.00	46.90	0.15	51.20	0.00	51.35	1.39	0.36	0.00	1.75	
PHF	0.90	0.45	0.00	**0.89**	0.50	0.85	0.00	**0.84**	0.54	0.38	0.00	**0.67**	**0.86**

HCS Reports

HCS Two-Way Stop-Control Report

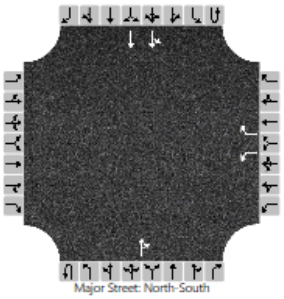
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	6/2/2023
Analysis Year	2023
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Ind Park

Site Information

Intersection	KY 55 at Development Dr
Jurisdiction	
East/West Street	Development Drive
North/South Street	KY 55
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	0	0	0	2	0
Configuration						L		R				TR		LT	T	
Volume (veh/h)						2		2			286	10		3	312	
Percent Heavy Vehicles (%)						0		50						33		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.2						4.1		
Critical Headway (sec)						6.80		7.20						4.76		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.80						2.53		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						2		2						3		
Capacity, c (veh/h)						524		604						1053		
v/c Ratio						0.00		0.00						0.00		
95% Queue Length, Q_{95} (veh)						0.0		0.0						0.0		
Control Delay (s/veh)						11.9		11.0						8.4	0.0	
Level of Service (LOS)						B		B						A	A	
Approach Delay (s/veh)						11.4								0.1		
Approach LOS						B								A		

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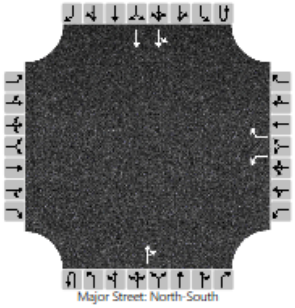
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 55 at Development Dr
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	6/2/2023	East/West Street	Development Drive
Analysis Year	2027	North/South Street	KY 55
Time Analyzed	AM Peak No Build	Peak Hour Factor	0.96
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ind Park		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	0	0	0	2	0
Configuration						L		R				TR		LT	T	
Volume (veh/h)						4		4			298	20		6	325	
Percent Heavy Vehicles (%)						0		50						33		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.2						4.1		
Critical Headway (sec)						6.80		7.20						4.76		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.80						2.53		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						4		4						6		
Capacity, c (veh/h)						500		588						1029		
v/c Ratio						0.01		0.01						0.01		
95% Queue Length, Q_{95} (veh)						0.0		0.0						0.0		
Control Delay (s/veh)						12.3		11.2						8.5	0.1	
Level of Service (LOS)						B		B						A	A	
Approach Delay (s/veh)						11.7								0.2		
Approach LOS						B								A		

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HCS Two-Way Stop-Control Report

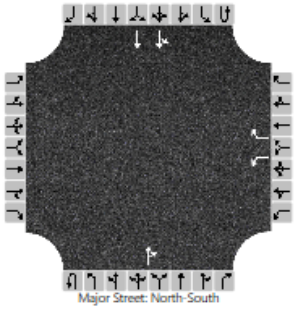
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	6/2/2023
Analysis Year	2027
Time Analyzed	AM Peak Build
Intersection Orientation	North-South
Project Description	Ind Park

Site Information

Intersection	KY 55 at Development Dr
Jurisdiction	
East/West Street	Development Drive
North/South Street	KY 55
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	0	0	0	2	0
Configuration						L		R				TR		LT	T	
Volume (veh/h)						4		4			299	20		6	331	
Percent Heavy Vehicles (%)						0		50						33		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.2						4.1		
Critical Headway (sec)						6.80		7.20						4.76		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.80						2.53		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						4		4						6		
Capacity, c (veh/h)						497		587						1028		
v/c Ratio						0.01		0.01						0.01		
95% Queue Length, Q_{95} (veh)						0.0		0.0						0.0		
Control Delay (s/veh)						12.3		11.2						8.5	0.1	
Level of Service (LOS)						B		B						A	A	
Approach Delay (s/veh)						11.7								0.2		
Approach LOS						B								A		

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HCS Two-Way Stop-Control Report

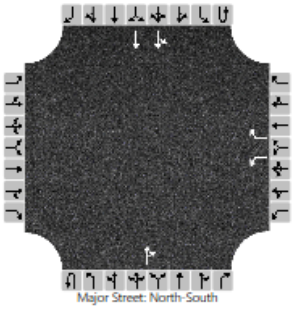
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	6/2/2023
Analysis Year	2037
Time Analyzed	AM Peak No Build
Intersection Orientation	North-South
Project Description	Ind Park

Site Information

Intersection	KY 55 at Development Dr
Jurisdiction	
East/West Street	Development Drive
North/South Street	KY 55
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	0	0	0	2	0
Configuration						L		R				TR		LT	T	
Volume (veh/h)						8		8			329	40		12	359	
Percent Heavy Vehicles (%)						0		50						33		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.2						4.1		
Critical Headway (sec)						6.80		7.20						4.76		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.80						2.53		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						8		8						13		
Capacity, c (veh/h)						446		551						977		
v/c Ratio						0.02		0.02						0.01		
95% Queue Length, Q_{95} (veh)						0.1		0.0						0.0		
Control Delay (s/veh)						13.2		11.6						8.7	0.1	
Level of Service (LOS)						B		B						A	A	
Approach Delay (s/veh)						12.4								0.4		
Approach LOS						B								A		

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HCS Two-Way Stop-Control Report

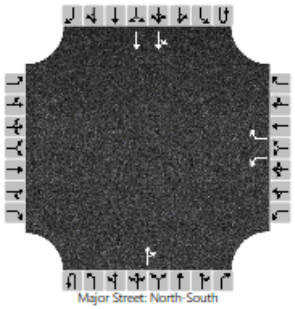
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	6/2/2023
Analysis Year	2037
Time Analyzed	AM Peak Build
Intersection Orientation	North-South
Project Description	Ind Park

Site Information

Intersection	KY 55 at Development Dr
Jurisdiction	
East/West Street	Development Drive
North/South Street	KY 55
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	0	0	0	2	0
Configuration						L		R				TR		LT	T	
Volume (veh/h)						8		8			330	40		12	365	
Percent Heavy Vehicles (%)						0		50						33		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.2						4.1		
Critical Headway (sec)						6.80		7.20						4.76		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.80						2.53		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						8		8						13		
Capacity, c (veh/h)						444		550						976		
v/c Ratio						0.02		0.02						0.01		
95% Queue Length, Q_{95} (veh)						0.1		0.0						0.0		
Control Delay (s/veh)						13.3		11.6						8.7	0.1	
Level of Service (LOS)						B		B						A	A	
Approach Delay (s/veh)						12.5								0.4		
Approach LOS						B								A		

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Development AM 37 B.xtw

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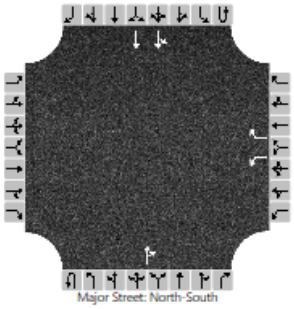
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 55 at Development Dr
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	6/2/2023	East/West Street	Development Drive
Analysis Year	2023	North/South Street	KY 55
Time Analyzed	PM Peak	Peak Hour Factor	0.86
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ind Park		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	0	0	0	2	0
Configuration						L		R				TR		LT	T	
Volume (veh/h)						13		3			334	9		2	423	
Percent Heavy Vehicles (%)						0		0						50		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.2						4.1		
Critical Headway (sec)						6.80		6.20						5.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.70		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						15		3						2		
Capacity, c (veh/h)						409		660						877		
v/c Ratio						0.04		0.01						0.00		
95% Queue Length, Q_{95} (veh)						0.1		0.0						0.0		
Control Delay (s/veh)						14.1		10.5						9.1	0.0	
Level of Service (LOS)						B		B						A	A	
Approach Delay (s/veh)						13.5								0.1		
Approach LOS						B								A		

HCS™ TWSC Version 2023
Development PM 23.xtw

Generated: 6/2/2023 11:53:16 AM

HCS Two-Way Stop-Control Report

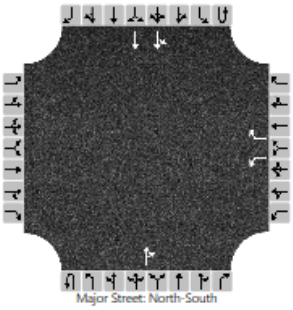
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	6/2/2023
Analysis Year	2027
Time Analyzed	PM Peak No Build
Intersection Orientation	North-South
Project Description	Ind Park

Site Information

Intersection	KY 55 at Development Dr
Jurisdiction	
East/West Street	Development Drive
North/South Street	KY 55
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	0	0	0	2	0
Configuration						L		R				TR		LT	T	
Volume (veh/h)						26		6			348	18		4	440	
Percent Heavy Vehicles (%)						0		0						50		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.2						4.1		
Critical Headway (sec)						6.80		6.20						5.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.70		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						30		7						5		
Capacity, c (veh/h)						387		642						852		
v/c Ratio						0.08		0.01						0.01		
95% Queue Length, Q_{95} (veh)						0.3		0.0						0.0		
Control Delay (s/veh)						15.1		10.7						9.2	0.1	
Level of Service (LOS)						C		B						A	A	
Approach Delay (s/veh)						14.3								0.1		
Approach LOS						B								A		

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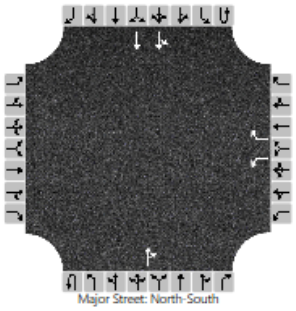
Development PM 27 NB.xtw

Generated: 6/2/2023 11:54:59 AM

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 55 at Development Dr
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	6/2/2023	East/West Street	Development Drive
Analysis Year	2027	North/South Street	KY 55
Time Analyzed	PM Peak Build	Peak Hour Factor	0.86
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ind Park		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	0	0	0	2	0
Configuration						L		R				TR		LT	T	
Volume (veh/h)						26		6			359	18		4	441	
Percent Heavy Vehicles (%)						0		0						50		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.2						4.1		
Critical Headway (sec)						6.80		6.20						5.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.70		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						30		7						5		
Capacity, c (veh/h)						379		631						841		
v/c Ratio						0.08		0.01						0.01		
95% Queue Length, Q_{95} (veh)						0.3		0.0						0.0		
Control Delay (s/veh)						15.3		10.8						9.3	0.1	
Level of Service (LOS)						C		B						A	A	
Approach Delay (s/veh)						14.5								0.1		
Approach LOS						B								A		

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Development PM 27 B.xtw

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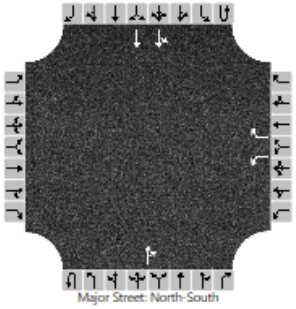
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 55 at Development Dr
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	6/2/2023	East/West Street	Development Drive
Analysis Year	2037	North/South Street	KY 55
Time Analyzed	PM Peak No Build	Peak Hour Factor	0.86
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ind Park		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	0	0	0	2	0
Configuration						L		R				TR		LT	T	
Volume (veh/h)						52		12			384	36		8	486	
Percent Heavy Vehicles (%)						0		0						50		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.2						4.1		
Critical Headway (sec)						6.80		6.20						5.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.70		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						60		14						9		
Capacity, c (veh/h)						337		600						797		
v/c Ratio						0.18		0.02						0.01		
95% Queue Length, Q_{95} (veh)						0.6		0.1						0.0		
Control Delay (s/veh)						18.0		11.1						9.6	0.1	
Level of Service (LOS)						C		B						A	A	
Approach Delay (s/veh)						16.7								0.3		
Approach LOS						C								A		

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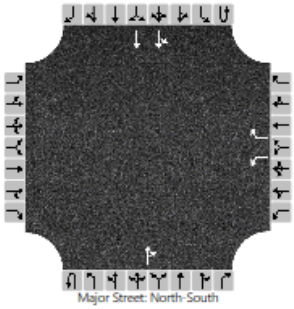
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 55 at Development Dr
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	6/2/2023	East/West Street	Development Drive
Analysis Year	2037	North/South Street	KY 55
Time Analyzed	PM Peak Build	Peak Hour Factor	0.86
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ind Park		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	0	0	0	2	0
Configuration						L		R				TR		LT	T	
Volume (veh/h)						52		12			395	36		8	487	
Percent Heavy Vehicles (%)						0		0						50		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.2						4.1		
Critical Headway (sec)						6.80		6.20						5.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.70		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						60		14						9		
Capacity, c (veh/h)						331		590						786		
v/c Ratio						0.18		0.02						0.01		
95% Queue Length, Q_{95} (veh)						0.7		0.1						0.0		
Control Delay (s/veh)						18.3		11.3						9.6	0.1	
Level of Service (LOS)						C		B						A	A	
Approach Delay (s/veh)						17.0								0.3		
Approach LOS						C								A		

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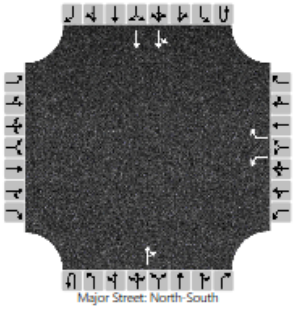
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 55 at Entrance
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	6/2/2023	East/West Street	Entrance
Analysis Year	2027	North/South Street	KY 55
Time Analyzed	AM Peak	Peak Hour Factor	0.96
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ind Park		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	0	0	0	2	0
Configuration						L		R				TR		LT	T	
Volume (veh/h)						4		1			318	19		6	329	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.2						4.1		
Critical Headway (sec)						6.80		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						4		1						6		
Capacity, c (veh/h)						484		706						1219		
v/c Ratio						0.01		0.00						0.01		
95% Queue Length, Q_{95} (veh)						0.0		0.0						0.0		
Control Delay (s/veh)						12.5		10.1						8.0	0.0	
Level of Service (LOS)						B		B						A	A	
Approach Delay (s/veh)						12.0								0.2		
Approach LOS						B								A		

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Ent AM 27.xtw

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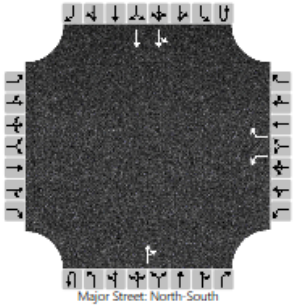
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 55 at Entrance
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	6/2/2023	East/West Street	Entrance
Analysis Year	2037	North/South Street	KY 55
Time Analyzed	AM Peak	Peak Hour Factor	0.96
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ind Park		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	0	0	0	2	0
Configuration						L		R				TR		LT	T	
Volume (veh/h)						4		1			369	19		6	367	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.2						4.1		
Critical Headway (sec)						6.80		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						4		1						6		
Capacity, c (veh/h)						436		659						1165		
v/c Ratio						0.01		0.00						0.01		
95% Queue Length, Q_{95} (veh)						0.0		0.0						0.0		
Control Delay (s/veh)						13.3		10.5						8.1	0.0	
Level of Service (LOS)						B		B						A	A	
Approach Delay (s/veh)						12.8								0.2		
Approach LOS						B								A		

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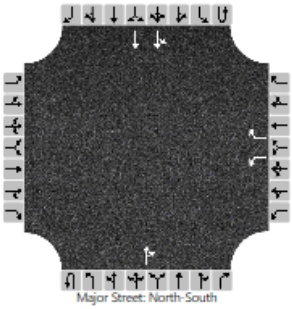
Ent AM 37.xtw

Generated: 6/2/2023 12:11:25 PM

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 55 at Entrance
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	6/2/2023	East/West Street	Entrance
Analysis Year	2027	North/South Street	KY 55
Time Analyzed	PM Peak	Peak Hour Factor	0.86
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ind Park		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	0	0	0	2	0
Configuration						L		R				TR		LT	T	
Volume (veh/h)						34		11			366	4		1	466	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.2						4.1		
Critical Headway (sec)						6.80		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						40		13						1		
Capacity, c (veh/h)						377		631						1140		
v/c Ratio						0.10		0.02						0.00		
95% Queue Length, Q_{95} (veh)						0.3		0.1						0.0		
Control Delay (s/veh)						15.7		10.8						8.2	0.0	
Level of Service (LOS)						C		B						A	A	
Approach Delay (s/veh)						14.5								0.0		
Approach LOS						B								A		

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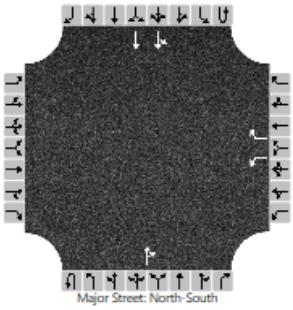
Ent PM 27.xtw
Generated: 6/2/2023 12:13:18 PM

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 55 at Entrance
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	6/2/2023	East/West Street	Entrance
Analysis Year	2037	North/South Street	KY 55
Time Analyzed	PM Peak	Peak Hour Factor	0.86
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ind Park		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	0	0	0	2	0
Configuration						L		R				TR		LT	T	
Volume (veh/h)						34		11			420	4		1	538	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.2						4.1		
Critical Headway (sec)						6.80		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						40		13						1		
Capacity, c (veh/h)						323		582						1081		
v/c Ratio						0.12		0.02						0.00		
95% Queue Length, Q_{95} (veh)						0.4		0.1						0.0		
Control Delay (s/veh)						17.7		11.3						8.3	0.0	
Level of Service (LOS)						C		B						A	A	
Approach Delay (s/veh)						16.1								0.0		
Approach LOS						C								A		

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Ent PM 37.xtw

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Turn Lane Warrants Entrance

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	6	Speed Limit (mph	55
Advancing Volume (vph)	373	No. of through lanes	1
Opposing Volume (vph)	388	Percent Heavy Vehicles (decimal percent)	0.01

Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

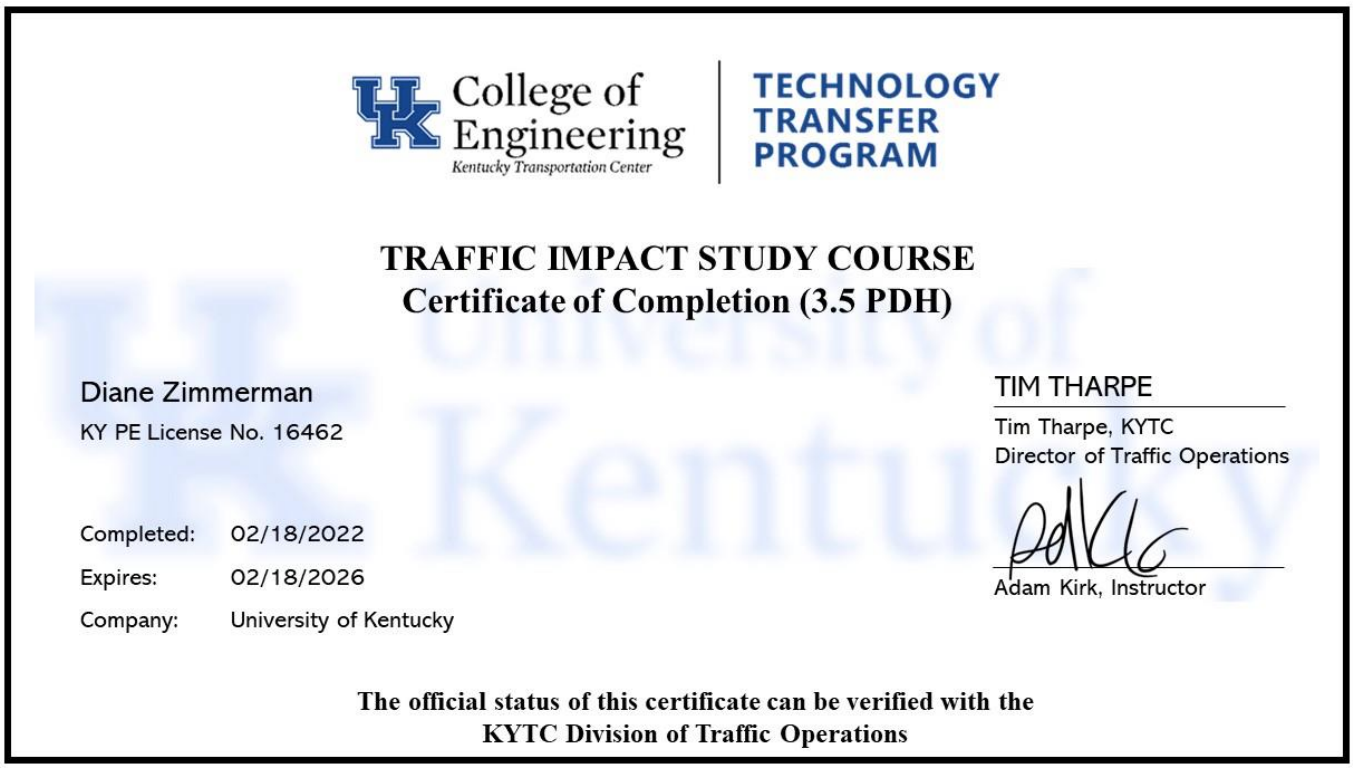
Right Turn Volume (vph)	19	Speed Limit (mph)	55
Advancing Volume (vph)	388		

Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

I, Diane Bridwell Zimmerman, certify that this Traffic Impact Study has been prepared under my direct supervision, that I am a Professional Engineer registered in the State of Kentucky and have successfully completed the Traffic Impact Study Requirements training course required by KYTC. Furthermore, I certify that this study has been completed in accordance with the KYTC Traffic Impact Study Requirements and in accordance with engineering standards of practice. The results presented have been determined to be accurate representations of existing and anticipated conditions based on the assumptions and methodologies presented in this report.

Diane Bridwell Zimmerman, Professional Engineer License #16462



College of Engineering
Kentucky Transportation Center

TECHNOLOGY TRANSFER PROGRAM

TRAFFIC IMPACT STUDY COURSE
Certificate of Completion (3.5 PDH)

Diane Zimmerman
KY PE License No. 16462

Completed: 02/18/2022
Expires: 02/18/2026
Company: University of Kentucky

TIM THARPE
Tim Tharpe, KYTC
Director of Traffic Operations

Adam Kirk, Instructor

The official status of this certificate can be verified with the KYTC Division of Traffic Operations

DIANE B. ZIMMERMAN
Traffic Engineering, LLC

12803 High Meadows Pike
Prospect, KY 40059
502.648.1858
dianebzim@att.net

March 17, 2023

Mr Bobby Morrison, Chairman
Columbia-Adair County Industrial Authority
201 Burkesville Street
Columbia, KY 42728

RE: Green River Commerce Park Traffic Impact Study

Dear Mr. Morrison:

Diane B. Zimmerman Traffic Engineering, LLC is pleased to present a professional services proposal to prepare a traffic impact study of the proposed Green River Commerce Park entrance on KY 55 in Columbia, KY. The proposed approach is described below:

Task 1. Data Collection

We will collect a.m. and p.m. intersection traffic turning movement counts for the intersection of:

- KY 55 at Development Drive

Task 2. Analysis

Based on the proposed development information the hourly traffic generated by the project will be estimated. The new traffic will be distributed and assigned to the adjoining street system. An analysis of the intersection listed above and the proposed entrance will be conducted.

Task 3. Prepare Report

The findings will be summarized in a report, which will be delivered to you.

Cost Proposal

We propose to perform these services for a lump sum fee of **$ 3,000**. This will be invoiced upon delivery of the study.

This proposal does not include attending any meetings. If this is required, the time will be billed at the rate of $180 per hour for the engineer, plus travel expenses. If additional work is requested beyond the scope of this agreement, it will also be billed at $180 per hour for the engineer.

Should you find our proposal acceptable, please signify by signing and dating this letter. Return a signed copy to me.

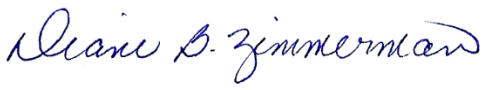
Thank you for providing this opportunity to work with you. Please feel free to contact me if you have any questions.

Sincerely,

APPROVED:

Diane B. Zimmerman Traffic Engineering, LLC

Columbia-Adair County Industrial Authority



Diane B. Zimmerman

_____

Signed Date

Dixon, Adam C (KYTC-D08)

From: glenross@mselex.com
Sent: Wednesday, June 19, 2024 12:09 PM
To: Dixon, Adam C (KYTC-D08)
Cc: 'Columbia Adair Economic Development'; 'Larry Walker'; bmorrisson@aol.com
Subject: FW: Columbia-Adair Entrance Permit

Adam

Another confirmation concerning the south entrance road and utilities.

Thank you,

Glen A. Ross, P.E.
President
MSE of Kentucky, Inc.
624 Wellington Way
Lexington, Ky 40503
859-223-5694 (Bus.)
859-223-2607 (Fax)
glenross@mselex.com
www.mselex.com

From: Johnny Webb <jwebb@mselex.com>
Sent: Wednesday, June 19, 2024 11:49 AM
To: Glen Ross <glenross@mselex.com>
Subject: Columbia-Adair Entrance Permit

Glen,

Received a called from Bradley Miller with Columbia Utilities. He also checked with their engineer and said they don't have a problem with the design of the proposed south entrance road.

Thanks,

Johnny

INSTRUCTIONS:

These are instructions for preparation of the KPDES BMP plans for highway construction projects.

1. A KPDES BMP plan and companion notice of intent form are the documents that are used to implement the requirements of the KPDES storm water general permit referenced as KYR10. The plans are required for any project that will disturb one acre or more of ground surface.

2. The Project Manager is to have a partial KPDES BMP plan prepared prior to project letting. This process brings information about the project together and places it in a template. This partial plan will be placed in the project documents that are available to the bidders. The items marked as (1) are to be completed by the project manager/design engineer. KPDES plans incorporate the Erosion Control sheets and bid items from the project documents. These documents are to be prepared using "good engineering practices".

3. After project letting, the successful contractor and the District resident engineer are to collaborate on the completion of the initial plan. The TEBM for Construction is to ensure that the KPDES permit notice of intent (NOI) is completed and signed by the Chief District Engineer and a letter of transmittal includes delegation of which person will be that is responsible to sign reports (including the BMP plan) for the project. Items in the plan marked as (2) are to be completed by the district and items marked as (3) are for the contractor. In some instances, items are marked as (2) and (3) for both the resident and contractor.

4. The plan template has been developed to address the requirements of 401 KAR 5:037. This part of the plan is for the contractor to complete. The contractor and resident must be aware of the location where these activities covered by the groundwater protection plan will be conducted at the project site. Also, there are requirements for training and inspection that must be included in the project management.

5. The KPDES BMP plan template also includes a reference to the Oil Pollution control Act requirement to have a Spill Prevention Control and Countermeasure plan. These plans are required when there will be storage of more than 1,320 gallons of fuel (and other petroleum products) as an aggregate in containers (mobile and static) that have a capacity of 55 gallons or more. This plan must be certified by a professional engineer. This plan is a separate document that is not included in the KyTC outline of the KPDES BMP plan. A copy of the SPCC plan is to be provided to the resident engineer.

6. The contractor shall prepare an Oil Pollution Spill Prevention Control and Countermeasure plan when the project that involves the storage of petroleum products in 55 gallon or larger containers with a total combined storage capacity of 1,320 gallons. This is a requirement of 40 CFR 112.

SECTION 04000 - TEMPLATE FOR HIGHWAY CONSTRUCTION BEST MANAGEMENT PRACTICES (BMP) PLAN

This template is provided for the Contractor's use (optional) in the required submission of a Best Management Practices (BMP) plan. This narrative and the attached plan sheets address requirements of the Kentucky Division of Water KPDES KYR10 General Permit and the Kentucky Transportation Cabinet / Best Management Practices (BMP) plan – Groundwater Protection plan for Highway Construction Activities.

Template Preparer Glen Ross, P.E. 859.223.5694,

Date: October 4, 2024 KY DOW NOI Attached: Yes X No: ___

1. CONTACT INFORMATION AND SITE DESCRIPTION

Project Name and Location
Green River Commerce Park
South Access Road Entrance
Grade, Drain and Paving
HWY 55, Columbia, KY 42728

Site Owner Name and Contact Information
Columbia-Adair Co. EDA
201 Burkesville St.
Columbia, KY 42728
Attn: Bobby Morrison
bmorrison@aol.com
270-384-4401

Construction Site SWPPP/BMP Plan Manager and Contact Information
Name, Title
(Contact Info)

Project Start and End Dates
Start:_____, 2024
End:_____, 2024

Description – Existing Site Conditions, Purpose, and Types of Soil Disturbing Activities
The existing site work will primarily occur on vacant farm property (grassland) at the Green River Commerce Park property on Hwy 55. The site is relatively level. Soils are mostly Frederick Silt Loam (FrC2) with 6 to 12 percent slopes and is well drained. Rock is typically more than 15' deep and in many instances more than 25' deep. No threatened or endangered species or historical sites were found on the site. This project will consist of about 150 feet of industrial entrance road. Soil disturbing activities will include: initial clearing; installing a stabilized construction entrance, installing downgradient silt fence and other erosion and sediment controls; grading; paving; and preparation for final seeding and landscaping.

Site Area and Disturbed Acreage
The site is less than 1 acre, based on a 60' wide easement that will be disturbed by construction activities.

There are no streams in the disturbed area. Note, the following is a template and some items may not be applicable.

Sequence of Major Activities

Construction Activity	Schedule Considerations
Work crew orientation	Pre-construction meeting to review permits, plans, schedule, and staffing.
Construction access – install entrance to road work site, initial construction routes, initial areas designated for vehicle parking	This is the first land-disturbing activity. Minimal clearing/grading will be done to install stabilized #2 rock material storage site exit with geotextile underliner, at least 50 ft long. Downgradient silt fences will be installed below areas to be cleared, graded, or cut/filled. Do-not- disturb areas will be marked off.
Sediment traps and barriers –traps, sediment fences, outlet protection	ID locations and install temporary sediment traps as needed to intercept flow. Build diversions prior to upgradient work where possible, and seed/mulch/blanket slopes immediately. Relocate and reinstall silt fences as necessary prior to upgradient work. Maintain and remove sediment as necessary.
Runoff and run-on controls – filter socks or pillows, straw wattles	Install controls as needed to divert clean flows in streets around soils stockpiles. Additional runoff control measures may be installed during excavation.
Land clearing and excavation— site preparation (cutting, back filling, and grading, sediment traps, barriers, diversions, and drains)	Clearing and excavation will begin after installation of principal sediment and runoff control measures, and additional control measures will be installed as excavation continues. Trees and buffer areas around streams, sinkholes, and other protected areas will be marked for preservation.
Runoff conveyance system - culverts, channels, inlet and outlet protection, slope drains	Inlet and outlet protection measures will be installed at culverts and surface inlets. Drainage ditches will be stabilized immediately with sod or seed with erosion control blanket.
Surface stabilization— temporary and permanent seeding, mulching, sodding, riprap	All disturbed grass areas will be graded and stabilized as soon as possible. Stabilization will begin within 14 days on areas of the site where construction has permanently or temporarily ceased. Temporary and permanent stabilization will comply with the project specifications. Erosion control blankets will be used on slopes in accordance with the project specifications.
Utilities, paving	During construction, erosion and sedimentation control measures will be installed as needed, such as construction entrances and downgradient silt fences and sediment traps. Areas at final grade not in the immediate construction area will be seeded/mulched as soon as possible. Trench areas will be protected from erosion until final restoration.
Landscaping and final stabilization—topsoiling, trees and shrubs, permanent seeding, mulching.	This is the last construction phase. All remaining disturbed areas will be stabilized, including borrow and spoil areas. Temporary control structures will be removed and the area will be seeded and mulched.

1. SITE DESCRIPTION, MAPS, AND DRAWINGS (INCLUDED BELOW OR ATTACHED)

Site Plan Showing Pre/Post Construction Topography, Construction, Drainage Features, and all BMPs

Name of Receiving Waters
The entire site will drain into an unnamed tributary of Butler Branch, which is approximately 4,500 feet beyond the point of excavation for new road construction. Butler Branch drains south to Russell Creek.

There are no other streams in the project site and some drainage is underground in the upper portions of the drainage area near the road construction.

TMDLs and Pollutants of Concern in Receiving Waters
Butler Branch is not listed as an impaired stream.

Potential Sources of Pollutants
Sediment from land clearing and pipeline excavation; fertilizer; concrete washout water; oil/fuel/grease from equipment; sanitary waste; and trash/debris.

2. EROSION PREVENTION AND SEDIMENT CONTROL MEASURES

Limits of Disturbance and Project Phasing
Land disturbance activities will be phased to minimize the amount of soil exposed and the length of exposure time. The overall objective will be to achieve final grades as quickly as possible, and to stabilize all gross areas with seed, mulch or blankets/mats within 14 days after final grade is achieved, or after grading work is suspended on that portion of the site.

Stabilization Practices
Temporary Stabilization – Top soil stockpiles and disturbed portions of the site where construction activity stops for 14 days or more will be stabilized with temporary seed or straw mulch no later than 14 days from the last construction activity in that area (portion) of the site. Seeding rates will be consistent with the Kentucky Erosion Prevention and Sediment Control Field Guide Lime and fertilizer will be applied only when necessary. After seeding, each area shall be mulched with at least 3,000 pounds per acre of blown or hand-scattered straw. The straw will be netted down or crimped into place by a disk harrow with the blades set straight. Slopes will be covered with blankets or mats consistent with the project details. Areas of the road which are to be paved will be temporarily stabilized by applying stone sub-base until bituminous pavement can be applied. Dust will be controlled by water sprayed from a tanker truck as needed during dry weather.

Permanent Stabilization – Disturbed portions of the site where construction activities are completed will be stabilized with permanent seed no later than 14 days after completion of grading in that area. Seed and mulch will be applied consistent with the Kentucky Erosion Protection and Sediment Control Field Guide. Lime and fertilizer will be applied only if needed. After seeding, each area will be mulched with 4,000 pounds per acre of straw. The straw mulch will be netted down or crimped into place by a disk harrow with blades set straight. Slopes will be covered with erosion control blankets or turf reinforcement mats consistent with the project details. Ditches will be triple-seeded and lined with erosion control blanket or turf reinforcement matting.

Structural Practices
Sediment Traps – will be sited and constructed as needed, according to the attached drawings and through field adaptations to changing grades and emergence of gullies that need to be controlled. Traps will consist of rock or rock bag berms across concentrated flow areas and be designed to intercept, detain, and settle out these flows. Traps installed as field adaptations will be logged on the erosion control plan sheets.

Inlet Protection Measures – will be used to detain, pond, and settle (or filter) out sheet and concentrated flows moving toward curb, drop, or other inlets. Inlet protection structures will consist of rock bags, #2 rock berms, trenched in silt fence on framing, or commercial devices.

Ditch Check Dams – will be installed as needed to control ditch downcutting, trap sediment, and

stabilize ditches. Check dam installation will be consistent with the Kentucky Erosion Protection and Sediment Control Field Guide and BMP Technical Specifications Manual.

Site Runoff Management
Sediment will be prevented from leaving the site to the maximum extent practicable. Runoff will be diverted onto undisturbed vegetated areas and revegetated areas where possible for infiltration. Landscaped areas with no buildings or roads will be brought to grade and planted/seeded/mulched within 14 days. Operations are limited to a 60' wide temporary construction easement along the proposed roads.

3. OTHER CONTROL MEASURES

Offsite Vehicle Tracking
A stabilized #2 and larger rock construction exit with geotextile underliner will be installed to help reduce vehicle tracking of sediments at all storage/parking area exits onto paved roads. The stabilized exit will be 100 ft where possible, and at least 50 ft in length. The paved street adjacent to the site entrance will be swept/cleaned daily if necessary to remove any excess mud, dirt, or rock tracked from the site. The rock exit will be grubbed lightly or otherwise maintained as needed to clear (shake down) dry mud. Dump trucks hauling material from the construction site will be covered with a tarpaulin.

Waste Disposal
Waste Materials – All waste materials that may leach pollutants (caulk tubes, oil/grease containers, liquids of any kind, soluble materials, etc.) will be collected and stored in a covered metal dumpster rented from the _____, which is a licensed solid waste management company in Kentucky. The dumpster will meet all state solid waste management regulations. Construction debris and other wastes that do not leach pollutants will be deposited in a covered or open-topped dumpster. The dumpster will be emptied when full, and the contents will be hauled to the Adair County Landfill. No construction waste materials will be buried onsite. All personnel will be instructed regarding the correct procedure for waste disposal. Notices stating these practices will be posted at the jobsite and _____ _____, the individual who manages the day-to-day site operations, will be responsible for seeing that these procedures are followed.

Hazardous Waste – All waste materials will be disposed of in the manner specified by local or state regulation or by the manufacturer. Site personnel will be instructed in these practices and _____ _____, the individual who manages day-to-day site operations, will be responsible for seeing that these practices are followed.

Sanitary Waste – Portable toilets will be used on site for sanitary wastes. All sanitary waste will be collected from the portable units as needed to prevent excessive odors and overflows by the _____ _____, a licensed Kentucky sanitary waste management contractor, as required by local regulation. Portable units will be placed away from storm drain inlets, ditches, creeks, and other water bodies

Timing of Control Measures
As indicated in the Sequence of Major Activities, the stabilized construction exit, silt fences and sediment barriers will be constructed prior to clearing or excavation of any other portions of the site. Sediment traps will be constructed as needed in areas where gullying occurs. Ditches will be repaired and triple seeded/mulched (or blanketed) after construction. Areas where construction activity temporarily ceases for more than 14 days will be stabilized with temporary seed and/or mulch within 14 days of the last disturbance. Once construction activity ceases permanently in an area, that area will be seeded and mulched within 14 days. Temporary controls in permanently stabilized areas, such as silt fences, sediment barriers, ditch checks, temporary sediment traps, surface inlet traps, etc., will be removed. Controls will remain in place until all vegetation is established and ditches are stable.

4. OTHER STATE AND LOCAL PLANS

Certification of Compliance with Federal, State, and Local Regulations
This Stormwater Pollution Prevention Plan (BMP Plan) reflects Kentucky Division of Water and KYTC requirements for stormwater management and erosion and sediment control. To ensure compliance, this plan was prepared in accordance with the Kentucky BMP Planning and Technical Specifications Manual published by KY DOW and KY DOC. There are no other local, state, or federal permits (e.g., Clean Water Act Section 404 dredge/fill permit, KY DOW Section 401 Water Quality Certification, KY DOW Floodplain Permit, etc.) needed for this project.

5. MAINTENANCE PROCEDURES

Stormwater, Erosion, and Sediment Control Maintenance Practices
Maintenance of all BMPs at the site will be handled by_____, 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_____. 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 one third (1/3) 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.

6. INSPECTION PROCEDURES

Stormwater, Erosion, and Sediment Control Inspection Practices
Inspection of all BMPs at the site will be handled by_____, 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.
- Inspections will be conducted by_____, who has been trained by the KY DOW and KEPSC._____will train three 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.

7. NON-STORMWATER DISCHARGES

It is expected that the following non-storm water discharges will occur from the site during the construction period:

- Water from water line flushing.
- Pavement wash waters (where no spills or leaks of toxic or hazardous materials have occurred).
- Uncontaminated groundwater and rain water (from dewatering during excavation).

All non-storm water discharges will be directed to a filter bag to remove sediment and other contaminants. Contractor will provide details of discharge filtration to the Engineer of any diversion bypass pumping proposed at the site.

The materials or substances listed below are expected to be present onsite during construction:

- Concrete
- Caulk
- Grout/Concrete Repair Materials
- Tar/Mastic Compounds
- Fertilizers for Seeding
- Petroleum Based Products
- Cleaning Solvents
- Wood

Spill Prevention and Material Management Practices
The following material management practices will be used to reduce the risk of spills or other accidental exposure of materials and substances to exposure to the weather and/or runoff.

Good Housekeeping
The following good housekeeping practices will be followed onsite during the construction project.

- An effort will be made to store only enough product required to do the job
- Products and materials will be stored away from the surface drainage system.
- All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure
- Products will be kept in their original containers with the original manufacturer's label
- Substances will not be mixed with one another unless recommended by the manufacturer
- Whenever possible, all of the product will be used up before disposing of the container
- Manufacturers' recommendations for proper use and disposal will be followed
- The site superintendent will inspect daily to ensure proper used and disposal of materials onsite.
- Dust will be controlled by water sprayed from a tanker truck as needed during dry weather.

Hazardous Products
These practices will be used to reduce the risks associated with any and all hazardous materials.

- Products will be kept in original containers unless they are not resealable.
- Original labels and material safety data sheets (MSDS) will be reviewed and retained.
- If surplus product must be disposed of, manufacturers' or state/local recommended methods for proper disposal will be followed.

Petroleum Products
This project (will / will not) have over 1,320 gallons of petroleum products with a total capacity, sum of all containers 55 gallon capacity and larger.

All onsite vehicles will be fueled and maintained at_____, monitored for leaks, and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products stored onsite will be stored in tightly sealed containers, which are clearly labeled. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations.

Fertilizers
If used, fertilizers used will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be covered with mulch or blankets or worked into the soil to limit exposure to storm water. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

Concrete Truck Washout
Concrete truck mixers and chutes will not be washed on pavement, near storm drain inlets, or within 75 feet of any ditch, stream, wetland, lake, or sinkhole. Where possible, excess concrete and wash water will be discharged to areas prepared for pouring new concrete, flat areas to be paved that are away from ditches or drainage system features, or other locations that will not drain off site. Where this approach is not possible, a constructed concrete wash-out pit will be installed away from ditches to receive the concrete wash water.

Spill Control Practices

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup:

- Manufacturers' recommended methods for spill cleanup will be clearly posted. All personnel will be made aware of procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area. Equipment and materials will include but not limited to brooms, dust pans, mops, rags, gloves, kitty litter, sand, sawdust, and plastic and metal trash containers.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contract with a hazardous substance.
- Spills of toxic or hazardous material will be reported to the appropriate state/local agency.
- The spill prevention plan will be adjusted as needed to prevent spills from reoccurring and improve spill response and cleanup.
- _____, the site superintendent responsible for the day-to-day site operations, will be the spill prevention and cleanup coordinator. He will designate at least three other people onsite to receive spill prevention/cleanup training and assist in cleanups. Their names will be posted in the material storage area and in the office trailer outside.

8. CONTRACTOR AND SUBCONTRACTOR CERTIFICATIONS

SWPPP/BMP Files, Updates, and Amendments

This BMP Plan and related documents (e.g., NOI, inspection reports, etc.) will be kept on file at the construction site by_____, the Site Manager. The SWPPP/BMP plan will be updated by the Owner and/or Site Manager to reflect any and all significant changes in site conditions, selection of BMPs, the presence of any unlisted potential pollutants on site, or changes in the Site Manager, contractor, subcontractors, or other key information. Updates and amendments will be made in writing within 7 days and will be appended to the original BMP Plan and available for review.

Stormwater Pollution Prevention Plan Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signed:_____ Date:_____

(Name, Title, Organization)

I certify under penalty of law that I understand the terms and conditions of the general KPDES permit that authorizes the storm water discharges associated with the construction site activity identified as part of this certification.

Subcontractor Certification

The subcontractors below certify under penalty of law that they understand the terms and conditions of the general KPDES permit that authorizes the storm water discharges associated with the construction site activity identified as part of this certification.

_____	_____
Name, Title Organization Contact Info	Name, Title Organization Contact Info

Construction Site Inspection Report

Company:	**Site:**	**County:**
Site Operator:		**Inspection Date:**
Receiving Water:	**Total Site Area (acres):**	**# Disturbed Acres:**
Inspector Name:	**Inspector Qualifications:**	
Inspection Type: Every 7 days: Every 14 days and after ½ inch rain	**Days Since Last Rainfall____**	**# Inches of Last Rainfall: _____**

Field Inspection Observations

BMP Category	Compliance Poor	Fair	Good	Field Indicators for Compliance
Project Operations				Notice of Intent (KPDES permit) and other local/state permits on file BMP Plan on site and available for review; project activities following BMP plan Weekly inspection and rain-event reports on BMPs available for review Diversions, silt checks/traps/basins, and silt fences/barriers installed prior to clearing Grading and clearing conducted in phases to minimize exposed soil areas No vegetation removal or operations in stream or sinkhole buffer area (25 ft min) Rock pad with underliner in place on all construction site exits leading to paved roads No sediment, mud, or rock on paved public roads in project area Dust control if needed when working in residential areas during dry conditions
Drainage Management				Upland runoff diverted around bare soil areas with vegetated/lined ditches/berms Drainage channels exiting the site are lined with grass/blanket/rock and stabilized Discharges from dewatering operations cleaned in silt fence enclosure or other filter No muddy runoff leaving site after rains up to 1½ inches
Erosion Protection				Exposed soil seeded/mulched after 2 weeks if no work is planned for the next 7 days Soils on steep slopes seeded/mulched/blanketed as needed to prevent rutting
Sediment Barriers				Silt fence, rock filter, or other sediment barrier below all bare soil areas on slopes Barrier installed across slope on the contour, trenched in, posts on downhill side Multiple sediment barriers at least 125 ft apart on unseeded slopes steeper than 4:1 J-hook interceptors along silt fence where heavy muddy flows run along fencing No visible undercutting or bypassing or blowout of sediment barrier Accumulated sediment is less than halfway to the top of sediment barrier
Slope Protection				Slopes tracked, disked, or conditioned after final grade is established Slopes seeded, mulched, or blanketed within 14 days, no unmanaged rills or gullying Heavy downslope flows controlled by lined downdrain channels or slope drain pipes No muddy runoff from slopes into streams, rivers, lakes, or wetlands
Inlet Protection				Inlet dam/device or filtration unit placed at all inlets receiving muddy flows No visible undercutting, bypassing, or blowout of inlet protection dam or device Accumulated sediment is less than halfway to the top of the inlet protection dam/device
Outlet Protection				High flow discharges have rock or other flow dissipaters of adequate sizing at outlet Culvert outlets show no visible signs of erosion/scour, bank failure, or collapse
Ditch and Channel Stabilization				No unmanaged channel bank erosion or bottom scouring visible within or below site Ditches with slopes more than 3% have check dams spaced as needed, if not grassed Ditch check dams tied in to banks, with center 4” lower than sides, and no bypassing Ditches with slopes of up to 5% are thickly seeded with grass (minimum requirement) Ditches 5% to 15% are lined with thick grass and erosion control blankets as needed Ditches 15% to 33% are lined with thick grass and matting or other approved product Ditches exceeding 33% are paved or lined with rock or other approved product

Sediment Traps and Basins	Storage volume is at least 134 cubic yards for each acre of bare soil area drained Trap or basin is seeded/mulched and stabilized; no collapsing sidewalls or banks Outlet structure is stable and consists of rock-lined notched overflow or outlet riser Rock overflow is 6” lower in center to control overflow discharge Outlet riser pipe has concrete & rock base, ½ inch holes every 3” to 6”, and trash rack Area near pipe outlet or overflow is stable, with no scour or erosion Sediment removed before trap or basin is halfway full; disposal is away from ditches
Maintenance of EPSC Management Practices	Sediment behind silt fence and other filters does not reach halfway to top Sediment traps and basins are less than half full of sediment Gullies repaired, silt fences and other controls inspected and repaired/replaced Written documentation of controls installed, inspection results, and repairs performed All controls removed and areas graded, seeded, and stabilized before leaving site
Materials Storage, Handling, and Cleanup	Materials that may leach pollutants stored under cover and out of the weather Fuel tanks located in protected area with double containment system Fuel and/or other spills cleaned up promptly; no evidence of unmanaged spills No evidence of paint, concrete, or other material washouts near drain inlets No storage of hazardous or toxic materials near ditches or water bodies
Waste Disposal	Trash, litter, and other debris in proper containers or properly managed No litter or trash scattered around on the construction site Provisions made for restroom facilities and/or other sanitary waste management Sanitary waste facilities clean and serviced according to schedule No disposal of any wastes into curb or other inlets, ditches, streams, or water bodies

Inspection Notes and Key Observations

List of Stabilized Areas: Vegetation is Established; Ditches are Stabilized; No Exposed Soil
Other Notes or Observations:
Corrective Actions Taken and/or Proposed Revisions to BMP Plan:

I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

1. **Signature of Inspector:** _____ **Date:** _____

KYTC STANDARD SPECIFICATIONS FOR
ROAD AND BRIDGE CONSTRUCTION
2019 EDITION

Where no specification is found to describe a certain project material, item or construction procedure, the "Standard Specifications for Road and Bridge Construction", 2019 or latest edition from the Kentucky Transportation Cabinet shall govern. The KYTC standard specifications are incorporated herein by reference.

FEBRUARY 28, 2022

GEOTECHNICAL REPORT FOR THE GREEN RIVER COMMERCE PARK ROADWAY EXTENSION

Cooke Engineering and Testing Company

February 28, 2022

Mr. Bobby Morrison, Chairman
Columbia-Adair County Economic Development Authority, Inc.
Sent %: MSE of Kentucky, Inc. (Mr. Glen Ross, PE)

Subject: **Geotechnical Report**
Proposed Industrial Park Road Extension/Entryway
Existing Green River Commerce Park, Columbia, Kentucky
CETCO Project No. 1776-22-0101

Dear Mr. Morrison and Mr. Ross:

CETCO appreciates the opportunity to provide our services to you both and the project. As follows, we are providing our geotechnical report. Our services were provided in general accordance with our proposal number CETCO 1776-0105, dated, January 20, 2022. Also, please note the report Appendix which contains many detailed findings as well as our standard of care for providing our services.

We appreciate the opportunity to provide our geotechnical services to you and the project team. Please do not hesitate to contact us for questions or comments about the information contained herein.

Cordially,
CETCO

Joseph S. Cooke, P.E.
Principal
Licensed KY 21244

Attachments: Geotechnical Report and Appendix

Cooke Engineering and Testing Company

TABLE OF CONTENTS

Proposed New Roadway Extension/Entryway

GREEN RIVER COMMERCE PARK, COLUMBIA, KENTUCKY

GEOTECHNICAL REPORT SUMMARY

We provided our services in general accordance with our proposal number CETCO 1776-0105, dated, January 20, 2022. CETCO was contracted by the industrial authority to provide geotechnical services including soil borings, laboratory testing and to provide a geotechnical report. These services included providing our opinion of the conditions encountered for the purpose of design and construction of the proposed new roadway extension/entryway. This introductory section, which has previously been discussed with both the industrial authority and MSE, provides a brief summary for quick reference. The report that follows provides much greater details for design and construction purposes.

In general, we encountered reddish lean to fat clay, “cherty" soils at the project site overlying limestone bedrock. Depth to auger refusal (which we have interpreted as bedrock) was as shallow as 8 feet (near the front of the road near KY55) to over 20 feet deep from the current top of ground elevation. Minimal to no wet conditions were encountered in our borings. Greater discussion and more details of our findings are provided in our report as well as the appendix (laboratory testing results and boring logs).

Based on the provided information about the proposed project, our experience with similar projects and with the area conditions and the provided information, we have concluded that the ***primary*** issues affecting the design and construction of the project include:

- Karst-Sinkholes
- Plastic Soils (Fat Clays-prone to low strength and potential shrink-swell)

A discussion to address these issues (Section 3), as well as our recommendations (Section 4), must be followed to lower costs and address the risks for these issues. In general, the project site is suitable for the intended roadway. We have already discussed with your office and MSE about the recommendation to alter a section of the road (near Stations 8+00 to Stations 10+00) to try to avoid a large sinkhole in that area.

Please review this report in detail, and please contact us to discuss any questions or additional information for the project or for our services and report.

1 PROJECT BACKGROUND

1.1 CETCO SCOPE OF SERVICES

CETCO was contracted to provide geotechnical services. This included: a site reconnaissance and site observations, drilling and sampling of the soil on-site, assessment of the depth to bedrock, assessment of the possibility of sinkholes/karst in the proposed new roadway alignment and to assist in the design of the new roadway and providing recommendations for the proposed construction. The complete scope of services are listed in our proposal number CETCO 1776-22-0105, dated January 20, 2022.

1.2 PROVIDED INFORMATION

Project information was provided in conversations and email correspondence with the industrial authority and MSE. We were provided information for the project as follows:

- Untitled site drawings showing a proposed road layout, some existing topographic information and existing main gas lines, all overlying a site aerial, undated.
- Cad files for this proposed alignment
- A pdf copy of the site boundary survey of the entire property

CETCO is familiar with the subsurface conditions in the general site area/at the site/adjacent to the site. This includes: Two previous geotechnical explorations (while at another firm) of the “northern” road areas.

We understand that the industrial authority wishes to construct about 2,000 linear feet of new roadway on a site just south of the existing main Green River Commerce Park entrance and existing road. The new road will run parallel to the existing road and will also have a new entrance from the main road (KY route 55). New construction would include associated “industrial park” type roadway construction for medium to heavy-duty industrial traffic and adjacent drainage ditches, but with the final road cover remaining as gravel until the industrial park lots are developed.

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The following table summarizes our understanding of the project.

Provided Project Information	
Property and Proposed Site Improvements	Location: off of Kentucky Route 55 at the existing industrial park Linear feet of new road: about 2,000 feet
Data for the Geotechnical Analysis	Maximum Cut and Fills: likely less than 20 feet Roadway usage: industrial park (likely large amounts of heavy tractor trailer traffic), but remaining gravel covered until final development.

If any of the aforementioned information is incorrect or requires modification, please let CETCO know. Changes to our reporting, recommendations and opinions may be required.

1.3 PUBLISHED SITE AND AREA INFORMATION

We have reviewed readily available published mapping pertaining to the subsurface conditions and widely known geologic/soil conditions for the site and immediately surrounding areas. The conditions that we believe may affect the site design, planning, construction and long-term performance of the proposed roadway are discussed.

AREA TOPOGRAPHY AND PHYSIOGRAPHY

The site is located just north of Columbia, Kentucky at the southeastern area of the Pennyroyal Physiographic Region of Kentucky. The area of this region close to the project site consists of rolling small hills intermixed with small creek and river valleys. Ridgeline areas are few but widespread in the area. A major fixture of the area is “karst terrain” (sinkholes, springs, caves, etc.). Topographic mapping of the area indicates general elevations of 800 to 900 feet across the majority of the area.

SITE GEOLOGY

The USGS Cane Valley Geologic Quandrangle, dated 1964, shows that the Fort Payne Formation underlies the site. The formation specifically mapped at the site is the “limestone” dominant portion. The Fort Payne here includes limestones with some siltstone and clay stone. The limestone is yellowish-gray to medium to light bluish gray in color and weathers to red and yellowish colored clay soils.

These soils are often highly plastic clays (fat clay) which are prone to shrink and swell with high fluctuation in moisture content. The bedrock (primarily the limestone) is prone to karst topography formation (sinkholes, caves, erratic rock profiles, springs, etc.). The Kentucky Geologic Service mapping publishes a karst risk map, which shows the site as being in the high risk category. Several sinkholes are mapped on and near the site (including those forming ponds). Below are images of the mapping.

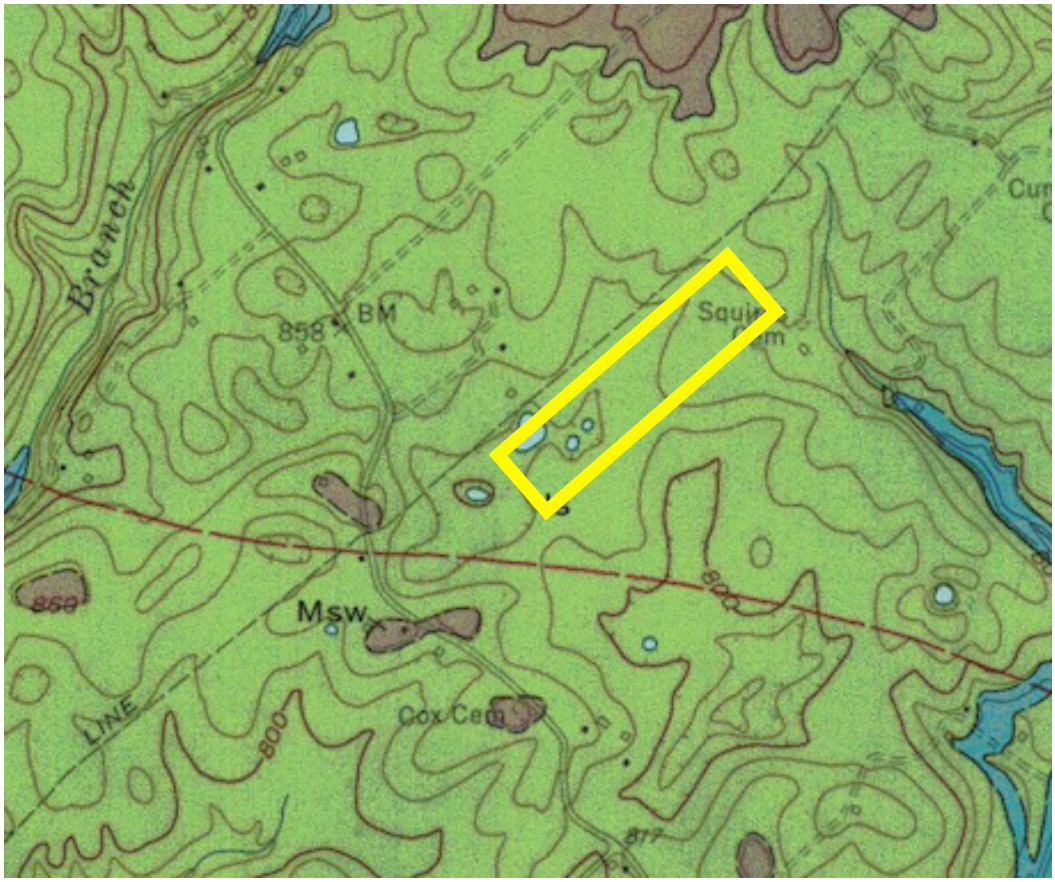

Image of the USGS Cane Valley Geologic Quadrangle showing the mapped sinkholes at and near the site (site is shown in the yellow rectangle).

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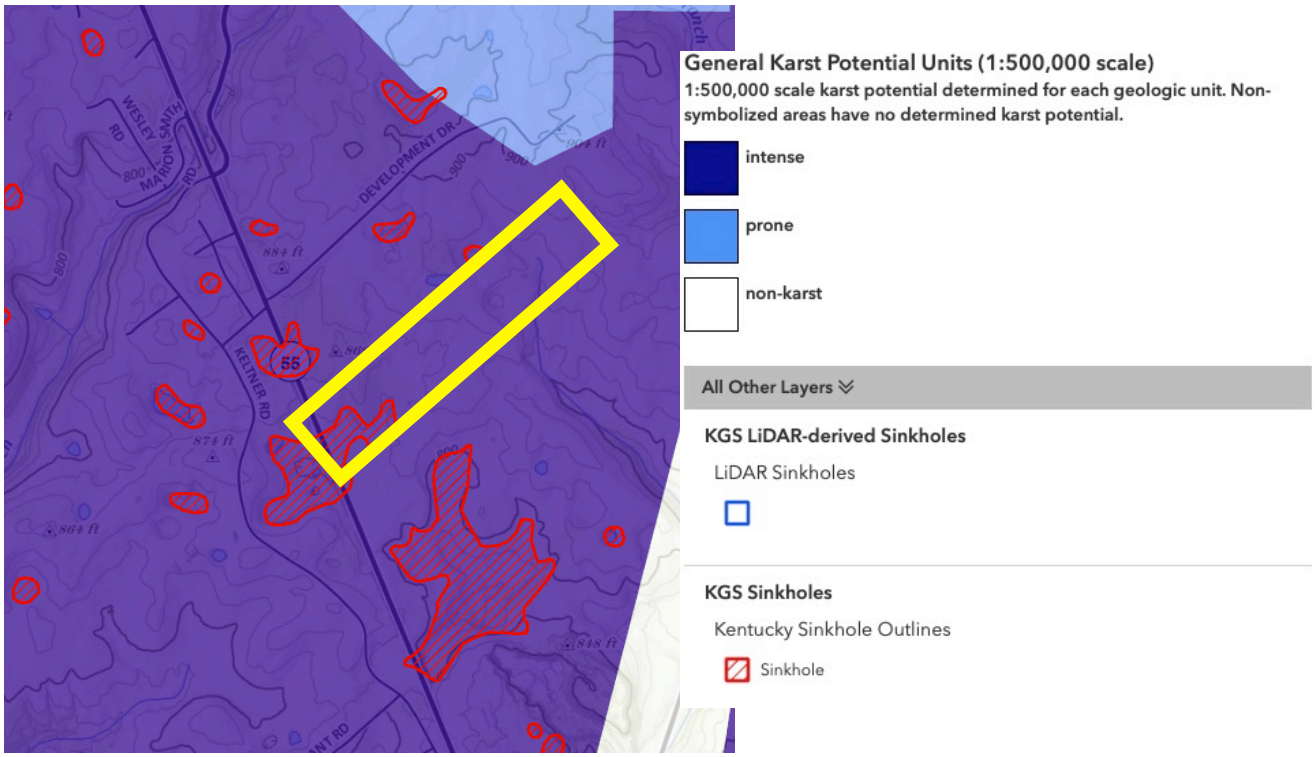

KGS website screenshot showing karst potential and mapped sinkholes. Site again is shown in the yellow rectangle.

Recommendations for these issues are contained in the report.

SITE SOIL SURVEY MAPPING

The NRCS website soil mapping shows that the site underlain by relatively thick clayey soil overburden. The soil survey of the site indicates that the soils are “low strength” and have tendencies for “shrink-swell”. The site is listed as being “very limited” for roadway development issues primarily due to these issues. Our report addresses means and methods to minimize the risks associated with the issues. Below are the soil survey mapping as well as a screen shot of the “risk” mapping.

USDA Soil Survey map of the site.

USDA map of the site showing “risks” for roadway development

RECENT AND CURRENT PUBLISHED AERIAL MAPPING

We reviewed readily available aerial mapping of the site as far back as 1993. The limits of the proposed roadway and property remain much as they are in the aerial photographs. The primary exception being the recent tree and brush removal on the western half of the roadway area. No other changes were noted.

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2 CETCO FINDINGS

We provided a site and area reconnaissance, logged soil test borings and explored the site using those borings. The following sections discuss our findings. Mr. Joe Cooke, PE, provided our field services.

2.1 CURRENT SITE SURFACE CONDITIONS AND OBSERVATIONS

The overall site could best be described as gently rolling "farmland" with a cultivated eastern half and uncultivated, previously wooded western half. The next pages illustrate select photos of the site at the time of drilling. The photo below is for reference of the "west" and "east" sections.

Western Portion of the Site (yellow rectangle below) from STA 0+00 to about STA 10+00

The western half begins at KY55 on the west and proceeds eastward through a swale, over a hill and then into another swale. The geologic mapping indicates these two swales as part of a large sinkhole and possibly parts of large former pond areas. The area was recently stripped of the tree and brush vegetation and only weeds with some grass cover remain. No obvious collapsed area of the mapped sinkhole portion was observed. However, from the surface observations and borings in the area, the second swale (most eastward) portion of this half of the site appears to be most like a potential sinkhole collapse area.

Eastern Portion of the Site (red rectangle below) from about STA 10+00 to STA 20+00

This portion of the site begins on the eastern edge of the stripped vegetation zone (second swale) and is mostly an upward sloping (to the east) cultivated field. The crops were harvested with only grassy cover of an inch or so present. Several obvious sinkholes (including two with cover collapse) were observed to the north and south of the proposed road area.

Several utility lines (overhead and underground) traverse both portions of the site.

Project Photos

Description	Photo
Drilling of boring at STA 2+00, facing northeast. Located at the bottom of the “first swale”.	
Photo of area immediate east of STA 8+00. Surface appearance likely “bottom” of a sinkhole. Boring at this location also had material typical of a sinkhole “bottom”. Facing east-southeast.	

Project Site Photos (cont.)-1

Description	Photo
Drilling at STA 6+00 at first hilltop area. Note gas line markers in background of photo.	
Near STA 10+50. Photo of sinkhole with cover collapse, just north of the roadway alignment. Facing north.	

Project Site Photos (cont.)

Description	Photo
Near STA 14+00. Showing cover collapse sinkhole just south of roadway alignment. Road alignment is located on the "hill"along the background of photo.	
Showing roadway alignment area, facing northeast, from about STA 13+00 (foreground of photo) to STA 20+00 (near tree line at background of the photo).	

2.2 SUBSURFACE INFORMATION SUMMARY

We utilized a total of 10 borings to explore the site. These were placed along the approximate center of the proposed roadway at approximately 200 feet intervals. We typically encountered orange to reddish brown lean to fat clay, becoming more "fat" (plastic) with depth. The borings all generally contained some amount of chert gravel as well as black oxide materials. Auger refusal was only encountered in the boring at STA 2+00, at a depth of about 8 feet. This is similar to our previous experience at the industrial road on the north end of the park. Our boring logs in the appendix have detailed findings and information. The table below also present a summary of the subsurface materials.

Strata	Thickness	Notes
Topsoil and "Plow Zone" cover soil	Up to 2 feet thick	Only observed on the eastern end of the site from STA 12+00 to 20+00
Reddish brown lean to fat clay soil with chert and black oxide concretions	From 6 to over 20 feet thick	Appears to be the primary soil at the site. Observed in all borings.
Gritty gray and sometimes blackish fat clay soil with abundant chert/limestone gravel and sand.	4 to over 8 feet	Soil typical of "sinkhole" material. Observed in two borings, STA 8+00 and STA 10+00
Brown lean to fat clay	4 to 6 feet	Observed only at STA 14+00 and STA 16+00

GROUNDWATER CONDITIONS: Groundwater was not observed in our borings. However, the karst topography, geologic mapping and our observation of nearby sinkholes, swales and creeks, indicate that shallow water in the form of springs is common to the area.

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3 OPINIONS AND DISCUSSION

SUMMARY: In general, the project site is suitable for the proposed new roadway extension. Two primary issues will greatly affect the design and cost.

3.1 PRIMARY GEOTECHNICAL ISSUES

The following issues are our opinion of the primary geotechnical-related issues at the site. Other issues are likely present, but we believe the following represent the greatest impact to the project budget, schedule, design and construction. Our recommendations in the report address these issues.

- Karst Concerns
- Fat Clay

Karst Concerns

Most of Adair County is located in a high risk karst zone and this risk is normal for many Kentucky areas and sites. Karst includes sinkholes, caves, formations of springs, shallow or erratic top of bedrock profile, etc. Several sinkholes are mapped at the site and site area. Also, numerous areas of swales and nearby springs further indicate that karst risks are elevated at the site. We have specific recommendations to minimize this risk, including recommendations for re-routing the road in one particular section of the road and also providing recommendations for construction in karst regions.

Fat Clay Soils

Most of the soil on-site has a high potential for swelling and shrinkage due to the high plasticity of the soil. One of the most prone areas of any site for swelling and shrinkage includes roadway areas. This is primarily due to the immense amount of moisture fluctuation for roadway areas. Means to limit this potential include a very strict moisture control of the soils during mass fill placement and maintaining proper drainage during the life of the roadway and during construction. These are further discussed throughout the report.

4 RECOMMENDATIONS

The following recommendations are provided to assist in the planning, design and construction of the project.

Roadway Alignment to Avoid Sinkholes and Karst Region Recommendations

As discussed previously, the site is in a “karst prone area”. Surface observations, our experience, mapping, geology and widely spaced borings were used to further assessment karst potential along the roadway alignment. One such area observed was at and near STA 8+00 to STA 10+00. This area shows tell-tale signs of being part of a very broad sinkhole including: topography of a “bowl”, vegetation of wet/dry variances, distinct dark and/or gritty soil conditions and surface drainage the does not have a surface outlet. We discussed the most obvious re-routing of the road is to curve the road uphill toward the north-northwest at least 20 to 30 feet (or more). See the image below for the approximate location.

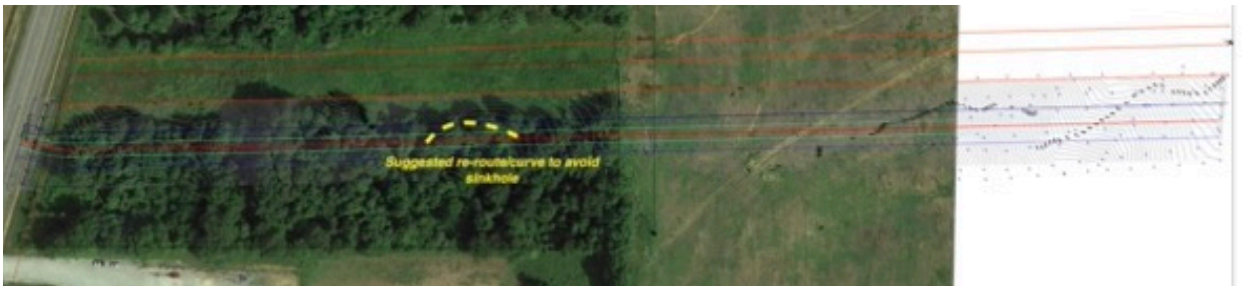

Image showing recommended rerouting of roadway near STA 8+00 to STA 10+00

The notes that follow (prior to section 4.1) should be considered for the planning and construction of the entire site. Levels of risk associated with Karst are difficult to assess. However, the level of assessment to pinpoint sinkhole dropouts that will occur is cost and time prohibitive for this level of a project and would include dozens of additional borings, geophysical surveying (scanning of the ground) and then additional borings again to verify the geophysical work. So the Owner must assume that there is always a level of risk of sinkholes or soil dropouts which could cause damage to completed structures or pavements in any limestone Karst area. The use of suitable precautionary measures can reduce this risk. Some of these measures include:

- Typically the risk of sinkhole drop-out formation is reduced in filled areas and increased in cut areas. Designing the site layout so that the roadway is constructed to the greatest extent on filled areas is preferable from a sinkhole risk standpoint.

- Water flow considerations (both surface and subsurface) are a key factor to try to reduce Karst associated risks when planning. CETCO should be retained to assess civil plans of water flow to provide guidance with regards to potential increases to Karst risks.
- A simple way to assess near surface potential dropouts is to conduct a strict proofroll of all construction areas after clearing and topsoil removal. Cut areas should be re-proofrolled after planned subgrade is reached. If possible, this second proofrolling should be performed after several cycles of rainy and fair weather.
- If a sinkhole/dropout is encountered, the most effective repair method is usually to excavate to bedrock, and the construct a suitable concrete "plug" or rock-fill filter over the bedrock opening. However, the geotechnical engineer should be consulted before performing any repairs.
- Specific procedure used to repair drop-outs will depend on the specific condition encountered. The project geotechnical engineer should be contacted if drop-outs form or suspect old drop-outs are encountered.

4.1 SITE PREPARATION

We recommend that site grading should take place between about late April to early November. Earthwork taking place outside this time period will likely encounter wet conditions and weather conditions that will provide little to no assistance with drying the soils. Additionally, the following bulleted items are critical to prepare the site for earthwork and additional construction.

- Topsoil and organic materials should be removed (stripped) from the construction area and all structural fill areas. These materials should be wasted from the site or used as topsoil in landscape areas;
- Areas ready to receive new fill should be proofolled with a heavily loaded dump truck or similar equipment judged acceptable by CETCO. The level of proofroll should be determined by CETCO;
- Proofrolling should not be performed on wet subgrade. If possible, perform proof rolls after suitable dry weather periods of time;
- CETCO should determine amounts of undercutting (if any) for any area which pumps or ruts. CETCO should also determine acceptable backfill materials and backfill methods. In general any backfill should be accomplished in general accordance with section 4.2;
- Remove deleterious materials or materials that are unsuitable for use in supporting the overlying new fill. The backfill should be consistent with the requirements listed in section 4.2;

- CETCO should observe the proofrolling operations and make recommendations for any unstable or unsuitable conditions encountered.

4.2 EARTHWORK

Before new fill construction, representative samples should be obtained of the proposed fill material to determine the moisture-density and overall classification of the material. The tests also would assist in determining if the material is suitable for use as structural fill.

After the subgrade has been approved to receive new fill, the fill may commence with the following procedures and guidelines recommended:

Mass Earthwork

- Based on our observations and laboratory testing, the on-site soils appear to be suitable for use as structural fill;
- Fill placement guidelines:
    - Structural fill should be placed in maximum 8-inch thick loose lifts;
    - A “sheeps foot” or similar cohesive soil compactor should be used to kneed the soil lifts together.
- Material guidelines:
    - It is likely that most of the on-site soil contains significant portions with a plasticity index (PI) of greater than 35. These materials can be prone to severe swell/shrink when exposed to changes in moisture content. New fill should be placed at a strict moisture control of from **Optimum Moisture Content to plus 3 percent**;
    - Materials with a PI of 45 or greater should not be used;
    - Maximum particle size of the soil should be limited to 8 inches in any dimension;
- Quality control testing guidelines:
    - Density testing should be performed as a means to verify percent compaction and moisture content of the material as it is being placed and compacted;
    - Density testing should be performed at a rate of at least one per 10,000 square feet per lift with a minimum of 3 tests per lift;
    - Fill lifts should be compacted to at least 95 percent of the soil's maximum dry density (ASTM D 698) within 10 feet of the roadway;

    - Again, maintain the moisture content of compacted fill from Optimum moisture content to plus 3 percent of optimum moisture;

- Observation of fill "stability" is also critical, so it is recommended to observe the operation of the filling equipment traversing over the new fill to document movement (similar to proofrolling);

- CETCO should observe and document fill placement and compaction operations.

Backfill Construction

These materials are placed in more confined areas than mass earthwork materials or pavement materials and therefore cannot be placed in full compliance with the previous recommendations. The following are general recommendations for backfill areas:

- Fill lift thicknesses will vary dependent on compaction equipment available and material types, but in no case should exceed 8 inches;
- For crushed stone/aggregate backfills in trenches or wall backfill and when using smaller compaction equipment (such as a plate compactor or trench compactor or similar) the lift thickness should not exceed 4 inches;
- Compaction/moisture percentages and density testing frequency should be the same as in the previous mass earthwork section;
- CETCO should provide addition recommendations for backfill.

Again, we recommend that site grading be started in the period from about late April to about November in order to prevent additional undercutting due to wet conditions. Drying of the site soils during other portions of the year is typically difficult.

Site Drainage

Site drainage (water flow into, along and from the site) is key to minimize damaging effects of water flow. Excess water ponding can destabilize soils. Excessive water flow can erode soils and destabilize soils, especially at or near slopes.

For groundwater seepage, the water encroaching upon construction excavations can be removed by placing a sump near the source of seepage and then pumping from the sump. Should heavy seepage occur, or should there be evidence of soil particle migration such as silting of the sump, then the geotechnical engineer should be contacted.

The following are general guidelines for site drainage.

- For all earthwork operations, positive surface drainage is prudent to keep water from ponding on the surface and to assist in maintaining surface stability;
- The surface should be sealed prior to expected wet weather. This can usually be accomplished with rubber-tired construction equipment or a steel-drum roller;
- During construction, water should not be allowed to pond in excavations or undercutting will likely be required;
- During the life of the project, slope the subgrade and other site features so that surface water flows away from the roadway at “collection points”;
- Diversion ditches should be used at the toe of all slopes to keep surface water from accumulating;
- For excavations during construction, most free water from the subsurface conditions could likely be removed via sump pumps and open channel flow (ditches) at or near the source of seepage. However, if normal dewatering measures prove insufficient, CETCO should be retained to provide recommendations on the issue;
- As previously mentioned, we anticipate potential springs may be uncovered during site excavations. We recommend spring locations be drained during site clearing and grubbing. Either ditches should be cut to promote drainage or underdrains constructed wherever evidence of spring activity is encountered in building or pavement areas. The following criteria are recommended for construction of underdrains to collect and convey the water from spring activity:
    - Construct underdrains to convey the water from locations of spring activity to tie into ditching or the storm water sewer system to be constructed at the site. Underdrains may be widened to include multiple spring locations or spring boxes may be installed at individual spring outlet locations.
    - The underdrain should consist of a minimum 2-foot by 2-foot gravel-filled trench, wrapped in a non-woven geotextile fabric. The gravel should be clean and free draining, similar to Kentucky Transportation Cabinet gradation No. 57 stone.
    - Place a 4-inch, minimum diameter perforated pipe at the base of the drain to convey water into ditching or the storm water sewer system to be constructed at the site. A solid pipe should be utilized for the last 50 feet at the outlet. We anticipate there is sufficient grade change to provide gravity drainage.
    - Excavated material may be reused as fill provided it is placed and compacted in accordance with our compacted fill recommendations.
    - Retain the geotechnical engineer to observe all excavation activities at locations of spring activity.

4.3 CUT/FILL SLOPES

We understand that major slopes (higher than 10 feet or steeper than 2H:1V) are not planned on the site. For general slope construction, we recommend the following as maximum limit.

General Maximum Allowable Slope Grading

Material	Slope Type	Steepest Permanent Slop
Soil	Cut or Fill	2H:1V*
Rock (if encountered, but not expected)	Cut	1H:2V

* For mowing and maintenance considerations a 3H:1V or flatter slope may be more desirable.

The following are general slope construction guidelines:

- Any area within 10 horizontal feet of a structure should be constructed flat (minimal sloping to allow some surface water drainage away from the structure);
- Toes of slopes should have drainage ditches directing water away from the areas;
- For areas wider than 20 feet above the top of slopes, we recommend installing lined/ impervious diversion ditches to redirect surface water away from the fill slope surface;
- Compaction of soil fill near the edge of a slope is generally difficult due to poor confinement. We recommend fill slopes be constructed steeper than the above recommendations and then cut the resulting slope back to the design slope;
- Fill placed on side slopes must be placed in horizontal lifts starting at the toe of the slope while securely benching the new fill material into the existing slope. Continue to place the fill in horizontal lifts until final proposed grade is reached;

Guidelines for construction of cut soil slopes are not practical because of unpredictability of the natural soil strata changes and relative differences in soil strengths within very short distances. Also, water drainage in the natural soil mass is irregular. CETCO should be retained at the time of construction to provide guidance on cut soil slope construction.

4.4 PAVEMENT AREAS

We understand that the pavement area surfaces will not be paved until the industrial lots are developed. At that time, laboratory analysis should be performed on representative samples of soils at the ground surface. The analysis should include California Bearing Ratio (CBR) testing for use in final pavement design. No final design recommendations are being provided by CETCO at this time. However, the following should be used for earthwork and planning for the roadway areas.

Pavement Area Subgrade Recommendations

Adequate soil/subgrade support is critical for any pavement area. Please refer the Earthwork section of this report for subgrade preparation. Prior to stone base placement we recommend an additional proofroll of the subgrade should be performed to verify subgrade conditions. Recommendations for undercutting/repair of the subgrade can be made at that time by CETCO.

Pavement Drainage

Adequate drainage and slope of the pavement subgrade and pavement section should be provided to promote adequate drainage. Edges of the pavement should be provided a means of water outlet by extending the aggregate base course through to side ditches or providing drain pipes and weep holes at catch basin walls.

4.5 DETENTION/RETENSION BASINS

No information on detention/retention basin locations or the request for recommendations were provided to us. However, we are providing one basic planning idea: placing basins in karst areas such as known sinkholes are practical, initially less expensive, but are often problematic and can cause additional sinkhole drop outs to occur “prematurely”. CETCO should be contacted to assist in locating the basin areas least risky for karst issues and also for construction recommendations of basin areas.

4.6 POST-REPORT GEOTECHNICAL CONSULTING

CETCO services as “geotechnical engineer of record” include answering questions pertaining to the materials presented in this report and the appendix. However, if conditions arise during construction that are different than those encountered during our exploration or if additional recommendations are needed, CETCO should be retained to provide that guidance.

Construction observation and testing are beyond the typical scope of the geotechnical engineer, but are essential to completing the geotechnical engineer's anticipated completion of their recommendations. CETCO should always be contracted as the testing/inspection firm for any project that applies their geotechnical report information. This always saves time, risk and project costs.

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5 NOTES ON THE REPORT

The assessment of site environmental conditions or the presence of contaminants in the soil, rock, surface water or groundwater of the site was beyond the scope of this exploration.

The recommendations provided are based in part on project information provided to us and they only apply to the specific project and site discussed in this report. If the project information section in this report contains incorrect information or if additional information is available, you should convey the correct or additional information to us and retain us to review our recommendations. We can then modify our recommendations if they are inappropriate for the proposed project.

Regardless of the thoroughness of a geotechnical exploration, there is always a possibility that conditions between borings/test pits will be different from those at specific boring/test pit locations and that conditions will not be as anticipated by the designers or contractors. In addition, the construction process may itself alter soil conditions. Therefore, experienced geotechnical personnel should observe and document the construction procedures used and the conditions encountered. Unanticipated conditions and inadequate procedures should be reported to the design team along with timely recommendations to solve the problems created. We recommend that the owner retain CETCO to provide this service based upon our familiarity with the project, the subsurface conditions and the intent of the recommendations.

We recommend that this complete report be provided to the various design team members, the contractors and the project owner. Potential contractors should be informed of this report in the "instructions to bidders" section of the bid documents. The report should not be included or referenced in the actual contract documents.

We wish to remind you that our exploration services include storing the samples collected and making them available for inspection for 30 days. The samples are then discarded unless you request otherwise.

APPENDIX

SITE LOCATION PLAN
BORING LOCATION PLAN
BORING LOGS
FIELD STANDARDS
LABORATORY TESTING
LABORATORY STANDARDS

Site location plan adapted from Google Earth Pro, with further adaptations from CETCO professionals.

N

CETCO, PLLC
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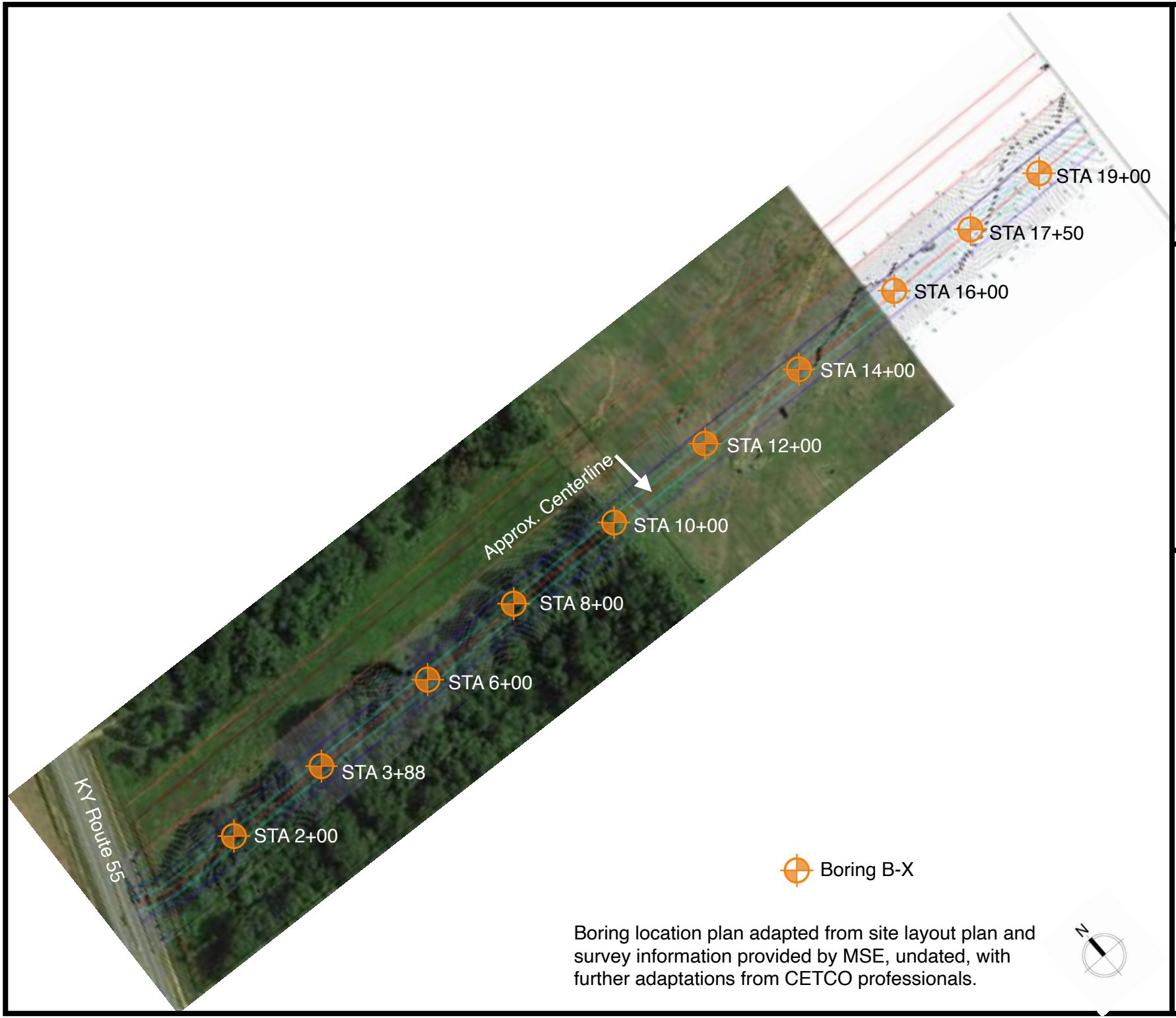
Lexington, KY 40515
859.475.3933
www.cetcopllc.com

SITE LOCATION PLAN
for
Adair County Industrial Park Road
Columbia, Kentucky

CETCO Project: 1776-22-0101
Date: February 27, 2022
Checked by: JSC
Drawing: 1 of 1



Boring location plan adapted from site layout plan and survey information provided by MSE, undated, with further adaptations from CETCO professionals.

CETCO Project: 1776-22-0101
Date: February 27, 2022
Checked by: JSC
Drawing: 1 of 1

BORING LOCATION PLAN
for
Adair County Industrial Park
Road
Columbia, Kentucky

CETCO, PLLC
4325 Palm Springs Point
Lexington, KY 40515
859.475.3933
www.cetcopllc.com

CETCO

Project: Adair Co. Industrial Park Road
Job Number: 1776-22-0101
Location: Columbia, KY
Date: 2/15/2022

Boring: STA 2+00
Elevation: 813’
Water Depth: Dry upon completion
Logged By: J.Cooke

Driller	Drill Rig	Method	Hammer	Weather and Temperature
X Strata Group □ _____ □ _____ □ _____	□ Mobile B-80 □ Mobile B-34 X CME- 550 □ CME- 55 □ D-50	X 4" OD SFA □ 4¼" ID HSA □ 3¼" ID HSA □ _____	Manual X Automatic Safety	Sunny, 30’s-60’s

Depth (ft.) From	Depth (ft.) To	Description	Sample Depth From	Sample Depth To	SPT Blow Count 6"	6"	6"	Recovery	SPT	UD	Core
0.0	3.0	“Disturbed Ground” from stripping	0.0	1.5	6	14	10	1.0’	X	□	□
		Orange Brown to Brown LEAN to							□	□	□
		FAT CLAY (CL to CH), with a few	1.5	3.0	9	9	9	0.2’	X	□	□
		roots, moist, VERY STIFF							□	□	□
			4.0	5.5	5	5	6	1.3’	X	□	□
3.0	6.0	Orange Brown LEAN to FAT CLAY							□	□	□
		(CL to CH), with chert gravel, with	6.5	8.0	3	6	15	1.2’	X	□	□
		black oxide concretions, moist,							□	□	□
		STIFF							□	□	□
									□	□	□
6.0	8.1	Reddish Brown FAT CLAY (CH),							□	□	□
		gravelly (chert and limestone), very							□	□	□
		moist, STIFF							□	□	□
									□	□	□
8.1	8.3	Weathered LIMESTONE							□	□	□
									□	□	□
		AUGER REFUSAL AT 8.3 FEET							□	□	□
									□	□	□
									□	□	□
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									□	□	□

Project: Adair Co. Industrial Park Road
Job Number: 1776-22-0101
Location: Columbia, KY
Date: 2/15/2022

Boring: STA 3+88
Elevation: 820.5’
Water Depth: Dry upon completion
Logged By: J.Cooke

Driller	Drill Rig	Method	Hammer	Weather and Temperature
X Strata Group □ _____ □ _____ □ _____	□ Mobile B-80 □ Mobile B-34 X CME- 550 □ CME- 55 □ D-50	X 4" OD SFA □ 4¼" ID HSA □ 3¼" ID HSA □ _____	Manual X Automatic Safety	Sunny, 30’s-60’s

Depth (ft.) From	Depth (ft.) To	Description	Sample Depth From	Sample Depth To	SPT Blow Count 6"	6"	6"	Recovery	SPT	UD	Core
0.0	15.0	SOUNDING ONLY-DESCRIPTION							□	□	□
		BASED ON AUGER CUTTINGS							□	□	□
		Orange to Reddish Brown LEAN to							□	□	□
		FAT CLAY (CL to CH), with chert,							□	□	□
		moist							□	□	□
									□	□	□
									□	□	□
									□	□	□
		BORING TERMINATED AT 15.0							□	□	□
		FEET WITHOUT ENCOUNTERING							□	□	□
		REFUSAL							□	□	□
									□	□	□
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CETCO

Project: Adair Co. Industrial Park Road
Job Number: 1776-22-0101
Location: Columbia, KY
Date: 2/15/2022

Boring: STA 6+00
Elevation: 835’
Water Depth: Dry upon completion
Logged By: J.Cooke

Driller	Drill Rig	Method	Hammer	Weather and Temperature
X Strata Group □ _____ □ _____ □ _____	□ Mobile B-80 □ Mobile B-34 X CME- 550 □ CME- 55 □ D-50	X 4" OD SFA □ 4¼" ID HSA □ 3¼" ID HSA □ _____	Manual X Automatic Safety	Sunny, 30’s-60’s

Depth (ft.) From	Depth (ft.) To	Description	Sample Depth From	Sample Depth To	SPT Blow Count 6"	6"	6"	Recovery	SPT	UD	Core
0.0	6.0	Orange Brown LEAN to FAT CLAY	0.0	1.5	3	4	5	1.1’	X	□	□
		(CL to CH), with chert gravel, moist,							□	□	□
		VERY STIFF	1.5	3.0	6	8	12	1.3’	X	□	□
									□	□	□
6.0	10.5	Reddish Brown FAT CLAY (CH), with	4.0	5.5	5	7	12	1.5’	X	□	□
		chert gravel and black oxide							□	□	□
		concretions, very moist, VERY STIFF	6.5	8.0	4	8	14	1.3’	X	□	□
									□	□	□
			9.0	10.5	5	11	12	1.5’	X	□	□
		BORING TERMINATED AT 10.5							□	□	□
		FEET WITHOUT REFUSAL							□	□	□
									□	□	□
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									□	□	□

Project:	Adair Co. Industrial Park Road	Boring:	STA 8+00
Job Number:	1776-22-0101	Elevation:	824’
Location:	Columbia, KY	Water Depth:	Dry upon completion
Date:	2/15/2022	Logged By:	J.Cooke

Driller	Drill Rig	Method	Hammer	Weather and Temperature
X Strata Group □ _____ □ _____ □ _____ □ _____	□ Mobile B-80 □ Mobile B-34 X CME- 550 □ CME- 55 □ D-50	X 4" OD SFA □ 4¼" ID HSA □ 3¼" ID HSA □ _____	Manual X Automatic Safety	Sunny, 30’s-60’s

Depth (ft.) From	Depth (ft.) To	Description	Sample Depth From	Sample Depth To	SPT Blow Count 6"	6"	6"	Recovery	SPT	UD	Core
0.0	8.0	SOUNDING ONLY-DESCRIPTION							□	□	□
		BASED ON AUGER CUTTINGS							□	□	□
		Orange to Reddish Brown LEAN to							□	□	□
		FAT CLAY (CL to CH), with chert,							□	□	□
		moist							□	□	□
									□	□	□
8.0	15.0	“Gritty material”, Reddish Brown							□	□	□
		FAT CLAY, very gravelly, with “black							□	□	□
		zone”, very moist							□	□	□
									□	□	□
		BORING TERMINATED AT 15.0							□	□	□
		FEET WITHOUT ENCOUNTERING							□	□	□
		REFUSAL							□	□	□
									□	□	□
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Project: Adair Co. Industrial Park Road
Job Number: 1776-22-0101
Location: Columbia, KY
Date: 2/15/2022

Boring: STA 10+00
Elevation: 828’
Water Depth: Dry upon completion
Logged By: J.Cooke

Driller	Drill Rig	Method	Hammer	Weather and Temperature
X Strata Group □ _____ □ _____ □ _____	□ Mobile B-80 □ Mobile B-34 X CME- 550 □ CME- 55 □ D-50	X 4" OD SFA □ 4¼" ID HSA □ 3¼" ID HSA □ _____	Manual X Automatic Safety	Sunny, 30’s-60’s

Depth (ft.) From	Depth (ft.) To	Description	Sample Depth From	Sample Depth To	SPT Blow Count 6"	6"	6"	Recovery	SPT	UD	Core
0.0	7.0	Orange Brown LEAN to FAT CLAY	0.0	1.5	5	6	7	1.1’	X	□	□
		(CL to CH), gritty chert gravel, dry,							□	□	□
		STIFF to VERY STIFF	1.5	3.0	5	5	7	1.4’	X	□	□
									□	□	□
7.0	10.5	Black/gray/light brown/yellow brown	4.0	5.5	4	9	12	1.5’	X	□	□
		FAT CLAY (CH), very gravelly-chert							□	□	□
		and limestone, moist, sampled	6.5	8.0	10	15	17	1.5’	X	□	□
		as HARD/VERY STIFF, but clay							□	□	□
		portion was firm to stiff. N-value	9.0	10.5	7	10	15	1.3’	X	□	□
		elevated due to gravel content.							□	□	□
									□	□	□
		BORING TERMINATED AT 10.5							□	□	□
		FEET WITHOUT ENCOUNTERING							□	□	□
		REFUSAL							□	□	□
									□	□	□
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Project: Adair Co. Industrial Park Road
Job Number: 1776-22-0101
Location: Columbia, KY
Date: 2/15/2022

Boring: STA 12+00
Elevation: 830’
Water Depth: Dry upon completion
Logged By: J.Cooke

Driller	Drill Rig	Method	Hammer	Weather and Temperature
X Strata Group □ _____ □ _____ □ _____	□ Mobile B-80 □ Mobile B-34 X CME- 550 □ CME- 55 □ D-50	X 4" OD SFA □ 4¼" ID HSA □ 3¼" ID HSA □ _____	Manual X Automatic Safety	Sunny, 30’s-60’s

Depth (ft.) From	Depth (ft.) To	Description	Sample Depth From	Sample Depth To	SPT Blow Count 6"	6"	6"	Recovery	SPT	UD	Core
0.0	10.0	SOUNDING ONLY-DESCRIPTION							□	□	□
		BASED ON AUGER CUTTINGS							□	□	□
		Orange to Reddish Brown LEAN to							□	□	□
		FAT CLAY (CL to CH), with chert,							□	□	□
		moist							□	□	□
									□	□	□
									□	□	□
									□	□	□
		BORING TERMINATED AT 10.0							□	□	□
		FEET WITHOUT ENCOUNTERING							□	□	□
		REFUSAL							□	□	□
									□	□	□
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Project: Adair Co. Industrial Park Road
Job Number: 1776-22-0101
Location: Columbia, KY
Date: 2/15/2022

Boring: STA 14+00
Elevation: 832’
Water Depth: Dry upon completion
Logged By: J.Cooke

Driller	Drill Rig	Method	Hammer	Weather and Temperature
X Strata Group □ _____ □ _____ □ _____	□ Mobile B-80 □ Mobile B-34 X CME- 550 □ CME- 55 □ D-50	X 4" OD SFA □ 4¼" ID HSA □ 3¼" ID HSA □ _____	Manual X Automatic Safety	Sunny, 30’s-60’s

Depth (ft.) From	Depth (ft.) To	Description	Sample Depth From	Sample Depth To	SPT Blow Count 6"	6"	6"	Recovery	SPT	UD	Core
0.0	1.0	“Plow zone”-Brown LEAN CLAY	0.0	1.5	3	4	6	1.1’	X	□	□
		(CL), silty, with some organics, moist							□	□	□
		FIRM	1.5	3.0	4	13	7	0.8’	X	□	□
									□	□	□
1.0	8.0	Brown to Reddish Brown LEAN to	4.0	5.5	3	6	10	1.2’	X	□	□
		FAT CLAY (CL to CH), with some							□	□	□
		black oxide staining, moist, VERY	6.5	8.0	5	10	10	1.3’	X	□	□
		STIFF							□	□	□
			9.0	10.5	7	11	14	1.5’	X	□	□
8.0	10.5	Reddish Brown FAT CLAY (CH), with							□	□	□
		chert and black oxide concretions,							□	□	□
		very moist, VERY STIFF							□	□	□
									□	□	□
		BORING TERMINATED AT 10.5							□	□	□
		FEET WITHOUT ENCOUNTERING							□	□	□
		REFUSAL							□	□	□
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Project: Adair Co. Industrial Park Road
Job Number: 1776-22-0101
Location: Columbia, KY
Date: 2/15/2022

Boring: STA 16+00
Elevation: 849’
Water Depth: Dry upon completion
Logged By: J.Cooke

Driller	Drill Rig	Method	Hammer	Weather and Temperature
X Strata Group □ _____ □ _____ □ _____	□ Mobile B-80 □ Mobile B-34 X CME- 550 □ CME- 55 □ D-50	X 4" OD SFA □ 4¼" ID HSA □ 3¼" ID HSA □ _____	Manual X Automatic Safety	Sunny, 30’s-60’s

Depth (ft.) From	To	Description	Sample Depth From	To	SPT Blow Count 6"	6"	6"	Recovery	SPT	UD	Core
0.0	5.0	SOUNDING ONLY-DESCRIPTION							□	□	□
		BASED ON AUGER CUTTINGS							□	□	□
		Brown LEAN to FAT CLAY (CL to							□	□	□
		CH), with some chert, moist							□	□	□
									□	□	□
5.0	10.0	Reddish Brown FAT CLAY (CH), with							□	□	□
		chert, moist							□	□	□
									□	□	□
		BORING TERMINATED AT 10.0							□	□	□
		FEET WITHOUT ENCOUNTERING							□	□	□
		REFUSAL							□	□	□
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Project: Adair Co. Industrial Park Road
Job Number: 1776-22-0101
Location: Columbia, KY
Date: 2/15/2022

Boring: STA 17+50
Elevation: 859’
Water Depth: Dry upon completion
Logged By: J.Cooke

Driller	Drill Rig	Method	Hammer	Weather and Temperature
X Strata Group □ _____ □ _____ □ _____	□ Mobile B-80 □ Mobile B-34 X CME- 550 □ CME- 55 □ D-50	X 4" OD SFA □ 4¼" ID HSA □ 3¼" ID HSA □ _____	Manual X Automatic Safety	Sunny, 30’s-60’s

Depth (ft.) From	Depth (ft.) To	Description	Sample Depth From	Sample Depth To	SPT Blow Count 6"	6"	6"	Recovery	SPT	UD	Core
0.0	1.0	“Plow zone”-Brown LEAN CLAY							□	□	□
		(CL), silty, with some organics, moist							□	□	□
		FIRM	1.5	3.0	2	4	4	1.5’	X	□	□
									□	□	□
1.0	7.0	Reddish Brown LEAN to FAT CLAY	4.0	5.5	5	9	6	1.3’	X	□	□
		(CL to CH), with some chert and							□	□	□
		black oxide staining, moist, FIRM to	6.5	8.0	3	7	7	1.0’	X	□	□
		STIFF							□	□	□
			9.0	10.5	4	8	10	1.4’	X	□	□
8.0	10.5	Reddish Brown FAT CLAY (CH), with							□	□	□
		chert and black oxide concretions,							□	□	□
		with some sand, very moist, VERY							□	□	□
		STIFF							□	□	□
									□	□	□
		BORING TERMINATED AT 10.5							□	□	□
		FEET WITHOUT ENCOUNTERING							□	□	□
		REFUSAL							□	□	□
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CETCO

Project: Adair Co. Industrial Park Road
Job Number: 1776-22-0101
Location: Columbia, KY
Date: 2/15/2022

Boring: STA 19+00
Elevation: 864.5’
Water Depth: Dry upon completion
Logged By: J.Cooke

Driller	Drill Rig	Method	Hammer	Weather and Temperature
X Strata Group □ ____ □ ____ □ ____ □ ____	□ Mobile B-80 □ Mobile B-34 X CME- 550 □ CME- 55 □ D-50	X 4" OD SFA □ 4¼" ID HSA □ 3¼" ID HSA □ ____	Manual X Automatic Safety	Sunny, 30’s-60’s

Depth (ft.) From	To	Description	Sample Depth From	To	SPT Blow Count 6"	6"	6"	Recovery	SPT	UD	Core
0.0	10.0	SOUNDING ONLY-DESCRIPTION							□	□	□
		BASED ON AUGER CUTTINGS							□	□	□
		Reddish Brown LEAN to FAT CLAY							□	□	□
		CL to CH), with some chert, moist							□	□	□
									□	□	□
		BORING TERMINATED AT 10.0							□	□	□
		FEET WITHOUT ENCOUNTERING							□	□	□
		REFUSAL							□	□	□
									□	□	□
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Cooke Engineering and Testing Company

Laboratory Testing Summary Table

Project Name:	Adair Co. Ind. Pk. Road	Date:	February 26, 2022
Project Location:	Columbia, KY	Reviewed by:	Joe Cooke, PE
Client:	Columbia-Adair Co. Econ. Dev. Auth., Inc.	CETCO Project Number:	1776-22-0101

Sample ID	Depth (ft)	Natural Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Finer than #200 Sieve	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
STA 2+00	1.0	18.6						
STA 2+00	5.0	21.4						
STA 6+00	1.0	23.8						
STA 6+00	2.5	26.3						
STA 6+00	5.0	31.6						
STA 10+00	2.5	24.1						
STA 10+00	5.0	19.7						
STA 14+00	1.0	21.6						
STA 14+00	2.5	19.8						
STA 14+00	5.0	25.7	47	22	25	84.7	107.9	17.9
STA 14+00	7.5	30.6						
STA 14+00	10.0	32.2						
STA 17+50	2.5	23.0						
STA 17+50	5.0	27.9						
STA 17+50	7.5	28.2						
STA 3+88	1-5	29.1	78	31	47	73.6	96.6	23.8

Cooke Engineering and Testing Company

Atterberg Limits Chart

Project Name:	Adair Co. Ind. Pk. Road	Date:	February 26, 2022
Project Location:	Columbia, KY	Reviewed by:	Joe Cooke, PE
Client:	Columbia-Adair Co. Econ. Dev. Auth., Inc.	CETCO Project Number:	1776-22-0101
		"Atterberg Limits", ASTM D4318	

Sample ID	Depth (ft)	Natural Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Finer than #200 Sieve
STA 3+88, 1'-5' ▲	1'-5'	29.1	78	31	47	73.6
STA 14+00, 1'-5' ★	1'-5'	20.6	47	22	25	84.7

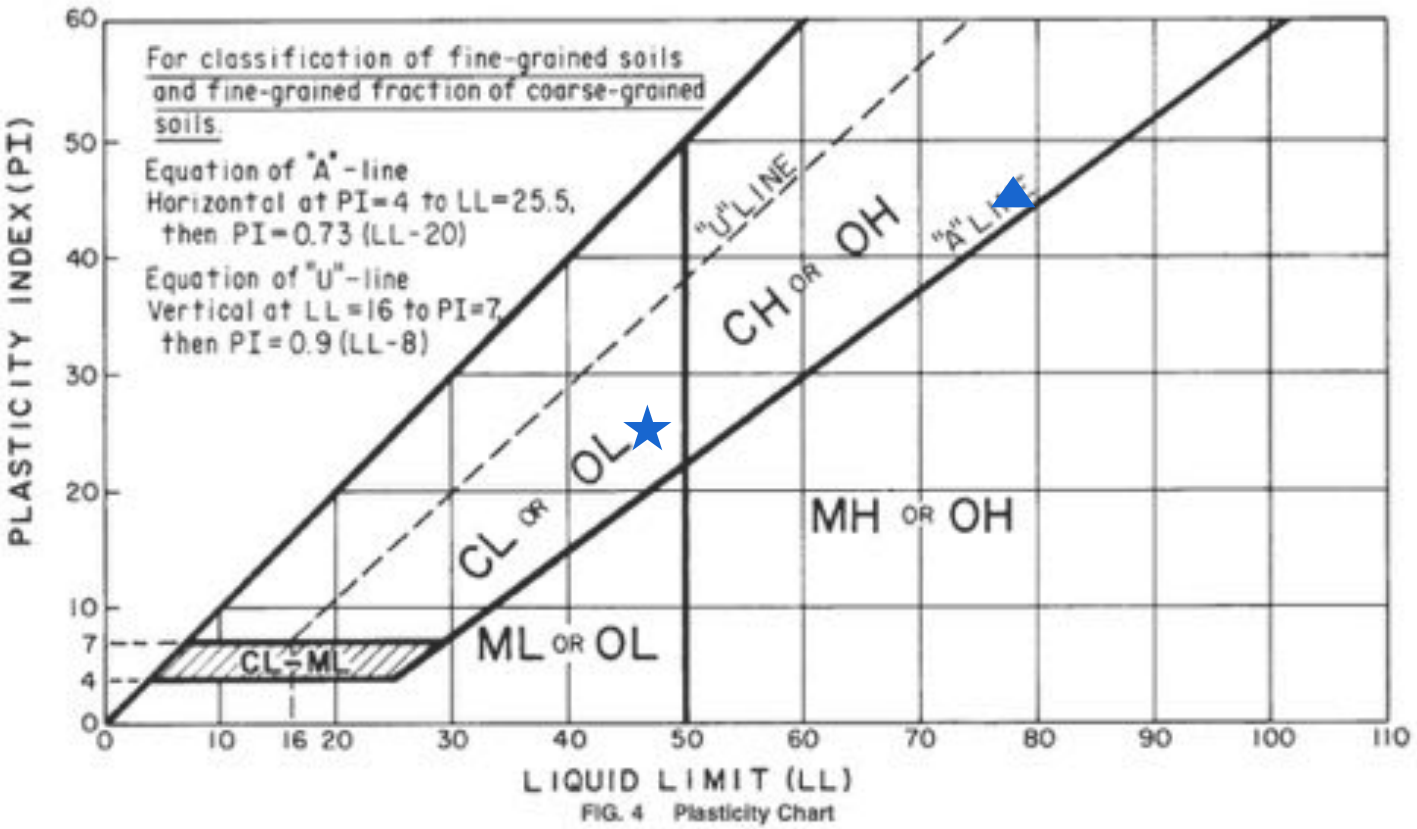


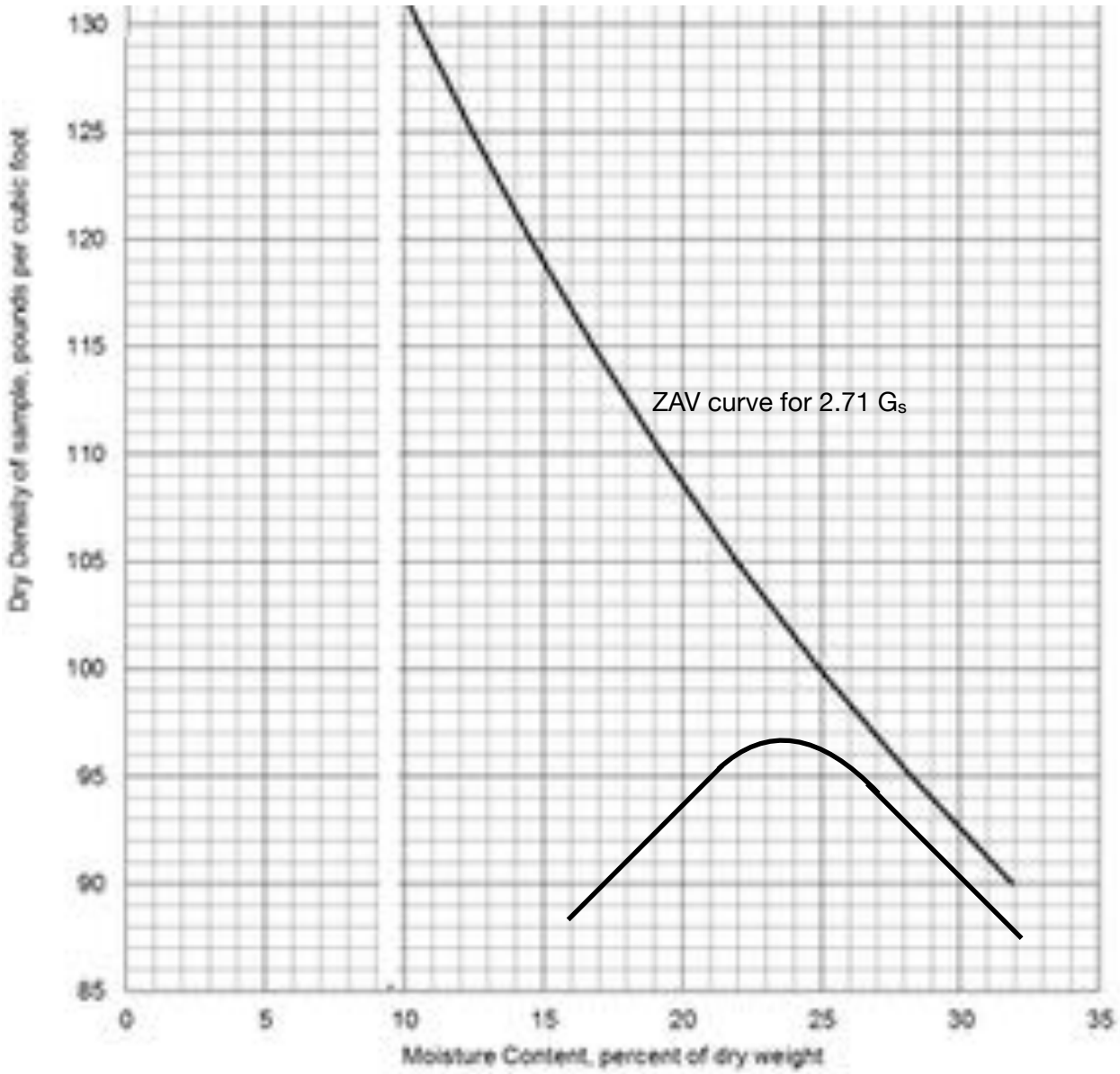
FIG. 4 Plasticity Chart

Cooke Engineering and Testing Company

Moisture-Density (“Proctor”) Sheet

Project Name:	Adair Co. Ind. Pk. Road	Date:	February 26, 2022
Project Location:	Columbia, KY	Reviewed by:	Joe Cooke, PE
Client:	Columbia-Adair Co. Econ. Dev. Auth., Inc.	CETCO Project Number: 1776-22-0101	
		“Proctor”, ASTM D698-A	

Sample ID	Natural Moisture Content (%)	Liquid Limit (%)	Plasticity Index	Maximum Dry Density (pcf)	Optimum Moisture Content (%)	% Finer than #200 Sieve
STA 3+88, 1’-5’	29.1	78	47	96.6	23.8	73.6

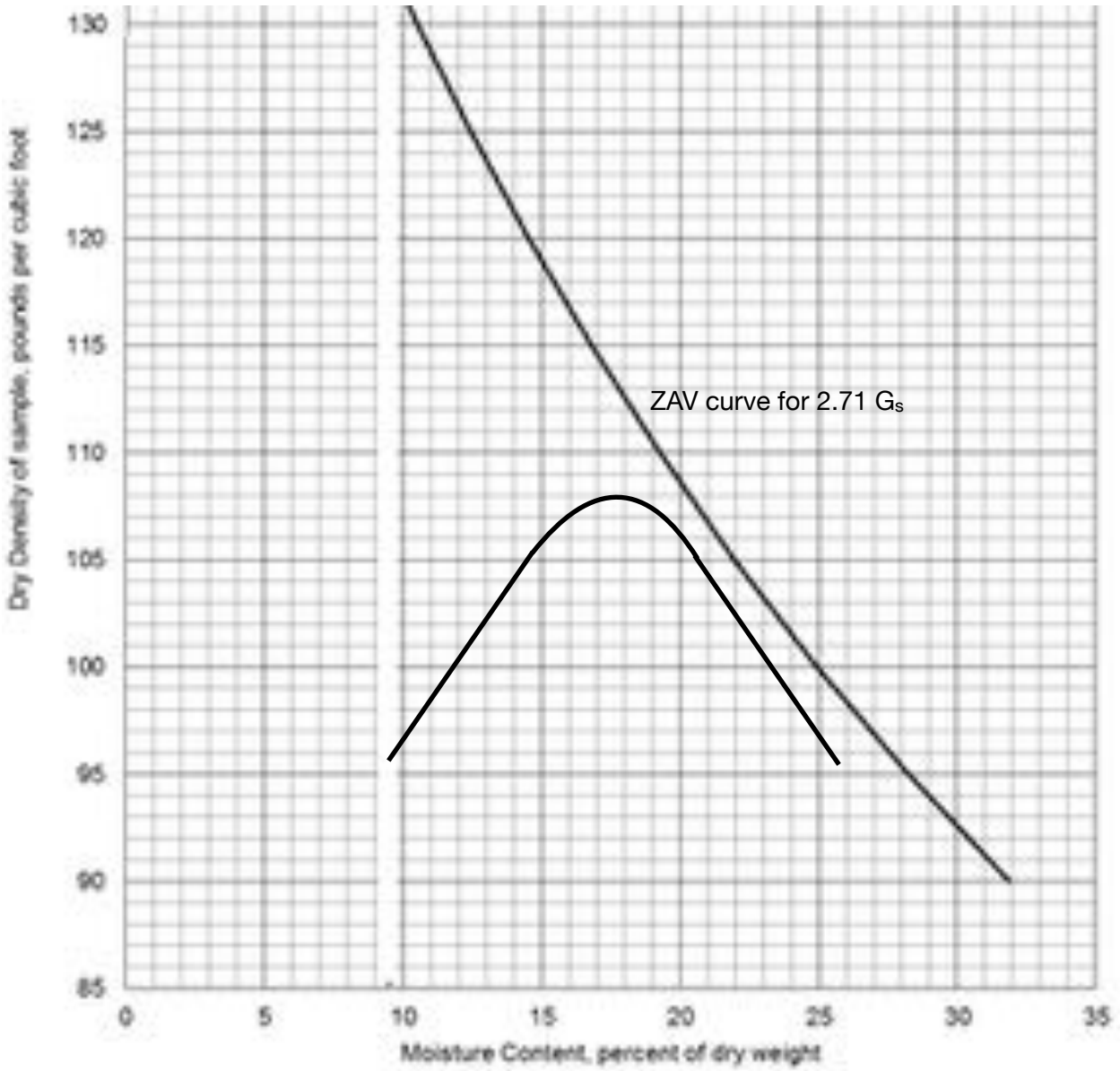


Cooke Engineering and Testing Company

Moisture-Density ("Proctor") Sheet

Project Name:	Adair Co. Ind. Pk. Road	Date:	February 26, 2022
Project Location:	Columbia, KY	Reviewed by:	Joe Cooke, PE
Client:	Columbia-Adair Co. Econ. Dev. Auth., Inc.	CETCO Project Number:	1776-22-0101
		"Proctor", ASTM D698-A	

Sample ID	Natural Moisture Content (%)	Liquid Limit (%)	Plasticity Index	Maximum Dry Density (pcf)	Optimum Moisture Content (%)	% Finer than #200 Sieve
STA 14+00, 1'-5'	25.7	47	25	107.9	17.9	84.7



LABORATORY STANDARDS AND 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 or “by hand” stiffness), color and texture. These classification descriptions are included on our "Boring Logs” or “Test Pit Logs”

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 D2487). 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.

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 D4318.

Moisture Content: The Moisture Content is determined according to ASTM D2216.

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.

“Proctor” (Moisture-Density Test): Often called by it’s original author’s name, the “Proctor” test is a moisture-density relationship test to determine “maximum dry density” and “optimum moisture content” curves using a set amount of force of “compaction” at variable moisture contents in a pre-determined mold size. The test is typically ASTM D698, method A, for standard effort. For a “modified” effort (higher amount of force), ASTM D 1557, again method A, is usually used. Due to high amounts of clay as well as typical compaction construction equipment used, the standard Proctor (ASTM D698) is the most common method used. For materials with larger grain sizes, methods B, C and D of each ASTM method can be used.

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.

FIELD SERVICES STANDARDS AND PROCEDURES

Field Operations: The general field procedures employed by CETCO are summarized in ASTM D420 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, in situ methods and test pits as well as borings.

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

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 our field personnel (typically engineers). 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 D2488 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 D1586.

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.

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 D2113 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".

Water Level Readings: Water table readings are normally taken in conjunction with borings and are recorded on the "Boring Logs". 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.

Rock Classification: Rock classifications (if any) 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 Boring Records.

Test Pits: Occasionally, our field sampling includes the use of “test pits”. Similarly to soil test borings, our classifications on the materials observed and sampled are performed in general accordance with ASTM standards. These excavations are performed by excavators of various sizes and the width/length/depth of the excavations vary as well. Typically, only the soil or “loose” rock areas can be sampled or excavated. The samples taken are usually taken at highly variable depths and the engineer or field personnel have extreme discretion on the sample sizes and locations. These are typically sealed in “zip lock” type baggies and transported back to our office for lab testing and further classification. Visual descriptions of rock materials (sand, gravel, cobbles, boulders, etc.) are provided on both samples taken and observations of spoils removed and sides of excavations. Typically, photos of both the mass excavation and spoil pile are provide on the test pit logs in our reports. Groundwater levels are noted and can include water flow at the excavation bottom or at points of depth in the excavation sides. “Refusal” usually means that the excavator cannot remove additional materials at the excavation bottom. Some excavations may also have very large boulders than cannot be removed by the excavator used. Depths indicated on the logs are usually measured with steel tape or cloth tape. Final complete details of the test pit findings and opinions are provided in the “Test Pit Logs” in our reports. Lastly, test pit excavations have no set standards and are performed at our engineers discretion.