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R-171-2026
Contract #110-2026

CONFORMED CONTRACT DOCUMENTS AND SPECIFICATIONS

FOR

WEST HICKMAN WWTP
HIGH FLOW DIVERSION BOX REPLACEMENT

Bid Number 23-2026

FEBRUARY 2026 Issued for Bid
APRIL 2026 Conformed Documents

PREPARED BY:

Tetra Tech and
Lexington – Fayette Urban County Government
Division of Water Quality

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1. INVITATION

Sealed proposals for the following work will be received by the Lexington-Fayette Urban County Government (LFUCG) via Ion Wave (https://lexingtonky.ionwave.net) until 2:00 pm, local time, March 24, 2026 for furnishing all labor and/or materials and performing all work as set forth in the Contract Documents prepared by and for Lexington-Fayette Urban County Government, Division of Water Quality (OWNER). All forms and Contract Documents filled out and attached with bid submission may be viewed and downloaded via on Ion Wave. All notary requirements are waived for this solicitation. A copy of bid bond must be included with submission. Following the scheduled closing time for reception of Bids, all proposals which have been submitted in accordance with the above will be opened electronically and a bid tab sheet will be posted on Ion Wave.

LFUCG will only be accepting bids on-line through Ion Wave for this solicitation. Base bid and alternate totals (if required) should be provided on the appropriate line items tab on Ion Wave. Submissions without line-item totals (if required) may be rejected and deemed non-responsive.

2. DESCRIPTION OF WORK

This project will replace the high flow diversion box at the northwest corner of the abandoned secondary clarifiers. The high flow diversion box is used to divert headworks effluent to the second stage (Zone 2) aeration. The high flow diversion box has been modified in several WWTP expansions and is currently leaking in several locations.

At West Hickman WWTP, effluent from the headworks facility on the west side of the creek flows to the treatment processes on the east side of the creek via two 48-inch pipes. These two 48-inch pipes discharge into a junction chamber located on the east side of the creek. The biological phosphorus removal (BPR) tanks are immediately downstream of the junction chamber, but the BPR tanks cannot handle the full forward flow of the WWTP. The junction chamber has various compartments and gates that allow the operators flexibility in modulating how much flow is sent to the BPR tanks and how much is diverted to the Zone 2 aeration tanks. The effluent from the junction chamber that is diverted to Zone 2 aeration flows immediately to the high flow diversion box which transitions the piped flow to an open channel conveyance.

3. OBTAINING PLANS AND SPECIFICATIONS

Bid Documents shall be obtained electronically via Ion Wave.

4. METHOD OF RECEIVING BIDS

Bids will be received from prime contracting firms on a unit price basis as outlined in the Form of Proposal. Bids shall be submitted in the manner and subject to the conditions as set forth and described in the Instruction to Bidders and Special Conditions.

Bids should be submitted online via Ion Wave.

5. METHOD OF AWARD

The Contract, if awarded, will be to the lowest, qualified, responsible bidder for the total project whose qualifications indicate the award will be in the best interest of the OWNER and whose bid/proposal complies with all the prescribed requirements. No Notice of Award will be given until the OWNER has concluded such investigation as deemed necessary to establish the responsibility, qualifications and financial ability of Bidders to do the work in accordance with the Contract Documents to the satisfaction of the OWNER within the time prescribed. The OWNER reserves the right to reject the Bid of any Bidder who does not pass such investigation to the OWNER's satisfaction. In analyzing Bids, the OWNER may take into consideration alternate and unit prices, if requested by the Bid forms.

6. BID WITHDRAWAL

No Bidder may withdraw his Bid for a period of sixty (60) calendar days after the closing date for receipt of Bids. Errors and omissions will not be cause for withdrawal of Bid without forfeit of Bid Bond. Bids may be withdrawn via Ion Wave prior to the closing date of receipt of bids.

7. BID SECURITY

Bid shall be accompanied by a certified check, cashier's check, or bid bond payable to the Lexington-Fayette Urban County Government in an amount not less than five percent (5%) of the base bid. Bid bond shall be executed by a Surety Company authorized to do business in the Commonwealth of Kentucky and countersigned by a licensed Kentucky Resident Agent, representing the Surety Company.

8. SUBMISSION OF BIDS

Bidders shall submit their Bids via Ion Wave not later than 2:00 p.m. (local time) **March 24, 2026**. Bids will remain sealed until 2:00 p.m. (local time) **March 24, 2026,** the official Bid closure time. Bids received after the scheduled closing time for receipt of Bids will not be considered.

9. RIGHT TO REJECT

The Procurement Agent for the LFUCG reserves the right to reject any and all bids and to waive all informalities and/or technicalities where the best interest of the LFUCG may be served.

10. NOTIFICATION TO THE LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT FOR AFFIRMATIVE ACTION PLAN AND CURRENT WORKFORCE

The successful Bidder must submit with their Bid the following items to the LFUCG:

1. Affirmative Action Plan for his/her firm.
2. Current Workforce Analysis Form.

Failure to submit these items as required herein may result in disqualification of the Bidder from the award of the contract.

All submissions should be directed to:

Lexington-Fayette Urban County Government
Division of Procurement
200 East Main Street, 3rd Floor, Room 338
Lexington, Kentucky 40507

11. NOTICE CONCERNING MINORITY, WOMEN, AND DISADVANTAGED BUSINESS ENTERPRISE (MWDBE) AND VETERAN-OWNED SMALL BUSINESS (VOSB) PARTICIPATION GOALS

This is a notice of requirement for Affirmative Action to ensure Equal Employment Opportunities and MWDBE and VOSB participation in government contracts. LFUCG sets goals for involvement of Disadvantaged Business Enterprises (DBE), Minority Business Enterprises (MBE), Women Business Enterprises (WBE), and Veteran-Owned Small Businesses (VOSB). All business enterprises in these categories are referred to as MWDBEs/VOSBs in these specifications.

LFUCG has set a combined minimum MBE and WBE participation goal of seventeen percent (17%) with minimum subgoals of five percent (5%) for MBEs and twelve percent (12%) for WBEs. LFUCG also has a separate minimum three percent (3%) participation goal for VOSBs. LFUCG recommends that DBEs participate as applicable. The goals for the utilization of MWDBEs/VOSBs as subcontractors are recommended goals. Bidders who fail to meet these goals will be expected to provide written explanations to the Director of the Division of Procurement of efforts they have made to accomplish the recommended goal and the extent to which they are successful in accomplishing the recommended goals will be a consideration in the procurement process. Depending on the funding source, other MWDBE/VOSB goals may apply.

For assistance in locating MWDBEs/VOSBs, contact:

Sherita Miller, Minority Business Enterprise Liaison
Lexington-Fayette Urban County Government
Division of Procurement
200 East Main Street, 3rd Floor, Room 338
Lexington, Kentucky 40507
smiller@lexingtonky.gov

12. PRE-BID MEETING, SITE VISITS, AND QUESTIONS

A mandatory Pre-Bid meeting will be held at **10:00 A.M. local time, March 11, 2026** at the West Hickman Wastewater Treatment Plant, 645 W Hickman Plant Road, Nicholasville, KY 40356.

The last day for questions to be received from Bidders will be **March 13, 2026 at 2:00 P.M.** and the last day for Addenda to be issued will be **March 16, 2026**. All questions shall be submitted via Ion Wave.

END OF SECTION

PART II

INFORMATION FOR BIDDERS

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PART II

INFORMATION FOR BIDDERS

1. RECEIPT AND OPENING OF BIDS

The LFUCG (herein called the OWNER) invites Bids from firms on the project described in the Advertisement for Bids. The OWNER will receive Bids online through Ion Wave (https://lexingtonky.ionwave.net) at the time and in the manner set forth in the Advertisement for Bids, at which time the Bids will be opened electronically. The OWNER may consider informal any Bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all Bids. Any Bid may be withdrawn prior to the 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 time and date of the Bid opening, but OWNER may, in its sole discretion, release any Bid and return the Bid Security prior to that date.

The OWNER assumes no responsibility for Bids that are not submitted electronically as indicated above. Bids that are not submitted in Ion Wave by the stated time and date will be rejected.

2. PREPARATION OF BID

Each Bid must be submitted on the prescribed digital Bid Form within Ion Wave. All blank spaces for the Bid prices must be filled in or the Bid will be considered incomplete.

3. SUBCONTRACTS

The Bidder is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract under this Contract must be acceptable to the OWNER. All proposed subcontractors must be identified on the Form of Proposal. Prior to the award of Contract, the OWNER or the OWNER'S representative will advise the CONTRACTOR of the acceptance and approval thereof or of any action necessary to be taken. Should any Subcontractor be rejected by the OWNER, the CONTRACTOR shall present a new name and/or firm to the OWNER at no change in the Contract Price.

4. QUALIFICATION OF BIDDER

Corporate firms are required to be registered and in good standing with the requirements and provisions of the Office of the Secretary of State, Commonwealth of Kentucky.

Bidders submitting on this project shall be or shall team with a general contractor with at least 5 years of experience working at wastewater treatment plants. Bidders without this relevant experience on their team will not be considered qualified bidders.

Bidder shall demonstrate qualifications by providing:

- A fully complete Form of Proposal with all associated forms filled out to the satisfaction of Owner.

- A list of all current work in progress with information about the percent completion of each project and the total value of work for each project.
- A list of five completed projects with contact information for the owner that demonstrate relevant experience with treatment plant flow management and treatment plant equipment replacements.

If requested by Owner, Bidder shall provide/obtain:

- A current detailed financial statement for a period including up to 3 prior years.
- Financial security or insurance in amounts and kinds acceptable to the OWNER to meet the financial responsibility requirements for the Bidder to indemnify the OWNER.

The OWNER may make such investigations as the OWNER deems 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 Contract and to complete the Work contemplated therein. Conditional Bids will not be accepted.

In evaluating Bids, OWNER shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and alternatives and unit prices, as requested. OWNER may consider maintenance requirements, performance data, and disruption or damage to private property. It is OWNER'S intent to accept alternatives, if requested by the bid forms, in the order in which they are listed in the Bid Form, but OWNER may accept or decline them in any order or combination. The contract, if awarded, will be awarded to the lowest, qualified, responsible Bidder based upon OWNER'S evaluation which indicates that the award will be in the best interest of OWNER and the general public.

In the event there is any question as to the Bidder's qualifications and ability to complete the work, a final determination will be made in accordance with a fair evaluation by the LFUCG of the above listed elements.

Each Bidder agrees to waive any claim it has or may have against the Owner, the Architect/Engineer, and their respective employees, arising out of or in connection with the administration, evaluation, or recommendation of any Bid.

5. BID SECURITY

A. Each Bid must be accompanied by a Bid Bond prepared on a Form of Bid Bond and attached hereto, duly executed by the Bidder as principal and having as surety thereon a surety company approved by the OWNER, in the amount of 5% of the Bid. Such Bid Bond will be returned to the unsuccessful bidder(s) only upon written request to the Director of Procurement within seven (7) days of opening of Bids. Bid bond shall be made payable to the LFUCG. Bid security is not required for projects under $50,000.

B. Bonds shall be placed with an agent licensed in Kentucky with surety authorized to do business within the state. When the premium is paid for such coverage, the full commission payable shall be paid to such local agent who shall not divide such commission with any person other than a duly licensed resident local agent.

6. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

The successful Bidder, upon his failure or refusal to execute and deliver the Contract and bonds required within ten (10) days after he has received notice of the acceptance of his Bid, shall forfeit to the OWNER, as liquidated damages for such failure or refusal, the security deposited with his Bid.

7. TIME OF COMPLETION AND LIQUIDATED DAMAGES

Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" from the OWNER and to fully complete the Project within the time as specified in the Contract. Bidder must agree also to pay liquidated damages for each consecutive calendar day thereafter as hereinafter provided in the General Conditions and Contract Agreement.

8. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

A. It is the responsibility of each Bidder before submitting a Bid, to (a) examine the Contract Documents thoroughly, (b) visit the site(s) to become familiar with local conditions that may affect cost, progress, performance or furnishing of the work, (c) consider Federal, State and Local laws and regulations that may affect cost, progress, performance or furnishing of the work, (d) study and carefully correlate Bidder's observations with the Contract Documents, and (e) notify Engineer of all conflicts, errors, or discrepancies in the Contract Documents.

B. Bidders should examine the requirements of section 4 of the General Conditions for information pertaining to subsurface conditions, underground structures, underground facilities, and availability of lands, easements, and rights-of-way. The completeness of data, presented in the Contract Documents, pertaining to subsurface conditions, underground structures, and underground facilities for the purposes of bidding or construction is not assured. The Bidder will, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (surface and subsurface) which may affect cost, progress, performance or furnishing of the Work and which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price, and other terms and conditions of the Contract Documents. On request in advance, OWNER will provide access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a bid. Bidder shall fill all holes, clean up and restore the site to its former condition upon completion of such explorations.

C. The submission of a Bid will constitute an incontrovertible representation by the Bidder that Bidder has complied with every requirement of this paragraph 8; that without exception the Bid is premised upon furnishing and performing the Work

required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents; and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

9. ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the Contract Documents will be made to any Bidder orally. Every request for such interpretation should be in writing addressed to the Director of Procurement, who in turn will have an Addendum issued for the LFUCG, and to be given consideration must be received prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications. Acknowledgement of the receipt of addenda must be included with all submitted bids. Failure of any Bidder to receive any such addendum or interpretation shall not relieve such Bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

10. SECURITY FOR FAITHFUL PERFORMANCE

A. Simultaneously with his delivery of the executed Contracts, the CONTRACTOR shall furnish a surety bond or bonds as security for the faithful performance of this Contract and for payment of all persons performing labor on the Project under this Contract and furnishing materials in connection with this Contract, as specified in the General Conditions. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the OWNER and authorized to do business in the Commonwealth of Kentucky.

B. All bonds required by this Contract and laws of this State shall be placed with agents licensed in the State of Kentucky. When the premium is paid for such coverage's, the full commission shall be paid to such local agent who shall not divide such commission with any person other than a duly licensed resident local agent.

C. **Contractor shall use standard Performance and Payment Bond forms such as documents provided with this contract book or AIA form A312-1984 (or later). Each document will be for 100% of the Contract Bid Amount.**

11. POWER OF ATTORNEY

Attorney-in-fact who signs Bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

12. TAXES AND WORKMEN'S COMPENSATION

The CONTRACTOR and subcontractor will be required to accept liability for payment of all payroll taxes, sales and use tax, and all other taxes or deductions required by local, state or federal law, such as old age pension, social security, or annuities measured by wages. Each shall carry Workmen's Compensation Insurance to the full amounts as required by Statutes and shall include the cost of all foregoing items in the proposal. The CONTRACTOR will not otherwise be reimbursed or compensated for such tax payments. The CONTRACTOR is urged to ascertain at his own risk his actual tax liability in connection with the execution or performance of his Contract.

13. LAWS AND REGULATIONS

The Bidder's attention is directed to the fact that all applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they will be deemed to be included in the contract, the same as though herein written out in full.

14. EROSION AND SEDIMENT CONTROL AND PERMITS

The CONTRACTOR and Subcontractors performing work on projects on behalf of the OWNER shall also comply with all applicable federal, state, and local environmental regulations and all requirements and conditions set forth in "special" permits including but not limited to Corp of Engineers 404 permits, 401 Water Quality Certifications, Stream Crossing, and Floodplain Encroachment Permits as described in Part 4 General Conditions Paragraph 5.17.

15. PREVAILING WAGE LAW AND MINIMUM HOURLY RATES

Federal or state wage rates and regulations, if required for this Project, will be as described in the Special Conditions.

16. AFFIRMATIVE ACTION PLAN

The successful Bidder must submit with their bid, the following items to the LFUCG:

1. Affirmative Action Plan of the firm
2. Current Work Force Analysis Form
3. Good Faith Effort Documentation
4. List of Disadvantaged Business Enterprise Subcontractors and the Dollar Value of each Subcontract

A Work Force Analysis Form shall be submitted for each Contract. Failure to submit these items as required herein may result in disqualification of the Bidder from award of the Contract.

All submissions should be directed to:

Director, Division of Procurement
Lexington-Fayette Urban County Government
200 East Main Street, Third Floor
Lexington, KY 40507

17. CONTRACT TIME

The number of calendar days within which the Work is to be substantially completed and ready for final payment (the Contract Time) is set forth in the Contract Agreement.

18. SUBSTITUTE OR "OR-EQUAL" ITEMS

The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or-equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or-equal" item of material or equipment may be furnished or used by the CONTRACTOR if acceptable to the ENGINEER and OWNER, application for such acceptance will not be considered by the ENGINEER and OWNER until after the effective date of the Agreement. The procedure for submission of any such application by the CONTRACTOR and consideration by the ENGINEER and OWNER is set forth in the General Conditions.

19. ALTERNATE BIDS

Bidders shall submit alternate Bids/proposals only if and when such alternate bids/proposals have been specifically requested in an Invitation for Bids. If alternate Bids/proposals are requested in an Invitation for Bids, the form of submission of such alternate Bid and the conditions under which such alternate Bids will be considered for award of a contract will be established in the Invitation.

Any Bidder who submits a Bid incorporating an alternate proposal when alternate Bids/proposals have not been requested in the Invitation for Bids shall have his/her Bid rejected as non-responsive.

Any Bidder who submits a Bid incorporating two (2) or more prices for an item or groups of items (unless such method of pricing is requested in the Invitation for Bids), or which imposes conditions for acceptance other than those established in the Invitation for Bids, shall have their Bid rejected as non-responsive.

20. SIGNING OF AGREEMENT

When OWNER gives a Notice of Award to the successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within ten (10) days thereafter, CONTRACTOR shall sign and deliver the required number of counterparts of the Agreement and attached documents to OWNER with the required Bonds, Certificate of Insurance, and Power of Attorney. The OWNER will deliver one fully signed counterpart to CONTRACTOR at such time as it has been signed by the Mayor.

21. ASSISTANCE TO BE OFFERED TO MINORITY, WOMEN, AND DISADVANTAGED BUSINESS ENTERPRISE (MWDBE) AND VETERAN-OWNED SMALL BUSINESS (VOSB) CONTRACTORS

A. Outreach for MWDBEs/VOSBs

LFUCG maintains a database of MWDBE/VOSB contractors and organizations. When a LFUCG construction project is advertised for bidding, notices are sent to companies registered at https://lexingtonky.ionwave.net. The notices describe the project and indicate the deadline for submitting bids.

Those wishing to be added to the LFUCG MWDBE/VOSB contractor database should contact:

Sherita Miller, Minority Business Enterprise Liaison
Division of Procurement
Lexington-Fayette Urban County Government
200 East Main Street, Room 338
Lexington, Kentucky 40507
smiller@lexingtonky.gov

B. Bid Bond Assistance for MWDBEs

For those MWDBE contractors who wish to Bid on a LFUCG project, Bid Bond assistance is available. This Bid Bond assistance is in the form of a "Letter of Certification" which is accepted by the LFUCG's Division of Procurement, in lieu of a Bid Bond. The "Letter of Certification" must be included in the Bid package when it is submitted to the Division of Procurement. The "Letter of Certification" will reference the specific project for which the Bid is being submitted, and the time and date on which the Bid is due. Bid bond assistance must be requested from the LFUCG's Division of Procurement.

C. Eligibility for Bid Bond Assistance for MWDBEs

In order to be eligible for any Bid bonding assistance, a MWDBE construction company must be owned or controlled at the level of 51% or more by a member or members of a minority group or females. Prior to receiving assistance, a statement providing evidence of ownership and control of the company by a member or members of a minority group or females must be signed by the Owner or corporate officer and by an attorney or accountant submitted to:

Sherita Miller, Minority Business Enterprise Liaison
Lexington-Fayette Urban County Government
Division of Procurement
200 East Main Street, Room 338
Lexington, Kentucky 40507
smiller@lexingtonky.gov

D. MWDBE and VOSB Subcontractors

The LFUCG will, upon request, assist prime contractors in the procurement of eligible MWDBE/VOSB subcontractors in an effort to achieve the 17% minimum MWDBE and 3% minimum VOSB participation goals.

For a list of eligible subcontractors, please contact:

Sherita Miller, Minority Business Enterprise Liaison
Lexington-Fayette Urban County Government
Division of Procurement
200 East Main Street, Room 338
Lexington, Kentucky 40507
smiller@lexingtonky.gov

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PART III

FORM OF PROPOSAL

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Document A310™ – 2010

Conforms with The American Institute of Architects AIA Document 310

Bid Bond

CONTRACTOR:
(Name, legal status and address)
Pace Contracting, LLC

15415 Shelbyville Rd
Louisville, KY 40245

SURETY:
(Name, legal status and principal place of business)
Western Surety Company
151 N. Franklin Street
Chicago, IL 60606
Mailing Address for Notices
151 N. Franklin Street
Chicago, IL 60606

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

OWNER:
(Name, legal status and address)
Lexington-Fayette Urban County Government
200 E. Main Street
Lexington, KY 40507

BOND AMOUNT: $ Five Percent of Amount Bid (5%)

PROJECT:
(Name, location or address, and Project number, if any)
WEST HICKMAN WWTP HIGH FLOW DIVERSION BOX REPLACEMENT

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner 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. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this 24th day of March, 2026

Kristy M. Smith
(Witness) Kristy M. Smith

Pace Contracting, LLC
(Principal) *(Seal)*
By:
(Title) Mike Mulhall, Vice President

Leslie Blevins
(Witness) Leslie Blevins

Western Surety Company
(Surety) *(Seal)*
By: Madison M. Haller
(Title) Madison M. Haller, Attorney-in-Fact

Western Surety Company

POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

Know All Men By These Presents, That WESTERN SURETY COMPANY, a South Dakota corporation, is a duly organized and existing corporation having its principal office in the City of Sioux Falls, and State of South Dakota, and that it does by virtue of the signature and seal herein affixed hereby make, constitute and appoint

Paula J Teague, Todd P Loehnert, John B Ayres, Michael W Baxter, Madison M Haller, Individually

of Louisville, KY, its true and lawful Attorney(s)-in-Fact with full power and authority hereby conferred to sign, seal and execute for and on its behalf bonds, undertakings and other obligatory instruments of similar nature

- In Unlimited Amounts -

and to bind it thereby as fully and to the same extent as if such instruments were signed by a duly authorized officer of the corporation and all the acts of said Attorney, pursuant to the authority hereby given, are hereby ratified and confirmed

This Power of Attorney is made and executed pursuant to and by authority of the Authorizing By-Laws and Resolutions printed at the bottom of this page, duly adopted, as indicated, by the shareholders of the corporation

In Witness Whereof, WESTERN SURETY COMPANY has caused these presents to be signed by its Vice President and its corporate seal to be hereto affixed on this 22nd day of January, 2026

WESTERN SURETY COMPANY

Larry Kasten, Vice President

State of South Dakota }
County of Minnehaha } ss

On this 22nd day of January, 2026, before me personally came Larry Kasten, to me known, who, being by me duly sworn, did depose and say that he resides in the City of Sioux Falls, State of South Dakota, that he is a Vice President of WESTERN SURETY COMPANY described in and which executed the above instrument, that he knows the seal of said corporation, that the seal affixed to the said instrument is such corporate seal, that it was so affixed pursuant to authority given by the Board of Directors of said corporation and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said corporation

My commission expires
December 4, 2031

K WALSH
NOTARY PUBLIC
SOUTH DAKOTA

K Walsh, Notary Public

CERTIFICATE

I, Paula Kolsrud, Assistant Secretary of WESTERN SURETY COMPANY do hereby certify that the Power of Attorney hereinabove set forth is still in force, and further certify that the By-Laws and Resolutions of the corporation printed below this certificate are still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said corporation this 24th day of March , 2026

WESTERN SURETY COMPANY

Paula Kolsrud, Assistant Secretary

Authorizing By-Laws and Resolutions

ADOPTED BY THE SHAREHOLDERS OF WESTERN SURETY COMPANY

This Power of Attorney is made and executed pursuant to and by authority of the following By-Law duly adopted by the shareholders of the Company.

Section 7. All bonds, policies, undertakings, Powers of Attorney, or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, and Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or agents who shall have authority to issue bonds, policies, or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile.

This Power of Attorney is signed by Larry Kasten, Vice President, who has been authorized pursuant to the above Bylaw to execute power of attorneys on behalf of Western Surety Company

This Power of Attorney may be signed by digital signature and sealed by a digital or otherwise electronic-formatted corporate seal under and by the authority of the following Resolution adopted by the Board of Directors of the Company by unanimous written consent dated the 27th day of April, 2022

"RESOLVED, That it is in the best interest of the Company to periodically ratify and confirm any corporate documents signed by digital signatures and to ratify and confirm the use of a digital or otherwise electronic-formatted corporate seal, each to be considered the act and deed of the Company."

Go to www.cnasurety.com > Owner / Obligee Services > Validate Bond Coverage, if you want to verify bond authenticity.

Form F4280-6-2023

6	Will the contractor have to vac anything out of the diversion box?	The box is lower than the channel so some dewatering will be required.
7	Should the contractor expect the need to hire utility location services such as Bloodhound to locate any utilities not shown on the Drawings?	Contractor shall comply with all requirements in the specifications regarding underground facilities including section 4.3 of the General Conditions.
8	If electrical is found, will LFUCG be the ones to relocate it?	LFUCG is relocating the known electrical along the perimeter of the existing clarifiers and diversion box. If electrical is encountered in the excavation area, this may be considered a changed condition.

1. DRAWINGS

A. DRAWING C-501

Replace the sheet C-501 in its entirety with the revised attached drawing.

B. DRAWING S-101

Replace the sheet S-101 in its entirety with the revised attached drawing.

2. SPECIFICATIONS

A. SPECIFICATION PART I – ADVERTISEMENT FOR BIDS

The Pre-Bid meeting minutes are attached at the end of this document.

Todd Slatin, Director
Division of Central Purchasing

All other terms and conditions of the Bid and specifications are unchanged.
This letter should be signed, attached to and become a part of your Bid.

COMPANY NAME: Pace Contracting, LLC

ADDRESS: 15415 Shelbyville Road, Louisville, KY 40245

SIGNATURE OF BIDDER: _____ Mike Mulhall

Acknowledgement of Addendum 1.

Kristy Smith

From: Brian Marcum <BrianM@lexingtonky.gov>
Sent: Tuesday, March 17, 2026 8:42 AM
To: Kristy Smith
Subject: Re: Addendum 1 - Bid 23-2026 High Flow Diversion Box - W Hickman

Addendum 1 replaced the drawings with a new set not corrupted

---

From: Kristy Smith <ksmith@pacecontracting.com>
Sent: Tuesday, March 17, 2026 8:29:35 AM
To: Brian Marcum <BrianM@lexingtonky.gov>
Subject: Addendum 1 - Bid 23-2026 High Flow Diversion Box - W Hickman

You don't often get email from ksmith@pacecontracting.com. Learn why this is important
[EXTERNAL] Use caution before clicking links and/or opening attachments.

Good morning, Brian.

I've been able to download Addendum 2 without issues for W Hickman. However, I must not be looking in the correct location in IonWave for Addendum 1.

Could you please guide me as to where I can locate Addendum 1?

Thank you in advance. I apologize for the inconvenience.

PACE CONTRACTING
An LPX Group Company

Kris Smith
Project Administrator

c: (502) 297-1336
e: ksmith@pacecontracting.com

15415 Shelbyville Road Louisville, KY 40245
o: (502) 736-6269

COMPANY NAME: Pace Contracting, LLC

ADDRESS: 15415 Shelbyville Road, Louisville, KY 40245

SIGNATURE OF BIDDER: Mike Mulhall

Kristy Smith

From: Lexington-Fayette Urban County Government <lexingtonky@customer.ionwave.net>
Sent: Tuesday, March 24, 2026 9:38 AM
To: Kristy Smith
Subject: [HIGH PRIORITY] Lexington-Fayette Urban County Government Bid Message Notification: Bid 23-2026 Addendum 2 (High Flow Diversion Box for West Hickman)

Dear Supplier,

You have been sent a message related to the following opportunity.

Subject: Addendum#1 Clarification
Message: Addendum#1 had no cover page issued as it replaced a corrupted file for the bid documents in Ionwave. You can state no form issued in Ionwave.

Bid Opportunity Information

Bid Number: Bid 23-2026 Addendum 2
Title: High Flow Diversion Box for West Hickman
Open Date: 3/3/2026 11:00:00 AM (ET)
Close Date: 3/24/2026 02:00:00 PM (ET)

Bid Notes

Bid Contact Information
Brian Marcum
200 East Main Street
Lexington, KY 40507
(859) 2583320
(859) 2583322
brianm@lexingtonky.gov

Click Here to View Opportunity

Questions about this system can be directed to:
Lexington-Fayette Urban County Government

Unsubscribe

BUYBIDMESSAGEVENDOR - 3/24/2026 08:38 AM (CT)

PART III
Invitation to Bid No. 23-2026

WEST HICKMAN WWTP
HIGH FLOW DIVERSION BOX REPLACEMENT

1. FORM OF PROPOSAL

Place: Lexington, Kentucky

Date: 03/24/2026

The following Form of Proposal shall be followed exactly in submitting a proposal for this Work.

This Proposal Submitted by Pace Contracting, LLC

15415 Shelbyville Road, Louisville, KY 40245
(Name and Address of Bidding Contractor)

(Hereinafter called "Bidder"), organized and existing under the laws of the State of Kentucky, doing business as a limited liability company "a corporation," "a partnership", or an "individual" as applicable.

To: Lexington-Fayette Urban County Government (LFUCG)
(Hereinafter called "OWNER")
Office of the Director of Procurement
200 East Main Street, 3rd Floor
Lexington, KY 40507

Gentlepeople:

The Bidder, in compliance with your Invitation for Bids for **West Hickman Wastewater Treatment Plant High Flow Diversion Box Replacement** having examined the Plans and Specifications with related documents, having examined the site for proposed Work, and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the Project in accordance with the Contract Documents, within the time set forth therein, and at the lump sum and/or unit prices stated hereinafter. These prices are to cover all expenses incurred in performing the Work required under the Contract Documents, of which this proposal is a part.

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 the time provided in the Purchase Order or Work Orders issued by the OWNER. BIDDER further agrees to pay liquidated damages, the sum of $400 for each consecutive calendar day thereafter.

The Bidder hereby acknowledges receipt of the following addenda:

Addendum No. 1 Date 03/03/2026
Addendum No. 2 Date 03/17/2026
Addendum No. ____ Date _____
Addendum No. ____ Date _____
Addendum No. ____ Date _____
Addendum No. ____ Date _____
Addendum No. ____ Date _____
Addendum No. ____ Date _____

Insert above the number and the date of any Addendum issued and received. If none has been issued and received, the word "NONE" should be inserted.

2. LEGAL STATUS OF BIDDER

Bidder Pace Contracting, LLC

Date 03/23/2026

LLC

* 1. A ~~corporation~~ duly organized and doing business under the laws of the State of Kentucky, for whom Mike Mulhall, bearing the official title of Vice President, whose signature is affixed to this Bid/Proposal, is duly authorized to execute contracts.

* 2. ~~A Partnership, all of the members of which, with addresses are: (Designate general partners as such)~~

_____

_____

_____

_____

_____

* 3. ~~An individual, whose signature is affixed to this Bid/Proposal (please print name)~~

_____

_____

*(The Bidder shall fill out the appropriate form and strike out the other two.)

3. BIDDERS AFFIDAVIT

Comes the Affiant, Mike Mulhall, and after being first duly sworn, states under penalty of perjury as follows:

1. His/her name is Mike Mulhall and he/she is the individual submitting the bid or is the authorized representative of Pace Contracting, LLC, the entity submitting the bid (hereinafter referred to as "Bidder").
2. Bidder will pay all taxes and fees, which are owed to the Owner at the time the bid is submitted, prior to award of the contract and will maintain a "current" status in regard to those taxes and fees during the life of the contract.
3. Bidder will obtain a business license from Owner, if applicable, prior to award of the contract.
4. Bidder has authorized the Division of Procurement to verify the above-mentioned information with the Division of Revenue and to disclose to the Urban County Council that taxes and/or fees are delinquent or that a business license has not been obtained.
5. Bidder has not knowingly violated any provision of the campaign finance laws of the Commonwealth of Kentucky within the past five (5) years and the award of a contract to the Bidder will not violate any provision of the campaign finance laws of the Commonwealth.
6. Bidder has not knowingly violated any provision of Chapter 25 of the LFUCG Code of Ordinances, known as the "Ethics Act."
7. Bidder acknowledges that "knowingly" for purposes of this Affidavit means, with respect to conduct or to circumstances described by a statute or ordinance defining an offense, that a person is aware or should have been aware that his conduct is of that nature or that the circumstance exists.

Further, Affiant sayeth naught.

(Affiant)

STATE OF Kentucky

COUNTY OF Jefferson

The foregoing instrument was subscribed, sworn to and acknowledged before me by

Mike Mulhall on this the 24th day of March, 2026.

My Commission expires: 04/28/2029

NOTARY PUBLIC, STATE AT LARGE

KRISTY M. SMITH NOTARY ID KYNP28290 MY COMMISSION EXPIRES 04/28/2029 PUBLIC STATE AT LARGE, KY.

4. BID SCHEDULE

The Bidder agrees to perform all the Work described in the Specifications and shown on the Plans for the following proposed lump sum bid price shall include the furnishing of all labor, materials, supplies, equipment and/or vehicle usage, services, all items of cost, overhead, taxes (federal, state, local), and profit for the Contractor and any Subcontractor involved, within the time set forth herein.

All pricing must be submitted correctly in Ion Wave to reflect the correct bid price. Contractors are responsible for correctly submitting pricing in Ion Wave. If the amount is entered incorrectly, the bid will be rejected.

The LFUCG's decision on the bid amount is final. The contract, if awarded, will be on the basis of materials and equipment specified in the specifications without consideration of possible substitute or "or equal" items.

LUMP SUM BID PRICE:

West Hickman WWTP High Flow Diversion Box Replacement=	**SUBMIT IN ION WAVE ONLY**

Submitted by:

Pace Contracting, LLC
Firm

15415 Shelbyville Road
Address

Louisville, KY 40245
City, State & Zip

Bid must be signed:
(original signature)

Signature of Authorized Company Representative – Title

Mike Mulhall, Vice President
Representative's Name (Typed or Printed)

502-815-4142
Area Code – Phone – Extension *Fax #*

mikem@pacecontracting.com
E-Mail Address

OFFICIAL ADDRESS:

Pace Contracting, LLC

15415 Shelbyville Road

Louisville, KY 40245

_____ (Seal if Bid is by Corporation)

By signing this form, you agree to ALL terms, conditions, and associated forms in this bid package.

5. STATEMENT OF BIDDER'S QUALIFICATIONS

The following statement of the Bidder's qualifications is required to be filled in, executed, and submitted with the Proposal:

1. Name of Bidder: Pace Contracting, LLC

2. Permanent Place of Business: 15415 Shelbyville Road, Louisville, KY 40245

3. When Organized: July 1997
   Established

4. Where ~~Incorporated:~~ Kentucky

5. Construction Plant and Equipment Available for this Project:

   See attached

   (Attach Separate Sheet If Necessary)

6. Financial Condition:

   If specifically requested by the OWNER, the apparent low Bidder is required to submit its latest three (3) years audited financial statements to the OWNER'S Division of Procurement within seven (7) calendar days following the bid opening.

7. In the event the Contract is awarded to the undersigned, surety bonds will be furnished by:

   Western Surety Company (Surety)

   Signed: Madison M. Haller (Representative of Surety)
   Madison M. Haller, Attorney in Fact

8. The following is a list of similar projects performed by the Bidder: (Attach separate sheet if necessary).

NAME	LOCATION	CONTRACT SUM
See attached		

9. The Bidder has now under contract and bonded the following projects:

NAME	LOCATION	CONTRACT SUM
See attached		

10. List Key Bidder Personnel who will work on this Project.

NAME	POSITION DESCRIPTION	NO. OF YEARS WITH BIDDER
Zach Denton	Project Manager - see attached	
Dennis Littleton	Superintendent - see attached	

11. MWDBE/VOSB participation on current bonded projects under contract:

SUBCONTRACTORS (LIST)	PROJECT (SPECIFIC TYPE)	MBE, WBE, DBE, or VOSB	% of WORK
Engineered Solutions	WWTP	WBE	4.7%
Island Electric	WWTP	MBE	3.3%
McKinney Painting	WWTP	WBE	0.56%
Seven Seas	WWTP	MBE	6.5%
Tomrook Steel	WWTP	WBE	2.4%
TRC, LLC	WWTP	WBE	3.7%

Pace has contracts in place with numerous municipalities that require M/W/DBE participation. Additional information is available upon specific request.

(USE ADDITIONAL SHEETS IF NECESSARY)

6. LIST OF PROPOSED SUBCONTRACTORS

The following list of proposed subcontractors is required by the Owner to be executed, completed, and submitted with the Bidder's Form of Proposal. All subcontractors are subject to approval by the LFUCG. Failure to submit this completed list may be cause for rejection of Bid.

BRANCH OF WORK - LIST EACH MAJOR ITEM Such as: Grading, bituminous paving, concrete, seeding and protection, etc.	SUBCONTRACTOR	MWDBE/ VOSB Yes/No	% of Work
1. Concrete Cutting	Name: AK Services Address: 310 Evergreen Rd, Ste 105 Louisville, KY 40203	yes	2.3%
2. Rebar Installer	Name: Lykins Reinforcing Address: PO Box 21325 Louisville, KY 40221	yes	0.7%
3. Asphalt Paving	Name: C&R Asphalt Address: 415 Rebmann Ln Lexington, KY 40504	no	2.0%
4. Temporary Power	Name: Island Electric, LLC Address: 2005 Dunkirk Dr Lexington, KY 40504	yes	1.5%
5.	Name: Address:		

(Attach additional sheet(s) if necessary.)

7. LFUCG'S MINORITY, WOMEN, AND DISADVANTAGED BUSINESS ENTERPRISE (MWDBE) AND VETERAN-OWNED SMALL BUSINESS (VOSB) PARTICIPATION GOALS

A. GENERAL

1) LFUCG requests all potential contractors to make a concerted effort to include MWDBEs and VOSBs as subcontractors or suppliers in their Bids. MWDBEs consist of Minority Business Enterprises (MBE), Women Business Enterprises (WBE), and Disadvantaged Business Enterprises (DBE).

2) LFUCG has set a combined minimum MBE and WBE participation goal of seventeen percent (17%) with minimum subgoals of five percent (5%) for MBEs and twelve percent (12%) for WBEs. LFUCG recommends that DBEs participate as applicable. It is recommended that each Bidder make a good faith effort to meet this goal. Bidders shall comply with other MWDBE requirements as outlined in this section.

4) LFUCG has set a goal that not less than three percent (3%) of the total value of this Contract be subcontracted to VOSBs. It is recommended that each Bidder make a good faith effort to meet this goal. Bidders shall comply with other MWDBE requirements as outlined in this section.

B. PROCEDURES

1) The successful Bidder will be required to report to LFUCG the dollar amounts of all payments submitted to MWDBE/VOSB subcontractors and suppliers for work done or materials purchased for this Contract. Reporting requirements will be satisfied via LFUCG's Diverse Business Management Compliance System, https://lexingtonky.diversitycompliance.com/ and/or as requested by the Division of Procurement.

2) Replacement of a MWDBE/VOSB subcontractor or supplier listed in the original submittal must be requested in writing and must be accompanied by documentation of good faith efforts to replace the subcontractor/supplier with another MWDBE/VOSB firm. This replacement is subject to approval by LFUCG. (See LFUCG MWDBE Substitution Form)

3) For assistance in identifying qualified certified MWDBE/VOSB businesses to solicit for potential contracting opportunities, bidders may contact LFUCG Division of Procurement at 859-258-3320 or by emailing Sherita Miller, MBE Liaison at smiller@lexingtonky.gov.

4) LFUCG will make every effort to notify interested MWDBE/VOSB subcontractors and suppliers of bidding opportunities including information on the scope of work, the pre-bid meeting time and location, the bid date, and all other pertinent information regarding the project.

C. DEFINITIONS

1) MWDBE and VOSB definitions can be found in the MBEP forms in this Form of Proposal.

5) Good faith efforts are efforts that, given all relevant circumstances, a bidder or proposer actively and aggressively seeking to meet the goals can reasonably be expected to make. In evaluating good faith efforts made toward achieving the goals, LFUCG will consider whether the bidder or proposer has performed the efforts outlined in the Obligations of Bidder for Good Faith Efforts detailed in this document. Other relevant factors will also be considered.

D. OBLIGATION OF BIDDER FOR GOOD FAITH EFFORTS

1) **Bidders shall make a good faith effort to achieve the participation goals for MWDBE/VOSB subcontractors and suppliers. Applicable good faith efforts are delineated in the MBEP forms in this Form of Proposal. Failure to meet the MWDBE/VOSB participation goals shall not necessarily be cause for disqualification of Bidders. Bidders not meeting the goal are required to furnish with their Bids written documentation of their good faith efforts to do so.**

2) Contract Award shall be conditioned upon satisfaction of the requirements set forth herein.

3) The Form of Proposal includes a section entitled MWDBE Participation Form. The applicable information must be completed and submitted as outlined below.

4) **Failure to submit this information as requested may be cause for rejection of Bid or delay in Contract Award.**

E. DOCUMENTATION REQUIRED FOR GOOD FAITH EFFORTS

All Bidders are required to submit with their Bid a completed MWDBE Participation Form, completed Attachment A – Small Business, MWDBE, and VOSB Outreach Plan, and a written statement documenting their good faith efforts. If Bid includes no MWDBE/VOSB participation, bidder shall enter "None" on the MWDBE Participation Form. Indicated forms and instructions for completion can be found in the MBEP section in this Form of Proposal.

LEXINGTON

MINORITY BUSINESS ENTERPRISE PROGRAM

Sherita Miller, MPA
Minority Business Enterprise Liaison
Division of Procurement
Lexington-Fayette Urban County Government
200 East Main Street
Lexington, KY 40507
smiller@lexingtonky.gov
859-258-3323

OUR MISSION: The mission of the Minority Business Enterprise Program (MBEP) is to facilitate the participation of Minority Business Enterprises (MBEs), Women Business Enterprises (WBEs), Disadvantaged Business Enterprises (DBEs), Veteran-Owned Small Businesses (VOSBs), and Service-Disabled Veteran-Owned Small Businesses (SDVOSBs) in the procurement process and to promote economic inclusion as a business imperative essential to the long-term economic viability of the Lexington-Fayette Urban County Government (LFUCG). For clarity, the term Minority, Women, and Disadvantaged Business Enterprises (MWDBE) will be an all-encompassing term used to refer to MBEs, WBEs, and DBEs.

To that end the LFUCG adopted and implemented Resolution 272-2024 implementing a revised combined minimum MBE and WBE goal of seventeen percent (17%) for government contracts with minimum subgoals of five percent (5%) for MBEs and twelve percent (12%) for WBEs. There remains a minimum three percent (3%) goal for VOSBs for government contracts. LFUCG recommends that DBEs participate as applicable.

The resolution states the following definitions shall be used for the purposes of reaching these goals (a full copy is available in the Division of Procurement):

Certified Disadvantaged Business Enterprise (DBE) *– a business in which at least fifty-one percent (51%) is owned, managed, and controlled by a person(s) who is socially and economically disadvantaged as defined by 49 CFR subpart 26.*

Certified Minority Business Enterprise (MBE) *– a business in which at least fifty-one percent (51%) is owned, managed, and controlled by an ethnic minority (i.e. Black American, Asian American, Hispanic American, Native American).*

Certified Women Business Enterprise (WBE) *– a business in which at least fifty-one percent (51%) is owned, managed, and controlled by a woman.*

Certified Veteran-Owned Small Business (VOSB) *– a business in which at least fifty-one percent (51%) is owned, managed, and controlled by a veteran who served on active duty with the U.S. Army, Air Force, Navy, Marines, or Coast Guard.*

Certified Service-Disabled Veteran-Owned Small Business (SDVOSB) *– a business in which at least fifty-one percent (51%) is owned, managed, and controlled by a disabled veteran who served on active duty with the U.S. Army, Air Force, Navy, Marines, or Coast Guard.*

The term "Certified" shall mean the business is appropriately certified, licensed, verified, or validated by an organization or entity recognized by the Division of Procurement as having the appropriate credentials to make a determination as to the status of the business.

The following certifications are recognized and accepted by the MBEP:

Kentucky Transportation Cabinet (KYTC), Disadvantaged Business Enterprise (DBE)
Kentucky Minority and Women Business Enterprise (MWBE)
Women's Business Enterprise National Council (WBENC)
National Women Business Owners Corporation (NWBOC)
National Minority Supplier Development Council (NMSDC)
Tri-State Minority Supplier Development Council (TSMSDC)
U.S. Small Business Administration Veteran Small Business Certification (VetCert)
Kentucky Service- Disabled Veteran Owned Small Business (SDVOSB)

To comply with Resolution 272-2024, prime contractors, MWDBEs, and VOSBs must complete monthly contract compliance audits in the Diverse Business Management Compliance system, https://lexingtonky.diversitycompliance.com/.

A list of organizations that certify and/or maintain lists of certified MWDBEs and VOSBs is available upon request by emailing Sherita Miller at smiller@lexingtonky.gov.

LEXINGTON

LFUCG MWDBE PARTICIPATION FORM
Bid/RFP/Quote Reference # Bid Number 23-2026

The MWDBE and/or VOSB subcontractors listed have agreed to participate on this Bid/RFP/Quote. If any substitution is made or the total value of the work is changed prior to or after the job is in progress, it is understood that those substitutions must be submitted to Procurement for approval immediately. **Failure to submit a completed form may cause rejection of the Bid.**

MWDBE or VOSB Company, Name, Address, Phone, Email	MBE, WBE, DBE, VOSB?	Work to be Performed	Total Dollar Value of the Work	% Value of Total Contract
1. AK Services 310 Evergreen Rd Ste 105 Louisville, KY 40203 270-556-0053 akservices502@gmail.com	MWBE	Concrete Cutting	$9,650.00	2.3%
2. Lykins Reinforcing PO Box 21325 Louisville, KY 40221 502-634-5030 rick@lykinsreinforcing.com	WBE	Reinforcing Steel Installer	$2,800.00	0.7%
3. Mills Supply 2910 Blankenbaker Rd. Louisville, KY 40299 502-561-0700 cechols@millssupply.net	WBE	Reinforcing Steel Supplier	$4,550.00	1.1%
4. Island Electric LLC 2005 Dunkirk Dr Lexington, KY 40504 859-2320-7937 dharris@islandelectricllc.com	MBE	Temporary Electric for Job Trailer	$6,288.00	1.5%

The undersigned company representative submits the above list of MWDBE/VOSB firms to be used in accomplishing the work contained in this Bid/RFP/Quote. Any misrepresentation may result in the termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

Pace Contracting, LLC
Company

Company Representative

03/24/2026
Date

Mike Mulhall, Vice President
Title

LEXINGTON

LFUCG MWDBE SUBSTITUTION FORM
Bid/RFP/Quote Reference # Bid Number 23-2026

The substituted MWDBE and/or VOSB subcontractors listed below have agreed to participate on this Bid/RFP/Quote. These substitutions were made prior to or after the job was in progress. These substitutions were made for reasons stated below and are now being submitted to Procurement for approval. By the authorized signature of a representative of our company, we understand that this information will be entered into our file for this project. **Note: Form required if a subcontractor is being substituted on a contract.**

SUBSTITUTED MWDBE/VOSB Company Name, Address, Phone, Email	MWDBE/VOSB Formally Contracted/ Name, Address, Phone, Email	Work to Be Performed	Reason for the Substitution	Total Dollar Value of the Work	% Value of Total Contract
1.					
2.					
3.					
4.					

Not applicable at time of bid

The undersigned acknowledges that any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

Company _____ **Company Representative** _____

Date _____ **Title** _____

LEXINGTON

DOCUMENTATION REQUIRED FOR GOOD FAITH EFFORTS AND OUTREACH PLANS

As affirmed in Resolution Number 272-2024, the LFUCG has adopted an annual aspirational goal of utilizing at least seventeen percent (17%) of public funds spent from certain discretionary agreements with certified MBEs and WBEs, utilizing at least three percent (3%) of public funds from certain discretionary agreements with certified VOSBs, and utilizing DBEs where applicable. Bidders should make every effort to achieve these goals.

Therefore, as an element of the responsiveness of the Bid, all Bidders are required to submit documentation of their good faith and outreach efforts to ensure all businesses, including small business and disadvantaged businesses such as MWDBEs and VOSBs have an equal opportunity to compete for and participate in the performance of any subcontracts resulting from this procurement. Examples of good faith and outreach efforts that satisfy this requirement to encourage the participation of MWDBEs and VOSBs include:

1. Advertised opportunities to participate in the contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting MWDBEs/VOSBs not less than fifteen (15) days prior to the deadline for submission of bids to allow MWDBEs/VOSBs to participate.
2. Attended LFUCG Procurement Economic Inclusion Outreach event(s) within the past year to meet small businesses, MWDBEs, and/or VOSBs to partner with on LFUCG contracts and procurements.
3. Attended pre-bid/pre-proposal meetings that were scheduled by LFUCG to inform small businesses, MWDBEs, and VOSBs of subcontracting opportunities.
4. Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and small businesses, MWDBEs, and VOSBs.
5. Requested a list of certified small business, MWDBE, and VOSB subcontractors or suppliers from LFUCG and showed evidence of contacting the companies on the list(s).
6. Contacted organizations that work with small businesses, MWDBEs, and VOSBs for assistance in finding certified MWDBEs and VOSBs to work on this project. Those contacted and their responses must be a part of the Bidder's outreach efforts documentation.
7. Sent written notices, by certified mail, email, or facsimile, to qualified, certified small businesses, MWDBEs, and VOSBs soliciting their participation in the contract not less than seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.
8. Followed up initial solicitations by contacting small businesses, MWDBEs, and VOSBs via tailored communications to determine their level of interest.
9. Provided the interested small businesses, MWDBEs, and VOSBs with adequate and timely information about the plans, specifications, and requirements of the contract.
10. Selected portions of the work to be performed by small businesses, MWDBEs, and VOSBs to increase the likelihood of subcontracting participation. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate small business, MWDBE, and VOSB participation, even when the prime contractor may otherwise perform these work items with its own workforce.

11. Negotiated in good faith with interested small businesses, MWDBEs, and VOSBs, not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection must be so noted in writing with a description as to why an agreement could not be reached.

12. Included documentation of quotations received from interested small businesses, MWDBEs, and VOSBs that were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a Bid.

    Bidder must submit sound reasons why the quotations were considered unacceptable. The fact that the Bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a quote from a small business, MWDBE, or VOSB. Nothing in this provision shall be construed to require the Bidder to accept unreasonable quotes in order to satisfy the participation goals.

13. Made an effort to offer assistance to or refer interested small businesses, MWDBEs, and VOSBs to obtain the necessary equipment, supplies, materials, insurance, and/or bonding to satisfy the work requirements of the Bid proposal.

14. Made efforts to expand the search for small businesses, MWDBEs, and VOSBs beyond the usual geographic boundaries.

15. Other – any other evidence that the Bidder submits that may demonstrate that the Bidder has made reasonable efforts to include small business, MWDBE, and VOSB participation.

Bidder must document, with specificity, each of the efforts it made to include small businesses, MWDBEs, and VOSBs as subcontractors in the procurement, including the date on which each effort was made, the method via which each effort was made, and the outcome of each effort.

Note: Failure to submit the documentation requested in this section may be cause for rejection of Bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to review by the MBE Liaison. Documentation of Good Faith and Outreach Efforts must be submitted with the Bid, regardless of the proposed level of small business, MWDBE, and VOSB participation in the procurement. If the Good Faith and Outreach Effort documentation is not submitted with the Bid response, the Bid may be rejected.

OUTREACH EFFORTS EVALUATION

Outreach efforts demonstrated by the Bidder or respondent will be evaluated on a pass/fail basis.

ATTACHMENT A – SMALL BUSINESS, MWDBE, and VOSB OUTREACH PLAN

Proposer Name:	Pace Contracting, LLC	**Date:**	03/24/2026
Project Name:	W Hickman WWTP High Flow	**Project Number:**	Bid Number 23-2026
Contact Name:	Mike Mulhall	**Telephone:**	502-815-4142
Email:	mikem@pacecontracting.com		

The mission of the MBEP is to facilitate the full participation of MWDBEs and VOSBs in the procurement process and to promote economic inclusion as a business imperative essential to the long-term economic viability of LFUCG.

To that end, small businesses, MWDBEs, and VOSBs must have an equal opportunity to be utilized in the performance of contracts with public funds spent from certain discretionary agreements. By submitting its offer, Bidder/Proposer certifies that it has taken, and, if there are further opportunities, will take, reasonable steps to ensure that small businesses, MWDBEs, and VOSBs are provided an equal opportunity to compete for and participate in the performance of any subcontracts resulting from this procurement.

The information submitted in response to this clause will not be considered in any scored evaluation. Failure to submit this form may cause the Bid or proposal to be rejected.

Is the Bidder/ Proposer a certified firm? Yes ☐ No ☒

If yes, indicate all certification type(s):

DBE ☐ MBE ☐ WBE ☐ VOSB/SDVOSB ☐ small business ☐

and supply a copy of the certificate and/or certification letter if not currently listed on the city's MBEP certified list.

1. Include a list of firms that Bidder/ Proposer has had a contractual relationship with within the last two years that are small businesses, MWDBEs, and/or VOSBs, regardless of their certification status.
Integrated Power and Technology, AES, Lykins Reinforcing, GECO, Cargill, TRC, Island Electric, McKinney Painting Norwood Hardware, Seven Seas, Tomrook Steel, Mills Supply, TEM Group, AK Services, Herb Geddes Fence, HB Masonry, Cornerstone, Cochran Mechanical, Advance Ready Mix, Bison, numerous others

2. Does Bidder/Proposer foresee any subcontracting opportunities for this procurement?

Yes ☒ No ☐

If no, please explain why in the field below. Do not complete the rest of this form and submit this first page with your Bid and/or proposal.

If yes, please complete the following pages and submit all pages with your bid and/or proposal.

Describe the steps Bidder/Proposer took to solicit small businesses, MWDBEs, and/or VOSBs for subcontracting opportunities for this procurement.

3. Check the good faith and outreach efforts the Bidder/Proposer used to encourage the participation of small businesses, MWDBEs, and/or VOSBs:

- ☐ Bidder placed advertisements in search of prospective small businesses, MWDBEs, and/or VOSBs for the solicitation.
- ☐ Bidder attended LFUCG Procurement Economic Inclusion Outreach event(s) within the past year.
- ☐ Bidder attended pre-bid and/or pre-proposal meetings for this solicitation.
- ☐ Bidder sponsored an Economic Inclusion Outreach event.
- ☒ Bidder requested a list of small business and certified MWDBE and VOSB subcontractors or suppliers from LFUCG. KYTC lists as well as existing MWDBE lists are on file in our office
- ☐ Bidder contacted organizations that work with small businesses, MWDBEs, and/or VOSBs.
- ☒ Bidder sent written notices to small business and certified MWDBEs and VOSBs.
- ☒ Bidder followed up to initial solicitations with interested small businesses, MWDBEs, and/or VOSBs.
- ☒ Bidder provided small businesses, MWDBEs, and VOSBs interested in performing the solicited work with prompt access to the plans, specifications, scope of work, and requirements of the solicitation.
- ☒ Bidder made efforts to segment portions of the work to be performed by small businesses, MWDBEs, and VOSBs, including dividing sub-bid/partnership opportunities into economically feasible units/parcels to facilitate participation.
- ☒ Bidder negotiated in good faith with interested small businesses, MWDBEs, and/or VOSBs.
- ☒ Bidder provided adequate rationale for rejecting proposals from small businesses, MWDBEs, and/or VOSBs for lack of qualifications.
- ☐ Bidder offered assistance in obtaining bonding, insurance, financial, equipment, or other resources to small businesses, MWDBEs, and/or VOSBs in an effort to assist them in meeting project requirements.
- ☐ Bidder made efforts to expand the search for small businesses, MWDBEs, and/or VOSBs beyond the usual geographic boundaries.
- ☒ Bidder made other reasonable efforts to include small business, MWDBE, and/or VOSB participation.

4. Bidder/Proposer must include documentation, including the date each effort was made, the method via which each effort was made, and the outcome of each effort with this form, regardless of the level of small business, MWDBE, and/or VOSB participation. Examples of required documentation include copies of email communications, copies of newspaper advertisements, or copies of quotations received from interested small businesses, MWDBE, and/or VOSBs.

For detailed information regarding outreach efforts that satisfy the MBEP's requirements, please see "Documentation Required for Good Faith Efforts and Outreach Plans" page.

Note: The Bidder/Proposer must be willing to report the identity of each subcontractor and the value of each subcontract to MBEP if awarded a contract from this procurement.

Failure to submit the documentation requested may be cause for rejection of the Bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to review by the MBE Liaison. Documentation of Good Faith and Outreach Efforts must be submitted with the Bid, regardless of the proposed level of small business, MWDBE, and VOSB participation in the procurement. If the Good Faith and Outreach Effort Form and associated documentation is not submitted with the Bid response, the Bid may be rejected.

The undersigned acknowledges that all information is accurate. Any misrepresentations may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

Pace Contracting, LLC	
Company	**Company Representative**
03/24/2026	Mike Mulhall, Vice President
Date	**Title**

4870-1925-6809, v. 1

8. AUTHENTICATION OF BID AND STATEMENT OF NON-COLLUSION AND CONFLICT OF INTEREST

I hereby swear (or affirm) under the penalty for false swearing:

1. That I am the Bidder (if the Bidder is an individual), a partner of the Bidder (if the Bidder is a partnership), or an officer or employee of the bidding corporation having authority to sign on its behalf (if the Bidder is a corporation);

2. That the attached Bid has been arrived at by the Bidder independently, and has been submitted without collusion with, and without any agreement, understanding, or planned common course of action, with any other contractor, vendor of materials, supplies, equipment, or services described in the Invitation to Bid, designed to limit independent bidding or competition;

3. That the contents of the Bid or Bids have not been communicated by the Bidder or its employees or agents to any person not an employee or agent of the Bidder or its surety on any bond furnished, with the Bid or Bids, and will not be communicated to any such person prior to the official opening of the Bid or Bids;

4. That the Bidder is legally entitled to enter into the contracts with the LFUCG, and is not in violation of any prohibited conflict of interest;

5. (Applicable to corporation only) That as a foreign corporation, we are registered with the Secretary of State, Commonwealth of Kentucky, and authorized to do business in the State _____ or, that as a domestic corporation, we are in good standing with the Secretary of State, Commonwealth of Kentucky __x__. Check the statement applicable.

6. This offer is for 60 calendar days from the date this Bid is opened. In submitting the above, it is expressly agreed that, upon proper acceptance by the LFUCG of any or all items bid above, a contract shall thereby be created with respect to the items accepted.

7. That I have fully informed myself regarding the accuracy of the statements made in this statement.

8. That I certify that subcontracts have not and will not be awarded to any firm(s) that have been debarred for noncompliance with the Federal Labor Standards, Title VI of the Civil Rights Act of 1964 As Amended, Executive Order 11246 As Amended or any other Federal Law.

9. STATEMENT OF EXPERIENCE

NAME OF INDIVIDUAL: Colton Perry

POSITION/TITLE: Operations Manager

STATEMENT OF EXPERIENCE: See attached resume

NAME OF INDIVIDUAL: Zach Denton

POSITION/TITLE: Project Manager

STATEMENT OF EXPERIENCE: See attached resume

NAME OF INDIVIDUAL: Dennis Littleton

POSITION/TITLE: Superintendent

STATEMENT OF EXPERIENCE: See attached resume

NAME OF INDIVIDUAL: Mike Mulhall

POSITION/TITLE: Vice President

STATEMENT OF EXPERIENCE: See attached resume

NAME OF INDIVIDUAL: Michael Bryant

POSITION/TITLE: President

STATEMENT OF EXPERIENCE: See attached Resume

NAME OF INDIVIDUAL:

POSITION/TITLE:

STATEMENT OF EXPERIENCE:

Include all officers, office management, Affirmative Action officials, and field management personnel. (Attach separate sheets if necessary.)

10. EQUAL OPPORTUNITY AGREEMENT

Standard Title VI Assurance

The Lexington Fayette-Urban County Government, (hereinafter referred to as the "Recipient") hereby agrees that as a condition to receiving any Federal financial assistance from the U.S. Department of Transportation, it will comply with Title VI of the Civil Rights Act of 1964, 78Stat.252, 42 U.S.C. 2000d-4 (hereinafter referred to as the "Act"), and all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, (49 CFR, Part 21) Nondiscrimination in Federally Assisted Program of the Department of Transportation – Effectuation of Title VI of the Civil Rights Act of 1964 (hereinafter referred to as the "Regulations") and other pertinent directives, no person in the United States shall, on the grounds of race, color, national origin, sex, age (over 40), religion, sexual orientation, gender identity, veteran status, or disability be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Recipient receives Federal financial assistance from the U.S. Department of Transportation, including the Federal Highway Administration, and hereby gives assurance that will promptly take any necessary measures to effectuate this agreement. This assurance is required by subsection 21.7(a) (1) of the Regulations.

The Law

* Title VII of the Civil Rights Act of 1964 (amended 1972) states that it is unlawful for an employer to discriminate in employment because of race, color, religion, sex, age (40-70 years) or national origin.
* Executive Order No. 11246 on Nondiscrimination under Federal contract prohibits employment discrimination by contractor and subcontractor doing business with the Federal Government or recipients of Federal funds. This order was later amended by Executive Order No. 11375 to prohibit discrimination on the basis of sex.
* Section 503 of the Rehabilitation Act of 1973 States:

  The Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap.
* Section 2012 of the Vietnam Era Veterans Readjustment Act of 1973 requires Affirmative Action on behalf of disabled veterans and veterans of the Vietnam Era by contractors having Federal Contracts.
* Section 206 (A) of Executive Order 12086, Consolidation of Contract Compliance Functions for Equal Employment Opportunity, states:

  The Secretary of Labor may investigate the employment practices of any Government contractor or sub-contractor to determine whether or not the contractual provisions specified in Section 202 of this order have been violated.

The Lexington-Fayette Urban County Government practices Equal Opportunity in recruiting, hiring and promoting. It is the Government's intent to affirmatively provide employment opportunities for those individuals who have previously not been allowed to enter into the mainstream of society. Because of its importance to the local Government, this policy carries the full endorsement of the Mayor, Commissioners, Directors, and all supervisory personnel. In following this commitment to Equal Employment Opportunity and because the Government is

the benefactor of the Federal funds, it is both against the Urban County Government policy and illegal for the Government to let contracts to companies which knowingly or unknowingly practice discrimination in their employment practices. Violation of the above mentioned ordinances may cause a contract to be canceled and the contractor may be declared ineligible for future consideration.

Please sign this statement in the appropriate space acknowledging that you have read and understand the provisions contained herein. Return this document as part of your application packet.

Bidders

I/We agree to comply with the Civil Rights Laws listed above that govern employment rights of minorities, women, Vietnam veterans, handicapped, and aged persons.

Signature

Pace Contracting, LLC
Name of Business

The Entity (regardless of whether construction contractor, non-construction contractor or supplier) agrees to provide equal opportunity in employment for all qualified persons, to prohibit discrimination in employment because of race, color, creed, national origin, sex or age, and to promote equal employment through a positive, continuing program from itself and each of its sub-contracting agents. This program of equal employment opportunity shall apply to every aspect of its employment policies and practices.

The Kentucky equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) requires that any count, city, town, school district, water district, hospital district, or other political subdivision of the state shall include in directly or indirectly publicly funded contracts for supplies, materials, services, or equipment hereinafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin;

(2) The contractor will state in all solicitations or advertisements for employees placed by or on behalf of the contractors that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age or national origin;

(3) The contract will post notices in conspicuous places, available to employees and applicants for employment, setting forth the provisions of the non-discrimination clauses required by this section; and

(4) The contractor will send a notice to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding advising the labor union or workers' representative of the contractor's commitments under the nondiscrimination clauses.

The Act further provides:

KRS 45.610. Hiring minorities – Information required

(1) For the length of the contract, each contractor shall hire minorities from other sources within the drawing area, should the union with which he has collective bargaining agreements be unwilling to supply sufficient minorities to satisfy the agreed upon goals and timetable.

(2) Each contractor shall, for the length of the contract, furnish such information as required by KRS 45.560 to KRS 45.640 and by such rules, regulations and orders issued pursuant thereto and will permit access to all books and records pertaining to his employment practices and work sites by the contracting agency and the department for purposes of investigation to ascertain compliance with KRS 45.560 to 45.640 and such rules, regulations and orders issued pursuant thereto.

KRS 45.620. Action against contractor – Hiring of minority contractor or subcontractor

(1) If any contractor is found by the department to have engaged in an unlawful practice under this chapter during the course of performing under a contract or subcontract covered under KRS 45.560 to 45.640, the department shall so certify to the contracting agency and such certification shall be binding upon the contracting agency unless it is reversed in the course of judicial review.

(2) If the contractor is found to have committed an unlawful practice under KRS 45.560 to 45.640, the contracting agency may cancel or terminate the contract, conditioned upon a program for future compliance approved by the contracting agency and the department. The contracting agency may declare such a contractor ineligible to bid on further contracts with that agency until such time as the contractor complies in full with the requirements of KRS 45.560 – 45.640.

(3) The equal employment provisions of KRS 45.560 to 45.640 may be met in part by a contractor by subcontracting to a minority contractor or subcontractor. For the provisions of KRS 45.560 to 45.640, a minority contractor or subcontractor shall mean a business that is owned and controlled by one or more persons disadvantaged by racial or ethnic circumstances.

KRS 45.630 Termination of existing employee not required, when

Any provision of KRS 45.560 to 45.640 notwithstanding, no contractor shall be required to terminate an existing employee upon proof that that employee was employed prior to the date of the contract.

KRS 45.640 Minimum skills

Nothing in KRS 45.560 to 45.640 shall require a contractor to hire anyone who fails to demonstrate the minimum skills required to perform a particular job.

It is recommended that all of the provisions quoted above to be included as special conditions in each contract. In the case of a contract exceeding $250,000, the contractor is required to furnish evidence that his work-force in Kentucky is representative of the available work-force in the area from which he draws employees, or to supply an Affirmative Action plan which will achieve such representation during the life of the contract.

II. EQUAL EMPLOYMENT OPPORTUNITY AFFIRMATIVE ACTION POLICY

It is the policy of Pace Contracting, LLC to assure that all applicants for employment and all employees are treated on a fair and equitable basis without regard to their race, religion, sex, color, handicap, natural origin or age.

Such action shall include employment, promotion, demotion, recruitment or recruitment advertising, layoff or termination, rates of pay and other forms of compensation, and selection for training, whether apprenticeship and/or on-the-job-training.

Furthermore, this company agrees to make special recruitment efforts to hire the protected class whenever feasible. This company also agrees to adhere to all applicable federal, state, and local laws relating to Equal Employment Opportunity for all individuals.

12. WORKFORCE ANALYSIS FORM

Name of Organization: Pace Contracting

Categories	Total	White (Not Hispanic or Latino)		Hispanic or Latino		Black or African American (Not Hispanic or Latino		Native Hawaiian and Other Pacific Islander (Not Hispanic or Latino		Asian (Not Hispanic or Latino		American Indian or Alaskan Native (not Hispanic or Latino		Two or more races (Not Hispanic or Latino		Total	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Administrators	4	2	1		1												
Professionals	5	5															
Superintendents	14	14															
Supervisors	15	14													1		
Foremen	10	7		3													
Technicians	13	13															
Protective Service	0																
Para-Professionals	0																
Office/Clerical	0																
Skilled Craft	34	33	1														
Service/Maintenance	27	17	1	7	1	1											
Total:	122	105	3	10	2	1									1		

Prepared by: Erin McDowell - HR Specialist
(Name and Title)

Date: 03/10/2026

13. EVIDENCE OF INSURABILITY

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT CONSTRUCTION PROJECT
(Use separate form for each Agency or Brokerage agreeing to provide coverage)

Names Insured: Pace Contracting, LLC

Employee ID: _____

Address: 15415 Shelbyville Road, Louisville, KY 40245

Phone: 502-815-4142

Project to be insured: WEST HICKMAN WWTP HIGH FLOW DIVERSION BOX REPLACEMENT

In lieu of obtaining certificates of insurance at this time, the undersigned agrees to provide the above Named Insured with the minimum coverage listed below. These are outlined in the Insurance and Risk Management of Part V (Special Conditions), including all requirements, and conditions:

Section Items	Coverage	Minimum Limits and Policy Requirements	Limits Provided To Insured	Name of Insurer	A.M. Best's Code	Rating
SC-3, Section 2, Part 4.1 □ see provisions	CGL	$1,000,000 per occ. And $2,000,000 aggregate	$ 2M/occ. $4M/Agg	Valley Forge	20508	A
SC-3, Section 2, Part 4.1 □ see provisions	AUTO	$2,000,000/per occ.	$ 2M/occ	Natl Fire Ins of Hartford	20478	A
SC-3, Section 2, Part 4.1 □ see provisions	WC	Statutory w/endorsement as noted	$ $4.5M	KY AGC Self Insurors Fund		A-

Section 2 includes required provisions, statements regarding insurance requirements, and the undersigned agrees to abide by all provisions for the coverage□s checked above unless stated otherwise when submitting.

Arthur J Gallagher Risk Mgmt Services, LLC
Agency or Brokerage

1601 Alliant Ave
Street Address

Louisville, KY 40299
City State Zip

502-415-7000
Telephone Number

William Kantlehner
Name of Authorized Representative

Producer/Agent
Title

William Kantlehner
Authorized Signature

03/23/2026
Date

NOTE: Authorized signatures may be the agent's if agent has placed insurance through an agency agreement with the insurer. If insurance is brokered, authorized signature must be that of authorized representative of insurer.

IMPORTANT: Contract may not be awarded if a completed and signed copy of this form for all coverage□s listed above is not provided with the bid.

14. DEBARRED FIRMS

PROJECT NAME: WEST HICKMAN WWTP HIGH FLOW DIVERSION BOX REPLACEMENT

BID NUMBER: Bid Number 23-2026

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
LEXINGTON, KY

All prime Contractors shall certify that Subcontractors have not and will not be awarded to any firms that has been debarred for noncompliance with the Federal Labor Standards, Title VI of the Civil Rights Act of 1964 As Amended, Executive Order 11246 As Amended or any other Federal Law.

All bidders shall complete the attached certification in duplicate and submit both copies to the Owner with the bid proposal. The Owner (grantee) shall transmit one copy to the Lexington-Fayette Urban County Government, Division of Community Development, within fourteen (14) days after bid opening.

The undersigned hereby certifies that the firm of Pace Contracting, LLC has not and will not award a subcontract, in connection with any contract award to it as the result of this bid, to any firm that has been debarred for noncompliance with the Federal labor Standards, Title VI of the civil Rights Act of 1964, Executive Order 11246 as amended or any Federal Law.

Pace Contracting, LLC
Name of Firm Submitting Bid

Signature of Authorized Official

Mike Mulhall, Vice President
Title

03/24/2026
Date

15. DEBARMENT CERTIFICATION

All contractors/subcontractors shall complete the following certification and submit it with the bid proposal.

The contractor/subcontractor certifies in accordance with Executive Order 12549 (Debarment and Suspension 2/18/86) that to the best of its knowledge and belief, that it and its principals:

1) Are not presently debarred, suspended, proposed for debarment, declared negligible, or voluntarily excluded from covered transactions or contract by any Federal department or agency for noncompliance with the Federal Labor Standards, Title VI of the Civil Rights Act of 1964 as amended, Executive Order 11246 as amended or any other Federal law;

    a) Have not within a three year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

    b) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(a) of this certification; and

    c) Have not within a three-year period preceding this bid has one or more public (Federal, State or local) transactions or contracts terminated for cause or default.

2) Where the contractor is unable to certify to any of the statements in this certification, such prospective contractors shall attach an explanation to this certification form.

Firm Name: Pace Contracting, LLC

Project: WEST HICKMAN WWTP HIGH FLOW DIVERSION BOX REPLACEMENT

Printed Name and Title of Authorized Representative: Mike Mulhall, Vice President

Signature:

Date: 03/24/2026

END OF SECTION

Unanimous Written Consent
of the
Board of Directors of Pace Contracting, LLC

The undersigned, being all members of the Board of Directors of Pace Contracting, LLC., a Kentucky Limited Liability Company (the "Company"), acting by unanimous consent in lieu of a meeting as permitted by the laws of the Commonwealth of Kentucky and the organizational documents of the Company, do hereby resolve as follows:

Whereas, Michael Bryant, is hereby elected to serve as President of the Company for a three-year period beginning January 1, 2025, through December 31, 2027.

Whereas, Mike Mulhall, is hereby elected to serve as Vice President of the Company for a three-year period beginning January 1, 2025, through December 31, 2027.

Whereas, Paul Snead, is hereby elected to serve as Director of the Company for a three-year period beginning January 1, 2025, through December 31, 2027.

Whereas, Hunter Strickler, is hereby elected to serve as Senior Vice President and as the LPX, Inc. Representative of the Company for a three-year period beginning January 1, 2025, through December 31, 2027.

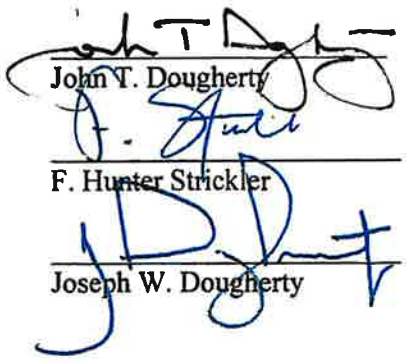
Whereas, Luke Fitzgerald, is hereby elected to serve as Chief Financial Officer and Secretary of the Company for a three-year period beginning January 1, 2025, through December 31, 2027.

Whereas, Kurt Krug, is hereby elected to serve as Chief People Officer of the Company for a three-year period beginning January 1, 2025, through December 31, 2027.

Whereas, Reggie Ball, is hereby elected to serve as Vice President of the Company (Contracts and Risk Management) for a three year period beginning January 1, 2025, through December 31, 2027.

Whereas, each of the aforementioned officers has full authority to execute agreements, proposals, contracts and other binding agreements on behalf of the Company.

In Testimony whereof, witness the signature of all of the members of the Board of Directors of the Company effective as of January 1, 2025.



John T. Dougherty

F. Hunter Strickler

Joseph W. Dougherty

Commonwealth of Kentucky
Michael G. Adams, Secretary of State

Michael G. Adams
Secretary of State
P. O. Box 718
Frankfort, KY 40602-0718
(502) 564-3490
http://www.sos.ky.gov

Certificate of Existence

Authentication number: 349075
Visit https://web.sos.ky.gov/ftshow/certvalidate.aspx to authenticate this certificate.

I, Michael G. Adams, Secretary of State of the Commonwealth of Kentucky, do hereby certify that according to the records in the Office of the Secretary of State,

PACE CONTRACTING, LLC

PACE CONTRACTING, LLC is a limited liability company duly organized and existing under KRS Chapter 14A and KRS Chapter 275, whose date of organization is July 30, 1997 and whose period of duration is December 31, 2047.

I further certify that all fees and penalties owed to the Secretary of State have been paid; that articles of dissolution have not been filed; and that the most recent annual report required by KRS 14A.6-010 has been delivered to the Secretary of State.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal at Frankfort, Kentucky, this 6th day of November, 2025, in the 234th year of the Commonwealth.

Michael G. Adams
Secretary of State
Commonwealth of Kentucky
349075/0436500

PACE
CONTRACTING

Colton Perry

Operations Manager

Colton Perry brings 15 years of experience in construction management, estimating and design to the table across multiple disciples of construction.

Unique Qualifications

- Design build experience
- Emergency Projects
- Experience managing large scale, diverse projects
- Experience with multiple owner agency construction projects

Experience: 13 Years

- Pace Contracting – Project Manager.
  - 2022- Present
- Harmon Construction – Project Manager.
  - 2018 - 2022
- All Purpose Steel – Assistant Project Manager.
  - 2012-2018

Education:

- Jefferson Community and Technical College – 2014-2016
  - GOTS
- Northwood University – 2016-2018
  - Applied Management

Certifications: OSHA 10, MSHA Part 46, Dale Carnegie, Various Equipment Operations.

EXPERIENCE HIGHLIGHTS

PACE CONTRACTING

MSD MFWQTC Biosolids
$330,000,000 | Jefferson Co., KY | Louisville MSD
Project Manager:

MSD Cedar Creek Sludge Holding Tanks
$3,000,000 | Jefferson Co, KY | Louisville MSD
Project Manager:

MSD 18th & Broadway Emergency Sewer Repairs
$400,000 | 6 Days | Jefferson Co. KY | Louisville MSD
Project Manager:

MSD DRGWQTC Pump Station/ Screen Building Rehab
$5,200,000 | Jefferson Co. KY | Louisville MSD
Project Manager:

Albany, KY Water Treatment Plant Renovation
$2,300,000 | Clinton Co. KY | City of Albany
Project Manager:

MSD Southwest Gate Renovation - Emergency
$15,500,000 | Jefferson Co. KY | Louisville MSD
Project Manager:

VA Hospital – Pump Stations
$1,600,000 | Jefferson Co. KY | USACE
Project Manager:

MSD DRGWQTC Pump Station/ Screen Building Rehab
$5,200,000 | Jefferson Co. KY | Louisville MSD
Project Manager:

MSD Mellwood Floodwall - Emergency
$700,000,000 | Jefferson Co. KY | Louisville MSD
Project Manager: :

MSD Tennis Blvd - Emergency
$125,000 | Jefferson Co., KY | Louisville MSD
Project Manager:

MSD DRGWQTC Sluice Gate - Emergency
$235,000 | Jefferson Co, KY | Louisville MSD
Project Manager:

MSD 18th & Broadway Emergency Sewer Repairs
$400,000 | 6 Days | Jefferson Co. KY | Louisville MSD
Project Manager:

HARMON CONSTRUCTION

Louisville City Soccer Stadium
$65,000,000| Jefferson Co. KY | Lou City
Project Engineer/ Project Manager:

LMAIA Airport Renovations – Phase A
$18,000,000 | Jefferson Co. KY | LMAIA
Project Manager:

LMAIA Airport Renovations – Phase B&C
$30,000,000 | Jefferson Co. KY | LMAIA
Project Manager:

Seymour City Hall - Renovations
$3,000,000 | Jackson Co. IN | City of Seymour
Project Manager:

Belterra Casino – Jr Suite Renovations
$5,300,000 | Switzerland Co. IN | Boyd Gaming
Project Manager:

Restaurant Division – Operations Management
$20,000,000 PY | Various Locations | Various Chains
Project Manager/ Operations Manager:

All Purpose Steel Construction

Harsco Building Demo
$5,600,000 | Carroll Co. KY | Harsco
Assistant Project Manager:

River Metals Recycling Renovations
$3,800,000 | Jefferson Co. KY | River Metals
Assistant Project Manager:

Nugent Sand and Gravel Addition
$6,500,000 | Carroll Co., KY | Nugent Sand
Assistant Project Manager:

Gallatin Steel – Phoenix Additions
$2,400,000 | Gallatin Co, KY | Phoenix Materials
Assistant Project Manager:

Sterling Materials – Feed Conveyor
$3,400,000 | Boone Co. KY | Sterling Materials
Assistant Project Manager:

Consolidated Grain and Barge - Addition
$950,000 | Jefferson Co. KY | CG&B
Assistant Project Manager:

Rogers Group - Renovations
$1,700,000 | Jefferson Co. KY | Rogers Group
Assistant Project Manager:

Kentucky Utilities - Renovations
$4,500,000 | Carroll Co. KY | KU
Assistant Project Manager:

PMC Organometallix - Additions
$740,000 | Carroll Co. KY | PMC
Assistant Project Manager:

Chemetco – Environmental Demo
$9,200,000 | St. Clair Co. KY | US EPA
Assistant Project Manager:

Big River Steel – Slag Reprocessing Plant
$13,400,000 | Mississippi Co. AR | Big River Steel
Assistant Project Manager:

Scrap Metal Services - Addition
$4,900,000 | St. Joseph Co. IN | SMS
Assistant Project Manager:

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Zach Denton

Project Manager

Zach Denton brings over a decade of experience in construction management, team management, and safety management to the team.

Unique Qualifications

» Design build experience
» Experience managing large infrastructure projects

Education: Eastern Kentucky University
»Bachelors of Science, Construction Management

Continuing Education: 10+ years of construction industry, OSHA 30-Hour Construction Certification, BCSP Safety Trained, 1st Aid/CPR, PMP Certification

Years of Relevant Experience: 10+, 1 years with Pace Contracting.

EXPERIENCE HIGHLIGHTS

Project Manager with a proven, long-standing record of success in automation, industrial, and commercial construction environments. Recognized for leading complex, multi-disciplinary projects from concept through turnover while maintaining strict alignment with client expectations, budgets, and safety standards. Skilled at building high-performing teams, optimizing workflows, and delivering high-value solutions under aggressive timelines. Proficient at coordinating with contractors, engineers, subcontractors, and stakeholders to ensure seamless project execution. Demonstrated ability to solve mission-critical challenges, enhance operational efficiencies, and drive long-term business growth through strategic planning, risk mitigation, and innovative project delivery methods.

Pace Contracting.

Lebanon Waterworks WTP	$1,300,000
New Albany 10th St Pumps	$100,000
Franklin, IN WWTP Expansion	$27,000,000
Georgetown WTP Filter and Bar Screen	$2,700,000

Prior Experience

Mt Franklin Foods Factory	$25,000,000
Buffalo Trace Fermentation Tanks	$24,000,000
Buffalo Trace New Boiler House	$26,000,000
Toyota – Multiple Design Build projects	$45,000,000

Dennis Littleton

Professional Experience

Pace Contracting, LLC., Louisville, Kentucky 2024-Current
Superintendent

- Existing and new WWTP projects and expansion
- Pre-Construction Planning
- Subcontractor coordination
- Site Coordination
- Material tracking

Preload, LLC., Louisville, Kentucky 2010-2024
Superintendent

- Developed and initiated projects, including managing costs, schedule and performance.
- Orchestrated projects within strict timeframes and budget constraints by solving complex problems and working closely with senior leaders.
- Eliminated discrepancies by reviewing performance, status and safety adherence.
- Managed all daily field operations.

Preload, LLC., Louisville, Kentucky 2005-2010
General Foreman

- Headed multiple project teams specializing in pipe work and concrete water storage/waste water treatment tanks.
- Complied with all company regulations in terms of safety to prevent accidents on job sites.
- Reviewed job details and assigned duties to workers based upon skills sets and experience.
- Fabricated new piping and parts to fit specific requirements.
- Kept teams properly supplied with materials, tools, plans and supplementary assistance to meet project deadlines.

Preload, LLC., Louisville, Kentucky 1999-2005
Foreman

- Specialized In tilt up, precast,prestress and cast in place concrete work.
- Constructed numerous types of formwork,shoring and scaffoldings.
- Placed and finished large quantities of concrete. Operated equipment such as man lifts, forklifts,concrete pumps, prestressing machines
- ,loaders etc.
- Placed and tied steel reinforcement.
- Assembled and placed a variety of piping.

Lacgo, Lexington, Kentucky 1996-1999
Plumber and Pipe Fitter Apprentice

- Supported needs of pipe fitters with skill and efficiency.
- Assisted certified plumbers.

Certifications

- OSHA 30
- OSHA 10
- ACI Nozzleman
- Rigging and Signalperson
- Confined Space
- Aerial Rescue

Skills

- Project management
- Safety and Compliance
- Mix designs
- Jobsite layout
- Crane layout
- Site conditions evaluation
- Look ahead scheduling
- Pre-construction planning
- Subcontractor coordination

PACE
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Douglas M. (Mike) Mulhall, P.E.

Vice President

Mike Mulhall brings 15+ years of experience in construction management, estimating and design experience to the project team.

Unique Qualifications

» Design build experience
» Experience managing large bundled projects
» Experience with multiple owner agency construction projects
» Experience as hands-on Estimator, Project Manager and Company Executive

Education: University of Kentucky
»Masters
Civil Engineering
»Bachelors
Civil Engineering

Certifications: 15+ years construction industry, Registered Licensed Engineer in Kentucky. Continuing education classes. Safety seminars and classes

Years of Relevant Experience: 20+
2015 to Present
Vice President 12/22 to present
VP of Estimating 2019 to 2022
Estimating Manger/ Project Manager. 2015 to 2019

EXPERIENCE HIGHLIGHTS

15+ years of experience in large scale construction, 4 years in construction sales, currently Vice President at Pace Contracting. Experience in project management, estimating, construction, engineering, and sales. Outgoing, hard-working, and eager to take on new challenges in the industry. Adaptable, self-motivating, and always inspired to learn.

Successfully managed project ranging from Splashpads and Streetscapes, to WWTP's and large scale pump stations, while serving as lead estimator on projects bid by Pace Contracting. Have had a great experience working with many customers throughout the state, including but not limited to MSD, WMU, City of Paducah, Louisville Metro.

Paducah FPS #2 Rehab

$4.5M | City of Paducah, KY

Project Manager: Remove two Existing 500 HP and two existing 800 HP Vertical Turbine Pumps and Motors. Install new Vertical Turbine Pumps to replace old ones; install two refurbished pump motors and two existing pump motors. Install new Sluice Gate in MH 23. Install new stem and actuator for Gate at MH 24. Excavate and remove existing discharge piping in Floodwall and install new 10", 20", 30", 48", and 60" diameter steel discharge pipe in floodwall. Install new 10", 20", 30", 48", and 60" diameter flapgates in discharge headwall.

Strodes Creek WWTP Solids Processing Improvements

$3.5M | City of Paducah, KY

Project Manager: Installation of two centrifuge systems, polymer systems, chemical storage tanks, conveyors and truck loading systems.

Shelbyville Sixth Streetscape

$1.6M | City of Shelbyville, KY

Project Manager: Reconfigure 6th Street in Shelbyville from Washington Street to Henry Clay Street. The scope of work includes removal of existing curbs. sidewalks & traffic light, installing 1,000 L.F. ± of new curbs, 730 L.F ± of sidewalks, installing 4,700S.F. of Pave Drain Pavers, installing 4,000 S.F. of brick paver sidewalk, installing approximately 141 L.F. of 12" storm pipe, 502 L.F. of 15" storm pipe, five (5) stormwater structures, installing 3-inch schedule 40 pipe for street lighting, new street lights and electric associated with street lights, installing six (6) ADA ramps and five (5)crosswalks, 150 tons of bituminous surface and other miscellaneous items.

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Michael C. Bryant, P.E.

President

Michael Bryant brings 20+ years of experience in construction management, estimating and design to the table.

Unique Qualifications

» Design build experience
» Experience managing large bundled projects
» Experience with multiple owner agency construction projects
» Experience as both hands-on Project Manager and Company Executive

Education: University of Louisville
»Masters Mechanical Engineering
»Masters Business Administration

Certifications: 20+ years construction industry, Registered Licensed Engineer in Kentucky. Continuing education classes. Safety seminars and classes

Years of Relevant Experience: 20+
Pace Contracting LLC
11/2016 to Present
President 12/22 - Present
VP operations, 3/20 – 12/22
Project Manager, 11/16 – 3/20

EXPERIENCE HIGHLIGHTS

Provide leadership to the Pace Department and project teams. As a Project Manager, develop and review submittals, track and monitor project costs and productions, coordinate with subcontractors, clients, inspectors and other project stakeholders, initiate RFIs, and ensure the project is constructed per the contract documents and within the contract timeframe.

Rowan Pump Station & Downtown Interceptor Project

$25M | Louisville and Jefferson Co. MSD

Project Manager: Part of the MSD Waterway Protection Tunnel to divert combined sewer waste to a tunnel rather than the Ohio River. The project included the construction of a new pump station building (126'x72') for twelve pumps, including all associated electrical and controls. Pumps and discharge pipe were installed in a 220' deep shaft. Additional sewer connections and structures built, with pipe sizes ranging from 60" to 12".

Zorn Pump Station Back-up Generator Building

$12M | Louisville Water Company

Project Manager: New CMU building with limestone veneer being built for LWC at their Zorn Pump Station. Exterior masonry and architectural details designed to match existing buildings. Building to house three 2500 kW generators and associated switchgear. Project was expedited, and is finished with an accelerated schedule.

Jacobson and Masterson Splash Parks

$1.2M | Lexington Fayette Urban County Government

Project Manager: Constructed a splash pad and operations building at Masterson Park, and a splash pad and restroom/operations building at Jacobson Park. Project also included landscaping, asphalt and paving, sidewalks, grading, electrical and controls installation, and plumbing.

Castlewood & Douglas Splash Parks

$940K | Lexington Fayette Urban County Government

Project Manager: Constructed splash pad and pumping pit for Castlewood Park, and splash pad and pump shelter for Douglas park. Project also included modifications to existing buildings, installation of a new shelter, landscaping, fencing, concrete paving, electrical and controls installation, and grading..

Pace EM Equipment List - Summary

Equipment and Components

Equipment/Component		Vin Number	Date Last Used	Last Job	Status	Attach To Equip	Comp of Equip
Department: 1 Owned Equipment							
Category: 1.	**Mgmt Truck**						
1- 4133	2021 FORD F-150 (DAN NEWTON	1FTFW1E89MFA23695	08/29/24	99. 60	Active		
1- 4134	2020 CHEVY SILVERADO (PHILL	3GCUYDED2LG442677	01/30/25	10. 5553	Active		
1- 4137	2020 CHEV SILVERADO (MICK C	3GCUYDED7LG394268	01/31/25	10. 5558	Active		
1- 4139	2022 SILVERADO 1500 (MIKE ML	1GCUDGED9NZ542565	01/04/24	99. 60	Active		
1- 4140	2023 SILVERADO 1500 (CHRIS L	1GCUDDED0PZ225422		99. 60	Active		
1- 4141	2023 CHEVY SILVERADO 1500 (F	3GCUDAED6PG119068			Active		
1- 4142	2023 JEEP GRAND CHEROKEE (	1C4RJHAG7PC673133			Active		
1- 4143	2023 CHEVY SILVERADO 1500 (F	3GCUDDED7PG118898			Active		
1- 4144	2024 CHEVY SILVERADO 1500 (L	1GCUDAED0RZ159553		99. 60	Active		
1- 4145	2024 CHEVY SILVERADO 1500 (\	1GCUDAED3RZ159689		99. 60	Active		
1- 4146	2024 CHEVY SILVERADO 1500 ([				Active		
Category: 2.	**Foreman Truck**						
2- 4109	2005 CHEVY 4500 SMALL DUMP	1GBE4C3275F512873	01/31/25	10. 5552	Active		
2- 4151	2018 FORD F-150 LXT	1FTEW1EGOJFC16431			Active		
2- 4155	2018 CHEVY Colorado (THOMAS	1GCGTBEN7J310695		99. 60	Active		
2- 4161	2020 CHEVY SILV 2500 (SHANE (	1GC1YLE78LF168958		99. 60	Active		
2- 4163	2020 CHEVY SILVERADO (RICHA	1GB4YLE71LF325778	08/22/24		Active		
2- 4164	2020 CHEVY SILVERADO	1GB4YLE76LF325713	01/31/25	10. 5548	Active		
2- 4165	2021 CHEVY SILVERADO 1500 (F	1GCUYDED3MZ407311	02/05/24	99. 60	Active		
2- 4166	2021 RAM 2500	3C6UR5HJ4MG677126	01/31/25	10. 5558	Active		
2- 4167	2022 GMC SIERRA 2500 (JUSTIN	1GD19LE71NF309932	01/30/25	10. 5544	Active		
2- 4168	2022 GMC SIERRA 2500 (JORDA	1GD19LE70NF309954	01/31/25	10. 5533	Active		
2- 4169	2022 GMC SIERRA 2500 (CARL R	1GD19LE75NF309982	01/31/25	10. 5552	Active		
2- 4170	2022 GMC SIERRA 2500 (DAN HA	1GD19LE73NF310032	01/30/25	10. 5545	Active		
2- 4171	2019 SILVERADO 1500	1GCUYDED3KX213231		99. 60	Active		
2- 4172	2023 SILVERADO 2500 (COLLIN I	1GB1YLE74PF156512	01/30/25	10. 5530	Active		
2- 4173	2023 SILVERADO 3500	1GC4YTEY9PF234171	01/29/25	10. 5543	Active		
2- 4174	2020 FORD F450 FLATBED (JOSI	1FD0W4GT2LED06934	12/27/24	10. 5548	Active		
2- 4176	2020 CHEVY SILVERADO 2500 U	1GB5YLE72LF255132	09/21/24	99. 60	Active		
2- 4177	2020 CHEVY SILVERADO 3500 (J	1GC5YSEY1LF248624	01/30/25	10. 5544	Active		
2- 4178	2020 CHEVY SILVERADO 2500 (H	1GB2YLE78LF251198	01/30/25	10. 5544	Active		
2- 4180	2021 DODGE RAM 2500 (ALBERT	3C6UR5HJ3MG677117	01/31/25	10. 5552	Active		
2- 4181	2021 DODGE RAM 2500 (ERIC BI	3C6UR5HJ6MG677127	08/19/24	99. 60	Active		
2- 4182	2022 CHEVY SILVERADO 2500 (S	1GB2YLE76NF304726	01/31/25	10. 5552	Active		
2- 4183	2022 GMC SIERRA 1500 (CORY [	1GTP9AEK2NZ160839			Active		
2- 4184	2023 CHEVY SILVERADO 3500 (E	1GC5YSEY6PF232800	01/31/25	10. 5558	Active		
2- 4185	2023 CHEVY SILVERADO 3500 (F	1GC5YSEY7PF232661	01/31/25	99. 185	Active		
2- 4186	2024 CHEVY 2500 (BYRON SCR(	1GC4YLEY8RF349850	01/31/25	10. 5548	Active		
2- 4187	2024 CHEVY 2500 (RICHARD ABI	1GC1YLE7XRF392290	01/30/25	10. 5548	Active		
2- 4188	2024 CHEVY 2500 (ERIC BENSO	1GC4YLEY4RF349974	01/31/25	10. 5547	Active		
2- 4189	2024 CHEVY 2500 (LOREN SATT	1GC1YLE70RF392329		99. 60	Active		
2- 4190	2024 CHEVY SILVERADO 2500 (F	1GC1YLE73RF392065		99. 60	Active		
Category: 3.	**Dump Truck**						
3- 4205	2023 FREIGHTLINER M2-106	3ALACXFE2PDNW3693	01/31/25	99. 60	Active		
Category: 4.	**Trailer**						
4- 4926	2001 ENCLOSED STORAGE TRA	48B500G2812026242			Active		
4- 4930	INTERSTATE TAG TRAILER	1JKDLA4056M006860	05/30/24		Active		

LPC EM Equipment List - Summary

Equipment and Components

Equipment/Component		Vin Number	Date Last Used	Last Job	Status	Attach To Equip	Comp of Equip
Department: 1	**Owned Equipment**						- Continued
Category: 4.	**Trailer**						- Continued
4- 4937	2019 BIG TEX TRAILER 60ES-16I	16VAX1610K207812			Active		
4- 4938	2019 BIG TEX 45ES-16BK4RG	16VAX161919K2072624			Active		
4- 4939	BIG TEX TRAILER 70PI-18XBK	16VPX1827L2071845	01/02/24		Active		
4- 4941	TALBERT 20 TON TAG TRAILER	40FR03324R5043811	01/31/25	99. 185	Active		
4- 4942	2018 SURE-TRAC 5T DECK TRAI	4MNDB1624J1001641			Active		
4- 4943	2024 TALBERT EQUIPMENT TRA		06/10/24	99. 60	Active		
4- 4944	2018 CARGO TRAILER	7H2BE1623JD005913			Active		
4- 4945	2018 CARGO TRAILER	7H2BE1621JD005912			Active		
4- 4946	2018 CARGO TRAILER	7H2BE162XJD005911			Active		
4- 4947	2018 CARGO TRAILER	7H2BE1628JD005910			Active		
4- 4948	2018 CARGO TRAILER	7H2BE1621JD005909			Active		
4- 4949	2018 CARGO TRAILER	5MYEE1825JB060830		99. 60	Active		
4- 4950	2018 DECK TRAILER	5MYEE1827JB060831			Active		
4- 4951	2018 DECK TRAILER	5MYEE1829JB060832			Active		
4- 4952	2018 DECK TRAILER	5MYEE1820JB060833			Active		
4- 4953	2018 DECK TRAILER	5MYEE1822JB060834			Active		
4- 4954	2019 7'X14' DUMP TRAILER	5MYDT1425KB067799			Active		
4- 4955	7'X14' CARGO TRAILER	56JTE1042XEA139116			Active		
4- 4956	2018 TAG TRAILER	5JW1D1028K4243139			Active		
4- 4957	2019 BETTER BUILT TRAILER	4MNDB162XK1001306			Active		
4- 4958	2015 BETTER BUILT TRAILER	4MNDB1622F1001081			Active		
4- 4959	2022 BIG TEX UTILITY TRAILER	16V3F4124N6185746			Active		
4- 4960	2023 IMPACT TAG TRAILER	53BATEA29PB018408			Active		
4- 4961	2023 IMPACT TAG TRAILER	53BATEA27PB018410			Active		
4- 4962	2016 LOAD TRAILER	4ZEGH2529G1104984			Active		
4- 4963	2016 BETTER BUILT	4MNDB162XG1001748		99. 60	Active		
4- 4964	2023 HOMESTEADER CHALLEN(	5HABE1218PN118160			Active		
4- 4965	2022 GORILLA 8X22 DECK TRAI	1G9CF2226N1597331			Active		
4- 4966	IMPACT 714 FREELANCER CAR(	53BATEA22PB018430			Active		
4- 4967	2022 SURE TRACK 5T DECK TR/	G2360			Active		
4- 4968	2023 BIG TEX UTILITY TRAILER	16V1C2321P7232505			Active		
4- 4969	2024 BIG TEX DUMP TRAILER	16V1D1929R7298768			Active		
4- 4971	2018 SMITH 7X14 CARGO TRAIL	56JTE142XKA163704			Active		
4- 4972	2019 6'X12' CARGO TRAILER	7H2BE122XKD015460			Active		
Category: 6.	**Backhoes**						
6- 4613	2003 CAT 420DIT	BLM08302	01/30/25	10. 5544	Active		
6- 4614	2005 CAT 420DIT	CBLN13023	11/07/24	10. 5545	Active		
6- 4616	KOMATSU BACKHOE LOADER	A23266			Active		
Category: 7.	**Skidsteer**						
7- 4509	2009 TAKEUCHI TL240 TRACK L(	224000275	10/18/24	10. 5552	Active		
7- 4510	2014 TAKEUCHI TS70R SKID STE	T3R07000261	01/31/25	10. 5552	Active		
7- 4511	KUBOTA SVC75 SKID STEER	34886	11/14/24	99. 60	Active		
7- 4512	KUBOTA SVL75-2HWC SS	44893	01/30/25	10. 5533	Active		
7- 4513	CAT 906M LOADER	H6604079	01/03/25	99. 60	Active		
7- 4514	2021 KUBODA SVL75-2W	KBCZ052CKL1M55241	01/31/25	10. 5547	Active		
7- 4515	2021 Kuboda SVL75-2W	KBCZ052CTL1M55513	01/30/25	10. 5544	Active		
Category: 12.	**Compactors**						

LPC EM Equipment List - Summary

Equipment and Components

Equipment/Component		Vin Number	Date Last Used	Last Job	Status	Attach To Equip	Comp of Equip
Department: 1 Owned Equipment							- Continued
Category: 12. Compactors							- Continued
12- 4300	2009 WACKER ROLLER	5855871	10/31/24	10. 5544	Active		
12- 4301	WACKER ROLLER RD11A	5277469			Active		
Category: 13. Attachments							
13- 4821	2012 HYDRAULIC HAMMER INDE	2506		10. 5548	Active		
13- 4822	BLUE DIAMOND BROOM ATTACI	41928		99. 60	Active		
13- 4823	BROOM, 72"" PLY STEEL PLACE	116065			Active		
13- 4824	PALLADIN 96" BOX BROOM	1816087			Active		
13- 4825	KENCO JIB BOOM FOR 325/335 I	7752052301			Active		
13- 4826	GORILLA GXS135 HAMMER FOR	GXS135-21A21A20152			Active		
Category: 16. Excavator							
16- 4201	KOMATSU PC78US-6	5526			Active		
16- 4506	2003 IHI CRAWLER CARRIER	CE000288			Active		
16- 4507	2005 KOMATSI PC50MR-2	62750R0PS			Active		
16- 4510	2014 KOMATSU PC-88 MR-8	6159	01/30/25	10. 5544	Active		
16- 4513	KOMATSU PC 138	41492	01/30/25	10. 5547	Active		
16- 4515	KUBOTA EXCAVATOR	43227	01/30/25	10. 5533	Active		
16- 4516	2019 KUBOTA KX080-4R3A	45118	01/31/25	10. 5552	Active		
16- 4517	KOMATSU PC138	55771	01/30/25	10. 5558	Active		
Category: 19. Air Compressors							
19- 4960	185 AIR COMPRESSOR	XAS185JD7			Active		
Category: 22. Welders							
22- 4001	BOBCAT 260 WELDER	907792002	10/04/24		Active		
22- 4002	MULTIQUIP 400 AMP WELDER	5893705	01/23/25	10. 5548	Active		
Category: 23. Generators							
23- 4803	25KW TRAILER MOUNTED GENE	7111122	12/31/24	10. 5518	Active		
Category: 24. Pumps							
24- 4902	GODWIN 8"" PUMP	9814727-2			Active		
24- 4903	H & H HYDRAULIC WATER PUMI	14583			Active		
24- 4904	H & H HYDRAULIC WATER PUMI	16117			Active		
Category: 27. Survey							
27- 4114	GPS BASE STATION & ROVER	6031R31531	04/24/24		Active		
27- 4115	TRIMBLE TOTAL STATION	72651856	12/06/24	10. 5558	Active		
Category: 28. Attachment							
28- 4900	CT BA18 BROOM	AXC18201			Active		
28- 4901	BACKHOE MOUNTED BROOM	6942	01/30/25	10. 5544	Active		
Category: 29. Forms							
29- 4868	HYDRAULIC HAMMER	54982			Active		
29- 4872	GANG FORMS				Active		
29- 4873	KUBOTA SIDE BY SIDE	65382			Active		
29- 4874	MINNICH A2-48 DOWEL DRILL	104-5713-20			Active		
29- 4875	MINNICH A1-48 DOWEL DRILL	104-5394-20			Active		
29- 4876	MINNICH A-1-C DOWELL DRILL	104-4461-20			Active		
29- 4877	MINNICH A1-48 DOWELL DRILL	NA			Active		
29- 4878	MINNICH A-1-48 DOWELL DRILL	104-5204-20			Active		
29- 4879	MINNICH A11755-0009D DOWELI	104-4870-20			Active		
29- 4880	MINNICH A-1C DOWELL DRILL	104-4956-20			Active		

LPC EM Equipment List - Summary

Equipment and Components

Equipment/Component		Vin Number	Date Last Used	Last Job	Status	Attach To Equip	Comp of Equip
Department: 1 Owned Equipment							- Continued
Category: 29. Forms							- Continued
29- 4881	TITAN TRI-ROLLER FINNISHING	230510RSB			Active		
29- 4882	TERRAMITE TRI-ROLLER FINNIS	219RS02			Active		
29- 4883	TERRAMITE TRI-ROLLER FINNIS	NA			Active		
Category: 34. Telehandler							
34- 4700	JLG TELEHANDLER G6-42A- 600	160017680	01/29/25	10. 5545	Active		
34- 4701	JLG TELEHANDLER G9-43A 900	160034525	01/30/25	10. 5533	Active		
34- 4702	SKYTRAK 10054 TELEHANDLER	0160051805	02/22/24	99. 60	Active		
34- 4703	SKYTRAK 6036 TELEHANDLER	0160034053		99. 60	Active		
34- 4704	JLG 10K TELEHANDLER	0160066194	01/30/25	10. 5544	Active		
34- 4705	CAT TH514 TELEHANDLER	TBW00404			Active		
Department: 2 Leased Equipment							
Category: 13. Attachments							
13- 400	CAT 24" 315 BUCKET	NHM02321			Active		
13- 401	CAT 36" 315 BUCKET	MFH76498			Active		
13- 402	CAT 36" 325 BUCKET	MFH46182			Active		
13- 403	CAT 48" 325 BUCKET	XC750492			Active		
Category: 16. Excavator							
16- 4518	CAT 315 EXCAVATOR RT W/ THU	WKX21816		99. 60	Active		
16- 4519	CAT 325 EXCAVATOR RT W/ THU	TEL20912	01/30/25	10. 5544	Active		
16- 4520	LINKBELT 80X3EX EXCAVATOR	LBX080Q6NPHEX2243	01/31/25	10. 5552	Active		
Department: 3 Rental Equipment							
Category: 34. Telehandler							
34-6362R	JLG 12K TELEHANDLER	16362			Active		

Pace Contracting, LLC
Schedule A Current Experience
As of 02-2026

Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	% Complete	Cost of Work/Contract Amount
VA Hospital Site Pump Station	Louisville Paving Co.	URS/Smithgroup	2022	Pump Station	95	1,606,785
MSD SGC Emergency Gate Replacements	Louisville and Jefferson Co. MSD 700 W Liberty St. Louisville, KY 40203	Louisville MSD	2022	Sitework	95	11,000,000
Mt. Sterling Hinkston Creek WTP	Mt. Sterling Water and Sewer 300 E Main Street Mt Sterling, KY 40356	Bell Engineering 2840 Fortune Drive #350 Lexington, KY 40509	2023	WTP	90	15,500,000
Cedar Creek Rerate to 9.0 MGD	Louisville and Jefferson Co MSD 700 W Liberty St Louisville, KY 40203	Strand Associates 325 W Main St Louisville KY 40202	2023	WWTP	85	8,860,946
DRG WQTC WWPS & WWSB	Louisville and Jefferson Co MSD 700 W Liberty St Louisville, KY 40203	Tetra Tech 2000 Warrington Way Louisville KY 40222	2023	WWTP	90	5,200,000
EC McManis WWTP Improvement	Frankfort Sewer Department	Bell Engineering 2840 Fortune Drive #350 Lexington, KY 40509	2023	WWTP	85	3,000,000
Charlestown WRF Expansion	City of Charlestown	Jacobi Toomb Lanz 1829 E Spring Street New Albany, IN 47150	2023	WWTP	75	39,900,000
MSD Biosolids	Walsh Group	Stantec 9200 Shelbyville Rd Louisville, KY	2023	WWTP	50	44,000,000
MSD Cedar Creek Tertiary	MSD	Arcadis	2023	WWTP	90	8,000,000
E Market St. Streetscape	Louisville Metro	Strand Associates 325 W Main St Louisville KY 40202	2024	Streetscape	80	9,100,000

Pace Contracting, LLC
Schedule A Current Experience
As of 02-2026

Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	% Complete	Cost of Work/Contract Amount
Pitman Creek WWTP	City Of Somerset, KY	Bell Engineering 2840 Fortune Drive #350 Lexington, KY 40509	2024	WWTP	50	10,000,000
MSD Cedar Creek Admin Building	Louisville and Jefferson Co MSD 700 W Liberty St Louisville, KY 40203		2024	WWTP	60	7,700,000
LWC Westport Rd Standby Generator	Louisville Water Company 550 S 3rd St Louisville KY 40202	CDM Smith 9420 Bunsen Pkwy Louisville KY 40220	2024	WTP	3	9,800,000
MSU WTP Solids Dewatering	Morehead State University Morehead, KY	GRW Engineering 801 Corporate Dr Lexington, KY 40503	2025	WTP	75	2,400,000
MSD Cedar Creek Solids Dewatering	Louisville and Jefferson Co MSD 700 W Liberty St Louisville, KY 40203	Strand Associates	2025	WWTP	50	22,682,886
MSD MFWQTC Secondary Load Ctr	TEM Group for Louisville MSD 700 W Liberty St Louisville, KY 40203		2025	WWTP	30	259,000
GE Appliance Park Sluice Gates	Haier US DBA GE Appliances 4000 Buechel Bank Rd Louisville, KKY 40225	GE Appliances	2025	Industrial	50	180,000
St Agnes School & Athletics Reno	St Agnes 1920 Newburg Rd Louisville KY 40205	VBEN	2025	Commercial	60	2,334,000
LWC BE Payne Standby Generator	LWC 550 S 3rd St Louisville, KY 40202	CDM Smith 9420 Bunsen Pkwy Louisville, KY 40220	2025	Building	10	8,830,739

Pace Contracting, LLC
Schedule A Current Experience
As of 02-2026

Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	% Complete	Cost of Work/Contract Amount
Hodgenville WWTP	City of Hodgenville 200 S Lincoln Blvd Hodgenville, KY 42748	GRW Engineers, Inc. 10350 Ormsby Park Place Louisville, KY 40207	2025	WWTP	35	859,000
GMWSS - Tertiary Upgrade & Bar Screen	Georgetown Muni Water & Sewer 1000 W Main St Georgetown, KY 40324	Kentucky Engineering Group PO Box 1034 Versailles, KY 40383	2025	WWTP	10	2,270,000
Corydon WWTP Ox Ditch Rehab	Town of Corydon IN 219 N Capital Ave Corydon, IN 47112	Midwestern Engineers PO Box 295 Loogootee, IN 47553	2025	WWTP	45	293,295
I-65 Corridor Bradley Culvert	Kiewit Infrastructure South 10055 Trainstation Circle Lone Tree CO 80124	KYTC Frankfort, KY	2025	Heavy Highway	5	6,800,000
Our Lady of Lourdes School Addition	Our Lady of Lourdes Catholic Church 3940 Poplar Level Rd Louisville KY 40213	Trpani Architects 2 Burlington Woods Dr Burlington MA 01803	2025	Building	30	4,316,000
MFWQTC DAFT Rehab	MSD 700 W Liberty St Louisville, KY 40203	MSD	2025	WWTP	3	23,610,000
GE New Weir & Scum Baffle	Haier US DBA GE Appliances 4000 Buechel Bank Rd AP20 - Boiler House Louisville, KY 40225		2025	Industrial	1	180,000
Franklin IN WWTP	City of Fanklin, IN 70 E Monroe St Franklin, IN 46131		2025	Building	0	26,680,000
Good Shepherd Catholic Church	Good Shepherd Catholic Church 3940 Poplar Level Rd Louisville, KY 40213	LMH+MAR 319 Bank St New Albany, IN	2025	Building	25	1,455,000

Pace Contracting, LLC
Project References

As of 02-2026

Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	Cost of Work/Contract Amount
Shively Pump Station Electrical Improv	MSD 700 W. Liberty Street Louisville, KY 40203 Steven Leong (502)540-6637	Hazen and Sawyer 9780 Ormsby Station Rd Louisville, KY 40223	2018	Pump Station	1,340,000
Contract 21 - Taylorsville Water Booste	City of Taylorsville 70 Taylorsville Road Taylorsville, KY (502)477-2296	Sisler-Maggard Engineering, PLLC 220 E. Reynolds Road. Lexington. KY. 40517	2018	Booster PS	769,000
Rowan Pump Station & Downtown CSO Interceptor	MSD 700 W. Liberty Street Louisville, KY 40203 Jacob Mathis (502)540-6561	HDR Engineers Hazen & Sawyer	2018	Pump Station	25,899,973
GMWSS 2018 WWTP Sand Filter Repla	Georgetown Municipal Water & Sewage Service 1000 W. Main Street Georgetown, KY. 40324 Chase Azevedo, PE Kevin Gibson (502)225-9477	Bluegrass Engineering 222 East Main Street Georgetown, KY. 40324	2019	WWTP	977,979
Shelbyville WTP Filter Upgrades	Shelbyville Municipal Water & Sewer 1059 Washington St Shelbyville KY 40065	HDR 401 W Main St, Ste 500 Louisville KY 40202	2019	WTP	1,637,532

Pace Contracting, LLC
Project References

As of 02-2026

Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	Cost of Work/Contract Amount
Flood Pump Station Elect Grease Lubrication System Upgrade	MSD 700 W. Liberty Street Louisville, KY 40203 Josh Dickerson 502-540-6966	QK4 1046 E Chestnut Street Louisville, KY 40204	2020	Pump Station	352,330
South Pump Station	Lagrange Utilities 412 E Jefferson St Lagrange, KY 40031	Derrick Engineering 1397 S 3rd St Louisville, KY 40208	2020	Pump Station	1,604,444
Strodes Creek WWTP Solids Processing	Winchester Municipal Utilities 150 N Main Street Winchester, KY 40391	Bell Engineering 2480 Fortune Dr, Ste 350 Lexington, KY 40509	2020	WWTP	2,517,993
Paducah FPS #2 Rehab	City of Paducah 1416 N 6th St Paducah KY 42001	HDR Inc 4645 Village Sq Dr, Ste F Paducah, KY 42001	2020	Pump Station	5,027,270
City of Bradfordsville WWTP & I/I Redu	City of Bradfordsville 202 W Main Street Bradfordsville KY 40009 270-337-3796	Cann-Tech 1180 Glensboro Rd Lawrenceburg KY 40342	2021	WWTP	556,063
Shelbyville 6th St Sidewalk	City of Shelbyville 315 Washington St. Shelbyville, KY 40065	Kerry P Magan Consulting 506 Main St Shelbyville KY 40065	2021	Streetscape	1,343,809

Pace Contracting, LLC
Project References

As of 02-2026

Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	Cost of Work/Contract Amount
MSD DRG Aeration Basin #5	Louisville and Jefferson Co. MSD	HDR, Inc. 401 W Main St, Ste 500 Louisville KY 40202	2021	Sitework	3,000,000
EC McManis WWTP Improvement	Frankfort Sewer Department	Bell Engineering 2480 Fortune Dr, Ste 350 Lexington, KY 40509	2021	WWTP	
Frankfort 2nd Street Corridor Tiger Pro	City of Frankfort 315 W 2nd Street Frankfort, KY 40602	Strand Associates 325 W Main St Louisville KY 40202	2020	Streetscape	7,658,406
Town Branch Commons	LFUCG 200 E. Main Street Lexington, KY. 40507	Strand Associates 325 W Main St Louisville KY 40202	2020	Sitework	20,193,934
Echo Trail PS & FM	Long Run Creek Properties	Mindel Scott 5151 Jefferson Blvd Louisville KY 40219	2021	Pump Station	2,886,365
Splash! At Charles Young Park	LFUCG 200 E. Main Street Lexington, KY. 40507	Gresham Smith 333 W Vine St Lexington KY 40507	2022	Park	1,249,200
Madisonville Westside WWTP	City of Madisonville 67 N Main Street Madisonville, KY 42431	Eclipse Engineers 113 W Mt Vernon St Somerset KY 42501	2022	WWTP	872,000
Broadway & 18th Emergency	Louisville and Jefferson Co MSD 700 W Liberty St Louisville, KY 40203	MSD	2023	Sitework	375,000
Frankfort 2nd Street Corridor Tiger Pro	City of Frankfort 315 W 2nd Street	Strand Associates 325 W Main St	2020	Streetscape	7,658,406

Pace Contracting, LLC
Project References

As of 02-2026

Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	Cost of Work/Contract Amount
	Frankfort, KY 40602	Louisville KY 40202			
Town Branch Commons	LFUCG 200 E. Main Street Lexington, KY. 40507	Strand Associates 325 W Main St Louisville KY 40202	2020	Sitework	20,193,934
Paducah FPS #2 Rehab	City of Paducah	HDR 401 W Main St, Ste 500 Louisville KY 40202	2020	Pump Station	4,500,000
Splash! At Charles Young Park	LFUCG 200 E. Main Street Lexington, KY. 40507	Gresham Smith 333 W Vine St Lexington KY 40507	2022	Park	1,249,200
Danville Main St. Streetscape	City of Danville 445 West Main Street Danville, KY 40243	Gresham Smith 333 W Vine St Lexington KY 40507	2022	Streetscape	6,125,000
Georgetown WWTP #2 - Grit Removal	Georgetown Muni Water & Sewer 1000 W Main Street Georgetown , KY 40324	Kentucky Engineering Group 101 High St Versailles KY 40383	2022	WWTP	1,267,000
Jennie Rogers School	City of Danville 445 West Main Street Danville, KY 40243	Hub+Weber Architects 200 W Pike St Covington KY 41011	2023	Sitework	2,687,251
Sellersburg WWTP Rehab	Town of Sellersburg	Jacobi Toombs & Lanz 1829 E Spring Street New Albany, IN 47150	2021	WWTP	19,568,000
Albany WTP A&B Improvements	City of Albany 204 S Cross Street Albany, KY 42602	Monarch Engineering 556 Carlton Dr Lawrenceburg KY 40342	2022	WTP	2,352,602

Pace Contracting, LLC
Project References

As of 02-2026

Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	Cost of Work/Contract Amount
MSD Cedar Creek Sludge Holding Tank	Louisville and Jefferson Co. MSD 700 W Liberty St. Louisville, KY 40203	Strand Associates 325 W Main St Louisville KY 40202	2022	WTP	2,780,000
INDOT R-41378 B Montgomery Ave	INDOT 100 N Senate Ave Indianapolis, IN 46204	United Consulting	2023	Streetscape	1,875,000
Big Sandy Martin Co. RWI/WTP Rehab	Big Sandy Area Dev District	Bell Engineering 2840 Fortune Drive #350 Lexington, KY 40509	2021	WTP	3,141,660
Falls Landing Park	Jeffersonville Redelopment Commission 500 Quartermaster Ct Jeffersonville, IN 47130	Jacobi Toombs & Lanz 1829 E Spring Street New Albany, IN 47150	2023	Park	2,856,000
Parks at Cherry Hill	French Lick, IN	Midwestern Engineers	2024	Park	2,800,000
Purnell Sausage Auger Replacement	Purnell Sausage PO Box 366 Simpsonville, KY 40067	Purnell	2025	Industrial	213,000
MSD DRGWQTC RAS Pumps 2 & 3	Louisville and Jefferson Co. MSD 700 W Liberty St. Louisville, KY 40203	Hazen and Sawyer 9920 Corporate Campus Dr Louisville KY 40223	2022	Pumps	1,979,000
Purnell Bonecrusher	Purnell FB Sausage Co Inc 3931 Shelbyville Rd Simpsonville, KY 40067		2025	Industrial	357,000
MFWQTC Computer Room Upgrades	Louisville and Jefferson Co. MSD 700 W Liberty St. Louisville, KY 40203	GRW Engineering 10350 Ormsby Park Place Louisville, KY 40223	2023	Sitework	1,598,070

Pace Contracting, LLC
Project References

As of 02-2026

Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	Cost of Work/Contract Amount
MSD Emergency-S Preston & Ormsby	MSD 700 W Liberty St Louisville, KY 40203		2025	Emergency	50,000

Pace Contracting, LLC
Schedule B - Previous Experience within the Last Five Years
As of 02-2026

Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	Date Completed	Cost of Work/Contract Amount
Contract 21 - Taylorsville Water Booste	City of Taylorsville 70 Taylorsville Road Taylorsville, KY (502)477-2296	Sisler-Maggard Engineering, PLLC 220 E. Reynolds Road. Lexington. KY. 40517	2018	Booster PS	2019	769,000
Rowan Pump Station & Downtown CSO Interceptor	MSD 700 W. Liberty Street Louisville, KY 40203 Jacob Mathis (502)540-6561	HDR Engineers Hazen & Sawyer	2018	Pump Station	2020	25,899,973
GMWSS 2018 WWTP Sand Filter Repla	Georgetown Municipal Water & Sewage Service 1000 W. Main Street Georgetown, KY. 40324 Chase Azevedo, PE Kevin Gibson (502)225-9477	Bluegrass Engineering 222 East Main Street Georgetown, KY. 40324	2019	WWTP	2019	977,979
Shelbyville WTP Filter Upgrades	Shelbyville Municipal Water & Sewer 1059 Washington St Shelbyville KY 40065	HDR 401 W Main St, Ste 500 Louisville KY 40202	2019	WTP	2021	1,637,532
Flood Pump Station Elect Grease Lubrication System Upgrade	MSD 700 W. Liberty Street Louisville, KY 40203 Josh Dickerson 502-540-6966	QK4 1046 E Chestnut Street Louisville, KY 40204	2020	Pump Station	2021	352,330
South Pump Station	Lagrange Utilities 412 E Jefferson St Lagrange, KY 40031	Derrick Engineering 1397 S 3rd St Louisville, KY 40208	2020	Pump Station	2021	1,604,444
Strodes Creek WWTP Solids Processing	Winchester Municipal Utilities 150 N Main Street Winchester, KY 40391	Bell Engineering 2480 Fortune Dr, Ste 350 Lexington, KY 40509	2020	WWTP	2021	2,517,993

Pace Contracting, LLC
Schedule B - Previous Experience within the Last Five Years
As of 02-2026

Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	Date Completed	Cost of Work/Contract Amount
City of Bradfordsville WWTP & I/I Redu	City of Bradfordsville 202 W Main Street Bradfordsville KY 40009 270-337-3796	Cann-Tech 1180 Glensboro Rd Lawrenceburg KY 40342	2021	WWTP	2022	556,063
Morris Forman Front Entrance Repair	MSD 700 W. Liberty St Louisville, KY 40203		2018	Entrance Repai	2020	277,742
Nightingale Pump Station	MSD 700 W. Liberty Street Louisville, KY40203	HDR Engineering 401 W Main St Louisville, KY 40202	2017	Pump Station	2018	320,865
Taylorsville Drainage Project	City of Taylorsville	DLZ Kentucky Inc 239 S 5th St Louisville, KY 40202	2018	raingage Proje	2019	547,433
Hite Creek WQTC	MSD 700 W. Liberty St Louisville, KY	Webster Environmental 13121 Eastpoint Blvd Louisville, KY 40223	2017	WQTC	2020	328,715
White Mills WTP	Hardin County Water District 2 363 Ring Road Elizabethtown, KY 42701	Kenvirons 452 Versailles Road Frankfort, KY 40601	2017	WTP	2020	284,090
UofL SAC Renovation	University of Louisville Service Complex Building Belknap Campus Louisville, KY 40292	Hastings & Chivetta 622 Emerson Rd St Louis, MO 63141	2017	SAC Renovatior	2020	594,000
US 60 Streetscape - Phase 3	City of Simpsonville 108 Old Veechdale Rd Simpsonville, KY 40067	AEI 2500 Nelson Miller Pkwy Louisville, KY 40223	2017	Streetscape	2019	1,998,106

Pace Contracting, LLC
Schedule B - Previous Experience within the Last Five Years
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Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	Date Completed	Cost of Work/Contract Amount
I-64/Grinstead Emergency Work	MSD 700 W. Liberty Street Louisville, KY 40203	QK4 Engineers	2018	te Improvemen	2019	1,396,000
EC McManis WWTP Improvement	Frankfort Sewer Department	Bell Engineering	2018	WWTP	2019	3,000,000
Veterans Memorial Park	City of Jeffersontown 10416 Watterson Trail Jeffersontown, KY 40299	Taylor Siefker Williams 10 S New Jersey Street Indianapolis, IN 46204	2018	Park	2019	2,814,042
S. 4th Street Streetscape	Louisville Metro Government	KY Dept of Highways	2018	Streetscape	2019	1,869,000
Cooling Tower Addition at CMF	MSD 700 W. Liberty Street Louisville, KY 40203	Magna Engineers 861 Corporate Dr Ste 210 Lexington, KY 40503	2018	ling Tower Addi	2019	397,000
Waverly Park Restroom	Louisville Metro Government 611 W. Jefferson Street Louisville, KY 40202	Tetra Tech 4967 US-42 Louisville, KY	2018	Restroom	2020	259,000
Shively Pump Station Electrical Improv	MSD 700 W. Liberty Street Louisville, KY 40203	Hazen and Sawyer 9780 Ormsby Station Rd Louisville, KY 40223	2019	Pump Station	2020	1,340,000
GMWSS 2018 WWTP Sand Filter Repla	Georgetown Municipal Water & Sewage Service 1000 W. Main Street Georgetown, KY. 40324	Bluegrass Engineering	2019-5	WWTP	2020	977,979
DRG WQTC Sodium Hypochlorite Mod	MSD 700 W. Liberty Street Louisville, KY 40203	HDR Engineers	2019-6	WQTC	2020	100,000
MSD MCC & Control Room HVAC Upgr	MSD 700 W. Liberty Street Louisville, KY 40203	Jacobs	2019	HVAC Upgrades	2020	101,900

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Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	Date Completed	Cost of Work/Contract Amount
4th Street Flood Pump Removal	MSD 700 W. Liberty Street Louisville, KY 40203		2020	Pump Station	2020	50,000
Legacy Trail Phase 3 and 4th Street Cooridor Enhancements	LFUCG 200 E. Main Street Lexington, KY. 40507	Strand Associates Inc.	2019	Streetscape	2021	3,900,727
FPS Electric Grease Lubrication System	MSD 700 W. Liberty Street Louisville, KY 40203	QK4	2020	Pump Station	2021	349,100
LaGrange South Pump Station	LaGrange Utilities Commission	Derrick Engineering	2020	Pump Station	2021	1,592,000
Ohio River Force Main	MSD 700 W. Liberty Street Louisville, KY 40203	Webster	2020	Force Main	2021	1,636,810
Bardstown Peracetic Acid Disinfecton S	City of Bardstown	KY Engineering Group	2020	Pump Station	2022	232,000
River Ridge Entry Drive	Louisville Paving and Construction	HWC Engineering	2021	Streetscape	2021	247,263
MSD SWSG Stilling Tubes	MSD 700 W Liberty Street Louisville, KY 40203	MSD	2022	Pump Station	2022	4,373
Bradfordsville WWTP Upgrades	City of Bradfordsville 202 W Main Street Bradfordsville KY 40009 270-337-3796	Cann-Tech 1180 Glensboro Rd Lawrenceburg KY 40342	2020	WWTP	2022	569,065

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Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	Date Completed	Cost of Work/Contract Amount
Strodes Creek WWTP	City of Winchester PO Box 40 Winchester, KY 40392	Bell Engineering	2020	WWTP	2022	3,473,480
Shelbyville 6th St Sidewalk	City of Shelbyville 315 Washington St. Shelbyville, KY 40065	Kerry P Magan Consulting	2021	Streetscape	2022	1,343,809
Crescent Hill WTP Standby Generator	LWC 550 S. Third Street Louisville, KY 40202	CDM Smith 9420 Bunsen Pkwy Louisville, KY 40220	2018-2	WTP	2021	10,427,000
Contract 21 - Taylorsville Water Booste	City of Taylorsville	Sisler-Maggard Engineering, PLLC 220 E. Reynolds Road. Lexington. KY. 40517	2018-11	oster Pump Stat	2021	769,000
LFUCG Legacy Trail Phase 3 & 4th Street	LFUCG 200 E Main Street Lexington, KY	Strand Associates	2019	Sitework	2021	3,794,000
LWC Zorn Avenue Pump Station	LWC 550 S. Third Street Louisville, KY 40202	CDM Smith	2019	Pump Station	2022	12,162,398
Lebanon WTP Repairs	Lebanon Waterworks 120 S. Proctor Knottt Ave. Lebanon, KY 40033	Kentucky Engineering Group	2022	WTP	2022	52,000
MSD Tennis Blvd Emergency Job	Louisville and Jefferson Co. MSD 700 W Liberty St. Louisville, KY 40203		2022	mergency Sewe	2022	T&M
LWC Zorn Avenue Pump Station	LWC 550 S. Third Street Louisville, KY 40202	CDM Smith	2019	Pump Station	2021	12,162,398

Pace Contracting, LLC
Schedule B - Previous Experience within the Last Five Years
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Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	Date Completed	Cost of Work/Contract Amount
MSD DRG Aeration Basin #5	Louisville and Jefferson Co. MSD 700 W Liberty St. Louisville, KY 40203	HDR, Inc.	2021	Sitework	2021	153,000
Frankfort 2nd Street Corridor Tiger Pro	City of Frankfort 315 W 2nd Street Frankfort, KY 40602	Strand Associates	2020	Streetscape	2022	7,658,406
Town Branch Commons	LFUCG 200 E. Main Street Lexington, KY. 40507	Strand Associates	2020	Sitework	2023	20,193,934
Paducah FPS #2 Rehab	City of Paducah	HDR	2020	Pump Station	2023	4,500,000
Echo Trail PS & FM	Long Run Creek Properties	Mindel Scott	2021	Pump Station	2023	2,886,365
Splash! At Charles Young Park	LFUCG 200 E. Main Street Lexington, KY. 40507	Gresham Smith	2022	Park	2023	1,249,200
Madisonville Westside WWTP	City of Madisonville 67 N Main Street Madisonville, KY 42431	Eclipse Engineers	2022	WWTP	2023	872,000
Broadway & 18th Emergency	Louisville and Jefferson Co MSD 700 W Liberty St Louisville, KY 40203		2023	Sitework	2023	375,000
DWTP Clarifier Valve Replacement	City of Jeffersonville 423 Lewman Way Jeffersonville, IN 47130		2023	WTP	2023	26,000
Danville Main St. Streetscape	City of Danville 445 West Main Street Danville, KY 40243	Gresham Smith	2022	Streetscape	2023	6,125,000

Pace Contracting, LLC
Schedule B - Previous Experience within the Last Five Years
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Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	Date Completed	Cost of Work/Contract Amount
Georgetown WWTP #2 - Grit Removal	Georgetown Muni Water & Sewer 1000 W Main Street Georgetown , KY 40324	Kentucky Engineering Group	2022	WWTP	2023	1,267,000
Hollenbach Oakley Bridge	Hollenbach-Oakley 12451 Plantside Dr Louisville, KY 40299		2022	ridge Abutmen	2023	25,000
MSD Mellwood Floodwall Emergency J	Louisville and Jefferson Co. MSD 700 W Liberty St. Louisville, KY 40203		2022	mergency Sewe	2023	T&M
Jennie Rogers School	City of Danville 445 West Main Street Danville, KY 40243	Hub+Weber Architects 200 W Pike St Covington KY 41011	2023	Sitework	2024	2,687,251
Sellersburg WWTP Rehab	Town of Sellersburg	Jacobi Toombs & Lanz 1829 E Spring Street New Albany, IN 47150	2021	WWTP	2024	19,568,000
Albany WTP A&B Improvements	City of Albany 204 S Cross Street Albany, KY 42602	Monarch Engineering	2022	WTP	2024	2,352,603
MSD Cedar Creek Sludge Holding Tank	Louisville and Jefferson Co. MSD 700 W Liberty St. Louisville, KY 40203	Strand Engineers	2022	WTP	2024	2,780,000
Oxmoor Bridge #2	Brookstone Properties	Walker Consultants	2024	Bridge	2024	675,000
INDOT R-41378 B Montgomery Ave	INDOT 100 N Senate Ave Indianapolis, IN 46204	United Consulting	2023	Streetscape	2024	1,875,000

Pace Contracting, LLC
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Project Name	Owner (Prime Contractor if Sub)	Design Engineer	Contract Date	Type of Work	Date Completed	Cost of Work/Contract Amount
Big Sandy Martin Co. RWI/WTP Rehab	Big Sandy Area Dev District	Bell Engineering 2840 Fortune Drive #350 Lexington, KY 40509	2021	WTP	2,025	3,141,660
Falls Landing Park	Jeffersonville Redelopment Commission 500 Quartermaster Ct Jeffersonville, IN 47130	Jacobi Toombs & Lanz 1829 E Spring Street New Albany, IN 47150	2023	Park	2,025	2,856,000
Parks at Cherry Hill	French Lick, IN	Midwestern Engineers	2024	Park	2,025	2,800,000
Purnell Sausage Auger Replacement	Purnell Sausage PO Box 366 Simpsonville, KY 40067	Purnell	2025	Industrial	2,025	213,000
MSD DRGWQTC RAS Pumps 2 & 3	Louisville and Jefferson Co. MSD 700 W Liberty St. Louisville, KY 40203	Hazen and Sawyer 9920 Corporate Campus Dr Louisville KY 40223	2022	Pumps	2,025	1,979,000
Purnell Bonecrusher	Purnell FB Sausage Co Inc 3931 Shelbyville Rd Simpsonville, KY 40067		2025	Industrial	2,025	357,000
MFWQTC Computer Room Upgrades	Louisville and Jefferson Co. MSD 700 W Liberty St. Louisville, KY 40203	GRW Engineering 10350 Ormsby Park Place Louisville, KY 40223	2023	Sitework	2,025	1,598,070

Project Name	Company Name	Trades	Company Address	Company City	Company State	Invited Recipient Email List	Invited Recipient Phone List
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Advance Ready Mix	Concrete Supplier, MSD - WBE	11421 Blankenbaker Access Drive	Louisville	KY	Alex Nofziger: anofziger@advancerm.net	Alex Nofziger: 502-930-1269
LFUCG W Hickman WWTP High Flow Diversion Box Repl	McKinney Painting	LFUCG Certified DBE, LWC- Prequalified, Painting	104 Industry Dr	Versailles	KY	Matt Gamlin: matt@mckinneypainting.com	Matt Gamlin: 859-873-6424
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Allterrain Paving and Construction LLC	Asphalt, LFUCG Certified DBE, LWC- Prequalified, LWC - WBE, MSD - WBE, Pipeline Work, Piping, WBENC	2235 Corydon Pike	New Albany	IN	Ed Morris: emorris@apcpaving.com, Maria Triplett: mtriplett@apcpaving.com, Steve Triplett: striplett@allterrainpaving.com	Ed Morris: N/A, Maria Triplett: N/A, Steve Triplett: 502-265-4729
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Seven Seas Construction	Concrete Flatwork, INDOT - DBE, KYTC - DBE, LWC - MBE, LWC- Prequalified, MSD - AA, Pipeline Work, Piping	3821 Fitzgerald Rd	Louisville	KY	Chase Kindler: ckindler@sevensc.net	Chase Kindler: 502-777-3454
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Herb Geddes Fence Company	Fencing, LFUCG Certified DBE, VBE/VFBE/SDVOSB	232 Industrial Parkway	Nicholasville	KY	Jack Badgett: jack.geddesfence@gmail.com	Jack Badgett: (859) 940-1304
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Somethin Bloomin, LLC	KYTC - DBE, Landscaping, LFUCG Certified DBE	1855 Norfolk Drive	Lexington	KY	Cindy English: sbloomin@gmail.com	Cindy English: (859) 536-7588
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Earth Images Inc. - Floyds Knobs	KYTC - DBE, Landscaping, LFUCG Certified DBE, MSD - WBE, WBENC	5868 Stiller Road	Floyds Knobs	IN	Jeff Dethy: jeffd@earthimagesinc.com	Jeff Dethy: 812-728-8190
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Aequitas Power Company, LLC.	Electrical, KYTC - DBE, LFUCG Certified DBE, MSD - AA, NMSDC - MBE	401 4th Street	Shelbyville	KY	Juan Flynn: info@aequitaspower.com	Juan Flynn: (502) 434-8329
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Jacobi Oil	Fuel, LFUCG Certified DBE	5686 Navilleton Rd	Floyds Knobs	IN	Terry Gebler: terry@jacobioil.com	Terry Gebler: 812-923-5174
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Rod-Techs, Inc.	INDOT - DBE, KYTC - DBE, Reinforcing Steel Supplier	1727 W. Galbraith Road	Cincinnatti	OH	Larry Packer, Jr.: lutheryates@rodtechs.org	Larry Packer, Jr.: 513-522-1111
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Schnell Contractors, Inc.	Coatings- Concrete and Steel, Concrete Rehab, LWC - WBE	1343 Tile Factory Lane	Louisville	KY	Carl Mitchum: cmitchum@schnellcontractors.com, Chase Schnell: cshnell@schnellcontractors.com	Carl Mitchum: (502) 821-1301, Chase Schnell: N/A
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Mills Supply	Concrete Accessories, LFUCG Certified DBE, MSD - WBE, Reinforcing Steel Supplier	1100 S 9th St	Louisville	KY	Ben Kareken: ben@millssupply.net, Troy Mills: troy@millssupply.net	Ben Kareken: N/A, Troy Mills: 502-561-0700
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Lykins Reinforcing	Cabot - Approved to bid, MSD - WBE, Reinforcing Steel Installer	Po Box 21325	Louisville	KY	Rick Lykins: rick@lykinsreinforcing.com	Rick Lykins: 502-634-5030
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Advanced Electrical Systems, Inc	Electrical, LWC- Prequalified, LWC - WBE, MSD - WBE	3312 Gilmore Industrial Boulevard	Louisville	KY	Brian Henn: brianh@aeslou.com	Brian Henn: 502-962-1102
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Gould Electric, LLC	Electrical, KYTC - DBE, NMSDC - MBE	3312 Calais Dr	Louisville	KY	Chris Gould: christine@gouldelectric.com	Chris Gould: 502-290-5751
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Island Electric	Electrical, LFUCG Certified DBE, MSD - AA, NMSDC - MBE	2005 Dunkirk Drive	Lexington	KY	Dwayne Harris: dharris@islandelectricllc.com, Willie Cline: estimator.islandelectricllc@outlook.com	Dwayne Harris: 859-230-7937, Willie Cline: (859) 536-0142
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Blaze Enterprises	Dumpsters, LFUCG Certified DBE		Lexington	KY	Joe McWilliams: joe@blaze.enterprises	Joe McWilliams: (859) 699-2601
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Video Vets (VBE)	LFUCG Certified DBE, Photos/ Videos	1901 Tully Road	Hughson	CA	Paul Zagaris: paul@videovets.net	Paul Zagaris: (916) 849-9616
LFUCG W Hickman WWTP High Flow Diversion Box Repl	Summers Grading Service	EPSC, INDOT - DBE, KYTC - DBE	6703 High Jackson Rd	Charlestown	IN	Charlene Summers: summersgrading@yahoo.com	Charlene Summers: 812-246-4839
LFUCG W Hickman WWTP High Flow Diversion Box Repl	All American Ironworks & Ornamental Metals	Metal Fabrication, VBE/VFBE/SDVOSB				Joshua Shifflet: jshifflet@allamericanironworksllc.com	Joshua Shifflet: (513) 546-9610

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PART IV

GENERAL CONDITIONS

1. DEFINITIONS

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

1.1 Addenda
Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bid Documents or the Contract Documents.

1.2 Agreement
The written agreement between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

1.3 Application for Payment
The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

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

1.5 Bidder
An individual, partnership, or corporation, who submit a Bid for a prime contract with the OWNER, for the Work described in the proposed Contract Documents.

1.6 Bonds
Bid, performance and payment bonds and other instruments of security.

1.7 Calendar Day
A calendar day of twenty-four hours measured from midnight to the next midnight shall constitute a day.

1.8 Change Order
A document recommended by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Agreement.

1.9 Contract Documents

The Advertisement for Bidders, Information for Bidders, Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR'S Bid (including documentation accompanying the Bid and any post-bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Bonds, these General Conditions, the Special Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all amendments, modifications and supplements.

1.10 Contract Unit Price

The monies payable by OWNER to CONTRACTOR under the Contract Documents as stated in the Agreement. Unit Prices are to be firm for the term of this Contract.

1.11 Contract Time

The number of consecutive calendar days between the date of issuance of the Notice to Proceed and the contract completion date.

1.12 CONTRACTOR

The person, firm or corporation with whom OWNER has entered into the Agreement.

1.13 Defective

An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER'S recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER).

1.14 Drawings

The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents.

1.15 Effective Date of the Agreement

The date indicated in the Agreement on which it becomes effective.

1.16 ENGINEER

The Lexington-Fayette Urban County Government (LFUCG) Division of Water Quality or its authorized representative.

1.17 Field Order

A documented order issued by ENGINEER which orders minor changes in the Work, but which does not involve a change in the Contract Price or the Contract Time.

1.18 Giving Notice
Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

1.19 Laws and Regulations
Laws, rules, regulations, ordinances, codes and/or orders.

1.20 Notice of Award
The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

1.21 Notice to Proceed
A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR'S obligations under the Contract Documents.

1.22 OWNER
The Lexington-Fayette Urban County Government (LFUCG).

1.23 Partial Utilization
Placing a portion of the Work in service for the purpose for which it is intended (or related purpose) before reaching Completion for all the Work.

1.24 Project
The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

1.25 Inspector
The authorized representative of the ENGINEER who is assigned to the site or any part thereof.

1.26 Shop Drawings
All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for CONTRACTOR to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by CONTRACTOR to illustrate material or equipment for some portion of the Work.

1.27 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 and certain administrative details applicable thereto.

1.28 Standard Specifications
The "Standard Specifications for Road and Bridge Construction", Transportation Cabinet, Department of Highways, Commonwealth of Kentucky, current edition. MUTCD shall refer to the "Manual of Uniform Traffic Control Devices.

1.29 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.

1.30 Special Conditions
The part of the Contract Documents which amends or supplements these General Conditions.

1.31 Supplier
A manufacturer, fabricator, supplier, distributor, materialman or vendor.

1.32 Underground Facilities
All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

1.33 Unit Price Work
Not applicable

1.34 Work
The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

1.35 Time Period
When any period of time is referred to in the Contract Documents by days, it will 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 will be omitted from the computation.

2. PRELIMINARY MATTERS

2.1 Delivery of Bonds

When the CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER, such Bonds, Insurance Certificate, and Power of Attorney as CONTRACTOR may be required to furnish.

2.2 Copies of Documents

Owner shall furnish to CONTRACTOR up to three copies (unless otherwise specified in the Special Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

2.3 Commencement of Contract Time; Notice to Proceed

The Contract Time will commence to run on the day specified in the Notice to Proceed.

2.4 Starting the Project

CONTRACTOR shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

2.5 Before Starting Construction

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. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents, unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

2.6 Submittal of Schedules

Within ten days after the effective date of the Agreement (unless otherwise specified) CONTRACTOR shall submit to ENGINEER for review:

2.6.1 an estimated progress schedule indicating the starting and completion dates of the various stages of the Work;

2.6.2 a preliminary schedule of Shop Drawing submissions; and

2.6.3 a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an

appropriate amount of overhead and profit applicable to each item of Work which will be confirmed in writing by CONTRACTOR at the time of submission.

2.7 Preconstruction Conference

Before CONTRACTOR starts the Work at the proposed site, a conference attended by CONTRACTOR, ENGINEER, EEO-Affirmative Action Officer, and other appropriate parties will be held to discuss the following issues: (1) The scheduling of the Work to be completed; (2) The procedures for handling shop drawings and other submittals; (3) The processing of applications for payment; (4) The establishment of an understanding among the involved parties in regard to the proposed project; and (5) The establishment of procedures for effectively implementing the LFUCG's 10% minimum DBE goals.

2.8 Finalizing Schedules

At least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to finalize the schedules submitted in accordance with paragraph 2.6. The finalized progress schedule will be acceptable to ENGINEER as providing orderly progression of the Work to completion within the Contract Time, but such acceptance will neither impose on ENGINEER responsibility for the progress or scheduling of the Work nor relieve CONTRACTOR from full responsibility thereof. The finalized schedule of Shop Drawing submissions will be acceptable to ENGINEER as providing a workable arrangement for processing the submissions. The finalized schedule of values will be acceptable to ENGINEER as to form and substance.

3. CONTRACT DOCUMENTS: INTENT, CONFLICTS, AMENDING AND REUSE

3.1 General

The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.

3.2 Intent

It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall

mean the latest standard specification, manual, code or laws or regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to ENGINEER, or any of ENGINEER'S consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 8.12.3 or 8.12.4. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in paragraph 8.4.

3.3 Conflicts

If, during the performance of the Work, CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, CONTRACTOR shall so report to ENGINEER in writing at once and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification from ENGINEER; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

In resolving such conflicts, errors and discrepancies, the documents shall be given precedence in the following order:

1. Agreement
2. Field and Change Orders
3. Addenda
4. Special Conditions
5. Instruction to Bidders
6. General Conditions
7. Specifications
8. Drawings

Figure dimension on drawings shall govern over scale dimensions and detailed Drawings shall govern over general Drawings.

3.4 Amending and Supplementing Contract Documents

The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof by means of a Change Order or a Field Order. Contract Price and Contract Time may only be changed by a Change Order.

3.5 Reuse of Documents

Neither CONTRACTOR nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect

contract with OWNER shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER; and they shall not reuse any of them on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

4. AVAILABILITY OF LANDS; PHYSICAL CONDITIONS, REFERENCE POINTS

4.1 Availability of Lands

OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR believes that any delay in OWNER'S furnishing these lands, rights-of-way or easements entitles CONTRACTOR to an extension of the Contract Time, CONTRACTOR may make a claim therefore as provided in Article 11. ENGINEER shall determine if the claim is legitimate or not. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.2 Physical Conditions

4.2.1 Explorations and Reports

Reference is made to the Special Conditions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such reports, but not upon non-technical data, interpretations or opinions contained therein or for the completeness thereof for CONTRACTOR'S purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to subsurface conditions at the site.

4.2.2 Existing Structures

Reference is made to the Special Conditions for identification of those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities referred to in paragraph 4.3) which are at or contiguous to the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such drawings, but not for the completeness thereof for CONTRACTOR'S purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to physical conditions in or relating to such structures.

4.2.3 Report of Differing Conditions

If CONTRACTOR believes that:

4.2.3.1 any technical data on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is inaccurate, or

4.2.3.2 any physical conditions uncovered or revealed at the site differ materially from that indicated, reflected or referred to in the Contract Documents,

CONTRACTOR shall, promptly after becoming aware thereof and before performing any WORK in connection therewith (except in an emergency) notify OWNER and ENGINEER in writing about the inaccuracy or difference.

4.2.4 ENGINEER'S Review

Engineer will promptly review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto and advise CONTRACTOR of ENGINEER'S findings and conclusions.

4.2.5 Possible Document Change

If ENGINEER concludes that there is a material error in the Contract Documents or that because of newly discovered conditions a change in the Contract Documents is required, a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the inaccuracy or difference.

4.2.6 Possible Price and Time Adjustments

In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, will be allowable to the extent that they are attributable to any such inaccuracy or difference.

4.3 Physical Conditions-Underground Facilities

4.3.1 Shown or Indicated

The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to OWNER or ENGINEER by the owners of such underground facilities or by others. Unless it is otherwise expressly provided in the Special Conditions:

4.3.1.1 OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and,

4.2.1.2 CONTRACTOR shall have full responsibility for reviewing and checking all such information and data; for locating all underground facilities shown or indicated in the Contract Documents; for coordination of the Work with the owners of such underground facilities during construction;

and for the safety and protection thereof and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Price.

4.3.2 Not Shown or Indicated

If an underground facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of, CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency), identify the owner of such Underground Facility and give written notice thereof to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the underground facility to determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract Documents will be amended or supplemented to the extent necessary. During such time, CONTRACTOR shall be responsible for the safety and protection of such underground facility. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any underground facility that was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of.

4.4 Reference Points

OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER'S judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work (unless otherwise specified), shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations and shall be responsible for the accurate replacement or relocation of such reference points by a Registered Land Surveyor.

5. CONTRACTOR'S RESPONSIBILITIES

5.1 Supervision

CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall assure that all CONTRACTOR personnel (including subcontractors, etc.) conduct themselves in a courteous and respectful manner toward the ENGINEER and the general public. Failure to comply with this condition of the Contract will result in immediate suspension of the Work. Following a review by the Commissioner of Public Works, the Contract may be terminated (see GC section 14). CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not

be 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.

5.2 Superintendence

CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR'S representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.

5.3 Labor

CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER'S written consent given after prior written notice to ENGINEER.

5.4 Start-Up and Completion of Work

Unless otherwise specified, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work and shall install, maintain and remove all equipment of the construction, other utensils or things, and be responsible for the safe, proper and lawful construction, maintenance and use of same, and shall construct in the best and most workmanlike manner, a complete job and everything incidental thereto, as shown on the plans, stated in the specifications, or reasonably implied therefrom, all in accordance with the Contract Documents.

5.5 Materials and Equipment

All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to ENGINEER, or any of ENGINEER'S consultants, agents or employees,

any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 8.12.3 or 8.12.4.

5.5.1 Not Clearly Specified or Indicated

In all instances where materials specified are obtainable in different sizes, weights, trade grades, qualities or finishes, etc., whose weights, trade grades, qualities or finishes, etc., are not clearly specified or indicated on the Drawings, the CONTRACTOR shall notify the ENGINEER of all such instances at least five (5) days in advance of receiving the proposals. The Engineer will then determine which size, weight, trade grade, quality, finish, etc., is required.

5.5.2 Coordination of Work

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. The CONTRACTOR shall furnish or require the Subcontractor to furnish such duplicates as will enable the Subcontractors to fit together and execute fully their respective portions of the Work.

5.6 Adjusting Progress Schedule

CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.8) adjustments in the progress schedule to reflect the impact thereon of new developments; these will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the Contract Documents applicable thereto.

5.7 Substitutes or "Or-Equal" Items

5.7.1 General

Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier, the naming of the item is intended to establish the type, function, and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by OWNER/ENGINEER if sufficient information is submitted by CONTRACTOR to allow OWNER/ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named. The procedure for review by OWNER/ENGINEER will include the following. Requests for review of substitute items of material and equipment will not be accepted by OWNER/ENGINEER from anyone, other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to OWNER/ENGINEER for acceptance thereof, certifying that the proposed

substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not prejudice CONTRACTOR'S achievement of completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by OWNER/ENGINEER in evaluating the proposed substitute. OWNER/ENGINEER may require CONTRACTOR to furnish at CONTRACTOR'S expense additional data about the proposed substitute.

5.7.2 Substitutes

If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to OWNER/ENGINEER, if CONTRACTOR submits sufficient information to allow OWNER/ENGINEER to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by OWNER/ENGINEER will be similar to that provided in paragraph 5.7.1 as applied by OWNER/ENGINEER.

5.7.3 OWNER/ENGINEER'S Approval

OWNER/ENGINEER will be allowed a reasonable time within which to evaluate each proposed substitute. OWNER/ENGINEER will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without OWNER/ENGINEER'S prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR'S expense a special performance guarantee or other surety with respect to any substitute. OWNER/ENGINEER will record time required by OWNER/ENGINEER and OWNER/ENGINEER'S consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not OWNER/ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of OWNER/ENGINEER and

OWNER/ENGINEER'S consultants for evaluating each proposed substitute.

5.8 Subcontractors, Suppliers, and Others

5.8.1 Acceptable to ENGINEER

CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and ENGINEER as indicated in paragraph 5.8.2), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

5.8.2 Objection After Due Investigation

If the Contract Documents require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials and equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by OWNER and ENGINEER and if CONTRACTOR has submitted a list thereof, OWNER'S or ENGINEER'S acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.

5.8.3 Contractor Responsible for Acts of Subcontractors

The CONTRACTOR shall perform on the site, and with its own organization, work equivalent to at least fifty (50) percent of the total amount of Work to be performed under the Contract. This percentage may be reduced by a supplemental agreement to this Contract if, during performing the Work, the CONTRACTOR requests a reduction and the Urban County Engineer determines that the reduction would be to the advantage of the Urban County Government.

The CONTRACTOR shall, at the time he submits his proposal for the Contract, notify the OWNER in writing of the names of Subcontractors proposed for the Work. He shall not employ any Subcontractor without the prior written approval of the OWNER.

CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR'S own acts and omissions. Nothing in the Contract Documents shall create any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other person or organization, 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 such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

5.8.4 Division of Specifications

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

5.8.5 Agreement Between Contractor and Subcontractors

All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER.

5.8.6 Statements and Comments by CONTRACTOR

Neither the CONTRACTOR, his employees nor his subcontractors shall at any time make any statement or comment as to the project scope, nature, intention, design or construction method to any third party or parties without the explicit written consent of the OWNER.

Any third party requesting such information shall be referred to the OWNER or his representative.

Should there be any change from the original intent of the project as a result of any statement or comment by the CONTRACTOR, his employees or subcontractors, CONTRACTOR shall be held liable for any change in the scope, nature, design, or construction method and shall bear the full cost for the previously mentioned changes.

5.9 Patent Fees and Royalties

CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others.

5.10 Permits

Unless otherwise provided in the Special conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or if there are no Bids on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

5.11 Laws and Regulations

5.11.1 CONTRACTOR to Comply

CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR'S compliance with any Laws and Regulations.

5.11.2 Specifications and Drawings at Variance

If CONTRACTOR observes that the Specifications or Drawings are at variance with any Laws or Regulations, CONTRACTOR shall give ENGINEER prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 3.4. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to such Laws, or Regulations, and without such notice to ENGINEER, CONTRACTOR shall bear all costs arising therefrom; however, it shall not be CONTRACTOR'S primary responsibility to make certain that the Specifications and Drawings are in accordance with such Laws and Regulations.

5.12 Taxes

CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work. Any party, firm or individual submitting a proposal pursuant to invitation must have paid all taxes owed to the LFUCG at the time the proposal is submitted and must maintain a "current" status in regard to those taxes throughout the Contract. If applicable, business must be licensed in Fayette County.

5.13 Use of Premises

5.13.1 Project Site

CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the staging areas or work site areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against OWNER or ENGINEER by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold OWNER and ENGINEER harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any such other party against OWNER or ENGINEER to the extent based on a claim arising out of CONTRACTOR'S performance of the Work.

5.13.2 Clean Up

During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work, CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials and shall leave the site clean and ready for occupancy by OWNER. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

5.13.1 Loading of Structures

CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

5.14 Record Drawings

CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Change Orders, Field Orders and written

interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, samples and Shop Drawings will be delivered to ENGINEER for OWNER.

5.15 Shop Drawings and Samples

5.15.1 Shop Drawing Submittals

After checking and verifying all field measurements and after complying with applicable procedures specified, CONTRACTOR shall submit to ENGINEER for review and approval in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.8), or for other appropriate action if so indicated in the Special Conditions, electronic pdf versions (unless otherwise specified) of all Shop Drawings, which will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR'S responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as ENGINEER may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable ENGINEER to review the information as required.

5.15.2 Sample Submittals

CONTRACTOR shall also submit to ENGINEER for review and 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 accompanied by a specific written indication that CONTRACTOR has satisfied CONTRACTOR'S responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.

5.15.3 Review by CONTRACTOR

Before submission of each Shop Drawing or sample CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

5.15.4 Notice of Variation

At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in

addition, shall cause a specific notation to be made on each Shop Drawing submitted to ENGINEER for review and approval of each such variation.

5.15.5 ENGINEER'S Approval

ENGINEER will review and approve with reasonable promptness Shop Drawings and samples, but ENGINEER'S review and approval will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by ENGINEER and shall resubmit electronic pdf (unless otherwise specified) Shop Drawings and submit, as required, new samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

5.15.6 Responsibility for Errors and Omissions

ENGINEER'S review and approval of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER'S attention to each such variation at the time of submission as required by paragraph 5.15.4 and ENGINEER has given written approval of each such variation by a specific written notation thereof incorporated in or accompanying the Shop Drawing or sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions of paragraph 5.15.3.

5.15.7 Cost of Related Work

Where a Shop Drawing or sample is required by the Specifications, any related Work performed prior to ENGINEER'S review and approval of the pertinent submission will be the sole expense and responsibility of CONTRACTOR.

5.16 Continuing the Work

CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolutions of any disputes or disagreements, except as permitted by paragraph 14.5 or as CONTRACTOR and OWNER may otherwise agree in writing.

5.17 Erosion and Sediment Control

5.17.1 General Environmental Requirements

The CONTRACTOR and Subcontractors performing work on projects on behalf of the OWNER shall comply with all applicable federal, state and local environmental regulations and all requirements and conditions set forth in "special" permits including but not limited to Corp of Engineers 404 permits, 401 Water Quality Certifications, Stream Crossing and Floodplain Encroachment Permits.

Any fines or penalties resulting from the failure to comply with the terms of the federal, state or local permits or perform necessary corrective action are solely the obligation of the CONTRACTOR.

5.17.2 Stormwater Pollution Prevention

A. The CONTRACTOR shall exercise due care to prevent or minimize any damage to any stream or wetland from pollution by debris, sediment or other material. The operation of equipment and/or materials in a jurisdictional wetland is expressly prohibited. Water that has been used for washing or processing, or that contains oils, sediments or other pollutants shall not be discharged from the job site. Such waters shall be collected and properly disposed of by the CONTRACTOR in accordance with applicable local, state and federal law.

B. The CONTRACTOR is solely responsible for securing all required state and local permits associated with stormwater discharges from the project including, but not necessarily limited to the KY Notice of Intent to Disturb (NOI) for Coverage of Storm Water Discharges Associated with Construction Activities under the KPDES Storm Water General Permit KYR100000 and the LFUCG Land Disturbance Permit. Permit application preparation and all required documentation are the responsibility of the CONTRACTOR. The CONTRACTOR is solely responsible for maintaining compliance with the stormwater pollution prevention plan or erosion and sediment control plan and ensuring the following:

a. That the Stormwater Pollution Prevention Plan (SWPPP) or erosion control plan is current and available for review on site;
b. That any and all stormwater inspection reports required by the permit are conducted by qualified personnel and are available for review onsite; and
c. That all best management practices (BMPs) are adequately maintained and effective at controlling erosion and preventing sediment from leaving the site.

C. The CONTRACTOR shall provide the necessary equipment and personnel to perform any and all emergency measures that may be required to contain any spillage or leakage and to remove materials, soils

or liquids that become contaminated. The collected spill material shall be properly disposed at the CONTRACTOR's expense.

D. Upon completion of the work and with the concurrence of the OWNER, the CONTRACTOR must file a Notice of Termination (NOT) of Coverage under the KPDES General Permit for Storm Water Discharges Associated with Construction Activity with the appropriate local and state authorities.

E. Any fines or penalties resulting from the failure to comply with the terms of the state or local stormwater permits or perform necessary corrective action are solely the obligation of the CONTRACTOR.

6. OTHER WORK

6.1 Related Work at Site

OWNER may perform other work related to the Project at the site by OWNER'S own forces, have other work performed by utility owners or let other direct contracts therefor which shall contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents, written notice thereof will be given to CONTRACTOR prior to starting any such other work; and, if such performance will involve additional expense to CONTRACTOR or requires additional time, a Change Order to the Contract will be negotiated.

6.2 Other Contractors or Utility Owners

CONTRACTOR shall afford each utility owner and other contractor who is a party to such a direct contract (or OWNER, if OWNER is performing the additional work with OWNER'S employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work and shall properly connect and coordinate the Work with theirs. CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

6.3 Delays Caused by Others

If any part of CONTRACTOR'S Work depends for proper execution or results upon the work of any such other contractor or utility owner (or OWNER), CONTRACTOR shall inspect and promptly report to ENGINEER in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. CONTRACTOR'S failure to so report will constitute an acceptance of the other work as fit and proper for integration with

CONTRACTOR'S Work except for latent or non-apparent defects and deficiencies in the other work.

6.4 Coordination

If OWNER contracts with others for the performance of other work on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified in the Special Conditions, and the specific matters to be covered by such authority and responsibility will be itemized, and the extent of such authority and responsibilities will be provided, in the Special Conditions.

7. OWNER'S RESPONSIBILITIES

7.1 Communications

OWNER shall issue all communications to CONTRACTOR through ENGINEER.

7.2 Data and Payments

OWNER shall furnish the data required of OWNER under the Contract Documents promptly after they are due.

7.3 Lands, Easements, and Surveys

OWNER'S duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER'S identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and in existing structures which have been utilized by ENGINEER in preparing the Drawings and Specifications.

7.4 Change Orders

OWNER is obligated to execute Change Orders as indicated in paragraph 9.4.

7.5 Inspections, Tests and Approvals

OWNER'S responsibility in respect to certain inspections, tests and approvals is set forth in paragraph 13.3.

7.6 Stop or Suspend Work

In connection with OWNER'S right to stop Work or suspend Work, see paragraphs 12.4 and 14.1. Paragraph 14.2 deals with OWNER'S rights to terminate services of CONTRACTOR under certain circumstances.

8. ENGINEER'S STATUS DURING CONSTRUCTION

8.1 OWNER'S Representative

ENGINEER will be OWNER'S representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER'S representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER.

8.2 Visits to Site

ENGINEER will make visits to the site at intervals appropriate to the various stages of construction 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. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER'S efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and on-site observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defects and deficiencies in the Work.

8.3 Project Representation

ENGINEER will provide an Inspector to assist ENGINEER in observing the performance of the Work. If OWNER designates another agent to represent OWNER at the site who is not ENGINEER'S agent or employee, the duties, responsibilities and limitations of authority of such other person will be as provided in the Special Conditions.

8.4 Clarifications and Interpretations

ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents.

8.5 Authorized Variations in Work

ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order.

8.6 Rejecting Defective Work

ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective and will also have authority to require special inspection or testing of the Work as provided in paragraph 12.3, whether or not the Work is fabricated, installed or completed.

8.7 Shop Drawings

In connection with ENGINEER'S responsibility for Shop Drawings and samples, see paragraphs 5.15.1 through 5.16 inclusive.

8.8 Change Orders

In connection with ENGINEER'S responsibilities as to Change Orders, see Articles 10, 11 and 12.

8.9 Payments

In connection with ENGINEER'S responsibilities with respect to Applications for Payment, etc., see Article 13.

8.10 Determinations for Unit Prices

ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR.

ENGINEER will review with CONTRACTOR ENGINEER'S preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise).

8.11 Decision on Disputes

ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims under Articles 10 and 11 in respect of changes in the Contract Price or Contract Time will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph, which ENGINEER will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter will be delivered to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise thereto, and written supporting data will be submitted to ENGINEER within sixty days after such occurrence unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim.

8.12 Limitations on Engineer's Responsibilities

8.12.1 CONTRACTOR, Supplier, or Surety

Neither ENGINEER's authority to act under this Article 8 or elsewhere in the Contract Documents nor any decision made by ENGINEER 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 Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

8.12.2 To Evaluate the Work

Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved" or terms of like effect or import

are used, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraphs 8.12.3 or 8.12.4.

8.12.3 CONTRACTOR'S Means, Methods, Etc.
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 ENGINEER will not be responsible for CONTRACTOR'S failure to perform or furnish the Work in accordance with the Contract Documents.

8.12.4 Acts of Omissions of CONTRACTOR
ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

9. CHANGES IN THE WORK

9.1 OWNER May Order Change
Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by a Change Order. Upon receipt of such notice, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

9.2 Claims
Claims for an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a Change Order will be settled as provided for in Article 10 or Article 11.

9.3 Work Not in Contract Documents
CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraph 3.4, except in the case of an emergency and except in the case of uncovering Work as provided in paragraph 12.3.4.

9.4 Change Orders
OWNER and CONTRACTOR shall execute appropriate Change Orders covering:

9.4.1 changes in the Work which are ordered by OWNER pursuant to paragraph 9.1, are required because of acceptance of defective Work under paragraph 12.7 or correcting defective Work under paragraph 12.8, or are agreed to by the parties;

9.4.2 changes in the Contract Price or Contract Time which are agreed to by the parties; and

9.4.3 changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 8.11; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 5.16.

9.5 Notice of Change

If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR'S responsibility, and the amount of each applicable Bond will be adjusted accordingly.

10. CHANGE OF CONTRACT PRICE

10.1 Total Compensation

The Contract Price constitutes the total compensation (subject to authorized adjustments) 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.

10.2 Claim for Increase or Decrease in Price

The Contract Price may only be changed by a Change Order. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by CONTRACTOR'S written statement that the amount claimed covers all known amounts (direct, indirect, and consequential) to which the CONTRACTOR is entitled as a result of the occurrence of said event.

10.3 Value of Work

The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

10.3.1 Unit Prices

Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of paragraphs 10.9.1. through 10.9.3, inclusive).

10.3.2 Lump Sum

By mutual acceptance of a lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 10.6.2.1).

10.3.3 Cost Plus Fee

On the basis of the Cost of the Work (determined as provided in paragraphs 10.4 and 10.5) plus a CONTRACTOR'S fee for overhead and profit (determined as provided in paragraphs 10.6 and 10.7).

10.4 Cost of the Work

The term Cost of the Work means the sum of all costs necessarily incurred and paid by 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 10.5:

10.4.1 Payroll Costs

Payroll costs 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, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

10.4.2 Materials and Equipment Costs

Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and

Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

10.4.3 Subcontractor Costs

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 CONTRACTOR 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 Subcontractor's Cost of the Work shall be determined in the same manner as CONTRACTOR'S Cost of the Work. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

10.4.4 Special Consultant Costs

Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.

10.4.5 Supplemental Costs

10.4.5.1 The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR'S employees incurred in discharge of duties connected with the Work.

10.4.5.2 Cost, 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 workers, 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.

10.4.5.3 Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, installation, dismantling and removal shall be 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.

10.4.5.4 Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

10.4.5.5 Deposits lost for causes other than 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, and royalty payments and fees for permits and licenses.

10.4.5.6 Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER), 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, CONTRACTOR shall be paid a fee proportionate to that stated in paragraph 10.6.2 for services.

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

10.4.5.8 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.

10.4.5.9 Cost of premiums for additional Bonds and insurance required because of changes in the Work and premiums for property insurance coverage within the limits of the deductible amounts established by OWNER.

10.5 Not to Be Included in Cost of the Work

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

10.5.1 Costs of Officers and Executives

Payroll costs and other compensation of CONTRACTOR'S officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants,

purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR'S principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 10.4.1 or specifically covered by paragraph 10.4.4 - all of which are to be considered administrative costs covered by the CONTRACTOR'S fee.

10.5.2 Principal Office
Expenses of CONTRACTOR'S principal and branch offices other than CONTRACTOR'S office at the site.

10.5.3 Capital Expense
Any part of CONTRACTOR'S capital expenses, including interest on CONTRACTOR'S capital employed for the Work and charges against CONTRACTOR for delinquent payments.

10.5.4 Bonds and Insurance
Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 10.4.5.9 above).

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

10.5.6 Other Costs
Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 10.4.

10.6 Contractor's Fee

The CONTRACTOR'S Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

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

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

10.6.2.1 for costs incurred under paragraphs 10.4.1 and 10.4.2, the CONTRACTOR'S fee shall be fifteen percent;

10.6.2.2 for costs incurred under paragraph 10.4.3, the CONTRACTOR'S fee shall be five percent; and if a subcontract is on the basis of Cost of the Work Plus a fee, the maximum allowable to CONTRACTOR on account of overhead and profit of all Subcontractors shall be fifteen percent;

10.6.2.3 no fee shall be payable on the basis of costs itemized under paragraphs 10.4.4, 10.4.5 and 10.5;

10.6.2.4 the amount of credit to be allowed by CONTRACTOR to OWNER for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in CONTRACTOR'S Fee by an amount equal to ten percent of the net decrease; and

10.6.2.5 when both additions and credits are involved in any one change, the adjustment in CONTRACTOR'S fee shall be computed on the basis of the net change in accordance with paragraphs 10.6.2.1 through 10.6.2.4, inclusive.

10.7 Itemized Cost Breakdown

Whenever the cost of any Work is to be determined pursuant to paragraphs 10.4 or 10.5, CONTRACTOR will submit in form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

10.8 Cash Allowances

It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to ENGINEER, CONTRACTOR agrees that:

10.8.1 Materials and Equipment

The allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

10.8.2 Other Costs

CONTRACTOR'S costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances. No demand for additional payment on account of any thereof will be valid.

10.8.3 Change Order

Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

10.9 Unit Price Work

10.9.1 General

Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER in accordance with Paragraph 8.10.

10.9.2 Overhead and Profit

Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR'S overhead and profit for each separately identified item.

10.9.3 Claim for Increase in Unit Price

Where the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement and there is no corresponding adjustment with respect to any other item of Work and if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an increase in the Contract Price in accordance with Article 10.

11. CHANGE OF CONTRACT TIME

11.1 Change Order

The Contract Time may only be changed by a Change Order. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by ENGINEER in accordance with paragraph 8.11. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph 11.1.

11.2 Justification for Time Extensions

The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if a claim is made therefore as provided in paragraph 11.1. Such delays shall include, but not be limited to, acts or neglect by OWNER or others performing additional work as contemplated by Article 6, or to fires, floods, labor disputes, epidemics, abnormal weather conditions or acts of God.

11.3 Time Limits

All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 11 shall not exclude recovery for damages (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court costs) for delay by either party.

12. WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

12.1 Warranty and Guarantee

CONTRACTOR warrants and guarantees to OWNER and ENGINEER that all Work will be in accordance with the Contract Documents and will not be defective. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 12.

12.2 Access to Work

ENGINEER and ENGINEER'S representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide proper and safe conditions for such access.

12.3 Tests and Inspections

12.3.1 Timely Notice

CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals.

12.3.2 Requirements and Responsibilities

The ENGINEER may require such inspection and testing during the course of the Work as he/she deems necessary to ascertain and assure the integrity and acceptable quality of the materials incorporated and the work performed. Inspection presence may be either full-time or intermittent, and neither the presence nor absence at any time of the ENGINEER or the INSPECTOR shall relieve the CONTRACTOR of sole responsibility for the acceptability and integrity of the Work or any part thereof.

The costs of sampling, testing, and inspection on-site to ascertain acceptability of the Work and materials will be borne by the OWNER except as otherwise provided. The OWNER will select a testing laboratory to perform such sampling and testing. Sampling and/or testing required by the CONTRACTOR or necessitated by failure of Work or materials to meet the above acceptability test shall be at the expense of the CONTRACTOR.

Inspection services may be performed by the employees of the OWNER or by others selected or designated by the OWNER or the ENGINEER.

Sampling and/or testing required for manufacturing quality and/or process control, for certification that raw mineral materials or manufactured products are the quality specified in the contract, or to assure the acceptability for incorporation into the Work shall be borne by the CONTRACTOR or the material supplier.

Cost for inspection, sampling, testing, and approvals required by the Laws or Regulations of any public body having competent jurisdiction shall be borne by the CONTRACTOR or the material supplier.

Sampling and testing will be in accord with pertinent codes and regulations and with appropriate standards of the American Society of Testing Materials or other specified standards.

12.3.3 On-Site Construction Test and Other Testing

All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to OWNER and CONTRACTOR (or by ENGINEER if so specified).

12.3.4 Covered Work

If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation. Such uncovering shall be at CONTRACTOR'S expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR'S intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

12.3.5 CONTRACTOR'S Obligation

Neither observations by ENGINEER nor inspections, tests or approvals by others shall relieve CONTRACTOR from CONTRACTOR'S obligations to perform the Work in accordance with the Contract Documents.

12.4 OWNER May Stop the Work

If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, 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.

12.5 Correction or Removal of Defective Work

If required by ENGINEER, CONTRACTOR shall promptly, as directed, either correct all 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. CONTRACTOR shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

12.6 One Year Correction Period

If within one year after the date of Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of 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, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and

other professionals) will be paid by CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service before Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Change Order.

12.7 Acceptance of Defective Work

If, instead of requiring correction or removal and replacement of defective Work, OWNER prefers to accept it, OWNER may do so. CONTRACTOR shall bear all direct, indirect and consequential costs attributable to OWNER'S evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness and to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals).

12.8 OWNER May Correct Defective Work

If CONTRACTOR fails within a reasonable time after written notice of ENGINEER to proceed to correct defective Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 12.5, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR'S services related thereto, take possession of CONTRACTOR'S tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER'S representatives, agents and employees such access to the site as may be necessary to enable OWNER to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of OWNER in exercising such rights and remedies will be charged against CONTRACTOR in an amount approved as to reasonableness by ENGINEER, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR'S defective Work. CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by OWNER of OWNER'S rights and remedies hereunder.

13. PAYMENTS TO CONTRACTOR AND COMPLETION

13.1 Schedule of Values

The schedule of values established as provided in paragraph 2.8 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

13.2 Application for Progress Payment

At least ten days before each progress payment is scheduled (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 supporting documentation as is required by the Contract Documents. 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 a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances (which are hereinafter in these General Conditions referred to as "Liens") and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER'S interest therein, all of which will be satisfactory to OWNER. OWNER shall, within thirty (30) calendar days of presentation to him of an approved Application for Payment, pay CONTRACTOR the amount approved by ENGINEER. Monthly progress payments shall be ninety (90) percent of the sum obtained by applying the respective bid unit prices to the approved estimated quantities of work completed by the Contractor during the preceding month. The remaining ten (10) percent will be held by the Owner, as retainage. At such time as the Engineer deems appropriate - based on the quality of work performed, progress of cleanup, and other pertinent factors - the rate of retainage, or the total amount retained, may be reduced; although, any reduction in retainage, below the ten (10) percent level, is made solely at the Engineer's discretion. All remaining retainage held will be included in the final payment to the Contractor.

13.3 CONTRACTOR'S Warranty of Title

CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

13.4 Review of Applications for Progress Payment

13.4.1 Submission of Application for Payment

ENGINEER will, after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER or return the Application to CONTRACTOR indicating in writing ENGINEER'S reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application.

13.4.2 ENGINEER'S Recommendation

ENGINEER may refuse to recommend the whole or any part of any payment, if, in ENGINEER'S opinion, it would be incorrect to make such representations to OWNER. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER'S opinion to protect OWNER from loss because:

13.4.2.1 the Work is defective, or completed Work has been damaged requiring correction or replacement;

13.4.2.2 the Contract Price has been reduced by Written Amendment or Change Order;

13.4.2.3 OWNER has been required to correct defective Work or complete Work in accordance with paragraph 12.8; or

13.4.2.4 of ENGINEER'S actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.2.1 through 14.2.9 inclusive.

13.5 Partial Utilization

OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and has been completed. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER that said part of the Work is complete and request that a Certificate of Completion be issued for that part of the Work.

13.6 Final Inspection

Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will make a final inspection with 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.

13.7 Final Application for Payment

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, marked-up record documents (as provided in paragraph 5.14) and other documents - all as required by the Contract Documents, and after ENGINEER has indicated that the Work is acceptable (subject to the provisions of paragraph 13.10), CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. 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 filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER'S 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 or Supplier fails to furnish a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

13.8 Final Payment and Acceptance

13.8.1 ENGINEER'S Approval

If, on the basis of ENGINEER'S observation of the Work during construction and final inspection, and ENGINEER'S review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR'S other obligations under the Contract Documents have been fulfilled, ENGINEER will, after receipt of the final Application for Payment, indicate in writing ENGINEER'S recommendation 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, subject to the provisions of paragraph 13.10. Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application.

13.8.2 Delay in Completion of Work

If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, OWNER shall, upon receipt of CONTRACTOR'S final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is

less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 10 of Part II, Information for Bidders, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for 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.

13.9 CONTRACTOR'S Continuing Obligation

CONTRACTOR'S obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by ENGINEER, nor the issuance of a certificate of Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by OWNER, nor any act of acceptance by OWNER nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor any correction of defective Work by OWNER will constitute an acceptance of Work not in accordance with the Contract Documents or a release of CONTRACTOR'S obligation to perform the Work in accordance with the Contract Documents (except as provided in paragraph 13.10).

13.10 Waiver of Claims

The making and acceptance of final payment will constitute:

13.10.1 a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from defective Work appearing after final inspection or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by OWNER of any rights in respect of CONTRACTOR'S continuing obligations under the Contract Documents; and

13.10.2 a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

14. SUSPENSION OF WORK AND TERMINATION

14.1 OWNER May 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 days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 10 and 11.

14.2 Termination of the Contract

The Owner may terminate the Work:

14.2.1 if CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency.

14.2.2 if a petition is filed against CONTRACTOR under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against CONTRACTOR under any other federal or state law in effect at the time relating to bankruptcy or insolvency.

14.2.3 if CONTRACTOR makes a general assignment for the benefit of creditors.

14.2.4 if a trustee, receiver, custodian or agent of CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of property of CONTRACTOR is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of CONTRACTOR'S creditors.

14.2.5 if CONTRACTOR admits in writing an inability to pay its debts generally as they become due.

14.2.6 if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.8 as revised from time to time).

14.2.7 if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction.

14.2.8 if CONTRACTOR disregards the authority of ENGINEER.

14.2.9 if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents.

OWNER may, after giving CONTRACTOR (and the surety) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR'S tools, appliances, construction equipment and machinery at the site and use the

same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) such excess will be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER will be approved as to reasonableness by ENGINEER and incorporated in a Change Order, but when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

14.2.10 if safety violations are observed and brought to the CONTRACTOR'S attention and CONTRACTOR fails to take immediate corrective measures. Owner will order an immediate termination of Contract. Note: It is the CONTRACTOR'S responsibility to know proper safety measures as they pertain to construction and OSHA.

14.3 CONTRACTOR'S Services Terminated

Where CONTRACTOR'S services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

14.4 Payment After Termination

Upon seven days' written notice to CONTRACTOR, OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, CONTRACTOR shall be paid for all Work executed and any expense sustained plus reasonable termination expenses, which will include, but not be limited to, direct, indirect and consequential costs (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs).

14.5 CONTRACTOR May Stop Work or Terminate

If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within sixty days after it is submitted, or OWNER fails for sixty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, terminate the Agreement and recover from OWNER payment for all Work executed and any expense sustained plus

reasonable termination expenses. 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 seven days' written notice to OWNER and ENGINEER stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve CONTRACTOR of the obligations under paragraph 5.16 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with OWNER.

15. MISCELLANEOUS

15.1 Claims for Injury or Damage

Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 15.1 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

15.2 Non-Discrimination in Employment

The CONTRACTOR shall comply with the following requirements prohibiting discrimination:

15.2.1 That no person (as defined in KRS 344.010) shall bid on LFUCG construction projects, or bid to furnish materials or supplies to the LFUCG, if, within six months prior to the time of opening of bids, said person shall have been found, by declamatory judgment action in Fayette Circuit Court, to be presently engaging in an unlawful practice, as hereinafter defined. Such declamatory judgment action may be brought by an aggrieved individual or upon an allegation that an effort at conciliation pursuant to KRS 344.200 has been attempted and failed, by the Lexington-Fayette County Human Rights Commission.

15.2.2 That it is an unlawful practice for an employer:

15.2.2.1 to fail or refuse to hire, or to discharge any individual or otherwise to discriminate against an individual, with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, sex, age, or national origin; or

15.2.2.2 to limit, segregate or classify his employees in any way which would deprive or tend to deprive an individual of employment opportunities or otherwise adversely affect his status as an employee because of such individual's sex, race, color, religion, age, or national origin.

15.2.3 That it is an unlawful practice for an employer, labor organization, or joint-labor management committee controlling apprenticeship or other training or retraining, including on-the-job training programs to discriminate against an individual because of his race, color, religion, sex, age, or national origin in admission to, or employment in, any program established to provide apprenticeship or other training.

15.2.4 That a copy of this Ordinance shall be furnished to all suppliers and made a part of all bid specifications.

15.2.5 This Ordinance shall take effect after it is signed, published, and recorded, as required by law.

15.3 Temporary Street Closing or Blockage

The CONTRACTOR will notify the ENGINEER at least 72 hours prior to making any temporary street closing or blockage. This will permit orderly notification to all concerned public agencies. Specific details and restrictions on street closure or blockage are contained in the Special Conditions.

15.4 Percentage of Work Performed by prime CONTRACTOR

The CONTRACTOR shall perform on site, and with its own organization, Work equivalent to at least fifty (50%) percent of the total amount of Work to be performed under the Contract. This percentage may be reduced by a supplemental agreement to this Contract if, during performing the Work, the CONTRACTOR requests a reduction, and the ENGINEER determines that the reduction would be to the advantage of the OWNER.

15.5 Clean-up

Clean-up shall progress, to the greatest degree practicable, throughout the course of the Work. The Work will not be considered as completed, and final payment will not be made, until the right-of-way and all ground occupied or affected by the Contractor in connection with the Work has been cleared of all rubbish, equipment,

excess materials, temporary structures, and weeds. Rubbish and all waste materials of whatever nature shall be disposed of, off of the project site, in an acceptable manner. All property, both public and private, which has been damaged in the prosecution of the Work, shall be restored in an acceptable manner. All areas shall be draining, and all drainage ways shall be left unobstructed, and in such a condition that drift will not collect, or scour be induced.

15.6 General

The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 12.1, 12.3.5, 13.3, and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and guarantees made in the Contract Documents will survive final payment and termination or completion of the Agreement.

15.7 Debris Disposal

For all LFUCG projects any trash, construction demolition debris, yard waste, dirt or debris of any kind that is removed from the project site must be disposed of in accordance with local, state, and federal regulations. The disposal site or facility must be approved in advance by the LFUCG and disposal documentation is required. The Contractor will be responsible for payment of any fines associated with improper disposal of material removed from the project site.

END OF SECTION

PART V
SPECIAL CONDITIONS
INDEX

1 BLASTING SC-2

2 RISK MANAGEMENT PROVISIONS –
INSURANCE AND INDEMNIFICATION SC-3

1. BLASTING

Blasting shall only be allowed with the specific written permission from the OWNER and the CONTRACTOR will be fully responsible and will be required to provide additional insurance.

Blasting is only allowed by a licensed blaster in compliance with the State of Kentucky Laws, KRS Section 351.310 – 351.340 and applicable rules and regulations issued by the Department of Mines and Minerals.

CONTRACTOR shall notify each property owner and public utility company having structures or facilities in proximity to the site of the work of the intent to use explosives. Give such notice sufficiently in advance to enable those being notified to take the necessary steps to protect their property from injury. CONTRACTOR will be liable for any and all damages and claims made as a result of his blasting operations.

CONTRACTOR shall preserve the original bearing value of rock located under proposed structure foundations from damage be blasting, by concussion from the blasting or by excessive breakage. The CONTRACTOR shall bear any increase in structure costs caused by blasting damage to rock under proposed foundations.

2. **RISK MANAGEMENT PROVISIONS**
INSURANCE AND INDEMNIFICATION

INDEMNIFICATION AND HOLD HARMLESS PROVISION

(1) It is understood and agreed by the parties that Contractor hereby assumes the entire responsibility and liability for any and all damages to persons or property caused by or resulting from or arising out of any act or omission on the part of Contractor or its employees, agents, servants, owners, principals, licensees, assigns or subcontractors of any tier (hereinafter "CONTRACTOR") under or in connection with this agreement and/or the provision of goods or services and the performance or failure to perform any work required thereby.

(2) CONTRACTOR shall indemnify, save, hold harmless and defend the Lexington-Fayette Urban County Government and its elected and appointed officials, employees, agents, volunteers, and successors in interest (hereinafter "LFUCG") from and against all liability, damages, and losses, including but not limited to, demands, claims, obligations, causes of action, judgments, penalties, fines, liens, costs, expenses, interest, defense costs and reasonable attorney's fees that are in any way incidental to or connected with, or that arise or are alleged to have arisen, directly or indirectly, from or by CONTRACTOR's performance or breach of the agreement and/or the provision of goods or services provided that: (a) it is attributable to personal injury, bodily injury, sickness, or death, or to injury to or destruction of property (including the loss of use resulting therefrom), or to or from the negligent acts, errors or omissions or willful misconduct of the CONTRACTOR; and (b) not caused solely by the active negligence or willful misconduct of LFUCG.

(3) In the event LFUCG is alleged to be liable based upon the above, CONTRACTOR shall defend such allegations and shall bear all costs, fees and expenses of such defense, including but not limited to, all reasonable attorneys' fees and expenses, court costs, and expert witness fees and expenses, using attorneys approved in writing by LFUCG, which approval shall not be unreasonably withheld.

(4) These provisions shall in no way be limited by any financial responsibility or insurance requirements and shall survive the termination of this agreement.

(5) LFUCG is a political subdivision of the Commonwealth of Kentucky. CONTRACTOR acknowledges and agrees that LFUCG is unable to provide indemnity or otherwise save, hold harmless, or defend the CONTRACTOR in any manner.

FINANCIAL RESPONSIBILITY

BIDDER/CONTRACTOR understands and agrees that it shall, prior to final acceptance of its bid and the commencement of any work, demonstrate the ability to assure compliance with the above Indemnity provisions and these other risk management provisions.

INSURANCE REQUIREMENTS

YOUR ATTENTION IS DIRECTED TO THE INSURANCE REQUIREMENTS BELOW, AND YOU MAY NEED TO CONFER WITH YOUR INSURANCE AGENTS, BROKERS, OR CARRIERS TO DETERMINE IN ADVANCE OF SUBMISSION OF A RESPONSE THE AVAILABILITY OF THE INSURANCE COVERAGES AND ENDORSEMENTS REQUIRED

HEREIN. IF YOU FAIL TO COMPLY WITH THE INSURANCE REQUIREMENTS BELOW, YOU MAY BE DISQUALIFIED FROM AWARD OF THE CONTRACT.

Required Insurance Coverage

BIDDER/CONTRACTOR shall procure and maintain for the duration of this contract the following or equivalent insurance policies at no less than the limits shown below and cause its subcontractors to maintain similar insurance with limits acceptable to LFUCG in order to protect LFUCG against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by CONTRACTOR. The cost of such insurance shall be included in any bid:

Coverage	**Limits**
General Liability (Insurance Services Office Form CG 00 01)	$1 million per occurrence, $2 million aggregate or $2 million combined single limit
Commercial Automobile Liability (Insurance Services Office Form CA 0001)	combined single, $1 million per occurrence
Worker's Compensation	Statutory
Employer's Liability	$500,000.00

The policies above shall contain the following conditions:

a. All Certificates of Insurance forms used by the insurance carrier shall be properly filed and approved by the Department of Insurance for the Commonwealth of Kentucky (DOI). LFUCG shall be named as an additional insured in the General Liability Policy and Commercial Automobile Liability Policy using the Kentucky DOI approved forms.

b. The General Liability Policy shall be primary to any insurance or self-insurance retained by LFUCG.

c. The General Liability Policy shall include a Products and Completed Operations endorsement or Premises and Operations Liability endorsement unless it is deemed not to apply by LFUCG.

d. The General Liability Policy shall include an Explosion-Collapse Underground (XCU) endorsement.

e. The General Liability Policy shall include a Pollution liability and/or Environmental Casualty endorsement unless it is deemed not to apply by LFUCG.

f. LFUCG shall be provided at least 30 days advance written notice via certified mail, return receipt requested, in the event any of the required policies are canceled or non-renewed.

g. Said coverage shall be written by insurers acceptable to LFUCG and shall be in a form acceptable to LFUCG. Insurance placed with insurers with a rating classification of no less than Excellent (A or A-) and a financial size category of no less than VIII, as defined by the most

current Best's Key Rating Guide shall be deemed automatically acceptable.

Renewals

After insurance has been approved by LFUCG, evidence of renewal of an expiring policy must be submitted to LFUCG and may be submitted on a manually signed renewal endorsement form. If the policy or carrier has changed, however, new evidence of coverage must be submitted in accordance with these Insurance Requirements.

Deductibles and Self-Insured Programs

IF YOU INTEND TO SUBMIT A SELF-INSURANCE PLAN IT MUST BE FORWARDED TO LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DIVISION OF RISK MANAGEMENT, 200 EAST MAIN STREET, LEXINGTON, KENTUCKY 40507 NO LATER THAN A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO THE RESPONSE DATE. Self-insurance programs, deductibles, and self-insured retentions in insurance policies are subject to separate approval by Lexington-Fayette Urban County Government's Division of Risk Management, upon review of evidence of BIDDER/CONTRACTOR's financial capacity to respond to claims. Any such programs or retentions must provide LFUCG with at least the same protection from liability and defense of suits as would be afforded by first-dollar insurance coverage. If BIDDER/CONTRACTOR satisfies any portion of the insurance requirements through deductibles, self-insurance programs, or self-insured retentions, BIDDER/CONTRACTOR agrees to provide Lexington-Fayette Urban County Government, Division of Risk Management, the following data prior to the final acceptance of bid and the commencement of any work:

a. Latest audited financial statement, including auditor's notes.

b. Any records of any self-insured trust fund plan or policy and related accounting statements.

c. Actuarial funding reports or retained losses.

d. Risk Management Manual or a description of the self-insurance and risk management program.

e. A claim loss run summary for the previous five (5) years.

f. Self-Insured Associations will be considered.

Safety and Loss Control

CONTRACTOR shall comply with all applicable federal, state, and local safety standards related to the performance of its works or services under this Agreement and take necessary action to protect the life, health and safety and property of all of its personnel on the job site, the public, and LFUCG.

Verification of Coverage

BIDDER/CONTRACTOR agrees to furnish LFUCG with all applicable Certificates of Insurance signed by a person authorized by the insurer to bind coverage on its behalf prior to final award, and if requested, shall provide LFUCG copies of all insurance policies, including all endorsements.

Right to Review, Audit and Inspect

CONTRACTOR understands and agrees that LFUCG may review, audit and inspect any and all of its records and operations to ensure compliance with these Insurance Requirements.

DEFAULT

BIDDER/CONTRACTOR understands and agrees that the failure to comply with any of these insurance, safety, or loss control provisions shall constitute default and that LFUCG may elect at its option any single remedy or penalty or any combination of remedies and penalties, as available, including but not limited to purchasing insurance and charging BIDDER/CONTRACTOR for any such insurance premiums purchased, or suspending or terminating the work.

END OF SECTION

PART VI

CONTRACT AGREEMENT

INDEX

1. SCOPE OF WORK
2. TIME OF COMPLETION AND LIQUIDATED DAMAGES
3. ISSUANCE OF WORK ORDERS
4. THE CONTRACT SUM
5. PROGRESS PAYMENTS
6. ACCEPTANCE AND FINAL PAYMENT
7. THE CONTRACT DOCUMENTS
8. EXTRA WORK
9. ENUMERATION OF SPECIFICATIONS AND DRAWINGS

PART VI

CONTRACT AGREEMENT

THIS AGREEMENT, made on the 14th day of May, 20 26, by and between **Lexington-Fayette Urban County Government (LFUCG)**, acting herein called "OWNER" and

Pace Contracting, LLC, doing business as a Limited Liability (LLC) corporation located in the City of Louisville, County of Jefferson, and State of Kentucky, hereinafter called "CONTRACTOR."

WITNESSETH: That the CONTRACTOR and the OWNER in consideration of Four Hundred Twenty Four Thousand Dollars and zero Cents ($424,000.00) quoted in the proposal by the CONTRACTOR, dated March 24, 2026, hereby agree to commence and complete the construction described as follows:

1. SCOPE OF WORK

The CONTRACTOR shall furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, the General Conditions, and the Special Conditions of the Contract, the Specifications and Contract Documents therefore as prepared by LFUCG for the **WEST HICKMAN WWTP HIGH FLOW DIVERSION BOX REPLACEMENT.**

2. TIME OF COMPLETION AND LIQUIDATED DAMAGES

The time period estimated and authorized by the OWNER for the proper execution of the Work by the Contract, in full, is hereby fixed as one hundred eighty (180) calendar days. The time shall begin ten (10) days after the CONTRACTOR is given the Notice to Proceed with the Work. **Time is of the essence in the performance of this Agreement and CONTRACTOR shall be liable and responsible for damages suffered by OWNER as a result of the delay caused by CONTRACTOR.**

Should the CONTRACTOR fail or refuse to complete the work within the time specified in his Proposal and/or Contract (or extension of time granted by the OWNER), the CONTRACTOR shall pay liquidated damages in an amount of four hundred dollars ($400) per day. The amount of liquidated damages shall in no event be considered as a penalty, nor other than an amount agreed upon by the CONTRACTOR and the OWNER for damages, loses, additional engineering, additional resident representation and other cost that will be sustained by the OWNER, if the CONTRACTOR fails to complete the work within the specified time. Liquidated damages will be applied on a rate per day for each and every calendar day (Sundays and holidays included) beyond the Contract expiration date stipulated in the Contract Documents, considering all time extension granted.

3. ISSUANCE OF WORK ORDERS

Notice to begin Work will be given in whole or for part of the Work as determined by the OWNER pending the availability of funds. The order of construction will be as determined by the Engineer after consultation with the CONTRACTOR and the OWNER.

4. THE CONTRACT SUM

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the Contract, as quoted in the proposal, subject to any additions and deductions, as provided therein.

5. PROGRESS PAYMENTS

The OWNER shall make payments on account of the Contract, as provided in accordance with the General Conditions, as estimated by the Engineer, less the aggregate of previous payments.

6. ACCEPTANCE AND FINAL PAYMENT

Final payment shall be due within ninety (90) days after completion of the Work, provided the Work be then fully completed and the Contract fully accepted.

Before issuance of final certificate, the CONTRACTOR shall submit evidence satisfactory to the Engineer that all payrolls, material bills, and other indebtedness connected with the Work has been paid.

If, after the Work has been substantially completed, full completion thereof is materially delayed through no fault of the CONTRACTOR, and the ENGINEER so certifies, the OWNER shall upon certificate of the ENGINEER, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

7. THE CONTRACT DOCUMENTS

The Advertisement for Bids, Information for Bidders, the General Conditions, Performance and Payment Bonds, Contract Agreement, Special Conditions, Technical Specifications, any and all Addenda, Proposal, and Plan Drawings form the Contract. and they are fully a part of the Contract as if hereto attached or herein repeated.

If during the performance of the Work, CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, CONTRACTOR shall so report to ENGINEER in writing at once and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification from ENGINEER; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof. In resolving such conflicts, errors and discrepancies, the documents shall be given precedence in

the following order:

1. Agreement
2. Field and Change Orders
3. Addenda
4. Special Conditions
5. Information for Bidders
6. General Conditions
7. Specifications and Drawings

8. EXTRA WORK

The OWNER, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the Work, the Contract Sum being adjusted accordingly. All such Work shall be executed and paid for in accordance with the General Conditions, which is a part of this Contract.

9. ENUMERATION OF SPECIFICATIONS AND DRAWINGS

THE FOLLOWING IS AN ENUMERATION OF THE SPECIFICATIONS AND DRAWINGS (CONTRACT DOCUMENTS):

SPECIFICATIONS

SECTION NO.	SPECIFICATION TITLE	PAGES
I	Advertisement for Bids	AB 1 - 4
II	Information for Bidders	IB 1 - 9
III	Form of Proposal	P 1 - 33
IV	General Conditions	GC 1 - 50
V	Special Conditions	SC 1 - 6
VI	Contract Agreement	CA 1 - 8
VII	Performance and Payment Bonds	PB 1 - 7
VIII	Addenda	AD 1 and AD 2
IX	Technical Specifications	1-180
X	APPENDIX A – EXISTING DIVERSION BOX PHOTOS	1-7
XI	APPENDIX B – 2016 GEOTECHNICAL REPORT	1-212

DRAWINGS

DRAWING NO.	DRAWING TITLE
G-001	COVER SHEET
G-002	GENERAL AND PROJECT SPECIFIC NOTES
G-003	LEGEND AND ABBREVIATIONS
V-001	EXISTING SITE LAYOUT AND EROSION AND SEDIMENT CONTROL PLAN
C-001	DEMOLITION PLAN
C-101	PROPOSED SITE PLAN
C-201	PIPING PLAN AND PROFILES
C-501	CIVIL STANDARD DETAILS
S-001	GENERAL NOTES, DESIGN CRITERIA AND FOUNDATIONS
S-002	SPECIAL INSPECTIONS
SD-101	DEMOLITON PLAN AND SECTIONS
S-101	DIVERSION BOX REPLACEMENT PLANS
S-301	SECTIONS
S-501	GENERAL CONCRETE

IN WITNESSETH WHEREOF, the parties hereto have executed this Contract as of the date and year above written.

(Seal)

Lexington-Fayette Urban County Government.
Lexington, Kentucky
(Owner)

ATTEST:

BY: Linda Gorton
MAYOR

Clerk of the Urban County Council

(Witness)

(Title)

(Seal)

Pace Contracting, LLC
(Contractor)

BY:

~~(Secretary)~~* Vice President

Mike Mulhall
(Witness)

Michael Bryant, President
(Title)

15415 Shelbyville Road, Louisville, KY 40245
(Address and Zip Code)

IMPORTANT: *Strike out any non-applicable terms.

Secretary of the OWNER should attest. If the CONTRACTOR is a corporation, the Secretary should attest. Give the proper title of each person executing the Contract.

END OF SECTION

PART VI-A
NOTICE OF AWARD

CONTRACTOR: Pace Contracting, LLC
15415 Shelbyville Road
Louisville, KY 40245

OWNER: Lexington-Fayette Urban County Government
Division of Water Quality
Lexington, Kentucky

PROJECT: West Hickman WWTP High Flow Diversion Box Replacement
Lexington-Fayette Urban County Government

LFUCG Bid No. 23-2026

You are hereby notified that the Owner has considered the Bid submitted by you for the above-described project in response to its Advertisement for Bids dated March 24, 2026.

It appears that it is to the best interest of said Owner to accept your Bid in the amount of four hundred twenty-four thousand dollars ($424,000.00), and you are hereby notified that your Bid has been accepted for

West Hickman WWTP High Flow Diversion Box Replacement,

LFUCG Bid No. 23-2026.

The Contractor is required by these Contract Documents to execute and deliver the formal Contract Agreement with the undersigned Owner and to furnish the required Contractor's Performance and Payment Bonds within ten (10) days from the date of the delivery of this Notice.

If you fail to execute said Contract Agreement and to furnish said Bonds within ten (10) days from the date of delivery 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 to award the Work covered by your Bid to another, or to re-advertise the Work or otherwise dispose thereof as the Owner may deem appropriate.

Dated this 21st day of May, 2026.

Lexington-Fayette Urban County Government

By: Emily Epperson

Title: Plant Engineering Manager

NOTICE OF ACCEPTANCE

Receipt of the above Notice of Award is hereby acknowledged this _____ day of _____, 20___.

By: _____

Title: _____

PART VI - B
NOTICE TO PROCEED

CONTRACTOR: Pace Contracting, LLC
15415 Shelbyville Road
Louisville, KY 40245

OWNER: Lexington-Fayette Urban County Government
Division of Water Quality
Lexington, Kentucky

PROJECT: West Hickman WWTP High Flow Diversion Box Replacement
Lexington-Fayette Urban County Government

LFUCG Bid No. 23-2026

Contract Agreement Amount:
four hundred twenty four thousand dollars ($ 424,000)

You are hereby notified to commence Work on the referenced project on or before May 25, 2026 and to substantially complete Work within one hundred eighty (180) CONSECUTIVE CALENDAR DAYS thereafter. Your Contract Agreement completion date is therefore November 21, 2026.

The Contract Agreement provides for assessment of the sum of four hundred dollars ($400) as liquidated damages for each consecutive calendar day after the above established Contract Agreement completion date that the Work remains incomplete.

Lexington-Fayette Urban County Government

By: Emily Epperson

Title: Plant Engineering Manager

Date: 05/21/2026

PART VII

PERFORMANCE AND PAYMENT BONDS

1. PERFORMANCE BOND

2. PAYMENT BOND

PART VII

PERFORMANCE BOND

Bond No: 30269582

KNOW ALL MEN BY THESE PRESENTS, that

Pace Contracting, LLC
(Name of CONTRACTOR)

15415 Shelbyville Rd, Louisville, KY 40245
(Address of CONTRACTOR)

a Limited Liability Company, hereinafter
(Corporation, Partnership, or Individual)

called Principal, and Western Surety Company
(Name of Surety)

151 N. Franklin Street, Chicago, IL 60606
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
200 East Main Street, Third Floor
Lexington, Kentucky 40507

hereinafter called "OWNER" in the penal sum of: Four Hundred Twenty-four Thousand & 00/100 Dollars, ($ 424,000.00), for the payment of whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal by written agreement is entering into a Contract with OWNER for WEST HICKMAN WWTP HIGH FLOW DIVERSION BOX REPLACEMENT in accordance with drawings and specifications prepared by: Lexington-Fayette Urban County Government which Contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the OWNER.

Whenever, Principal shall be, and declared by OWNER to be in default under the Contract, the OWNER having performed OWNER'S obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

(1) Complete the Contract in accordance with its terms and conditions or

(2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or if the OWNER elects, upon determination by the OWNER and Surety jointly of the lowest responsible bidder, arrange for a Contract between such bidder and OWNER, and make available as Work progresses (even though there may be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract Price", as used in this paragraph shall mean the total amount payable by OWNER to Principal under the Contract and any amendments thereto, less the amount properly paid by OWNER to Principal.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the OWNER named herein or the heirs, executors, administrators or successors of OWNER.

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

ATTEST:

Michael Bryant
(Principal) ~~Secretary~~ President

Pace Contracting, LLC
Principal

BY: _____(s)

15415 Shelbyville Rd
(Address)
Louisville, KY 40245

Kristy M. Smith
Witness as to Principal Kristy Smith

15415 Shelbyville Rd
(Address)
Louisville, KY 40245

Western Surety Company
Surety

ATTEST:

BY: Madison M Haller
Attorney-in-Fact

SEE ATTACHED POWER OF ATTORNEY
(Surety) Secretary

151 N. Franklin Street
(Address)
Chicago, IL 60606

(SEAL)

Leslie Blevins
Witness as to Surety

127 S Sherrin Ave.,
(Address)
Louisville, KY 40207

TITLE: Attorney in Fact
Surety

BY: Madison M. Haller

TITLE: Leslie Blevins, Witness

NOTE: The number of executed counterparts of the bond shall coincide with the number of executed counterparts of the Contract.

PART VII

Bond No: 30269582

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENT: that

Pace Contracting, LLC

(Name of Contractor)

15415 Shelbyville Rd, Louisville, KY 40245

(Address of Contractor)

a Limited Liability Company, hereinafter

(Corporation, Partnership or Individual)

called Principal, and Western Surety Company

(Name of Surety)

151 N. Franklin Street, Chicago, IL 60606

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto:

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
200 East Main Street, Third Floor
Lexington, Kentucky 40507

Obligee, hereinafter called OWNER, for the use and benefit of claimants as hereinafter defined, in the amount of Four Hundred Twenty-four Thousand & 00/100 Dollars ($424,000.00) the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal by written agreement is entering into a Contract with OWNER for WEST HICKMAN WWTP HIGH FLOW DIVERSION BOX REPLACEME in accordance with drawings and specifications prepared by: Lexington-Fayette Urban County Government which Contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall promptly make payment to all claimants as hereinafter defined for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions.

I. A claimant is defined as one having a direct contract with the Principal or with a Subcontractor of the Principal for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.

2. The above named Principal and Surety hereby jointly and severally agree with the OWNER that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The OWNER shall not be liable for the payment of any costs or expenses of any such suit.

3. No suit or action shall be commenced hereunder by any claimant:

   (a) Unless claimant, other than one having a direct contract with the Principal, shall have given written notice to any two of the following: The Principal, the OWNER, or the Surety above named, within ninety (90) days after such claimant did or performed the last of the Work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the Work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal, OWNER, or Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need not be made by a public officer.

   (b) After the expiration of one (1) year following the date on which Principal ceased Work on said Contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

   (c) Other than in a state court of competent jurisdiction in and for the county or other political subdivision of the state in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere.

4. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens which may be filed of record against aid improvement, whether or not claim for the amount of such lien be presented under and against this bond.

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

ATTEST:

Michael Bryant
(Principal) ~~Secretary~~ President

(SEAL)

Pace Contracting, LLC
(Principal)

BY: _____(s)

15415 Shelbyville Rd
(Address)
Louisville, KY 40245

Kristy M. Smith
(Witness to Principal) Kristy Smith

15415 Shelbyville Rd
(Address)
Louisville, KY 40245

Western Surety Company
(Surety)

ATTEST:

BY: Madison M. Haller
(Attorney-in-Fact)
Madison M. Haller

SEE ATTACHED POWER OF ATTORNEY
(Surety) Secretary

(SEAL)

Leslie Blevins
Witness as to Surety Leslie Blevins

127 S Sherrin Ave.,
(Address)
Louisville, KY 40207

151 N. Franklin Street
(Address)
Chicago, IL 60606

NOTE: The number of executed counterparts of the bond shall coincide with the number of executed counterparts of the Contract.

END OF SECTION

Western Surety Company

POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

Know All Men By These Presents, That WESTERN SURETY COMPANY, a South Dakota corporation, is a duly organized and existing corporation having its principal office in the City of Sioux Falls, and State of South Dakota, and that it does by virtue of the signature and seal herein affixed hereby make, constitute and appoint

Paula J Teague, Todd P Loehnert, John B Ayres, Michael W Baxter, Madison M Haller, Individually

of Louisville, KY, its true and lawful Attorney(s)-in-Fact with full power and authority hereby conferred to sign, seal and execute for and on its behalf bonds, undertakings and other obligatory instruments of similar nature

- In Unlimited Amounts -

and to bind it thereby as fully and to the same extent as if such instruments were signed by a duly authorized officer of the corporation and all the acts of said Attorney, pursuant to the authority hereby given, are hereby ratified and confirmed.

This Power of Attorney is made and executed pursuant to and by authority of the Authorizing By-Laws and Resolutions printed at the bottom of this page, duly adopted, as indicated, by the shareholders of the corporation.

In Witness Whereof, WESTERN SURETY COMPANY has caused these presents to be signed by its Vice President and its corporate seal to be hereto affixed on this 22nd day of January, 2026.

WESTERN SURETY COMPANY

Larry Kasten, Vice President

State of South Dakota }
County of Minnehaha } ss

On this 22nd day of January, 2026, before me personally came Larry Kasten, to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is a Vice President of WESTERN SURETY COMPANY described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed pursuant to authority given by the Board of Directors of said corporation and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said corporation.

My commission expires
December 4, 2031

K WALSH
NOTARY PUBLIC
SOUTH DAKOTA

K. Walsh, Notary Public

CERTIFICATE

I, Paula Kolsrud, Assistant Secretary of WESTERN SURETY COMPANY do hereby certify that the Power of Attorney hereinabove set forth is still in force, and further certify that the By-Laws and Resolutions of the corporation printed below this certificate are still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said corporation this day of .

WESTERN SURETY COMPANY

Paula Kolsrud, Assistant Secretary

Authorizing By-Laws and Resolutions

ADOPTED BY THE SHAREHOLDERS OF WESTERN SURETY COMPANY

This Power of Attorney is made and executed pursuant to and by authority of the following By-Law duly adopted by the shareholders of the Company.

Section 7. All bonds, policies, undertakings, Powers of Attorney, or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, and Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or agents who shall have authority to issue bonds, policies, or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile.

This Power of Attorney is signed by Larry Kasten, Vice President, who has been authorized pursuant to the above Bylaw to execute power of attorneys on behalf of Western Surety Company

This Power of Attorney may be signed by digital signature and sealed by a digital or otherwise electronic-formatted corporate seal under and by the authority of the following Resolution adopted by the Board of Directors of the Company by unanimous written consent dated the 27th day of April, 2022:

"RESOLVED: That it is in the best interest of the Company to periodically ratify and confirm any corporate documents signed by digital signatures and to ratify and confirm the use of a digital or otherwise electronic-formatted corporate seal, each to be considered the act and deed of the Company."

Go to www.cnasurety.com > Owner / Obligee Services > Validate Bond Coverage, if you want to verify bond authenticity.

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 4/29/2026

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Arthur J. Gallagher Risk Management Services, LLC
1601 Alliant Ave
Louisville KY 40299

CONTACT NAME: Amy Morgan
PHONE (A/C, No, Ext): 502-415-7033 **FAX (A/C, No):**
E-MAIL ADDRESS: amy_morgan@ajg.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : AGCS Marine Insurance Company	22837
INSURER B : Kentucky AGC Self Insurors Fund	
INSURER C : Indemnity National Insurance Company	18468
INSURER D : Convex Insurance UK Limited	
INSURER E : National Fire Insurance Co of Hartford	20478
INSURER F :	

INSURED
Pace Contracting, LLC
15415 Shelbyville Road
Louisville, KY 40245

COVERAGES **CERTIFICATE NUMBER:** 1252467085 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
E	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE [ ] OCCUR [X] GEN'L AGGREGATE LIMIT APPLIES PER: POLICY [ ] PRO-JECT [X] LOC [X] OTHER:	Y		6012455573	4/1/2026	4/1/2027	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 2,000,000 $ 500,000 $ 15,000 $ 2,000,000 $ 4,000,000 $ 4,000,000
E	AUTOMOBILE LIABILITY X ANY AUTO OWNED AUTOS ONLY [ ] HIRED AUTOS ONLY [X] SCHEDULED AUTOS [ ] NON-OWNED AUTOS ONLY [X]	Y		6012455590	4/1/2026	4/1/2027	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) Comp/Coll Ded	$ 2,000,000 $ $ $ $ 2,000
C	[ ] UMBRELLA LIAB [X] OCCUR X EXCESS LIAB [ ] CLAIMS-MADE DED [ ] RETENTION $			XS0001202-26	4/1/2026	4/1/2027	EACH OCCURRENCE AGGREGATE	$ 5,000,000 $ 5,000,000
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N [N] If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		18803	1/1/2026	1/1/2027	X PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 4,500,000 $ 4,500,000 $ 4,500,000
A A D	Bikt Bldrs Risk Bikt Bldrs Risk Prof/Pollution			MXI93057340 MXI93057340 CPL000004-0426	4/1/2026 4/1/2026 4/1/2026	4/1/2027 4/1/2027 4/1/2027	Frame, JM MNC, MFR & FR Limit	$2,500,000 $25,000,000 $5,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
Certificate Holder is afforded additional insured as required by written contract per: General Liability CNA75079 3/22, Commercial Auto CNA63359 04/12, Waiver of Subrogation as required by written contract: General Liability CNA74705 01/15, Commercial Auto CNA63359 04/12. Insurance is primary and non-contributory on the General Liability per: CNA74705 01/15, and Commercial Auto per: CNA63359 04/2012. Excess is follow form of underlying policies.

Policies include: Builders Risk; $25M for Water Treatment Projects; policy # MXI93057340; Carrier: AGCS Marine Insurance Company; NAIC # 22837.
Project: West Hickman WWTP High Flow Diversion Box Replacement

Lexington-Fayette Urban County Government (LFUCG) is an Additional Insured with respect to the General Liability and Auto Liability policies when required by
See Attached...

CERTIFICATE HOLDER

Lexington-Fayette Urban County Government (LFUCG),
Division of Water Quality
200 East Main Street, Third Floor
Lexington KY 40507
United States

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
Wm Hamilton III

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AGENCY CUSTOMER ID: _____

LOC #: _____

ADDITIONAL REMARKS SCHEDULE

AGENCY Arthur J. Gallagher Risk Management Services, LLC	NAMED INSURED Pace Contracting, LLC 15415 Shelbyville Road Louisville, KY 40245
POLICY NUMBER	
CARRIER / NAIC CODE	EFFECTIVE DATE:

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: 25 FORM TITLE: CERTIFICATE OF LIABILITY INSURANCE

written contract. Insurance is primary with regards to the General Liability policy. General Liability policy does not exclude Explosion - Collapse, Underground (XCU).

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CNA

CNA PARAMOUNT

Contractors' General Liability Extension Endorsement

It is understood and agreed that this endorsement amends the **COMMERCIAL GENERAL LIABILITY COVERAGE PART** as follows. If any other endorsement attached to this policy amends any provision also amended by this endorsement, then that other endorsement controls with respect to such provision, and the changes made by this endorsement with respect to such provision do not apply.

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1. ADDITIONAL INSUREDS

a. **WHO IS AN INSURED** is amended to include as an **Insured** any person or organization described in paragraphs **A.** through **H.** below whom a **Named Insured** is required to add as an additional insured on this **Coverage Part** under a written contract or written agreement, provided such contract or agreement:

(1) Is currently in effect or becomes effective during the term of this **Coverage Part**; and

(2) was executed prior to:

(a) the **bodily injury** or **property damage**; or

(b) the offense that caused the **personal and advertising injury**,

for which such additional insured seeks coverage.

b. However, subject always to the terms and conditions of this policy, including the limits of insurance, the insurer will not provide such additional insured with:

(1) a higher limit of insurance than required by such contract or agreement; or

(2) coverage broader than required by such contract or agreement, and in no event broader than that described by the applicable paragraph **A.** through **H.** below.

Any coverage granted by this endorsement shall apply only to the extent permissible by law.

A. Controlling Interest

Any person or organization with a controlling interest in a **Named Insured**, but only with respect to such person or organization's liability for **bodily injury**, **property damage** or **personal and advertising injury** arising out of:

1. such person or organization's financial control of a **Named Insured**; or

2. premises such person or organization owns, maintains or controls while a **Named Insured** leases or occupies such premises;

provided that the coverage granted by this paragraph does not apply to structural alterations, new construction or demolition operations performed by, on behalf of, or for such additional insured.

B. Co-owner of Insured Premises

A co-owner of a premises co-owned by a **Named Insured** and covered under this insurance but only with respect to such co-owner's liability for **bodily injury**, **property damage** or **personal and advertising injury** as co-owner of such premises.

C. Lessor of Equipment

Any person or organization from whom a **Named Insured** leases equipment, but only with respect to liability for **bodily injury**, **property damage** or **personal and advertising injury** caused, in whole or in part, by the **Named Insured's** maintenance, operation or use of such equipment, provided that the **occurrence** giving rise to such **bodily injury**, **property damage** or the offense giving rise to such **personal and advertising injury** takes place prior to the termination of such lease.

D. Lessor of Land

Any person or organization from whom a **Named Insured** leases land but only with respect to liability for **bodily injury**, **property damage** or **personal and advertising injury** arising out of the ownership, maintenance or use of such land, provided that the **occurrence** giving rise to such **bodily injury**, **property damage** or the offense giving rise to such **personal and advertising injury** takes place prior to the termination of such lease. The

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coverage granted by this paragraph does not apply to structural alterations, new construction or demolition operations performed by, on behalf of, or for such additional insured.

E. Lessor of Premises

An owner or lessor of premises leased to the **Named Insured**, or such owner or lessor's real estate manager, but only with respect to liability for **bodily injury**, **property damage** or **personal and advertising injury** arising out of the ownership, maintenance or use of such part of the premises leased to the **Named Insured**, and provided that the **occurrence** giving rise to such **bodily injury** or **property damage**, or the offense giving rise to such **personal and advertising injury**, takes place prior to the termination of such lease. The coverage granted by this paragraph does not apply to structural alterations, new construction or demolition operations performed by, on behalf of, or for such additional insured.

F. Mortgagee, Assignee or Receiver

A mortgagee, assignee or receiver of premises but only with respect to such mortgagee, assignee or receiver's liability for **bodily injury**, **property damage** or **personal and advertising injury** arising out of the **Named Insured's** ownership, maintenance, or use of a premises by a **Named Insured**.

The coverage granted by this paragraph does not apply to structural alterations, new construction or demolition operations performed by, on behalf of, or for such additional insured.

G. State or Governmental Agency or Subdivision or Political Subdivisions – Permits

A state or governmental agency or subdivision or political subdivision that has issued a permit or authorization but only with respect to such state or governmental agency or subdivision or political subdivision's liability for **bodily injury**, **property damage** or **personal and advertising injury** arising out of:

1. the following hazards in connection with premises a **Named Insured** owns, rents, or controls and to which this insurance applies:

   a. the existence, maintenance, repair, construction, erection, or removal of advertising signs, awnings, canopies, cellar entrances, coal holes, driveways, manholes, marquees, hoistaway openings, sidewalk vaults, street banners, or decorations and similar exposures; or

   b. the construction, erection, or removal of elevators; or

   c. the ownership, maintenance or use of any elevators covered by this insurance; or

2. the permitted or authorized operations performed by a **Named Insured** or on a **Named Insured's** behalf.

   The coverage granted by this paragraph does not apply to:

   a. **Bodily injury**, **property damage** or **personal and advertising injury** arising out of operations performed for the state or governmental agency or subdivision or political subdivision; or

   b. **Bodily injury** or **property damage** included within the **products-completed operations hazard**.

With respect to this provision's requirement that additional insured status must be requested under a written contract or agreement, the Insurer will treat as a written contract any governmental permit that requires the **Named Insured** to add the governmental entity as an additional insured.

H. Trade Show Event Lessor

1. With respect to a **Named Insured's** participation in a trade show event as an exhibitor, presenter or displayer, any person or organization whom the **Named Insured** is required to include as an additional insured, but only with respect to such person or organization's liability for **bodily injury**, **property damage** or **personal and advertising injury** caused by:

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a. the **Named Insured's** acts or omissions; or

b. the acts or omissions of those acting on the **Named Insured's** behalf,

in the performance of the **Named Insured's** ongoing operations at the trade show event premises during the trade show event.

2. The coverage granted by this paragraph does not apply to **bodily injury** or **property damage** included within the **products-completed operations hazard.**

2. ADDITIONAL INSURED - PRIMARY AND NON-CONTRIBUTORY TO ADDITIONAL INSURED'S INSURANCE

The **Other Insurance** Condition in the **COMMERCIAL GENERAL LIABILITY CONDITIONS** Section is amended to add the following paragraph:

If the **Named Insured** has agreed in writing in a contract or agreement that this insurance is primary and non-contributory relative to an additional insured's own insurance, then this insurance is primary, and the insurer will not seek contribution from that other insurance. For the purpose of this Provision **2.**, the additional insured's own insurance means insurance on which the additional insured is a named insured. Otherwise, and notwithstanding anything to the contrary elsewhere in this Condition, the insurance provided to such person or organization is excess of any other insurance available to such person or organization.

3. BODILY INJURY – EXPANDED DEFINITION

Under **DEFINITIONS**, the definition of **bodily injury** is deleted and replaced by the following:

Bodily injury means physical injury, sickness or disease sustained by a person, including death, humiliation, shock, mental anguish or mental injury sustained by that person at any time which results as a consequence of the physical injury, sickness or disease.

4. BROAD KNOWLEDGE OF OCCURRENCE/ NOTICE OF OCCURRENCE

Under **CONDITIONS**, the condition entitled **Duties In The Event of Occurrence, Offense, Claim or Suit** is amended to add the following provisions:

A. BROAD KNOWLEDGE OF OCCURRENCE

The **Named Insured** must give the Insurer or the Insurer's authorized representative notice of an **occurrence**, offense or **claim** only when the **occurrence**, offense or **claim** is known to a natural person **Named Insured**, to a partner, executive officer, manager or member of a **Named Insured**, or an **employee** designated by any of the above to give such notice.

B. NOTICE OF OCCURRENCE

The **Named Insured's** rights under this **Coverage Part** will not be prejudiced if the **Named Insured** fails to give the Insurer notice of an **occurrence**, offense or **claim** and that failure is solely due to the **Named Insured's** reasonable belief that the **bodily injury** or **property damage** is not covered under this **Coverage Part**. However, the **Named Insured** shall give written notice of such **occurrence**, offense or **claim** to the Insurer as soon as the **Named Insured** is aware that this insurance may apply to such **occurrence**, offense or **claim**.

5. BROAD NAMED INSURED

WHO IS AN INSURED is amended to delete its Paragraph **3.** in its entirety and replace it with the following:

3. Pursuant to the limitations described in Paragraph **4.** below, any organization in which a **Named Insured** has management control:

a. on the effective date of this **Coverage Part**; or

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b. by reason of a **Named Insured** creating or acquiring the organization during the **policy period**,

qualifies as a **Named Insured**, provided that there is no other similar liability insurance, whether primary, contributory, excess, contingent or otherwise, which provides coverage to such organization, or which would have provided coverage but for the exhaustion of its limit, and without regard to whether its coverage is broader or narrower than that provided by this insurance.

But this **BROAD NAMED INSURED** provision does not apply to:

(a) any partnership, limited liability company or joint venture; or

(b) any organization for which coverage is excluded by another endorsement attached to this **Coverage Part**.

For the purpose of this provision, management control means:

A. owning interests representing more than 50% of the voting, appointment or designation power for the selection of a majority of the Board of Directors of a corporation; or

B. having the right, pursuant to a written trust agreement, to protect, control the use of, encumber or transfer or sell property held by a trust.

4. With respect to organizations which qualify as **Named Insureds** by virtue of Paragraph **3.** above, this insurance does not apply to:

a. **bodily injury** or **property damage** that first occurred prior to the date of management control, or that first occurs after management control ceases; nor

b. **personal or advertising injury** caused by an offense that first occurred prior to the date of management control or that first occurs after management control ceases.

5. The insurance provided by this **Coverage Part** applies to **Named Insureds** when trading under their own names or under such other trading names or doing-business-as names (dba) as any **Named Insured** should choose to employ.

6. BROADENED LIABILITY COVERAGE FOR DAMAGE TO YOUR PRODUCT AND YOUR WORK

A. Under **COVERAGES**, **Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended to delete exclusions **k.** and **l.** and replace them with the following:

This insurance does not apply to:

k. Damage to Your Product

Property damage to **your product** arising out of it, or any part of it except when caused by or resulting from:

(1) fire;

(2) smoke;

(3) collapse; or

(4) explosion.

l. Damage to Your Work

Property damage to **your work** arising out of it, or any part of it and included in the **products-completed operations hazard**.

This exclusion does not apply:

(1) If the damaged work, or the work out of which the damage arises, was performed on the **Named Insured's** behalf by a subcontractor; or

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(2) If the cause of loss to the damaged work arises as a result of:

(a) fire;

(b) smoke;

(c) collapse; or

(d) explosion.

B. The following paragraph is added to **LIMITS OF INSURANCE**:

Subject to **5.** above, $100,000 is the most the insurer will pay under **Coverage A** for the sum of **damages** arising out of any one **occurrence** because of **property damage** to **your product** and **your work** that is caused by fire, smoke, collapse or explosion and is included within the **product-completed operations hazard**. This sublimit does not apply to **property damage** to **your work** if the damaged work, or the work out of which the damage arises, was performed on the **Named Insured's** behalf by a subcontractor.

C. This **Broadened Liability Coverage For Damage To Your Product And Your Work** Provision does not apply if an endorsement of the same name is attached to this policy.

7. CONTRACTUAL LIABILITY – RAILROADS

With respect to operations performed within 50 feet of railroad property, the definition of **insured contract** is replaced by the following:

Insured Contract means:

a. A contract for a lease of premises. However, that portion of the contract for a lease of premises that indemnifies any person or organization for damage by fire to premises while rented to a **Named Insured** or temporarily occupied by a **Named Insured** with permission of the owner is not an **insured contract**;

b. A sidetrack agreement;

c. Any easement or license agreement;

d. An obligation, as required by ordinance, to indemnify a municipality, except in connection with work for a municipality;

e. An elevator maintenance agreement;

f. That part of any other contract or agreement pertaining to the **Named Insured's** business (including an indemnification of a municipality in connection with work performed for a municipality) under which the **Named Insured** assumes the tort liability of another party to pay for **bodily injury** or **property damage** to a third person or organization. Tort liability means a liability that would be imposed by law in the absence of any contract or agreement.

Paragraph **f.** does not include that part of any contract or agreement:

(1) That indemnifies an architect, engineer or surveyor for injury or damage arising out of:

(a) Preparing, approving or failing to prepare or approve maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; or

(b) Giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage;

(2) Under which the **Insured**, if an architect, engineer or surveyor, assumes liability for an injury or damage arising out of the insured's rendering or failure to render professional services, including those listed in **(1)** above and supervisory, inspection, architectural or engineering activities.

8. ELECTRONIC DATA LIABILITY

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A. Under **COVERAGES, Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended to delete exclusion **p. Electronic Data** and replace it with the following:

This insurance does not apply to:

p. Access Or Disclosure Of Confidential Or Personal Information And Data-related Liability

Damages arising out of:

(1) any access to or disclosure of any person's or organization's confidential or personal information, including patents, trade secrets, processing methods, customer lists, financial information, credit card information, health information or any other type of nonpublic information; or

(2) the loss of, loss of use of, damage to, corruption of, inability to access, or inability to manipulate **electronic data** that does not result from physical injury to tangible property.

However, unless Paragraph **(1)** above applies, this exclusion does not apply to **damages** because of **bodily injury**.

This exclusion applies even if damages are claimed for notification costs, credit monitoring expenses, forensic expenses, public relation expenses or any other loss, cost or expense incurred by the **Named Insured** or others arising out of that which is described in Paragraph **(1)** or **(2)** above.

B. The following paragraph is added to **LIMITS OF INSURANCE**:

Subject to **5.** above, $100,000 is the most the Insurer will pay under **Coverage A** for all **damages** arising out of any one **occurrence** because of **property damage** that results from physical injury to tangible property and arises out of **electronic data**.

C. The following definition is added to **DEFINITIONS**:

Electronic data means information, facts or programs stored as or on, created or used on, or transmitted to or from computer software (including systems and applications software), hard or floppy disks, CD-ROMS, tapes, drives, cells, data processing devices or any other media which are used with electronically controlled equipment.

D. For the purpose of the coverage provided by this **ELECTRONIC DATA LIABILITY** Provision, the definition of **property damage** in **DEFINITIONS** is replaced by the following:

Property damage means:

a. Physical injury to tangible property, including all resulting loss of use of that property. All such loss of use shall be deemed to occur at the time of the physical injury that caused it;

b. Loss of use of tangible property that is not physically injured. All such loss of use shall be deemed to occur at the time of the **occurrence** that caused it; or

c. Loss of, loss of use of, damage to, corruption of, inability to access, or inability to properly manipulate **electronic data**, resulting from physical injury to tangible property. All such loss of **electronic data** shall be deemed to occur at the time of the **occurrence** that caused it.

For the purposes of this insurance, **electronic data** is not tangible property.

E. If Electronic Data Liability is provided at a higher limit by another endorsement attached to this policy, then the $100,000 limit provided by this **ELECTRONIC DATA LIABILITY** Provision is part of, and not in addition to, that higher limit.

9. ESTATES, LEGAL REPRESENTATIVES, AND SPOUSES

The estates, heirs, legal representatives and **spouses** of any natural person **Insured** shall also be insured under this policy; provided, however, coverage is afforded to such estates, heirs, legal representatives, and **spouses** only for

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claims arising solely out of their capacity or status as such and, in the case of a **spouse**, where such **claim** seeks **damages** from marital community property, jointly held property or property transferred from such natural person **insured** to such **spouse**. No coverage is provided for any act, error or omission of an estate, heir, legal representative, or **spouse** outside the scope of such person's capacity or status as such, provided however that the **spouse** of a natural person **Named Insured** and the **spouses** of members or partners of joint venture or partnership **Named Insureds** are **insureds** with respect to such **spouses'** acts, errors or omissions in the conduct of the **Named Insured's** business.

10. EXPECTED OR INTENDED INJURY – EXCEPTION FOR REASONABLE FORCE

Under **COVERAGES, Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended to delete the exclusion entitled **Expected or Intended Injury** and replace it with the following:

This insurance does not apply to:

Expected or Intended Injury

Bodily Injury or **property damage** expected or intended from the standpoint of the **insured**. This exclusion does not apply to **bodily injury** or **property damage** resulting from the use of reasonable force to protect persons or property.

11. GENERAL AGGREGATE LIMITS OF INSURANCE - PER PROJECT

A. For each construction project away from premises the **Named Insured** owns or rents, a separate Construction Project General Aggregate Limit, equal to the amount of the General Aggregate Limit shown in the Declarations, is the most the Insurer will pay for the sum of:

1. All **damages** under **Coverage A**, except **damages** because of **bodily injury** or **property damage** included in the **products-completed operations hazard**; and
2. All medical expenses under **Coverage C**,

that arise from **occurrences** or accidents which can be attributed solely to ongoing operations at that construction project. Such payments shall not reduce the General Aggregate Limit shown in the Declarations, nor the Construction Project General Aggregate Limit of any other construction project.

B. All:

1. **Damages** under **Coverage B**, regardless of the number of locations or construction projects involved;
2. **Damages** under **Coverage A**, caused by **occurrences** which cannot be attributed solely to ongoing operations at a single construction project, except **damages** because of **bodily injury** or **property damage** included in the **products-completed operations hazard**; and
3. Medical expenses under **Coverage C** caused by accidents which cannot be attributed solely to ongoing operations at a single construction project,

will reduce the General Aggregate Limit shown in the Declarations.

C. The limits shown in the Declarations for Each Occurrence, for Damage To Premises Rented To You and for Medical Expense continue to apply, but will be subject to either the Construction Project General Aggregate Limit or the General Aggregate Limit shown in the Declarations, depending on whether the **occurrence** can be attributed solely to ongoing operations at a particular construction project.

D. When coverage for liability arising out of the **products-completed operations hazard** is provided, any payments for **damages** because of **bodily injury** or **property damage** included in the **products-completed operations hazard** will reduce the Products-Completed Operations Aggregate Limit shown in the Declarations, regardless of the number of projects involved.

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E. If a single construction project away from premises owned by or rented to the **Insured** has been abandoned and then restarted, or if the authorized contracting parties deviate from plans, blueprints, designs, specifications or timetables, the project will still be deemed to be the same construction project.

F. The provisions of **LIMITS OF INSURANCE** not otherwise modified by this endorsement shall continue to apply as stipulated.

12. IN REM ACTIONS

A quasi in rem action against any vessel owned or operated by or for the **Named Insured**, or chartered by or for the **Named Insured**, will be treated in the same manner as though the action were in personam against the **Named Insured**.

13. INCIDENTAL HEALTH CARE MALPRACTICE COVERAGE

Solely with respect to **bodily injury** that arises out of a **health care incident**:

A. Under **COVERAGES**, **Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Insuring Agreement** is amended to replace Paragraphs **1.b.(1)** and **1.b.(2)** with the following:

b. This insurance applies to **bodily injury** provided that the professional health care services are incidental to the **Named Insured's** primary business purpose, and only if:

(1) such **bodily injury** is caused by an **occurrence** that takes place in the **coverage territory**.

(2) the **bodily injury** first occurs during the **policy period**. All **bodily injury** arising from an **occurrence** will be deemed to have occurred at the time of the first act, error, or omission that is part of the **occurrence**; and

B. Under **COVERAGES**, **Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended to:

I. add the following to the **Employers Liability** exclusion:

This exclusion applies only if the **bodily injury** arising from a **health care incident** is covered by other liability insurance available to the **Insured** (or which would have been available but for exhaustion of its limits).

II. delete the exclusion entitled **Contractual Liability** and replace it with the following:

This insurance does not apply to:

Contractual Liability

the **Insured's** actual or alleged liability under any oral or written contract or agreement, including but not limited to express warranties or guarantees.

III. add the following additional exclusions:

This insurance does not apply to:

Discrimination

any actual or alleged discrimination, humiliation or harassment, including but not limited to **claims** based on an individual's race, creed, color, age, gender, national origin, religion, disability, marital status or sexual orientation.

Dishonesty or Crime

Any actual or alleged dishonest, criminal or malicious act, error or omission.

Medicare/Medicaid Fraud

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any actual or alleged violation of law with respect to Medicare, Medicaid, Tricare or any similar federal, state or local governmental program.

Services Excluded by Endorsement

Any **health care incident** for which coverage is excluded by endorsement.

C. **DEFINITIONS** is amended to:

I. add the following definitions:

Health care incident means an act, error or omission by the **Named Insured's employees** or **volunteer workers** in the rendering of:

a. **professional health care services** on behalf of the **Named Insured** or

b. Good Samaritan services rendered in an emergency and for which no payment is demanded or received.

Professional health care services means any health care services or the related furnishing of food, beverages, medical supplies or appliances by the following providers in their capacity as such but solely to the extent they are duly licensed as required:

a. Physician;

b. Nurse;

c. Nurse practitioner;

d. Emergency medical technician;

e. Paramedic;

f. Dentist;

g. Physical therapist;

h. Psychologist;

i. Speech therapist;

j. Other allied health professional; or

Professional health care services does not include any services rendered in connection with human clinical trials or product testing.

II. delete the definition of **occurrence** and replace it with the following:

Occurrence means a **health care incident**. All acts, errors or omissions that are logically connected by any common fact, circumstance, situation, transaction, event, advice or decision will be considered to constitute a single **occurrence**;

III. amend the definition of **Insured** to:

a. add the following:

the **Named Insured's employees** are **Insureds** with respect to:

(1) **bodily injury** to a co-**employee** while in the course of the co-**employee's** employment by the **Named Insured** or while performing duties related to the conduct of the **Named Insured's** business; and

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(2) **bodily injury** to a **volunteer worker** while performing duties related to the conduct of the **Named Insured's** business;

when such **bodily injury** arises out of a **health care incident**.

the **Named Insured's volunteer workers** are **insureds** with respect to:

(1) **bodily injury** to a co-**volunteer worker** while performing duties related to the conduct of the **Named Insured's** business; and

(2) **bodily injury** to an **employee** while in the course of the **employee's** employment by the **Named Insured** or while performing duties related to the conduct of the **Named Insured's** business;

when such **bodily injury** arises out of a **health care incident**.

b. delete Subparagraphs **(a)**, **(b)**, **(c)** and **(d)** of Paragraph **2.a.(1)** of **WHO IS AN INSURED**.

D. The **Other Insurance** condition is amended to delete Paragraph **b.(1)** in its entirety and replace it with the following:

Other Insurance

b. Excess Insurance

(1) To the extent this insurance applies, it is excess over any other insurance, self insurance or risk transfer instrument, whether primary, excess, contingent or on any other basis, except for insurance purchased specifically by the **Named Insured** to be excess of this coverage.

14. JOINT VENTURES / PARTNERSHIP / LIMITED LIABILITY COMPANIES

WHO IS AN INSURED is amended to delete its last paragraph and replace it with the following:

No person or organization is an **Insured** with respect to the conduct of any current or past partnership, joint venture or limited liability company that is not shown as a **Named Insured** in the Declarations, except that if the **Named Insured** was a joint venturer, partner, or member of a limited liability company and such joint venture, partnership or limited liability company terminated prior to or during the **policy period**, such **Named Insured** is an **Insured** with respect to its interest in such joint venture, partnership or limited liability company but only to the extent that:

a. any offense giving rise to **personal and advertising injury** occurred prior to such termination date, and the **personal and advertising injury** arising out of such offense first occurred after such termination date;

b. the **bodily injury** or **property damage** first occurred after such termination date; and

c. there is no other valid and collectible insurance purchased specifically to insure the partnership, joint venture or limited liability company; and

If the joint venture, partnership or limited liability company is or was insured under a **consolidated (wrap-up) insurance program**, then such insurance will always be considered valid and collectible for the purpose of paragraph **c.** above. But this provision will not serve to exclude **bodily injury**, **property damage** or **personal and advertising injury** that would otherwise be covered under the **Contractors General Liability Extension Endorsement** provision entitled **WRAP-UP EXTENSION: OCIP, CCIP, OR CONSOLIDATED (WRAP-UP) INSURANCE PROGRAMS**. Please see that provision for the definition of **consolidated (wrap-up) insurance program**.

15. LEGAL LIABILITY – DAMAGE TO PREMISES / ALIENATED PREMISES / PROPERTY IN THE NAMED INSURED'S CARE, CUSTODY OR CONTROL

A. Under **COVERAGES, Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended to delete exclusion **j. Damage to Property** in its entirety and replace it with the following:

This insurance does not apply to:

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j. Damage to Property

Property damage to:

(1) Property the **Named Insured** owns, rents, or occupies, including any costs or expenses incurred by you, or any other person, organization or entity, for repair, replacement, enhancement, restoration or maintenance of such property for any reason, including prevention of injury to a person or damage to another's property;

(2) Premises the **Named Insured** sells, gives away or abandons, if the **property damage** arises out of any part of those premises;

(3) Property loaned to the **Named Insured**;

(4) Personal property in the care, custody or control of the **Insured**;

(5) That particular part of real property on which the **Named Insured** or any contractors or subcontractors working directly or indirectly on the **Named Insured's** behalf are performing operations, if the **property damage** arises out of those operations; or

(6) That particular part of any property that must be restored, repaired or replaced because **your work** was incorrectly performed on it.

Paragraphs **(1)**, **(3)** and **(4)** of this exclusion do not apply to **property damage** (other than damage by fire) to premises rented to the **Named Insured** or temporarily occupied by the **Named Insured** with the permission of the owner, nor to the contents of premises rented to the **Named Insured** for a period of 7 or fewer consecutive days. A separate limit of insurance applies to Damage To Premises Rented To You as described in **LIMITS OF INSURANCE**.

Paragraph **(2)** of this exclusion does not apply if the premises are **your work**.

Paragraphs **(3)**, **(4)**, **(5)** and **(6)** of this exclusion do not apply to liability assumed under a sidetrack agreement.

Paragraph **(6)** of this exclusion does not apply to **property damage** included in the **products-completed operations hazard**.

Paragraphs **(3)** and **(4)** of this exclusion do not apply to **property damage** to:

i. tools, or equipment the **Named Insured** borrows from others, nor

ii. other personal property of others in the **Named Insured's** care, custody or control while being used in the **Named Insured's** operations away from any **Named Insured's** premises.

However, the coverage granted by this exception to Paragraphs **(3)** and **(4)** does not apply to:

a. property at a job site awaiting or during such property's installation, fabrication, or erection;

b. property that is **mobile equipment** leased by an **Insured**;

c. property that is an **auto**, aircraft or watercraft;

d. property in transit; or

e. any portion of **property damage** for which the **Insured** has available other valid and collectible insurance, or would have such insurance but for exhaustion of its limits, or but for application of one of its exclusions.

A separate limit of insurance and deductible apply to such property of others. See **LIMITS OF INSURANCE** as amended below.

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B. Under **COVERAGES, Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended to delete its last paragraph and replace it with the following:

Exclusions **c.** through **n.** do not apply to damage by fire to premises while rented to a **Named Insured** or temporarily occupied by a **Named Insured** with permission of the owner, nor to damage to the contents of premises rented to a **Named Insured** for a period of 7 or fewer consecutive days.

A separate limit of insurance applies to this coverage as described in **LIMITS OF INSURANCE**.

C. The following paragraph is added to **LIMITS OF INSURANCE**:

Subject to **5.** above, $25,000 is the most the Insurer will pay under **Coverage A** for **damages** arising out of any one **occurrence** because of the sum of all **property damage** to borrowed tools or equipment, and to other personal property of others in the **Named Insured's** care, custody or control, while being used in the **Named Insured's** operations away from any **Named Insured's** premises. The Insurer's obligation to pay such **property damage** does not apply until the amount of such **property damage** exceeds $1,000. The Insurer has the right but not the duty to pay any portion of this $1,000 in order to effect settlement. If the Insurer exercises that right, the **Named Insured** will promptly reimburse the Insurer for any such amount.

D. Paragraph **6.**, Damage To Premises Rented To You Limit, of **LIMITS OF INSURANCE** is deleted and replaced by the following:

6. Subject to Paragraph **5.** above, (the Each Occurrence Limit), the Damage To Premises Rented To You Limit is the most the Insurer will pay under **Coverage A** for **damages** because of **property damage** to any one premises while rented to the **Named Insured** or temporarily occupied by the **Named Insured** with the permission of the owner, including contents of such premises rented to the **Named Insured** for a period of 7 or fewer consecutive days. The Damage To Premises Rented To You Limit is the greater of:

a. $500,000; or

b. The Damage To Premises Rented To You Limit shown in the Declarations.

E. Paragraph **4.b.(1)(a)(II)** of the **Other Insurance** Condition is deleted and replaced by the following:

(II) That is property insurance for premises rented to the **Named Insured**, for premises temporarily occupied by the **Named Insured** with the permission of the owner; or for personal property of others in the **Named Insured's** care, custody or control;

16. LIQUOR LIABILITY

Under **COVERAGES, Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended to delete the exclusion entitled **Liquor Liability**.

This **LIQUOR LIABILITY** provision does not apply to any person or organization who otherwise qualifies as an additional insured on this **Coverage Part**.

17. MEDICAL PAYMENTS

A. **LIMITS OF INSURANCE** is amended to delete Paragraph **7.** (the Medical Expense Limit) and replace it with the following:

7. Subject to Paragraph **5.** above (the Each Occurrence Limit), the Medical Expense Limit is the most the Insurer will pay under **Coverage C – Medical Payments** for all medical expenses because of **bodily injury** sustained by any one person. The Medical Expense Limit is the greater of:

(1) $15,000 unless a different amount is shown here: $N,NNN,NNN,NNN; or

(2) the amount shown in the Declarations for Medical Expense Limit.

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B. Under **COVERAGES**, the **Insuring Agreement** of **Coverage C – Medical Payments** is amended to replace Paragraph **1.a.(3)(b)** with the following:

(b) The expenses are incurred and reported to the Insurer within three years of the date of the accident; and

18. NON-OWNED AIRCRAFT

Under **COVERAGES, Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended as follows:

The exclusion entitled **Aircraft, Auto or Watercraft** is amended to add the following:

This exclusion does not apply to an aircraft not owned by any **Named Insured**, provided that:

1. the pilot in command holds a currently effective certificate issued by the duly constituted authority of the United States of America or Canada, designating that person as a commercial or airline transport pilot;

2. the aircraft is rented with a trained, paid crew to the **Named Insured**; and

3. the aircraft is not being used to carry persons or property for a charge.

19. NON-OWNED WATERCRAFT

Under **COVERAGES, Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended to delete subparagraph **(2)** of the exclusion entitled **Aircraft, Auto or Watercraft**, and replace it with the following.

This exclusion does not apply to:

(2) a watercraft that is not owned by any **Named Insured**, provided the watercraft is:

(a) less than 75 feet long; and

(b) not being used to carry persons or property for a charge.

20. PERSONAL AND ADVERTISING INJURY –DISCRIMINATION OR HUMILIATION

A. Under **DEFINITIONS**, the definition of **personal and advertising injury** is amended to add the following tort:

Discrimination or humiliation that results in injury to the feelings or reputation of a natural person.

B. Under **COVERAGES**, **Coverage B – Personal and Advertising Injury Liability**, the paragraph entitled **Exclusions** is amended to:

1. delete the Exclusion entitled **Knowing Violation Of Rights Of Another** and replace it with the following:

This insurance does not apply to:

Knowing Violation of Rights of Another

Personal and advertising injury caused by or at the direction of the **Insured** with the knowledge that the act would violate the rights of another and would inflict **personal and advertising injury**. This exclusion shall not apply to discrimination or humiliation that results in injury to the feelings or reputation of a natural person, but only if such discrimination or humiliation is not done intentionally by or at the direction of:

(a) the **Named Insured**; or

(b) any **executive officer**, director, stockholder, partner, member or manager (if the **Named Insured** is a limited liability company) of the **Named Insured**.

2. add the following exclusions:

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This insurance does not apply to:

Employment Related Discrimination

Discrimination or humiliation directly or indirectly related to the employment, prospective employment, past employment or termination of employment of any person by any **Insured**.

Premises Related Discrimination

discrimination or humiliation arising out of the sale, rental, lease or sub-lease or prospective sale, rental, lease or sub-lease of any room, dwelling or premises by or at the direction of any **Insured**.

Notwithstanding the above, there is no coverage for fines or penalties levied or imposed by a governmental entity because of discrimination.

The coverage provided by this **PERSONAL AND ADVERTISING INJURY –DISCRIMINATION OR HUMILIATION** Provision does not apply to any person or organization whose status as an **Insured** derives solely from

Provision **1. ADDITIONAL INSURED** of this endorsement; or

attachment of an additional insured endorsement to this **Coverage Part**.

This **PERSONAL AND ADVERTISING INJURY –DISCRIMINATION OR HUMILIATION** Provision does not apply to any person or organization who otherwise qualifies as an additional insured on this **Coverage Part**.

21. PERSONAL AND ADVERTISING INJURY - CONTRACTUAL LIABILITY

A. Under **COVERAGES, Coverage B –Personal and Advertising Injury Liability**, the paragraph entitled **Exclusions** is amended to delete the exclusion entitled **Contractual Liability**.

B. Solely for the purpose of the coverage provided by this **PERSONAL AND ADVERTISING INJURY - CONTRACTUAL LIABILITY** provision, the following changes are made to the section entitled **SUPPLEMENTARY PAYMENTS – COVERAGES A AND B:**

1. Paragraph **2.d.** is replaced by the following:

d. The allegations in the **suit** and the information the Insurer knows about the offense alleged in such **suit** are such that no conflict appears to exist between the interests of the **Insured** and the interests of the indemnitee;

2. The first unnumbered paragraph beneath Paragraph **2.1.(2)(b)** is deleted and replaced by the following:

So long as the above conditions are met, attorneys fees incurred by the Insurer in the defense of that indemnitee, necessary litigation expenses incurred by the Insurer, and necessary litigation expenses incurred by the indemnitee at the Insurer's request will be paid as **defense costs**. Such payments will not be deemed to be **damages** for **personal and advertising injury** and will not reduce the limits of insurance.

C. This **PERSONAL AND ADVERTISING INJURY - CONTRACTUAL LIABILITY** Provision does not apply if **Coverage B –Personal and Advertising Injury Liability** is excluded by another endorsement attached to this **Coverage Part**.

This **PERSONAL AND ADVERTISING INJURY - CONTRACTUAL LIABILITY** Provision does not apply to any person or organization who otherwise qualifies as an additional insured on this **Coverage Part**.

22. PROPERTY DAMAGE – ELEVATORS

A. Under **COVERAGES, Coverage A – Bodily Injury and Property Damage Liability**, the paragraph entitled **Exclusions** is amended such that the **Damage to Your Product** Exclusion and subparagraphs **(3)**, **(4)** and **(6)** of the **Damage to Property** Exclusion do not apply to **property damage** that results from the use of elevators.

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B. Solely for the purpose of the coverage provided by this **PROPERTY DAMAGE – ELEVATORS** Provision, the **Other Insurance** conditions is amended to add the following paragraph:

This insurance is excess over any of the other insurance, whether primary, excess, contingent or on any other basis that is Property Insurance covering property of others damaged from the use of elevators.

23. SUPPLEMENTARY PAYMENTS

The section entitled **SUPPLEMENTARY PAYMENTS – COVERAGES A AND B** is amended as follows:

A. Paragraph **1.b.** is amended to delete the $250 limit shown for the cost of bail bonds and replace it with a $5,000. limit; and

B. Paragraph **1.d.** is amended to delete the limit of $250 shown for daily loss of earnings and replace it with a $1,000. limit.

24. UNINTENTIONAL FAILURE TO DISCLOSE HAZARDS

If the **Named Insured** unintentionally fails to disclose all existing hazards at the inception date of the **Named Insured's Coverage Part**, the Insurer will not deny coverage under this **Coverage Part** because of such failure.

25. WAIVER OF SUBROGATION - BLANKET

Under **CONDITIONS**, the condition entitled **Transfer Of Rights Of Recovery Against Others To Us** is amended to add the following:

The Insurer waives any right of recovery the Insurer may have against any person or organization because of payments the Insurer makes for injury or damage arising out of:

1. the **Named Insured's** ongoing operations; or
2. **your work** included in the **products-completed operations hazard**.

However, this waiver applies only when the **Named Insured** has agreed in writing to waive such rights of recovery in a written contract or written agreement, and only if such contract or agreement:

1. is in effect or becomes effective during the term of this **Coverage Part**; and
2. was executed prior to the **bodily injury**, **property damage** or **personal and advertising injury** giving rise to the **claim**.

26. WRAP-UP EXTENSION: OCIP, CCIP, OR CONSOLIDATED (WRAP-UP) INSURANCE PROGRAMS

Note: The following provision does not apply to any public construction project in the state of Oklahoma, nor to any construction project in the state of Alaska, that is not permitted to be insured under a **consolidated (wrap-up) insurance program** by applicable state statute or regulation.

If the endorsement **EXCLUSION – CONSTRUCTION WRAP-UP** is attached to this policy, or another exclusionary endorsement pertaining to Owner Controlled Insurance Programs (O.C.I.P.) or Contractor Controlled Insurance Programs (C.C.I.P.) is attached, then the following changes apply:

A. The following wording is added to the above-referenced endorsement:

With respect to a **consolidated (wrap-up) insurance program** project in which the **Named Insured** is or was involved, this exclusion does not apply to those sums the **Named Insured** become legally obligated to pay as **damages** because of:

1. **Bodily injury**, **property damage**, or **personal or advertising injury** that occurs during the **Named Insured's** ongoing operations at the project, or during such operations of anyone acting on the **Named Insured's** behalf; nor

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2. **Bodily injury** or **property damage** included within the **products-completed operations hazard** that arises out of those portions of the project that are not **residential structures**.

B. Condition **4. Other Insurance** is amended to add the following subparagraph **4.b.(1)(c)**:

This insurance is excess over:

(c) Any of the other insurance whether primary, excess, contingent or any other basis that is insurance available to the **Named Insured** as a result of the **Named Insured** being a participant in a **consolidated (wrap-up) insurance program**, but only as respects the **Named Insured's** involvement in that **consolidated (wrap-up) insurance program**.

C. **DEFINITIONS** is amended to add the following definitions:

Consolidated (wrap-up) insurance program means a construction, erection or demolition project for which the prime contractor/project manager or owner of the construction project has secured general liability insurance covering some or all of the contractors or subcontractors involved in the project, such as an Owner Controlled Insurance Program (O.C.I.P.) or Contractor Controlled Insurance Program (C.C.I.P.).

Residential structure means any structure where 30% or more of the square foot area is used or is intended to be used for human residency, including but not limited to:

1. single or multifamily housing, apartments, condominiums, townhouses, co-operatives or planned unit developments; and

2. the common areas and structures appurtenant to the structures in paragraph **1.** (including pools, hot tubs, detached garages, guest houses or any similar structures).

However, when there is no individual ownership of units, **residential structure** does not include military housing, college/university housing or dormitories, long term care facilities, hotels or motels. **Residential structure** also does not include hospitals or prisons.

This **WRAP-UP EXTENSION: OCIP, CCIP, OR CONSOLIDATED (WRAP-UP) INSURANCE PROGRAMS** Provision does not apply to any person or organization who otherwise qualifies as an additional insured on this **Coverage Part**.

All other terms and conditions of the Policy remain unchanged.

This endorsement, which forms a part of and is for attachment to the Policy issued by the designated Insurers, takes effect on the effective date of said Policy at the hour stated in said Policy, unless another effective date is shown below, and expires concurrently with said Policy.

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Blanket Additional Insured - Owners, Lessees or Contractors - with Products-Completed Operations Coverage Endorsement

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

It is understood and agreed as follows:

I. **WHO IS AN INSURED** is amended to include as an **insured** any person or organization whom you are required by **written contract** to add as an additional insured on this **Coverage Part**, but only with respect to liability for **bodily injury, property damage** or **personal and advertising injury** caused in whole or in part by your acts or omissions, or the acts or omissions of those acting on your behalf:

A. In the performance of your ongoing operations subject to such **written contract**; or

B. In the performance of **your work** subject to such **written contract**, but only with respect to **bodily injury** or **property damage** included in the **products-completed operations hazard**, and only if:

1. The **written contract** requires you to provide the additional insured such coverage; and

2. This **Coverage Part** provides such coverage; and

C. Subject always to the terms and conditions of this policy, including the limits of insurance, the insurer will not provide such additional insured with:

1. Coverage broader than what you are required to provide by the **written contract**; or

2. A higher limit of insurance than what you are required to provide by the **written contract**.

Any coverage granted by this Paragraph I. shall apply solely to the extent permissible by law.

II. If the written contract requires additional insured coverage under the 07-04 edition of CG2010 or CG2037, then paragraph I. above is deleted in its entirety and replaced by the following:

WHO IS AN INSURED is amended to include as an **insured** any person or organization whom you are required by **written contract** to add as an additional insured on this **Coverage Part**, but only with respect to liability for **bodily injury, property damage** or **personal and advertising injury** caused in whole or in part by your acts or omissions, or the acts or omissions of those acting on your behalf:

A. In the performance of your ongoing operations subject to such **written contract**; or

B. In the performance of **your work** subject to such **written contract**, but only with respect to **bodily injury** or **property damage** included in the **products-completed operations hazard**, and only if:

1. The **written contract** requires you to provide the additional insured such coverage; and

2. This **Coverage Part** provides such coverage.

III. But if the **written contract** requires:

A. Additional insured coverage under the 11-85 edition, 10-93 edition, or 10-01 edition of CG2010, or under the 10-01 edition of CG2037; or

B. Additional insured coverage with "arising out of" language;

then paragraph I. above is deleted in its entirety and replaced by the following:

WHO IS AN INSURED is amended to include as an **insured** any person or organization whom you are required by **written contract** to add as an additional insured on this **Coverage Part**, but only with respect to liability for **bodily injury, property damage** or **personal and advertising injury** arising out of **your work** that is subject to such **written contract**.

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Blanket Additional Insured - Owners, Lessees or Contractors - with Products-Completed Operations Coverage Endorsement

IV. But if the **written contract** requires additional insured coverage to the greatest extent permissible by law, then paragraph **I.** above is deleted in its entirety and replaced by the following:

WHO IS AN INSURED is amended to include as an **insured** any person or organization whom you are required by **written contract** to add as an additional insured on this **Coverage Part**, but only with respect to liability for **bodily injury, property damage** or **personal and advertising injury** arising out of **your work** that is subject to such **written contract**.

V. The insurance granted by this endorsement to the additional insured does not apply to **bodily injury, property damage**, or **personal and advertising injury** arising out of:

A. The rendering of, or the failure to render, any professional architectural, engineering, or surveying services, including:

1. The preparing, approving, or failing to prepare or approve maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; and
2. Supervisory, inspection, architectural or engineering activities; or

B. Any premises or work for which the additional **insured** is specifically listed as an additional insured on another endorsement attached to this **Coverage Part**.

VI. Under **COMMERCIAL GENERAL LIABILITY CONDITIONS**, the Condition entitled **Other Insurance** is amended to add the following, which supersedes any provision to the contrary in this Condition or elsewhere in this **Coverage Part**:

Primary and Noncontributory Insurance

With respect to other insurance available to the additional insured under which the additional insured is a named insured, this insurance is primary to and will not seek contribution from such other insurance, provided that a **written contract** requires the insurance provided by this policy to be:

1. Primary and non-contributing with other insurance available to the additional insured; or
2. Primary and to not seek contribution from any other insurance available to the additional insured.

But except as specified above, this insurance will be excess of all other insurance available to the additional insured.

VII. Solely with respect to the insurance granted by this endorsement, the section entitled **COMMERCIAL GENERAL LIABILITY CONDITIONS** is amended as follows:

The Condition entitled **Duties In The Event of Occurrence, Offense, Claim or Suit** is amended with the addition of the following:

Any additional insured pursuant to this endorsement will as soon as practicable:

1. Give the insurer written notice of any **claim**, or any **occurrence** or offense which may result in a **claim**;
2. Send the insurer copies of all legal papers received, and otherwise cooperate with the insurer in the investigation, defense, or settlement of the **claim**; and
3. Make available any other insurance, and endeavor to tender the defense and indemnity of any **claim** to any other insurer or self-insurer, whose policy or program applies to a loss that the insurer covers under this **coverage part**. However, if the **written contract** requires this insurance to be primary and non-contributory, this paragraph **3.** does not apply to other insurance under which the additional insured is a named insured.

The insurer has no duty to defend or indemnify an additional insured under this endorsement until the insurer receives written notice of a **claim** from the additional insured.

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Blanket Additional Insured - Owners, Lessees or Contractors - with Products-Completed Operations Coverage Endorsement

VIII. Solely with respect to the insurance granted by this endorsement, the section entitled **DEFINITIONS** is amended to add the following definition:

Written contract means a written contract or written agreement that requires you to make a person or organization an additional insured on this **Coverage Part**, provided the contract or agreement:

A. Was executed prior to:

1. The **bodily injury** or **property damage**; or
2. The offense that caused the **personal and advertising injury**;

for which the additional insured seeks coverage; and

B. Is still in effect at the time of the **bodily injury** or **property damage occurrence** or **personal and advertising injury** offense.

All other terms and conditions of the Policy remain unchanged.

This endorsement, which forms a part of and is for attachment to the Policy issued by the designated insurers, takes effect on the effective date of said Policy at the hour stated in said Policy, unless another effective date is shown below, and expires concurrently with said Policy.

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PART VIII

ADDENDA

All addenda issued during the bidding of the Project will be reproduced in the signed Contract Documents, on the pages following this heading sheet.

Addendum Number	Title	Date
1.	Addendum #1	March 16, 2026
2.	Addendum #2	March 16, 2026
3.		
4.		
5.		

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PART IX

TECHNICAL SPECIFICATIONS

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DIVISION 01

GENERAL REQUIREMENTS

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SECTION 01010 - SUMMARY OF WORK

PART 1 - GENERAL

1.01 REQUIREMENTS

A. The Work to be done under this Contract and in accordance with these Specifications consists of furnishing all equipment, supervision, labor, skill, material and all other items necessary for the construction of the West Hickman High Flow Diversion Box Replacement.

B. The Contractor shall perform all work required for such construction in accordance with the Contract Documents and subject to the terms and conditions of the Contract, complete and ready for use.

C. The principal features of the Work to be performed under this Contract includes, but is not limited to:

1. The demolition of existing 42" RCP piping, 48" steel piping, 48" ductile iron piping, and the existing diversion box in accordance with the Drawings

2. The installation of the proposed diversion box in accordance with the Drawings.

3. The installation of new ductile iron piping in accordance with the Drawings.

4. The relocation of the existing 8" non-potable water line.

D. The foregoing description(s) shall not be construed as a complete description of all work required.

1.02 CONTRACT DOCUMENTS

A. Work to be done is shown on the set of Drawings entitled: West Hickman High Flow Diversion Box Replacement. The numbers and titles of all Drawings appear on the index sheet of the Drawings. All drawings so enumerated shall be considered an integral part of the Contract Documents as defined herein.

1.03 GENERAL ARRANGEMENT

A. Drawings indicate the extent and general arrangement of the work. If any departures from the Drawings are deemed necessary by the Contractor to accommodate the materials and equipment he proposes to furnish, details of such departures and reasons therefore shall be submitted as soon as practicable to the Engineer for approval. No such departures shall be made without the prior written approval of the Engineer. Approved changes shall be made without additional cost to the Owner for this work or related work under other Contracts of the Project.

1.04 CONSTRUCTION PERMITS, EASEMENTS AND ENCROACHMENTS

A. The Contractor shall obtain, keep current and pay all fees for any necessary construction permits from those authorities, agencies, or municipalities having jurisdiction over land areas, utilities, or structures which are located within the Contract limits and which will be occupied, encountered, used, or temporarily interrupted by the Contractor's operations unless otherwise stated. Record copies of all permits shall be furnished to the Engineer.

B. When construction permits are accompanied by regulations or requirements issued by a particular authority, agency or municipality, it shall be the Contractor's responsibility to

familiarize himself and comply with such regulations or requirements as they apply to his operations on this Project.

1.05 ADDITIONAL ENGINEERING SERVICES

A. In the event that the Engineer is required to provide additional engineering services as a result of substitution of materials or equipment by the Contractor which are not "or equal", or changes by the Contractor in dimension, weight, power requirements, etc., of the equipment and accessories furnished, or if the Engineer is required to examine and evaluate any changes proposed by the Contractor for the convenience of the Contractor, then the Engineer's charges in connection with such additional services shall be charged to the Contractor by the Owner.

B. In the event that the Engineer is required to provide additional engineering services as a result of Contractor's errors, omissions, or failure to conform to the requirements of the Contract Documents, or if the Engineer is required to examine and evaluate any changes proposed by the Contractor solely for the convenience of the Contractor, then the Engineer's charges in connection with such additional services shall be charged to the Contractor by the Owner.

1.06 ADDITIONAL OWNER'S EXPENSES

A. In the event the Work of this Contract is not completed within the time set forth in the Contract or within the time to which such completion may have been extended in accordance with the Contract Documents, the additional engineering or inspection charges incurred by the Owner may be charged to the Contractor and deducted from the monies due him. Extra work or supplemental Contract work added to the original Contract, as well as extenuating circumstances beyond the control of the Contractor, will be given due consideration by the Owner before assessing engineering and inspection charges against the Contractor.

B. Unless otherwise specifically permitted, the normal time of work under this Contract is limited to 40 hours per week, Monday through Friday. Work beyond these hours will result in additional expense to the Owner. Any expenses and/or damages, including the cost of the Engineer's on-site personnel, arising from the Contractor's operations beyond the hours and days specified above shall be borne by the Contractor. Any overtime work, as defined above as 40 hours per week, will require the Contractor to reimburse the Owner for the Engineer's on-site personnel at a rate of $80.00 per hour.

C. Charges assessed to the Contractor for additional engineering and inspection costs will be determined based on actual hours charged to the job by the Engineer. Daily rates will depend on the number and classifications of employees involved, but in no case shall such charges exceed $640 per day for field personnel based on an eight-hour workday. Additional charges will apply if multiple personnel are needed or if engineering time is required as part of the work outside the contract times.

D. Charges for additional Owner's expenses shall be in addition to any liquidated damages assessed in accordance with the Contract.

1.07 TIME OF WORK

A. The normal time of work for this Contract is limited to 40 hours per week and shall generally be between the hours of **7:00 a.m. and 6:00 p.m., Monday through Friday**. The Contractor may work beyond these hours or on weekends with written approval from the Owner provided that all costs incurred by the Owner for any additional engineering shall be borne by the Contractor. The Owner shall deduct the cost of additional engineering from monies due the Contractor.

B. If it shall become imperative to perform work outside of the normal working hours the Owner and Engineer shall be informed a reasonable time in advance of the beginning of such work.

Temporary lighting and all other necessary facilities for performing and inspecting the work shall be provided and maintained by the Contractor.

C. Unless otherwise specifically permitted, all work that would be subject to damage shall be stopped during inclement, stormy or freezing weather. Only such work as will not suffer injury to workmanship or materials will be permitted. Contractor shall carefully protect his work against damage or injury from the weather, and when work is permitted during freezing weather, he shall provide and maintain approved facilities for heating the materials and for protecting the finished work.

1.08 SURVEYS AND LAYOUT

A. All work under this Contract shall be constructed in accordance with the lines and grades shown on the Drawings or as directed by the Engineer. Contractor shall be responsible for confirming locations and elevations of existing site utilities, site improvements and grades. Elevations of existing ground and appurtenances are believed to be reasonably correct but are not guaranteed to be absolute and therefore are presented only as an approximation. Any error or apparent discrepancy in the data shown or omissions of data required for accurately accomplishing the stake out survey shall be referred immediately to the Engineer for interpretation or correction.

B. All survey work for construction control purposes shall be made by the Contractor at his expense. The Contractor shall provide a Licensed Surveyor as Chief of Party, competently qualified survey party, all necessary instruments, stakes, and other material to perform the work.

C. Contractor shall establish all baselines for the location of the principal component parts of the work together with a suitable number of bench marks adjacent to the work. Based upon the information provided by the Contract Drawings, the Contractor shall develop and make all detail surveys necessary for construction, including stakes for all working points, lines and elevations.

D. Contractor shall have the responsibility to carefully preserve the bench marks, reference points and stakes, and in the case of destruction thereof by the Contractor or resulting from his negligence, the Contractor shall be charged with the expense and damage resulting therefrom and shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such bench marks, reference points and stakes.

E. Existing or new control points, property markers and monuments that will be or are destroyed during the normal causes of construction shall be reestablished by the Contractor and all reference ties recorded therefore shall be furnished to the Engineer. All computations necessary to establish the exact position of the work shall be made and preserved by the Contractor.

F. The Engineer may check all or any portion of the work and the Contractor shall afford all necessary assistance to the Engineer in carrying out such checks. Any necessary corrections to the work shall be immediately made by the Contractor. Such checking by the Engineer shall not relieve the Contractor of any responsibilities for the accuracy or completeness of his work.

G. At completion of the work, the Contractor shall furnish Record Drawings with survey data indicating the final layout of all constructed piping, equipment, structures and finished grades constructed or changed as part of this work.

1.09 FIRE PROTECTION

A. Contractor shall take all necessary precautions to prevent fires at or adjacent to the work and shall provide adequate facilities for extinguishing fires which do occur. Burning shall not be permitted on site.

B. When fire or explosion hazards are created in the vicinity of the work as a result of the locations of fuel tanks or similar hazardous utilities or devices, the Contractor shall immediately alert the local Fire Marshal, the Engineer, and the Owner of such tank or device. The Contractor shall exercise all safety precautions and shall comply with all instructions issued by the Fire Marshal and shall cooperate with the Owner of the tank or device to prevent the occurrence of fire or explosion.

1.10 CHEMICALS

A. All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, or reactant of other classification, must show approval of either the EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with all applicable rules and regulations.

1.11 FIRST AID FACILITIES AND ACCIDENTS

A. First Aid Facilities

1. The Contractor shall provide at the site such equipment and facilities as are necessary to supply first aid to any of his personnel who may be injured in connection with the work.

B. Accidents

1. The Contractor shall promptly report, in writing, to the Engineer and Owner all accidents whatsoever out of, or in connection with, the performance of the work, whether on or adjacent to the site, which cause death, personal injury or property damage, giving full details and statements of witnesses.

2. If death, serious injuries, or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the Owner and the Engineer.

3. If any claim is made by anyone against the Contractor or a Subcontractor on account of any accidents, the Contractor shall promptly report the facts, in writing, to the Engineer and Owner, giving full details of the claim.

1.12 ULTIMATE DISPOSITION OF CLAIMS BY ONE CONTRACTOR ARISING FROM ALLEGED DAMAGE BY ANOTHER CONTRACTOR

A. During the progress of the Work, other Contractors may be engaged in performing other work or may be awarded other Contracts for additional work on this project. In that event, the Contractor shall coordinate the work to be done hereunder with the work of such other Contractors and the Contractor shall fully cooperate with such other Contractors and carefully fit its own work to that provided under other Contracts as may be directed by the Engineer. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other Contractor.

B. If the Engineer shall determine that the Contractor is failing to coordinate his work with the work of the other Contractors as the Engineer directed, then the Owner shall have the right to withhold any payments otherwise due hereunder until the Contractor completely complies with the Engineer's directions.

C. If the Contractor notifies the Engineer in writing that another Contractor is failing to coordinate his work with the work of this Contract as directed, the Engineer will promptly investigate the

charge. If the Engineer finds it to be true, he will promptly issue such directions to the other Contractor with respect thereto as the situation may require. The Owner, the Engineer, nor any of their agents shall not, however, be liable for any damages suffered by the Contractor by reason of the other Contractor's failure to promptly comply with the directions so issued by the Engineer, or by reason of another Contractor's default in performance, it being understood that the Owner does not guarantee the responsibility or continued efficiency of any Contractor.

D. The Contractor shall indemnify and hold the Owner and the Engineer harmless from any and all claims of judgments for damages and from costs and expenses to which the Owner may be subjected or which it may suffer or incur by reason of the Contractor's failure to promptly comply with the Engineer's directions.

E. Should the Contractor sustain any damage through any act or omission of any other Contractor having a Contract with the Owner for the performance of work upon the site or of work which may be necessary to be performed for the proper execution of the work to be performed hereunder, or through any act or omission of a Subcontractor of such Contract, the Contractor shall have no claim against the Owner or the Engineer for such damage, but shall have a right to recover such damage from the other Contractor under the provision similar to the following provisions which have been or will be inserted in the Contracts with such other Contractors.

F. Should any other Contractor having or who shall hereafter have a Contract with the Owner for the performance of work upon the site sustain any damage through any act or omission of the Contractor hereunder or through any act or omission of any Subcontractor of the Contractor, the Contractor agrees to reimburse such other Contractor for all such damages and to defend at his own expense any suit based upon such claim and if any judgment or claims against the Owner shall be allowed, the Contractor shall pay or satisfy such judgment or claim and pay all costs and expenses in connection therewith and shall indemnify and hold the Owner harmless from all such claims.

G. The Owner's right to indemnification hereunder shall in no way be diminished, waived or discharged, by its recourse to assessment of liquidated damages as provided in the Contract, or by the exercise of any other remedy provided for by Contract Documents or by law.

1.13 LIMITS OF WORK AREA

A. The Contractor shall confine his construction operations within the Contract limits shown on the Drawings and/or property lines and/or fence lines. Storage of equipment and materials, or erection and use of sheds outside of the Contract limits, if such areas are the property of the Owner, shall be used only with the Owner's approval. Such storage or temporary structures, even within the Contract's limits, shall not be placed on properties designated as easements or rights-of-way unless specifically permitted elsewhere in the Contract Documents.

B. The Contractor shall secure, insure, maintain, rent/lease, and restore staging area.

C. The Contractor shall provide Engineer and Owner copy of agreement with landowner of staging areas.

1.14 WEATHER CONDITIONS

A. No work shall be done when the weather is unsuitable. The Contractor shall take necessary precautions (in the event of impending storms) to protect all work, materials, or equipment from damage or deterioration due to floods, driving rain, or wind, and snow storms. The Owner reserves the right, through the opinion of the Engineer, to order that additional protection measures over and beyond those proposed by the Contractor, be taken to safeguard all components of the Project. The Contractor shall not claim any compensation

for such precautionary measures so ordered, nor claim any compensation from the Owner for damage to the work from weather elements.

1.15 PERIODIC CLEANUP: BASIC SITE RESTORATION

A. During construction, the Contractor shall regularly remove from the site of the work all accumulated debris and surplus materials of any kind which result from his operations. Unused equipment and tools shall be stored at the Contractor's staging area for the Project.

B. The Contractor shall perform the cleanup work on a regular basis and as frequently as ordered by the Engineer. Basic site restoration in a particular area shall be accomplished immediately following the installation or completion of the required facilities in that area. Furthermore, such work shall also be accomplished, when ordered by the Engineer, if partially completed facilities must remain incomplete for some time period due to unforeseen circumstances.

C. Upon failure of the Contractor to perform periodic cleanup and basic restoration of the site to the Engineer's satisfaction, the Owner may, upon five (5) days prior written notice to the Contractor, without prejudice to any other rights or remedies of the Owner, cause such work for which the Contractor is responsible to be accomplished to the extent deemed necessary by the Engineer, and all costs resulting therefrom shall be charged to the Contractor and deducted from the amounts of money that may be due him.

1.16 USE OF FACILITIES BEFORE COMPLETION

A. The Owner reserves the right to enter the site and use any portion of the constructed facilities before final completion of the whole work to be done under this Contract. However, only those portions of the facilities which have been completed to the Engineer's satisfaction, as evidenced by his issuing a Certificate of Substantial Completion covering that part of the work, shall be placed in service.

B. It shall be the Owner's responsibility to prevent premature connections to or use of any portion of the installed facilities by private or public parties, persons or groups of persons, before the Engineer issues his Certificate of Substantial Completion covering that portion of the work to be placed in service.

C. Consistent with the approved progress schedule, the Contractor shall cooperate with the Owner, his agents, and the Engineer to accelerate completion of those facilities, or portions thereof, which have been designated for early use by the Owner.

1.17 CONSTRUCTION VIDEO

A. The Contractor shall video the entire project site including all concrete and asphalt pavements, curb and gutter, fencing to remain, structures to be demolished, and existing structures that are to remain or be modified. The original video image shall be turned over to the Engineer prior to beginning construction activities. The video shall be provided as an Audio Video Interleave File (.avi) and shall be provided on DVD+R/DVD-ROM compatible media only. The video shall clearly identify existing site and structural conditions prior to construction.

1.18 CONTINUOUS OPERATION

A. The existing system must be maintained in continuous operation in such a manner that it meets all local, state, and federal requirements. The Contractor is responsible not to deactivate, demolish, or interfere with any system until a temporary or new permanent-like system has been installed and is operational. The Contractor is responsible for payment of all fines resulting from any action or inaction on his part or the part of his subcontractors during performance of the Work that is illegal.

1.19 SAFETY REGULATIONS & COMPLIANCE

A. The Contractor shall comply with OSHA (P.L. 91-596) and the Contract Work Hours and Safety Standards Act (P.L. 91-54). Contractor must also comply with Title VI of the Civil Rights Act of 1964.

PART 2 – PRODUCT

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

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SECTION 01015 - WORK SEQUENCE

PART 1 - GENERAL

1.01 WORK INCLUDED

A. General Information and Requirements

1. The requirements of this section shall be coordinated with the notes on the Drawings.

2. Wastewater treatment at the West Hickman WWTP consists of screening, grit removal, biological phosphorous removal, two zones of activated sludge aeration, final clarification, disinfection with chlorine, dichlorination with sulfur dioxide, and post-aeration of the final effluent. Waste activated sludge is thickened in the gravity thickeners, stored in the aerated sludge holding tanks, dewatered via centrifuges, and landfilled.

3. Contractor shall coordinate all construction and shutdowns with Owner.

4. It shall be the responsibility of the Contractor to not in any way impair the treatment or operating efficiency of the facilities, regardless of the work underway. No by passing of raw or partially treated wastewater to the receiving stream shall occur at any time as a result of construction. This often requires that temporary facilities be provided prior to removing existing units from service for modification or repair. The contractor shall provide all temporary piping, bypass pumping, bulkheads, and temporary construction required to complete the Work.

5. Operation of existing treatment facilities will be the responsibility of the Owner. The Contractor shall cooperate with the Owner's staff at all times. A minimum of 48 hours prior to making any modifications to the existing facilities, the Contractor shall notify the Owner in writing. At the time of notification the Contractor shall submit a schedule for completion of the Work, including a description of measures that will be taken to minimize the impact to existing facilities.

6. Except as specified, the Owner will drain existing tanks and structures to the level of the lowest existing drain line. Subsequent cleaning or further draining and/or pumping shall be provided by the Contractor. If there exists sludge, grit, or other residue, it shall be the responsibility of the Contractor to remove and dispose of this material. The contractor shall provide notice three working days prior to beginning work in an area to enable the Owner to prepare.

7. Access: The Contractor shall maintain roadways open at all times to meet Owner's requirements, including access for sludge hauling vehicles and chemical deliveries. All city-owned roadways around the WWTP shall be cleaned of construction site materials, soil, and debris daily.

B. Construction Sequence

1. The following construction sequence is provided as a general guideline for the information and benefit of the Contractor. The construction sequence is not intended to dictate means, methods of construction, or direct construction activities. This construction sequence is both general and conceptual and is intended to delineate minimum recommended outages, shutdowns, and operating units to be maintained in service. The general construction sequence is projected to allow the Work to be completed while maintaining treatment. It is not intended to be all inclusive and does not list all work elements or details that are required to complete the Work. The Contractor shall be responsible for implementing any additional details required at no additional cost to the Owner.

2. The Contractor may propose an alternate sequence or modifications to this sequence. The Owner and Engineer will review the proposed modifications and determine feasibility. Any modifications to this general construction sequence shall be proposed in writing and approved by the Owner and Engineer prior to implementation.

3. At West Hickman WWTP, effluent from the headworks facility on the west side of the creek flows to the treatment processes on the east side of the creek via two 48-inch pipes. These two 48-inch pipes discharge into a junction chamber located on the east side of the creek. The junction chamberhas various compartments and gates that allow the operators flexibility in modulating how much flow is sent to the biological phosphorus removal (BPR) tanks and how much is diverted to the second stage (Zone 2) aeration tanks. The RAS flow combines with the forward flow at the influent to the BPR tanks.

4. Typical operation at West Hickman WWTP is to limit the combined influent flow to the biological phosphorus removal (BPR) tanks to approximately 40 MGD. Above this flowrate, structures downstream of the BPR tanks will overflow. This 40 MGD total includes both headworks effluent and RAS flow. Note the following regarding BPR influent flows:

   a. Typical RAS flows range from 10-16 MGD.

   b. The headworks effluent to the BPRs must be limited to 24-30 MGD depending on RAS. Any flow in excess of this range is diverted to the Zone 2 aeration tanks.

5. 40 MG of wet weather storage (WWS) tank capacity is available to help manage flows during construction. Operators can divert flow to the WWS tanks upstream of the junction chamber.

6. Contractor shall coordinate with WWTP staff at all times to prevent overflows. Contractor shall work expeditiously to complete the work.

7. Contractor shall choose low flow times as much as possible to undertake construction.

8. Construction Sequence:
   a. Contractor to excavate and expose all piping affected by the work prior to taking the diversion box out of service.

   b. If possible, Contractor shall demo 48-inch steel diversion pipe from old leaping wiere and 42-inch RCP from old raw sewage pump station as shown on Drawings prior to taking the diversion box out of service. Contractor to confirm that pipes are out of service and demolition will not cause leakage at diversion box.

   c. Contractor to relocate non-potable water line prior to taking the diversion box out of service.

   d. Contractor to coordinate with Owner to install a bulkhead in the secondary clarifier effluent channel.

   e. Contractor to demo existing diversion structure and piping.

   f. Contractor to provide temporary bracing, shoring, earth retention, etc. as needed to protect existing structures.

   g. Contractor to complete construction of new diversion box as indicated in the Contract Documents.

   h. Contractor to coordinate with Owner to put new diversion box in service.

   i. Contractor to complete site clean-up and restoration.

C. The Contractor shall conform to all miscellaneous requirements as contained in the Contract.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. General Conditions: Section Part IV

B. Summary of Work: Section 01010

C. Coordination: Section 01040

PART 2 – PRODUCT

2.01 MATERIALS

A. The Contractor shall comply with the Specifications for type of work to be done.

PART 3 – EXECUTION

3.01 SEQUENCE OF CONSTRUCTION OPERATIONS

The Contractor shall submit to the Engineer for review and acceptance a complete schedule (progress chart) of his proposed sequence of construction operations prior to commencement of Work. However, the Engineer shall not accept a construction schedule that fails to utilize the entire time allocated for the construction of the project. The Contractor shall schedule the various construction activities to complete the project throughout the entire allotted time period. This schedule requirement in no way prevents the Contractor from completing the project in a shorter time frame than scheduled. The construction schedule along with a cost breakdown schedule shall be submitted and approved by the Owner prior to the submittal of the first partial payment request in accordance with the general conditions. A revised construction schedule shall be submitted to the Owner with each pay request. This revised schedule must be approved by the Owner prior to payment.

3.02 SPECIAL WORK SEQUENCE CONDITIONS

A. Refer to phasing narratives shown on Drawings.

B. The Contractor shall submit to the Engineer for review and acceptance a complete schedule of the proposed sequence of construction operations prior to commencement of work. This submittal shall include estimated tie-in dates to the existing plant, each with a contingency plan due to weather related delays.

C. This project involves the modification of the existing systems at the plant which interface and potentially impact the existing treatment plant operations. Plant operations must be maintained throughout construction; therefore, the various construction activities associated with work must be properly sequenced. The information given in this section regarding work sequence is intended to help the Contractor in identifying constraints with respect to keeping the existing plant in operation and in compliance with the discharge permit and assist the Contractor in planning its work.

D. In general, each existing process or item of equipment cannot be removed from service until a new, like system is operational and all downstream systems are operational. "Operational" means constructed, installed, inspected, checked by the manufacturer's factory representative, tested, and operated by the Contractor for an adequate time period. Use of

any equipment, improvement, or process by Owner necessary for sequencing of construction shall not determine substantial completion or initiation of any warranty period.

E. The high flow diversion box is required for the plant to handle influent flows above 27 million gallons per day (MGD). The two wet weather storage tanks provide 40 million gallons of storage that can be used to manage flow during construction. Contractor shall coordinate with WHWWTP plant staff to perform work during low flow times as much as possible. Contractor shall complete the work expeditiously to minimize the diversion box outage.

F. Contractor will be responsible for bulkheading the existing secondary clarifier effluent channel. This must remain in service during construction.

G. WHWWTP plant staff anticipate that the 48" steel pipe and 42" RCP bypass schedules to be removed and capped are abandoned and/or valved off. Contractor shall be responsible for handling any leakage encountered during cutting or capping of these pipes.

END OF SECTION

SECTION 01025 - MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 WORK INCLUDED

The Contractor shall furnish all necessary labor, machinery, tools, apparatus, equipment, materials, service, other necessary supplies and perform all work including all excavation and backfilling (without additional compensation, except where specifically set out in these specifications) at the contract lump sum bid for the work described in the plans and specifications.

1.02 PROGRESS AND PAYMENTS SCHEDULES

A. The Contractor's construction schedule must be approved by the Engineer before any payments shall be made on this contract. Refer to Section 01320.

B. Within fifteen (15) days after the date of formal execution of the Agreement (Contract), the Contractor shall prepare and submit to the Engineer, for approval, a schedule of values. The schedule of values depicts the Contractor's cost for completing the contract requirements and identify by major unit of the project work, the Contractor's dollar value for the material and the labor (two separate amounts) to be used as a basis for the periodic payments. The Contractor's schedule of values must be approved by the Engineer before any payments shall be made on this contract.

C. The Engineer's decision as to sufficiency and completeness of the Contractor's construction schedule and schedule of values shall be final.

D. The Contractor must make current, to the satisfaction of the Engineer, the construction schedule and schedule of values each time it requests a payment on this contract.

E. The Contractor's construction schedule and schedule of values must be maintained at the construction site, available for inspection, and shall be revised to incorporate approved change orders as they occur.

F. When the Contractor requests a payment on this contract, it must be on the approved schedule of values and be current. Further, the current schedule of values and construction schedule (both updated and revised) shall be submitted for review and approval by the Engineer before monthly payments shall be made by the Owner. The Contractor may submit stored materials for pay purposes provided proper documentation is provided.

G. Refer to Section 00800 14.02.A.6-8 for retainage requirements.

1.03 CLAIMS FOR EXTRA WORK

A. If the Contractor claims that any instructions by Drawings or otherwise involve extra cost, it shall give the Engineer written notice of said claim within seven (7) days after the receipt of such instructions, and in any event before proceeding to execute the work, stating clearly and in detail the basis of its claim or claims. No such claim shall be valid unless so made.

B. Claims for additional compensation for extra work, due to alleged errors in spot elevations, contour lines, or bench marks, shall not be recognized unless accompanied by certified survey data, made prior to the time the original ground was disturbed, clearly showing that errors exist which resulted, or would result, in handling more material, or performing more work than would reasonably be estimated from the Drawings and topographical maps issued.

C. Any discrepancies which may be discovered between actual conditions and those represented by the topographical maps and Drawings shall at once be reported to the Engineer, and work shall not proceed, except at the Contractor's risk, until written instructions have been received by the Contractor from the Engineer.

D. If, on the basis of the available evidence, the Engineer determines that an adjustment of the Contract Price or time is justifiable, the procedure shall then be as provided herein for "Changes in the Work".

E. By execution of this Contract, the Contractor warrants that it has visited the site of the proposed work and fully acquainted itself with the conditions there existing relating to construction and labor, and that it fully understands the facilities, difficulties, and restrictions attending the execution of the work under this Contract. The Contractor further warrants that it has thoroughly examined and is familiar with the Drawings, Specifications and all other documents comprising the Contract. The Contractor further warrants that by execution of this Contract its failure when it was bidding on this Contract to receive or examine any form, instrument or document, or to visit the site and acquaint itself with conditions there existing, in no way relieves the Contractor from any obligation under the Contract, and the Contractor agrees that the Owner shall be justified in rejecting any claim based on facts regarding which it should have been on notice as a result thereof.

1.04 DETERMINATION OF THE VALUE OF EXTRA (ADDITIONAL) OR OMITTED WORK

A. The value of extra (additional) or omitted work shall be determined in one or more of the following ways:

1. On the basis of the actual cost of all the items of labor (including on-the-job supervision), materials, and use of equipment, plus a maximum 15 percent for added work or a minimum 15 percent for deleted work which shall cover the Contractor's general supervision, overhead and profit.

    a. Labor may include on-site supervision, on-site project management, in addition to field personal associated with the work.

    b. In case of subcontracts, the 15 percent (maximum for added work and minimum for deleted work) is interpreted to mean the subcontractor's supervision, overhead and profit, and an additional 5 percent (maximum for added work and minimum for deleted work) may then be added to such costs to cover the General Contractor's supervision, overhead and profit.

    c. The cost of labor shall include required insurance, taxes and fringe benefits.

    d. Equipment costs shall be based on current rental rates in Lexington, KY.

2. By estimate and acceptance in a lump sum.

3. By unit prices named in the Contract or subsequently agreed upon.

B. Provided, however, that the cost or estimated cost of all extra (additional) work shall be determined in advance of authorization by the Engineer and approved by the Owner.

C. All extra (additional) work shall be executed under the conditions of the original Contract. Any claim for extension of time shall be adjusted according to the proportionate increase or decrease in the final total cost of the work unless negotiated on another basis.

D. Except for over-runs in contract unit price items, no extra (additional) work shall be done except upon a written Change Order from the Engineer, and no claim on the part of the Contractor for pay for extra (additional) work shall be recognized unless so ordered in writing by the Engineer.

1.05 PAY ITEMS

A. Item No. 1 – Base Bid for Replacement of Existing Diversion Box and Associated Piping

The Contractor shall furnish all necessary labor, machinery, tools, apparatus, equipment, materials service and other necessary supplies and perform all Work shown on the Drawings and/or described in the Specifications and Contract Documents at the lump sum price as indicated by the Bidder in the Bid. The Contract shall include in this item any additional materials, labor, goods, services, resources, and manpower necessary to complete the work for the item.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

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SECTION 01040 - COORDINATION

PART 1 - GENERAL

1.01 REQUIREMENTS

A. The Contractor shall allow the Owner or his agents, and other project Contractors or their agents, to enter upon the work for the purpose of constructing, operating, maintaining, removing, repairing, altering, or replacing such pipes, sewers, conduits, manholes, wires, poles, or other structures and appliances which may be required to be installed at or in the work. The Contractor shall cooperate with all aforesaid parties and shall allow reasonable provisions for the prosecution of any other work by the Owner, or others, to be done in connection with his work, or in connection with normal use of the facilities.

B. Each Contractor shall cooperate fully with the Owner, the Engineer, and all other Contractors employed on the Work, to effect proper coordination and progress to complete the project on schedule and in proper sequence. Insofar as possible, decisions of all kinds required from the Engineer shall be anticipated by the Contractor to provide ample time for inspection, or the preparation of instructions.

C. Each Contractor shall assume full responsibility for the correlation of all parts of his work with that of other Contractors. Each Contractor's superintendent shall correlate all work with other Contractors in the laying out of work. Each Contractor shall lay out his own work in accordance with the Drawings, Specifications, and instructions of latest issue and with due regard to the work of other Contractors.

D. Monthly general progress coordination meetings will be held at regularly scheduled times convenient for all parties involved. These meetings are in addition to specific meetings held for other purposes, such as special pre-installation meetings. Representation at each meeting by every part currently involved in coordination or planning for the work of the entire project is requested. Meetings shall be conducted in a manner that will resolve coordination problems. Results of the meetings shall be recorded and copies distributed to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

E. The Contractor will be responsible for coordinating with the West Hickman Wastewater Treatment Plant personnel and Superintendent Matthew Chancellor, for any work which will affect normal daily operation of the wastewater treatment plant.

1.02 COORDINATION OF CRAFTS, TRADES, AND SUBCONTRACTORS

A. The Contractor shall coordinate the work of all crafts, trades and subcontractors engaged on the Work, and he shall have final responsibility as regards the schedule, workmanship and completeness of each and all parts of the work.

B. Each Subcontractor is expected to be familiar with the General requirements and all sections of the detailed Specifications for all other trades and to study all Drawings and Specifications applicable to his work to the end that complete coordination between trades will be affected. Consult the Engineer if conflicts exist on the Drawings.

C. Contractor's Superintendent, or his designee who is employed by Contractor, must be on site at all times when work is being performed, except for periods which will not exceed 1 hour.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01200 - PROJECT MEETINGS

PART 1 - GENERAL

1.01 PRECONSTRUCTION MEETING

A. A preconstruction meeting will be held after Award of Contract, but prior to starting work at the site. Contractor's Project Manager and Site Superintendent are required to attend, as are representatives of all major subcontractors. Progress schedule update shall be submitted in advance of each meeting.

1.02 PROGRESS MEETINGS

A. Progress meetings will be held monthly at the Division of Water Quality offices during the performance of the Work. Additional progress meetings may be called as progress of work dictates. Prior to each progress meeting, Contractor shall submit a progress report summarizing the work completed over the past month and providing a look ahead at the work to be done over the next month.

B. Minimum Agenda for meeting shall include:

1. Review and approve minutes of previous meetings.
2. Review progress of Work since last meeting.
3. Review proposed 30 day construction schedule.
4. Note and identify problems which impede planned progress.
5. Develop corrective measures and procedures to regain planned schedule.
6. Revise construction schedule as indicated and plan progress during next work period.
7. Maintaining of quality and work standards.
8. Complete other current business.
9. Schedule next progress meeting.

1.03 SPECIAL MEETINGS

A. Owner or Engineer may schedule special meetings at the site or at Division of Water Quality offices to resolve construction issues. Contractor and when appropriate, subcontractors, shall attend upon request. No additional compensation shall be paid for meeting attendance.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

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SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.01 REQUIREMENTS

A. Progress Schedule

1. Within thirty (30) days after execution of the Agreement, but at least 20 days prior to submitting the first application for a progress payment, the Contractor shall prepare and submit three (3) copies of his proposed progress schedule to the Engineer for review and approval.

2. If so required, the schedule shall be revised until it is approved by the Engineer.

3. The schedule shall be updated monthly, depicting progress to the last day of the month and three (3) copies submitted to the Engineer not later than the fifth day of the month with the application for progress payment.

4. The schedule shall be prepared in the form of a horizontal bar chart showing in detail the proposed sequence of the work and identifying construction activities for each structure and for each portion of work.

5. The schedule shall be time scaled, identifying the first day of each week. The Schedule shall be provided with estimated dates for Early Start, Early Finish, Late Start and Late Finish as applicable. The work shall be scheduled to complete the Project within the Contract time. The Late Finish date shall equal the Contract Completion Date.

6. The schedule shall show duration (number of days) and float for each activity. Float shall be defined as the measure of leeway in starting or completing a scheduled activity without adversely affecting the project completion date established by the Contract Documents.

7. The updated schedule shall show all changes since the previous submittal.

8. All revisions to the schedule must reviewed and commented on by the Engineer.

B. Equipment and Material Orders Schedule

1. Contractor shall prepare and submit three (3) copies of his schedule of principal items of equipment and materials to be purchased to the Engineer for review and approval.

2. If so required, the schedule shall be revised until it is approved by the Engineer.

3. The schedule shall be updated monthly and three (3) copies submitted to the Engineer not later than the fifth day of every month with the application for progress payment.

4. The updated schedule shall be based on the Progress Schedule developed under the requirements of Paragraph 1.01(A) of this Section.

5. The schedule shall be in tabular form with appropriate spaces to insert the following information for principal items of equipment and materials:

   a. Dates on which Shop Drawings are requested and received from the manufacturer.

   b. Dates on which certification is received from the manufacturer and transmitted to the Engineer.

c. Dates on which Shop Drawings are submitted to the Engineer and returned by the Engineer for revision.

d. Dates on which Shop Drawings are revised by manufacturer and resubmitted to the Engineer.

e. Date on which Shop Drawings are returned by Engineer annotated either "Furnish as Submitted" or "Furnish as Corrected".

f. Date on which accepted Shop Drawings are transmitted to manufacturer.

g. Date of manufacturer's scheduled delivery.

h. Date on which delivery is actually made.

C. Working Drawings

1. Within thirty (30) days after the Notice to Proceed, Contractor shall prepare and submit three (3) copies of his preliminary schedule of Working Drawing submittals to the Engineer for review and approval. If so required, the schedule shall be revised until it is approved by the Engineer.

2. Working Drawings include, but are not limited to, Shop Drawings, layout drawings in plan and elevation, installation drawings, etc. Contractor shall be responsible for securing all of the information, details, dimensions, Drawings, etc., necessary to prepare the Working Drawings required and necessary under this Contract and to fulfill all other requirements of his Contract. Contractor shall secure such information, details, Drawings, etc., from all possible sources including the Drawings, Working Drawings prepared by subcontractors, Engineers, suppliers, etc.

3. In the event that the Engineer is required to provide additional engineering services as a result of a substitution of materials or equipment by the Contractor, the additional services will be provided in accordance with Section 01010 - Summary of Work, and will be covered in supplementary or revised Drawings which will be issued to the Contractor. All changes indicated that are necessary to accommodate the equipment and appurtenances shall be incorporated into the Working Drawings submitted to the Engineer.

4. Shop Drawings and Manufactured Item Information

   a. Contractor shall submit for review by the Engineer Shop Drawings for all fabricated work and for all manufactured items required to be furnished by the Contract Documents.

   b. Structural and all other layout Drawings prepared specifically for the Project shall have a plan scale of not less than 1/4-inch = 1 foot.

   c. The submitted documents shall provide information indicating that the materials are in conformance with the Technical Specifications and Contract Documents.

   d. Where manufacturer's publications in the form of catalogs, brochures, illustrations or other data sheets are submitted in lieu of prepared Shop Drawings, such submittals shall specifically indicate the item for which approval is requested. Identification of items shall be made in ink, and submittals showing only general information are not acceptable.

5. Contractor Responsibilities

   a. All submittals from subcontractors, manufacturers or suppliers shall be sent directly to the Contractor for checking. Contractor shall thoroughly check all Drawings for accuracy and conformance to the intent of the Contract Documents. Drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors, manufacturers, or suppliers by the Contractor for correction before submitting them to the Engineer.

   b. All submittals shall be bound, dated, properly labeled and consecutively numbered. Information on the label shall indicate Specification Section, Drawing number, subcontractors', manufacturer's or supplier's name and the name or type of item the submittal covers. Each part of a submittal shall be marked and tabulated.

   c. Working Drawings shall be submitted as a single complete package including all associated drawings relating to a complete assembly of the various parts necessary for a complete unit or system.

   d. Shop Drawings shall be submitted as a single complete package for any operating system and shall include all items of equipment and any mechanical units involved or necessary for the functioning of such system.

   e. ALL SUBMITTALS SHALL BE THOROUGHLY CHECKED BY THE CONTRACTOR FOR ACCURACY AND CONFORMANCE TO THE INTENT OF THE CONTRACT DOCUMENTS BEFORE BEING SUBMITTED TO THE ENGINEER AND SHALL BEAR THE CONTRACTOR'S STAMP OF APPROVAL CERTIFYING THAT THEY HAVE BEEN SO CHECKED. SUBMITTALS WITHOUT THE CONTRACTOR'S STAMP OF APPROVAL WILL NOT BE REVIEWED BY THE ENGINEER AND WILL BE RETURNED TO THE CONTRACTOR. Any comments added to the drawings by the Contractor shall be done in green ink so as to denote any Contractor notes.

   f. If the submittals contain any departures from the Contract Documents, specific mention thereof shall be made in the Contractor's letter of transmittal. Otherwise, the review of such submittals shall not constitute approval of the departure.

   g. No materials shall be ordered, fabricated or shipped or any work performed until the Engineer returns to the Contractor the submittals, herein required, annotated either "Furnish as Submitted" or "Furnish as Corrected".

   h. Where errors, deviations, and/or omissions are discovered at a later date in any of the submittals, the Engineer's prior review of the submittals does not relieve the Contractor of the responsibility for correcting all errors, deviations, and/or omissions.

6. Procedure for Review

   a. Submittals shall be transmitted in sufficient time to allow the Engineer at least thirty (30) working days for review and processing.

   b. Engineer prefers initial submittals be in electronic media for review. Once the submittal is reviewed, Contractor to provide two (2) paper hardcopies.

   c. If Contractor does not have capability to submit electronic submittals, then Contractor shall submit a request to Engineer for waiver. In the event a waiver is granted, Contractor shall transmit two (2) prints of each submittal to the Engineer for review for all Drawings greater than 11-inches by 17-inches in size, as well as six (6) copies of all other material.

d. Submittal shall be accompanied by a letter of transmittal, in duplicate, containing date, project title, Contractor's name, number and titles of submittals, notification of departures and any other pertinent data to facilitate review.

e. Submittals will be annotated by the Engineer in one of the following ways:

"Furnish as Submitted" - no exceptions are taken.

"Furnish as Corrected" - minor corrections are noted and shall be made.

"Revise and Resubmit" - major corrections are noted and a resubmittal is required.

"Rejected" - Based on the information submitted, the submission is not in conformance with the Contract Documents. The deviations from the Contract Documents are too numerous to list and a completely revised submission of the proposed equipment or a submission of other equipment is required.

f. If a submittal is satisfactory to the Engineer, the Engineer will annotate the submittal "Furnish as Submitted" or "Furnish as Corrected", retain four (4) copies and return remaining copies to the Contractor.

g. If a resubmittal is required, the Engineer will annotate the submittal "Revise and Resubmit" and transmit five (5) copies to the Contractor for appropriate action.

h. Contractor shall revise and resubmit submittals as required by the Engineer until submittals are acceptable to the Engineer. It is understood by the Contractor that Owner may charge the Contractor the Engineer's charges for review in the event a submittal is not approved (either "Furnish as Submitted" or "Furnish as Corrected") by the third submittal for a system or piece of equipment. These charges shall be for all costs associated with engineering review, meetings with the Contractor or manufacturer, etc., commencing with the fourth submittal of a system or type of equipment submitted for a particular Specification Section.

i. Acceptance of a Working Drawing by the Engineer will constitute acceptance of the subject matter for which the Drawing was submitted and not for any other structure, material, equipment or appurtenances indicated or shown.

7. Engineer's Review

a. Engineer's review of the Contractor's submittals shall in no way relieve the Contractor of any of his responsibilities under the Contract. An acceptance of a submittal shall be interpreted to mean that the Engineer has no specific objections to the submitted material, subject to conformance with the Contract Drawings and Specifications. The Engineer will denote any notes in red ink so as to record his comments on the submittal. Engineer may provide a tabular list of comments referencing the submittal, in lieu of, or in addition to marking the submittal.

b. Engineer's review will be confined to general arrangement and compliance with the Contract Drawings and Specifications only, and will not be for the purpose of checking dimensions, weights, clearances, fittings, tolerances, interferences, coordination of trades, etc.

8. Record Working Drawings

a. Prior to final payment, the Contractor shall furnish the Engineer one complete set of all accepted Working Drawings, including Shop Drawings, for equipment, piping, electrical work, heating system, ventilating system, air conditioning system,

instrumentation system, plumbing system, structural, interconnection wiring diagrams, etc.

b. Manufacturer's publications, submitted in lieu of prepared Shop Drawings, will not be required in reproducible form. However, three (3) sets of such material shall be furnished by the Contractor to the Engineer.

c. Working Drawings furnished shall be corrected to include any departures from previously accepted Drawings.

D. Certified Shop Test Reports

1. Each piece of equipment for which pressure, head, capacity, rating, efficiency, performance, function or special requirements are specified or implied shall be tested in the shop of the manufacturer in a manner which shall conclusively prove that its characteristics comply fully with the requirements of the Contract Documents and applicable test codes and standards. Contractor shall keep the Engineer advised of the scheduling of shop tests (at least three weeks minimum advance notice) so that the Engineer may arrange for the witnessing or inspection at the proper time and place.

2. The contractor shall secure from the manufacturers five (5) paper copies and two (2) electronic copies of the actual test data, the interpreted results and a complete description of the testing facilities and testing setup, all accompanied by a certificate of authenticity sworn to by a responsible official of the manufacturing company and notarized. These reports shall be forwarded to the Engineer for review.

3. In the event any equipment fails to meet the test requirements, the manufacturer shall make all necessary changes, adjustments or replacements and the tests shall be repeated, at no additional cost to the Owner or Engineer, until the equipment test requirements are acceptable to the Engineer.

4. No equipment shall be shipped to the Project until the Engineer notifies the Contractor, in writing, that the shop test reports are acceptable.

E. Operation and Maintenance Manuals

1. See Section 01780 for requirements.

F. Construction Photographs

1. The Contractor shall take photographs at the locations and at such stages of the construction as directed by the Engineer. Digital format shall be used. Provide all pictures for a given period on a CD or DVD.

2. Provide the equivalent of 36 different exposures per month for the duration of the Contract time. When directed by the Engineer, frequency of photographs may be increased to weekly sessions provided that the equivalent number of exposures is not exceeded. Engineer may waive requirements for photographs during inactive construction periods in favor of increased photographs during active construction sequences.

G. Stormwater Pollution Prevention Plan (SWPPP), if required

1. Within thirty (30) days after execution of the Agreement, but at least 20 days prior to submitting the first application for a progress payment, the Contractor shall prepare and submit a sequenced SWPPP. The sequenced SWPPP must align with the Contractor's construction activities.

2. The SWPPP shall be updated monthly, depicting the current SWPPP, submitted to the Engineer not later than the fifth day of the month with the application for progress payment.

3. The Contactor shall submit an updated SWPPP to the Engineer prior to beginning and after completing construction on the affected areas.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01320 - PROGRESS SCHEDULES

PART 1 - GENERAL

1.01 REQUIREMENTS

A. Scheduling Responsibilities:

1. In order to provide a definitive basis for determining job progress, a construction schedule of a type approved by the Owner will be used to monitor the project.

2. Each week the Contractor shall be responsible for preparing the schedule and updating it based on a tentative two week basis. It shall at all times remain the Contractor's responsibility to schedule and direct his forces in a manner that will allow for the completion of the work within the contractual period.

B. Construction Hours: see Section 01010 – Summary of Work – for construction working hours requirements.

C. Progress of the Work:

1. The work shall be started within ten (10) days following the Notice to Proceed and shall be executed with such progress as may be required to prevent delay to other Contractors or to the general completion of the project. The work shall be executed at such times and in or on such parts of the project, and with such forces, material and equipment, to assure completion of the work in the time established by the Contract.

2. The Contractor agrees that whenever it becomes apparent from the current monthly schedule update that delays have resulted and, hence, that the Contract completion date will not be met or when so directed by the Owner, he will take some or all of the following actions at no additional cost to the Owner:

a. Increase construction manpower in such quantities and crafts as will substantially eliminate the backlog of work.

b. Increase the number of working hours per shift, shifts per working day or days per week, the amount of construction equipment, or any combination of the foregoing to substantially eliminate the backlog of work.

c. Reschedule activities to achieve maximum practical concurrency of accomplishment of activities, and comply with the revised schedule.

d. The Contractor shall submit to the Owner or the Owner's representative for review a written statement of the steps he intends to take to remove or arrest the delay to the critical path in the accepted schedule.

1.02 CONSTRUCTION SCHEDULE

A. Within fifteen (15) calendar days of the Notice to Proceed, the Contractor shall submit to the Engineer five (5) copies of his proposed schedule. Schedule shall be Critical Path Method (CPM) type which depicts the Contractor's plan for completing the contract requirements and show work placement in dollars versus contract time. The schedule will be the subject of a schedule review meeting with the Contractor, the Engineer and the Owner or the Owner's representative within one (1) week of its submission. The Contractor will revise and resubmit the schedule until it is acceptable and accepted by the Owner or the Owner's representative.

1.03 CONTRACT COMPLETION TIME

A. Causes for Extensions:

The Contract completion time will be adjusted only for causes specified in this Contract. In the event the Contractor requests an extension of any Contract completion date, he shall furnish such justification and supporting evidence as the Owner or the Owner's representative may deem necessary for a determination as to whether the Contractor is entitled to an extension of time under the provisions of this Contract. The Owner, with the assistance of the Engineer, will, after receipt of such justification and supporting evidence, make findings of fact and will advise the Contractor in writing thereof.

B. Requests for Time Extension:

Each request for change in any Contract completion date shall be initially submitted to the Owner within the time frame stated in the General Conditions. All information known to the Contractor at that time concerning the nature and extent of the delay shall be transmitted to the Owner at that time. Within the time frame stated in the General Conditions but before the date of final payment under this Contract, all information as required above concerning the delay must be submitted to the Owner. No time extension will be granted for requests which are not submitted within the foregoing time limits.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01380 - CONSTRUCTION PHOTOGRAPHS AND VIDEO

PART 1 - GENERAL

1.01 WORK INCLUDED

Provide monthly photographs of the construction throughout the progress of the Work. Provide video of the length of construction area prior to commencement of work, monthly progress, and at completion of work.

1.02 RELATED WORK

A. General Conditions

B. Section 01700 - Contract Closeout

1.03 PHOTOGRAPHY

A. Provide monthly photographs (two sets) of the construction throughout progress of the Work. Provide twenty-four (24) views of Work each month or more as may be necessary to clearly show any new Work.

B. Take the photographs at the beginning, during, and completion of each element of construction listed below:

1. Unclassified excavation.
2. Trenching.
3. Demolition of existing diversion box
5. Installation of all equipment.
6. Installation of all electric work.
7. All other aspects of construction.

1.04 PRINTS

A. Color: two (2) prints of each view, bound into separate sets.

B. Paper: single weight, neutral black image tone, white base.

C. Finish: matte.

D. Size: 3" x 5". Mount with binder tabs.

E. Label each print on back. List project name and Contract number, orientation of view, date and time of view, work being performed, location of work, and Contractor's name.

1.05 DIGITAL PHOTOGRAPHS

All photographs shall be digital. Digital photographs of all views shall be provided on compact disc (CD) or digital video disc (DVD) to the Owner. The CD or DVD shall be included monthly along with the two sets of prints. Digital pictures shall be time and date stamped one labeled the same as prints.

1.06 DIGITAL VIDEO

A. All video shall be digital. Digital video shall be provided on a compact disc (CD) or digital video disc (DVD) to the Owner. The CD or DVD shall be included monthly with the digital photographs. Digital video shall be time and date stamped.

B. Initial video shall be completed prior to the arrival of any equipment for construction facilities. The video shall include all existing structures, visible utilities, parking lots, and access roads. Record any existing damage to the facilities.

C. Final video shall be completed once all equipment and construction facilities have been removed from the sites. The video shall include all items listed above plus all new modifications or alternations.

D. All video shall provide correct exposure and focus, high resolution and sharpness, maximum depth of field.

1.07 TECHNIQUE

A. All views shall provide factual presentation of the Work progress.

B. All photographs shall provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.

1.08 VIEWS

The photographs shall be from varied views that show the most representative sample of the Work progress.

1.09 SUBMITTALS

Submit prints and CD or DVD at the monthly progress meetings unless specifically requested sooner by the Owner or Engineer.

- END OF SECTION -

SECTION 01400 - QUALITY CONTROL

PART 1 - GENERAL

1.01 REQUIREMENTS

A. Testing Laboratory Services

1. Laboratory and field testing and checking required by the Specifications, including the cost of transporting all samples and test specimens, shall be provided and paid for by the Owner unless otherwise indicated in the Specifications.

2. Materials to be tested include, but are not necessarily limited to the following: cement, concrete aggregate, concrete, onsite and offsite fill, and reinforcing steel.

3. Tests required by the Owner shall not relieve the Contractor from the responsibility of supplying test results and certificates from manufacturers or suppliers to demonstrate conformance with the Specifications.

4. In place testing of compacted materials will be conducted as specified or recommended by Engineer.

5. Procedures

   a. The Contractor shall plan and conduct his operations to permit taking of field samples and test specimens, as required, and to allow adequate time for laboratory tests.

   b. The collection, field preparation and storage of field samples and test specimens shall be as directed by the Engineer with the cooperation of the Contractor.

6. Significance of Tests

   a. Test results shall be binding on both the Contractor and the Owner, and shall be considered irrefutable evidence of compliance or noncompliance with the Specification requirements, unless supplementary testing shall prove, to the satisfaction of the Owner, that the initial samples were not representative of actual conditions.

7. Supplementary and Other Testing

   a. Nothing shall restrict the Contractor from conducting tests he may require. Should the Contractor at any time request the Owner to consider such test results, the test reports shall be certified by an independent testing laboratory acceptable to the Owner. Testing of this nature shall be conducted at the Contractor's expense.

1.02 IMPERFECT WORK OR MATERIALS

A. Any defective or imperfect work or materials furnished by the Contractor which is discovered before the final acceptance of the work, as established by the Certificate of Substantial Completion, or during the subsequent guarantee period, shall be removed immediately even though it may have been overlooked by the Engineer and estimated for payment. Any materials condemned or rejected by the Engineer shall be tagged as such and shall be immediately removed from the site. Satisfactory work or materials shall be substituted for that rejected.

B. The Engineer may order tests of imperfect or damaged work or materials to determine the required functional capability for possible acceptance, if there is no other reason for rejection. The cost of such tests shall be borne by the Contractor; and the nature, tester, extent and

supervision of the tests will be as determined by the Engineer. If the results of the tests indicate that the required functional capability of the work or material was not impaired, consistent with the final general appearance of same, the work or materials may be deemed acceptable. If the results of such tests reveal that the required functional capability of the questionable work or materials has been impaired, then such work or materials shall be deemed imperfect and shall be replaced. The Contractor may elect to replace the imperfect work or material in lieu of performing the tests.

1.03 INSPECTION AND TESTS

A. The Contractor shall allow the Engineer ample time and opportunity for testing materials to be used in the work. He shall advise the Engineer promptly upon placing orders for material so that arrangements may be made, if desired, for inspection before shipment from the place of manufacture. The Contractor shall at all times furnish the Engineer and his representatives, facilities including labor, and allow proper time for inspecting and testing materials and workmanship. The Contractor must anticipate possible delays that may be caused in the execution of his work due to the necessity of materials being inspected and accepted for use. The Contractor shall furnish, at his own expense, all samples of materials required by the Engineer for testing, and shall make his own arrangements for providing water, electric power, or fuel for the various inspections and tests of structures and material.

B. Where other tests or analyses are specifically required in other Sections of these Specifications, the cost thereof shall be borne by the party (Owner or Contractor) so designated in such Sections. The Owner will bear the cost of all tests, inspections, or investigations undertaken by the order of the Engineer for the purpose of determining conformance with the Contract Documents if such tests, inspection, or investigations are not specifically required by the Contract Documents, and if conformance is ascertained thereby. Whenever nonconformance is determined by the Engineer as a result of such tests, inspections, or investigations, the Contractor shall bear the full cost thereof or shall reimburse the Owner for said cost. In this connection, the cost of any additional tests and investigations, which are ordered by the Engineer to ascertain subsequent conformance with the Contract Documents, shall be borne by the Contractor.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01510 - TEMPORARY UTILITIES

PART 1 - GENERAL

1.01 REQUIREMENTS

A. The Contractor shall provide temporary light and power, heating, water service and sanitary facilities for his operations, for the construction operations of his subcontractors on this Project at the site. The temporary services shall be provided for use throughout the construction period.

B. The Contractor shall coordinate and install all temporary services in accordance with the requirements of the utility companies having jurisdiction and as required by applicable codes and regulations.

C. At the completion of the work, or when the temporary services are no longer required, the facilities shall be restored to their original conditions.

D. All costs in connection with the temporary services including, but not limited to, installation, utility company service charges, maintenance, relocation and removal shall be borne by the Contractor at no additional cost to the Owner.

E. Temporary Light and Power

1. The temporary general lighting and small power requirements shall be serviced by 120/240 V, 1 phase, 3 wire temporary systems furnished and installed by the Contractor. This service shall be furnished complete with main disconnect, overcurrent protection, meter outlet, branch circuit breakers, and wiring as required; including branch circuit breakers and wiring as required for furnishing temporary power to the subcontractor's field office service connections, all in accordance with the requirements of the servicing power company and applicable standards and codes. The meter for the temporary 120/240 V service for construction purposes shall be registered in the name of the Contractor and all energy charges for furnishing this temporary electric power shall be borne by the Contractor.

2. The Contractor shall make all necessary arrangements, and pay for all permits, inspections, and power company charges for all temporary service installations. All temporary systems shall comply with and meet the approval of the local authorities having jurisdiction. All temporary electrical systems shall consist of wiring, switches, necessary insulated supports, poles, fixtures, sockets, receptacles, lamps, guards, cutouts, and fuses as required to complete such installations. The Contractor shall furnish lamps and fuses for all temporary systems furnished by him and shall replace broken and burned out lamps, blown fuses, damaged wiring and as required to maintain these systems in adequate and safe operating condition. All such temporary light and power system shall be installed without interfering with the work of his subcontractors.

   When it is necessary during the progress of construction that a temporary electrical facility installed under this Division interferes with construction operations, the Contractor shall relocate the temporary electrical facilities to maintain temporary power as required at no additional cost to the Owner. The Contractor shall be responsible at all times for any damage or injury to equipment, materials, or personnel caused by improperly protected or installed temporary installations and equipment.

3. The various subcontractors doing the work at the site shall be permitted to connect into the temporary general lighting system small hand tools, such as drills, hammers, and grinders, provided that:

   a. Equipment and tools are suitable for 120 V, single phase, 60 Hz operation and operating input does not exceed 1,500 volt-amperes.

b. Tools are connected to outlets of the system with only one (1) unit connected to a single outlet.

c. In case of overloading of circuits, the Contractor will restrict use of equipment and tools as required for correct loading.

4. The Contractor shall keep the temporary general lighting and power systems energized fifteen minutes before the time that the earliest trade starts in the morning and de-energized fifteen minutes after the time the latest trade stops. This applies to all weekdays, Monday through Friday, inclusive, which are established as regular working days.

5. If the Contractor requires additional power and lighting other than that specified herein (including power for temporary heating equipment) shall furnish an additional service complete with all fuses, cutouts, wiring and other material and equipment necessary for a complete system between the service point and the additional power consumers and shall install his own metering equipment in accordance with the requirements of the servicing power company.

6. The temporary general lighting system shall be installed progressively in structures as the various areas are enclosed or as lighting becomes necessary because of partial enclosure. Lighting intensities shall be not less than 10 foot candles.

7. The Contractor shall provide a separate temporary night lighting circuit for construction security. This system shall be energized at the end of each normal working day and de-energized at the start of each normal working day by the Contractor. The system is to be left energized over Saturdays, Sundays, and all holidays. Lighting intensities shall be not less than 2 foot candles.

8. Electrical welders provided by each trade used in the erection and fabrication of the buildings, structures and equipment shall be provided with an independent grounding cable connected directly to the structure on which the weld is being made rather than adjacent conduit piping, etc.

   Electricians and other tradesmen necessary for the required connections and operation of welding equipment and generator, standby generators and similar equipment (and related labor) shall be furnished by the Contractor and his subcontractors.

9. Upon completion of the work, but prior to acceptance by the Owner, the Contractor shall remove all temporary services, security lighting systems, temporary general lighting systems and all temporary electrical work from the premises.

F. Temporary Heating

1. The Contractor shall provide temporary heating, ventilation coverings and enclosures necessary to properly protect all work and materials against damage by dampness and cold, to dry out the work and to facilitate work in all structures.

2. The equipment, fuel, materials, operating personnel and methods used shall be at all times satisfactory and adequate to maintain critical installation temperatures and ventilation for all work in those areas where the same is required.

3. After any structure is enclosed, the minimum temperature to be maintained is 50°F, unless otherwise specified, where work is actually being performed.

4. Before and during the application of interior finishing, painting, etc., the Contractor shall provide sufficient heat to maintain a temperature of not less than 65°F.

5. Any work damaged by dampness or insufficient or abnormal heating shall be replaced by the Contractor at no additional cost to the Owner.

G. Temporary Sanitary Service

1. Sanitary conveniences, in sufficient numbers, for the use of all persons employed on the work and properly screened from public observation, shall be provided and maintained at suitable locations by the Contractor, all as prescribed by State Labor Regulations and local ordinances. The contents of same shall be removed and disposed of in a manner consistent with local and state regulations, as the occasion requires. Contractor and his subcontractors shall rigorously prohibit the committing of nuisances within, on, or about the work. Sanitary facilities shall be removed from the site when no longer required. Employees shall not use the West Hickman WWTP facilities.

H. Temporary Water

1. The Contractor shall provide temporary water service for construction purposes, sanitary facilities, fire protection, field offices and for cleaning. The Contractor shall make all arrangements for connections to the potable water at the plant site. The Contractor shall pay all charges associated with the connection and all charges for potable water used under this Contract.

2. The Contractor shall supply potable water for his employees either by portable containers or drinking fountains.

3. An adequate number of hose bibbs, hoses, and watertight barrels shall be provided for the distribution of water.

4. Water service shall be protected from freezing and the service shall be extended and relocated as necessary to meet temporary water requirements.

PART 2 - PRODUCTS

(NOT USED)

PART 3 - EXECUTION

(NOT USED)

END OF SECTION

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SECTION 01515 - FIELD OFFICES

PART 1 - GENERAL

1.01 CONTRACTOR'S FIELD OFFICE

A. The Contractor shall establish and maintain a field office on this project and have available at the office a responsible representative who can officially receive communications from the Owner and the Engineer. The Contractor shall have one complete, up-to-date set of Drawings, Specifications and Contract Documents (including all Addenda and Change Orders) in this office at all times, available for reference at any time. The office shall be provided with telephone service, toilet facilities, light, air conditioning and heat; the cost of which shall be borne by the Contractor. Notices, instructions, orders, directions or other communications from the Engineer, left at this office, shall be considered as received by the Contractor.

B. Field office and utilities shall be in accordance with all applicable codes and ordinances.

1.02 RESIDENT PROJECT REPRESENTATIVE'S (RPR) FIELD OFFICE

A. Field office for the RPR is not required.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

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SECTION 01520 - MAINTENANCE OF UTILITY OPERATIONS DURING CONSTRUCTION

PART 1 - GENERAL

1.01 REQUIREMENTS

A. The wastewater treatment plant shall be maintained in continuous operation during the entire construction period of this Contract as hereinafter specified. The intent of this section is to outline the minimum requirements necessary to provide continuous transference of wastewater throughout the construction period.

B. Work under this Contract shall be scheduled and conducted by the Contractor so as to not reduce the quality of near-by water streams or cause odor or other nuisance except as explicitly permitted hereinafter. In performing the work shown and specified, the Contractor shall plan and schedule his work to meet the plant operating requirements, and the constraints and construction requirements as outlined in this Section. No discharge of raw or inadequately treated wastewater shall be allowed. The Contractor shall pay all civil penalties, costs, and assessments associated with any discharge of raw or inadequately treated wastewater associated with the Contractor's work.

C. The Contractor shall be responsible for coordinating the general construction and for ensuring that permanent or temporary power is available for all existing, proposed, and temporary facilities that are required to be on line at any given time.

D. The Contractor has the option of providing additional temporary facilities that can eliminate a constraint, provided it is done without cost to the Owner and provided that all requirements of these Specifications are fulfilled and approved by the Engineer.

E. All tie-ins, replacement, or modifications Work shall be accomplished as quickly as possible. If Work required extends beyond 8-hours or weather causes higher flows in the existing system during the Work, the new Work shall be stopped and the existing system shall be placed back into service. The new Work shall be properly protected from damage. Any damage to the new Work or damage to surrounding areas caused by the new Work shall be repaired or replaced at the Owner's decision by the Contractor at the Contractor's sole expense.

1.02 MAINTENANCE OF PLANT OPERATION

A. This project involves modifications of the existing plant systems which interface with the existing treatment plant. Plant operations must be maintained throughout construction.

B. The Contractor will be responsible for supplying a sequence of construction shop drawing to the engineer for review prior to the beginning of any construction activities. The Contractor must note and follow the guidelines and requirements listed below:

1.03 SUBMITTALS

C. The Contractor shall submit a sequence of construction prior to the beginning of any construction activities.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01530 - PROTECTION OF EXISTING FACILITIES

PART 1 - GENERAL

1.01 REQUIREMENTS

A. Contractor shall be responsible for the preservation and protection of property adjacent to the work site against damage or injury as a result of his operations under this Contract. Any damage or injury occurring on account of any act, omission or neglect on the part of the Contractor shall be restored in a proper and satisfactory manner or replaced by and at the expense of the Contractor to an equal or superior condition than previously existed.

B. Contractor shall be responsible for locating all underground utilities in accordance with applicable regulation. Locations and elevations of all existing utilities shall be accurately marked on record drawings.

C. Contractor shall comply promptly with such safety regulations as may be prescribed by the Owner or the local authorities having jurisdiction and shall, when so directed, properly correct any unsafe conditions created by, or unsafe practices on the part of, his employees. In the event of the Contractor's failure to comply, the Owner may take the necessary measures to correct the conditions or practices complained of, and all costs thereof will be deducted from any monies due the Contractor. Failure of the Engineer to direct the correction of unsafe conditions or practices shall not relieve the Contractor of his responsibility hereunder.

D. In the event of any claims for damage or alleged damage to property as a result of work under this Contract, the Contractor shall be responsible for all costs in connection with the settlement of or defense against such claims. Prior to commencement of work in the vicinity of property adjacent to the work site, the Contractor, at his own expense, shall take such surveys as may be necessary to establish the existing condition of the property. Before final payment can be made, the Contractor shall furnish satisfactory evidence that all claims for damage have been legally settled or sufficient funds to cover such claims have been placed in escrow, or that an adequate bond to cover such claims has been obtained.

1.02 PROTECTION OF WORK AND MATERIAL

A. During the progress of the work and up to the date of final payment, the Contractor shall be solely responsible for the care and protection of all work and materials covered by the Contract.

B. All work and materials shall be protected against damage, injury or loss from any cause whatsoever, and the Contractor shall make good any such damage or loss at his own expense. Protection measures shall be subject to the approval of the Engineer.

1.03 BARRICADES, WARNING SIGNS AND LIGHTS

A. The Contractor shall provide, erect and maintain as necessary, strong and suitable barricades, danger signs and warning lights along all roads accessible to the public, as required by the Manual on Uniform Traffic Control Devices or as required by the authority having jurisdiction, to ensure safety to the public. All barricades and obstructions along public roads shall include reflective material, shall be illuminated at night, and all lights for this purpose shall be kept burning from sunset to sunrise.

B. Contractor shall provide and maintain such other warning signs and barricades in areas of and around their respective work as may be required for the safety of all those employed in the work, the Owner's operating personnel, or those visiting the site.

1.04 EXISTING UTILITIES AND STRUCTURES

A. The term existing utilities shall be deemed to refer to both publicly-owned and privately-owned utilities such as electric power and lighting, telephone, water, gas, storm drains, sanitary sewers and all appurtenant structures.

B. Where existing utilities and structures are indicated on the Drawings, it shall be understood that all of the existing utilities and structures affecting the work may not be shown and that the locations of those shown are approximate only. It shall be the responsibility of the Contractor to ascertain the actual extent and exact location of existing utilities and structures. In every instance, the Contractor shall notify the proper authority having jurisdiction and obtain all necessary directions and approvals before performing any work in the vicinity of existing utilities.

C. Prior to beginning any excavation work, the Contractor shall, through field investigations, determine any conflicts or interferences between existing utilities and new utilities to be constructed under this project. This determination shall be based on the actual locations, elevations, slopes, etc., of existing utilities as determined in the field investigations, and locations, elevation, slope, or other information of new utilities as shown on the Drawings. If an interference exists, the Contractor shall bring it to the attention of the Engineer as soon as possible. If the Engineer agrees that an interference exists, he shall develop a plan to address the interference as required, and obtain the Owner's approval. Additional costs to the Contractor for this change shall be processed through a Change Order as detailed elsewhere in these Contract Documents. In the event the Contractor fails to bring a potential conflict or interference to the attention of the Engineer prior to beginning excavation work, any actual conflict or interference which does arise during the Project shall be corrected by the Contractor, as directed by the Engineer, at no additional expense to the Owner.

D. The work shall be carried out in a manner to prevent disruption of existing services and to avoid damage to the existing utilities. Temporary connections shall be provided, as required, to insure uninterruption of existing services. Any damage resulting from the work of this Contract shall be promptly repaired by the Contractor at his own expense in a manner approved by the Engineer and further subject to the requirements of any authority having jurisdiction. Where it is required by the authority having jurisdiction that they perform their own repairs or have them done by others, the Contractor shall be responsible for all costs thereof.

E. Where excavations by the Contractor require any utility lines or appurtenant structures to be temporarily supported and otherwise protected during the construction work, such support and protection shall be provided by the Contractor. All such work shall be performed in a manner satisfactory to the Engineer and the respective authority having jurisdiction over such work. In the event the Contractor fails to provide proper support or protection to any existing utility, the Engineer may, at his discretion, have the respective authority to provide such support or protection as may be necessary to ensure the safety of such utility, and the costs of such measures shall be paid by the Contractor. This is not a pay item.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01550 - SITE ACCESS AND STORAGE

PART 1 - GENERAL

1.01 REQUIREMENTS

A. Access Roads

1. The Contractor shall construct and maintain such temporary access roads as required to perform the work of this Contract.

2. Access roads shall be located within the property lines of the Owner unless the Contractor independently secures easements for his use and convenience. Contractor shall submit written documentation to the Engineer for any Contractor secured easements across privately held property. Easement agreement shall specify terms and conditions of use and provisions for site restoration. A written release from the property owner certifying that all terms of the easement agreement have been complied by the Contractor shall be furnished to the Engineer prior to final payment.

3. Existing access roads used by the Contractor shall be suitably maintained by the Contractor at his expense during construction. Contractor shall not be permitted to restrict Owner access to existing facilities. Engineer may direct Contractor to perform maintenance of existing access roads when Engineer determines that such work is required to insure all weather access by the Owner.

4. The Contractor will maintain the primary roads to be free of mud and dirt. All mud and dirt carried from the access roads to the primary roads shall be washed and cleaned immediately.

5. The Contractor shall obtain and pay all cost associated with any bonds required by the Kentucky Department of Transportation for the use of State maintained roads.

6. The primary access to the facility for this work will be from Ashgrove Pike.

7. Contractor shall maintain the road surface of the plant access road from Ashgrove Pike throughout construction. This shall include undercutting and backfilling areas which have failed or pumped, at the direction of the Engineer. Maintenance shall include patching of potholes with asphalt using "cold patch" or "hot mix", whichever is available during the maintenance period. Any additional pavement outside of the designated haul route that needs repair during construction or after construction shall be incidental to the project and will not be paid for by the Owner.

B. Parking Areas

1. Contractor shall construct and maintain suitable parking areas for his construction personnel on the project site where approved by the Engineer and the Owner.

C. Restoration

1. At the completion of the Work, the surfaces of land used for access roads and parking areas shall be restored by the Contractor to its original condition and to the satisfaction of the Engineer.

D. Traffic Regulations

1. Contractor shall obey all traffic laws and comply with all the requirements, rules and regulations of the Kentucky Transportation Cabinet, LFUCG, and other local authorities

having jurisdiction to maintain adequate warning signs, lights, barriers, etc., for the protection of traffic on public roadways.

E. Storage of Equipment and Materials

1. Contractor shall store his equipment and materials at the job site in accordance with the requirements of the Contract Documents, and as hereinafter specified. All equipment and materials shall be stored in accordance with manufacturer's recommendations and as directed by the Owner or Engineer, and in conformity to applicable statutes, ordinances, regulations and rulings of the public authority having jurisdiction.

2. Contractor shall secure a site for staging area and material storage, including portable restroom facilities. Contractor shall not store materials or encroach upon private property without the written consent of the owners of such private property. Use of public lands must be with the written approval of the Owner.

3. Contractor shall not store unnecessary materials or equipment on the job site, and shall take care to prevent any structure from being loaded with a weight which will endanger its security or the safety of persons.

4. Materials shall not be placed within ten (10) feet of fire hydrants. Gutters, drainage channels and inlets shall be kept unobstructed at all times.

5. Contractor shall provide adequate temporary storage buildings/facilities, if required, to protect materials or equipment on the job site.

6. Contractor shall provide Engineer with copy of agreement with property owner of staging area. Contractor will be responsible for all restoration. Agreement between Contractor and property owner shall include language holding the Owner harmless from responsibility and liability.

7. The Contractor shall not have storage of material within the floodway.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01560 - TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.01 GENERAL

A. Provide and maintain equipment and temporary construction, as necessary to provide controls over environmental and safety conditions at the construction site and adjacent areas. Remove physical evidence of temporary facilities at completion of Work.

B. Prohibited Construction Activities:

1. Disposing of excess or unsuitable excavated material in wetlands or floodplains, even with the permission of the property owner.

2. Locating stockpile storage areas in environmentally sensitive areas.

3. Indiscriminate, arbitrary, or capricious operation of equipment in any stream corridors, any wetlands, any surface waters, or outside the construction limits.

4. Pumping of sediment-laden water from trenches or other excavations directly into any surface waters, any stream corridors, any wetlands, or storm sewers; all such water will be properly filtered or settled to remove silt prior to release.

5. Discharging pollutants such as chemicals, fuels, lubricants, bituminous materials, raw sewage and other harmful waste into or alongside of rivers, streams, impoundments, or into natural or manmade channels leading thereto.

6. Permanent or unspecified alteration of the flow line of any stream.

7. Damaging vegetation outside of the construction area.

8. Disposal of trees, brush, and other debris in any stream corridors, any wetlands, any surface waters, or at unspecified locations.

9. Open burning of project debris without a permit.

10. Discharging injurious silica dust concentrations into the atmosphere resulting from breaking, cutting, chipping, drilling, buffing, grinding, polishing, shaping or surfacing closer than 200 feet to places of residences or commercial, professional, quasi-public or public places of human occupation.

11. Storing construction equipment and vehicles and/or stockpiling construction materials on property, public or private, not previously authorized for such purposes as noted in Section 01550.

12. Running well point or pump discharge lines through private property or public property and rights-of-way without an easement or the written permission of the property owner and the consent of the Engineer.

13. Non-compliance with the Contractor's, OSHA's, or the Owner's safety requirements.

14. Operations entailing the use of vibratory hammers or compactors outside the hours listed in Section 01010 - Summary of Work, or outside the hours allowed for construction by local ordinances or regulations.

1.02 SAFETY ADVISORY

A. Scope:

1. Maintaining jobsite safety
2. Maintaining traffic safety

B. LFUCG-funded projects have a contractual and legal obligation for performance and breech of contract in regard to the safety of all exposed personnel. Reference the Occupational Safety Health Administration (OSHA) Multi Employer Citation Policy: Multi-employer Worksites, The Creating Employer, The Exposing Employer, The Correcting Employer, The Controlling Employer, Multiple Roles.

C. The Contractor shall at all times conduct the work safely in order to assure a safe work site. The Contractor shall be responsible for the safety of the Contractor's employees, agents and subcontractors, Owner's personnel and all other personnel or persons at the work site. The Contractor shall be responsible for the adequacy and safety of all construction methods or procedures and the safe prosecution of the work.

D. The Contractor shall be responsible at all times to conduct the work and keep the work site in compliance with federal, state, and local safety Laws and Regulations, including but not limited to Occupational Safety and Health (OSHA) requirements. This includes shaft drilling operations, concrete moving and placement, confined space entry requirements for trench construction, including use of a trench box or other shoring to support trench walls and proper means of exit from an excavation.

E. The Contractor shall have an authorized and competent safety representative as defined above on the work site at frequent and regular intervals, or more often, as conditions require. Failure to have such a person at the site as specified herein constitutes an unsafe practice.

F. The Contractor shall be responsible to suspend Work whenever a Work method or procedure or condition at work site is unsafe.

G. The Contractor shall submit a written notification to the Owner of any accident or injury. Such notification shall include the Contractor's investigation and what measures are appropriate to avoid such accidents. Payment applications will not be authorized until such notice is provided.

H. Failure of the Contractor to comply with any provision of this Specification section or the Owner's safety requirements or any federal, state or local safety Laws and Regulations constitute just cause for the Owner to order suspension of Work.

I. None of the provisions of the section are intended to, nor shall be construed to, create any duty or responsibility on the Owner or Engineer to provide or enforce safety requirements of the Contractor. The duty, responsibility, and liability for safety shall remain with the Contractor.

1.03 AIR POLLUTION AND NOISE CONTROL

A. Contractor's vehicles and equipment shall be such as to minimize noise to the greatest degree practicable. Noise levels shall conform to the latest OSHA standards and in no case will noise levels be permitted which interfere with the work of the Owner or others.

1. Construction activities will be limited to hours specified in Section 01010 – Summary of Work.

2. Construction equipment will be provided with intake silencers and mufflers, as required by safety standards.

3. All construction vehicles should be equipped with proper emissions control equipment.

4. Periodically check equipment and machinery for proper tuning to minimize exhaust emissions and noise.

1.04 DUST CONTROL

A. Contractor shall be responsible for controlling objectionable dust caused by his operation of vehicles and equipment, clearing or for any reason whatever. Contractor shall apply water or use other methods subject to the Engineer's approval which will keep dust in the air to a minimum. Dust control measures shall be implemented multiple times throughout each working day if necessary.

1.05 PEST AND RODENT CONTROL

A. Provide rodent and pest control as necessary to prevent infestation of construction or storage area.

1. Employ methods and use materials which will not adversely affect conditions at the site or on adjoining properties.

1.06 WATER CONTROL

A. Contractor shall comply with the Storm Water Pollution Prevention Plan (SWPPP) approved by LFUCG.

B. Provide methods to control surface water and water from excavations and structures to prevent damage to the Work, the site, or adjoining properties.

C. Provide, operate and maintain equipment and facilities of adequate size to control surface water.

D. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the site or to adjoining areas and in conformance with all environmental requirements.

1.07 POLLUTION CONTROL

A. Provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by the discharge of noxious substances from construction operations.

B. Provide equipment and personnel, perform emergency measures required to contain any spillages, and to remove contaminated soils or liquids.

1. Excavate and dispose of any contaminated earth offsite and replace with suitable compacted fill and topsoil.

C. Take special measures to prevent harmful substances from entering public waters.

1. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers.

D. Provide systems for control of atmospheric pollutants.

1. Prevent toxic concentrations of chemicals.
2. Prevent harmful dispersal of pollutants into the atmosphere.

E. All Contractor's equipment used during construction shall conform to all current federal, state and local laws and regulations.

1.08 EROSION AND SEDIMENT CONTROL

A. See Section 02372 for erosion and sediment control requirements.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01570 - TRAFFIC REGULATION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Construction parking control.

B. Flagmen.

C. Flares and lights.

D. Haul routes.

E. Removal.

1.02 RELATED SECTIONS

A. Section 01530 – Protection of Existing Facilities

1.03 SUBMITTAL

A. Contractor to submit a Traffic Control Plan to the Engineer for review prior to the commencement of construction.

PART 2 - PRODUCTS

2.01 SIGNS AND DEVICES

A. Traffic Cones and Drums, Signage, Flares and Lights: as required/approved by federal, state, and local jurisdictions.

B. Flagman Equipment: as required by federal, state, and local jurisdictions.

C. All signs and control of traffic shall be in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways, latest edition, and safety requirements shall comply with the Permits Manual.

PART 3 - EXECUTION

3.01 CONSTRUCTION PARKING CONTROL

A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles and Owner's operations.

B. Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.

C. Prevent parking on or adjacent to access roads or in non-designated areas.

3.02 TRAFFIC CONTROL

A. Whenever and wherever, in the Engineer's opinion, traffic is sufficiently congested or public safety is endangered, Contractor shall furnish uniformed officers to direct traffic and to keep traffic off the highway area affected by construction operations.

B. Contractor shall abide by county and state regulations governing utility construction Work.

C. Traffic control shall be provided according to the Kentucky Department of Highways Manual on Uniform Traffic Control Devices for Streets and Highways and County requirements.

D. The Contractor shall be responsible for complying with appropriate temporary traffic control as described in the latest edition of the Manual on Uniform Traffic Control Devices, in accordance with the KYTC Encroachment Permit.

E. The Contractor shall advise the Engineer and KYTC District 7 Public Information Officer and local media of the location and duration of any proposed lane closures, a minimum of three (3) days prior to the closure. The KYTC District 7 Information Officer's contact information is NatashF.Lacy@ky.gov, or (all perm859) 246-2355.

F. No more than one (1) traveled-lane shall be blocked or obstructed during normal working hours. All signs and flaggers during lane closures shall conform with the Manual on Uniform Traffic Control Devices.

G. No nonconstruction equipment or vehicles or office trailers shall be allowed on the right of way during working hours.

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

I. All workers within the right of way shall wear high-visibility safety apparel that meets the performance Class 2 or 3 requirements of the ANSI/ISEA 107-2004 publication entitled "American National Standards for Safety Apparel and Headwear."

3.03 FLAGMEN

Provide trained and equipped flagmen to regulate traffic when construction operations or traffic encroach on public traffic lanes.

3.04 FLARES AND LIGHTS

Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

3.05 HAUL ROUTES

A. Consult with authorities, establish public thoroughfares to be used for haul routes and site access.

B. Confine construction traffic to designated haul routes.

C. Provide traffic control at critical areas of haul routes to regulate traffic and minimize interference with public traffic.

3.06 REMOVAL

Remove equipment and devices when no longer required.

- END OF SECTION -

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SECTION 01631 - PRODUCTS AND SUBSTITUTIONS

PART 1 - GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

A. General: Substitution of materials and/or equipment is defined in the General Conditions and more fully hereinafter.

B. Substitutions: The Contractor's requests for changes in the products, materials, equipment and methods of construction required by the Contract Documents are considered requests for "substitutions" and are subject to the requirements specified herein. The following are not considered as substitutions:

1. Revisions to the Contract Documents, where requested by the Owner and Engineer are considered as "changes" not substitutions.

2. Substitutions requested during the bidding period, which have been accepted prior to the Contract Date, are included in the Contract Documents and are not subject to the requirements for substitutions as herein specified.

3. Specified Contractor options on products and construction methods included in the Contract Documents are choices available to the Contractor and are not subject to the requirements for substitutions as herein specified.

4. Except as otherwise provided in the Contract Documents, the Contractor's determination of and compliance with governing regulations and orders as issued by governing authorities do not constitute "substitutions" and do not constitute a basis for change orders.

1.02 SUBMITTALS

A. The information required to be furnished for evaluation of product substitution will be as follows:

1. Performance capabilities, and materials and construction details will be evaluated based upon conformance with the Specifications. Products that do not conform with the Specification shall not be accepted.

2. Manufacturer's production and service capabilities, and evidence of proven reliability will be acceptable if the following is furnished.

   a. Written evidence that the manufacturer has not less than (3) years experience in the design and manufacture of the substitute product.

   b. Written evidence of at least one application, of a type and size similar to the proposed substitute product, in successful operation in a wastewater treatment plant or collection system for a period of at least one year.

   c. In lieu of furnishing evidence of a manufacturer's Experience and successful operation of an application of the product to be substituted, the Contractor has the option of furnishing a cash deposit or bond which will guarantee replacement if the product the furnished does not satisfy the other requirements specified in this section. The amount of each deposit or bond will be subject to the approval.

3. Specific reference to characteristics either superior or inferior to specified requirements will be evaluated based on their net effect on the project. Products with any characteristics inferior to those specified will not be acceptable unless offset by

characteristics that, in the opinion of the Engineer, will cause the overall effect of the product on the project to be at least equal to that of those specified.

1.03 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same generic kind, from a single source, for each unit of work.

B. Compatibility of Options: Compatibility of products is a basic requirement of product selection. When the Contractor is given the option of selecting between two or more products for use on the project, the product selected must be compatible with other products previously selected, even if the products previously selected were also Contractor options. The complete compatibility between the various choices available to the Contractor is not assured by the various requirements of the Contract Documents, but must be provided by the Contractor.

C. The detailed estimate of operating and maintenance costs will be evaluated based on comparison with similar data on the specified products. Proposed substitute products which have an operating and maintenance cost that, in the opinion of the Engineer, exceeds that of the specified products will not be considered equal and will not be acceptable.

D. All equipment provided under this Contract shall meet all the requirements of the Federal and/or State Occupational Health Acts. Each equipment supplier shall submit to the Engineer certification that the equipment furnished is in compliance with OSHA.

E. The design, testing, assembly and methods of installation of the wiring materials, electrical equipment and accessories proposed under this Contract shall conform to the National Electrical Code and to applicable State and local requirements. UL listing and labeling shall be adhered to under this Contract. Any equipment that does not have a UL, FM, CSA, or other listed testing laboratory label shall be furnished with a notarized letter signed by the supplier stating that the equipment furnished has been manufactured in accordance with the Nation Electrical Code and OSHA requirements. Any additional cost resulting from any deviation from code or local requirements shall be borne by the Contractor.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. General: Deliver, store, and handle products in accordance with manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft. Control delivery schedules to minimize long-term storage at the site and to prevent overcrowding of construction spaces. In particular coordinate delivery and installation to ensure minimum holding or storage times for items known or recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other sources of loss.

1. Deliver products to the site in the manufacturer's sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.

2. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.

3. Store heavy materials away from the project construction in a manner that will not endanger the supporting construction.

PART 2 - PRODUCTS

2.01 GENERAL PRODUCT COMPLIANCE

A. General: Requirements for individual products are indicated in the Contract Documents; compliance with these requirements is in itself a Contract Requirement. These requirements may be specified in any one of several different specifying methods, or in any combination of these methods. These methods include the following:

1. Proprietary
2. Descriptive
3. Performance
4. Compliance with Reference Standards

Compliance with codes, compliance with graphic details and similar provisions of the Contract Documents also have a bearing on the review and approval outcome.

B. Procedures for Selecting Products: Contractor's options in selecting products are limited by requirements of the Contract Documents and governing regulations. They are not controlled by industry traditions or procedures experienced by the Contractor on previous construction projects.

2.02 SUBSTITUTIONS

A. Conditions: Contractor's request for substitution will be received and considered when extensive revisions to the Contract Documents are not required, when the proposed changes are in keeping with the general intent of the Contract Documents, when the request is timely, fully documented and properly submitted, and when one or more of the following conditions is satisfied, all as judged by the Engineer; otherwise the requests will be returned without action except to record non-compliance with these requirements.

1. The Engineer will consider a request for substitution where the request is directly related to an "or equal" clause or similar language in the Contract Documents.

2. The Engineer will consider a request for substitution where the specified product or method cannot be provided within the Contract Time. However, the request will not be considered if the product or method cannot be provided as a result of the Contractor's failure to pursue the work promptly or to coordinate the various activities properly.

3. The Engineer will consider a request for substitution where the specified product or method cannot receive necessary approval by a governing authority, and the requested substitution can be approved.

4. The Engineer will consider a request for a substitution where a substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. These additional responsibilities may include such considerations as additional compensation to the Engineer for redesign and evaluation services, the increased cost of other work by the Owner or separate contractors, and similar considerations.

5. The Engineer will consider a request for substitution when the specified product or method cannot be provided in a manner which is compatible with other materials of the work, and where the Contractor certifies that the substitution will overcome the incompatibility.

6. The Engineer will consider a request for substitution when the specified product or method cannot be properly coordinated with other materials in the work, and where the Contractor certifies that the proposed substitution can be properly coordinated.

7. The Engineer will consider a request for substitution when the specified product or method cannot receive a warranty as required by the Contract Documents and where the Contractor certifies that the proposed substitution receive the required warranty.

8. The Contractor shall reimburse the Owner any costs for review by the Engineer of proposed product substitutions which require major design changes, as determined by the Owner, to related or adjacent work made necessary by the proposed substitutions.

B. Work-Related Submittals: Contractor's submittal of and the Engineer's acceptance of shop drawings, product data or samples which relate to work not complying with requirements of the Contract Documents, does not constitute an acceptable or valid request for a substitution, nor approval thereof.

2.03 GENERAL PRODUCT REQUIREMENTS

A. General: Provide products that comply with the requirements of the Contract Documents and that are undamaged and, unless otherwise indicated, unused at the time of installation. Provide products that are complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.

1. Standard Products: Where they are available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

2. Continued Availability: Where, because of the nature of its application, the Owner is likely to need replacement parts or additional amounts of a product at a later date, either for maintenance and repair or replacement, provide standard, domestically produced products for which the manufacturer has published assurances that the products and its parts are likely to be available to the Owner at a later date.

PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS

A. General: Except as otherwise indicated in individual sections of these Specifications, comply with the manufacturer's instructions and recommendations for installation of the products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other work. Clean exposed surfaces and protect surfaces as necessary to ensure freedom from damage and deterioration at Time of Acceptance.

END OF SECTION

SECTION 01731 - CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes procedural requirements for cutting and patching existing structures.

B. The Contractor shall be responsible for all cutting, fitting or patching that may be required to complete the work or to make its parts fit together properly.

C. The Contractor shall not damage or endanger any portion of the Work or the Work of the Owner or any separate contractors by cutting, patching or otherwise altering any work, or by excavation.

D. Any cutting of existing structures or facilities shall be approved in advance by Owner or Engineer. Approval shall not impact Contractor's full liability for any damage caused.

1.02 QUALITY ASSURANCE

A. Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that result in increased maintenance or decreased operational life or safety.

1.03 WARRANTY

A. Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing Materials: Use materials identical to existing materials, to the extent practicable.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the functional performance of existing materials.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

3.02 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

3.03 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.

5. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

END OF SECTION

SECTION 01740 - CLEANING

PART 1 - GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

A. Maintain premises free from accumulations of waste, debris, and rubbish.

B. At completion of work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all exposed surfaces. Leave project clean and ready for occupancy.

1.02 RELATED DOCUMENTS

A. Cutting and Patching: Section 01731.

B. Project Closeout: Section 01770.

C. Cleaning for Specific Products of Work: Specification Section for that work.

1.03 SAFETY REQUIREMENTS

A. Hazards Control:

1. Store volatile wastes in covered metal containers and remove from premises daily.

2. Prevent accumulation of wastes which create hazardous conditions.

3. Provide adequate ventilation during use of volatile noxious substances.

B. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

1. Do not burn or bury rubbish and waste materials on project site.

2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.

3. Do not dispose of wastes into streams or waterways.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.

B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.01 DURING CONSTRUCTION

A. Execute cleaning to ensure that building, grounds, and public properties are maintained free from accumulations of waste materials and rubbish.

B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.

C. At reasonable intervals during progress of work, clean site and public properties, and dispose of waste materials, debris and rubbish.

D. Provide on-site containers for collection of waste materials, debris and rubbish.

E. Remove waste materials, debris and rubbish from site and legally dispose of at public or private dumping areas off Owner's property.

F. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.

G. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.

3.02 FINAL CLEANING

A. Employ experienced workmen, or professional cleaners, for final cleaning.

B. In preparation for substantial completion or occupancy, conduct final inspection of sight-exposed interior and exterior surfaces, and of concealed spaces.

C. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials, from sight-exposed interior or exterior finished surfaces; polish surfaces so designated to shine finish.

D. Repair, patch and touch up marred surfaces to specified finish, to match adjacent surfaces.

E. Broom clean paved surfaces; rake clean other surfaces of grounds.

F. Maintain cleaning until project, or portion thereof, is occupied by Owner.

END OF SECTION

SECTION 01770 - PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Liquidated Damages: Supplemental General Conditions

B. Cleaning: Section 01740.

C. Project Record Documents: Section 01785.

1.02 SUBSTANTIAL COMPLETION

A. In order to initiate project closeout procedures, the Contractor shall submit the following:

1. Written certification to Engineer that project is Substantially Complete.

2. List of major items to be completed or corrected.

B. Engineer will make an inspection within seven (7) days after receipt of certification, together with Owner's Representative.

C. Should Engineer consider that work is Substantially Complete:

1. Contractor shall prepare, and submit to Engineer, a list of items to be completed or corrected, as determined by the inspection.

2. Engineer will prepare and issue a Certificate of Substantial Completion, containing:

a. Date of Substantial Completion.

b. Contractor's list of items to be completed or corrected, verified and amended by Engineer.

c. The time within which Contractor shall complete or correct work of listed items.

d. Time and date Owner will assume possession of work or designated portion thereof.

e. Responsibilities of Owner and Contractor for:

1) Insurance.

2) Utilities.

3) Operation of Mechanical, Electrical, and Other Systems.

4) Maintenance and Cleaning.

5) Security.

f. Signatures of:

1) Engineer.

2) Contractor.

3) Owner.

3. Owner occupancy of Project or Designated Portion of Project:

    a. Contractor shall:

        1) Obtain certificate of occupancy.

        2) Perform final cleaning in accordance with Section 01740.

    b. Owner will occupy Project, under provisions stated in Certificates of Substantial Completion.

4. Contractor: Complete work listed for completion or correction, within designated time.

D. Should Engineer consider that work is not Substantially Complete:

1. Engineer shall immediately notify Contractor, in writing, stating reasons.

2. Contractor: Complete work, and send second written certification to Engineer, certifying that Project or designated portion of Project is substantially complete.

3. Engineer will reinspect work.

E. Should Engineer consider that work is still not finally complete:

1. Engineer shall notify Contractor, in writing, stating reasons.

2. Contractor shall take immediate steps to remedy the stated deficiencies and send third written notice to the Engineer certifying that the work is complete.

3. Engineer and Owner will reinspect work at Contractor's expense.

1.03 FINAL INSPECTION

A. Contractor shall submit written certification that:

1. Contract Documents have been reviewed.

2. Project has been inspected for compliance with Contract Documents.

3. Work has been completed in accordance with Contract Documents.

4. Equipment and systems have been tested in presence of Owner's Representative and are operational.

5. Project is completed, and ready for final inspection.

B. Engineer will make final inspection within seven (7) days after receipt of certification.

C. Should Engineer consider that work is finally complete in accordance with requirements of Contract Documents, he shall request Contractor to make Project Closeout submittals.

D. Should Engineer consider that work is not finally complete:

1. Engineer shall notify Contractor in writing, stating reasons.

2. Contractor shall take immediate steps to remedy the stated deficiencies and send second written notice to Engineer certifying that work is complete.

3. Engineer will reinspect work.

1.04 CLOSEOUT SUBMITTALS

A. Project Record Documents: To requirements of Section 01785.

B. Guarantees, Warranties and Bonds: To requirements of particular technical Specifications and Section 01782.

1.05 INSTRUCTION

A. Instruct Owner's personnel in operation of all systems, mechanical, electrical, and other equipment.

1.06 FINAL APPLICATION FOR PAYMENT

A. Contractor shall submit final applications in accordance with requirements of General Conditions.

1.07 FINAL CERTIFICATE FOR PAYMENT

A. Engineer will issue final certificate in accordance with provisions of general conditions.

B. Should final completion be materially delayed through no fault of Contractor, Engineer may issue a Semi-Final Certificate for Payment.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01782 - WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

A. Compile specified warranties and bonds.

B. Compile specified service and maintenance contracts.

C. Co-execute submittals when so specified.

D. Review submittals to verify compliance with Contract Documents.

E. Submit to Engineer for review and transmittal to Owner.

1.02 RELATED DOCUMENTS

A. Bid Bond: Instructions to Bidders.

B. Performance and Payment Bonds: General Conditions and Supplemental General Conditions.

C. Guaranty: General Conditions and Supplemental General Conditions.

D. General Warranty of Construction: General Conditions.

E. Project Closeout: Section 01770.

F. Warranties and Bonds required for specific products: As listed herein.

G. Provisions of Warranties and Bonds, Duration: Respective specification sections for particular products.

1.03 SUBMITTALS REQUIREMENTS

A. Assemble warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers and subcontractors.

B. Furnish two (2) original signed copies.

C. Table of Contents: Neatly typed, in orderly sequence. Provide complete information for each item.

1. Product, equipment or work item.

2. Firm name, address and telephone number.

3. Scope

4. Date of beginning of warranty, bond or service and maintenance contract.

5. Duration of warranty, bond or service and maintenance contract.

6. Provide information for Owner's personnel:

a. Proper procedure in case of failure.

b. Instances which might affect the validity of warranty or bond.

7. Contractor name, address and telephone number.

1.04 FORM OF SUBMITTALS

A. Prepare in duplicate packets.

B. Format:

1. Size 8-1/2 in. x 11 in., punch sheets for 3-ring binder.

a. Fold larger sheets to fit into binders.

2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS." List:

a. Title of Project

b. Name of Contractor

C. Binders: Commercial quality, three-ring, with durable and cleanable plastic covers.

1.05 TIME OF SUBMITTALS

A. For equipment or component parts of equipment put into service during progress of construction:

1. Submit documents within 10 days after inspection and acceptance.

B. Otherwise make submittals within 10 days after date of substantial completion, prior to final request for payment.

C. For items of work, where acceptance is delayed materially beyond the Date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing the date of acceptance as the start of the warranty period.

D. Equipment Warranty will not begin until after successful start-up, training, and acceptance by Owner for Partial Utilization. Any manufacturer's request to initiate warranty period earlier than Owner's acceptance will not be valid.

E. Contractor warranty shall be a minimum of one (1) year after final acceptance of the completed project.

1.06 SUBMITTALS REQUIRED

A. Submit warranties, bonds, service and maintenance contracts as specified in the respective sections of the Specifications.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01785 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 MAINTENANCE OF DOCUMENTS

A. Maintain at job site, one copy of:

1. Contract Drawings
2. Specifications
3. Addenda
4. Reviewed Shop Drawings
5. Change Orders
6. Other Modifications to Contract

B. Store documents in approved location, apart from documents used for construction.

C. Provide files and racks for storage of documents.

D. Maintain documents in clean, dry, legible condition.

E. Do not use record documents for construction purposes.

F. Make documents available at all times for inspection by Engineer and Owner.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Submittals: Section 01300.

1.03 MARKING DEVICES

A. Provide colored pencil or felt-tip marking pen for all marking.

1.04 RECORDING

A. Label each document "PROJECT RECORD" in 2-inch high printed letters.

B. Keep record documents current.

C. Do not permanently conceal any work until required information has been surveyed and recorded.

D. Contract Drawings: Legibly mark to record actual construction:

1. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
2. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
3. Field changes of dimension and detail.
4. Changes made by Change Order or Field Order.

5. Details not on original Contract Drawings.

E. Specifications and Addenda: Legibly mark up each section to record:

1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.

2. Changes made by Change Order or Field Order.

3. Other matters not originally specified.

F. Shop Drawings: Maintain as record documents; legibly annotate shop drawings to record changes made after review.

1.05 SUBMITTALS

A. At completion of project, deliver two hard copies and one CD with pdf of all record documents to Engineer.

B. Accompany submittal with transmittal letter, in duplicate, containing:

1. Date.

2. Project Title and Number.

3. Contractor's Name and Address.

4. Title and Number of each Record Document.

5. Certification that each Document as Submitted is Complete and Accurate.

6. Signature of Contractor, or His Authorized Representative.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

DIVISION 02

SITE CONSTRUCTION

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SECTION 02110 - SITE CLEARING

PART 1 - GENERAL

1.01 SUMMARY

A. Clear site within construction limits of plant life and grass.

B. Remove root system of trees and shrubs.

C. Remove surface debris.

1.02 REGULATORY COMPLIANCE

Conform to applicable local codes and ordinances for disposal of debris.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 REMOVAL OF EXISTING TREES AND OTHER VEGETATION

A. Reasonable care shall be taken during construction to avoid damage to vegetation. Ornamental shrubbery and tree branches shall be temporarily tied back, where appropriate, to minimize damage. Trees that receive damage to branches shall be trimmed of those branches to improve the appearance of the tree. Tree trunks receiving damage from equipment shall be treated with a tree dressing. The Contractor shall not cut or injure any trees or other vegetation outside areas to be cleared, as indicated on the drawings, without written permission from the Engineer. The Contractor shall be responsible for all damages done outside these lines.

B. The Engineer shall designate which trees are to be removed within permanent and temporary easement lines or right-of-way lines.

3.02 CLEARING

A. From areas to be cleared, the Contractor shall cut or otherwise remove all trees, brush, and other vegetable matter such as snags, bark, and refuse. The ground shall be cleared to the width necessary for pipe installation unless otherwise directed by the Engineer.

3.03 GRUBBING

From areas to be grubbed, the Contractor shall remove completely all stumps, remove to a depth of 12 inches all roots larger than 3-inch diameter, and remove to a depth of six (6) inches all roots larger than 1/2-inch diameter. Such depths shall be measured from the existing ground surface or the proposed finished grade, whichever is lower.

3.04 STRIPPING OF TOPSOIL

Prior to starting general excavation, strip topsoil to a depth of six (6) inches or to depths required by the Engineer. Do not strip topsoil in a muddy condition and avoid mixture of subsoil. Stockpile the stripped topsoil onsite for use in finish grading and site restoration. Topsoil stockpiled shall be free from trash, brush, stones over two (2) inches in diameter and other extraneous material.

3.05 PROTECTION

A. Protect plant growth and features remaining as final landscaping.

B. Protect bench marks and existing work from damage or displacement.

C. Maintain designated site access for vehicle and pedestrian traffic.

3.06 DISPOSAL

A. All materials resulting from clearing and grubbing and not scheduled for reuse shall become the property of the Contractor and shall be suitably disposed of off-site, unless otherwise directed by the Engineer, in accordance with all applicable laws, ordinances, rules, and regulations.

B. Such disposal shall be performed as soon as possible after removal of the material and shall not be left until the final period of cleaning up.

- END OF SECTION -

SECTION 02220 - DEMOLITION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The demolition indicated on the drawings and required by the Specifications does not profess to show or indicate every detail necessary to complete this project. The drawings and Specifications indicate the overall intent. The contractor shall provide the labor, construction equipment, materials and incidentals necessary to meet the intent of the contract documents. Demolition of existing items shall include the removal of all related appurtenances and the patching of all holes resulting from the removal. Demolition required to alter or remove all or parts of existing structures shall be conducted in a manner that protects the existing structures and those facilities to remain in service, and the proper disposal of all construction debris. Contractor shall inform the Owner of the disposal location for material. If disposal is in Fayette County, a separate ESC plan and gradings permit shall be obtained by the Contractor.

B. Included, but not limited to, are demolition and removals of existing materials, equipment, or work necessary to install the new work as shown and specified and to connect same with existing work in an approved manner. Demolition includes, but is not necessarily limited to, structural steel, structural concrete, miscellaneous metal, piping, equipment, attachments, appurtenances, and similar existing facilities.

C. Demolitions and removals which may be specified under other sections shall conform to requirements of this section.

D. All work shall comply with all federal, state, and local codes and regulations regarding safety.

1.02 SUBMITTALS

A. Contractor shall submit for review proposed methods, equipment, and operations sequence. Include coordination for shut-off capping, temporary services, continuation of utility services, and other applicable items to ensure no interruption of Owner's operations.

1.03 JOB CONDITIONS

A. Protection

1. Contractor shall execute the demolition and removal work to prevent damage or injury to structures, occupants thereof, and adjacent features which might result from falling debris or other causes, and so as not to interfere with the use, and free and safe passage to and from, adjacent structures.

2. Closing or obstructing of roadways, sidewalks, and passageways adjacent to the work by the placement or storage of materials will not be permitted, and all operations shall be conducted with a minimum interference to traffic on these ways unless approved by the Owner.

3. Contractor shall erect and maintain barriers, lights, sidewalk sheds, and other required protective devices.

4. Contractor shall repair damage to facilities to remain, or to any property belonging to the Owner or occupants of the facilities at no additional cost to the Owner.

B. Scheduling

1. Contractor shall carry out his operations so as to avoid interference with operations and work in the existing facilities.

C. Notification

1. At least 48 hours prior to commencement of a demolition or removal, Contractor shall notify the Engineer in writing of his proposed schedule. Owner shall inspect the existing equipment and identify and mark those items which are to remain the property of the Owner. No removals shall be started without the written permission of the Engineer.

D. Explosives

1. Do not bring explosives on site nor use explosives for demolition.

PART 2 - PRODUCTS

(NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. All materials and equipment removed from existing work shall become the property of the Contractor, except for those which the Owner has identified and marked for its use. All materials and equipment marked by the Owner to remain its property, or designated to be relocated, shall be carefully removed by the Contractor so as not to be damaged, and then cleaned and stored on or adjacent to the site in a protected place specified by the Engineer or loaded onto trucks provided by the Owner.

B. Contractor shall dispose of all demolition materials, equipment, debris, and all other items not marked by the Owner to remain as its property off the site and in conformance with all existing applicable laws and regulations.

C. Surfaces of walls, floors, ceilings, or other areas which are exposed by any of the removals specified herein, and which will remain as architecturally finished surfaces and which have holes, scars, chipped or other damaged surfaces revealed by the removal shall be repaired by the Contractor with the same or matching materials as the existing surface or as may be otherwise approved by the Engineer.

D. Pollution Controls: Use water sprinkling, temporary enclosures, and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level. Comply with governing regulations pertaining to environmental protection.

1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

2. Clean adjacent structures, facilities, and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to conditions existing prior to the start of the work.

3.02 STRUCTURAL REMOVALS

A. Existing structures which are designated to be demolished shall be removed in their entirety unless noted otherwise on the drawings.

B. All concrete, concrete block, reinforcement, plaster, wire mesh and other items contained in or upon the structures shall be removed and taken from the site, unless otherwise approved by the Engineer. Demolished items shall not be used in backfill adjacent to structures or in pipeline trenches.

C. All structural and miscellaneous metals designated to remain the property of the Owner shall be removed and stored on or adjacent to the site in a protected place specified by the Owner or loaded onto trucks provided by the Owner.

D. After removal of parts or all of masonry walls, slabs and like work which tie into new work or existing work, the point of junction shall be neatly repaired so as to leave only finished edges and surface exposed.

E. After removing the demolished structures, remaining cavities shall be backfilled with soil unless otherwise noted on the drawings.

3.03 PIPE REMOVED

A. Piping removals shall consist of removing existing piping, and other appurtenances as specified, shown, or required for the completion of the work. It shall include demolition, cutting, capping, and plugging as required.

B. Excavate all necessary material to remove the pipe which has been designated for removal. Dispose of the excavated material and remove the pipe. The pipe shall be relocated where indicated on the drawings. Pipe not scheduled to be relocated shall become the property of the Contractor and shall be removed from the project site. Seal all holes left in walls of structures or manholes that are to remain in place.

C. The trench resulting from the removal of pipe shall be backfilled except when the trench lies within the limits of subsequent excavation.

D. Where existing piping is not removed in its entirety, the remaining abandoned portion of the pipe will be sealed with precast, vitrified, or concrete stoppers or with masonry of a type and thickness acceptable to the Engineer.

E. Where existing piping through demolished structures is to remain in service, pipes shall be connected through the structures with new pipe of a type and in a manner acceptable to the Engineer without additional cost to the Owner.

F. After connecting across or sealing the existing pipes remaining, cavities shall be backfilled with soil. When connecting pipes are used, suitable backfill shall be carefully tamped solidly under and around the pipe.

3.04 CLEAN UP

A. Contractor shall remove from the site all debris resulting from the demolition operations as it accumulates. Upon completion of the work, all materials, equipment, waste, and debris of every sort shall be removed. The premises shall be left clean, neat, and orderly.

END OF SECTION

SECTION 02225 - EXCAVATING, BACKFILLING, AND COMPACTING

PART 1 - GENERAL

1.01 SUMMARY

A. Excavating of trenches.

B. Bedding of pipe.

C. Backfilling trenches.

D. Installing identification tape.

PART 2 - PRODUCTS

2.01 BEDDING AND BACKFILLING STONE

A. Crushed Stone material shall conform to the Kentucky Transportation Cabinet's Standard Specifications for Road and Bridge Construction, Current Edition, latest revision.

B. Dense Grade Aggregate material shall conform to the Kentucky Transportation Cabinet's Standard Specifications for Road and Bridge Construction, Current Edition, latest revision.

C. Bedding Stone: No. 9 Crushed Limestone

D. Backfill Stone: No. 9 Crushed Limestone

E. General Backfill and Fill Materials: Approved soil materials for backfill and fill which is free of rock greater than 6 inches in diameter, debris, waste, frozen materials, vegetative and other organic matter or any materials that may be considered deleterious.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. Trenching may be accomplished by means of a backhoe, trenching machine, hydro-excavation or by hand depending on the construction area.

B. Clearing - All trees, stumps, bushes, shrubbery, and abandoned concrete or masonry structures within the limits of the trench shall be removed by the Contractor and disposed of in accordance with federal, state and local regulations. All clearing work shall be considered as incidental to the cost of laying pipe.

C. Bracing and Sheeting - Bracing and sheeting shall be provided to adequately protect the workers during pipe line installation.

1. All requirements of the Occupational Safety and Health Act (OSHA) shall be met during trenching and backfill operations.

2. As backfill is placed, the sheeting shall be withdrawn in increments not exceeding one (1) foot and the void left by the withdrawn sheeting shall be filled and with #9 stone.

3. The Contractor is solely responsible for determining requirements for bracing or sheeting. The Owner or Engineer will not be responsible for determining these requirements.

3.02 TRENCHING

A. General:

1. The Contractor shall perform all excavation of every description and of whatever substances encountered, including clearing over the pipeline route. All excavations for the pipeline shall be open-cut except where noted for bore and jack.

B. Trench Width:

1. Trench widths shall not be less than the sum of the pipe outside diameter with a six (6) inches of clearance on either side of the piping from the trench as noted on LFUCG Standard Drawings.

2. Trench widths shall not be greater than the sum of the pipe outside diameter with a one (1) foot of clearance on either side of the piping from the trench edge as noted on LFUCG Standard Drawings.

3. **Contractor shall submit a shop drawing that includes a certification from the pipe manufacturer stating the recommended trench width for each pipe size and material being used.**

C. Trench Depth:

1. The trench shall be excavated to a minimum of six (6) inches below outside bottom of pipe as noted on LFUCG Standard Drawings.

3.03 BACKFILLING

A. Trench Backfill
   a. Pipe sections shall be embedded with No.9 crushed stone in accordance with LFUCG Standard Drawings and as defined by the Kentucky Transporation Cabinet (KYTC) standards up to a point twelve (12) inches above the outside top of pipe elevation.

   b. After all pipe sections have been embedded the trench shall be backfilled using trench or structure excavated material so long as it meets the requirements set forth in 2.01 E to a depth of twelve (12) inches below proposed grade.

   c. The final twelve (12) inches shall be topsoil with no rocks or foreign materials allowed.

B. Miscellaneous Backfill
   a. All other areas requiring backfill shall be backfilled using trench or structure excavated material so long as it meets the requirements set forth in 2.01 E.

3.04 BLASTING AND EXPLOSIVES

C. Blasting shall only be allowed with the specific written permission from OWNER and the CONTRACTOR will be fully responsible and will be required to provide additional insurance.

D. Blasting is only allowed by a licensed blaster in compliance with the State of Kentucky Laws, KRS Section 351.310 – 351.340 and applicable rules and regulations issued by the Department of Mines and Minerals.

E. CONTRACTOR shall notify each property owner and public utility company having structures or facilities in proximity to the site of the work of the intent to use explosives. Give such notice sufficiently in advance to enable those being notified to take the necessary steps to protect their property from injury. CONTRACTOR will be liable for any and all damages and claims made as a result of his blasting operations.

F. CONTRACTOR shall preserve the original bearing value of rock located under proposed structure foundations from damage by blasting, by concussion from the blasting or by excessive breakage. The CONTRACTOR shall bear any increase in structure costs caused by blasting damage to rock under proposed foundations.

3.05 INSTALLING IDENTIFICATION TAPE

A. Detectable underground marking tape shall be installed over all force mains. Marking tape is not required for gravity sewers. Care shall be taken to insure that the buried marking tape is not broken when installed and shall be Lineguard brand encased aluminum foil, Type III. The identification tape is manufactured by Lineguard, Inc., P.O. Box 426, Wheaton, IL 60187

B. The identification tape shall bear the printed identification of the plastic utility line below it, such as "Caution – Buried Below". Tape shall be reverse printed; surface printing will not be acceptable. The tape shall be visible in all types and colors of soil and provide maximum color contrast to the soil. The tape shall meet the APWA color code, and shall be two (2) inches in width. Colors are green for sewer and brown for force main.

END OF SECTION

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SECTION 02260 - EXCAVATION SUPPORT AND PROTECTION

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. This Section includes, but is not limited to, the following:

1. Shoring and bracing necessary to protect existing buildings, streets, walkways, utilities, and other improvements and excavation against loss of ground or caving embankments.

2. Maintenance of shoring and bracing.

3. Removal of shoring and bracing, as required.

B. Types of shoring and bracing systems include, but are not limited to, the following:

1. Steel H-section (soldier) piles.

2. Timber lagging.

3. Steel sheet piles.

4. Portable steel trench box.

C. Building excavation is specified in another Division 2 Section.

1.02 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.03 QUALITY ASSURANCE

A. Engineer Qualifications: A professional engineer legally authorized to practice in jurisdiction where Project is located and experienced in providing successful engineering services for excavation support systems similar in extent required for this Project.

B. Supervision: Engage and assign supervision of excavation support system to a qualified professional engineer foundation consultant.

C. Regulations: Comply with codes and ordinances of governing authorities having jurisdiction.

D. Layout drawings for excavation support system shall be prepared by, or under the supervision of, a qualified professional engineer. System design and calculations must be acceptable to local authorities having jurisdiction.

1.04 JOB CONDITIONS

A. Before starting work, verify governing dimensions and elevations. Verify condition of adjoining properties. Take photographs to record any existing settlement or cracking of structures, pavements, and other improvements. Prepare a list of such damages, verified by dated photographs, and signed by Contractor and others conducting investigation.

B. Survey adjacent structures and improvements, employing qualified professional engineer, establishing exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

C. During excavation, resurvey benchmarks weekly, maintaining accurate log of surveyed

elevations for comparison with original elevations. Promptly notify Engineer if changes in elevations occur or if cracks, sags, or other damage is evident.

1.05 EXISTING UTILITIES

A. Protect existing active sewer, water, gas, electricity and other utility services and structures.

B. Notify municipal agencies and service utility companies having jurisdiction. Comply with requirements of governing authorities and agencies for protection, relocation, removal, and discontinuing of services.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Provide adequate shoring and bracing materials which will support loads imposed. Materials need not be new, but should be in serviceable condition.

B. Structural Steel: ASTM A 36.

C. Steel Sheet Piles: ASTM A 328.

D. Timber Lagging: Any species, rough-cut, mixed hardwood, nominal 3 inches thick, unless otherwise indicated.

E. Portable Steel Trench Box shall be OSHA approved.

PART 3 - EXECUTION

3.01 SHORING

A. Wherever shoring is required, locate the system to clear permanent construction and to permit forming and finishing of concrete surfaces. Provide shoring system adequately anchored and braced to resist earth and hydrostatic pressures.

B. Shoring systems retaining earth on which the support or stability of existing structures is dependent must be left in place at completion of work.

3.02 BRACING

A. Locate bracing to clear columns, floor framing construction, and other permanent work. If necessary to move a brace, install new bracing prior to removal of original brace.

B. Do not place bracing where it will be cast into or included in permanent concrete work, except as otherwise acceptable to Engineer.

C. Install internal bracing, if required, to prevent spreading or distortion of braced frames.

D. Maintain bracing until structural elements are supported by other bracing or until permanent construction is able to withstand lateral earth and hydrostatic pressures.

E. Remove sheeting, shoring, and bracing in stages to avoid disturbance to underlying soils and damage to structures, pavements, facilities, and utilities.

F. Repair or replace, as acceptable to Engineer, adjacent work damaged or displaced through installation or removal of shoring and bracing work.

END OF SECTION

SECTION 02371 – STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

PART 1 - GENERAL

1.01 GENERAL

A. Contractor shall prepare its own SWPPP and submit to LFUCG Division of Water Quality for approval. No additional payment will be allowed for the Erosion and Sediment Control and conformance with SWPPP.

B. The SWPPP, including an Erosion and Sediment Control Plan, shall be prepared by a professional engineer licensed in the Commonwealth of Kentucky, meeting all of the requirements of KYR10 and Chapter 16-Article X, Division 5 of the LFUCG Code of Ordinances.

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SECTION 02372 - EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall furnish all labor, materials, and equipment required for installing, maintaining, amending, and removing temporary soil erosion, sediment, and pollutant controls as shown in the Stormwater Pollution Prevention Plan (SWPPP) and as specified herein and as required by the LFUCG Land Disturbance Permit, Chapter 16-Article X, Division 5 of the LFUCG Code of Ordinances, and the KPDES General Permit for Stormwater Discharges Associated with Construction Activities (KYR10).

B. The Contractor shall take all site management measures necessary to minimize erosion and contain sediment, construction materials (including excavation and backfill), and pollutants (such as chemicals, fuels, lubricants, bitumen, raw sewage, and other harmful waste) and prevent them from being discharged into or alongside any body of water or into natural or man-made channels leading thereto.

C. The Contractor shall at all times minimize disturbance and the period of time that the disturbed area is exposed without stabilization practices. In "critical areas" (within 25 feet of a stream) erosion prevention measures such as erosion control mats/blankets, mulch, or straw blown in and stabilized with tackifiers or by treading, etc. shall be implemented on disturbed areas within 24 hours or "as soon as practical" after completion of disturbance/grading or following cessation of activities.

D. Temporary erosion controls include, but are not limited to grassing, mulching, seeding, providing erosion control and turf reinforcement mats on all disturbed surfaces including waste area surfaces and stockpile and borrow area surfaces; scheduling work to minimize erosion and providing interceptor ditches at those locations which will ensure that erosion during construction will be either eliminated or maintained within acceptable limits.

E. Temporary sedimentation controls include, but are not limited to, silt dams, traps, barriers, and appurtenances on sloped surfaces which will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits.

F. Contractor is responsible for providing and maintaining effective temporary erosion and sediment control measures prior to and during construction or until final controls become effective.

G. Prior to construction, the Contractor shall obtain, if necessary, a LFUCG Land Disturbance Permit and shall obtain coverage under the KPDES General Permit for Stormwater Discharges Associated with Construction Activities (KYR10) (see Article 3.24 in this Section). The Contractor shall be responsible for placement of pollutant, erosion, and sedimentation controls as shown in the Stormwater Pollution Prevention Plan (SWPPP) prior to excavation, fill or grade work. If during the course of construction, the state and/or LFUCG determine additional controls are required, the Contractor shall furnish, install and maintain additional mulch, blankets, sediment barriers, and/or other controls as necessary to control pollution, erosion, and sedimentation to the satisfaction of the regulatory agency.

H. The Contractor shall inspect and repair all erosion and sedimentation controls as follows:

1. At least once every seven (7) calendar days, and

2. Within 24 hours after any storm event of 0.5 inch or greater.

I. Final stabilization practices on those portions of the project where construction activities have permanently ceased shall be initiated within fourteen (14) days of the date of cessation of

construction activities. Temporary stabilization practices on those portions of the project where construction activities have temporarily ceased shall be initiated within fourteen (14) days of the date of cessation of construction activities.

J. **Erosion and Sediment Control prevention measures shall be installed prior to removal of vegetation and/or stripping of topsoil.** The Contractor is responsible for preparing and submitting the state Notice of Intent and attachments and obtaining state permit approval prior to the beginning of any construction activities.

1.02 PERMITS AND NOTIFICATION REQUIREMENTS

A. The Contractor is responsible to prepare a Stormwater Pollution Prevention Plan (SWPPP) for inclusion with permit submittals. The SWPPP, including an Erosion and Sediment Control Plan, shall be prepared by a professional engineer licensed in the Commonwealth of Kentucky, meeting all of the requirements of KYR10 and Chapter 16-Article X, Division 5 of the LFUCG Code of Ordinances.

B. The Contractor shall submit, if necessary, a Notice of Intent specifically for Construction Activities (NOI-SWCA) before beginning any site disturbance, and shall implement erosion, sediment and pollution control measures as may be required by state, local and federal agencies. Contractor shall submit a signed Notice of Intent form and required attachments to the Division of Water at least seven (7) days prior to beginning of construction activity. **See Article 3.24 in this Section for detailed requirements.**

C. A Land Disturbance Permit, if necessary, shall be obtained from the Lexington-Fayette Urban County Government. **See Article 3.25 in this Section for detailed requirements.**

D. The Contractor shall comply with all additional requirements of LFUCG. It is the Contractor's responsibility to provide evidence to the Owner that all permits have been obtained prior to initiation of construction.

1.03 RELATED WORK

A. Section 02371 – Storm Water Pollution Prevention Plan (SWPPP)

B. Applicable LFUCG Storm Water Manual Standard Drawings are included at the end of this Section 02372.

PART 2 – PRODUCTS

2.01 MULCH

A. Mulch shall be used as a soil stabilization measure for any disturbed area inactive for 14 days or longer. Areas requiring stabilization during December through February shall receive only mulch held in place with bituminous material. Mulching shall be used whenever permanent or temporary seeding is used. The anchoring of mulch shall be in accordance with the Construction Drawings except all mulch placed in December through February shall be anchored with bituminous materials regardless of the slope. Permanent mulches shall be used in conjunction with planting trees, shrubs, and other ground covers that do not provide adequate soil stabilization.

B. Straw shall come from wheat, rye, or barley and may be spread by hand or machine. Straw shall be anchored. Straw shall be applied at two tons per acre or 90 pounds per 1,000 square feet. Straw shall be free from weeds and coarse matter.

C. Wood chips do not require tacking. Wood chips shall be applied at 270 cubic yards per acre or 6 cubic yard per 1,000 square feet and approximately 2 inches deep. Wood chips shall be

treated with 20 pounds of nitrogen per acre or shall be treated with 12 pounds slow-release nitrogen per ton to prevent nutrient deficiency in plants.

D. Bark chips or shredded bark shall be applied at 70 cubic yards per acre or 1.5 to 2 cubic yards per 1,000 square feet and about one-half inch thick. Bark does not require additional nitrogen fertilizer.

E. Manufacturer's recommendations shall be followed during application of manufactured wood fiber and recycled paper sold as mulch materials applied in a hydroseeder slurry with binders/tackifiers. Recycled paper (newsprint) or wood fiber shall be mixed at 50 pounds per 100 gallons of water and applied according to manufacturer's recommendations and model of hydroseeder in use.

F. Liquid mulch binders/tackifiers shall be applied according to manufacturer's recommendations. Chemical soil stabilizers or soil binders/tackifiers/emulsions shall not be used alone.

G. Netting and mats shall be used in critical areas such as waterways where concentrated flows are expected.

H. Before the gravel or crushed stone is applied, it shall be washed. Aggregate cover shall only be used in relatively small areas and shall be incorporated into an overall landscaping plan.

2.02 TEMPORARY SEED

A. Temporary seeding shall be used for soil stabilization when grades are not ready for permanent seeding, except during December through February. The seed shall be applied within 14 days after grading has stopped. Only rye grain or annual rye grass seed shall be used for temporary seeding.

2.03 PERMANENT SEED

A. Permanent seeding shall be applied within 14 days after final grade has been reached, except during December through February. Permanent seeding shall also be applied on any areas that will not be disturbed again for a year even if final grades have not been reached. The use of mulch and erosion matting and netting with permanent seeding shall be in accordance with applicable sections of this Specification. "Seed mats" may be used for permanent seeding in accordance with manufacturers' recommendations.

B. Permanent seeding shall be used on disturbed areas where permanent, long-lived vegetative cover is needed to stabilize the soil and on rough graded areas that will not be brought to final grade for one year or more.

C. The area to be seeded shall be protected from excess runoff as necessary with diversions, grassed waterways, terraces, or sediment ponds.

D. Contractor shall use the following Permanent Seed Mix, with the following exceptions:

   a. If a property owner landscaping agreement differs from this specification, the property owner landscaping agreement shall be followed on that property, or

   b. The area to be seeded is within 25 feet of a stream bank, in which case Contractor shall follow the seed mix provided in Section 02373, or

   c. The Construction Drawings identify a different seed mix.

   The Permanent Seed Mix shall consist of the following mix spread at a rate of 12.5 pounds/1,000 square feet:

Common Name	%	lbs per 1,000 sq. ft.
Bluegrass	24%	3
Perennial ryegrass (turf)	16%	2
+ bluegrass	20%	2.5
Tall fescue (turf type)	32%	4
+ bluegrass	8%	1
TOTAL	100%	12.5

E. Vegetative cover alone shall not be used to provide erosion control cover and prevent soil slippage on a soil that is not stable due to its structure, water movement, or excessive slope.

F. Permanent seeding may be done at any time except December through February.

G. Soil material shall be capable of supporting permanent vegetation and have at least 25 percent silt and clay to provide an adequate amount of moisture holding capacity. An excessive amount of sand will not consistently provide sufficient moisture for good growth regardless of other soil factors.

H. Fertilizer shall be applied at a rate of 800 pounds per acre of 10-10-10 analysis or equivalent, unless soil test results indicate a different rate is appropriate. Lime shall be applied at a rate of 100 pounds per 1,000 square feet or two tons per acre of agricultural ground limestone, unless soil test results indicate differently.

2.04 SOD

A. Sod shall be used for disturbed areas that require immediate vegetative cover, *e.g.*, the area surrounding a drop inlet in a grassed waterway, the design flow perimeter of a grassed waterway that will convey flow before vegetation can be established, and the inlet of a culvert. Sod may be installed throughout the year. "Seed mats" and seed with geotextiles may be used in place of sod when done in accordance with manufacturers' recommendations.

B. Contractor shall use tall fescue sod, unless another species is specified in the Construction Drawings or unless the property owner landscaping agreement differs from this specification.

C. Sod shall not be used to provide erosion control and prevent soil slippage on a soil that is not stable due to its structure, water movement, or excessive slope.

D. Sod shall be installed within 36 hours of digging and removal from the field. Sod should not be used on slopes steeper than 2H:1V. If it is to be mowed, installation should be on slopes no greater than 3H:1V.

E. Soil material shall be capable of supporting permanent vegetation and shall consist of at least 25 percent silt and clay to provide an adequate amount of moisture holding capacity. An excessive amount of sand will not consistently provide sufficient moisture for the sod regardless of other soil factors.

F. Fertilizer shall be applied at a rate of 1,000 pounds per acre of 10-10-10 analysis or equivalent, unless soil test results indicate a different rate is appropriate. Lime shall be applied at a rate of 100 pounds per 1,000 square feet or two tons per acre of agricultural ground limestone, unless soil test results indicate differently.

G. The sod shall consist of strips of live, vigorously growing grasses. The sod shall be free of noxious and secondary noxious weeds and shall be obtained from good, solid, thick-growing

stands. The sod shall be cut and transferred to the job in the largest continuous pieces that will hold together and are practical to handle.

H. The sod shall be cut with smooth clean edges and square ends to facilitate laying and fitting. The sod shall be cut to a uniform thickness of not less than three-fourth inch measured from the crown of the plants to the bottom of the sod strips for all grasses except bluegrass. Bluegrass sod shall be cut to a uniform thickness of not less than one and one-half inches.

I. The sod shall be mowed to a height of not less than two inches and no more than four inches prior to cutting.

J. The sod shall be kept moist and covered during hauling and preparation for placement on the sod bed.

2.05 ROAD/PARKING STABILIZATION

A. Gravel or paved material shall be used to stabilize permanent roads or parking areas or roads or parking areas used repeatedly by construction traffic. Stabilization shall be accomplished within 14 days of grading or initiation of use for construction traffic. Unstabilized roads are not acceptable except in instances where the road will be used less than one month.

B. Road/parking stabilization shall be used wherever roads or parking areas are constructed, whether permanent or temporary, for use by construction traffic.

C. Stabilization shall be accomplished with a minimum depth of six inches of crushed stone. Stabilized construction roadbeds shall be at least 14 feet wide for one-way traffic and at least 20 feet wide for two-way traffic.

D. Temporary roads shall follow the contour of the natural terrain to the extent possible. Slopes shall not exceed 10 percent.

E. Temporary parking areas shall be located on naturally flat areas to minimize grading. Grades shall be sufficient to provide drainage but shall not exceed 4 percent.

F. All cuts and fills shall be 2H:1V or flatter.

G. Drainage ditches shall be provided as needed.

H. Crushed stone shall be KYTC aggregate No. 2 (1.5 to 3 inches in diameter), or equivalent.

2.06 CONSTRUCTION ENTRANCE

A. A stabilized construction entrance shall be constructed wherever vehicles are leaving a construction site to enter a public road or at any unpaved entrance/exit location where there is a risk of transporting mud or sediment onto paved roads. A construction entrance shall be constructed at the beginning of the project before construction traffic begins to enter and exit the site.

B. A stabilized construction entrance shall be constructed of crushed stone a minimum of 6 inches thick laid over geotextile (filter fabric).

C. The width shall be at least 20 feet and as wide as the entire width of the access. At sites where traffic volume is high, the entrance shall be wide enough for two vehicles to pass safely. The length shall be at least 50 feet, and where practical, shall be extended to 100 feet. The entrance shall be flared where it meets the existing road to provide a turning radius.

D. Stormwater and wash water runoff from a stabilized construction entrance shall drain to a sediment trap or sediment pond. If conditions on the site are such that the majority of the mud is not removed by the vehicles traveling over the gravel, then the tires of the vehicles shall be washed before entering a public road.

E. Pipe placed under the entrance to handle runoff shall be protected with a mountable berm.

F. Dust control shall be provided in accordance with the applicable sections of this Specification.

G. Crushed stone shall be KYTC aggregate No. 2 (1.5 to 3 inches in diameter), or equivalent.

H. Geotextile filter fabric shall be KYTC Type III.

2.07 DUST CONTROL

A. Dust control measures shall be implemented on the site.

B. Construction activities shall be phased to minimize the total area unstabilized at any given time, thereby reducing erosion due to air and water movement.

C. Construction roads shall be watered as needed to minimize dust.

D. Existing trees, shrubs, and ground cover shall be retained as long as possible during the construction. Initial land clearing should be conducted only in those areas to be regraded or where construction is to occur. Areas to be cleared only for new vegetation or landscaping shall be stabilized with seed and mulch immediately following clearing.

E. Vegetative cover is the most effective means of dust and erosion control, when appropriate. See sections on Temporary Seed, Permanent Seed, Mulch, and Sod of this Specification.

F. When areas have been regraded and brought to final grade, they shall be stabilized using temporary or permanent seed and mulch or other measures.

G. Mulch with mulch binders may be used as an interim dust control measure in areas where vegetation may not be appropriate.

H. See sections on Temporary Seed, Permanent Seed, Sod, Mulch, Road/Parking Stabilization, and Construction Entrance of this Specification.

2.08 NETS AND MATS

A. Mulch netting, erosion control matting, or turf reinforcement matting (TRM) shall be used on sloping areas as indicated in the Construction Drawings. Mats or nets and permanent seeding may be used as an alternate to sod for culvert entrances and grassed waterways. TRMs shall be used at the water line to control wave action in wet ponds. TRMs shall be used in accordance with manufacturer's recommendations. Erosion control matting may be used to stabilize channels and swales and on recently planted slopes to protect seedlings until they become established.

B. Effective netting and matting shall require firm, continuous contact between the materials and the soil. If there is no contact, the material will not hold the soil and erosion will occur underneath the material.

C. Nets and mats shall be suitable for their intended purpose and shall be as indicated in the Construction Drawings.

2.09 TEMPORARY DIVERSION DITCH

A. Temporary diversion ditches shall be used to collect sediment-laden runoff from disturbed areas and direct it to a sediment pond where applicable. Temporary ditches are those expected to be in use for less than one year. Temporary diversion ditches do not require stabilization, unless otherwise indicated on the Construction Drawings.

B. Temporary diversion ditches shall have stable outlets. The combination of conditions of site, slopes, and soils should be so that the ditch can be maintained throughout its planned life.

C. Temporary diversion ditches shall not be constructed below high sediment-producing areas unless land treatment practices or structural measures, designed to prevent damaging accumulations of sediment in the channels, are installed with or before the diversion.

D. A typical diversion cross section consists of a channel and a supporting ridge. In the case of an excavated-type diversion, the natural ground serves as the diversion ridge. Diversion cross sections shall be adapted to the equipment that will be used for their construction and maintenance.

E. The channel may be parabolic or trapezoidal in shape. V-shaped ditches shall not be constructed.

F. Diversions shall be located so that water will empty onto an established area such as a stable watercourse, waterway, or structure.

G. Any high sediment-producing area above a diversion shall be controlled by good land use management or by structural measures to prevent excessive sediment accumulation in the diversion channel.

H. Temporary diversions above steep slopes or across graded rights-of-way shall have a berm with a minimum top width of 2 feet, side slopes of 2:1 or flatter and a minimum height of 18 inches measured from the channel bottom.

I. Diversions installed to intercept flow on graded rights-of-way shall be spaced 200 to 300 feet apart.

J. A level lip spreader shall be used at diversion outlets discharging onto areas already stabilized by vegetation.

2.10 LEVEL SPREADER

A. Level spreaders shall be constructed at the outlets of temporary diversion ditches. Level spreaders shall also be constructed at outlets of permanent constructed waterways where they terminate on undisturbed areas.

B. The length of the level spreader shall be constructed as shown on the Construction Drawings.

2.11 PERMANENT CONSTRUCTED WATERWAY

A. Permanent constructed waterways shall be used to divert stormwater runoff from upland undisturbed areas around or away from areas to be disturbed during construction. A waterway expected to be in place for at least one year shall be considered permanent. Permanent waterways shall be lined with sod or permanent seeding and nets, mats, or TRMs.

2.12 PIPE SLOPE DRAIN

A. Pipe slope drains shall be used whenever it is necessary to convey water down a steep slope, which is not stabilized or which is prone to erosion, unless paved ditch (flume) is installed.

B. Contractor shall use a 10-inch diameter pipe or larger to convey runoff from areas up to one-third acre; 12-inch or larger pipe for up to half-acre drainage areas; and 18-inch pipe for areas up to one acre, unless otherwise specified in the Construction Drawings. Multiple pipes shall be required for large areas, spaced as shown on the Construction Drawings.

C. The pipe shall be heavy duty flexible tubing designed for this purpose, *e.g.*, non-perforated, corrugated plastic pipe, or specially designed flexible tubing.

D. A standard flared end section or a standard T-section fitting secured with a watertight fitting shall be used for the inlet.

E. Extension collars shall be 12-inch long sections of corrugated pipe. All fittings shall be watertight.

2.13 IMPACT STILLING BASIN

A. Impact stilling basins shall be used at the outlet of culverts and storm sewers with calculated exit velocities greater than 15 feet per second when flowing full.

2.14 CHECK DAM

A. Check dams shall be limited to use in small, open channels that drain 10 acres or less.

B. Check dams shall not be used in streams.

C. Check dams can be constructed of stones, coir logs, or wood fiber logs.

D. Check dams shall be constructed prior to the establishment of vegetation.

E. The maximum height of a check dam shall be three feet above the ground on which the rock is placed.

F. The center of the portion of the check dam above the flat portion of the channel shall be at least 1 foot lower than the outer edges. The outer edges of the check dam shall extend up the side slopes of the channel to a point 3 feet in elevation above the center portion of the check dam or to the top of the side slopes.

G. The maximum spacing between rock check dams in a ditch should be such that the toe of the upstream dam is at the same elevation as the top of the next downstream dam.

H. The spacing of coir and wood fiber check dams is one log every 100 feet for velocities of 5 fps, 50 feet for velocities between 5 and 7.5 fps, and 25 feet for velocities greater than 10 fps, unless otherwise shown in the Construction Documents.

I. Stone check dams shall be constructed of KYTC Class II channel lining.

J. Coir log or wood fiber log check dams shall be constructed of a single log with a diameter of at least 20 inches.

2.15 SEDIMENT TRAP

A. Sediment traps shall be installed below all disturbed areas of less than 5 acres that do not

drain to a sediment pond.

B. Erosion control practices such as seeding, mulching, sodding, diversion dikes, etc., shall be used in conjunction with sediment traps to reduce the amount of sediment flowing into the trap. The amount of sediment entering a trap can be reduced by the use of stabilized diversion dikes and ditches.

C. The trap shall not be located in a stream. It shall be located to trap sediment-laden runoff before it enters the stream.

D. Trap depth shall be at least 2 feet at the inlet and 4 feet at the outlet. Effective trap width shall be at least 10 feet and trap length shall be at least 30 feet.

E. The Construction Drawings shall indicate the final disposition of the sediment trap after the upstream drainage area is stabilized. The Construction Drawings shall indicate methods for the removal of excess water lying over the sediment, stabilization of the pond site, and the disposal of any excess material.

2.16 SEDIMENT POND

A. A sediment pond shall be installed at the outlet of a disturbed area of 5 acres or more. The maximum drainage area for a single pond is 100 acres.

B. Design and construction shall comply with all federal, state, and local laws, ordinances, rules, and regulations regarding dams.

C. Erosion control practices such as seeding, mulching, sodding, diversion dikes, etc., shall be used in conjunction with sediment ponds to reduce the amount of sediment flowing into the pond.

D. The pond shall not be located in a stream. It shall be located to trap sediment-laden runoff before it enters the stream.

E. Contractor shall construct the sediment pond as shown on the Construction Drawings.

F. Permanent ponds designed for stormwater detention or water quality treatment may serve as temporary sediment ponds if site conditions make the use of these structures desirable. At the time of conversion from a sediment pond to a permanent stormwater management pond, excess sediment shall be cleaned from the pond. If the pond is converted to a water quality basin, the sand in the sand filter outlet shall be replaced with clean sand unless it is shown to be clean.

G. The Construction Drawings shall indicate the final disposition of the sediment pond after the upstream drainage area is stabilized. The Construction Drawings shall indicate methods for the removal of excess water lying over the sediment, stabilization of the pond site, and the disposal of any excess material.

H. Vegetation shall be established upon completion of construction of the embankment, emergency spillway and other areas disturbed by construction.

2.17 SILT FENCE

A. Silt fence shall be installed down-slope of areas to be disturbed prior to clearing and grading. Silt fence shall be situated such that the total area draining to the fence is not greater than one-fourth acre per 100 feet of fence. Silt fence shall be used for storm drain drop inlet protection and around soil stockpiles.

B. Under no circumstances shall silt fences be constructed in streams or in swales or ditch lines or any area of concentrated flow where discharge rates are likely to exceed 1 cubic foot per

second (cfs).

C. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, and polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following requirements:

PHYSICAL PROPERTY	REQUIREMENTS
Filtering Efficiency	80% (minimum)
Tensile Strength at 20%	50 lbs./linear inch (minimum)
Flow Rate	0.3 gal./ sq. ft/ min. (minimum)

D. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0°F to 120°F.

E. Posts for synthetic fabric silt fences shall be either 2-inch by 2-inch wood or 1.33 pounds per linear foot steel with a minimum length of 5 feet. Steel posts shall have projections for fastening wire to them.

F. Wire fence reinforcement for silt fences shall be a minimum of 36 inches in height, a minimum of 14 gauge and shall have a mesh spacing of no greater than 6 inches.

2.18 STORM DRAIN INLET PROTECTION

A. Storm drain inlet protection may be utilized on drop inlets and curb inlets.

B. Storm drain inlet protection shall only be used around drop inlets when the up-slope area draining to the inlet has no other or inadequate sediment control.

C. The drainage area shall be no greater than 1 acre.

D. The inlet protection device shall be constructed in a manner that will facilitate cleanout and disposal of trapped sediment and minimize interference with construction activities.

E. Inlet protection devices shall be constructed in such a manner that any resultant ponding of stormwater will not cause flooding or excessive inconvenience or damage to adjacent areas, roadways, properties, or structures.

F. Inlet protection devices are low flow filter devices, and as such shall be constructed in such a manner as to allow for higher flows to bypass into the storm drain system to prevent flooding of the roadway or downstream properties.

2.19 FILTER STRIP

A. Filter strips shall be used on each side of permanent constructed channels.

B. Filter strips shall only be used to remove sediment from overland flow. Filter strips are not effective in removing sediment from concentrated flows.

C. If vegetative filters are proposed as a sediment control device and they do not already exist, they shall be planted and established prior to initiating land disturbing activities.

D. The minimum filter strip width shall be 50 feet for streams, wetlands, and sinkholes. The minimum filter strip width shall be ten feet for constructed waterways.

E. Where a post development floodplain or wet weather conveyance is being protected, filter strips shall be provided on each side. When a wetland or sinkhole is being protected, filter strips shall be provided around the perimeter.

F. Contractor shall construct the filter strips as shown on the Construction Drawings.

G. Existing grass or grass/legume mixtures used as filter strips shall be dense and well established, with no bare spots. When establishing new seeding, consideration shall be given to wildlife needs and soil conditions on the site. The following chart provides a list of alternative grass and grass/legume mixtures:

SEEDING MIXTURE AND SITE SUITABILITY CHART

Seeding Mixture	Rate lbs/acre	Soil Suitability
Alfalfa *Or* Red Clover *Plus* Timothy *Or* Orchardgrass *Or* Bromegrass	6 10 4 6 6	Well Drained
Ladino *Plus* Timothy *Or* Orchardgrass *Or* Bromegrass	.05 4 6 8	Wet or Well-Drained

Notes:

1. All seeding shall be in accordance with the seeding sections of this Specification.

2. Well drained sites include sites that are drained with tile as well as naturally well drained and droughty sites. Wet sites include sites that are excessively wet only a portion of the growing season.

2.20 STREAM CROSSING

A. Stream crossings shall be used in cases where construction traffic, permanent traffic, or utilities must cross existing post development floodplains. If the drainage area exceeds 1 square mile and a structure is necessary, the structure must be designed by a professional engineer licensed in Kentucky, and shall be considered a permanent structure.

B. Temporary stream crossings are applicable to flowing streams with drainage areas less than one square mile. Temporary stream crossings shall be planned to be in service for the shortest practical period of time and to be removed as soon as their function is completed.

C. All such structures, whether temporary or permanent, are subject to the rules and regulations of the U.S. Army Corps of Engineers for in-stream modifications (404 Permitting) and the Kentucky Division of Water (401 Certification). No stream crossing shall be installed without first obtaining all applicable local, state, and federal permits.

Where culverts are to be installed, compacted soil or rock shall be used to form the crossing. The depth of soil or rock cover over the culvert shall be equal to one-half the diameter of the culvert or 12 inches, whichever is greater. The sides of the fill shall be protected from erosion using the mulching and seeding erosion control measures specified in this Specification.

D. All stream crossings shall be constructed in such a manner as to avoid flooding or excessive inconvenience or damage to adjacent areas, roadways, properties, or structures.

E. When using a culvert crossing, the top of a compacted earth fill shall be covered with six inches of KYTC No. 57 stone.

F. KYTC No. 57 stone shall also be used for the stone pads forming the crossing approaches.

2.21 PUMP AROUND FLOW DIVERSION

A. A pump-around flow diversion shall be used to divert flow around construction activities occurring in a stream when those activities are reasonably expected to cause the erosion of sediment or deposition of sediment in the stream.

B. Check dams to form the diversion shall span the banks of the stream. Maintain 1-foot freeboard (minimum) on the upstream and downstream checks.

C. Check dams may be constructed of sandbags or may be a water-filled bladder such as an Aqua-Barrier.

D. The dewatering flow from the work area shall be treated in a sediment-trapping device prior to discharge to the stream.

E. Sandbags shall be woven polypropylene bags with approximate dimensions of 18-1/2 inches by 28 inches. Contractor shall tie the ends of filled bags closed using either draw strings or wire ties.

2.22 CONSTRUCTION DEWATERING

A. Sediment-laden water shall be pumped to a dewatering structure before it is discharged.

PART 3 – EXECUTION

3.01 GENERAL

A. Erosion and sediment control practices shall be consistent with the requirements of the state and local regulatory agencies and in any case shall be adequate to prevent erosion of disturbed and/or regraded areas.

B. Contractor is responsible for notifying the state regulatory agency concerning inclusion under the KPDES General Permit for Storm Water Discharges Associated with Construction Activities.

C. Gravity sewer lines, force mains and water lines that cross streams shall be constructed by methods that maintain normal stream flow and allow for a dry excavation. Water pumped from the excavation shall be contained and allowed to settle prior to reentering the stream. Excavation equipment and vehicles shall operate outside of the flowing portion of the stream. Spoil material from the line excavation shall not be allowed to enter the flowing portion of the stream. The provisions of this condition shall apply to all types of utility line stream crossings.

D. Removal of riparian vegetation in the utility line right-of-way shall be limited to that necessary for equipment access. Effective erosion and sedimentation control measures shall be employed at all times during the project to prevent degradation of waters of the Commonwealth. Site regrading and reseeding shall be accomplished with 14 days after disturbance.

3.02 MULCH

A. Seed shall be applied prior to mulching except where seed is to be applied as part of a hydroseeder slurry containing mulch.

B. Lime and fertilizer shall be incorporated and surface roughening accomplished as needed prior to mulching in accordance with applicable sections of this Specification.

C. Mulch materials shall be spread uniformly by hand or mechanically so the soil surface is covered. During or immediately following application, the mulch shall be anchored or otherwise secured to the ground according to one of the following methods:

1. Mechanical – Use a disk, crimper, or similar type tool set straight to punch or anchor the mulch material into the soil.

2. Mulch Tackifiers/Nettings/Emulsions – Use according to the manufacturer's recommendations. This is a superior method in areas of water concentration to hold mulch in place.

3. Wood Fiber – Wood fiber hydroseeder slurries may be used to tack straw mulch. This combination treatment is well suited to steep slopes and critical areas, and severe climate conditions.

D. Mulch shall be anchored using a mulch anchoring tool, a liquid binder/tackifier, or mulch nettings. Nets and mats shall be installed to obtain firm, continuous contact between the material and the soil. Without such contact, the material is useless and erosion occurs.

E. A mulch anchoring tool is a tractor-drawn implement that is typically used for anchoring straw and is designed to punch mulch approximately two inches into the soil surface. Machinery shall be operated on the contour and shall not be used on slopes steeper than 3H:1V.

F. When using liquid mulch binders and tackifiers, application shall be heaviest around edges of areas and at crests of ridges and banks to prevent wind blow. Remainder of area shall have binders/tackifiers spread uniformly in accordance with manufacturer's recommendations.

G. When using a mulch net, it shall be used in conjunction with an organic mulch and shall be installed immediately after the application and spreading of the mulch. Mulch net shall be installed over the mulch except when the mulch manufacturer recommends otherwise.

H. Excelsior blankets and mats with mulch are considered protective mulches and may be used alone on erodible soils and during all times of year. Erosion control mats shall be installed in accordance with manufacturer's recommendations.

I. Mulched areas shall be inspected at least weekly and after each rainfall of one-half inch or more. When mulch material is found to be loosened or removed, the mulch cover shall be replaced within 48 hours.

3.03 TEMPORARY SEED

A. The site shall be graded as needed to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and anchoring.

B. The needed erosion control practices, such as diversions, temporary waterways for diversion outlets, and sediment ponds, shall be installed prior to seeding.

C. Prior to seeding, lime and fertilizer shall be worked into the soil with a disk harrow, springtooth harrow, or similar tools to a depth of two inches. On sloping areas, the final operation shall be on the contour.

D. The seed shall be applied uniformly with a cyclone seeder, drill, cultipacker, seeder, or hydroseeder (slurry may include seed and fertilizer) preferably on a firm, moist seedbed. Seed shall be sown no deeper than one-fourth inch to one-half inch.

E. The seedbed shall be firmed following seeding operations with a cultipacker, roller, or light drag.

F. On sloping land, seeding operations shall be on the contour wherever possible.

G. Mulch shall be applied, in the amounts described in the mulch section of this Specification, to protect the soil and provide a better environment for plant growth.

H. New seed shall have adequate water for growth, through either natural means or irrigation, until plants are firmly established.

I. Seeded areas shall be inspected at least weekly after planting and after each rainfall of one-half inch or more. Areas requiring additional seed and mulch shall be repaired within 48 hours.

J. If vegetative cover is not established within 21 days, the area shall be reseeded.

3.04 PERMANENT SEED

A. During site preparation, topsoil shall be stockpiled for use in establishing permanent vegetation.

B. The site shall be graded as needed to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and anchoring.

C. The needed erosion control practices, such as diversions, temporary waterways for diversion outlets, and sediment ponds, shall be installed prior to seeding.

D. Prior to seeding, lime and fertilizer shall be worked into the soil with a disk harrow, springtooth harrow, or similar tools to a depth of four inches. On sloping areas, the final operation shall be on the contour.

E. Where compacted soils occur, they shall be broken up sufficiently to create a favorable rooting depth of six to eight inches.

F. The seed shall be applied uniformly with a cyclone seeder, drill, cultipacker, seeder, or hydroseeder (slurry may include seed and fertilizer) preferably on a firm, moist seedbed. Seed shall be sown no deeper than one-fourth inch to one-half inch.

G. The seedbed shall be firmed following seeding operations with a cultipacker, roller, or light drag.

H. On sloping land, seeding operations shall be on the contour wherever possible.

I. Mulch shall be applied, in the amounts described in the mulch section of this Specification, to protect the soil and provide a better environment for plant growth.

J. New seed shall have adequate water for growth, through either natural means or irrigation, until plants are firmly established.

K. Seeded areas shall be inspected at least weekly after planting and after each rainfall of 0.5 inches or more. Areas requiring additional seed and mulch shall be repaired within 48 hours.

L. If vegetative cover is not established (>70%) within 21 days, the area shall be reseeded. If 40 to 70 percent groundcover is established, seed and fertilize, using half of rates originally applied, and mulch. If less than 40 percent groundcover is established, follow original seedbed preparation methods, seeding and mulching specifications, and apply lime and fertilizer as needed according to soil tests.

3.05 SOD

A. The area to be sodded shall be protected from excess runoff, as necessary, with appropriate BMPs.

B. Prior to sodding, the soil surface shall be cleared of all trash, debris, and stones larger than one and one-half inches in diameter, and of all roots, brush, wire, and other objects that would interfere with the placing of the sod.

C. Compacted soils shall be broken up sufficiently to create a favorable rooting depth of six to eight inches.

D. Lime and fertilizer shall be worked into the soil with a disk harrow, springtooth harrow, or other suitable field equipment to a depth of four inches.

E. After the lime and fertilizer have been applied and just prior to the laying of the sod, the soil in the area to be sodded shall be loosened to a depth of one inch. The soil shall be thoroughly dampened immediately after the sod is laid if it is not already in a moist condition.

F. No sod shall be placed when the temperature is below 32°F. No frozen sod shall be placed nor shall any sod be placed on frozen soil.

G. When sod is placed during the periods of June 15 to September 1 or October 15 to March 1, it shall be covered immediately with a uniform layer of straw mulch approximately one-half inch thick or so the green sod is barely visible through the mulch.

H. Sod shall be carefully placed and pressed together so it will be continuous without any voids between the pieces. Joints between the ends of strips shall be staggered.

I. On gutter and channel sodding, the sod should be carefully placed on rows or strips at right angles to the centerline of the channel (*i.e.*, at right angles to the direction of flow). The edge of the sod at the outer edges of all gutters shall be sufficiently deep so that surface water will flow over onto the top of the sod.

J. On steep graded channels, each strip of sod shall be staked with at least two stakes not more than 18 inches apart.

K. On slopes 3H:1V or steeper, or where drainage into a sod gutter or channel is one-half acre or larger, the sod shall be rolled or tamped and then chicken wire, jute, or other netting shall be pegged over the sod for protection in the critical areas. The netting and sod shall be staked with at least two stakes not more than 18 inches apart. The netting shall be stapled on the side of each stake within two inches of the top of the stake. The stake should then be driven flush with the top of the sod.

L. When stakes are required, the stakes shall be wood and shall be approximately ½ inch by ¾ inch by 12 inches. They shall be driven flush with the top of the sod with the flat side against the slope and on an angle toward the slope.

M. Sod shall be tamped or rolled after placing and then watered. Watering shall consist of a thorough soaking of the sod and of the sod bed to a depth of at least 4 inches. The sod should be maintained in a moist condition by watering for a period of 30 days.

N. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week to maintain moist soil to a depth of 4 inches. Watering shall be done during the heat of the day to prevent wilting. After the first week, sod shall be watered as necessary to maintain adequate moisture content.

O. The first mowing of sod shall not be attempted until the sod is firmly rooted. No more than one-third of the grass leaf shall be removed by the initial and subsequent cuttings. Grass height shall be maintained between 2 inches and 3 inches.

P. Where sod does not establish properly, the sod should be replaced immediately. Areas requiring resodding should be prepared in the same manner as the original installation.

3.06 ROAD/PARKING STABILIZATION

A. The roadbed or parking surface shall be cleared of all vegetation, roots, and other objectionable material.

B. All roadside ditches, cuts, fills, and disturbed areas adjacent to parking areas and roads shall be stabilized with appropriate temporary or permanent vegetation according to the applicable sections of this Specification.

C. Geotextile filter fabric may be applied beneath the stone for additional stability in accordance with fabric manufacturer's specifications.

D. Both temporary and permanent roads and parking areas may require periodic top dressing with new gravel. Seeded areas adjacent to the roads and parking areas shall be checked regularly to ensure that a vigorous stand of vegetation is maintained. Roadside ditches and other drainage structures shall be checked once each week to ensure that they do not have silt or other debris that reduces their effectiveness.

3.07 CONSTRUCTION ENTRANCE

A. Vegetation, roots, and all other obstructions shall be cleared in preparation for grading. Prior to placing geotextile (filter fabric), the entrance shall be graded and compacted to 80% of standard proctor density.

B. To reduce maintenance and loss of aggregate, the geotextile shall be placed over the existing ground before placing the stone for the entrance. Stone shall be placed to depth of 6 inches or greater for the entire width and length of the stabilized construction entrance.

C. If wash racks are used, they shall be installed according to manufacturer's specifications.

D. The stabilized construction entrance shall be inspected once each week and after there has been a high volume of traffic or a storm event greater than 0.2 inches.

E. The entrance shall be maintained in a condition that will prevent tracking or flow of sediments onto public rights-of-way. This may require periodic top dressing with additional stone, as conditions demand, and repair and/or cleanout of any structures used to trap sediment.

F. All materials spilled, dropped, washed, or tracked from vehicles onto roadways or into storm drains must be removed immediately.

3.08 DUST CONTROL

A. See Articles on Temporary Seed, Permanent Seed, Sod, Mulch, Road/Parking Stabilization, and Construction Entrance of this Specification Section.

B. When construction is active on the site, dust control shall be implemented as needed.

C. When using tillage as a dust control measure, Contractor shall begin plowing on windward side of area. Chisel-type plows spaced about 12 inches apart, spring-toothed harrow, and similar plows are examples of equipment that may produce the desired effect.

D. The site shall be observed daily for evidence of windblown dust and reasonable steps shall be taken to reduce dust whenever possible. When construction on a site is inactive for a period, the site shall be inspected at least weekly for evidence of dust emissions or previously windblown sediments. Dust control measures shall be implemented or upgraded if the site inspection shows evidence of wind erosion.

3.09 NETS AND MATS

A. Nets and mats shall be installed according to the manufacturer's recommendations. In the event that the manufacturer's recommendations conflict with any requirement of this Specification, the most conservative requirement, in terms of protection of public health and the environment, shall govern.

3.10 TEMPORARY DIVERSION DITCH

A. All dead furrows, ditches or other depressions to be crossed shall be filled before construction begins or as part of construction, and the earth fill used to fill the depressions shall be compacted using the treads of the construction equipment. All old terraces, fencerows, or other obstructions that will interfere with the successful operation of the diversion shall be removed.

B. The base for the diversion ridge shall be prepared so that a good bond is obtained between the original ground and the fill material. Vegetation shall be removed and the base shall be thoroughly disked prior to placement of fill.

C. The earth materials used to construct the earth fill portions of the diversions shall be obtained from the diversion channel or other approved source.

D. The earth fill materials used to construct diversions shall be compacted by running the construction equipment over the fill in such a manner that the entire surface of the fill will be traversed by not less than one tread track of the equipment.

E. When an excess of earth material results from cutting the channel cross section and grade, it shall be deposited adjacent to the supporting ridge unless otherwise directed.

F. The completed diversion shall conform to the cross section and grade shown on the Construction Drawings.

G. Temporary or permanent seeding and mulch shall be applied to the berm or ditch immediately following its construction. Contractor shall triple-seed areas below the flow line, and shall use erosion control blankets or turf reinforcement mats as needed.

H. Bare and vegetated diversion channels shall be inspected regularly to check for points of scour or bank failure; rubbish or channel obstruction; rodent holes, breaching, or settling of the ridge; and excessive wear from pedestrian or construction traffic.

I. Damaged channels or ridges shall be repaired at the time damage is detected. Sediment deposits shall be removed from diversion channels and adjoining vegetative filter strips regularly.

J. Diversions shall be reseeded and fertilized as needed to establish vegetative cover.

3.11 LEVEL SPREADER

A. The minimum acceptable width shall be 6 feet. The depth of the level spreader as measured from the lip shall be at least 6 inches and the depth shall be uniform across the entire length of the measure.

B. The grade of the channel for the last 15 feet entering the level spreader shall be less than or equal to 1%.

C. The level lip of the spreader shall be constructed on zero percent grade to insure uniform conversion of channel flow to sheet flow.

D. Level spreaders shall be constructed on undisturbed soil.

E. The entrance to the spreader shall be graded in a manner to ensure that runoff enters directly onto the zero percent graded channel.

F. Storm runoff converted to sheet flow shall discharge onto undisturbed areas stabilized with vegetation.

G. All disturbed areas shall be stabilized immediately after construction is completed in accordance with the mulching and vegetation requirements of this Specification.

H. The level spreader shall be inspected after each storm event and at least once each week. Any observed damage shall be repaired immediately.

3.12 PERMANENT CONSTRUCTED WATERWAY

A. All ditches or other depressions to be crossed shall be filled before construction begins or as part of construction, and the earth fill used to fill the depressions shall be compacted using the treads of the construction equipment. All old terraces, fence rows, or other obstructions that will interfere with the successful operation of the channel shall be removed.

B. The earth materials used to construct the earth fill portions of the channel shall be obtained from the excavated portion of the channel or other approved source.

C. The earth fill materials used to construct the channel shall be compacted by running the construction equipment over the fill in such a manner that the entire surface of the fill will be traversed by at least one tread track of the equipment.

D. The completed channel shall conform to the cross section and grade shown on the Construction Drawings.

E. Channels shall be inspected regularly to check for points of scour or bank failure; rubbish or channel obstruction; rodent holes; breaching; and excessive wear from pedestrian or construction traffic.

F. Channels shall be repaired at the time damage is detected. Sediment deposits shall be removed from adjoining vegetative filter strips when they are visible.

G. Channels shall be reseeded and fertilized as needed to establish vegetative cover.

H. The subgrade of paved channels shall be constructed to the required elevations. All soft sections and unsuitable material shall be removed and replaced with suitable material. The subgrade shall be thoroughly compacted and shaped to a smooth, uniform surface. The subgrade shall be moist when pouring concrete.

I. Before permanent stabilization of the slope, the structure shall be inspected after each rainfall. Any damages to the paved channel or slope shall be repaired immediately.

3.13 PIPE SLOPE DRAIN

A. The pipe slope drain shall be placed on undisturbed or well-compacted soil.

B. Soil around and under the entrance section shall be hand-tamped in 4-inch to 8-inch lifts to the top of the dike to prevent piping failure around the inlet.

C. Filter fabric shall be placed under the inlet and extended 5 feet in front of the inlet and be keyed in 6 inches on all sides to prevent erosion.

D. Backfilling around and under the pipe with stable soil material hand compacted in lifts of 4 inches to 8 inches shall be done to ensure firm contact between the pipe and the soil at all points.

E. The pipe slope drain shall be securely staked to the slope using grommets provided for this purpose at intervals of 10 feet or less.

F. All slope drain sections shall be securely fastened together and have watertight fittings.

G. The pipe shall be extended beyond the toe of the slope and discharged at a non-erosive velocity into a stabilized area or to a sediment trap or pond.

H. The pipe slope drain shall have a minimum slope of 3 percent or steeper.

I. The height at the centerline of the earth dike shall range from a minimum of 1.0 foot over the pipe to twice the diameter of the pipe measured from the invert of the pipe. It shall also be at least 6 inches higher than the adjoining ridge on either side. At no point along the dike will the elevation of the top of the dike be less than 6 inches higher than the top of the pipe.

J. All areas disturbed by installation or removal of the pipe slope drain shall be immediately stabilized.

K. The pipe slope drain shall be inspected after every rainfall and at least weekly. Any necessary repairs shall be made immediately.

L. Contractor shall check to see that water is not bypassing the inlet and undercutting the inlet or pipe. If necessary, Contractor shall install headwall or sandbags.

M. Contractor shall check for erosion at the outlet point and shall check the pipe for breaks or clogs. Contractor shall install additional outlet protection if needed and immediately repair the breaks and clean any clogs.

N. Contractor shall not allow construction traffic to cross the pipe slope drain and shall not place any material on it.

O. If a sediment trap has been provided, it shall be cleaned out when the sediment level reaches 1/3 the design volume.

P. The pipe slope drain shall remain in place until the slope has been completely stabilized or up to 30 days after permanent slope stabilization.

3.14 IMPACT STILLING BASIN

A. Construction specifications for impact stilling basins are provided in the Construction Drawings.

3.15 CHECK DAM

A. Stone shall be placed by hand or mechanically as necessary to achieve complete coverage of the ditch and to ensure that the center of the dam is at least 1 foot lower than the outer edges. Stone shall also be placed to extend 3 feet in elevation above the center portion of the check dam or to the top of the channel side slopes.

B. Coir and wood fiber logs shall be laid on the channel bottom.

C. Check dams shall be removed when their useful life has been completed. In temporary ditches and swales, check dams shall be removed and the ditch filled in when it is no longer needed. In permanent channels, check dams shall be removed when a permanent lining can be installed. In the case of grass-lined ditches, check dams shall be removed when the grass has matured sufficiently to protect the ditch or swale. The area beneath the check dams shall be seeded and mulched or sodded (depending upon velocity) immediately after check dams are removed.

D. If stone check dams are used in grass-lined channels that will be mowed, care shall be taken to remove all stone from the channel when the dam is removed. This shall include any stone that has washed downstream.

E. Regular inspections shall be made to ensure that the check dam is in good working order and the center of the dam is lower than the edges. Erosion caused by high flows around the edges of the dam shall be corrected immediately, and the dam shall be extended beyond the repaired area.

F. Check dams shall be checked for sediment accumulation after each rainfall. Sediment shall be removed before or when it reaches one-third of the original height.

G. Check dams shall remain in place and operational until the drainage area and channel are completely stabilized, or up to 30 days after the permanent site stabilization is achieved.

3.16 SEDIMENT TRAP

A. The area to be excavated shall be cleared of all trees, stumps, roots, brush boulders, sod, and debris. All channel banks and sharp breaks shall be sloped to no steeper than 1:1. All topsoil containing excessive amounts of organic matter shall be removed.

B. Seeding, fertilizing, and mulching of the material taken from the excavation shall comply with the applicable soil stabilization sections of this Specification.

C. Construction specifications for sediment traps are provided in the Construction Drawings.

D. Any material excavated from the trap shall be placed in one of the following ways so that it will not be washed back into the trap by rainfall:

   1. uniformly spread to a depth not exceeding 3 feet and graded to a continuous slope away from the trap

   2. uniformly placed or shaped reasonably well with side slopes assuming the natural angle of repose for the excavated material behind a berm width not less than 12 feet.

E. Sediment shall be removed from the trap when the capacity is reduced to one third of the design volume. Contractor shall follow the methods for disposing of sediment removed from the trap as shown in the Construction Drawings.

3.17 SEDIMENT POND

A. The foundation area shall be cleared of all trees, stumps, roots, brush boulders, sod, and debris. All channel banks and sharp breaks shall be sloped to no steeper than 1:1. All topsoil containing excessive amounts of organic matter shall be removed. The surface of the foundation area shall be thoroughly scarified before placement of the embankment material.

B. A cutoff trench shall be backfilled with suitable material. The trench shall be kept free of standing water during backfill operations.

C. The pipe conduit barrel shall be placed on a firm foundation. Selected backfill material shall be placed around the conduit in layers, and each layer shall be compacted to at least the same density as the adjacent embankment. All compaction within 2 feet of the pipe spillway shall be accomplished with hand-operated tamping equipment.

D. All borrow areas outside the pond and in the drainage area shall be graded and left in such a manner that water will not be ponded.

E. The material placed in the fill shall be free of all sod, roots, frozen soil, stones more than 6 inches in diameter, and other objectionable material. The placing and spreading of the fill material shall occur in approximately 6-inch horizontal layers or of such thickness that the required compaction can be obtained with the equipment used. Each layer shall be compacted in a way that will result in achieving 95 percent of the maximum standard dry density.

F. The distribution and gradation of materials throughout the fill shall be such that there will be no lenses, pockets, stakes, or layers of material differing substantially in texture or gradation from the surrounding material. Where it is necessary to use materials of varying texture and gradation, the more impervious material shall be placed in the upstream and center portions of the fill.

G. The moisture content of fill material shall be such that the required degree of compaction can be obtained with the equipment used.

H. Fill shall not be placed on frozen, slick, or saturated soil.

I. The topsoil material saved in the site preparation shall be placed as a top dressing on the surface of the emergency spillways, embankments, and borrow areas. It shall be evenly spread.

J. A protective cover of herbaceous vegetation shall be established on all exposed surfaces of the embankment, spillway, and borrow areas to the extent practical under prevailing soil and climatic conditions.

K. Seedbed preparation, seeding, fertilizing, and mulching shall comply with the applicable sections of this Specification.

L. Any material excavated from the pond shall be placed in one of the following ways so that its weight will not endanger the stability of the side slopes and where it will not be washed back into the pond by rainfall:

    1. uniformly spread to a depth not exceeding 3 feet and graded to a continuous slope away from the pond.

    2. uniformly placed or shaped reasonably well with side slopes assuming the natural angle of repose for the excavated material behind a berm width not less than 12 feet.

M. Sediment shall be removed from the pond when the capacity is reduced to one third of the

design volume. Contractor shall follow the methods for disposing of sediment removed from the pond as shown in the Construction Drawings.

3.18 SILT FENCE

A. This Article provides construction specifications for silt fences using synthetic fabric. See the Construction Drawings for additional detail.

B. Posts shall be spaced a maximum of 10 feet apart at the barrier location and driven securely into the ground (minimum of 12 inches). When necessary, because of rapid runoff, post spacing shall not exceed 6 feet.

C. A trench shall be excavated at least 6 inches wide and 6 inches deep along the line of posts and upslope from the barrier.

D. A wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy-duty wire staples at least 1 inch long, tie wires or hog rings. The wire shall extend into the trench a minimum of 2 inches and shall not extend more than 36 inches above the original ground surface.

E. The filter fabric shall be stapled or wired to the fence, and 12 inches of the fabric shall be extended into the trench. The fabric shall not extend more than 30 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.

F. At joints, filter fabric shall be lapped with terminating posts with a minimum overlap of 3 feet.

G. The trench shall be backfilled and soil compacted over the filter fabric.

H. Silt fences shall be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized.

I. Silt fences and filter barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately. Knocked down fences shall be repaired at the end of each day.

J. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and if the barrier is still necessary, the fabric shall be replaced promptly.

K. Sediment deposits shall be removed after each storm event or when deposits reach approximately one-third the height of the barrier.

L. Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform to the existing grade, prepared, and seeded.

M. Silt fences shall be replaced every 6 months.

3.19 STORM DRAIN INLET PROTECTION

A. For silt fence drop inlet protection, the following specifications apply:

1. For stakes, Contractor shall use 2 x 4-inch wood (preferred) or equivalent metal with a minimum length of 3 feet.

2. Stakes shall be evenly spaced around the perimeter of the inlet a maximum of 3 feet apart and securely driven into the ground, approximately 18 inches deep.
3. To provide needed stability to the installation, Contractor shall frame with 2 x 4-inch wood strips around the crest of the overflow area at a maximum of 1.5 feet above the drop inlet crest and shall brace diagonally.

4. Contractor shall place the bottom 12 inches of the fabric in a trench and backfill the trench with at least 4 inches of crushed stone or 12 inches of compacted soil.

5. Contractor shall fasten fabric securely to the stakes and frame. Joints shall be overlapped to the next stake.

B. For sod drop inlet protection, sod shall be placed to form a turf mat covering the soil for a distance of 4 feet from each side of the inlet structure. Soil preparation and sod placement shall be in accordance with the section entitled Sod.

C. For gravel curb inlet protection, the following specifications apply:

1. Wire mesh with ½-inch openings shall be placed over the curb inlet opening so that at least 12 inches of wire extends across the concrete gutter from the inlet opening.

2. KYTC No. 2 Coarse Aggregate shall be piled against the wire so as to anchor it against the gutter and inlet cover and to cover the inlet opening completely.

3. This type of device must never be used where overflow may endanger an exposed fill slope. Consideration shall also be given to the possible effects of ponding on traffic movement, nearby structures, working areas, and adjacent property.

D. For block and gravel curb inlet protection, the following specifications apply:

1. Two concrete blocks shall be placed on their sides abutting the curb at either side of the inlet opening to act as spacer blocks.

2. A 2-inch by 4-inch stud shall be cut and placed through the outer holes of each spacer block to help keep the front blocks in place.

3. Concrete blocks shall be placed on their sides across the front of the inlet and abutting the spacer blocks.

4. Wire mesh shall be placed over the outside of the concrete blocks to prevent stone from being washed through the holes in the blocks. Wire with ½-inch openings shall be used

5. KYTC No. 2 Coarse Aggregate shall be piled against the wire to the top of the barrier.

E. For stone-filled corrugated pipe curb inlet protection, the following specifications apply:

1. Two concrete "L" blocks shall be placed on their sides, with one leg fitting into the mouth of the curb opening.

2. A 6-inch corrugated pipe shall be filled with stone and covered with a filter sock.

3. The stone-filled pipe will be placed in front of the two concrete "L" blocks, and extend a minimum of the width of the curb inlet opening on either side. The total length of the stone filled pipe shall be three times the width of the curb inlet opening.

F. The structure shall be inspected after each rain, and repairs made as needed.

G. Sediment shall be removed and the device restored to its original dimensions when the sediment has accumulated to one-third the design depth of the filter. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.

H. If a stone filter becomes clogged with sediment so that it no longer adequately performs its function, the stone must be pulled away from the blocks, cleaned, and replaced.

I. Structures shall be removed after the drainage area has been properly stabilized.

3.20 FILTER STRIP

A. When planting filter strips, Contractor shall prepare seedbed, incorporate fertilizer, and apply mulch consistent with the seeding sections of this Specification. Filter strips using areas of existing vegetation shall be over seeded, as necessary, with the specified mixtures to obtain an equivalent density of vegetation. The over seeding shall be accomplished prior to any land disturbing activities.

B. Filter strips shall be inspected regularly to ensure that a healthy vegetative growth is maintained. Any bare spots or spots where sediment deposition could lead to the destruction of vegetation shall be repaired.

C. Filter strips shall be fertilized once each year in the fall.

D. Irrigation shall be used as necessary to maintain the growth of the vegetation in the filter strip.

E. Sediment shall be removed when it becomes visible in the filter.

F. Construction traffic shall not be driven on or over filter strips.

3.21 STREAM CROSSING

A. Clearing and excavation of the streambed and banks shall be kept to a minimum.

B. The structure shall be removed as soon as it is no longer necessary for project construction.

C. Upon removal of the structure, the stream shall immediately be reshaped to its original cross section and properly stabilized.

D. The approaches to the structure shall consist of stone pads with a minimum thickness of 6 inches, a minimum width equal to the width of the structure, and a minimum approach length of 25 feet on each side.

E. The structure shall be inspected after every rainfall and at least once a week and all damages repaired immediately.

3.22 PUMP-AROUND FLOW DIVERSION

A. Operations shall be scheduled such that diversion installation, in-stream excavation, in-stream construction, stream restoration, and diversion removal are completed as quickly as possible. Contractor shall not construct in a stream when rainfall is expected during the time excavation will be occurring in the stream.

B. Check dams shall be installed across the stream during low flow conditions.

C. Stream flow shall be pumped around the check dams. Outlet protection shall be installed as required at the discharge point.

D. Contractor shall dewater the work area and pump into a sediment trapping device.

E. Contractor shall complete construction activities across the stream.

F. Contractor shall restore the streambed and banks.

G. Contractor shall remove sandbags and shut down pumping operation. (Salvage sandbags for future use if multiple stream crossings are required on the project.) Contractor shall remove all sandbags from the stream, including damaged and empty bags.

H. Pumps shall be manned around-the-clock when the pump-around diversion is in the stream.

I. This control provides short-term diversion of stream flow (typically 1 day to 3 days). Additional sandbags or pumps may be required to maintain 1-foot freeboard on the sandbag checks if flow conditions change.

J. Contractor shall add sandbags as required to seal leaks in checks.

3.23 CONSTRUCTION DEWATERING

A. Contractor shall follow the specifications for sediment traps and basins. The manufacturer's recommendations shall be followed for commercial products.

B. The dewatering structure shall be inspected frequently to ensure it is functioning properly and not overtopping. Accumulated sediment shall be spread out on site and stabilized or disposed of offsite.

3.24 KPDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

A. The Contractor is responsible for electronically filing the appropriate state Notice of Intent (NOI-SWCA) letter at least seven (7) days prior to start of construction activity. The Notice of Intent (NOI) is a Kentucky Pollution Discharge Elimination System (KPDES) permit application as provided by the Kentucky Revised Statutes, Chapter 224. This application is required to be submitted for construction projects that disturb one or more acres of land.

B. The NOI requires the inclusion of the descriptions of (but is not limited to) the following items:

1. Names and designated uses of any receiving waters

2. Anticipated number and locations of discharge points

3. Identification of planned construction in or along a water body

C. A topographic map showing project boundaries, areas to be disturbed, locations of anticipated discharge points and receiving waters is also required to be submitted with the NOI.

D. If the construction site is near a designated "High Quality/Impaired Waters" or a "Cold Water Aquatic Habitat Waters, Exceptional Waters, Outstanding National/State Resource Waters," additional items and/or individual permits will be required.

E. The NOI form requires an SIC code. The link to the SIC codes is http://www.osha.gov/pls/imis/sicsearch.html. The following are the typical construction SIC codes utilized:

1542 – Building Construction, nonresidential, except industrial and warehouses
1623 – Water Main Construction, Sewer Construction
1629 – Water and Wastewater Treatment Plant Construction
1711 – Water Pump Installation
1781 – Drilling Water Wells

F. The Contractor is responsible for implementing the approved Stormwater Pollution Prevention Plan (SWPPP) prior to commencement of site disturbance. The SWPPP shall include erosion prevention measures and sediment and pollutant control measures which are installed and maintained to minimize discharges of sediments and other pollutants from a 2-year, 24-hour storm event. The SWPPP must be kept at the site and available for review by LFUCG and state officials.

G. The Contractor is responsible for the description of procedures to maintain erosion and sediment control measures during the period of construction.

H. The Contractor is responsible for identifying each Contractor and Subcontractor who will install each SWPPP erosion and sediment control measure.

I. Each Contractor and Subcontractor shall sign a statement certifying the awareness of the requirements of the SWPPP related documents. Certification is attached at the end of this section.

J. The Contractor shall not start land disturbing activities until written permit coverage is obtained from the Kentucky Division of Water.

K. The inspection by qualified personnel, **provided by the Contractor**, of the site as follows:

1. at least once every seven (7) calendar days, and

2. within 24 hours after any storm event of 0.5 inch or greater

L. The Contractor is responsible for completing and maintaining the required Self-Inspection Forms. A sample is included in this specification Section.

M. Amendments to the approved SWPPP shall be made and implemented as necessary through the course of the construction project if inspections or investigations by the Contractor's inspector, site staff, or by local, state, or federal officials determine that the existing sediment control measures, erosion control measures, or other site management practices are ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the construction site. All plan amendments shall be noted on the copy of the SWPPP maintained at the project site.

N. Upon completion of the project and establishment of all permanent erosion and sediment control structures and devices, the Contractor shall submit the Notice of Termination (NOT) form to the Kentucky Division of Water, the LFUCG Division of Water Quality, and the LFUCG Division of Engineering.

O. All subcontractors shall be required to comply with the requirements of the state permit and the Stormwater Pollution Prevention Plan (SWPPP).

P. Where to submit:

1. Complete KPDES FORM NOI-SW at the following website:
   https://dep.gateway.ky.gov/eForms/default.aspx?FormID=7

2. Do not initiate work until receiving approval from the Kentucky Division of Water.

3. A complete copy of the NOI submittal shall also be provided to the following for approval/coverage verification:

   Division of Water Quality
   125 Lisle Industrial Avenue, Suite 180
   Lexington, KY 40511

   Division of Engineering
   Lexington-Fayette Urban County Government
   101 E. Vine St.
   4th Floor
   Lexington, KY 40507

3.25 LFUCG Land Disturbance Permit

A. The Contractor shall obtain a Land Disturbance Permit from the LFUCG Division of Engineering, after the LFUCG Division of Water Quality inspects the installation of the best management practices as required by the Stormwater Pollution Prevention Plan (SWPPP). The site grading plan shall show the original and finish grade contours. The grading plan shall be in conformance with the SWPPP.

B. Where to obtain:

Division of Engineering
Lexington-Fayette Urban County Government
101 E. Vine St.
4th Floor
Lexington, KY 40507
(859) 258-3410
Attn: Land Disturbance Permit Section

C. All excess earthen/rock materials hauled off the site to a location in Fayette County shall be hauled to a site permitted by the Kentucky Division of Water and the LFUCG. The haul site must be permitted in accordance with these specifications.

LFUCG LAND DISTURBANCE PERMIT APPLICATION AND ESC PLAN CHECKLIST

OWNER / DEVELOPER Name: _____ **Date:** _____ **Zone:** _____

Address: _____ **City:** _____ **State:** _____ **Zip:** _____

Contractor Name and Address: _____ **Reg #:** _____

Contact Name, Phone/ FAX/Email: _____

ITEM DESCRIPTION	Y	N	N/A	PAGE #	NOTES
I. Permits:					
KY Construction Permit (KYR10 or Indvid)	☐	☐	☐		
USCOE 404 Permit	☐	☐	☐		
KYDOW 401 Water Quality Cert.	☐	☐	☐		
KY Stream Construction Permit	☐	☐	☐		
FEMA LOMR or CLOMR	☐	☐	☐		
II. BMPS:					
Site Preparation:					
Phasing plan for large projects	☐	☐	☐		Maximum disturbed area = 25 acres
Limits of disturbance clearly marked	☐	☐	☐		25 foot undisturbed buffer strip along streams
Construction Entrance/ Exit Pad	☐	☐	☐		No. 2 stone w/ filter fabric, min. 50 ft long (100' where practical)
Temporary Diversion (Berm or Ditch)	☐	☐	☐		Offsite (clean) water routed around disturbed area
Stream Crossings	☐	☐	☐		Not allowed without US Army Corps 404 permit
Concrete Washout Area	☐	☐	☐		One washout pit for every 40 lots
Soil Stabilization:					
Seeding/sodding schedule/timing	☐	☐	☐		Applied within 14 days of reaching final grade or suspending work
Slope Protection:					
Silt Fence downslope of bare areas	☐	☐	☐		
Silt Fence installed along contour	☐	☐	☐		
Erosion Control Blankets on slopes	☐	☐	☐		Conforms with Fig. 11-1 in LFUCG Stormwater Manual
Drainage System Control:					
Inlets Protected	☐	☐	☐		
Pipe Outfall Erosion Prevention	☐	☐	☐		
Channel Lining	☐	☐	☐		Sodding or seed w/ blankets/mats immediately after construction
Check Dams	☐	☐	☐		Max drainage area = 10 acres
Sediment Basins and Traps:					
Sediment Traps (drainage area < 5 ac)	☐	☐	☐		Minimum volume = 2yr-24hr runoff volume
Sediment Basins (drainage area = > 5 ac)	☐	☐	☐		Minimum volume = 2yr-24hr runoff volume
Good Housekeeping:					
Material storage addressed	☐	☐	☐		
Spill Prevention and Control addressed	☐	☐	☐		
Dust control addressed	☐	☐	☐		
Dewatering operations are filtered	☐	☐	☐		
Narrative:					
Schedule/sequence for BMP installation	☐	☐	☐		
BMP Inspection Requirement	☐	☐	☐		Every 7 days, or every 14 days and after 0.5" of rainfall
BMP Maintenance Requirement	☐	☐	☐		
Roadway Cleaning	☐	☐	☐		

LFUCG USE ONLY: Review Date: _____ **Status:** In Compliance: Y N Additional Info Needed: Y N

Reviewed By: _____ **Department:** _____

Comments / Items Missing or Incomplete:

Form Effective Date - January 13, 2011

Kentucky Best Management Practices Plan • Construction Site Inspection Report

Company:	**Site:**	**County:**
Site Operator:		**Date:**
Receiving Water:	**Total Site Area (acres):**	**# Disturbed Acres:**
Inspector Name:	**Inspector Qualifications:**	
Inspection Type: Weekly or ½ Inch Rain	**Days Since Last Rainfall ____**	**# Inches of Last Rainfall: _____**

Field Inspection Observations

BMP Category	Compliance Yes	No	N/A	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 timing/schedule and 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 (25-50 ft min) Rock pad 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 21 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 Kentucky Pollutant Discharge Elimination System (KPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Signature of Inspector: _____

CONTRACTOR AND SUBCONTRACTOR CERTIFICATIONS

SWPPP Files, Updates, and Amendments

This SWPP Plan and related documents (e.g., NOI, inspection reports, US ACE permits, etc.) will be kept on file at the construction site by _____ (name and title). The SWPPP 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: _____

Title: _____

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.

Signed: _____ Date: _____

Title: _____

Signed: _____ Date: _____

Title: _____

Signed: _____ Date: _____

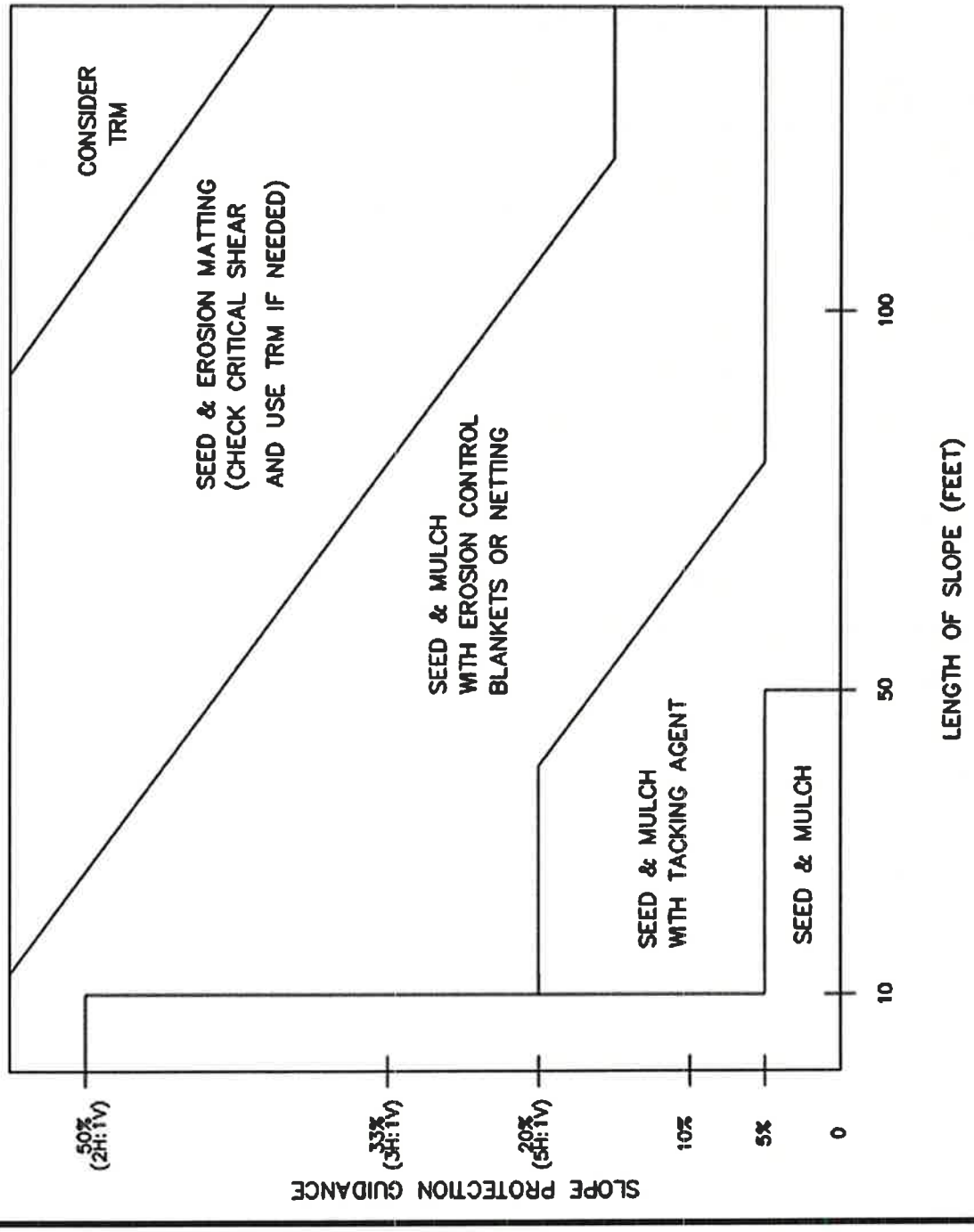
Title: _____

STORMWATER MANUAL

FIGURE 11-1
SLOPE PROTECTION GUIDANCE

(OCTOBER 1, 2020)

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



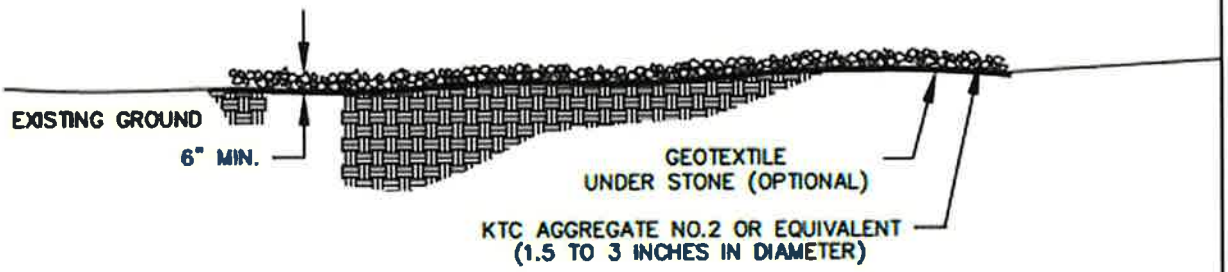
STORMWATER MANUAL

FIGURE 11–2

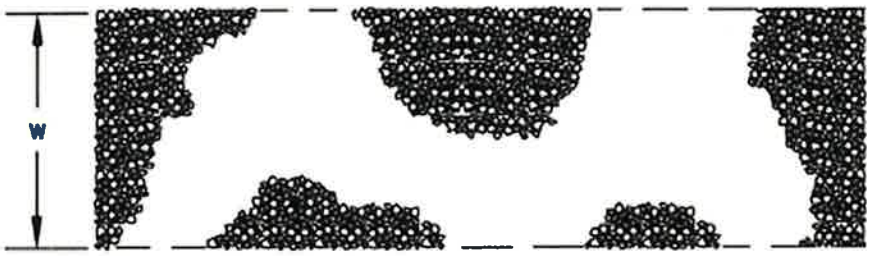
ROAD/PARKING STABILIZATION

(OCTOBER 1, 2020)

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



CROSS SECTION



PLAN VIEW

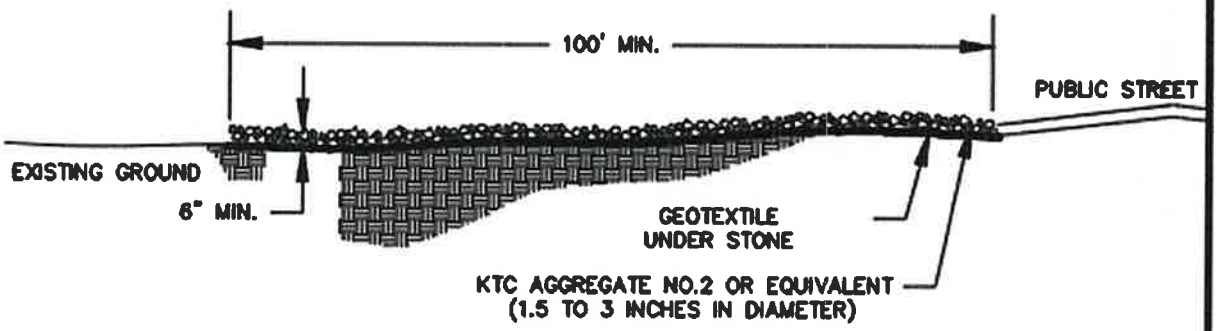
W = 14' MIN. FOR ONE WAY TRAFFIC
20' MIN. FOR TWO WAY TRAFFIC

STORMWATER MANUAL

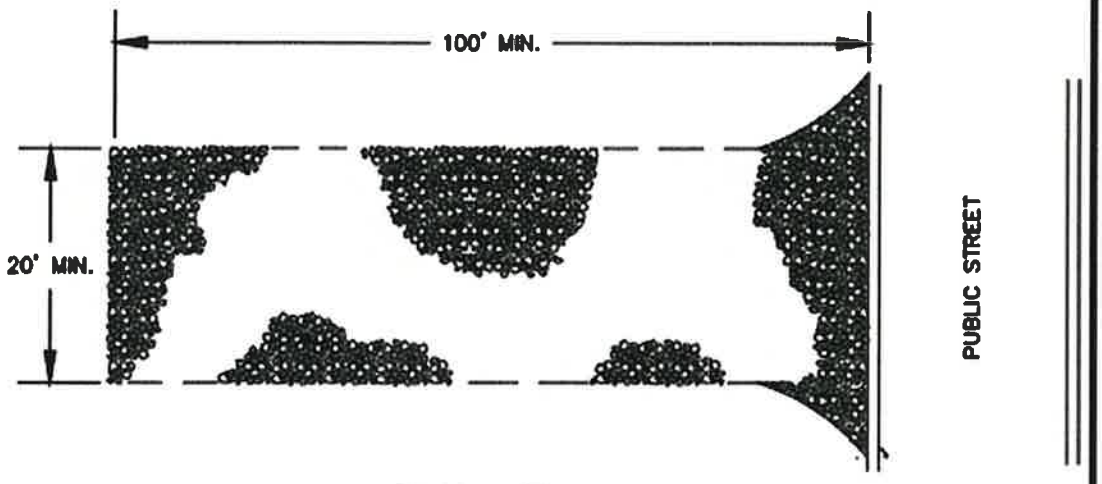
FIGURE 11–3
CONSTRUCTION ENTRANCE

(OCTOBER 1, 2020)

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



CROSS SECTION



PLAN VIEW

STORMWATER MANUAL

FIGURE 11-4

CONSTRUCTION ENTRANCE
NOTES AND SPECIFICATIONS

(OCTOBER 1, 2020)

SPECIFICATIONS FOR GEOTEXTILE FABRIC

GRAB TENSILE STRENGTH	220 LBS. (MIN.) (ASTM D1682)
ELONGATION FAILURE	60% (MIN.) (ASTM D1682)
MULLEN BURST STRENGTH	430 LBS. (MIN.) (ASTM D3768)
PUNCTURE STRENGTH	125 LBS. (MIN.) (ASTM D751) (MODIFIED)
EQUIVALENT OPENING	SIZE 40-80 (US STD SIEVE) (CW-02215)

NOTES

1. A STABILIZED ENTRANCE PAD OF CRUSHED STONE SHALL BE LOCATED WHERE TRAFFIC WILL ENTER OR LEAVE THE CONSTRUCTION SITE ONTO A PUBLIC STREET.
2. SOIL STABILIZATION FABRIC SHALL BE USED AS A BASE FOR THE CONSTRUCTION ENTRANCE.
3. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC STREETS OR EXISTING PAVEMENT. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS WARRANT AND REPAIR OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
4. ANY SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC STREETS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
5. WHEN APPROPRIATE, WHEELS MUST BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTERING A PUBLIC STREET. WHEN WASHING IS REQUIRED, IT SHALL BE DONE IN AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT BASIN.

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

STORMWATER MANUAL

FIGURE 11-5

STAPLE PATTERN FOR STRAW OR EXCELSIOR MATS

(OCTOBER 1, 2020)

SLOPES UP TO 1.5H:1V

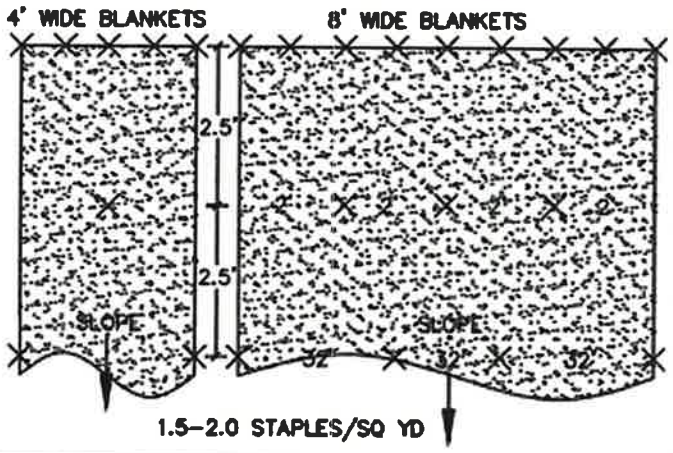
- INSTALL BLANKET VERTICALLY OR HORIZONTALLY
- USE 12" STAPLE SPACING ON STARTER ROW.

COHESIVE SOILS:

- NO OVERLAP REQUIRED ON SIDE SEAMS
- USE 6" STAPLE LENGTH

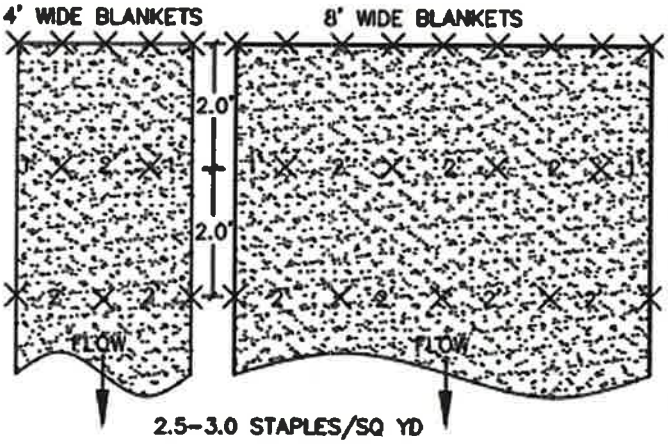
NON-COHESIVE SOILS:

- USE 6" SIDE SEAM OVERLAP
- USE 8" STAPLE LENGTH
- USE 6" ANCHOR TRENCH AT TOP OF SLOPE



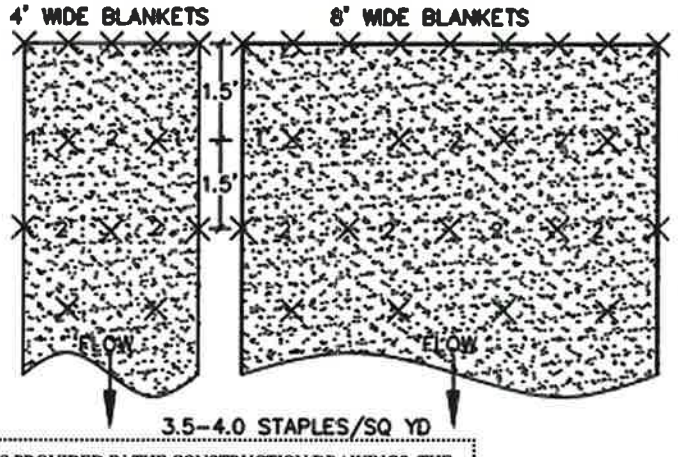
CHANNELS IN COHESIVE SOILS

- USE 6" SIDE SEAM OVERLAP
- USE 6" STAPLE LENGTH
- USE 6" TRANSVERSE ANCHOR TRENCH AT 100-FT. INTERVALS
- USE 12" STAPLE SPACING ON STARTER ROW.
- UPSTREAM BLANKET SHOULD OVERLAP DOWNSTREAM BLANKET A DISTANCE OF 12" IN A "SHINGLE" FASHION AND BURY THE FINISHED TOE AT LEAST 6".



CHANNELS IN NON-COHESIVE SOILS

- USE 6" SIDE SEAM OVERLAP
- USE 8" STAPLE LENGTH
- USE 6" TRANSVERSE ANCHOR TRENCH AT 50-FT. INTERVALS
- USE 12" STAPLE SPACING ON STARTER ROW.
- UPSTREAM BLANKET SHOULD OVERLAP DOWNSTREAM BLANKET A DISTANCE OF 12" IN A "SHINGLE" FASHION AND BURY THE FINISHED TOE AT LEAST 6".



NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

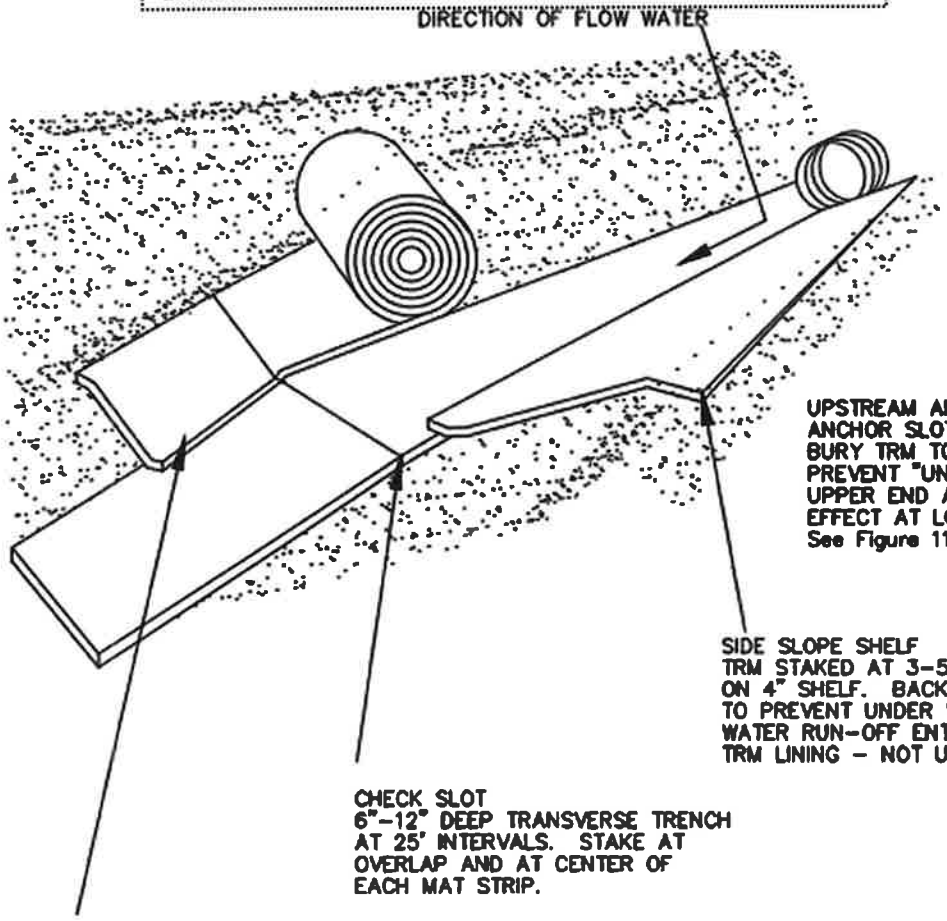
STORMWATER MANUAL

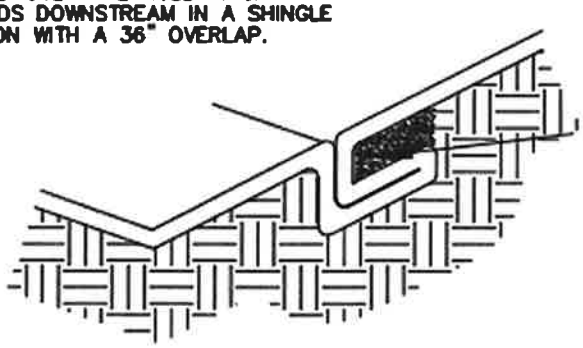
FIGURE 11-6

PLACEMENT OF TRM IN CHANNEL

(OCTOBER 1, 2020)

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



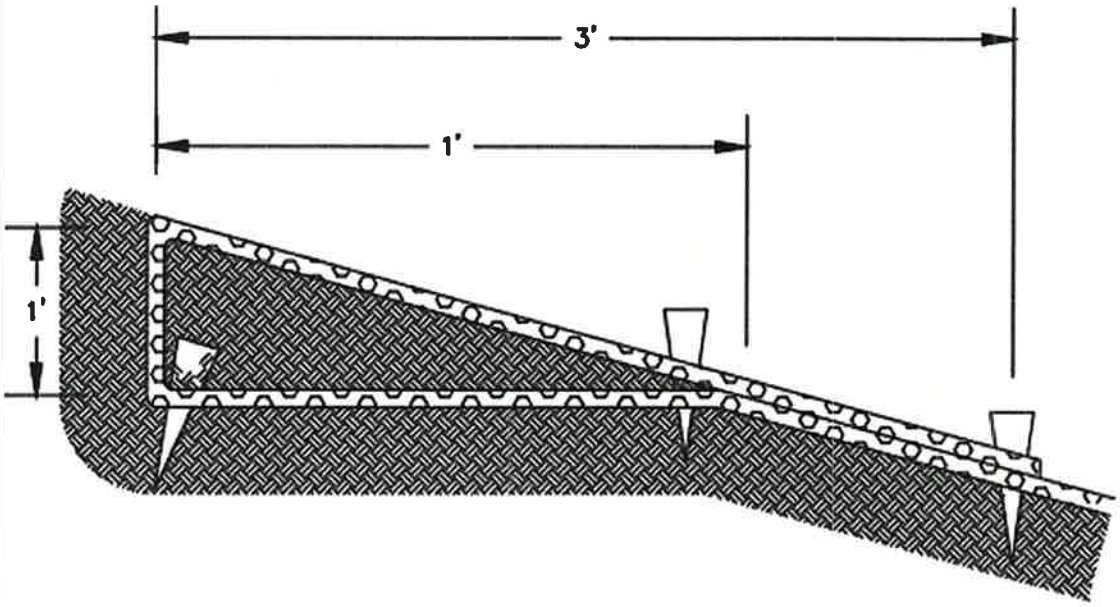


STORMWATER MANUAL

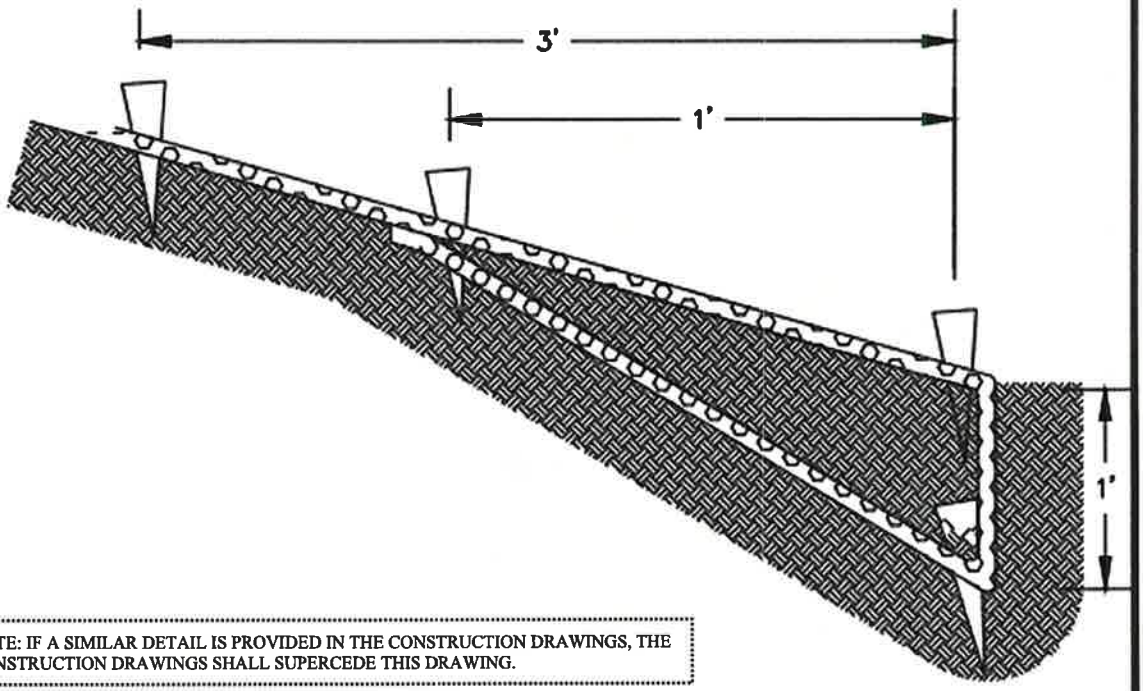
FIGURE 11-7
ANCHOR SLOT DETAILS FOR TRM

(OCTOBER 1, 2020)

UPSTREAM ANCHOR SLOT DETAIL



DOWNSTREAM ANCHOR SLOT DETAIL



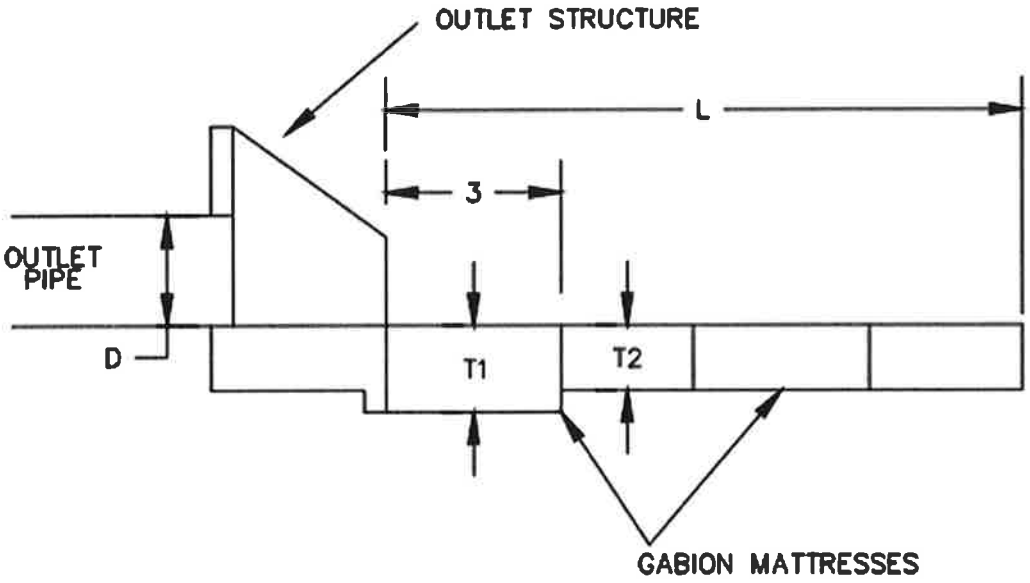
NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

STORMWATER MANUAL

FIGURE 11-8

CROSS SECTION AT
GABION MATTRESS OUTLET PROTECTION

(OCTOBER 1, 2020)



T1 = THICKNESS OF FIRST 3 FEET OF GABION MATTRESS TO MATCH DEPTH OF OUTLET STRUCTURE FOUNDATION

T2 = THICKNESS OF REMAINING GABION MATTRESS, 12 INCHES MINIMUM AND 18 INCHES MINIMUM FOR CALCULATED OUTLET VELOCITIES OF 10 TO 15 FEET PER SECOND.

FOR D < 36 INCHES, L = 12 FEET

FOR D > 36 INCHES, L = 4 x D FEET

D = HEIGHT OR WIDTH OF OUTLET, WHICHEVER IS GREATER

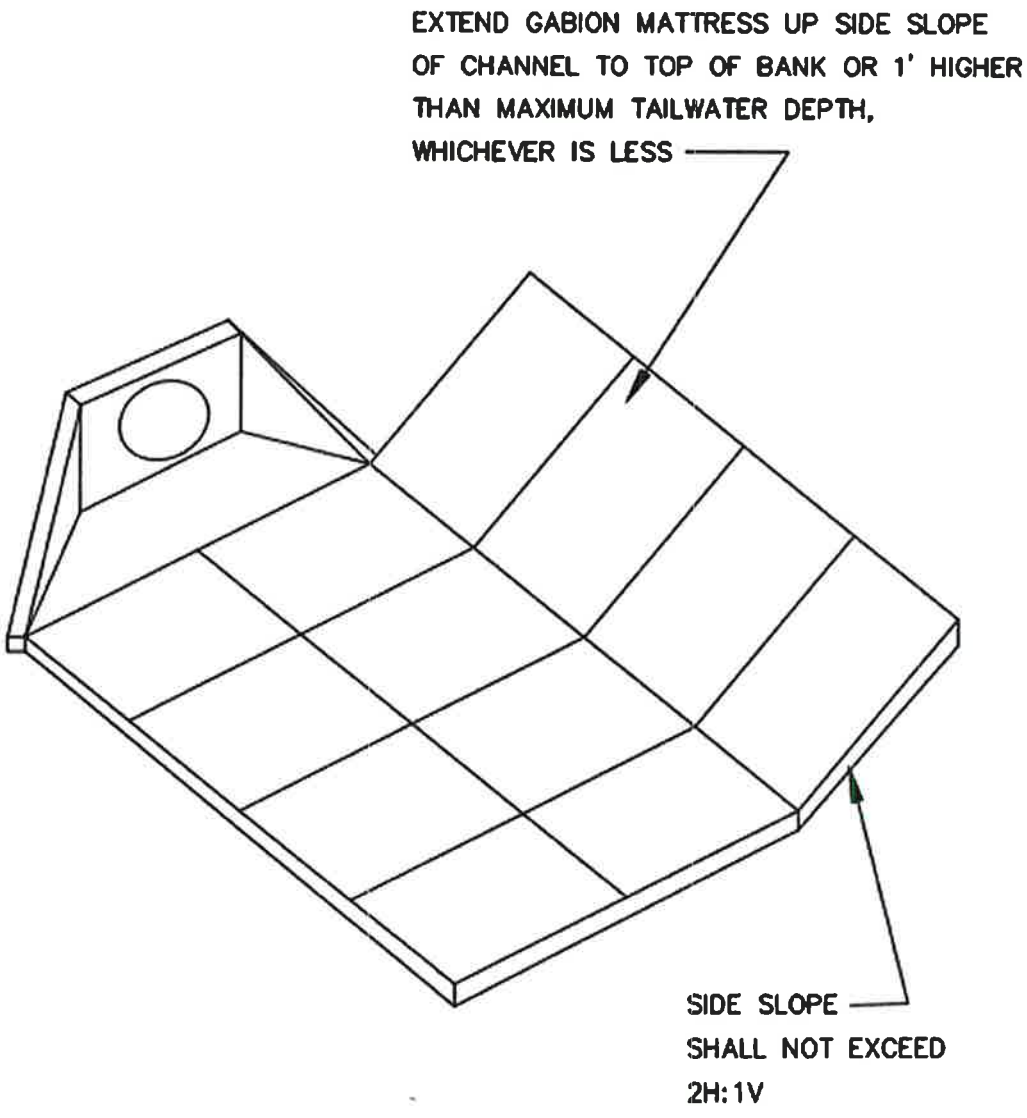
NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

STORMWATER MANUAL

FIGURE 11-9

GABION MATTRESS AT OUTLET INTO WELL-DEFINED CHANNEL

(OCTOBER 1, 2020)



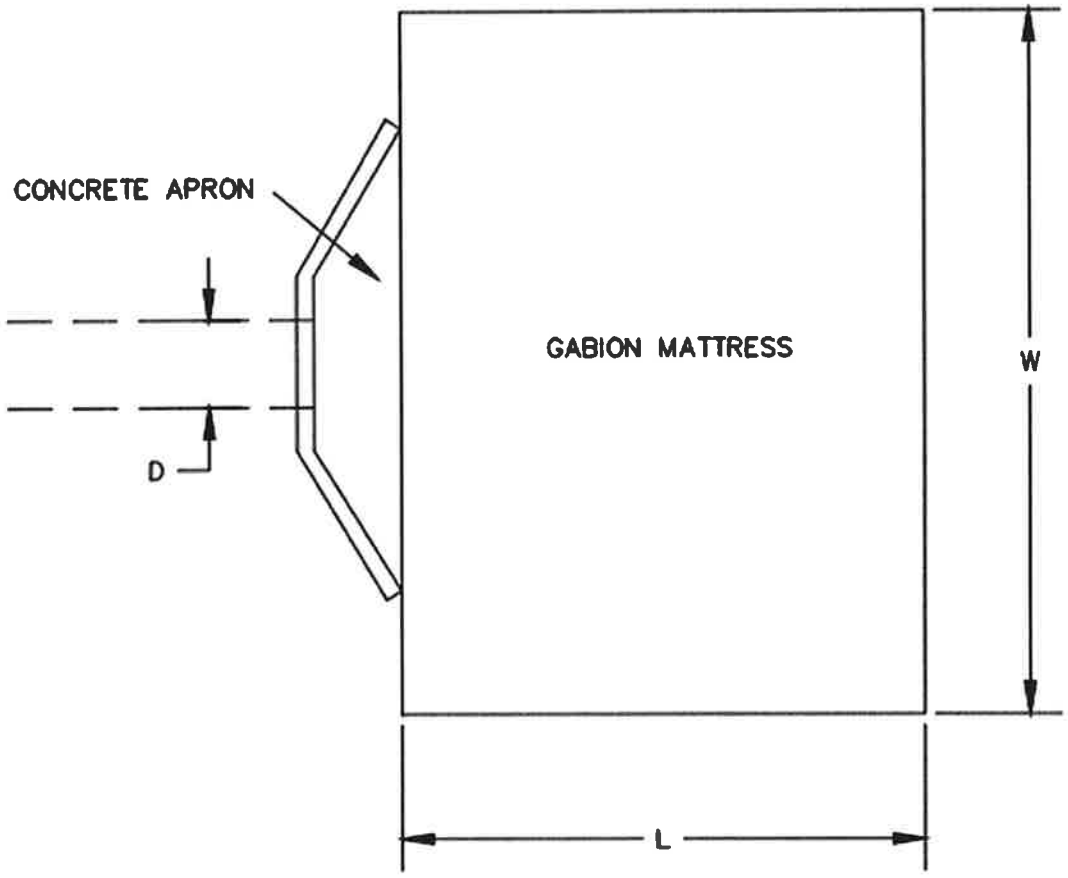
NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

STORMWATER MANUAL

FIGURE 11-10

PLAN VIEW OF GABION MATTRESS AT OUTLET INTO FLAT AREA

(OCTOBER 1, 2020)



D = HEIGHT OR WIDTH OF OUTLET, WHICHEVER IS GREATER

FOR D <= 36 INCHES:

L = 12 FEET MINIMUM

W = (18 + D) FEET MINIMUM

FOR D > 36 INCHES:

L = 4 x D FEET MINIMUM

W = (2 L + D) FEET MINIMUM

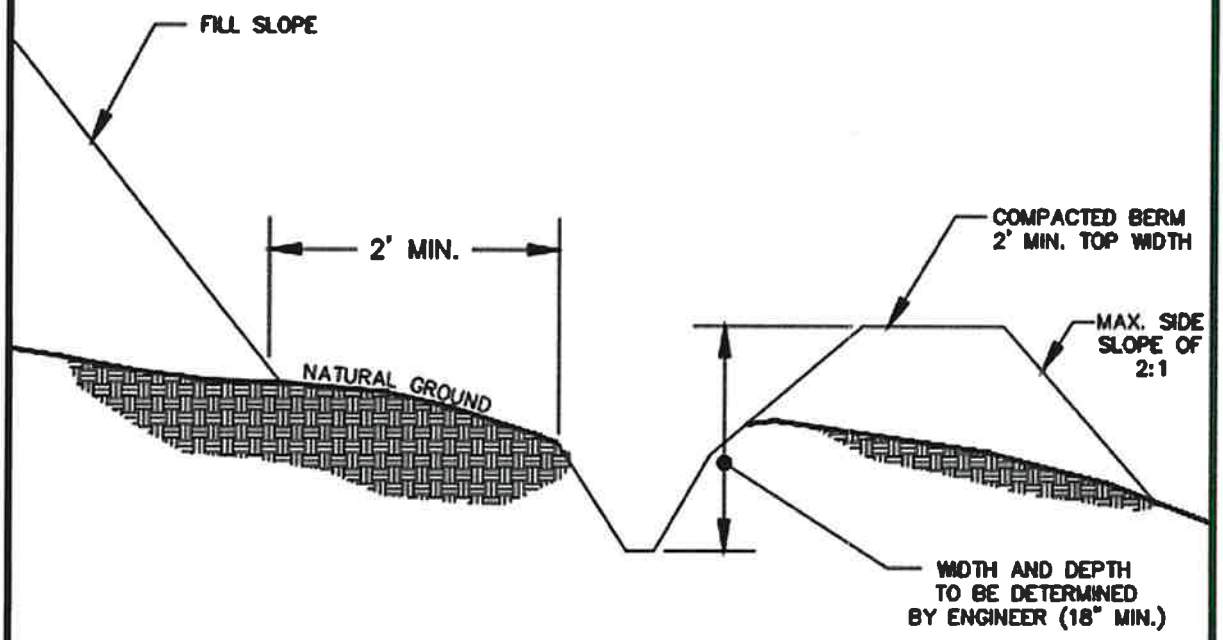
NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

STORMWATER MANUAL

FIGURE 11-12

TEMPORARY DIVERSION DITCH

(OCTOBER 1, 2020)



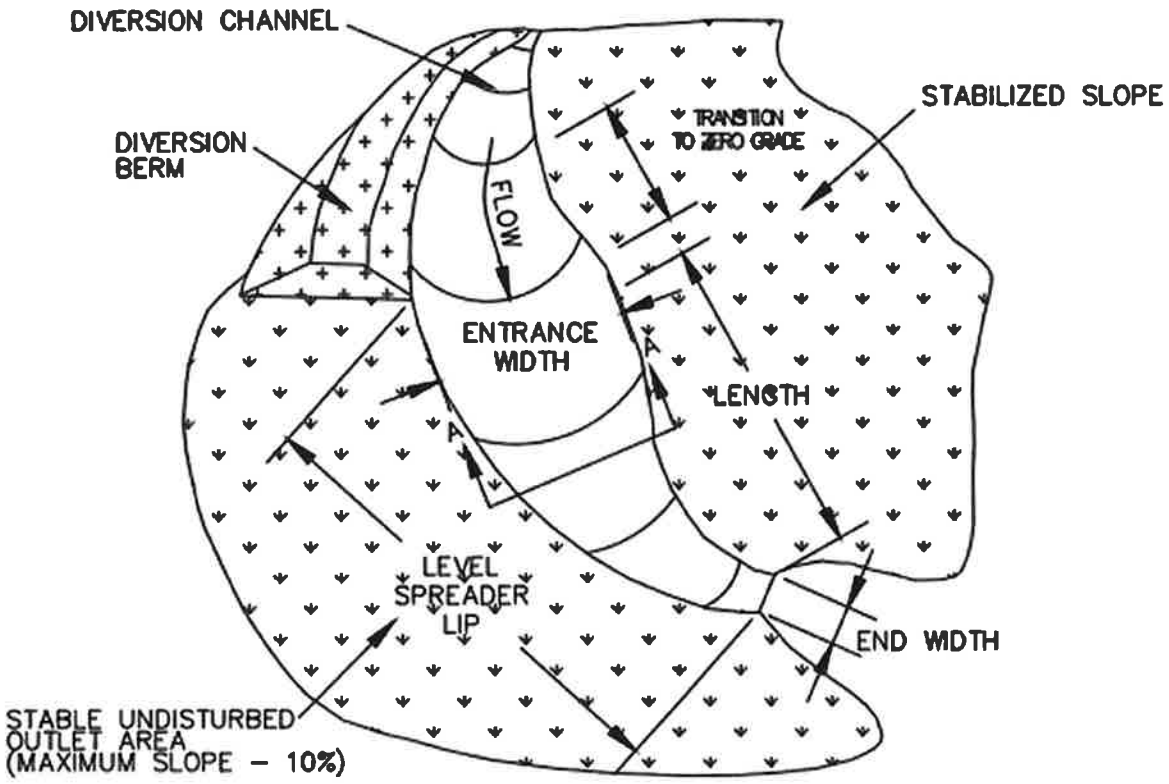
NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

STORMWATER MANUAL

FIGURE 11-13

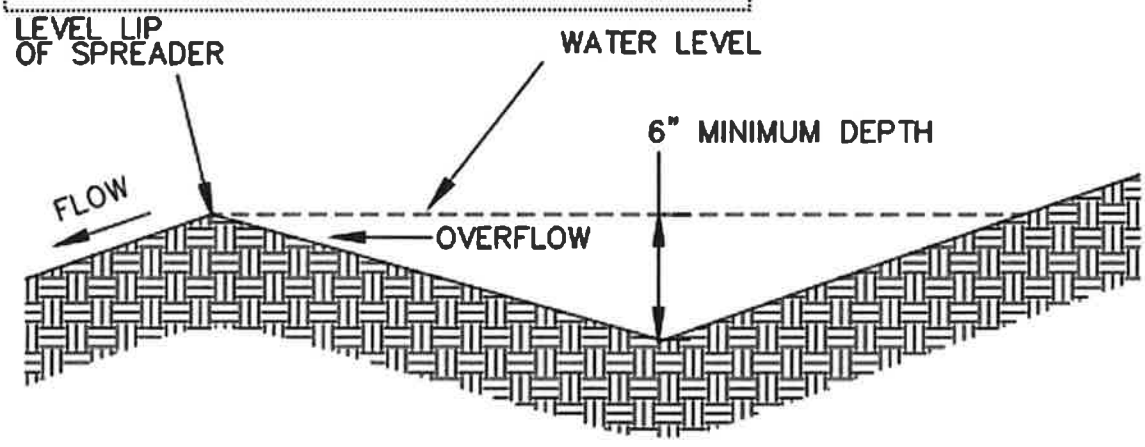
LEVEL SPREADER

(OCTOBER 1, 2020)



PERSPECTIVE

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



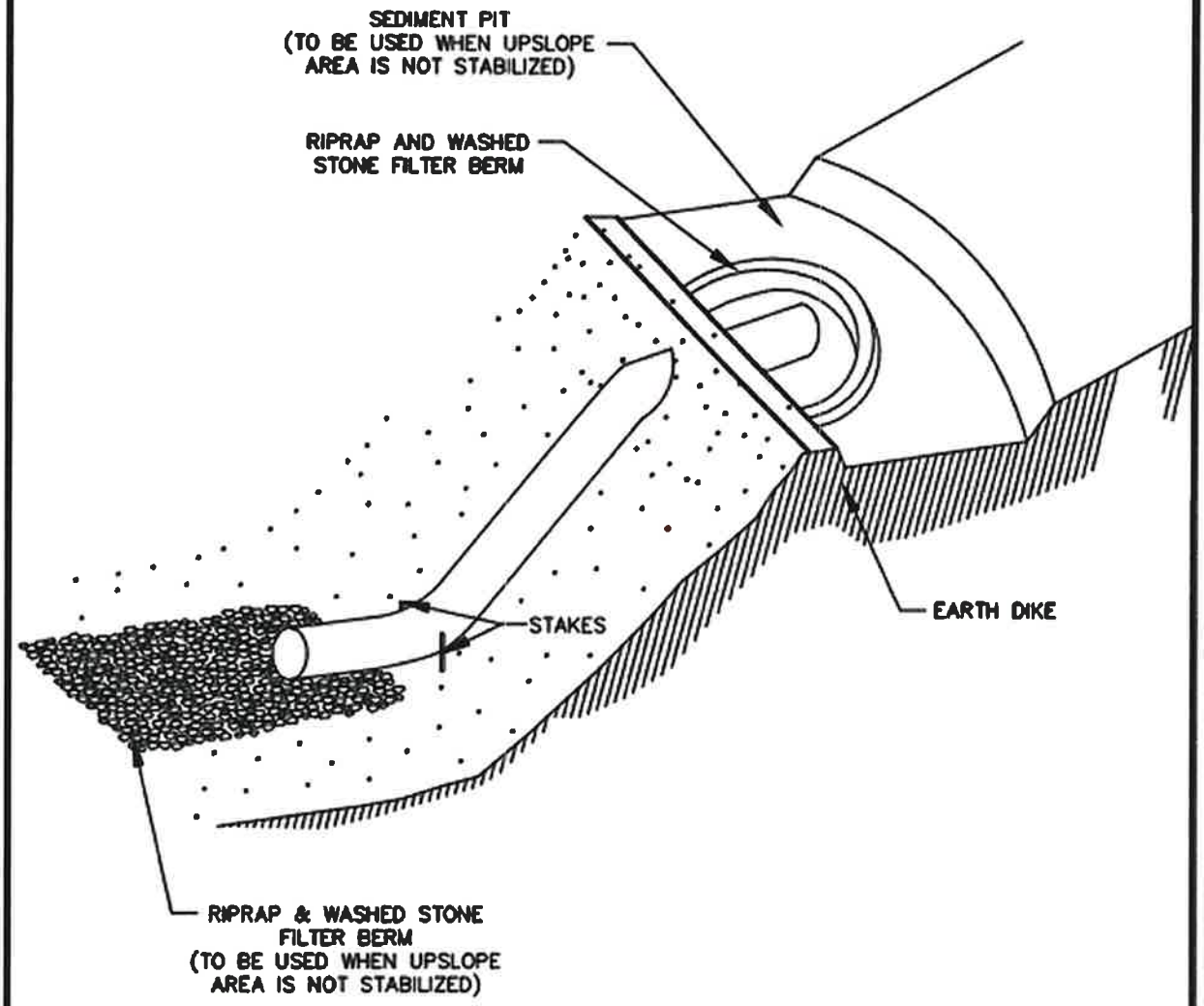
SECTION A–A

STORMWATER MANUAL

FIGURE 11-14

FLEXIBLE PIPE SLOPE DRAIN

(OCTOBER 1, 2020)



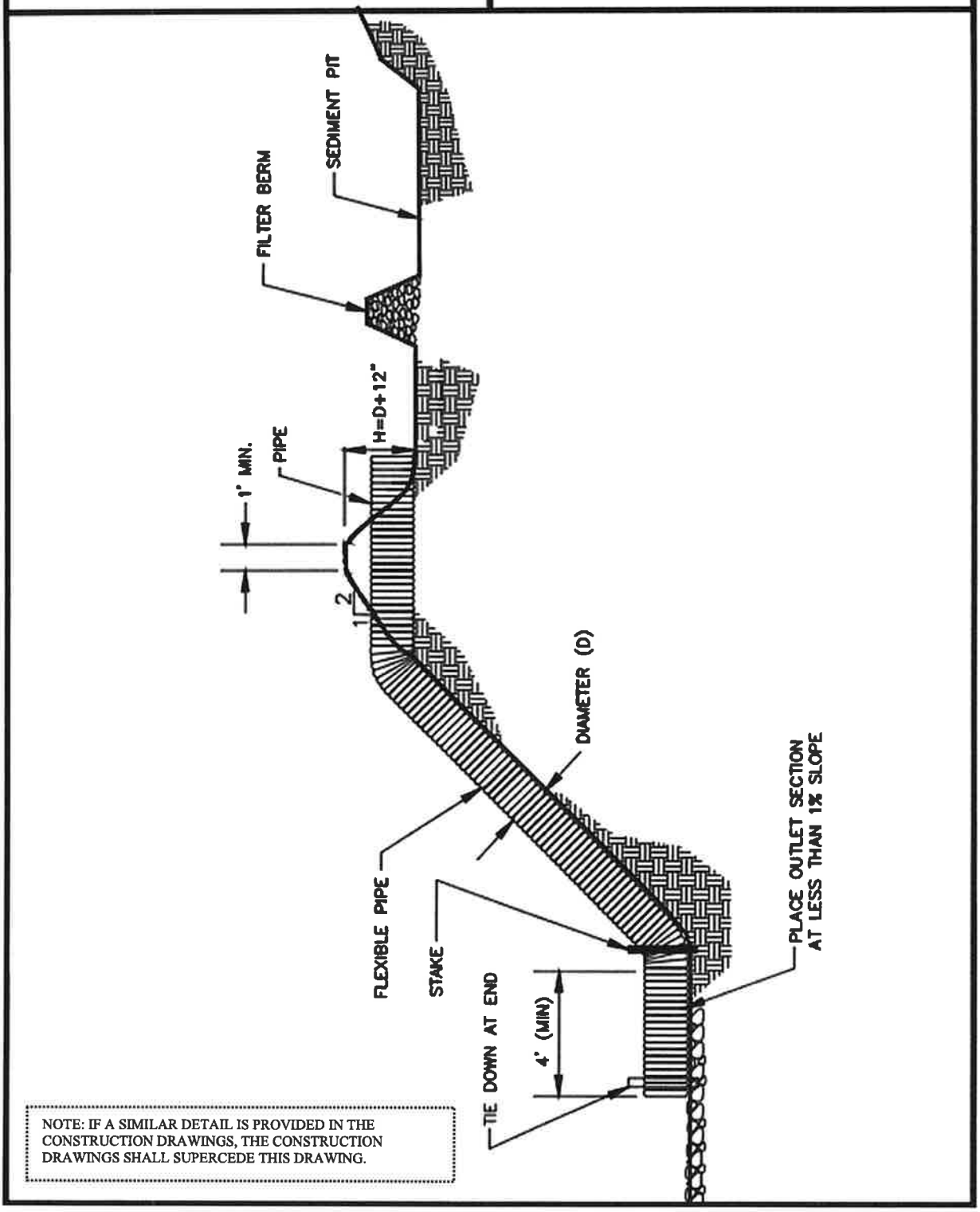
NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

STORMWATER MANUAL

FIGURE 11-15

SLOPE DRAIN – PROFILE

(OCTOBER 1, 2020)



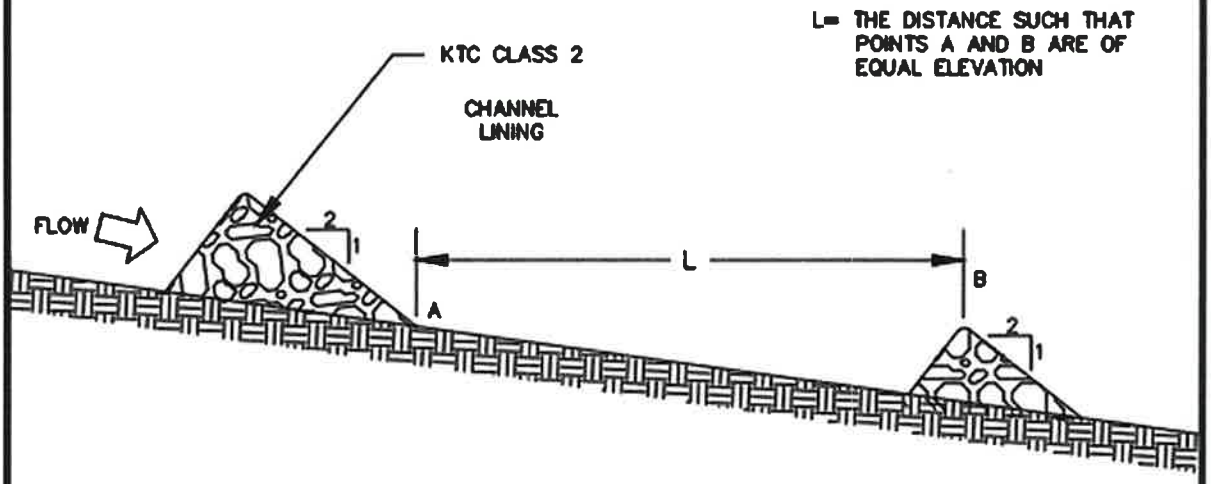
NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

STORMWATER MANUAL

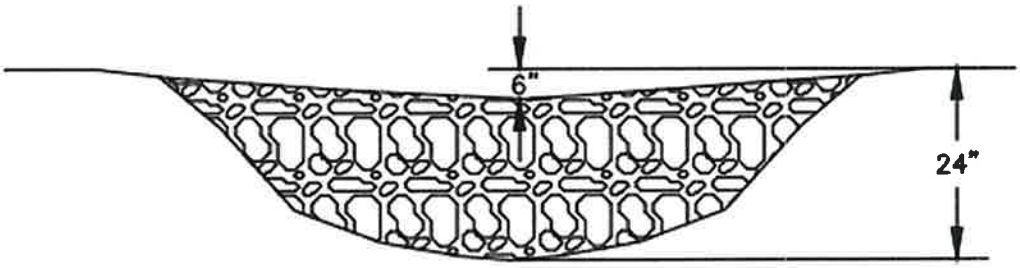
FIGURE 11-16

ROCK CHECK DAM

(OCTOBER 1, 2020)



LONGITUDINAL SECTION SHOWING SPACING BETWEEN CHECK DAMS



SECTION ACROSS CHANNEL

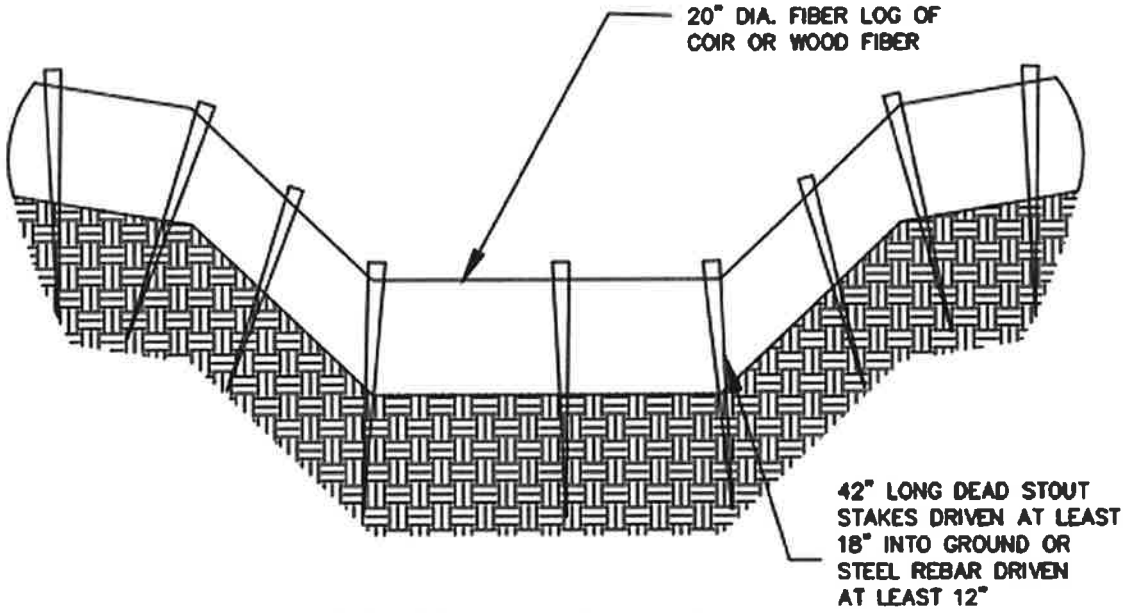
NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

STORMWATER MANUAL

FIGURE 11-17

FIBER LOG CHECK DAM

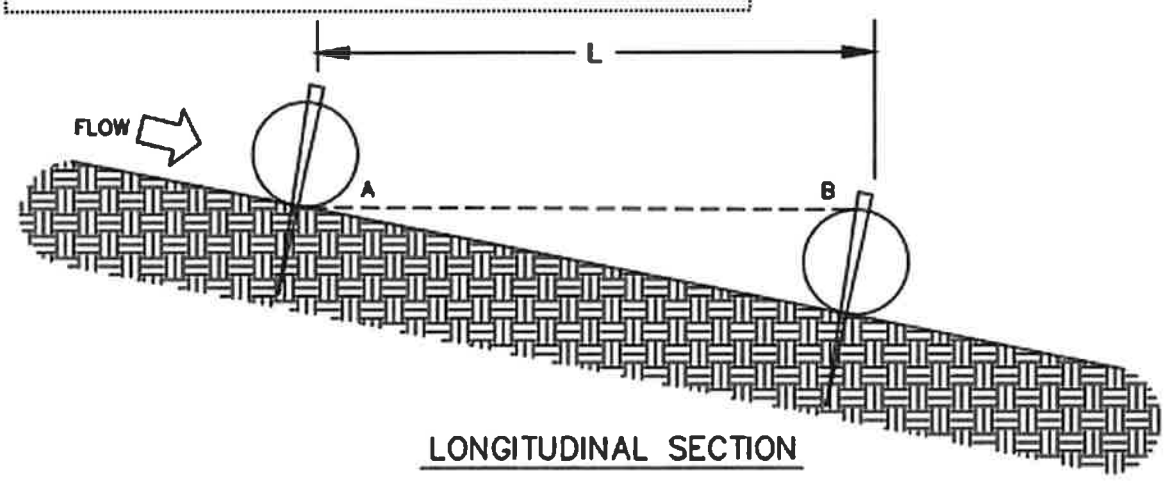
(OCTOBER 1, 2020)



SECTION ACROSS CHANNEL

STAKES SHALL BE SPACED NO FURTHER THAN 24" AND SHALL BE DRIVEN AT EACH SIGNIFICANT SLOPE BREAK AND WITHIN 6" OF EACH END.

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



LONGITUDINAL SECTION

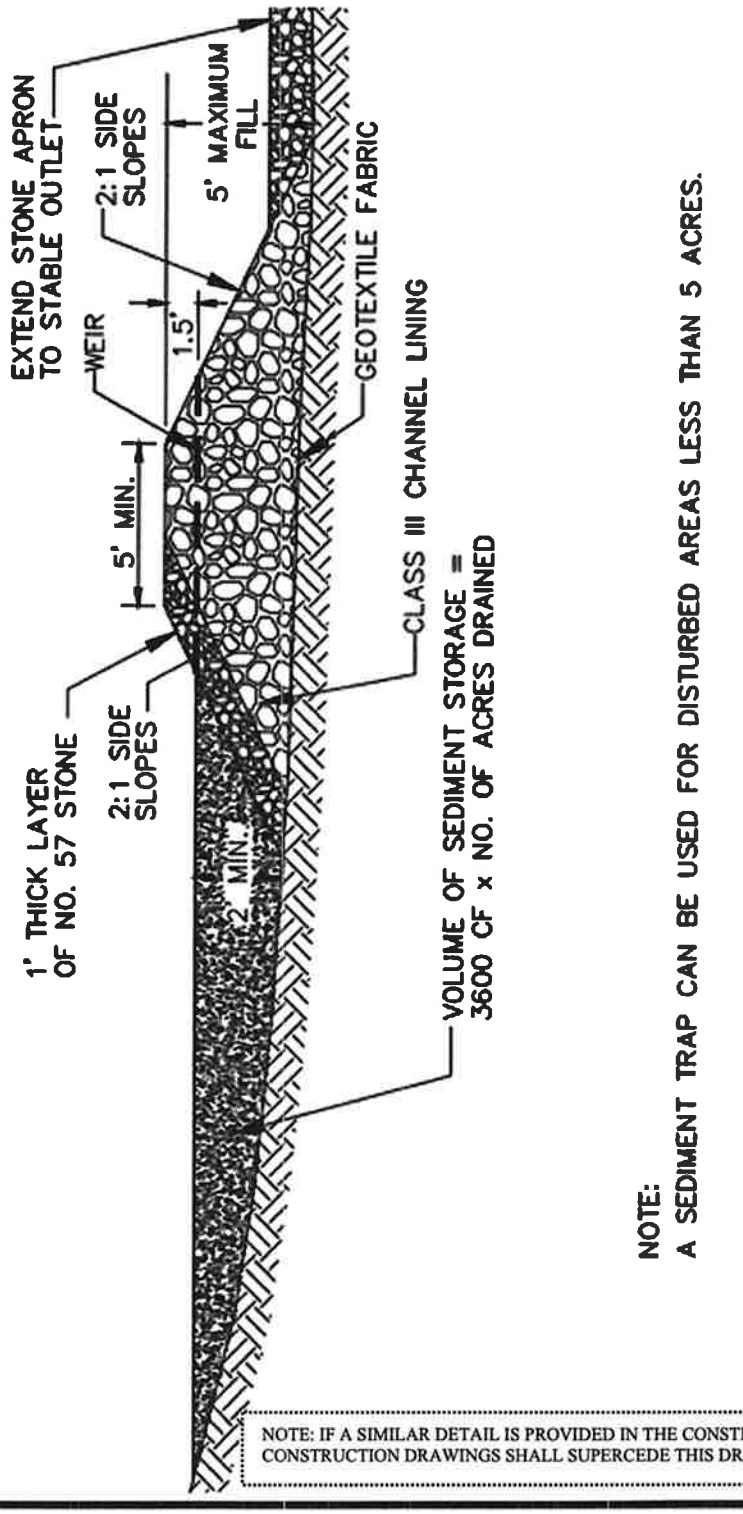
L = DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION

STORMWATER MANUAL

FIGURE 11-18

SEDIMENT TRAP

(OCTOBER 1, 2020)



NOTE:
A SEDIMENT TRAP CAN BE USED FOR DISTURBED AREAS LESS THAN 5 ACRES.

STONE SECTION

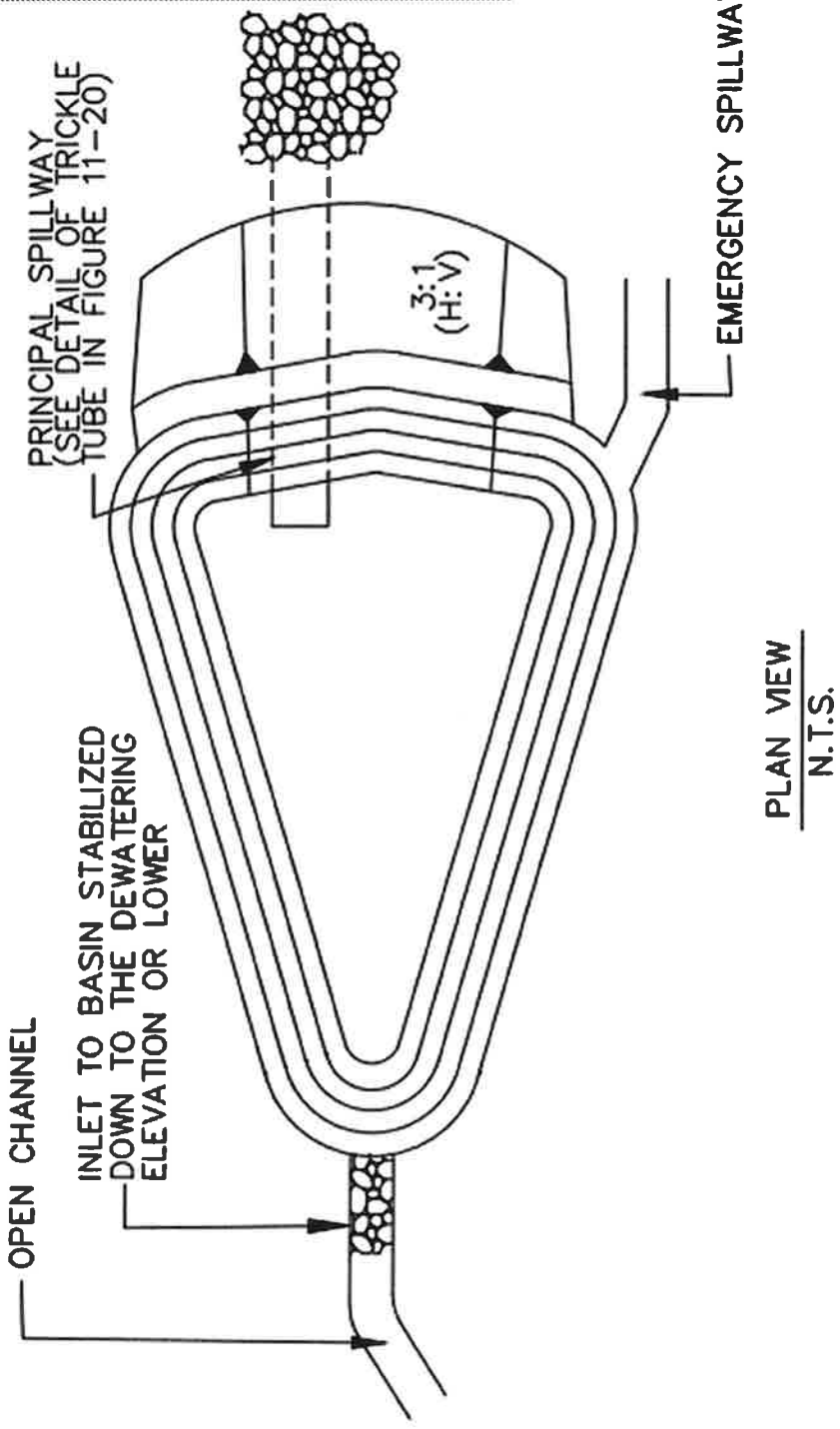
NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

STORMWATER MANUAL

FIGURE 11-19
SEDIMENT POND

(OCTOBER 1, 2020)

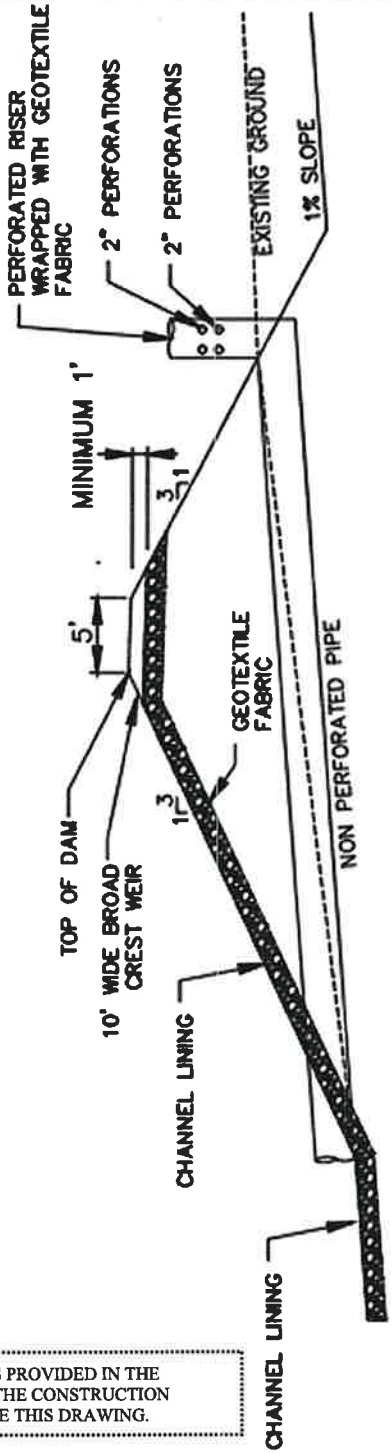
NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



PLAN VIEW
N.T.S.

STORMWATER MANUAL

FIGURE 11-20
TEMPORARY SEDIMENTATION BASIN
OUTLET STRUCTURE / SPILLWAY
DETAIL
(OCTOBER 1, 2020)



TEMPORARY SEDIMENTATION BASIN
OUTLET STRUCTURE / SPILLWAY
N.T.S.

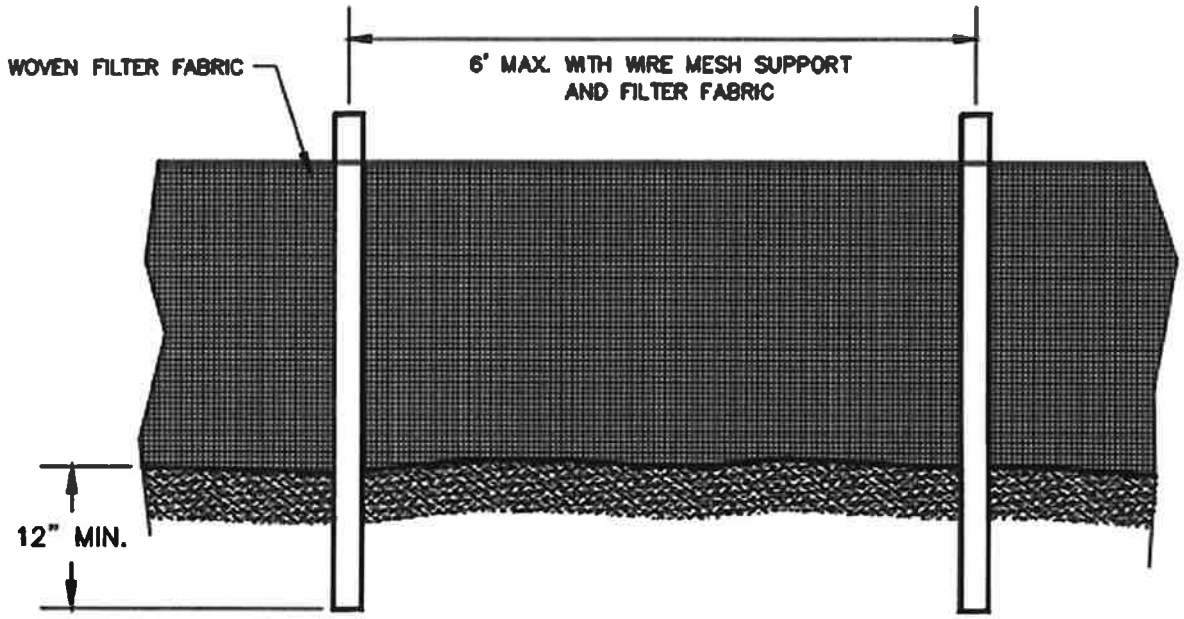
NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

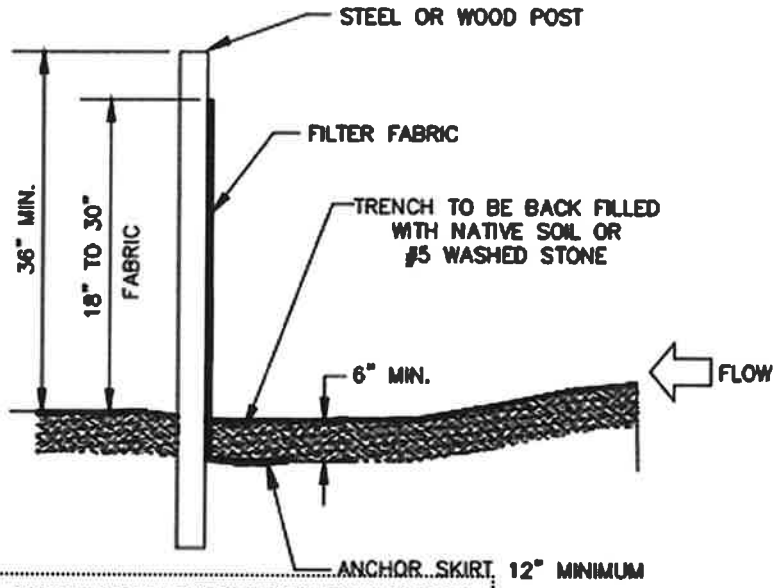
STORMWATER MANUAL

FIGURE 11-21

TEMPORARY SILT FENCE

(OCTOBER 1, 2020)





NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

STORMWATER MANUAL

FIGURE 11-22

TEMPORARY SILT FENCE GENERAL NOTES

(OCTOBER 1, 2020)

GENERAL NOTES

1. FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL AND CUT TO THE LENGTH OF THE BARRIER. WHEN JOINTS CANNOT BE AVOIDED, FILTER FABRIC SHALL BE SPLICED TOGETHER ONLY AT A POST WITH 3 FOOT MIN. OVERLAP, AND SECURELY SEALED.
2. POSTS SHALL BE SPACED AT 6 FOOT INTERVALS IN AREAS OF RAPID RUNOFF.
3. POSTS SHALL BE AT LEAST 5 FEET IN LENGTH.
4. STEEL POSTS SHALL HAVE PROJECTIONS FOR FASTENING WIRE AND FABRIC.
5. WOOD POSTS SHALL BE 2 INCHES BY 2 INCHES OR EQUIVALENT. STEEL POSTS SHALL BE 1.33 LBS PER LINEAR FOOT.
6. A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH IN LENGTH, WIRE TIES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 2 INCHES AND SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
7. WASHED STONE SHALL BE USED TO BURY SKIRT WHEN SILT FENCE IS USED ADJACENT TO A CHANNEL, CREEK, OR POND.
8. TURN SILT FENCE UP SLOPE AT ENDS.

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

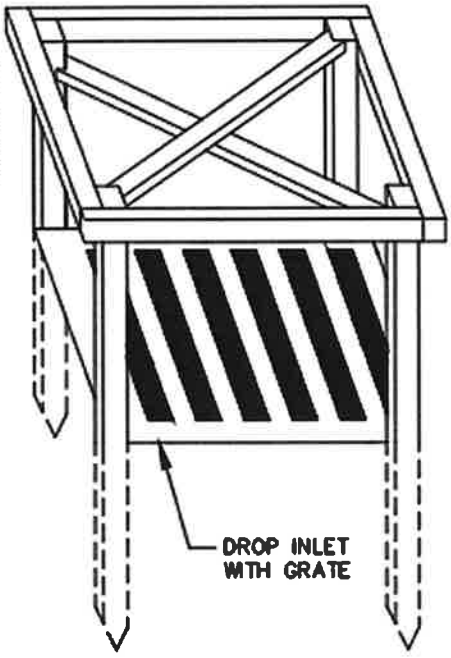
STORMWATER MANUAL

FIGURE 11-23

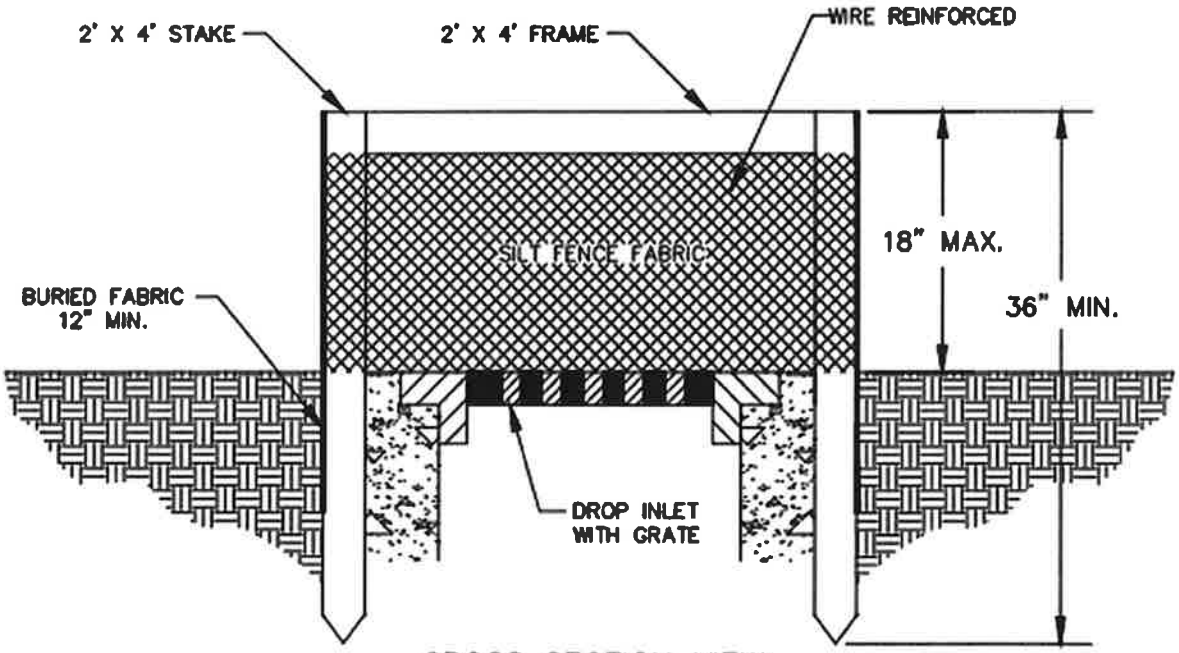
DROP INLET PROTECTION
USING SILT FENCE

(OCTOBER 1, 2020)

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.



ISOMETRIC VIEW OF
2 X 4 WOOD FRAME



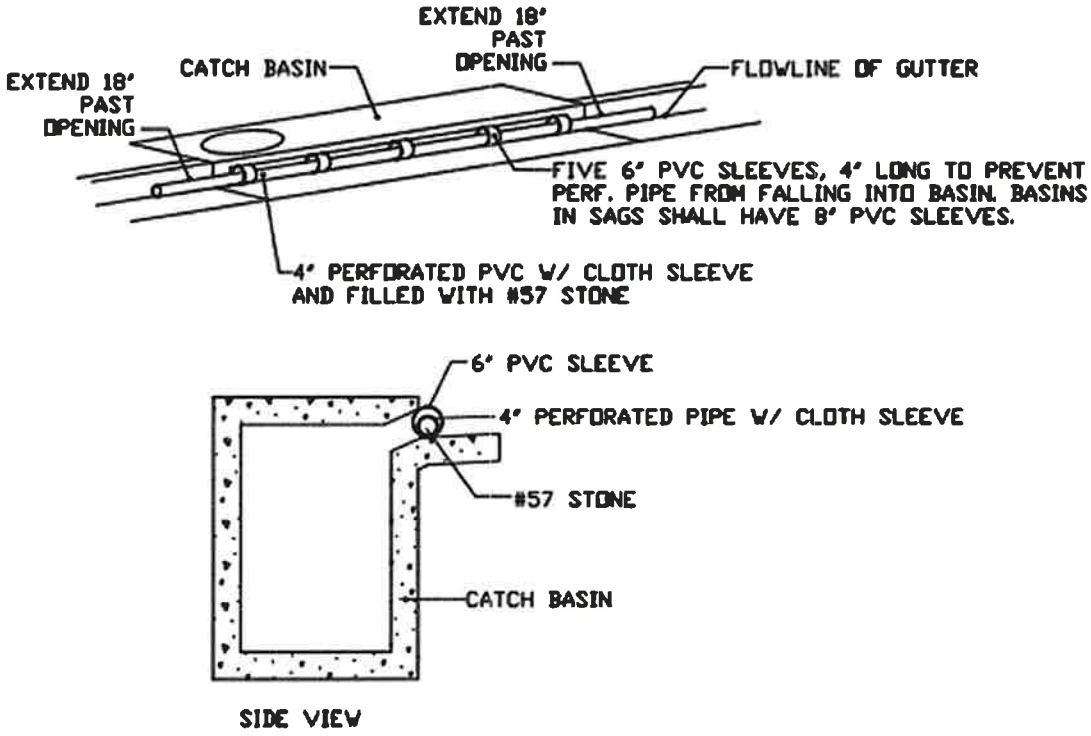
CROSS SECTION VIEW

STORMWATER MANUAL

FIGURE 11-24

CATCH BASIN INLET PROTECTION DETAIL

(OCTOBER 1, 2020)



CATCH BASIN INLET PROTECTION DETAIL

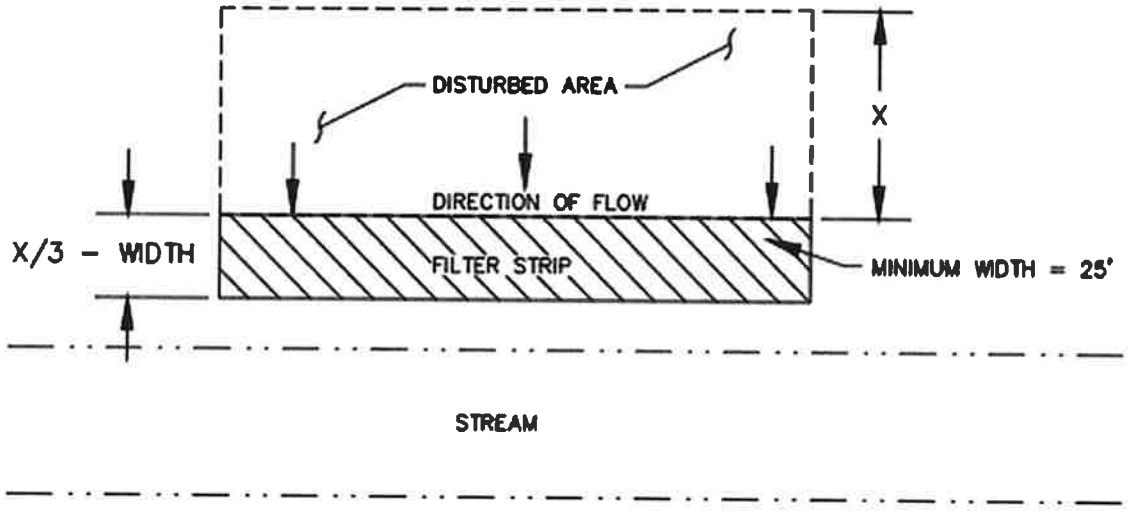
N.T.S.

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

STORMWATER MANUAL

FIGURE 11-25
FILTER STRIPS

(OCTOBER 1, 2020)

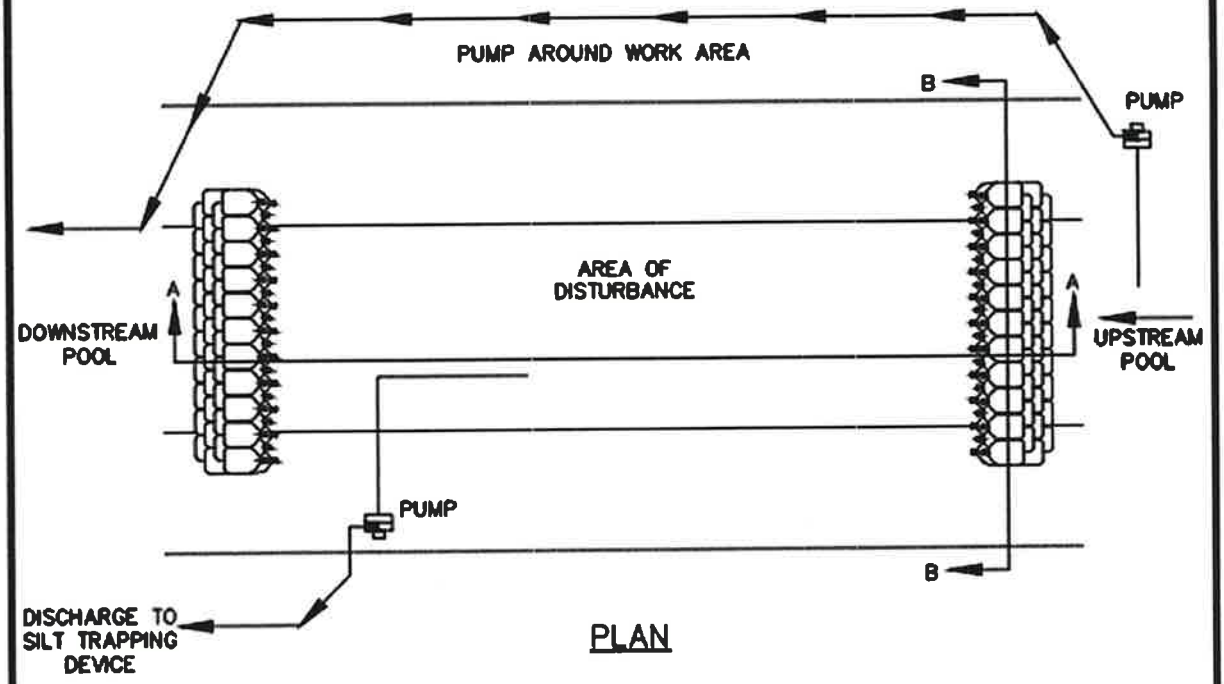


NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

STORMWATER MANUAL

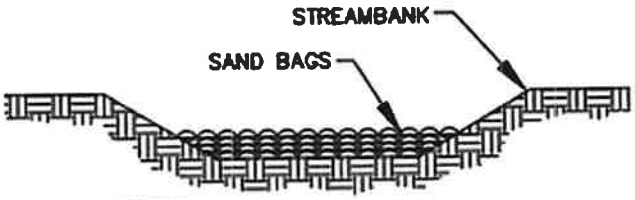
FIGURE 11-26
PUMP-AROUND FLOW DIVERSION

(OCTOBER 1, 2020)



PLAN

SECTION A-A



SECTION B-B

NOTE: IF A SIMILAR DETAIL IS PROVIDED IN THE CONSTRUCTION DRAWINGS, THE CONSTRUCTION DRAWINGS SHALL SUPERCEDE THIS DRAWING.

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SECTION 02374 – ESC PERMITTING, INSPECTION, AND PERMITTING PROCEDURES

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Permitting, Inspection, and Enforcement Procedures for Erosion and Sediment Control on Capital Projects

Division of Water Quality

Lexington-Fayette
Urban County Government

October 2025

Permitting, Inspection, and Enforcement Procedures for Erosion and Sediment Control on Capital Projects

Division of Water Quality

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This publication was developed by the Tetra Tech / Third Rock Consultants Stormwater Program Management Team under contract to LFUCG for purposes of implementing its Kentucky Division of Water (KDOW) Municipal Separate Storm Sewer System (MS4) Permit.

Permitting, Inspection, and Enforcement Procedures for Erosion, Sediment, and Stormwater Control on Division of Water Quality Capital Construction Projects

DWQ Remedial Measures Plan Projects
DWQ RMP Program Manager: Bob Peterson
DWQ Program Management Consultant: Hazen and Sawyer
Construction Contract Administrators (CA): DWQ Consultants
Resident Project Representative (RPR): DWQ Consultants
ESC Plan Reviewer: DWQ Stormwater Section – Amad Al-Humadi
Land Disturbance Permit (LDP) Issuer: DOE New Development
LFUCG Erosion and Sediment Control Compliance Inspector: RPR
Accela Data Entry: DWQ Compliance & Monitoring (C&M) – Kevin Lyne
Land Disturbance Permit (LDP) Permittee: Contractor

DWQ Wastewater Treatment Plant Capital Projects
DWQ Plant Engineer: Tiffany Rank
DWQ Project Manager: Varies
Construction Contract Administrators (CA): Rick Day, Rick Bowman
Resident Project Representatives (RPR): DWQ Consultant or DWQ Construction Management (Rick Day, Bill Warren, Phoebe Belew)
ESC Plan Reviewer: DWQ Stormwater Section – Amad Al-Humadi
Land Disturbance Permit (LDP) Issuer: DOE New Development
LFUCG Erosion and Sediment Control Compliance Inspector: RPR
Accela Data Entry: DWQ Construction Management – Brenda Whittington
Land Disturbance Permit (LDP) Permittee: Contractor

DWQ Stormwater and Sanitary Sewer Projects:
DWQ Section Managers: Mark Sanders, Chris Dent, Tiffany Rank, Bailee Young
Construction Contract Administrator (CA): Rick Day
Resident Project Representatives (RPR): DWQ Construction Management (Rick Day, Bill Warren, Phoebe Belew)
ESC Plan Reviewer: DWQ Stormwater Section – Rick Day or Amad Al-Humadi
Land Disturbance Permit (LDP) Issuer: DOE New Development
LFUCG Erosion and Sediment Control Compliance Inspector: RPR
Accela Data Entry: DWQ Construction Management – Brenda Whittington
Land Disturbance Permit (LDP) Permittee: Contractor

Permitting Procedures

1. Contractor shall develop a Stormwater Pollution Prevention Plan/Erosion and Sediment Control Plan (SWPPP/ESC Plan). A SWPPP/ESC Plan template is on the LFUCG website at https://www.lexingtonky.gov/new-development. On some projects, the construction contract documents may contain a SWPPP/ESC Plan prepared by LFUCG's consultant for purposes of establishing bid quantities. If the Contractor chooses to use this SWPPP/ESC Plan to obtain the required permits, the Contractor takes sole responsibility for the content of the SWPPP/ESC Plan and the implementation of the plan during construction.
2. Contractor must submit an application for a Land Disturbance Permit to the LFUCG Division of Engineering before beginning project construction. The permit application is available at https://aca3.accela.com/lexky/.
3. For projects with a disturbed area of ≥ 1 acre, the contractor must submit a Notice of Intent (NOI) to the KY Division of Water (KDOW) and obtain KYR10 Permit coverage before beginning construction of any kind on the site. The NOI can be submitted electronically at https://eec.ky.gov/Environmental-Protection/Water/PermitCert/KPDES/Documents/KYR10PermitPage.pdf.
4. Contractor cannot start project work until they have obtained the LFUCG Land Disturbance Permit and KYR10 Permit coverage (if applicable – see above).
5. DWQ will review the SWPPP/ESC Plan, confirm that the Contractor has obtained KYR10 Permit coverage (if applicable – see above), and authorize the Contractor to install the initial BMPs.
6. Contractor then installs the initial BMPs, prior to project work (general excavation, grading, etc.).
7. DWQ inspects the installation of the initial BMPs and authorizes DOE New Development to issue the Land Disturbance Permit. Contractor then begins the project.

Contractor Responsibilities

Contractor shall:

1. Develop a SWPPP/ESC Plan, or review and agree to use the SWPPP/ESC Plan prepared by LFUCG's consultant, or amend it as needed.

2. Attend a pre-construction conference with LFUCG.

3. Post the LFUCG Land Disturbance Permit and KYR10 Permit (if applicable) on the project sign at the site, and keep a copy of the SWPPP/ESC Plan on site and available for review.

4. Follow the SWPPP/ESC Plan; revise and redline it as conditions change on the site.

5. Install and maintain BMPs to prevent sediment from washing into streets, storm sewers, and streams. All runoff from disturbed areas must pass through a BMP before leaving the site.

6. Maintain a 50-foot vegetative buffer strip along perennial and intermittent streams (including impounded streams), wetlands, sinkholes, and inlets.

7. If work must be done within 50 feet of a perennial or intermittent stream, wetland, sinkhole, or inlet, complete work as soon as possible and stabilize the area within 24 hours after completing work.

8. Conduct an ESC inspection at least once every 7 calendar days and within 24 hours after each rainfall of 0.5 inches or greater (or 4 inches of snow or greater).

9. Complete and sign the inspection form after each inspection. Keep the completed inspection forms on site and available for review. Keep a backup record of inspection forms (photos or scans).

10. Stabilize inactive portions of the site with straw, blanket, seed, or other cover within 14 days of no activity, and provide permanent stabilization within 14 days of reaching final grade.

11. If the project has a KYR10 Permit, file a Notice of Termination with the KY Division of Water and forward to the LFUCG Division of Engineering and LFUCG Division of Water Quality when construction has been completed and the site is stabilized. Final stabilization is defined as follows from KYR10: "All soil disturbing activities at the site have been completed and either of the two following criteria are met – a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70 percent of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or equivalent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed."

12. Respond promptly to Verbal Warnings and Notices of Violation from LFUCG regarding correcting ESC problems.

Inspection Procedures for the Resident Project Representative

Weekly Field Inspections

1. Inspect the site each week and the next working day after a storm event of 0.5 inches or greater
2. Ensure the LFUCG Land Disturbance Permit and KYR10 Permit are posted at the site
3. Ensure SWPPP/ESC Plan is available for review
4. Ensure that the weekly and rain event completed inspection forms are available for review
5. Walk the perimeter of the entire site
6. Note downgradient controls:
    - Inspect ditches and sheet flow areas
    - Silt fences working?
    - Ditches vegetated / stabilized?
    - Significant sediment discharges?
7. Walk around internal disturbed areas
    - Idle for more than 14 days . . . stabilized?
8. Inspect all inlets and ditches
    - Inlets protected, ditches stabilized?
9. Check out material / fuel storage areas
    - Spills? Leaks? Leaching pollutants? Litter / waste managed?
10. Inspect concrete washout(s)
11. Inspect the construction entrance / exit
12. Inspect the 50-foot vegetative buffer strip adjacent to waterways. The buffer strip must be stabilized within 24 hours of any approved construction activity in the buffer strip.
13. Communicate inspection findings to Contractor, note issues that need attention
14. Complete the LFUCG inspection checklist
15. Submit an electronic copy of the completed checklist to the Project Manager and the Accela Data Entry Contact person on page 1 **the week of the inspection.**

Important Items for the Permittee / Contractor / RPR to Verify:

- Posted permits, plans, and inspection reports
- Graded / inactive areas stabilized with seed, mulch, blankets, mats, etc.
- Stabilized, non-eroding ditches
- Maintained silt fences and protected curb / drop inlets
- No mud on the street
- Trash and litter managed
- No disturbance in the 50-foot buffer zone adjacent to streams, wetlands, sinkholes, and inlets, unless approved; areas within the 50-foot buffer must be stabilized within 24 hours

Enforcement Procedures

1. The Contractor will be paid for erosion and sediment control based upon a schedule of values established within the Measurement and Payment section of the specifications (e.g., 25% paid once initial ESCs have been installed and LDP obtained, 50% paid in equal monthly payments for maintenance over the construction period, 25% paid for removal of ESCs and final stabilization). The intent of this provision is to pay the Contractor for ESC maintenance for each month that the BMPs are maintained and functioning properly.
2. The RPR shall follow the attached ***Compliance Assistance Guidance for DWQ Capital Project RPRs*** and implement the **Escalating Enforcement Process** described below.

Table 1 – ESC Escalating Enforcement Process

DWQ Capital Project	Escalating Enforcement Process
Remedial Measures Program	The RPR shall escalate the issue to the RMP Program Manager and RMP Program Management Consultant's Project Manager
Wastewater Treatment Plants Stormwater Section MS4/Water Quality Section Sanitary Sewers Capacity Assurance Program	The RPR shall escalate the issue to the DWQ Section Manager and the DWQ Construction Contract Administrator

3. DWQ will use all available means in the contract to obtain compliance, including:
   a. withholding payment
   b. notifying the Contractor that LFUCG intends to initiate the process for declaring that the Contractor is in default of the contract and specifying a deadline for addressing the ESC deficiencies
   c. initiating the process for calling the ESC Performance Bond
   d. issuing Notices of Violation (NOVs)
   e. stopping work

Compliance Assistance Guidance for DWQ Capital Project RPRs

Observed Condition	Verbal Warning to Correct within 3-5 days (See Note 1)	Verbal Warning to Correct within 24 hours (See Note 1)	Escalate the Issue Immediately in Accordance with Table 1
Construction Entrance to Public Road	Rock pad poorly installed/maintained	Rock pad not installed	
	Small amount of sediment on road	Rock pad completely covered with soil	
		Significant amount of sediment on road	
Unstabilized Areas	Flat inactive disturbed areas not stabilized in 14 days	Ditches not stabilized immediately after construction	
		Disturbed, inactive slopes not stabilized within 14 days	Disturbed, inactive slopes above waterways, wetlands, floodplains, critical areas[2] not stabilized within 24 hours
Inlet Protection	Sediment needs to be removed around inlet protection	Curb inlet protection not in place or improperly installed	Discharge of concrete wash water, chemicals, other pollutants into inlets, streams, wetlands, etc.
Silt Fencing	Does not match SWPPP/ESC Plan but critical areas[2] and roads are protected	Silt fence not installed per plan and critical areas[2] and roads are not protected	
	Does not comply with Stormwater Manual but is functional	Blowouts have occurred with discharge of sediment to critical areas[2]	Large quantities of sediment in critical areas[2]
	Needs maintenance/repair, but is not near an inlet or surface water	Not trenched in, is not functional	
		Silt fence needs repairs in critical areas[2]	
Soil Stockpiles	No perimeter controls, downstream BMPs in place	No perimeter controls, downstream BMPs not in place	
Permit Violations		Permit expired	Site not permitted (No LDP or KDOW NOI)
		Permit not posted or available on site	
		Contact name/phone not posted	
		No self-inspection reports; reports not on site	
		Self-inspection reports not current	
		SWPPP/ESC Plan not on site	
			Unapproved construction activities in 50-foot buffer zone around sinkholes, streams, wetlands, etc.
			Construction has started, BMPs not installed

1. Escalate the issue in accordance with Table 1 after the 2nd Verbal Warning.
2. Critical areas are areas within 25 feet of a stream, wetland, sinkhole, or inlet.

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SECTION 02505 – NON-POTABLE WATER PIPING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Provide all labor, materials, equipment and services required for furnishing and installing all water piping and appurtenances as specified and shown on Drawings.

PART 2 - PRODUCTS

2.01 DUCTILE IRON PIPE AND FITTINGS

A. Ductile iron pipe shall be furnished cement lined unless otherwise noted on the drawings or in other sections of these specifications. Ductile iron pipe shall be furnished with rubber gasket push-on joints except as may otherwise be noted on the drawings or in difficult working areas upon approval of the Engineer.

B. Pressure class shall be 350 psi for pipe sizes 20 inches or smaller and pressure class 250 psi for pipe sizes larger than 20 inches for mechanical and push-on joint pipe.

C. Thickness design of ductile iron shall conform in all aspects to the requirements of ANSI/AWWA C150/A 21.50 latest revision.

D. Manufacture and testing of ductile iron pipe shall conform in all aspects to the requirements of ANSI/AWWA C151/A 21.51 latest revisions.

E. Cement mortar lining with bituminous seal coat shall conform to the requirements of ANSI/AWWA C104/A 21.4, latest revision for cement-mortar lining for ductile iron pipe, gray iron pipe, and fittings for water. Bituminous outside coating shall be in accordance with ANSI/AWWA C151/A 21.51 for pipe and ANSI/AWWA C110/A 21.10 for fittings.

F. Fittings and gaskets for mechanical and push-on joint ductile and cast iron pipe shall conform to the latest revisions of ANSI/AWWA C110/A 21.10 for mechanical and push-on joint fittings, ANSI/AWWA C111/A 21.11 for gaskets, and ANSI/AWWA C153/A 21.53 for mechanical and push-on joint compact fittings. Mechanical and push-on joint fittings shall have pressure class rating of 350 psi for sizes 20 inches and smaller and 250 psi for sizes larger than 20 inches.

G. All ductile and cast iron fittings shall be ductile iron grade 80-60-03 in accordance with ASTM A339-55.

H. Flanged ductile iron pipe shall conform to the latest revisions of ANSI/AWWA C115/A 21.15. Bolt pattern of flange shall be in accordance with ANSI/AWWA C115/A 21.15 (which is equivalent to ASME/ANSI B16.1, Class 125 flange bolt pattern). Pipe shall have pressure class 250 rating. Gaskets shall be synthetic rubber ring gaskets with a thickness of 1/8 inch. Nuts and bolts shall be in accordance with ASME/ANSI B18.2.1, ASME/ANSI B18.2.2, ASME/ANSI B1.1, and ASTM A307.

I. Flanged fittings shall conform to the latest revisions of ANSI/AWWA C110/A 21.10 or ANSI/AWWA C153/A 21.53 (compact fittings). Gaskets shall be in accordance with ANSI/AWWA C111/A 21.11. Fittings shall have pressure class rating of 250 psi. Bolt pattern of flange shall be in accordance with ANSI/AWWA C115/A 21.15 (which is equivalent to ASME/ANSI B16.1, class 125 flange bolt pattern).

J. Restrained joint pipe and fittings using restraining gaskets shall be a boltless system equal to "Field-Lok" restraining gaskets as manufactured by U.S. Pipe & Foundry Company or approved equal.

K. Restrained joint pipe and fittings using a locking ring system shall be American Flex-Ring, U.S. Pipe TRFLEX, or Clow Clow Tyton/Fastite shop or field systems.

L. Restrained joint pipe and fittings using a grip ring system shall be equal to Romac Grip Rings or Mega Lugs.

M. Mechanical joint ductile iron anchor pipe shall be included with fire hydrant setting as noted on Drawings. Anchor pipe shall be Clow Corporation F1211 mechanical joint, Tyler swivel by solid adapter 5-198 mechanical joint, or approved equal.

N. Ball and socket restrained joint pipe and fittings shall be a boltless system equal to USIFLEX manufactured by U.S. Pipe & Foundry Company or FLEX-LOK manufactured by American Pipe Company. Pipe shall have a working pressure rating of 250 psi and have a maximum joint deflection of 15°. Nominal laying lengths shall be in range of 18 feet 6 inches to 20 feet 6 inches.

O. Manufacturers: Pipe shall be as manufactured by U.S. Pipe & Foundry Company, Clow, American Cast Iron Pipe Company, or equal.

P. Marking: Pipe or fitting shall have the ANSI/AWWA standard, pressure (or thickness) class, diameter, DI or ductile noted, manufacturer, and country and year where cast on the outside of the body.

2.02 CONNECTION OF NEW UTILITIES TO EXISTING SYSTEM

A. The Contractor shall connect the new utilities to the existing system where shown on the Drawings or directed by the Engineer, and shall furnish all necessary equipment and materials required to complete the connection.

B. Couplings and Adaptors

1. Flexible couplings shall be of the sleeve type with a middle ring, two wedge shaped resilient gaskets at each end, two follower rings, and a set of steel trackhead bolts. The middle ring shall be flared at each end to receive the wedge portion of the gaskets. The follower rings shall confine the outer ends of the gaskets, and tightening of the bolts shall cause the follower rings to compress the gaskets against the pipe surface, forming a leak-proof seal. Flexible couplings shall be steel with minimum wall thickness of the middle ring or sleeve installed on pipe being 5/16-inch for pipe smaller than 10 inches, 3/8-inch for pipe 10 inches or larger. The minimum length of the middle ring shall be 5-inches for pipe sizes up to 10 inches and 7 inches for pipe 10 inches to 30 inches. The pipe stop shall be removed. Gaskets shall be suitable for 250 psi pressure rating or at rated working pressure of the connecting pipe. Couplings shall be harnessed and be designed for 250 psi.

2. Flanged adapters shall have one end suitable for bolting to a pipe flange and the other end of flexible coupling similar to that described hereinbefore. All pressure piping with couplings or adapters shall be harnessed with full threaded rods spanning across the couplings or adapters. The adapters shall be furnished with bolts of an approved corrosion resistant steel alloy, extending to the adjacent pipe flanges. Flanges on flanged adapter (unless otherwise indicated or required) shall be faced and drilled ANSI B16.1 Class 125.

3. Flexible couplings and flanged adapters shall be as manufactured by Dresser, Rockwell, or equal, per the following, unless otherwise specified and/or noted on the Drawings:

4. Steel couplings for joining same size, plain-end, steel, cast iron, and PVC plastic pipe -

Dresser	Rockwell
Style 138	411

5. Transition couplings for joining pipe of different outside diameters-

Dresser	Rockwell
Style 162 (4"-12")	413 steel (2"-24")
Style 62 (2"-24")	415 steel (6"-48")
	433 cast (2"-16")
	435 cast (2"-12")

6. Flanged adapters for joining plain-end pipe to flanged pipe, fittings, valves and equipment.

Dresser	Rockwell
Style 127 cast (3"-12")	912 cast (3"-12")
Style 128 steel (3"-48" C.I. Pipe)	913 steel (3" and larger)
Style 128 steel (2"-96" steel pipe)	

PART 3 - EXECUTION

3.01 EXCAVATION FOR PIPELINE TRENCHES

A. Excavation shall be in accordance with Specification 02225 "Excavating, Backfilling, and Compacting."

B. **Minimum cover of 36" shall be provided for all non-potable water piping.**

3.02 PIPE BEDDING

A. Bedding shall be No. 9 crushed stone in accordance with LFUCG Standard Drawings and as defined by the Kentucky Transportation Cabinet (KYTC) standards.

B. Bedding shall extend a minimum depth of six (6) inches below the outside bottom of the proposed pipe.

C. Bedding shall extend a minimum of six (6) inches horizontally from outside edge of the proposed pipe.

3.03 LAYING PIPE

A. The laying of pipe in finished trenches shall be commenced so the spigot ends point in the direction of flow.

A. All pipes shall be laid with ends abutting and true to line and grade as given by the Engineer. Supporting of pipes shall be as set out hereinbefore under "Pipe Bedding" and in no case shall the supporting of pipes on blocks be permitted.

C. Before each piece of pipe is lowered into the trench, it shall be thoroughly inspected to insure

it's clean. Each piece of pipe shall be lowered separately unless special permission is given otherwise by the Engineer. No piece of pipe or fitting which is known to be defective shall be laid or placed in the lines. If any defective pipe or fitting shall be discovered after the pipe is laid, they shall be removed and replaced with a satisfactory pipe or fitting without additional charge. In case a length of pipe is cut to fit in a line, it shall be so cut as to leave a smooth end at right angles to the longitudinal axis of the pipe.

D. Pipe shall not be laid on solid rock. Pipe bedding shall be installed prior to laying pipe. Irregularities in subgrade in an earth trench shall be corrected by use of #9 crushed limestone.

E. When ordered by the Engineer, unsuitable materials in subgrades shall be removed below ordinary trench depth in order to prepare a proper bed for the pipe.

F. When laying of pipe is stopped for any reason, the exposed end of such pipe shall be closed with a plywood or fabricated plug fitted into the pipe bell, so as to exclude earth or other material, and precautions taken to prevent flotation of pipe by runoff into trench.

G. No backfilling (except for securing pipe in place) over pipe will be allowed until the Engineer has had an opportunity to make an inspection of the joints, alignment and grade, in the section laid.

3.04 BACKFILLING PIPELINE TRENCHES

A. Backfilling shall be in accordance with Specification 02225 "Excavating, Backfilling, and Compacting for Utilities."

3.05 COPPER TRACING WIRE

At the Owner's discretion, No. 12 solid copper wire shall be laid in top 12 inches of ditch over all plastic pipe. The copper tracing wire shall be connected valve to valve unless the distance between valves is greater than 1000 feet. If distance is greater than 1000 feet, the tracing wire shall be wrapped around a line marker at least three (3) times and tied one (1) foot above grade.

3.06 SETTLEMENT OF TRENCHES

A. Whenever lines are in, or cross, driveways and streets, the Contractor shall be responsible for any trench settlement which occurs within these rights-of-way within one year from the time of final acceptance of the work. If paving shall require replacement because of trench settlement within this time, it shall be replaced by the Contractor at no extra cost to the Owner. Repair of settlement damage shall meet the approval of the Owner and/or the State Department of Transportation.

3.07 CONCRETE THRUST BLOCKS OR ENCASEMENT

A. Concrete thrust blocks or encasement shall be placed at all bends or where shown on the Drawings and in accordance with LFUCG Standard Drawings.

3.08 TESTING

A. All pressure piping (lines not laid to grade) shall be given a hydrostatic test of at least 1.5 times the normal operating pressure of the pipe (at its lowest elevation), but not to exceed the rated working pressure of the pipe or valves. Note: Engineer shall verify test pressure. Loss of pressure during the test shall not exceed 0 psi in a 4 hour period and 5 psi in a 24 hour period. Any test results that do not meet either of these requirements shall constitute a failure of the pressure test.

B. Contractor shall furnish a recording gauge and water meter for measuring water used during leakage test and recording pressure charts during duration of test. Recording pressure charts shall be turned over to the Engineer at conclusion of test. The pressure recording device shall be suitable for outside service, with a range from 0-200 psig, 24-hour spring wound clock, designed for 9" charts, and shall be approved by the Engineer.

C. Pipelines shall be tested before backfilling at joints except where otherwise required by necessity or convenience.

D. Duration of test shall be not less than four (4) hours where joints are exposed and not less than 24 hours where joints are covered.

E. Where leaks are visible at exposed joints and/or evident on the surface where joints are covered, the joints shall be laid and leakage must be minimized, regardless of total leakage as shown by test.

F. All pipe, fittings and other materials found to be defective under test shall be removed and replaced at no additional expense to the Owner.

G. Lines which fail to meet tests shall be repaired and retested as necessary until test requirements are complied with.

H. Where nonmetallic joint compounds are used, pipelines should be held under normal operating pressure for at least three days before testing.

I. The Owner will provide initial water for testing and disinfecting the pressure piping. Should the first test fail to pass, all additional water required for subsequent tests shall be furnished at the Contractor's expense.

J. The cost of testing pressure piping is to be included in the Contractor's lump sum Contract Price.

3.09 CLEAN UP

A. Upon completion of installation of the piping and appurtenances, the Contractor shall remove all debris and surplus construction materials resulting from the work. The Contractor shall grade the ground along each side of pipe trenches in a uniform and neat manner leaving the construction area in a shape as near as possible to the original ground line.

END OF SECTION

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SECTION 02531 – SEWAGE PIPING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Provide all labor, materials, equipment and services required for furnishing and installing all force main pipe and appurtenances as specified and shown on Drawings.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Rock Removal: Section 02221

B. Excavating, Backfilling, and Compacting: Section 02225

C. Excavation Support and Protection: Section 02260

1.03 SUBMITTALS

A. Submit shop drawings and product data in accordance with Section 01300 of these specifications.

B. Descriptive literature, catalog cuts, parts lists, and dimensional prints clearly indicating all dimensions and materials of construction, shall be submitted on all items specified herein to the Engineer for review before ordering.

C. A notarized certification shall be furnished for all pipe and fittings which verifies compliance with all applicable specifications and AIS requirements for DI

PART 2 - PRODUCTS

2.03 DUCTILE IRON (DI) PIPE AND FITTINGS

A. **Ductile iron pipe and fittings shall be furnished with Protecto 401 lining as specified herein.** Ductile iron pipe shall be furnished with rubber gasket push-on joints except as may otherwise be noted on the drawings or in difficult working areas and with approval of the Engineer. All pipe inside of casing pipe shall have restraining gaskets as specified in this Section.

B. All site piping shall be restrained joint and fittings.

C. Pressure class shall be minimum 150 psi for mechanical and push-on joint pipe.

D. Thickness design of ductile iron shall conform in all aspects to the requirements of ANSI/AWWA C150/A 21.50 latest revision.

E. Manufacture and testing of ductile iron pipe shall conform in all aspects to the requirements of ANSI/AWWA C151/A 21.51 latest revision.

F. Pipe Coatings

1. Interior Lining

a. Condition of Ductile Iron Prior to Surface Preparation

All ductile pipe and fittings shall be delivered to the application facility without asphalt, cement lining, or any other lining on the interior surface. Because removal of old linings may not be possible, the intent of this specification is that the entire interior of

the ductile iron pipe and fittings shall not have been lined with any substance prior to the application of the specified lining material and no coating shall have been applied to the first six (6) inches of the exterior of the spigot ends.

b. Lining Material

The standard of quality is Protecto 401 Ceramic Epoxy. The material shall be an amine cured novalac epoxy containing at least 20% by volume of ceramic quartz pigment. Any request for substitution must be accompanied by a successful history of lining pipe and fittings for sewer service, a test report verifying the following properties, and a certification of the test results.

(1) A permeability rating of 0.00 when tested according to Method A of ASTM E-96-66, Procedure A with a test duration of 30 days.

(2) The following test must be conducted on coupons from factory lined ductile iron pipe:

(a) ASTM B-117 Salt Spray (scribed panel) – Results to equal 0.0 undercutting after two years.

(b) ASTM G-95 Cathodic Disbondment 1.5 volts @ 77°F. Results to equal no more than 0.5 mm undercutting after 30 days.

(c) Immersion Testing rated using ASTM D-714-87.

i. 20% Sulfuric Acid – no effect after two years
ii. 25% Sodium Hydroxide – No effect after two years
iii. 160°F Distilled Water – No effect after two years
iv. 120° Tap Water (scribed panel) – 0.0 undercutting after two years with no effect.

(3) An abrasion resistance of no more than 4 mils (.10 mm) loss after one million cycles European Standard EN 598: 1994 section 7.8 Abrasion resistance.

c. Application

(1) Applicator

The lining shall be applied by a competent firm with a successful history of applying linings to the interior of ductile iron pipe and fittings.

(2) Surface Preparation

Prior to abrasive blasting, the entire area to receive the protective compound shall be inspected for oil, grease, etc. Any areas where oil, grease, or any substance which can be removed by solvent is present, shall be solvent cleaned using the guidelines outlined in DIPRA-1 Solvent Cleaning. After the surface has been made free of grease, oil, or other substances, all areas to receive the protective compounds shall be abrasively blasted using compressed air nozzles with sand or grit abrasive media. The entire surface to be lined shall be struck with the blast media so that all rust, loose oxides, etc., are removed from the surface. Only slight stains and tightly adhering annealing oxide may be left on the surface. Any area where rust reappears before lining must be reblasted.

(3) Lining

After the surface preparation and within eight (8) hours of surface preparation, the interior of the pipe shall receive 40 mils nominal dry film thickness of Protecto

401. No lining shall take place when the substrate or ambient temperature is below 40 degrees Fahrenheit. The surface also must be dry and dust free. If flange pipe or fittings are included in the project, the lining shall not be used on the face of the flange.

(4) Coating of Bell Sockets and Spigot Ends

Due to the tolerances involved, the gasket area and spigot end up to six (6) inches back from the end of the spigot end must be coated with 6 mils nominal, 10 mils maximum Protecto Joint Compound. The joint compound shall be applied by brush to ensure coverage. Care should be taken that the joint compound is smooth without excess buildup in the gasket seat or on the spigot ends. Coating of the gasket seat and spigot ends shall be done after the application of the lining.

(5) Number of Coats

The number of coats of lining material applied shall be as recommended by the lining manufacturer. However, in no case shall this material be applied above the dry thickness per coat recommended by the lining manufacturer in printed literature. The maximum or minimum time between coats shall be that time recommended by the lining material manufacturer. **No material shall be used for lining which is not indefinitely recoatable with itself without roughening of the surface.**

(6) Touch-Up and Repair

Protecto Joint Compound shall be used for touch-up or repair in accordance with manufacturer's recommendations.

d. Inspection and Certification

(1) Inspection

(a) All ductile iron pipe and fitting linings shall be checked for thickness using a magnetic film thickness gauge. The thickness testing shall be done using the method outlined in SSPC-PA-2 Film Thickness Rating.

(b) The interior lining of all pipe barrels and fittings shall be tested for pinholes with a non-destructive 2,500-volt test. Any defects found shall be repaired prior to shipment.

(c) Each pipe joint and fitting shall be marked with the date of application of the lining system along with its numerical sequence of application on that date and records maintained by the applicator of his work.

(2) Certification

The pipe or fitting manufacturer must supply a certificate attesting to the fact that the applicator met the requirements of this specification, and that the material used was as specified.

e. Handling

Protecto 401 lined pipe and fittings must be handled only from the outside of the pipe and fittings. No forks, chains, straps, hooks, etc., shall be placed inside the pipe and fittings for lifting, positioning, or laying.

2. Exterior Coating

Bituminous outside coating shall be in accordance with ANSI/AWWA C151/A 21.51 for pipe and ANSI/AWWA C110/A 21.10 for fittings.

G. Fittings and gaskets for mechanical and push-on joint ductile and cast iron pipe shall conform to the latest revisions of ANSI/AWWA C110/A 21.10 for mechanical and push-on joint fittings, ANSI/AWWA C111/A 21.11 for gaskets and ANSI/AWWA C153/A 21.53 for mechanical and push-on joint compact fittings. Mechanical and push-on joint fittings shall have pressure class rating of 150 psi minimum.

H. All ductile and cast iron fittings shall be ductile iron grade 80-60-03 in accordance with ASTM A339-55.

I. Restrained joint pipe and fittings shall use Mega-Lug pipe restraints or be a boltless system equal to "Field-Lok" restraining gaskets or "TRFLEX Joint" as manufactured by U.S. Pipe and Foundry Company.

J. Pipe shall be as manufactured by U.S. Pipe and Foundry Company, Clow, American Pipe Company, or equal.

K. Pipe or fitting shall have the ANSI/AWWA standard, pressure (or thickness) class, diameter, DI or ductile noted, manufacturer, and country and year where cast on the outside of the body.

L. Polyethylene Encasement

1. Polyethylene encasement shall be installed as indicated on the drawings or herein.

2. Polyethylene encasement material, size, sheet width, and markings shall meet all requirements set forth in AWWA C105/A21.5-10 Standards

3. Polyethylene encasement shall be installed in accordance to AWWA C105/A21.5-10 to prevent contact between the pipe and the surrounding backfill material. During installation, all lumps of soil shall be removed from the pipe surface and no soil of embedment material shall be trapped between the pipe and the encasement. The encasement shall be fitted to the pipe creating a snug encasement with minimum space between the polyethylene and the pipe. For installations below the water table, tube form polyethylene should be used, both ends shall be sealed with tape or plastic tie straps at joints.

4. Two methods of installation are set forth in AWWA C-105/A21.5-10 for polyethylene tubes and one for polyethylene sheets. The encasement shall be installed by a personnel trained or experienced in proper installation and application of the polyethylene encasement.

    a. Method A for Polyethylene Tubes:

    Cut the polyethylene tube to a length approximately 2 feet longer than the pipe section. Slip the tube around the pipe, centering the pipe within the tube, leaving approximately 12 inches overlap at each end of the section, bunch it accordion fashion until it clears the pipe end. Lower the pipe into the trench and make up the pipe joint with the preceding pipe section. To facilitate the installation of the tube, a shallow bell hole must be made at the joints. After the joint is assembled, make and overlap of the polyethylene tube, pull the bunched polyethylene from the preceding pipe, slip it over the end of the new pipe and secure it. Slip the end of the polyethylene from the new pipe section over the end of the first wrap until it overlaps the joint at the preceding end and secure the overlap in place. Take up the slack width at the top of the pipe to make it a snug fit along the barrel of the pipe, securing at quarter points.

Cuts, tears, punctures, or other damage to the polyethylene shall be repaired with adhesive tape or with a short length of polyethylene sheet or tube cut opened, wrapped around the pipe to cover the damaged area and secured in place.

b. Method B for Polyethylene Tubes:

Cut polyethylene tube to a length of approximately 12 inches shorter than the pipe section and slip the tube around the pipe centering the pipe in the tubing, leaving 6 inches care at each end of the pipe. Take the slack out of the top of the pipe to make a snug fit, not tight, along the barrel, securing at quarter points. Before making up a joint, slip a 3 foot length of polyethylene tube over the end of the preceding pipe section, bunching it accordion-fashion lengthwise. Alternatively, place a 3 foot length of polyethylene sheet in the trench under the joint to be made. After the joint is complete, pull the 3 foot length of tubing over or around the pipe, overlapping the polyethylene by at least 12 inches on each adjacent section of pipe. Make each end snug and secure.

Cuts, tears, punctures, or other damage to the polyethylene shall be repaired with adhesive tape or with a short length of polyethylene sheet or tube cut opened, wrapped around the pipe to cover the damaged area and secured in place.

c. Method C for Polyethylene sheets

Cut polyethylene sheet to a length approximately 2 feet longer than the section of pipe. Center the cut on the section providing 12 inches of overlap at each end of the pipe section. Bunch the sheet until it clears the pipe ends. Wrap the polyethylene around the pipe so that it circumferentially overlap the top quadrant of the pipe. Secure the cut edge of polyethylene sheet at intervals of approximately 3 feet. Lower the wrapped pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole is necessary and shall be made at the joints to facilitate installation of polyethylene. After completing the joint, make an overlap and secure the ends.

Cuts, tears, punctures, or other damage to the polyethylene shall be repaired with adhesive tape or with a short length of polyethylene sheet or tube cut opened, wrapped around the pipe to cover the damaged area and secured in place.

2.06 COUPLING AND ADAPTORS

A. Flexible couplings shall be of the sleeve type with a middle ring, two wedge shaped resilient gaskets at each end, two follower rings, and a set of steel trackhead bolts. The middle ring shall be flared at each end to receive the wedge portion of the gaskets. The follower rings shall confine the outer ends of the gaskets, and tightening of the bolts shall cause the follower rings to compress the gaskets against the pipe surface, forming a leak-proof seal. Flexible couplings shall be steel with minimum wall thickness of the middle ring or sleeve installed on pipe being 5/16-inch for pipe smaller than 10 inches, 3/8-inch for pipe 10 inches or larger. The minimum length of the middle ring shall be 5 inches for pipe sizes up to 10 inches and 7 inches for pipe 10 inches to 30 inches. The pipe stop shall be removed. Gaskets shall be suitable for 250 psi pressure rating or at rated working pressure of the connecting pipe. Couplings shall be harnessed and be designed for 250 psi.

B. Flanged adapters shall have one end suitable for bolting to a pipe flange and the other end of flexible coupling similar to that described hereinbefore. All pressure piping with couplings or adapters shall be harnessed with full threaded rods spanning across the couplings or adapters. The adapters shall be furnished with bolts of an approved corrosion resistant steel

alloy, extending to the adjacent pipe flanges. Flanges on flanged adapter (unless otherwise indicated or required) shall be faced and drilled ANSI B16.1 Class 125.

C. Flexible couplings and flanged adapters shall be as manufactured by Dresser, Rockwell, or equal, unless otherwise specified and/or noted on the Drawings.

2.07 CONCRETE PIPE ANCHORS, THRUST BLOCKS, CRADLE OR ENCASEMENT

A. Where indicated on the Drawings, required by the specifications or as directed by the Engineer, concrete pipe anchors, thrust blocks, cradles or encasements shall be installed. Concrete shall be Class A. Thrust blocking shall be in accordance with LFUCG Standard Drawings.

2.08 ELECTRONIC MARKERS

A. Electronic markers shall be installed along the force main at intervals of 500 feet maximum, at all bends, and as noted on drawings or directed by Engineer. Maximum depth shall be 36". Markers shall be used regardless of the pipe material. Markers shall be green Tempo Omni Markers or equal.

2.09 AIR RELEASE VALVES (ARVs)

A. Air release, air vacuum valves, and/or combination air valves shall be installed along the force main as noted on drawings or directed by Engineer. ARVs shall be ARI or approved equal.

2.10 SEWAGE CAPS

A. All caps shall meet the fitting specifications herein. All caps should be watertight at the pressures indicated in this section.

B. Ductile Iron pipe caps shall be blind flanges Lok-ring, or equal.

C. Sewer force main caps shall be backfilled with flowable fill. Flowable fill to be placed in accordance with the tee fitting thrust block detail located on the Thrust Block Detail for small diameter fittings.

PART 3 – EXECUTION

3.01 EXCAVATION FOR PIPELINE TRENCHES

A. Excavation shall be in accordance with Specification 02225 "Excavating, Backfilling, and Compacting."

3.02 PIPE BEDDING

A. Bedding shall be No. 9 crushed stone in accordance with LFUCG Standard Drawings and as defined by the Kentucky Transportation Cabinet (KYTC) standards.

B. Bedding shall extend a minimum depth of six (6) inches below the outside bottom of the proposed pipe.

C. Bedding shall extend a minimum of six (6) inches horizontally from the outside edge of the proposed pipe.

3.03 LAYING PIPE

A. The laying of pipe in finished trenches shall be commenced so the spigot ends point in the

direction of flow.

B. All pipes shall be laid with ends abutting and true to line and grade as given by the Engineer. Supporting of pipes shall be as set out hereinbefore under "Pipe Bedding" and in no case shall the supporting of pipes on blocks be permitted.

C. Before each piece of pipe is lowered into the trench, it shall be thoroughly inspected to insure it's clean. Each piece of pipe shall be lowered separately unless special permission is given otherwise by the Engineer. No piece of pipe or fitting which is known to be defective shall be laid or placed in the lines. If any defective pipe or fitting shall be discovered after the pipe is laid, they shall be removed and replaced with a satisfactory pipe or fitting without additional charge. In case a length of pipe is cut to fit in a line, it shall be so cut as to leave a smooth end at right angles to the longitudinal axis of the pipe.

D. Pipe shall not be laid on solid rock. Pipe bedding shall be installed prior to laying pipe. Irregularities in subgrade in an earth trench shall be corrected by use of #9 crushed limestone.

E. When ordered by the Engineer, unsuitable materials in subgrades shall be removed below ordinary trench depth in order to prepare a proper bed for the pipe.

F. When laying of pipe is stopped for any reason, the exposed end of such pipe shall be closed with a plywood or fabricated plug fitted into the pipe bell, so as to exclude earth or other material, and precautions taken to prevent flotation of pipe by runoff into trench.

G. No backfilling (except for securing pipe in place) over pipe will be allowed until the Engineer has had an opportunity to make an inspection of the joints, alignment and grade, in the section laid.

3.04 BACKFILLING PIPELINE TRENCHES

A. Backfilling shall be in accordance with Specification 02225 "Excavation, Backfilling and Compacting."

3.05 SETTLEMENT OF TRENCHES

A. Whenever lines are in, or cross, driveways and streets, the Contractor shall be responsible for any trench settlement which occurs within these rights-of-way within one year from the time of final acceptance of the work. If paving shall require replacement because of trench settlement within this time, it shall be replaced by the Contractor at no extra cost to the Owner. Repair of settlement damage shall meet the approval of the Owner and/or the State Department of Transportation.

3.0.6 CONCRETE THRUST BLOCKS OR ENCASEMENT

A. Concrete thrust blocks or encasement shall be placed at all bends or where shown on the Drawings and in accordance with LFUCG Standard Drawings.

3.07 INSTALLATION OF PCCP AND FITTINGS

A. Prestressed concrete cylinder pipe and fittings shall be installed in accordance with requirements of AWWA M9, except as otherwise provided herein. A firm, even bearing throughout the length of the pipe shall be provided by tamping select fill in the haunch area and at the side of the pipe to achieve the required bedding support angle. BLOCKING WILL NOT BE PERMITTED.

B. Gasket, gasket groove, and bell sealing surfaces shall be cleaned and lubricated with a lubricant furnished by the pipe manufacturer. The lubricant shall be approved for use in potable water and shall be harmless to the rubber gasket. Use only lubricant supplied by the

pipe manufacturer. Pipe shall be laid with bell ends looking ahead in the direction of laying. As soon as the spigot ring is centered in the bell of the previously laid pipe, it shall be forced home with approved equipment. After the gasket is compressed, verify the position of the gasket in the spigot ring groove with a feeler gage provided by the pipe manufacturer.

C. The grout diaper for PCCP shall consist of a Typar synthetic fabric layer (gray in color) and a layer of closed cell foam. These layers are sewn together along with a pair of 5/8" wide steel bands at each edge which are used to secure the diaper to the pipe exterior. Use only grout diapers supplied by the pipe manufacturer. A stretching tool is used to tighten the steel bands. Once the bands are pulled tight, a steel clip is crimped around the bands to hold them in position. It is important that the diaper be carefully placed against the exterior surface of the pipe to insure that it is flush with no gaps or gathers. The closed cell foam surface is to be placed against the pipe exterior.

The wet grout will flow down to the bottom of the diaper and begin to bulge it out. It is often helpful to place some bedding material (or sandbags) directly under the diaper at the bottom to support the weight of the wet grout. Take care to not push excessive amounts of bedding material under the diaper such that the diaper is pushed up into the joint recess impeding the flow of wet grout.

Mix the grout using one part ASTM C150 Type 1 or Type 2 portland cement to not more than three parts clean sand with sufficient water to achieve a pourable consistency. The grout should look and pour like a thick cream. Carefully pour the mixed grout into the gap at the top of the diaper. As the pouring proceeds, the workers must inspect the diaper around the joint periphery to insure that the grout is flowing all around. Once the diaper is full and wet grout is puddling at the gap at the top, apply a stiffer mix the consistency of wet brick mortar over the joint insuring that all steel components of the joint are covered.

3.08 TESTING

A. All ductile iron force mains shall be given a hydrostatic test to 150 psi or 250% of working design pressure, whichever is greater, and tested at the lowest level of the pipeline. In no case shall the pipe be tested at a pressure exceeding the pressure class rating of the pipe.

B. Loss of pressure during the test shall not exceed 0 psi in a 4 hour period and 2 psi in a 24 hour period. Any test results that do not meet either of these requirements shall constitute a failure of the pressure test.

C. Leakage in force mains, when tested under the hydrostatic test described above, shall not exceed 10 gallons per 24 hours per inch of diameter per mile of pipe.

E. Contractor shall furnish a recording gauge and water meter for measuring water used during leakage test and recording pressure charts during duration of test. Recording pressure charts shall be turned over to the Engineer at conclusion of tests. The pressure recording device shall be suitable for outside service, with a range from 0-200 psig, 24-hour spring wound clock, designed for 9-inch charts, and shall be approved by the Engineer.

F. Duration of test shall be not less than 24 hours.

G. Where leaks are visible at exposed joints, evident on the surface where joints are covered and/or identified by isolating a section of pipe, the joints shall be repaired.

H. All pipe, fittings, valves, and other materials found to be defective under test shall be removed and replaced at no additional expense to the owner.

I. Lines which fail to meet tests shall be repaired and retested as necessary until test requirements are complied with.

J. The Contractor will provide water for testing the pressure piping.

K. The 60-inch force main shall be pressure tested in accordance with this specification to 150 psi regardless of pipe material.

END OF SECTION

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SECTION 02920 - LAWNS AND GRASSES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide all labor, materials, equipment, and services required for seeding of all disturbed areas caused by construction activities.

1.02 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to Work of this Section.

1.03 MAINTENANCE

A. Maintenance shall begin immediately following the last operation of installation for each portion of lawn.

B. Lawns shall be maintained by watering, mowing, and for resodding for a period of forty-five (45) days. At the end of this period an inspection will be made and any deficiencies, which may be attributable to the Contractor, will be noted in writing. At this time, the Owner will assume the maintenance. Another inspection will be made at the beginning of the next planting season, and any of the previously noted deficiencies still existing shall be repaired by the Contractor.

1.04 INSPECTION FOR ACCEPTANCE

A. The Inspection of the Work:

The inspection of the work of lawns to determine the completion of contract work exclusive of the possible replacement of plants, will be made by the Architect/Engineer upon written notice requesting such inspection submitted by the Contractor at least ten (10) days prior to the anticipated date.

B. Acceptance:

After inspection, the Contractor will be notified in writing by the Owner of acceptance of all work of this Section, exclusive of the possible replacement of plants subject to guaranty, or if there are any deficiencies of the requirements of completion of the Work.

PART 2 - PRODUCTS

2.01 WATER

A. Water used in this work shall be suitable for irrigation and free from ingredients harmful to plant life.

B. Hose and other watering equipment required for the Work shall be furnished by the Contractor.

2.02 TOPSOIL

A. The Contractor shall furnish and place sufficient topsoil for the seeding and installation of sod, 3-inch minimum.

2.03 FERTILIZER

A. Commercial fertilizer for lawn areas shall be complete fertilizer, formula 10-10-10, for lawns and shall conform to the applicable state fertilizer laws. Fertilizer shall be uniform in composition, dry and free flowing and shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guarantee analysis. Any fertilizer which becomes caked or otherwise damaged making it unsuitable for use will not be accepted.

B. Fertilizer shall be applied at the rate of 25 pounds per 1,000 square feet.

2.04 GRASS SEED

A. The seed mixture to be sown shall be in the following proportions:

Common Name	Proportion By Weight	% of Purity	% of Germination
Fine Lawn Fescue	40	90	85
Chewings Fescue	25	90	85
Italian Rye Grass	20	90	85
Red Top	10	90	85
White Clover	5	95	90

B. All seed shall be fresh and clean and shall be delivered mixed, in unopened packages, bearing a guaranteed analysis of the seed mixture.

C. Germination must be certified to conform to the following minimums:

Purity	90%
Germination	85%

2.04 SOD

A. Sod shall be at least 70% Bluegrass, strongly rooted and free of pernicious weeds.

B. It shall be mowed to a height not to exceed 3" before lifting and shall be of uniform thickness with not over 1-1/2" or less than 1" of soil.

2.06 MULCH

A. Mulch for seeded areas shall be Conwed Hydro Mulch, Silva-Fiber, or equal. It shall be suitable for use in a water slurry or for application with hydraulic equipment.

B. Clean straw is acceptable as mulch. It shall be spread at the rate approximately 2 inch loose depth.

C. Mulch on slopes greater than 1: 3 shall be held in place with erosion control netting.

D. Mulch on areas subject to surface water run-off or in drainage ditches shall be held in place with erosion control netting.

PART 3 - EXECUTION

3.01 TIME OF PLANTING

A. Planting operations shall be conducted under favorable weather conditions during seasons which are normal for such work as determined by accepted practice in the locality of the

project. At the option and on full responsibility of the Contractor, planting operations may be conducted under unseasonable conditions without additional compensation.

3.02 LAWNS

A. All lawn areas, including areas of cut and fill and where existing ground has been disturbed by construction operations, shall be seeded.

B. Fertilizer:

Fertilizer shall be applied at the rate of 25 pounds per 1,000 square feet to the lawn area being prepared for planting and mixed lightly into the top few inches of topsoil. Fertilizer may be mixed with and distributed with grass seed.

C. Planting of Lawns:

1. Sowing of Seed:

Immediately before any seed is to be sown, the ground shall be scarified as necessary, and shall be raked until the surface is smooth, friable and of uniformly fine texture. Lawn areas shall be seeded evenly with a mechanical spreader at the rate of 4 pounds per 1,000 square feet of area, lightly raked, rolled with a 200-pound roller and watered with a fine spray. The method of seeding may be varied at the discretion of the Contractor on his own responsibility to establish a smooth, uniform turf composed of the grasses specified. The sowing of seed shall be done only within the season extending from March 1st to May 15th and from September 1st to October 15th, unless other seasons may be approved by the Owner.

2. Laying of Sod:

Before any sod is laid, all soft spots and inequalities in grade shall be corrected. Fertilizer spread shall be raked in. Sod shall be laid so that no voids occur, tamped or rolled and then thoroughly watered. The complete sodded surface shall be true to finished grade, even and firm at all points. Sodding shall be done only within the seasons extending from March 1st to May 15th and from September 1st to October 15th, unless other seasons may be approved by the Owner.

3. Sod on Slopes:

Sod on slopes 2 to 1 or steeper shall be held in place by wooden pins about 1-inch square and about 6 inches long driven through the sod into the soil until they are flush with the top of the sod, or by other approved methods for holding the sod in place.

4. Mulching:

All seeded areas are to be mulched with Conwed Hydro Mulch, Silva-Fiber, or equal, or with clean straw as specified under PRODUCTS. Mulch shall be applied at the rate of 1,500 pounds per acre. It may be applied with hydraulic equipment or may be added to the water slurry in a hydraulic seeder and the seeding and mulching combined in one operation. Clean straw may be spread by hand to cover the seeded areas at a depth of two (2) inches. Erosion control netting shall be installed and anchored per manufacturer's instructions in areas of slopes, ditches, or surface water runoff.

3.03 CLEAN UP

A. All soil, peat or similar material which has been brought over paved areas by hauling operations or otherwise, shall be removed promptly, keeping these areas clean at all times. Upon completion of the planting all excess soil, stone and debris which have not previously been cleaned up shall be removed from the site or disposed of as directed by the Owner. All lawns shall be prepared for final inspection.

3.04 OTHER WORK

A. The Contractor also shall be responsible for the repair of any damage caused by his activities or those of his subcontractors, such as the storage of topsoil or other materials, operations or equipment, or other usages to all on-site areas outside the contract limits. Such repair operations shall include any regrading, seeding or other work necessary to restore such areas to an acceptable condition.

3.05 QUALITY CONTROL

A. Areas seeded shall be protected until a uniform stand develops, when it will be accepted and the Contractor relieved of further responsibility for maintenance. Displaced mulch shall be replaced or any damage to the seeded area shall be repaired promptly, both in a manner to cause minimum disturbance to the existing stand of grass. If necessary to obtain a uniform stand, the Contractor shall refertilize, reseed and remulch as needed. Scattered bare spots up to one (1) square yard in size will be allowed up to a maximum of 10 percent of any area.

END OF SECTION

DIVISION 03

CONCRETE

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SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
   1. Concrete walls
   2. Slabs-on-grade.
   3. Elevated top slabs

1.02 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

   1. Indicate amounts of mixing water to be withheld for later addition at Project site.

   2. Water/cement ratio (total gallons of water per cubic yard).

   3. Brand, type, and quantity of cement.

   4. Type and quantity of aggregates.

   5. Type and quantity of admixtures.

   6. Type, composition, and quantity of fly ash, slag (GGBFS), or silica fume.

   7. Unit weight (wet density).

   8. Composition strength based on 28-day compression test.

C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.

   1. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and reshoring installation and removal.

E. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.

1. Location of construction joints is subject to approval of the Engineer.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer manufacturer testing agency.

B. Welding certificates.

C. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.

2. Admixtures.

3. Form materials and form-release agents.

4. Steel reinforcement and accessories.

5. Curing compounds.

6. Floor and slab treatments.

7. Bonding agents.

8. Adhesives.

9. Joint-filler strips.

10. Repair materials.

D. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:

1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.

E. Submit laboratory test reports for concrete mix design, aggregates (particularly deleterious materials in coarse aggregate) and fly ash, slag (GGBFS) and silica fume (if used) 4 weeks before scheduled pouring.

F. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.

G. Field quality-control reports.

1. Submit written reports to Engineer documenting testing and inspection results.

2. Submit mill test reports on reinforcement.

3. Submit materials certificates in lieu of laboratory test reports on other materials. Manufacturer and Contractor shall sign material certificates certifying that each material item complies with or exceeds, specified requirements. Submit certification from admixture manufacturers that chloride content complies with specification requirements.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.

2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

F. Concrete Testing Service: Owner to engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

1.07 PROJECT CONDITIONS

A. Protect adjacent finish materials against spatter during concrete placement.

PART 2 - PRODUCTS

2.01 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.

2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

a. High-density overlay, Class 1 or better.

b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.

c. Structural 1, B-B or better; mill oiled and edge sealed.

d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch (19 by 19 mm), minimum.

D. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

E. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

F. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that will leave no corrodible metal closer than 1 inch (25 mm) to the plane of exposed concrete surface.

2.02 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

B. Plain-Steel Wire: ASTM A 82/A 82M, as drawn.

C. Deformed-Steel Wire: ASTM A 496/A 496M.

2.03 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

2.04 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150, Type I, except use Type III where applications require high-early-strength or Type II where required by Engineer for corrosive environments.

2. Use one brand of cement throughout Project, unless otherwise acceptable to Engineer.

B. Fly Ash: ASTM C 618, Type C or Type F (corrosive environments) with loss on ignition not more than 6 percent.

C. Ground Granulated Blast-Furnace Slag: ASTM C 989.

D. Silica Fume: ASTM C 1240, amorphous silica.

E. Normal-Weight Aggregates: ASTM C 33, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse-Aggregate Size: 1-1/2 inches (38 mm) nominal.

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

F. Water: ASTM C 94/C 94M.

2.05 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Prohibited Admixtures: Calcium chloride thyocyanates or admixtures containing more than 0.1 percent chloride ions.

2. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.

3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.

4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.

5. Water Reducing, Nonchloride Accelerator Admixture: ASTM C 494, Type E.

6. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.

2.06 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.

1. BASF Construction Chemical

2. ChemMasters, Inc.

3. Dayton Superior

4. Euclid Chemical Company

5. Kaufman Products, Inc.

6. L&M Construction Chemical

7. Lambert Corporation

8. Metalcrete Industries

9. Nox-Crete Products Group

10. Sika Corporation

11. SpecChem

12. Symons by Dayton Superior

13. TK Products Unitex by Dayton Superior

14. Vexcon Chemicals Inc.

15. W.R. Meadows, Inc.

2.07 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

2.08 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.

16. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.

17. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.

18. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by underlayment manufacturer.

19. Compressive Strength: Not less than 4100 psi (29 MPa) at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch (6.4 mm) and that can be filled in over a scarified surface to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.

2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.

3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by topping manufacturer.

4. Compressive Strength: Not less than 5000 psi (34.5 MPa) at 28 days when tested according to ASTM C 109/C 109M.

2.09 CONCRETE MIXING, GENERAL

A. Prepare design mixes for each concrete class and strength by either laboratory trial batch or field experience methods as specified in ACI 301. If trial batch method is used, use independent testing facilities acceptable to Engineer for preparing and reporting proposed mix designs. Testing facility shall not be identical to that used for field quality control testing.

B. Fly ash shall be used to partially supplant cement content in Class A concrete, unless noted otherwise, and is optional in other classes. Replacement quantity of cement content by weight shall be not less than 15 percent for Class A.

C. For concrete Class A, concrete mix design with fly ash and silica fume shall be maximum 30 percent of cement content by weight, and shall constitute no more than 20 and 10 percent, respectively, of the total weight of cementitious materials.

D. Use of ground granulated blast furnace slag (GGBFS) shall only be approved by Engineer. Replacement quantity of cement content weight shall not be less than 35 percent or more than 50 percent.

E. Design mixes to provide normal weight concrete for following classes and properties:

1. Locations for concrete classes are as follows:

a. Class A structural concrete (slabs, walls, columns, piers, beams, equipment bases, and slab toppings 2 inches or greater in thickness). Note: High range water-reducing admixture shall be used for all concrete walls.

b. Class C lean concrete for filling spaces where indicated on drawings.

2. Properties for concrete classes are as follows:

Concrete Class	Minimum Compressive Strength (28 day)	Concrete Type	Exposure (ACI 318-14)	Maximum water/cement ratio	Air Content	Max. Agg. Size
A	4,500 psi	Normal Wt.	F2,S0,W2,C1	0.42	3% ±1%	¾"
C	2,000 psi	Normal Wt.	F0,S0,W0,C0	0.75	N/A	1"

3. Adjustment of Concrete Mixes: Mix designs may be adjusted when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, when approved by Engineer, at no additional cost to Owner. Submit laboratory test data for revised mix design and strength results to Engineer before using in work.

4. Admixtures:

a. Use water-reducing admixture or high range water-reducing admixture (superplasticizer) in concrete for placement and workability.

b. Use nonchloride accelerating admixture in concrete slabs placed at ambient temperatures below 50 degrees F (10 degrees C).

c. Add air-entraining admixture at manufacturer's prescribed rate to result in placed concrete having total air content specified.

d. Use nonstructural synthetic reinforcement, monofilament polypropylene Type F1 in Class A concrete for exposed exterior surfaces without earth covering, and as specified by Engineer for other concrete mix design. Bottom slabs of open concrete tanks do not require synthetic reinforcement. The synthetic reinforcing fibers shall be added to the concrete mix at the rate of 1.5 pounds per cubic yard and in accordance with manufacturer's recommendations.

2.10 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.11 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.

B. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

2.12 POLYVINYL CHLORIDE (PVC) WATERSTOPS

A. PVC waterstops for construction joints shall be flat ribbed type, 6 inches wide with a minimum thickness at any point of 3/8 inches.

B. The waterstops shall be manufactured from virgin polyvinyl chloride plastic compound and shall not contain any scrap or reclaimed material or pigment whatsoever. The properties of the polyvinyl chloride compound used, as well as the physical properties of the waterstops, shall exceed the requirements of the U.S. Army Corps. of Engineers' Specification CRD-C572. The waterstop material shall have an off-white, milky color.

C. The required minimum physical characteristics for this material are:
   1. Tensile strength - 1,750 psi (ASTM D-638).
   2. Ultimate elongation - not less than 280% (ASTM D-638).

D. No reclaimed PVC shall be used for the manufacturing of the waterstops. The Contractor shall furnish certification that the proposed waterstops meet the above requirements.

E. PVC waterstops shall be as manufactured by DuraJoint, Vinylex Corp., Greenstreak, Inc.

F. All waterstop intersections, both vertical and horizontal, shall be made from factory fabricated corners and transitions. Only straight butt joint splices shall be made in field.

2.13 RETROFIT WATERSTOPS

A. Retrofit waterstops shall be used where specifically shown on Drawings for sealing joints between existing concrete construction and new construction.

B. Retrofit waterstops shall be PVC waterstops fabricated from material as described in Section 2.12 of this Specification.

C. Retrofit waterstop shall be attached to existing concrete surface as shown on Drawings.

D. Use of split waterstop in lieu of specially fabricated retrofit waterstop will not be acceptable.

E. Retrofit waterstop manufacturer must provide a complete system including all waterstop, stainless steel anchoring hardware, and epoxy for installation.

2.14 WATERSTOP ADHESIVE

A. Adhesive between waterstops and existing concrete shall be 20+F Contact Cement by Miracle Adhesives Corporation, Neoprene Adhesive 77-198 by JGF Adhesives, Sikadur 31 Hi-Mod Gel by Sika Corporation, DP-605 NS Urethane Adhesive by 3M Adhesive Systems.

2.15 EPOXY BONDING AGENT

A. Epoxy bonding agent shall conform to ASTM C881 and shall be Sikadur 32 Hi-Mod, Sika Corporation, Lyndhurst, N.J.; Euco #452 Epoxy System, Euclid Chemical Company, Cleveland, OH, Concresive LV1 by BASF Construction Chemicals.

2.16 EPOXY RESIN BINDER.

A. Epoxy resin binder shall conform to the requirements of ASTM C-881, Type III, Grade 3, Class B and C for epoxy resin binder and shall be Sikadur 23, Low-Mod-Gel, manufactured by the Sika Corporation, Lyndhurst, N.J., Flexocrete Gel manufactured by Tamms Industries Co. or Euco #352 Gel, Euclid Chemical Company, Concresive Paste LPL or SPL by BASF Construction Chemicals.

PART 3 - EXECUTION

3.01 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

1. Class A, 1/8 inch (3.2 mm) for smooth-formed finished surfaces.

2. Class B, 1/4 inch (6 mm) for rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.

2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.02 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.03 PVC AND CHEMICAL RESISTANT WATERSTOPS

A. PVC and waterstops shall be provided in all construction and expansion joints in water bearing structures and at other such locations as required by the Drawings.

B. Waterstops shall be carefully positioned so that they are embedded to an equal depth in concrete on both sides of the joint. They shall be kept free from oil, grease, mortar or other foreign matter. To ensure proper placement, all waterstops shall be secured in correct position at 12" on center along the length of the waterstop on each side, prior to placing concrete. Such method of support shall be submitted to the Engineer for review and approval. Grommets or small pre-punched holes as close to the edges as possible will be acceptable for securing waterstops.

C. Splices in PVC waterstops shall be made with a thermostatically controlled heating element. Only straight butt joint splices will be allowed in the field. Factory fabricated corners and transitions shall be used at intersections. Splices shall be made in strict

accordance with the manufacturer's recommended instructions and procedures. At least three satisfactory sample splices shall be made on the site. The Engineer may require tests on these splices by an approved laboratory. The splices shall exhibit not less than 80 percent of the strength of the unspliced material.

D. All splices in waterstops will be subject to rigid review for misalignment, bubbles, inadequate bond, porosity, cracks, offsets, and other defects which would reduce the potential resistance of the material to water pressure at any point. All defective joints shall be replaced with material which will pass said review and all faulty material shall be removed from the site and disposed of by the Contractor at no additional cost to the Owner.

E. Retrofit waterstops shall be installed as shown on Contract Drawings using approved waterstop adhesive and Type 316 stainless steel batten bars and expansion anchors.

F. Waterstop installation and splicing defects which are unacceptable include, but are not limited to the following:
   1. Tensile strength not less than 80 percent of parent material.
   2. Overlapped (not spliced) Waterstop.
   3. Misalignment of Waterstop geometry at any point greater than 1/16 inch.
   4. Visible porosity or charred or burnt material in weld area.
   5. Visible signs of splice separation when splice (24 hours or greater) is bent by hand at sharp angle.

3.04 WATERSTOP ADHESIVE

A. Adhesive shall be applied to both contact surfaces in strict accordance with manufacturer's recommendations.

B. Adhesive shall be used where waterstops are attached to existing concrete surfaces.

3.05 EPOXY BONDING AGENT

A. The Contractor shall use an epoxy bonding agent for bonding all fresh concrete to existing concrete as shown on the Drawings.

B. Bonding surface shall be clean, sound and free of all dust, laitance, grease, form release agents, curing compounds, and any other foreign particles.

C. Application of bonding agent shall be in strict accordance with manufacturer's recommendations.

D. Fresh concrete shall not be placed against existing concrete if epoxy bonding agent has lost its tackiness.

3.06 REMOVING AND REUSING FORMS

A. Vertical Forms not supporting concrete weight may be removed when concrete has sufficiently set to resist damage from removal operation.

B. Other forms shall be left in place until concrete has attained strength to support its own weight and construction live loads, unless removed in sections, and each structural section immediately reshored.

C. Time Periods: Forms remain in place as shown in table below. If form removal occurs before time shown in the table, apply curing procedures previously specified.

Minimum Time Forms are to Remain in Place:

	Average Air Temperature* During Period	
Part of Structure	40 - 50 degrees F	50 degrees F
Walls, columns and sides of beam (hours)	72	24

* Air temperature near form.

D. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

E. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.07 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Field bending of reinforcement:

1. Field bending of plain reinforcement shall be performed using an approved and appropriate sized portable hydraulic device that makes ACI-approved radius bends. No other field bending method shall be permitted.

3.08 JOINTS

A. Locate and install construction joints as shown or, if not shown, locate so as not to impair strength and appearance of structures, at intervals not to exceed 50 feet. For construction joints in water-containing structures or tanks or in water-restraining structures, use watertight joints.

B. Continue reinforcement across construction joints, unless otherwise noted. Mechanical inserts with threaded studs are not accepted as substitutes for through-dowels.

C. Locate construction joints in floor system at or near middle of span in slabs, beams, or girders unless beam intersects girders at this point. Then, where not shown on Drawings, joints in girders shall be offset distances twice the width of beams, and provisions made for shear by web reinforcement across joints.

D. Provide isolation joints in slabs-on-ground at points of contact between slabs-on-ground and vertical surfaces of column pedestals, foundation walls, and grade beams.

E. Contraction (Control) Joints in Slabs-on-Ground: Construct contraction (control) joints in slabs-on-ground to form panels of patterns as shown. Use saw cuts 3/16 inch by 1/4 slab depth or inserts 1/4-inch wide by 1/4 of slab depth unless otherwise noted.

F. If joint pattern is not shown, provide joints at 15 feet at most in either direction, with locations to conform to bay spacing wherever practical (at column centerlines, half-bays, third-bays).

G. Form contraction joints by inserting pre-molded plastic, hardboard, or fiberboard strip into fresh concrete until top surface of strip is flush with slab surface. Tool slab edges round on each side of insert. After concrete has cured, remove inserts and clean groove of loose debris.

H. Cut contraction joints in unexposed floor slabs by saw cuts as soon as practical after slab finishing when it can be safely done without dislodging aggregate.

I. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.09 INSTALLATION OF EMBEDDED ITEMS

A. Set and build into Work anchorage devices and other embedded items required for other work that are attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of attachment items.

B. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain set elevations and contours in finished slab surface. Provide and secure units sufficiently strong to support screed strips by use of strike-off templates or accepted compacting screeds.

C. Conduits and pipes of aluminum shall not be embedded in structural concrete unless they are effectively coated or covered to prevent aluminum-concrete reaction or electrolytic action between aluminum and steel.

3.10 PREPARATION OF FORM SURFACES

A. Clean re-used forms of concrete matrix residue, repair and patch to return forms to acceptable surface condition.

B. Coat contact surfaces of forms with form-coating compounds before placing reinforcement.

C. Thin form-coating compounds only with acceptable thinning agents, quantity, and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete is placed. Apply in compliance with manufacturer's instructions.

D. Coat steel forms with non-staining, rust-preventive form oil to protect against rusting. Rust-stained steel formwork is not acceptable.

3.11 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation, reinforcing steel, waterstop installation, and other embedded or cast-in items.

1. Notify other crafts to permit installation of their work.

2. Cooperate with other trades in setting their work.

3. Moisten wood forms immediately before placing concrete where form coatings are not used.

4. Apply temporary protective covering to lower 2 feet of finished walls where adjacent floor slabs are poured to guard against spattering during slab placement.

B. Comply with ACI 304R and as specified in this Section.

C. Discharge Concrete at Site within 1-1/2 hours after cement is added to water or aggregates. When air temperature exceeds 85 degrees F, the discharge time shall be less than 45 minutes. The 45-minute requirement may be waived with the use of a water reducing, retarding admixture and approval of Engineer.

D. Provide trip ticket in duplicate for each ready-mixed concrete load delivered, stating truck number, Project name, Contractor and producer, batching time, total yards of concrete and material contained therein. Show ticket to Engineer upon request. Fill in concrete discharge time and turn over to Engineer trip ticket copies at end of each day.

E. Deposit concrete continuously or in layers so that no concrete is placed on concrete which has hardened sufficiently to cause seams or planes of weakness. If section cannot be placed continuously, provide construction joints as specified. Deposit concrete as nearly as practical to its final location to avoid segregation.

F. When depositing by chute, provide equipment of size and design to ensure continuously flowing concrete. Provide discharge end of chute with baffle plate to prevent segregation. Position chute so that concrete need not flow more than 5 feet horizontally.

G. Do not drop concrete from chute end distances greater than 3 times the deposited layer thickness, nor more than 5 feet. Where distance from chute end to surface of concrete exceeds these distances, use spout and maintain lower end as near to deposit surface as practical. When operations are intermittent, discharge chutes into hoppers.

H. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24 inches to avoid inclined construction joints. Where placement involves several layers, place each layer while preceding layer is still plastic to avoid cold joints.

1. Fill bottom of wall space with 2 to 4 inches of cement slurry immediately before depositing concrete in walls. Use cement slurry composed of 1 part Portland cement, 2 parts fine aggregate, and sufficient water (but not to exceed 0.45 parts) for 7-inch slump mixture.

2. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping. Use equipment and procedures for concrete consolidation in accordance with ACI recommended practices.

3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible machine effectiveness. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into concrete layers that have begun to set. At each insertion, limit duration to time necessary to consolidate concrete and complete reinforcement embedment and other embedded items without causing mix segregation. Keep vibrators away from waterstops to prevent displacement.

I. Placing Concrete Slabs: Deposit and consolidate concrete slabs in continuous operations between construction joints until panel or section placement is complete.

1. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.

2. Bring slab surfaces to correct level with straightedge and strikeoff. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces before beginning finishing operations.

3. Maintain reinforcing in proper position during concrete placement operations.

4. Maintain waterstop in proper position during concrete placement operations.

5. Moisten soil when depositing concrete directly on granular soil.

J. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.

2. Maintain reinforcement in position on chairs during concrete placement.

3. Screed slab surfaces with a straightedge and strike off to correct elevations.

4. Slope surfaces uniformly to drains where required.

5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

K. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F (4.4 deg C) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.

2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

L. Hot-Weather Placement: Comply with ACI 301 and as follows:

1. Maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.12 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

3. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view.

C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.13 FINISHING FLOORS AND SLABS

A. Trowel Finish: Apply trowel finish to monolithic slab surfaces exposed-to-view, and slab surfaces covered with resilient flooring, carpet, ceramic or quarry tile, paint, or other thin film finish coating system.

1. After floating, begin first trowel finish operation using power-driven trowels. Begin last troweling when surface produces ringing sound when trowel moves over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance.

2. Check and level surface plane to tolerances of floor flatness (FF) of 20 and floor levelness (FL) of 17 in accordance with ASTM E 1155.

3. Grind smooth surface defects that would telegraph through applied floor covering system.

B. Nonslip Broom Finish: Apply non-slip broom finish to exterior concrete platforms, steps, ramps, and elsewhere as noted.

1. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required finish with Engineer before application.

3.14 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.

2. Construct concrete bases 4 inches high unless otherwise indicated; and extend base not less than 6 inches (150 mm) in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support.

3. Minimum Compressive Strength: 4500 psi at 28 days.

4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around the full perimeter of concrete base.

5. For supported equipment, install anchor bolts that extend through concrete base, and anchor into structural concrete substrate.

6. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

7. Cast anchor-bolt insert into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.

3.15 CONCRETE PROTECTING AND CURING

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Start curing as soon as free water has disappeared from concrete surface after placing and finishing. Maintain curing as follows:

1. All concrete unless otherwise noted: 7 days.

2. High-early-strength concrete: 3 days.

C. Curing Methods: Cure concrete for water-retaining structures by moist curing. Cure concrete for other structures by curing compound, moist curing, moisture-retaining cover curing, or combinations thereof.

D. Provide Moist Curing by following methods:

1. Keep concrete surface continuously wet by covering with water.

2. Continuous water-fog spray.

3. Covering concrete surface with specified absorptive cover, thoroughly saturating cover with water and keeping continuously wet. Place absorptive cover to cover concrete surfaces and edges, with 4 inches lap over adjacent absorptive covers.

E. Provide Moisture-Retaining Cover Curing as follows:

1. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practical width with sides and ends lapped 3 inches and sealed by waterproof tape or adhesive.

2. Immediately repair holes or tears during curing period using cover material and waterproof tape.

F. Provide Curing Compound as follows:

1. Apply specified curing compound to concrete slabs as soon as last finishing operations are complete (within 2 hours). Apply uniformly in continuous operation by power-spray or roller according to manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain coating continuity and repair damage during curing period.

2. Transparent curing compound shall be used for structural concrete (Class A concrete).

3. Do not use membrane curing compounds on surfaces that are covered with coating material applied directly to concrete, liquid floor hardener, waterproofing, dampproofing, membrane roofing, flooring (ceramic or quarry tile, glue-down carpet), painting, and other coatings and finish materials, unless otherwise acceptable to Engineer.

G. Curing Formed Surfaces: Cure formed concrete surfaces, including beam undersides, supported slabs and other similar surfaces by moist curing with forms in place for full curing period. If form removal occurs before curing period is up, continue curing by methods specified above as applicable.

H. Curing Unformed Surfaces: Cure unformed surfaces, including slabs, floor topping, and other flat surfaces, by application of appropriate curing method.

3.16 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least one month. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches (50 mm) deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.17 EPOXY RESIN BINDER

A. Epoxy resin binder shall be used to seal all existing rebar cut and burned off during demolition operations. Exposed rebar shall be burned back 1/2-inch minimum into existing concrete and the resulting void filled with epoxy resin binder.

3.18 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.

B. Patching Mortar: Mi dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch (13 mm) in any dimension to solid concrete. Limit cut depth to 3/4 inch (19 mm). Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.

3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Engineer.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

2. After concrete has cured at least 14 days, correct high areas by grinding.

3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.

4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.

5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch (6 mm) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.

6. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

7. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Engineer's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Engineer's approval.

G. Concrete connection methods to existing concrete structures are as follows:
   1. METHOD A Bonding to Saturated Surface: Provide bond between new repair concrete/mortar and existing concrete by conditioning the prepared existing concrete to a saturated surface condition (prewetted so the substrate is saturated while the surface is free of standing water) and placing the repair material to achieve full contact at the interface. This method relies on proper surface preparation and moisture conditioning of the existing concrete to promote bond.

   2. METHOD B Bonding by Using Bonding Agent: After preparing and cleaning the existing concrete repair surface, condition the substrate as required by the bonding

agent manufacturer then apply a continuous coat of bonding agent to the existing concrete at all contact surfaces. Place the repair material within the bonding agent's allowable working/open time and in the condition required for bonding , ensuring the repair material is fully consolidated against the existing substrate.

3. METHOD C Dowels Using Epoxy Bonding Agent: Provide a positive mechanical connection by installing dowel bars into drilled holes in the existing concrete, bonding the dowels in place with an epoxy bonding agent, and placing the repair concrete/mortar around the projecting dowels to tie new work to the existing substrate. Dowel size, spacing, embedment, and layout shall be as shown on the drawings or as directed, and dowels shall be installed only into sound existing concrete.

3.19 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing and Inspecting: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

C. Inspections:

1. Steel reinforcement placement.

2. Steel reinforcement welding.

3. Headed bolts and studs.

4. Verification of use of required design mixture.

5. Concrete placement, including conveying and depositing.

6. Curing procedures and maintenance of curing temperature.

7. Verification of concrete strength before removal of shores and forms from beams and slabs.

D. Provide qualified personnel and employ testing laboratory, approved by Engineer, to do tests and to submit test reports.

E. Sampling Fresh Concrete: ASTM C 172, except modified for slump and air-content tests to comply with ASTM C 94.

1. Slump: ASTM C 143, one each time compression test specimens are made; additional tests when concrete consistency seems to have changed.

2. Air Content: ASTM C 231, pressure method, one each time compression test specimens made.

3. Concrete Temperature: Test hourly when air temperature is 40 degrees F and below, and when 80 degrees F and above; and each time compression test specimens are made.

4. Compression Test Specimen: ASTM C 31, four standard cylinders for each compressive strength test set, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens.

5. Compressive Strength Tests: ASTM C 39, one set for each day's pour exceeding 5 cubic yards plus additional set for each 100 cubic yards over and above first 50 cubic yards of each concrete class placed in 1 day; 1 specimen tested at 7 days, 2 specimens tested at 28 days, and 1 specimen retained in reserve for later testing if required.

F. Test Results: Report test results in writing to Engineer and Contractor within 24 hours after tests. Compressive strength test reports shall contain Project identification name and number, concrete placement date, concrete testing service name, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and break type for both 7-day tests and 28-day tests.

G. Acceptance: Concrete strength shall be considered satisfactory if averages of 3 consecutive strength test results equal or exceed specified 28-day compressive strength (f'c), and no individual strength test result falls below specified compressive strength by more than 500 psi.

H. Failure to Meet Requirements:

1. Should 7-day compressive strengths shown by test specimens fall below 65 percent of required 28-day strength (f'c), Engineer will have the right to require changes in proportions for remaining Work. Furthermore, Engineer will have the right to require additional curing, as specified in this Section, on those portions or structures represented by failed test specimens.

2. Should 28-day compressive strengths (f'c) test results fail to meet required strength, core-boring tests conforming to ASTM Standard C 42 shall be made at Contractor's expense within 60 days of that concrete placement.

I. At locations where concrete quality is deemed questionable by Engineer, core-boring tests shall also be made at Contractor's expense.

J. Concrete is acceptable if average strength of 3 cores is at least 85 percent and no single core is less than 75 percent of required minimum allowable 28-day compressive strengths (f'c). If core-boring test results fail to meet strength requirements, Engineer will have right to require strengthening or replacing those portions of structures which failed to develop specified strength.

K. Provide additional curing when ordered by Engineer because of failure to meet requirements. It shall be done at Contractor's expense, and no claim for extra compensation for additional curing will be allowed. Additional curing shall extend period of protection. Additional curing is limited to 60 days.

L. Additional Tests: Testing service shall make additional in-place concrete tests when test results suggest specified concrete strengths and other characteristics have not been attained. Testing service may conduct tests to determine adequacy by cored cylinders complying with ASTM C 42, or by other approved methods. Contractor shall pay for additional tests when unacceptable concrete is verified.

END OF SECTION

PART X

APPENDIX A – EXISTING DIVERSION BOX PHOTOS

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Photo 1: Picture of existing diversion box, secondary clarifiers, and junction chamber.

Photo 2: Picture of secondary clarifier effluent channel and existing secondary clarifier 1.

Photo 3: Picture of secondary clarifier effluent channel.

Photo 4: Picture of existing diversion box.

Photo 5: Picture of existing 48" steel pipe to be removed.

Photo 6: Picture of existing junction chamber.

PART XI

APPENDIX B – 2016 GEOTECHNICAL REPORT

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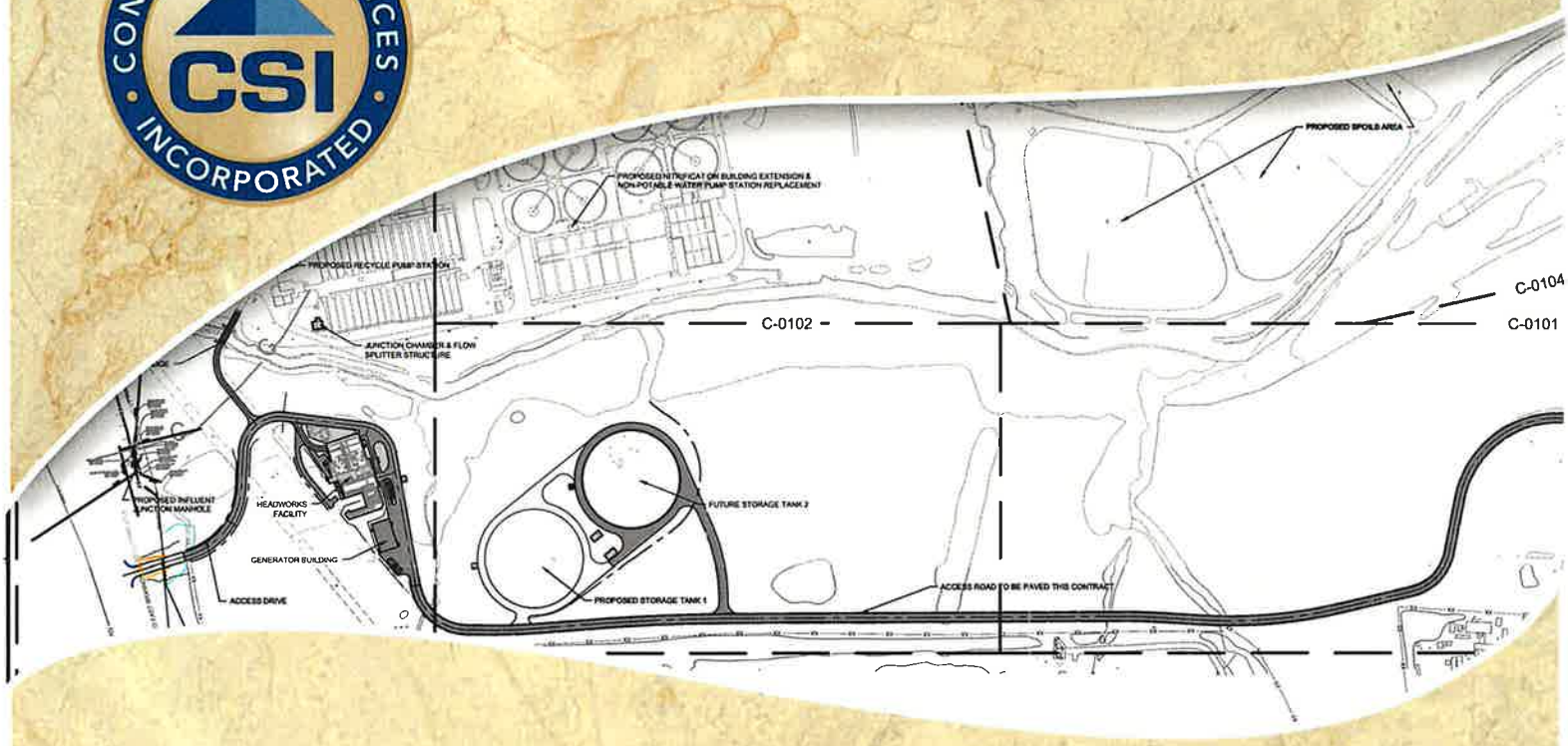

Geotechnical Report

for

Lexington Fayette Urban County Government

West Hickman WWTP

Wet Weather Storage Facility

Nicholasville, Kentucky

January 25, 2016

Prepared for

Tetra Tech, Inc.

Lexington, Kentucky

CSI Project Number LX150053

csikentucky.com | csiohio.com

858 Contract Street, Lexington, Kentucky 40505 | 11012 Decimal Drive, Louisville, Kentucky 40299

11162 Luschek Avenue, Cincinnati, Ohio 45241

Consulting Services Incorporated
Lexington 859.309.6021 | Cincinnati 513.252.2059 | Louisville 502.532.8269
Geotechnical & Materials Engineering | IBC Special Inspection | Material Testing

January 25, 2016

Tetra Tech, Inc.
424 Lewis Hargett Circle, Suite 110
Lexington, KY 40503

ATTN: Mr. Herb LeMaster, PE

Subject: **Geotechnical Report**
LFUCG West Hickman WWTP Wet Weather Storage Facility
Nicholasville, Kentucky
CSI Project No. LX150053

Dear Mr. LeMaster:

Consulting Services Incorporated of Kentucky (CSI) is pleased to present our report for the geotechnical services completed on the proposed LFUCG West Hickman WWTP Wet Weather Storage project. We provided our services in general accordance with CSI Proposal Number 3621R2, dated March 20, 2015.

Our report represents information provided to us, readily available published data relevant to the site and site area, our observations and subsurface conditions encountered and our opinion of primary geotechnical conditions (discussion and recommendations) affecting design, construction and performance of the proposed earth and/or rock supported portions of the project.

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

Cordially,

Jessica Wheat, EIT, SI
Staff Professional

STATE OF KENTUCKY
BRUCE L. HATCHER 14,527
LICENSED PROFESSIONAL ENGINEER
1-25-16

Bruce L. Hatcher, PE, SI
Chief Engineer
Licensed KY 14,527

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INTRODUCTION

1 SCOPE OF THE GEOTECHNICAL EXPLORATION

As we proposed, we conducted geotechnical services which are summarized in the following report. Our services included a review of the project information provided, conducting a subsurface exploration that utilized soil borings, soundings (borings without sampling), rock coring, and test pit excavations to obtain samples for modeling the soil/rock conditions at the subject site, an analysis of the data and information obtained, and providing recommendations for the earth and/or rock supported portions of the site as listed in our proposal.

2 PROVIDED INFORMATION

Project information for this project was provided to us via e-mail from Mr. Herb LeMaster, PE and Mr. Jason Burkett, PE of Tetra Tech. We were provided several documents and figures, which provided design guidance and depicted the site location.

We understand that Lexington Fayette Urban County Government (LFUCG), through its Division of Water Quality (DWQ), will be constructing two new wet weather storage tanks and improvements to the existing West Hickman Wastewater Treatment Plant. Specifically, the project site is located at 645 West Hickman Plant Road in Nicholasville, Kentucky. Please reference the Site Location Plan in the Appendix for details.

The proposed construction is divided into a two phase approach. Phase 1 construction includes construction of a new 22 million gallon wet weather storage (WWS) facility (South Tank), a new combination influent pump station/WWS pump station (IPS/WWSPS), a new screening facility, a new grit removal facility, upgrades to the existing West Hickman Wastewater Treatment Plant non-potable water (NPW) system (including a new recycle pump station and splitter box), and other various site improvements (such as a new bridge connecting both sides of West Hickman Creek). Phase 2 construction includes the construction of a new 22 million gallon wet weather storage (WWS) facility (North Tank - adjacent to the South Tank) and an extension of the NPW system.

At the time of this report publication, we understand that the foundations for the tanks, valve vaults, headworks facility, recycle pump station, splitter box, and bridge will bear on rock (either directly or indirectly), while the generator building will consist of shallow spread foundations bearing on soil and concrete slab-on-grade floors. Please reference Section 8 for specific structure and foundation details.

Since the time of our original geotechnical work, an alternate location on the site was proposed for the South Tank. Also, the locations of the generator building, headworks facility, flume structure, recycle pump station, junction chamber/flow splitter, and the meter and return valve vault had been shifted/moved to new locations. Additionally, further information concerning the competency of the underlying bedrock was requested. Thus, this report has included a discussion on competent rock at the project site.

Additionally, we understand that there was concern that the new proposed location for the South Tank could be a potential sinkhole area. Thus, we performed soundings (borings without sampling) and test pit excavations to better observe the area for potential Karst activity.

We understand that the 100-year floodplain elevation for West Hickman Creek in this area is 891.8 feet. Therefore, structures located within the creek's floodplain will need to be designed to resist buoyancy. Based upon our boring locations and elevations, we understand that a majority of the structures will not be affected. In terms of buoyancy, only the recycle pump station and splitter box (on the existing plant side of the creek) and the lower level of the headworks facility could be affected by a 100-year flood. Additionally, based upon discussions with the structural engineer, we understand that rock anchors will not be needed since the structure's deadweight will be enough to resist the effect of buoyancy.

The majority of the site is gently sloping grass-covered fields on either side of West Hickman Creek. We anticipate significant cuts/fills (more than 10 feet) will be required for this project. Additionally, we understand the proposed WWS tanks and other structures will be either below grade or partially below grade. Therefore, this report has included recommendations for lateral earth pressures.

We understand flexible pavement design is required for this project. Thus, we have included recommendation for flexible pavement (based upon CBR values correlated from tested soil samples).

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

3 AREA/SITE INFORMATION

3A AREA TOPOGRAPHY/PHYSIOGRAPHY

The site is located in the Inner Blue Grass Region of the Blue Grass Physiographic Region of Kentucky. This area consists of gently rolling topography and rich, fertile soils. Published topographic mapping by the United States Geological Survey (USGS) indicates the elevations in the site vicinity range from 880 feet to 990 feet. On the following page is a figure of the location of the site with respect to the regional physiography.

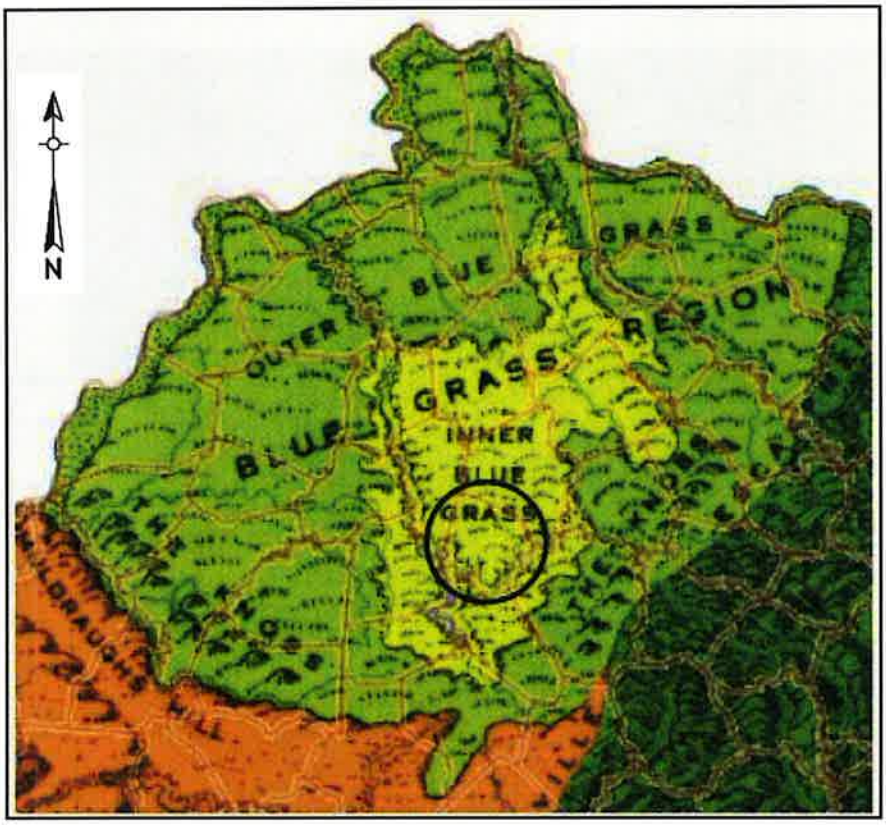

Figure 1. Kentucky Physiographic Map (site vicinity shown in the circle)

3B SITE GEOLOGY

A review of the *USGS Geologic Maps of the Nicholasville and Coletown Quadrangles, Kentucky* (dated 1968 and 1987, respectively), indicates that portions of the project site are underlain by Quaternary Alluvium deposits (i.e.- water transported), while other parts of the site are underlain by Middle and Upper Ordovician aged rock deposits, specifically, the Brannon Member and Tanglewood Limestone Member of the Lexington Limestone Formation.

The Quaternary Alluvium is composed of silty clay, silt, sand, and gravel. The Tanglewood Limestone Member is composed of limestone described as medium-light-gray to medium-brownish-gray, fine to coarse-grained, and fossil-fragmented. The Brannon Member is composed of limestone and shale. The limestone is described as medium-gray to light-brownish gray, micrograined, silty, and partly fossiliferous. The clay shale is described as greenish- to brownish-gray. The West Hickman Fault Zone is mapped directly west of the project site. Figure 2 on the following page shows the geology.

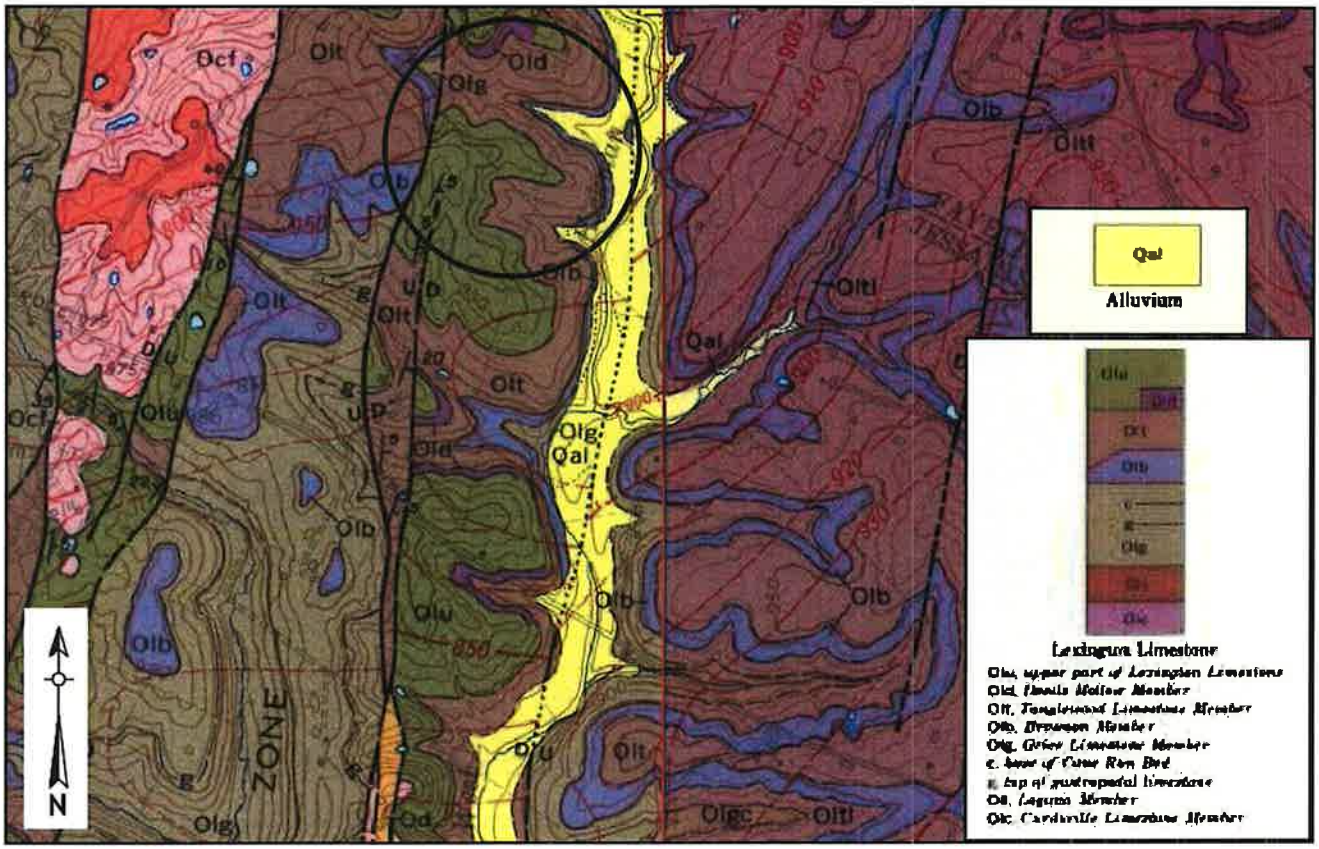

Figure 2. Site Geology (USGS Nicholasville and Coletown Geologic Quadrangles, dated 1968 and 1967, respectively) (Site vicinity shown in circle)

As with most of the geology of this portion of Kentucky, Karst (sinkholes, weathered bedrock, caverns, erratic bedrock, etc.) is associated with the site geology. However, no closed depressions were mapped in the immediate vicinity on the USGS Geological Maps of the Nicholasville and Coletown Quadrangles. However, there are sinkholes mapped nearby to the southwest and northwest. The site (and the surrounding areas) is in a developed area and has been regraded, thus obvious signs of sinkhole activity may have been filled or otherwise occluded.

The Jessamine County Karst Areas map published by the Kentucky Geological Survey (KGS) indicates that the project site is in an area of intense Karst development. Figure 3 on the following page indicates the likelihood of Karst occurrence.

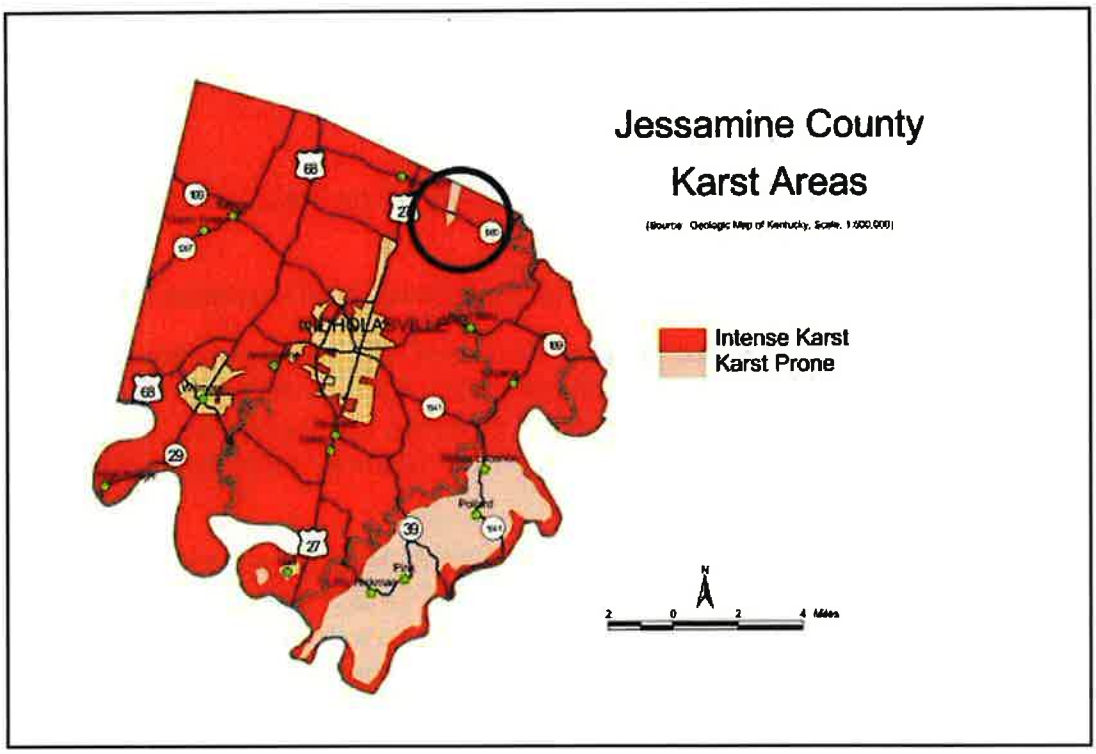

Figure 3. Jessamine County Karst Areas Map, KGS (site vicinity shown in circle)

3C PUBLISHED SITE SOIL CONDITIONS

According to the USDA Soil Survey of Jessamine County (NRCS website), the soils underlying the project site vicinity consist of the following series (See Figure 4 - on page 6):

- Fairmount flaggy silty clay (FaC), 6 to 12 percent slopes
- Faywood silt loam (FdE), 12 to 30 percent slopes
- Huntington silt loam (Hu)
- Lowell silt loam (LwC), 6 to 12 percent slopes
- McAfee silt loam (MnB), 2 to 6 percent slopes
- McAfee silt loam (MnC), 6 to 12 percent slopes
- Bluegrass-Maury silt loams (uBlmB), 2 to 6 percent slopes

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

- All of the soil series are listed as being well drained.
- Depth to restrictive feature (i.e. - lithic bedrock) for these soil series is generally listed from 17 to greater than 80 inches.
- Depth to water table for these soil series is generally listed as greater than 80 inches.
- The soil series uBlmB is listed as being not limited, while the soil series LwC is listed as being somewhat limited, and the soil series FaC, FdE, Hu, MnB, and MnC are listed as being very limited to the construction of dwellings with basements. Particular issues affecting construction include depth to hard bedrock, shrink-swell potential, and slope.
- The soil series uBlmB is listed as being not limited, while the soil series LwC, MnB, and MnC are listed as being somewhat limited, and the soil series FaC, FdE, and Hu are listed as being very limited to the construction of dwellings without basements. Particular issues affecting construction include depth to hard bedrock, shrink-swell potential, and slope.
- The soil series uBlmB is listed as being not limited, while the soil series LwC is listed as being somewhat limited, and the soil series FaC, FdE, Hu, MnB, and MnC are listed as being very limited to the construction of small commercial buildings. Particular issues affecting construction include depth to hard bedrock, slope, and shrink-swell potential.
- The soil series Hu, LwC, and uBlmB are listed as being somewhat limited, while the soil series FaC, FdE, MnB, and MnC are listed as being very limited to the construction of shallow excavations. Particular issues affecting construction include depth to hard bedrock, being dusty, slope, and unstable excavation walls.
- These soil series are listed as being very limited to the construction of local roads and streets due to depth to hard bedrock, low strength, shrink-swell potential, slope, and frost action.

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

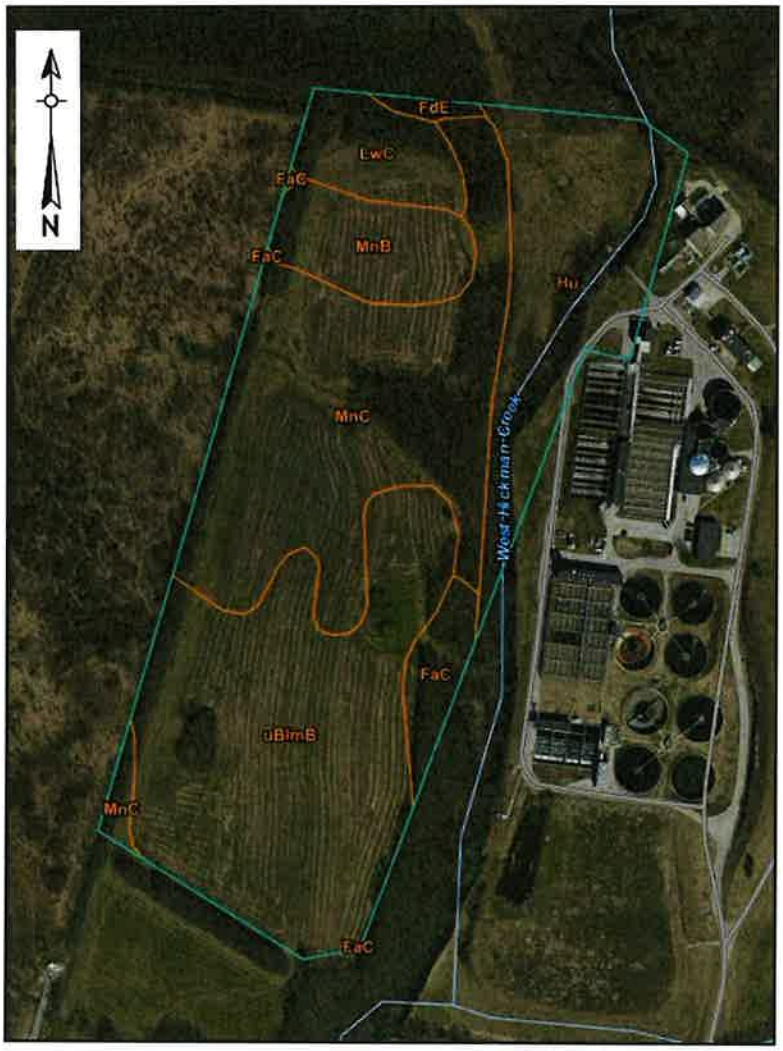

Figure 4. USDA Soil Survey Map of Project Site (site vicinity outlined in blue)

3D OTHER PUBLISHED SITE INFORMATION

The project site is located at the existing West Hickman Wastewater Treatment Plant in Nicholasville, Kentucky. We have reviewed aerial photographs of the site dating back to April 1993. The April 1993 aerial photo shows the project site as grass covered fields across the creek from the existing wastewater treatment plant. The reviewed aerial photographs indicate that between March 1997 and April 2002, additions to the existing treatment plant were constructed. Since April 2002, no significant development has occurred in the immediate vicinity (See Figures 5 and 6 on the following page for details).

Figure 5. Aerial Photo dated April 1993
from Terra Server (site is located in the circle)

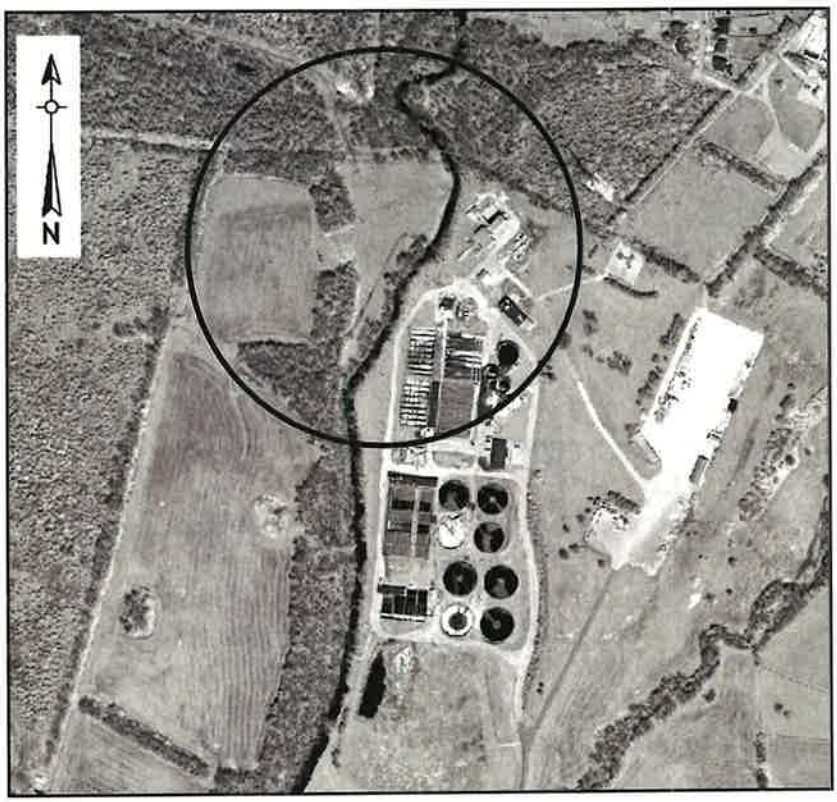

Figure 6: Aerial Photo dated April 2014
from Terra Server (site is located in the circle)

FINDINGS

4 SITE SURFACE OBSERVATIONS

During our original geotechnical work, Mrs. Jessica Wheat, EIT and Mr. Nick Consigli, EIT of CSI conducted a site visit, performed a field reconnaissance, logged soil borings and rock cores, and directed drilling operations within the proposed project area on March 24 through 27 and March 30 through April 2, 2015. Due to drill rig access issues, parts of the project site needed to be cleared. Additionally, vacuum excavations were performed to locate unknown utilities on the existing plant side of the creek prior to our drilling. Thus, we returned to the site and finished our original drilling on April 20 through 22, 2015. CSI personnel observed and documented site surface conditions that could have an impact on the proposed construction.

After completion of our original geotechnical work, the locations of several structures were shifted/moved. Thus, we were requested to perform additional field services in order to better explore the bedrock conditions at the new and existing locations. Mrs. Wheat, Mr. Travis Greenwell, and Mr. Christopher Yohe, PE directed drilling operations on August 24 through September 3, 2015. Additionally, on August 25, 2015, Mr. Yohe, directed test pit excavations to better observe the potential Karst area on-site.

The majority of the site is currently grass-covered with a gravel road running with a south/ north orientation along the western perimeter. No underground utilities were marked in the vicinity of our soil borings, although various underground utilities are located on the existing plant side of the site. A gas line runs from the north across the project site and creek to the existing plant. A sanitary sewer line runs with a similar orientation. Several utilities were uncovered on the existing plant side of the project site located near boring B-24. Additionally, overhead electric lines run east to west through the middle of the site. The following are some photos of areas of the site at the time of drilling.

Photo 1: View from south perimeter looking north across the project site.

Photo 2: View from the north perimeter looking south across the project site.

Photo 3: View of the rocky fill material observed in the proposed WWS tank area.

Photo 4: View from northwest looking east across the project site.

Photo 5: View from proposed WWS tank area looking at the new road.

Photo 6: View from new road looking north across the project site.

Photo 7: View of the proposed bridge area.

Photo 8: View near boring B-22 looking south across the project site on the existing plant side.

Photo 9: View of the proposed road area on our return site visit.

Photo 10: View of an area that was cleared to gain drill rig access.

5 SUBSURFACE CONDITIONS

The subsurface conditions encountered at each of our soil boring and test pit locations are shown on the Soil Boring and Test Pit Logs in the Appendix. It should be noted that our soil borings were sampled according to the procedures presented in the Appendix. The Boring and Test Pit Logs represent our interpretations of the subsurface conditions based on field logs, visual examination of field samples by an engineer, and tests of the samples collected. The letters in parentheses following the soil descriptions are the soil classifications in accordance with the Unified Soil Classification System. It should be noted that the stratification lines shown on the soil boring logs represent approximate transitions between material types. In-situ stratum changes could occur gradually or at slightly different depths. Water levels shown on the Soil Boring and Test Pit Logs represent the conditions only at the time of our exploration.

5A SOIL CONDITIONS

During our original geotechnical work, we utilized 24 soil test borings and 100 soundings (borings without sampling) to explore the subsurface conditions at the site. We completed 14 soil test borings (labeled B-1 through B-14) for the two proposed WWS tanks, 3 soil borings (labeled B-15 through B-17) for the proposed screening and grit removal facility, 1 soil boring (labeled B-23) for the proposed generator building, 4 soil borings (labeled B-18 through B-21) for the proposed bridge, 1 soil boring (labeled B-22) for the proposed recycle pump station, and 1 soil boring (labeled B-24) for the proposed splitter box. Additionally, we performed soundings along the proposed sanitary sewer lines (on approximately 50 feet spacing). Please note that we were not able to perform 16 of the proposed soundings due to drill rig access (too steep slopes, soft/wet soil conditions, etc). Also, please note that the location and size of the screening facility/grit removal facility was changed after the completion of our original field services.

During our additional geotechnical work, we performed 15 soundings (labeled SH-1 through SH-15) to delineate the rock depths in the potential sinkhole area. We also performed 5 test pit excavations in this area to explore for potential Karst activity.

We completed 7 soundings with rock coring (labeled RC-201 through RC-207) for the proposed North Tank, 14 soundings with rock coring (labeled RC-301 through RC-313 plus RC-305A) for the proposed South Tank alternate location, 3 soundings with rock coring (labeled RC-401 through RC-403) for the ancillary structures, 1 sounding with rock coring (labeled RC-404) for the proposed recycle pump station, 1 sounding with rock coring (labeled RC-405) for the proposed flume structure, 1 sounding with rock coring (labeled RC-406) for the proposed splitter box, 6 soundings with rock coring (labeled RC-501 through RC-506) for the proposed headworks facility, and 6 soil borings (labeled B-25 through B-30) for the proposed generator building. Please reference the Boring, Sounding, and Test Pit Location Plans in the Appendix for the approximate boring, sounding, and test pit locations.

In general, our borings encountered a layer of topsoil, overlying previously placed fill (old fill), overlying a possible buried topsoil layer (when encountered), overlying residual or alluvial soils, overlying weathered rock, overlying bedrock.

In 28 of our 30 soil borings, we encountered a layer of topsoil and/or root zone. Thickness of the topsoil/root zone ranged from 1 to 7 inches.

Beneath the topsoil/root zone, we encountered previously placed fill material at 28 of our 30 soil boring locations (at all 5 of our test pit locations). The fill material generally consisted of a brown and gray clay with varying amounts of rock fragments. Wood fragments were observed in a few of the recovered soil boring samples of the fill material. Please note that large concrete boulders were observed in boring B-8. However, no other large concentrations of deleterious materials (large pieces of wood, trash, etc.) were observed in our recovered soil samples or noted in our auger cuttings. The thickness of the fill material (where encountered) ranged from 1.0 to 16.7 feet. Please note that in some borings (located in the proposed WWS tanks area), the fill material extended to the top of weathered rock. The old fill was generally sampled as firm to hard. Please note that the inclusion of rock fragments may have inflated the SPT N-counts. Thus, the soils on-site may be softer than indicated.

A possible buried topsoil layer was observed in boring B-7. The buried topsoil layer consisted of dark brown clay with fine roots and had an organic odor. The thickness of the buried topsoil layer was approximately 1.5 feet and the layer was sampled as very stiff.

Residual soils (or alluvial soils) were observed underlying the old fill in 21 of our 30 soil boring locations. Please note that in some of the borings, no residual soil was observed since the fill material extended to the top of weathered rock. The residual soil was very loose to firm. Generally, the residual soil consisted of a brown and tan lean clay (CL) to fat clay (CH) with varying amounts of black oxide nodules and sand content. The alluvial soils generally consisted of brown and tan clayey sand (SC) with varying amounts of sand and silt. Highly weathered limestone fragments were observed in recovered soil samples at some of our boring locations. The thickness of the residual soil (where encountered) ranged 0.4 to 8.3 feet and extended to the top of weathered rock. The thickness of the alluvial soil (where encountered) ranged from 3.4 to 6.6 feet and extended to the top of weathered rock.

Weathered rock was underlying the residual soil in 23 of our 30 soil borings. Thickness of the weathered rock ranged from approximately 0.1 to 2.4 feet.

We explored a potential sinkhole area located on-site in the proposed South Tank location. We performed 15 rock soundings in order to delineate rock depths around the area and help identify the likely openings in the bedrock (i.e.- sinkhole). Additionally, we performed 5 test pit excavations to explore the area for a potential sinkhole. The potential sinkhole area consisted of trees and large mounds of fill material. During our exploration of the potential sinkhole area, we did not observe any obvious signs of Karst activity.

5B GROUNDWATER CONDITIONS

Groundwater was not encountered at any of our soil boring and/or sounding locations upon completion of soil augering. Final groundwater readings were not taken in the core holes since water was used to cool the rock coring bit. Additionally, groundwater was not encountered in any of our test pit excavations upon completion of soil excavation. Water conditions that usually affect construction and performance of projects consist of trapped/ perched water zones which occur in variable areas in the soil mass, at or near existing or former structures, at or near the bedrock bedding planes, or at or near the soil/rock interface. Perched water sources are often not linked to the more continuous relatively stable ground water table that typically occurs at greater depths. Site excavation activities or ground disturbance can expose these features and the resulting seepage can vary greatly. Finally, water issues are also dependent upon recent rainfall activity and surface, subsurface drainage patterns in the area, and water levels in the adjacent West Hickman Creek.

5C BEDROCK INFORMATION

Auger refusal was encountered in all of our 30 borings at depths ranging from 2.7 (at boring B-30) to 18.1 feet (at boring B-2). Additionally, auger refusal was encountered in all of our soundings at depths ranging from 1.0 (probably a false auger refusal) to 18.7 feet (at RC-201A). Please note that we encountered several false auger refusals due to large boulders in the fill material. We have interpreted auger refusal to be the top of the bedrock surface. At 23 of our 30 boring locations, we obtained at least 10 feet of rock core. Additionally, we obtained rock core samples from all of our sounding with rock coring locations. Generally, the recovered rock cores consisted of light to medium gray, fine to coarse grained limestone with some clay seams and shale partings. The recovery for our rock cores ranged from 79 to 100 percent. The rock quality designations (RQDs) for our recovered rock cores ranged from very poor to excellent engineering quality with RQD values ranging from 0 to 100 percent. Core water loss was observed at borings B-1, B-4, B-5A, B-12, B-14A, B-15, B-16, B-18, RC-201A, RC-204, RC-303, RC-404, RC-405, RC-406, and RC-504 at depths ranging from 8.6 to 38 feet. Also, no core water return was observed at RC-307. Please note that at boring B-15, the core water returned at a depth of 30 feet. Additionally, open voids (ranging from approximately 2 to 22 inches) were observed at rock coring locations B-1, B-12, B-18, RC-201A, RC-203, and RC-310. Please reference our Rock Core Logs in the Appendix for further details.

6 LABORATORY TESTING

During the course of our work, we selected representative soil and rock samples for laboratory testing. The tests include obtaining data for soil classification testing. Detailed descriptions of these tests and the results of our testing are included in the Appendix. Tests performed included:

- Natural moisture contents
- Atterberg limits
- Percent fines analyses
- Unconfined compressive strength (rock)

GEOTECHNICAL DISCUSSION AND RECOMMENDATIONS

7 DISCUSSION-GEOTECHNICAL ISSUES

Based on our experience with similar projects and the conditions observed during our subsurface exploration, we believe the site can be adapted for the proposed development. The primary geotechnical concerns are:

- **Previously Developed Areas/Overhead and Underground Utilities**
- **Previously Placed (Old) Fill**
- **Varying Depth to Bedrock**
- **Karst**

The following sections of this report discuss each issue. However, recommendations to address the issues are contained in later sections of the report.

7A PREVIOUSLY DEVELOPED AREAS/OVERHEAD AND UNDERGROUND UTILITIES

Existing underground utilities (i.e. - sanitary sewer, water, gas, etc.) are located around the perimeter of the project site. A gas line runs along the north and a sanitary sewer trunk line runs along the west side of the site. An overhead electric line runs northwest to southeast along the northern boundary of the project site. Some of the utility lines mentioned above may need to be relocated or removed at the time of construction. Expect that the previous utility construction may have left old fill or other buried deleterious material within the project boundaries. Your budget should include a contingency for remediation of any encountered buried deleterious material.

Also, expect that previous construction activities could have left underground elements (such as wells, cisterns, septic tanks, septic fields, waste pits, old foundations, old basements, abandoned utilities, etc.), within the construction limits. Your project budget should include a contingency for remediation of any encountered buried underground structures.

7B PREVIOUSLY PLACED (OLD) FILL

Old fill was encountered at 28 of our 30 boring locations (and at all 5 of our test pit locations). The old fill generally consisted of a brown and gray clay with varying amounts of rock fragments. Wood fragments were observed in a few of the recovered soil boring samples of the fill material. Please note that large concrete boulders were observed in boring B-8. However, no other large concentrations of deleterious materials (large pieces of wood, trash, etc.) were observed in our recovered soil samples or noted in our auger cuttings. The thickness of the old fill ranged from 1.0 to 16.7 feet. Please note that in some borings (located in the proposed WWS tanks area), the fill material extended to the top of weathered rock. The old fill was generally sampled as firm to hard. Please note that the inclusion of rock fragments may have inflated the SPT N-counts. Thus, the soils on-site may be softer than indicated.

Old fill materials are often improperly compacted, commonly contain organics and debris, and can be poor bearing materials. Fills placed in an uncontrolled manner have proven to be problematic. The problems generally arise not from general settlement, but from erratic differential settling of the fill. The settlement of old fill masses is dependent upon several factors such as fill thickness, degree of compaction, fill contents, and age of the fill mass.

Due to the heavy weight of the WWS tanks, Headworks Facility, and bridge, we expect that all of the old fill (along with all of the residual soil) will be removed so that the foundations will bear directly on rock. We recommend complete removal of any encountered old fill within the proposed generator building footprint and replacement with new structural fill. Foundations or slabs for the generator building should not bear on the old fill.

7C VARYING DEPTH TO BEDROCK

At all 30 of our boring (and at all 100 of our sounding) locations, we encountered auger refusal (interpreted as bedrock) at depths ranging from 1.0 (probably a false auger refusal at sounding S-73) to 18.7 feet (at RC-201A). Please note that we had several probable false auger refusals due to encountering large boulders in the fill material. Mass earthwork cuts and deep excavations intersecting the soil/rock interface may have significant impact on the construction budget since rock removal is expensive. The encountered underlying bedrock appeared to consist of limestone and shale, thus hard rock removal (i.e.- blasting, hoe-ramming, etc.) will likely be required for this project. Therefore, the final grades for the project will have a major impact on the project costs due to the presence of shallow bedrock (in the southernmost proposed WWS tank area).

Due to the different depths to auger refusal and the amount of vertical relief across the site, differing foundation bearing conditions will likely be an issue. Bearing project foundations on any combination of both soil and rock will likely result in unwanted differential settlement. Therefore, we recommend that foundations either entirely bear on rock (either directly or indirectly) -OR- entirely on soil, not a combination of both.

We have assumed that the foundations for the WWS tanks, headworks facility, bridge, recycle pump station, flume structure, and splitter box will bear on rock due to the weight of each structure. Additionally, we have assumed that the foundations and slabs for the generator

building will bear on soil. Therefore, the foundations for each proposed structure should utilize the same bearing conditions.

7D KARST

Karst is common in Central Kentucky and typically include, sinkholes, caverns, erratic/ irregular (pinnacle and rock channels) bedrock surfaces, and "floater" type boulders or rock cobbles in the native soil overburden. The prominent topographic feature of Karst regions in Central Kentucky is the sinkhole. This is defined as areas underlain by carbonate rocks that are characterized by closed surface depressions and internal drainage systems.

An in-depth Karst study was beyond the scope of this exploration. As previously discussed, no signs of Karst activity were observed in our soundings and/or test pits performed in the potential sinkhole area (South Tank). We did not observe obvious indications of surface depressions on or adjacent to the site, nor was a relatively erratic bedrock profile present at our boring and/or sounding locations, both of which are commonly associated with Karst topography. The geologic mapping also did not show mapped sinkholes within ½ mile of the site. Please note that we observed open voids in 6 of our 62 rock core locations and observed core water loss in 15 of our 62 rock coring locations (both of which are indicative of Karst activity).

Raveling failures are the most common of the subsidence phenomena that are associated with areas underlain by limestone formations. A typical scenario for sinkhole development caused by raveling begins with the natural rising and lowering of the ground water table and is aggravated by surface water migration downward through the subsurface soils. The migrating water eventually transports soil particles into a void or solution feature in the rock. With time, the resulting voids in the soil zone collapse under the force of gravity. This raveling can lead to the development of increasingly large voids within the soil mass. Continued long term water movement causes the void or cavity to become progressively larger until the soil arch becomes thin near the ground surface and collapses into the cavity resulting in a dropout. Surface erosion then continues to enlarge the dropout to a conical, rounded depression - a sinkhole.

Additionally, as the water encounters the limestone bedrock, it continues to migrate downward into small fissures and along bedding planes within the rock unit. With time, the migration of water may result in solution weathering of the limestone bedrock. The natural acidity in water migrating through the bedrock reacts with the calcium-based limestone rock dissolving the rock. This results in the formation of voids (or cavities) in the rock mass itself. The open voids in the bedrock act as conduits for movement of water and suspended solids from above.

Based on our knowledge of the area geology, sinkholes (or slots/troughs in the bedrock) could be exposed during grading activities and foundation and utility construction. Detailed site proofrolling and foundation observations are frequently utilized in an attempt to locate incipient soil dropouts. Sinkholes must be evaluated and treated on an individual basis. A CSI geotechnical engineer should be retained for remediation recommendations if a sinkhole is exposed during construction. Where the soil overburden is relatively thick, treatment of depressions will likely involve monitoring by a CSI geotechnical engineer during earthwork

operations to observe indications of sinkhole throats and conduits after stripping of topsoil from the site and soil cutting activities are complete.

8 PROJECT DISCUSSION

Based on our discussions with the design team, we understand that construction will consist of two wet weather storage (WWS) tanks, a headworks facility, a generator building, a bridge crossing West Hickman Creek, a recycle pump station, flume structure, and a junction chamber for flow splitting. Also, several ancillary structures (i.e.- valve vaults) and extensive piping are also proposed.

The two WWS tanks will be pre-stressed concrete tanks partially below grade with a preliminary center elevation of 906.0 feet. Therefore, portions of both tanks will be approximately 15 to 20 feet below grade. We understand that the South Tank will be constructed first, while the North Tank will be constructed during Phase 2. Additionally, we understand that the foundation for the South Tank will consist of a monolithic slab bearing on rock (either directly or indirectly), while the foundations for the North Tank will consist of a combination of shallow spread foundations bearing on rock and drilled shafts end-bearing on bedrock.

We understand that the South Tank footprint will be undercut to (or into) rock and backfilled to subgrade with lean concrete. However, if favorable conditions are encountered and approved by project engineer, dense graded aggregate (DGA) may be used in lieu of lean concrete. Thus, the South Tank will be supported directly or indirectly on rock. Since the South Tank will be supported by rock, probe holes will be required to determine if significant voids exist below the foundation level. When the bedrock is approved and lean concrete fill (or DGA, if favorable conditions are encountered and approved by project engineer) is placed (if necessary), we expect minimal settlement for the tank.

We also understand that the foundations for the North Tank will consist of a combination of shallow spread foundations bearing on rock and drilled shaft foundations end-bearing on rock. Since the foundations will be bearing on bedrock, we expect minimal settlement for the tank.

We understand that all three valve vaults will consist of foundations bearing on rock. The preliminary FFEs for the valve vault slabs include 894.0, 894.5, and 896.5 feet.

The headworks facility consists of several components: truck loading bay, screen and grit handling room, pump station wet wells, pipe gallery, grit removal tanks, and flume channel. The grit tanks and pipe gallery sections have a preliminary bottom of slab elevation of 887.0 feet, while the pump station wet wells have a bottom slab elevation of 850.0 feet. The influent channels and screening room have a preliminary bottom of slab elevation of 863.0 feet. The flume channel has a bottom of slab elevation of 903.5 feet. Additionally, the truck loading bay has a preliminary FFE of 897.0 feet. We understand the entire headworks facility footprint will be undercut to (or into) rock and backfilled as necessary with lean concrete. Thus, foundations will be either mat or shallow spread footings bearing directly or indirectly on rock. Since this structure will be supported by rock, probe holes will be required to determine if significant voids exist beneath the applicable foundations. Since all soil will be

removed from beneath the footprint of this structure, we expect minimal settlement since all foundations will bear on lean concrete over bedrock and/or directly on bedrock.

We understand the generator building will consist of shallow spread foundations bearing on soil with a slab-on-grade concrete floor. The preliminary FFE for the generator building is 908.0 feet.

We understand the bridge will consist of a three-sided culvert with shallow foundations bearing on rock.

We understand that three new structures (a recycle pump station, a flume structure, and a splitter box) will be constructed on the existing plant side of the West Hickman Creek. The recycle pump station will have an elevation of 865.5 feet, the flume structure will have an elevation of 873.25 feet, and the splitter box will have an elevation of 877.0 feet. Thus, foundations will be either mat or shallow spread footings bearing directly or indirectly on rock. Since these structures will be supported by rock, probe holes will be required to determine if significant voids exist beneath the applicable foundations. Since all soil will be removed from beneath the footprint of these structures, we expect minimal settlement since all foundations will bear on lean concrete and/or directly on bedrock.

9 EARTHWORK

Historically, more change orders (in orders and costs) occur during the earthwork portion of construction than in almost any other part of the project. Further, the site preparation phase of construction always affects the future performance of project structures and pavements. Add into this, the fact that earthwork is the portion of work most influenced by wet weather and unknown conditions and time-wise, this section of the report could be the most important to prevent and minimize delays and costs during construction and for the life of the project.

Please review the concerns listed in section 7 prior to reading the following recommendations. If problems occur that the recommendations do not address or do not adequately remedy, please contact CSI as soon as possible.

9A SITE PREPARATION (WORK PRIOR TO FILLING)

- When ready to commence construction, all 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 stockpiled for use as topsoil in landscape areas.

- For the South Tank, valve vaults, headworks facility, bridge, recycle pump station, flume structure, and splitter box, remove all soil to the bedrock surface.

- For the generator building, remove all old fill to stiff or better residual soil.

- Areas ready to receive new fill should be proofolled with a heavily loaded dump truck (GVW of at least 80,000 pounds) or similar equipment judged acceptable by a CSI geotechnical engineer.

- The level of proofroll should be determined by a CSI geotechnical engineer on a case-by-case basis.
- Perform the proofrolling after a suitable period of dry weather to avoid degrading the subgrade.
- Areas which pump, rut, or wave during proofrolling may require undercutting, depending on the location of the area and the use of the area, so a CSI geotechnical engineer should be contacted for guidance.
- Backfill of undercut areas should be done in accordance with sections 9B and 9C of this report.
- Retain CSI to observe the proofrolling operations and make recommendations for any unstable or unsuitable conditions encountered. This can save time on the construction schedule and save unnecessary undercutting.

We recommend that site grading should take place between 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.

9B NEW FILL OPERATIONS (SOIL)

Our laboratory tests indicate that the on-site soils are suitable for use as structural fill material. The old fill material may be used as structural fill if all deleterious materials (if any) are removed and the big boulders are crushed to meet maximum particle size criteria. Please note that it may not be economical to crush and screen the existing fill material due to the amount of large rock fragments observed. If any off-site soil fill material is imported to the project site, representative samples should be obtained of the proposed fill material to determine the moisture-density relationship 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:

- Place fill in maximum 8-inch thick loose lifts.
- Fill lifts should be compacted to at least 95 percent of the soil's maximum dry density (ASTM D 698).
- Maintain the moisture content of compacted fill within 3 percent of optimum moisture.
- Off-site soils with a plasticity index (PI) of greater than 30 percent should not be used in the new fill.
- Maximum particle size of the soil should be limited to 4 inches in any one dimension. Additionally, no concentration of large fragments should be permitted.

- 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.

- Soils should not be "overcompacted" and construction traffic should be kept to a minimum to assure compaction is achieved and that the soil is not allowed to "break down".

- Retain a representative of CSI to observe and document fill placement and compaction operations.

9C NEW FILL OPERATIONS (DGA)

If favorable conditions are encountered and approved by the project engineer, DGA (dense graded aggregate) may be used as backfill in lieu of lean concrete. DGA fill should not be used within the 100-year flood plain. After the subgrade has been approved to receive new fill and the geogrid has been placed, the DGA fill may commence with the following procedures and guidelines recommended:

- Place fill in maximum 8-inch thick loose lifts.

- Fill lifts should be densified using vibratory compaction methods.

- Fill lifts should be compacted to at least 95 percent of the DGA's maximum dry density (ASTM D 698). 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.

- If field conditions warrant, dry DGA may be placed at the direction of a CSI geotechnical engineer. If the DGA will be placed dry, field density testing will yield distorted results. A "roller patten" may be performed to determine a target density if field density testing is required. Otherwise, proofrolling of each lift (if possible) should be performed with a partially loaded tri-axle dump truck as a basis of approval.

- Retain a representative of CSI to observe and document fill placement and compaction operations.

9D BACKFILL OPERATIONS (FOUNDATION WALLS, UTILITIES, ETC.)

These materials are placed in more confined areas than mass earthwork materials and therefore cannot be placed in full compliance with sections 9A or 9B. 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 section 9B.

- CSI should be retained to provide addition recommendations for backfill.

9E CUT AND FILL SLOPES

Steep cut/fill slopes are expected for this project; however, a detailed slope stability analysis was beyond the scope of this report. The following table shows our recommended steepest, permanent slopes for the materials encountered during our exploration.

Table 1. General Maximum Allowable Slope Grading

Material	Slope Type	Steepest Permanent Slope
Soil	Cut or Fill	3H:1V*
Rock	Cut	1H:1V

*For mowing and maintenance considerations a 4H:1V or flatter slope may be more desirable.

The following are general slope construction guidelines:

- Any area within 10 horizontal feet of 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 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. CSI should be retained at the time of construction to provide guidance on cut soil slope construction.

9F GENERAL NOTES

- 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.

- If any soil placement problems occur, CSI should be retained to provide additional recommendations, as needed.

10 SITE DRAINAGE

During construction, water should not be allowed to pond in excavations or undercutting will likely be required. Additionally, allowing water to pond in excavations (especially those at or near the soil/rock interface) greatly increases the risk for activating latent Karst features. During the life of the project, slope the subgrade and other site features so that surface water flows away from the site structures. Structure roof drains should be piped away to proper storm drainage systems. Diversion ditches should be used at the toe of all slopes to keep surface water from accumulating at or near site structures.

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. Due to the presence of old fill and the site's proximity to the nearby West Hickman Creek, water could be encountered in the foundation excavations. If normal dewatering measures prove insufficient, CSI should be retained to provide recommendations on the issue.

Wet conditions are possible in excavations on-site during site construction (especially in the excavations near the creek). Additionally, deep excavations into rock could intersect underground conduit systems. Conduits were not observed during our field work; however, we did observe open voids in a few of our recovered rock cores. These open voids could potentially carry groundwater flow. Thus, conduit systems may be present at the site. Daylighting wet zones for drainage or the use of french/rock drains may be prudent or cost effective methods of de-watering wet areas of the site. Pumping with long-flexible hoses day-lighted hundreds of feet away or other types of sumping could also be utilized if necessary. CSI should be retained to observe all excavations in locations of springs or other water-bearing features.

As previously mentioned, the new structures (recycle pump station, flume structure, and splitter box) on the existing plant side of the West Hickman Creek and the wet well in the headworks facility are within the 100-year floodplain. Thus, buoyancy will be an issue regarding these structures. However, based upon our discussions with the structural engineer, we understand that the weight of the structures will resist the buoyancy (therefore, rock anchors are not necessary for these structures).

Please note that special construction procedures may be required if groundwater becomes an issue during construction. **We expect that groundwater will be an issue, especially in the deep excavations (for the recycle pump station, flume structure, and splitter box) on the existing plant side of the creek and in the deep excavation for the wet well in the headworks facility.**

11 FOUNDATIONS

We understand that the majority of the North Tank will be supported by drilled shaft foundations end-bearing on rock, while the South Tank, a portion of the North Tank, valve vaults, headworks facility, recycle pump station, flume structure, and splitter box will be supported either directly on bedrock or indirectly on competent bedrock. The generator

building will consist of shallow spread footings bearing on soil, while the bridge will consist of shallow spread footings bearing on rock. If there are any changes in the project criteria, CSI should be allowed to review the recommendations to determine if any modifications are required.

11A DRILLED SHAFT FOUNDATIONS

Design Considerations for Rock-Bearing Foundations

Due to the rock profile beneath the North Tank, deep foundations (drilled shafts) bearing on limestone bedrock will be required in some areas of the tank. The following table provides drilled shaft design parameters for this portion of the project. The recommendations are based on all shafts having a minimum 2-foot rock socket into bedrock. Acceptable bearing bedrock shall be determined in each drilled shaft at the time of construction (see details in following paragraphs). We recommend a minimum drilled shaft diameter of 30 inches be used in the design to allow down-hole inspection of the bedrock.

Table 2. Drilled Shaft Design Parameters

Description	Allowable Skin Friction (psf)	Allowable End-Bearing Pressure (psf)	Allowable Passive Pressure (psf)	Cohesion (psf)	Strain (ε_{50})	Lateral Modulus (pci)
Fill (if any remains)	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore
Residual Clay	400	----	1,500	2,000	0.001	150
Weathered Limestone (2 foot rock socket)	400	----	1,500	2,000	0.001	150
Limestone	9,000	60,000	5,000	50,000	0.00001	3,000

The above table assumes a total unit weight of 125 pcf and 140 pcf for the fill/residual clay and limestone, respectively. The allowable skin friction and allowable end-bearing pressure parameters for the limestone are based on the assumption that drilled shafts will be embedded at least 2 feet into bedrock (i.e- 2 foot rock socket). Additionally, the allowable skin friction and passive resistances have a factor of safety of about 2. If the drilled piers are designed using the above parameters and bear within the limestone bedrock, settlements are not anticipated to exceed 1/4 inch.

Additional design considerations for drilled shaft foundations are as follows:

- Design the drilled shaft for end bearing and/or skin friction (below the 2 foot rock socket) for gravity loading conditions.
- Skin friction can be applied to resist the uplift by multiplying the side surface area by the full skin friction value and applying the appropriate factor of safety. NOTE: No skin friction should be calculated for any remaining fill material.

- The allowable uplift capacity of the drilled shaft should be no more than 2/3 of the allowable shaft resistance for downward loading.

Rock Excavation

The amount of rock excavation in drilled shafts can have a major impact on the final cost of installed foundations. CSI's experience indicates general drilled shaft construction and delineation of "rock" in the excavation is greatly facilitated if suitable drilling equipment is used. The use of a drill capable of producing at least 500,000 inch·pounds of torque and 35,000 pounds of downward force is recommended. Additionally, CSI recommends that competent rock be defined as material which cannot be penetrated by a heavy duty earth auger with hardened teeth at a rate in excess of 3 inches per minute.

11B DRILLED SHAFT FOUNDATIONS - CONSTRUCTION NOTES

The performance of the drilled shaft is dependent upon the method of construction, and *the most appropriate method of construction is normally the foundation contractor's responsibility*. The depth of foundation embedment was unknown at the time of this report and will be determined by the foundation designer.

Drilled Shaft Construction

- Provide a minimum drilled shaft diameter of 30 inches to reasonably enter the drilled shaft excavation for cleaning, bottom preparation and inspection.

- Clean the foundation bearing area so it is nearly level and is free of ponded water or loose material.

- Install a temporary protective steel casing to prevent side wall collapse, prevent excessive mud and water intrusion, and to allow workers to safely enter, clean and inspect the drilled shaft.

- Make provisions for groundwater removal from the drilled shaft excavation (not expected). Ground water conditions at this site may require the use of special procedures to achieve a satisfactory foundation installation. If water is flowing into the drilled shaft at less than 20 gallons per minute, pumps may be used to maintain less than 2 inches of water in the drilled shaft during cleaning and inspection. After approval of the bearing surface, the pumps should be pulled and concreting commenced immediately. If more than 20 gallons per minute are flowing into the drilled hole, the water level should be allowed to stabilize before attempting to place the concrete. For this condition, concrete placement should be accomplished using a tremie pipe or concrete pumping equipment.

- Clean the socket "face" prior to concrete placements. Cleaning will require hand cleaning or washing if mud smear forms on the face of the rock. The geotechnical engineer should approve the rock socket surface prior to concrete placement.

- Retain a CSI geotechnical engineer to observe the bottom of the drilled shaft after the bottom of the hole is leveled, cleaned of any mud or extraneous material, and dewatered.

- Probe holes (1-1/2 to 2 inch diameter) should be drilled at least two times the shaft diameter (5 feet minimum) into the bedrock for each drilled shaft with a pneumatic drill.

- The protective steel casing may be extracted as the concrete is placed provided a sufficient head of concrete is maintained inside the steel casing to prevent soil or water intrusion into the newly placed concrete.

- Specify concrete slumps ranging from 4 to 7 inches for the drilled shaft construction. These slumps are recommended to fill irregularities along the sides and bottom of the drilled hole, displace water as it is placed, and permit placement of reinforcing cages into the fluid concrete.

- Direct the concrete placement into the drilled hole through a centering chute to reduce side flow or segregation.

11C DRILLED SHAFT FOUNDATIONS - INSTALLATION MONITORING

It is recommended that the drilled shaft construction be observed by a CSI geotechnical engineer. The observation should address the following items:

- Top location within tolerances

- Correct plan dimensions

- Plumbness within tolerances

- Materials excavated agree with borings

- Statement of bottom cleanliness

- Construction procedure

Again, drilled shafts with diameters of 30 inches or greater are large enough to allow a down-hole inspection of the bearing conditions. At least one, 1-1/2 to 2-inch diameter probe hole must be drilled at least two times the shaft diameter (5 feet minimum) into the bedrock for each drilled shaft. These probe holes are usually drilled with a pneumatic percussion drill. Larger diameter probe holes will be allowed; however, they will require filling to the bottom of the drilled shaft elevation with high strength, non-shrink grout.

A CSI representative should check the probe hole using a hooked-end steel feeler rod to assess the rock continuity. If this check indicates a discontinuous/compressible seam in the bedrock, the drilled shaft should be excavated deeper. However, these additional excavations should not extend beyond a maximum depth of 5 feet below the design bottom of drilled shaft elevation. In these cases, the increased side friction will need to be calculated on an individual basis. Also,

additional probe holes may be required by the CSI geotechnical engineer if the results indicate inconsistent bedrock conditions. Significant deviations from the specified or anticipated conditions should be reported to the owner's representative and to the foundation designer.

11D SHALLOW SPREAD OR MAT FOUNDATIONS ON ROCK

Due to the weight and the elevations of the South Tank, a portion of the North Tank, valve vaults, headwork facility, the bridge, the recycle pump station, the flume structure, and the splitter box, rock bearing foundations will be required. The bridge foundations will consist of shallow spread foundations bearing on rock, while the foundations for the other structures will consist of mat foundations bearing on rock.

These foundations (mats or spreads) should not bear on soil. Any existing soil or weathered rock should be excavated until competent rock is exposed in the bottom of the foundation excavation. Competent rock will be determined during construction by observing the teeth of a medium size excavator (such as the Cat 320 series) being dragged vertically across the top of the exposed rock. The equipment must meet the following specifications: 50,000 lbs (minimum weight), 150 HP (minimum horsepower), 2 foot minimum bucket width, using a rock bucket with rock teeth. The acceptance criteria is based upon removal of all loose soil, mud, and excess water in the bottom of the excavation.

Probe holes (described in detail below) will be required for the South Tank, a portion of the North Tank, headworks facility, recycle pump station, flume structure, and splitter box. Upon approval by a CSI engineer, the excavation can be backfilled to the design bottom of footing elevation with lean concrete. If favorable conditions are found and approved by the project engineer, DGA may be used as backfill in lieu of lean concrete for the South Tank. Thus, foundations will be bearing directly on bedrock or indirectly on rock through lean concrete (or DGA - if approved). For foundations bearing completely on bedrock or on lean concrete overlying bedrock (or DGA - if approved), mat or spread foundations may be sized using a maximum allowable bearing pressure of **5,000 pounds per square foot (psf).**

The recommended bearing pressure is based on the assumption that 1½- to 2-inch diameter probe holes will be drilled into the bedrock so that a CSI geotechnical engineer can evaluate the underlying bedrock. These probe holes are usually drilled with a pneumatic percussion drill. Larger diameter probe holes will be allowed; however, they will require filling to the bottom of foundation elevation with high strength, non-shrink grout. The probe holes will need to be drilled every 100 square feet of the South Tank, a portion of the North Tank, headworks facility, recycle pump station, flume structure, and splitter box footprints to a depth of 5 feet.

A CSI geotechnical engineer should check the probe hole using a hooked-end steel feeler rod to assess the rock quality and continuity. If this check indicates a void or discontinuous/ compressible seam in the rock, the foundation excavation should be excavated deeper. The frequency of these probe holes may be increased by the CSI geotechnical engineer if the results indicate inconsistent bedrock conditions. Significant deviations from the specified or anticipated conditions should be reported to the owner's representative and to the foundation designer.

We understand that the bridge will consist of shallow spread foundations bearing directly on rock. Probe holes are not required for the bridge foundations. Upon approval by a CSI engineer, the excavation can be backfilled to the design bottom of footing elevation with lean concrete (2,000 psi minimum). Flowable fill, DGA, or No. 57 stone is not acceptable backfill material for the bridge foundations (due to expected groundwater issues). For foundations bearing completely (either directly or indirectly) on sound limestone bedrock, foundations may be sized using a maximum allowable bearing pressure of **10,000 pounds per square foot (psf)**. Thus, foundations may be sized using an ultimate bearing pressure of 30,000 psf using a factor of safety of 3.

A detailed settlement analysis was beyond the scope of this exploration. However, based on the expected structural loads and foundations bearing on competent bedrock indirectly through lean concrete, we expect both total settlement and differential settlement for mats or shallow spread foundations on rock will not exceed 1/4 inch.

Additional design considerations for spread foundations bearing on bedrock are outlined as follows:

- Spread foundations bearing on bedrock are not subject to a minimum frost embedment depth.

11E SHALLOW FOUNDATIONS ON ROCK - CONSTRUCTION NOTES

For foundations constructed on top of competent bedrock, we also recommend the following procedures:

- Loose soil, mud, debris, and excess water should be removed from the bearing surface immediately prior to concrete placement.

- Probe holes (1-1/2 to 2 inch diameter) should be drilled for every **100 square feet** of the South Tank, a portion of the North Tank, headworks facility, recycle pump station, flume structure, and splitter box footprints to a depth of 5 feet using a pneumatic percussion drill. Please note probe holes are not required for the bridge.

- If a void is detected in the underlying bedrock, additional probe holes should be drilled. In order to delineate the direction and extent of the void, the additional probe holes should be drilled half way between the probe hole containing the void and the adjacent solid rock probe holes. Remediation of the void (i.e.- excavating the overlying rock to expose the void and backfilling with lean concrete) will be at the discretion of the geotechnical engineer.

- Use lean concrete as fill material to backfill the undercut South Tank, a portion of the North Tank, headworks facility, recycle pump station, flume structure, and splitter box footprints. If favorable conditions are encountered and approved by the project engineer, DGA is an acceptable backfill for the South Tank or portion of the North Tank in lieu of lean concrete.

- A CSI geotechnical engineer should observe all foundation excavations and provide recommendations for treatment of any unsuitable conditions encountered.

11F SHALLOW FOUNDATIONS ON ROCK - SPECIAL CONSTRUCTION CONDITIONS

Boring RC-305 (well within the footprint of the South Tank) indicates a possible depression in the bedrock profile. If this depression is encountered during construction, it should be cleaned out as much as possible (using a trackhoe) and backfilled to the required grade with lean concrete.

If a series of voids are found which cause additional rock removal and the resulting "hole" in the bedrock surface is located well inside the tank footprint, it should be cleaned out as much as possible (using a trackhoe) and backfilled to the required grade with lean concrete.

If additional rock removal is required (due to voids within the bedrock) along the edge of the tank footprints -OR- if the top of bedrock profile drops off near the edge of the tank footprints, then the remediation will depend on which tank footprint this occurs within. In the South Tank, remove loose rock, bench 1 foot horizontal for 1 foot vertical, and backfill with lean concrete at least 5 feet beyond the outer edge of the tank foundation. In the North Tank, two options are available depending on the location: remove loose rock, bench 1 foot horizontal for 1 foot vertical, and backfill with lean concrete at least 5 feet beyond the outer edge of the tank foundation -OR- add additional drilled shafts as necessary.

11G ROCK BEARING FOUNDATIONS - COMPETENT ROCK

The following table summarizes our interpretation of competent rock at our rock coring locations within the footprints of the rock bearing foundations. Our top of competent rock elevations are based on visual observations in the field, calculated rock quality designation (RQD) values, and reviewing the rock cores. We cannot predict the top of competent rock elevations at boring locations B-1 through B-7, since rock coring was terminated prior to encountering competent rock. Please note that these borings were performed during our initial geotechnical work (prior to the competent rock requirement). Additionally, we are not able to predict the top of competent rock at RC-305, since coring was also terminated prior to encountering competent rock. As requested by Tetra Tech, Inc., an offset sounding with rock coring was performed approximately 5 feet away from RC-305 toward the center of the South Tank. Competent rock was encountered at this offset location. Thus, we suspect that RC-305 was performed in a slot or crevice in the bedrock (not uncommon in Karst terrain).

Table 3. WWS North Tank Competent Rock Summary Table

Boring No.	Elevation (ft)*	Auger Refusal Depth (ft)	Auger Refusal Elevation (ft)	Top of Competent Rock Elevation (ft)**
North Tank				
B-1	919.1	11.3	907.8	***
B-2	918.9	18.1	900.8	***
B-3	926.1	14.8	911.3	***
B-4	924.0	17.7	906.3	***
B-5	930.1	17.7	912.4	***
B-6	924.6	17.2	907.4	***
B-7	915.8	9.6	906.2	***
RC-201A	913.6	18.7	894.9	889.1
RC-202	924.5	10.2	914.3	902.3
RC-203	922.2	17.7	904.5	896.9
RC-204	921.3	15.3	906.0	899.3
RC-205	926.5	16.2	910.3	903.5
RC-206	928.1	15.3	912.8	910.8
RC-207	929.9	12.3	917.6	912.6

Table 4. WWS South Tank Competent Rock Summary Table

Boring No.	Elevation (ft)*	Auger Refusal Depth (ft)	Auger Refusal Elevation (ft)	Top of Competent Rock Elevation (ft)**
South Tank				
B-9	931.7	11.8	919.9	911.9
B-10	929.4	10.7	918.7	903.6
RC-301	920.5	6.0	914.5	909.5
RC-302	918.8	9.8	909.0	907.8
RC-303	925.3	5.1	920.2	913.2
RC-304	931.4	5.1	926.3	921.3
RC-305	927.0	4.9	922.1	***
RC-305A	927.1	4.8	922.3	917.3
RC-306	924.8	6.5	918.3	914.8
RC-307	928.8	9.4	919.4	907.4
RC-308	927.4	3.8	923.6	915.4
RC-309	926.6	6.9	919.7	912.6
RC-310	926.8	7.4	919.4	909.1
RC-311	927.9	4.1	923.8	892.9
RC-312	930.4	5.2	925.2	920.2
RC-313	928.0	3.7	924.3	904.3

Table 5. Ancillary Structures Competent Rock Summary Table

Boring No.	Elevation (ft)*	Auger Refusal Depth (ft)	Auger Refusal Elevation (ft)	Top of Competent Rock Elevation (ft)**
Ancillary Structures				
RC-401	931.6	7.9	923.7	923.7
RC-402	927.5	8.2	919.3	912.5
RC-403	908.9	6.0	902.9	893.3

Table 6. Headworks Facility Competent Rock Summary Table

Boring No.	Elevation (ft)*	Auger Refusal Depth (ft)	Auger Refusal Elevation (ft)	Top of Competent Rock Elevation (ft)**
Headworks Facility				
B-15	903.2	8.1	895.1	881.7
B-16	905.8	7.8	898.0	887.8
RC-501	881.2	10.9	870.3	868.2
RC-502	881.8	10.7	871.1	871.1
RC-503	908.1	4.5	903.6	890.1
RC-504	910.6	4.0	906.6	886.6
RC-505	914.5	4.7	909.8	895.5
RC-506	907.3	3.7	903.6	892.2

Table 7. Existing Plant Side Structures Competent Rock Summary Table

Boring No.	Elevation (ft)*	Auger Refusal Depth (ft)	Auger Refusal Elevation (ft)	Top of Competent Rock Elevation (ft)**
Recycle Pump Station				
RC-404	888.5	14.5	874.0	873.0
Flume Structure				
RC-405	888.0	14.5	873.5	872.5
Splitter Box				
RC-406	887.5	12.0	875.5	873.5

* Elevations were provided by the project surveyor, Hall Harmon Engineers, Inc.

** Top of competent rock elevations were estimated using the following criteria: rock quality designation (RQD) value greater than 50, visual field observations, and review of rock cores.

*** Top of competent rock elevations could not be provided since rock coring was terminated prior to encountering competent rock.

DISCLAIMER: Although our top of competent rock elevations are based on specific criteria, we cannot accurately predict the true top of competent rock that will be encountered in the field during construction. Competent rock will be determined during construction by observing the teeth of a medium size excavator (such as the Cat 320 series) being dragged vertically across the top of the exposed rock. The equipment must meet the following specifications: 50,000 lbs (minimum weight), 150 HP (minimum horsepower), 2 foot minimum bucket width, using a rock bucket with rock teeth. The acceptance criteria is based upon removal of all loose soil, mud, and excess water in the bottom of the excavation. Thus, our predicted competent rock elevations may vary (possibly greatly) from those determined in the field. Additionally, if voids are encountered in probe holes, the rock will need to be undercut to an elevation below the void which will affect the actual top of competent rock elevation.

11H SHALLOW FOUNDATIONS ON SOIL

Shallow spread footings on soil for the generator building may be sized using a **maximum allowable bearing pressure of 2,500 pounds per square foot (psf)**. Foundations should bear on stiff or better residual soil or new fill. Foundations should not bear on old fill. If rock is encountered within 2 feet of the bottom of foundation (BOF) elevation (not expected), we recommend that the rock be undercut at least 2 feet below bottom of footing and the excavation be backfilled with compacted soil up to the design BOF elevation to provide a "cushion".

A detailed settlement analysis was beyond the scope of this exploration. However, based on the expected generator building loads, the anticipated behavior of the soil types encountered during field activities, and our experience with similar projects, we expect that total settlements will not exceed 1 inch, and that differential settlements will not exceed 1/2 inch over 30 feet. We recommend that the generator building be designed to accommodate these magnitudes of total and differential settlements.

Settlement estimates are based, in part, upon the assumption that site preparation is performed in accordance with our recommendations and with good quality control of the earthwork. Removal of all old fill and proper placement and compaction of new fill is particularly important in keeping settlements within tolerable limits.

Additional design considerations for project foundations are outlined as follows:

- Design all footings with a minimum 18 inches width.
- All footing bottoms should bear at least 24 inches below finished exterior grading (KBC Table 1805.2.1 for Jessamine County).
- Include control joints at suitable intervals in the walls of structures and in areas where changes in support from native soil to fill are anticipated, to help accommodate differential foundation movements.

11I SHALLOW FOUNDATIONS ON SOIL - CONSTRUCTION NOTES

Any soils can lose strength if they become wet, so we recommend the foundation subgrades be protected from exposure to water. For foundations construction, we also recommend the following procedures.

- ∞ For soils that will remain exposed overnight or for an extended period of time, place a "lean" concrete mudmat over the bearing areas. The concrete should be at least 4 inches thick. Flowable fill concrete or low-strength concrete is suitable for this cover, as conditions allow;
- ∞ Disturbed soil should be removed prior to foundation concrete placement.
- ∞ Foundation bearing conditions should be benched level.
- ∞ Soils loosened by excavation operations should be recompacted prior to reinforcing steel placement.
- ∞ Loose soil, debris, and excess surface water should be removed from the bearing surface prior to concrete placement.
- ∞ Retain a CSI geotechnical engineer to observe all foundation excavations and provide recommendations for treatment of any unsuitable conditions encountered.
- ∞ The foundation bearing conditions should be checked by means of portable dynamic cone penetration (DCP) testing at the direction of a CSI geotechnical engineer.

12 SEISMIC SITE CLASSIFICATION

The Kentucky Building Code (KBC), as updated was reviewed to determine the Site Seismic Classification. Based on our review of geologic data, our experience, and subsurface conditions encountered, we recommend a **Seismic SITE CLASS "B"** for foundations for the WWS tanks, headworks facility, bridge, recycle pump station, flume structure, and splitter box since their foundations will be bearing on rock.

Based on our review of geologic data, our experience, subsurface conditions encountered, and foundations bearing on soil for the proposed generator building, we recommend a **Seismic SITE CLASS "C"** for foundation design purposes.

A detailed geotechnical earthquake engineering analysis was not performed since it was beyond the scope of our authorized work. However, based on a review of published literature and our experience with similar subsurface conditions, we believe the potential for slope instability, liquefaction, and surface rupture due to faulting or lateral spreading resulting from earthquake motions is low. However, this potential could be elevated during wet periods of the year unless adequate drainage is provided.

13 CONCRETE SLAB-ON-GRADE FLOOR SLABS

The generator building will utilize concrete slab-on-grade construction. If rock is encountered within 12 inches of finished subgrade elevation (not expected), we recommend that the rock be undercut at least 12 inches below subgrade and the excavation backfilled with compacted soil up to the design finished subgrade elevation to provide a "cushion". In no case should the floor slab bear on both soil and rock. Additionally, the concrete slabs-on-grade should not bear on old fill.

The following features are recommended as part of grade supported slab construction:

- Provide isolation joints between the slab and columns and along footing supported walls.
- Adequate joint patterns (ACI and ICC guidelines) should be used to permit slab movement due to normal settlement, normal subgrade disturbance, and material expansion/contraction.
- Place a minimum of 4 inches of compacted dense graded crushed stone beneath the slab to provide a working base. The actual thickness of the crushed stone layer should be based on design requirements.
- Keep the crushed stone moist, but not wet, immediately prior to slab concrete placement to minimize curling of the slab due to differential curing conditions between the top and bottom of the slab.
- Retain CSI to review the actual subgrade conditions prior to slab construction and to make recommendations for any unsuitable conditions encountered.

Note: Slab subgrade conditions are also considered earthwork areas; thus, the recommendations contained in the Earthwork section of the report apply.

14 BELOW GRADE STRUCTURES

Based on the provided preliminary FFEs, we understand that portions of the wet weather storage tanks, headworks facility, recycle pump station, flume structure, and splitter box will be below grade. Thus, these below grade portions will be subjected to lateral earth pressures due to the backfill around them. For soil backfill placement and compaction requirements, please reference section 9B of this report.

The following table presents soil backfill, earth pressure design parameters for Equivalent Hydrostatic Pressures (EHP) and Earth Pressure coefficients. The values given assume the backfill surface is nearly level, and that no surcharge is placed on the backfill. Hydrostatic pressures due to high groundwater levels during flood events must be taken into consideration (as applicable). Clayey soil (typical for this area) was used in these calculations and the following EHP values assume a unit weight of 125 pcf (pounds per square foot).

Table 8. Soil Material Equivalent Hydrostatic Pressures (EHP) and Earth Pressure Coefficients

Condition	EHP (pcf)	Coefficients
Active	61	$K_a = 0.49$
At Rest	83	$K_o = 0.66$
Passive	255*	$K_p = 2.04$*

*Unfactored

The following table presents granular backfill, earth pressure design parameters for Equivalent Hydrostatic Pressures (EHP) and Earth Pressure coefficients. The values given assume the backfill surface is nearly level, the granular backfill is drained, the zone of backfill conforms to the minimum zone detailed above, and no surcharge is placed on the backfill. A unit weight of 100 pcf (pounds per square foot) was used for the backfill stone.

Table 9. Granular Material Equivalent Hydrostatic Pressures (EHP) and Earth Pressure Coefficients

Condition	EHP (pcf)	Coefficients
Active	30	$K_a = 0.30$
At Rest	50	$K_o = 0.50$
Passive	300*	$K_p = 3.0$*

*Unfactored

15 PAVEMENT RECOMMENDATIONS

No traffic loads were supplied to us for this project. However, we expect that the traffic in the pavement areas will be limited primarily to automobiles and delivery trucks (at least 3 times a week). Adequate soil/subgrade support is critical for any pavement area. Please refer to the recommendations contained in the Earthwork section of this report for subgrade preparation. Prior to stone base placement, we recommend an additional heavy proofroll (GVW of at least 80,000 pounds) of the subgrade should be performed to verify subgrade conditions. Recommendations for undercutting/repair of the subgrade can be made at that time by a CSI geotechnical engineer.

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.

The following pavement recommendations are based on our experience with similar materials and loading conditions. The recommendations are based on the assumption that the soil subgrade will be compacted according to the recommendations contained in this report.

15A ASPHALT PAVEMENT

Typically, pavement design is based on supplied traffic loads and CBR values. No traffic loads were supplied to us and a CBR test was beyond our scope of work. However, based on our soil laboratory results and our experience in the area, we expect CBR values between 3 to 5 percent. We recommend that the light duty pavement section be utilized in areas restricted mostly to automobiles (i.e. - parking areas, etc.) and that the heavy duty pavement section be used in the main drive lanes or where other heavy traffic loads are expected. Generalized pavement designs for both light duty and heavy duty asphalt pavement are given below based on assumed traffic loadings and empirical correlations with laboratory determined soil classifications.

Table 10. Light Duty Asphalt Pavement Section

Pavement Section Component	Thickness (in)
Bituminous Surface Course	1.5
Bituminous Binder Course	1.5
Dense Graded Aggregate (DGA)*	8.0

*DGA to be placed in 6 inch thick maximum, compacted lifts

Table 11. Heavy Duty Asphalt Pavement Section

Pavement Section Component	Thickness (in)
Bituminous Surface Course	1.5
Bituminous Binder Course	3.5
Dense Graded Aggregate (DGA)*	12.0

*DGA to be placed in 6 inch thick maximum, compacted lifts

The dense graded aggregate (DGA) should be placed and compacted in accordance with Kentucky Department of Highways Standard Specifications, latest edition. The asphalt should be mixed, placed, and compacted in accordance with Kentucky Department of Highways Standard Specifications, latest edition. It is common practice to place the base stone and binder course prior to completion of construction without placing the surface course. It should be noted that repeated passes of heavily loaded construction traffic on the binder course will likely decrease the service life of your pavement.

15B RIGID PAVEMENT (CONCRETE)

We anticipate concrete pavements will be used in areas where the pavement is subjected to high stresses such as entrances/exits and possibly other areas of the project site.

We recommend a minimum DGA thickness of 8 inches beneath new concrete pavement and a minimum concrete thickness of 6 inches for new concrete pavement areas. Obviously, thicker concrete pavement sections can be used in select areas where heavy wheel loads are expected. We also recommend that the concrete pavement be reinforced with heavy welded wire fabric or reinforcing steel. For dumpster pads and refuse container pads, the concrete pads should be large enough to accommodate both the refuse container and all axles of the truck.

16 NOTES ON THE REPORT AND RECOMMENDATIONS

We recommend that this 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 "Instruction to Bidders" section of the bid documents. A geotechnical exploration, such as the one we performed, uses widely spaced borings to attempt to model the subsurface conditions at the site. Because no exploration contains complete data or a complete model, there is always a possibility that conditions between borings will be different from those at specific boring locations. Thus, it is possible that some subsurface conditions will not be anticipated by the project team or contractor. If this report is included or referenced in the actual contract documents, **it shall be explicitly understood that this report is for informational purposes only**. CSI shall not be responsible for the opinions of, or conclusions drawn by, others.

It has been our experience that the construction process often disturbs soil conditions and this process, no matter how much experience we use to anticipate construction methodology, is not completely predictable. Therefore, changes or modifications to our recommendations are likely needed due to these possible variances. Experienced CSI geotechnical personnel should be used to observe and document the construction procedures 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 CSI to provide this service based upon our familiarity with the project, the subsurface conditions and the intent of our recommendations.

This report is based on the provided project information, the subsurface conditions observed at the time of the report, and our experience with similar conditions. As such, it cannot be applied to other project sites, types, or combinations thereof. 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. Our recommendations may then require modification.

No section or portion of this report (including Appendix information) can be used as a stand alone article to make distinct changes or assumptions. The entire report and Appendix should be used together as one resource. We wish to remind you that our exploration services include storing the soil samples collected and making them available for inspection for 30 days. The soil samples are then discarded unless you request otherwise. Rock cores are kept typically until the foundation installation is complete, and then discarded. Please inform us if you wish to keep any of the obtained samples.

While this report deals with samples of subsurface materials and some comments on water conditions at the site, no assessment of site environmental conditions or the presence of contaminants were performed.

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APPENDIX

Site Location Plan
Boring, Sounding, and Test Pit Location Plan
Key to Symbols and Descriptions
Soil Boring Logs
Rock Core Logs
Soundings Summary Table
Test Pit Logs
Field Testing Procedures
Summary of Lab Testing Table(s) and Lab Testing Sheets
Laboratory Testing Procedures

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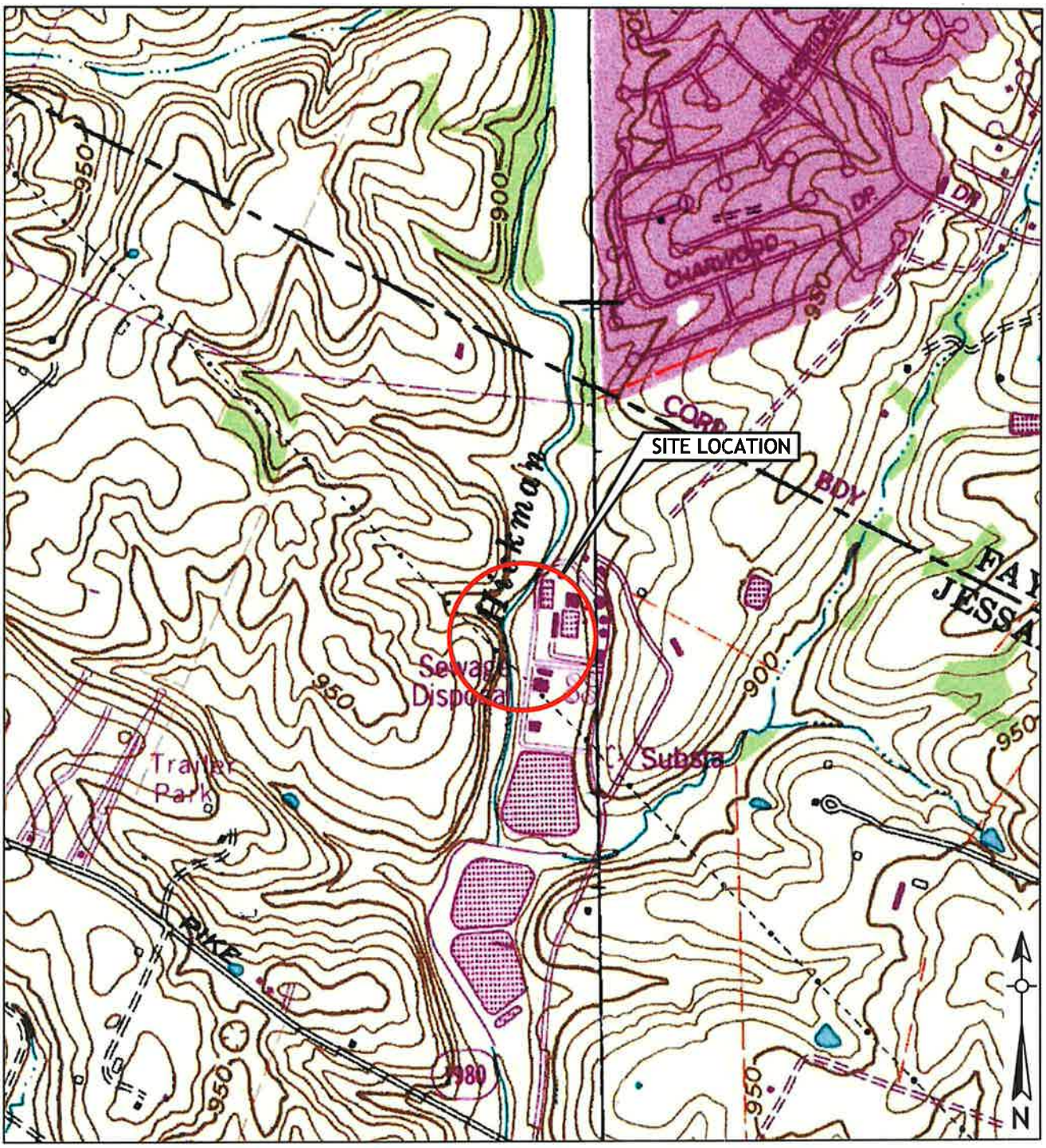

Site Location Plan adapted from USGS Nicholasville and Coletown Topographic Quadrangle maps both dated 1965 (revised 1993), with further adaptation by CSI personnel.

FOR ILLUSTRATION PURPOSES ONLY

Consulting Services Incorporated of Kentucky
858 Contract Street
Lexington, Kentucky 40505
859.309.6021 Office|888.792.3121 Fax
www.csikentucky.com

TITLE: SITE LOCATION PLAN		Project No: LX150053	Drawn By: TEW
PROJECT: WEST HICKMAN WWTP WET WEATHER STORAGE FACILITY NICHOLASVILLE, KENTUCKY		Date: January 25, 2016	Checked By: JNW
		Scale: Not To Scale	Drawing No: 1 of 1

This drawing is being furnished for this specific project only. Any party accepting this document does so in confidence and agrees that it shall not be duplicated in whole or in part, nor disclosed to others without the consent of Consulting Services Incorporated of Kentucky.

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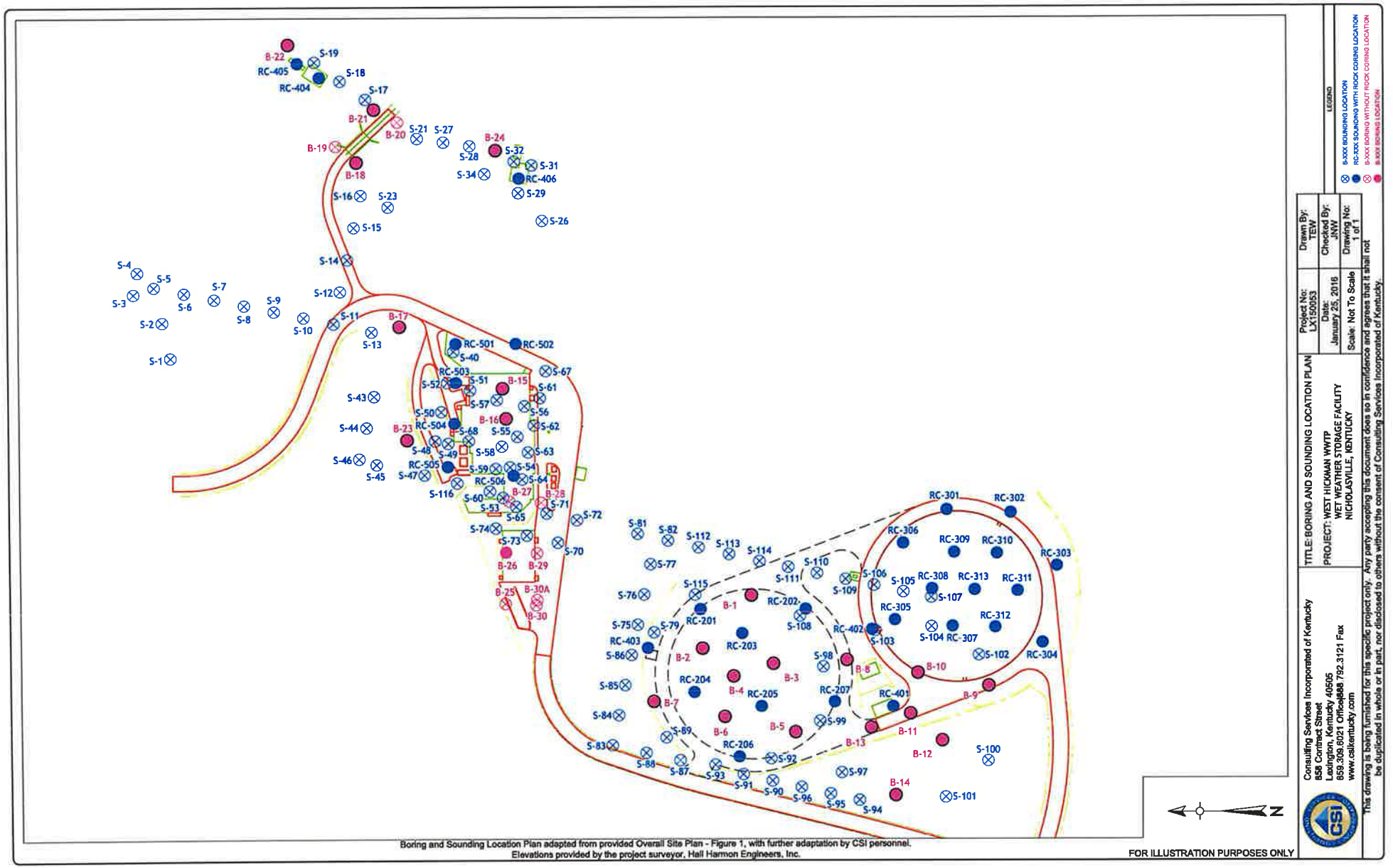

Boring and Sounding Location Plan adapted from provided Overall Site Plan - Figure 1, with further adaptation by CSI personnel.
Elevations provided by the project surveyor, Hall Harmon Engineers, Inc.

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LEGEND

S-XXX SOUNDING LOCATION

RC-XXX SOUNDING WITH ROCK CORING LOCATION

B-XXX BORING WITHOUT ROCK CORING LOCATION

B-XXX BORING LOCATION

Drawn By: TEW
Checked By: JNW
Drawing No: 1 of 1

Project No: LX150053
Date: January 25, 2016
Scale: Not To Scale

TITLE: BORING AND SOUNDING LOCATION PLAN

PROJECT: WEST HICKMAN WWTP
WET WEATHER STORAGE FACILITY
NICHOLASVILLE, KENTUCKY

Consulting Services Incorporated of Kentucky
858 Contract Street
Lexington, Kentucky 40505
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Sounding and Test Pit Location Plan adapted from provided Overall Site Plan - Figure 1, with further adaptation by CSI personnel.
Elevations provided by the project surveyor, Hall Harmon Engineers, Inc.

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TITLE: SOUNDING & TEST PIT LOCATION PLAN	Project No: LX150053
PROJECT: WEST NICKMAN WWTP WET WEATHER STORAGE FACILITY NICHOLASVILLE, KENTUCKY	Date: January 25, 2016
	Scale: Not To Scale
	Drawing No: 1 of 1
	Drawn By: TEW
	Checked By: JNW

LEGEND

SH-XXX SOUNDING LOCATION

TP-XXX TEST PIT LOCATION

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Geotechnical Boring Information Sheet

Sample Type Symbols	
Splitspoon (SPT)	
Dynamic Cone Penetrometer (DCP)	
Shelby Tube	
Grab	
Bulk	
Rock Core	

Surface Symbols
Topsoil
Asphalt
Concrete
Lean Clay
Fat Clay
Sandy Clay
Silt
Elastic Silt
Lean Clay to Fat Clay
Gravelly Clay
Sandy Silt
Gravelly Silt
Sand
Gravel
Fill
Void
Limestone
Sandstone
Shale/Siltstone
Weathered Rock

Samples Strength Descriptors	
Cohesive Soils:	**N**
Very Soft	0-1
Soft	2-4
Firm	5-8
Stiff	9-15
Very Stiff	16-30
Hard	31+
Non-cohesive Soils:	
Very Loose	0-4
Loose	5-10
Firm	11-20
Very Firm	21-30
Dense	30-50
Very Dense	51+

Definitions

SPT-"Splitspoon" or standard penetration test. Blow counts are number of drops required for a 140 lb hammer dropping 30 inches to drive the sampler 6 inches.

N-value is the addition of the last two intervals of the 18-inch sample.

Shelby tubes are often called "undisturbed samples". They are directly pushed into the ground, twisted, allowed to rest for a small period of time and then pulled out of the ground. Tops and bottoms are cleaned and then sealed.

Sample classification is done in general accordance with ASTM D2487 and 2488 using the Unified Soil Classification System (USCS) as a general guide.

Soil moisture descriptions are based on the recovered sample observations. The descriptors are dry, slightly moist, moist, very moist and wet. These are typically based on relative estimates of the moisture condition of a visual estimation of the soils optimum moisture content (EOMC). Dry is almost in a "dusty" condition usually 6 or more percent below EOMC. Slightly moist is from about 6 to 2 percent below EOMC at a point at which the soil color does not readily change with the addition of water. Moist is usually 2 percent below to 2 percent above EOMC and the point at which the soil will tend to begin forming "balls" under some pressure in the hand. Very moist is usually from about 2 percent to 6 percent above EOMC and also the point at which it's often considered "muddy". Wet soil is usually 6 or more percent above EOMC and often contains free water or the soil is in a saturated state.

Silt or Clay is defined at material finer than a standard #200 US sieve (<0.075mm) Sand is defined as material between the size of #200 sieve up to #4 sieve. Gravel is from #4 size sieve material to 3". Cobbles are from 3" to 12". Boulders are over 12".

Rock hardness is classified as follows:

Very Soft:	Easily broken by hand pressure
Soft:	Ends can be broken by hand pressure; easily broken with hammer
Medium:	Ends easily broken with hammer; middle requires moderate blow
Hard:	Ends require moderate hammer blow; middle requires several blows
Very Hard:	Many blows with a hammer required to break core

Rock Quality Designation (RQD) is defined as total combined length of 4" or longer pieces of core divided by the total core run length; defined in percentage.

Water or cave-in observed in borings is at completion of drilling each boring unless otherwise noted.

Strata lengths shown on borings represents a rough estimate. Transition may be more abrupt or gradual. Soil borings are representative of that estimated location at that time and are based on recovered samples. Conditions may be different between borings and between sample intervals. Boring information is not to be considered stand alone but should be taken in context with comments and information in the geotechnical report and the means by which the borings are logged, sampled and drilled.

Consulting Services Inc. of Kentucky — Boring Log

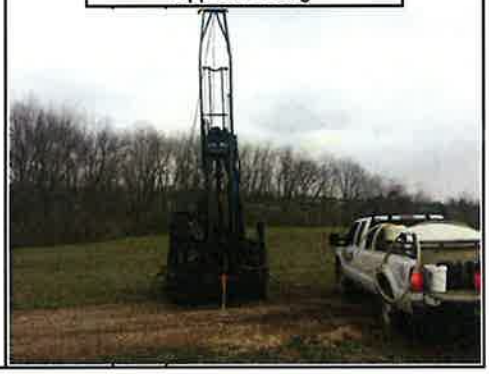
858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-1
LOCATION: Nicholasville, Kentucky
WEATHER: Cloudy, 30's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-27-2015
DRILLING METHOD: 3-1/4" ID HSA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 919.1

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
919.1	0		TOPSOIL / ROOT ZONE - 1 inch			9-15-18	9		Dry upon completion of soil augering
			FILL - sampled as HARD to STIFF, brown and light gray clay, with rock fragments, with small pieces of wood, moist with damp zone			18-32-28	14		
915.1	4					3-4-8	15		
						3-4-8	17		
911.1	8								
			FAT CLAY (CH) - HARD, brown and tan, with black oxide nodules, with highly weathered limestone fragments (in bottom of splitspoon), with sand, wet			4-12-50/0.4	13		
907.1	12		Weathered Rock			Run No.	Recovery (%)	RQD (%)	
			Auger Refusal at 11.3 feet Begin Coring at 11.3 feet			1 (11.3'-21.3')	88	33	Core water loss observed at 12.8 feet Rock Qu = 1,325 ksf
903.1	16		LIMESTONE - light to medium gray, medium to coarse grained, with interbedded shale, moderately weathered						
			VOID from 12.8 to 14.0 feet						
899.1	20		LIMESTONE - light to medium gray, medium to coarse grained, with interbedded shale, moderately weathered						
			Coring Terminated at 21.3 feet						
895.1	24								
891.1	28								

Photo of Approx. Boring Location



Please note: Boring log is for information only. Soil borings only show conditions observed in specific recovered samples at that particular location.
Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-2
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 30's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-27-2015
DRILLING METHOD: 3-1/4" ID HSA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 918.9

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
918.9	0		TOPSOIL / ROOT ZONE - 4 inches			5-9-8	10		Dry upon completion of soil augering
			FILL - sampled as VERY STIFF, brown clay, with rock fragments, moist			13-10-8	10		
914.9	4					12-12-9	11		
			FILL - sampled as VERY STIFF to STIFF, brown and greenish gray clay, with fine roots, with rock fragments, moist			4-9-10	14		
910.9	8					4-5-11	16		
906.9	12								
						3-5-8	16		
902.9	16		Weathered Rock						
			Auger Refusal at 18.1 feet Begin Coring at 18.1 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
898.9	20					1 (18.1'-28.1')	98	33	Rock Qu = 991 ksf
894.9	24		LIMESTONE - light to medium gray, medium to coarse grained, with interbedded shale, moderately to slightly weathered						
890.9	28		Coring Terminated at 28.1 feet						

Photo of Approx. Boring Location

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Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-3
LOCATION: Nicholasville, Kentucky
WEATHER: Overcast/Rainy, 40's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-26-2015
DRILLING METHOD: 3-1/4" ID HSA
CSI FIELD REP: N. Consigli
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 926.1

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
926.1	0		TOPSOIL / ROOT ZONE - 7 inches			9-9-7	5		Dry upon completion of soil augering
			FILL - sampled as HARD to VERY STIFF, brown clay, with rock fragments, moist (Encountered a large piece of concrete at 1.5 feet)			50/0.3	3		
922.1	4					9-15-17	10		
						18-14-10	8		
918.1	8		FILL - sampled as STIFF to HARD, brown and gray, with rock fragments, moist			4-5-7	14		
914.1	12					4-50/0.3	4		
			Auger Refusal at 14.8 feet Begin Coring at 14.8 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
910.1	16					1 (14.8'-24.8')	98	0	
906.1	20		LIMESTONE - light to medium gray, coarse to fine grained, with clay seams, with interbedded shale, moderately weathered						Rock Qu = 714 ksf
902.1	24								Photo of Approx. Boring Location
898.1	28		Coring Terminated at 24.8 feet						

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Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-4
LOCATION: Nicholasville, Kentucky
WEATHER: Cloudy, 30's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-27-2015
DRILLING METHOD: 3-1/4" ID HSA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 924.0

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
924	0		TOPSOIL / ROOT ZONE - 6 inches			4-4-11	14		Dry upon completion of soil augering
			FILL - sampled as VERY STIFF to FIRM with HARD zone, brown and gray clay, with rock fragments, with pieces of wood, moist			11-6-5	12		
920	4					6-36-9	4		
						8-9-5	13		
916	8					2-3-5	11		
912	12					2-3-3	9		
908	16		Weathered Rock Auger Refusal at 17.7 feet Begin Coring at 17.7 feet			Run No.	Recovery (%)	RQD (%)	
						1 (17.7'-24.0')	100	12	Core water loss observed at 19.7 feet Rock Qu = 732 ksf
904	20								
900	24		LIMESTONE - light to medium gray, medium to coarse grained, with interbedded shale, moderately weathered			2 (24.0'-27.7')	100	25	Photo of Approx. Boring Location
896	28		Coring Terminated at 27.7 feet						

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Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-5
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 50's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-30-2015
DRILLING METHOD: 3-1/4" ID HSA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 930.1

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
930.1	0		TOPSOIL / ROOT ZONE - 3 inches			8-8-11	9		Dry upon completion of soil augering
			FILL - sampled as VERY STIFF to VERY SOFT, brown clay, with rock fragments, with pieces of concrete, moist			8-10-11	10		
926.1	4					10-7-4	12		
						1-1-1	4		
922.1	8		Auger Refusal at 7.5 feet (encountered a possible large boulder in fill)						Splitspoon driven before auger advanced to refusal
918.1	12								
914.1	16								
910.1	20								
906.1	24								
902.1	28								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-5A
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 50's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-30-2015
DRILLING METHOD: 3-1/4" ID HSA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 930.1

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
930.1	0		Sounding - no samples taken Offset from boring B-5 due to encountering a relatively shallow auger refusal depth						
926.1	4								
922.1	8	▽	FILL - sampled as VERY STIFF, brown clay, with rock fragments, moist			4-5-12	7		Encountered perched water at 9 feet
918.1	12					8-14-19	17		
914.1	16		FAT CLAY (CH) - HARD, tan and gray, with black oxide nodules, with limestone fragments (in bottom of splitspoon), with sand, moist						
910.1	20		Auger Refusal at 17.7 feet Begin Coring at 17.7 feet LIMESTONE - light to medium gray, medium to coarse grained, with interbedded shale, moderately weathered			Run No. 1 (17.7'-27.7')	Recovery (%) 100	RQD (%) 42	No core water return observed Rock Qu = 411 ksf
906.1	24								
902.1	28		Coring Terminated at 27.7 feet						

Photo of Approx. Boring Location

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Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

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Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-6
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 40's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-30-2015
DRILLING METHOD: 3-1/4" ID HSA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 924.6

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
924.6	0		TOPSOIL / ROOT ZONE - 6 inches			5-15-20	13		Dry upon completion of soil augering
			FILL - sampled as HARD to FIRM to VERY STIFF, brown clay, with rock fragments, moist			15-8-16	14		
920.6	4					8-15-50/0.2	12		
						10-7-5	6		
916.6	8					2-2-4	13		
912.6	12								
						8-7-14	16		
908.6	16								
			Auger Refusal at 17.2 feet Begin Coring at 17.2 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
						1 (17.2'-27.2')	100	17	
904.6	20								Rock Qu = 647 ksf
			LIMESTONE - light to medium gray, medium to coarse grained, with interbedded shale, moderately weathered						
900.6	24								
896.6	28		Coring Terminated at 27.2 feet						

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky — Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-7
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 30's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-27-2015
DRILLING METHOD: 3-1/4" ID HSA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 915.8

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
915.8	0		TOPSOIL / ROOT ZONE - 6 inches			8-15-19	16		Dry upon completion of soil augering
			FILL - sampled as HARD to STIFF, brown clay, with rock fragments, moist (unable to sample from 1.5 to 3.0 feet due to rocky fill material)						
911.8	4					5-5-5	12		
						3-6-10	14		
907.8	8		POSSIBLE BURIED TOPSOIL - VERY STIFF, dark brown, with fine roots, with organic odor, moist			50/0.4	4		
			FAT CLAY (CH) - HARD, brown and tan, with black oxide nodules, with sand, moist			Run No.	Recovery (%)	RQD (%)	No core water loss observed
			Weathered Rock			1 (9.6'-19.6')	98	35	
903.8	12		Auger Refusal at 9.6 feet Begin Coring at 9.6 feet						
			LIMESTONE - light to medium gray, medium to coarse grained, with interbedded shale, moderately weathered						Rock Qu = 557 ksf
899.8	16								
895.8	20					2 (19.6'-21.6')	100	38	
			Coring Terminated at 21.6 feet						
891.8	24								
887.8	28								

Photo of Approx. Boring Location

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Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky

Boring Log

856 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-8
LOCATION: Nicholasville, Kentucky
WEATHER: Overcast/Rainy, 40's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-26-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: N. Consigli
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 929.0

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
929	0		TOPSOIL / ROOT ZONE - 6 inches			9-11-14	5		Dry upon completion of soil augering
			FILL - sampled as VERY STIFF to STIFF with HARD zone, brown clay, with rock fragments, moist (encountered a large piece of concrete at 1.5 feet)			14-17-19	8		
925	4					10-2-8	8		
						16-9-6	6		
921	8		FAT CLAY (CH) - VERY STIFF, orangish brown with gray mottling, with black oxide nodules, with sand, moist			5-7-11	12		
			Auger Refusal at 10.7 feet Begin Coring at 10.7 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
917	12					1 (10.7'-19.7')	92	53	
913	16								Photo of Approx. Boring Location
909	20		LIMESTONE - light to medium gray, fine to coarse grained, with clay seams, with interbedded shale, moderately weathered			2 (19.7'-29.7')	99	95	
905	24								Rock Qu = 609 ksf
901	28					3 (29.7'-35.7')	99	78	

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Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-8
LOCATION: Nicholasville, Kentucky
WEATHER: Overcast/Rainy, 40's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-26-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: N. Consigli
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 929.0

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
897	32		LIMESTONE - light to medium gray, fine to coarse grained, with clay seams, with interbedded shale, moderately weathered						
893	36		Coring Terminated at 35.7 feet						
889	40								
885	44								
881	48								
877	52								
873	56								
869	60								

Please note: Boring log is for information only. Soil borings only show conditions observed in specific recovered samples at that particular location.
Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-9
LOCATION: Nicholasville, Kentucky
WEATHER: Overcast/Rainy, 50's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-26-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: N. Consigli
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 931.7

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
931.7	0		TOPSOIL / ROOT ZONE - 5 inches			3-5-7	10		Dry upon completion of soil augering
			FILL - sampled as STIFF to VERY STIFF, brown, moist			4-7-9	13		
927.7	4		FAT CLAY (CH) - VERY STIFF, orangish brown with gray mottling, with black oxide nodules, with sand, moist			5-8-11	14		
						5-10-12	14		
923.7	8					4-7-11	15		
919.7	12		Auger Refusal at 11.8 feet Begin Coring at 11.8 feet			Run No. 1 (11.8'-19.8')	Recovery (%) 99	RQD (%) 53	No core water loss observed
915.7	16								
911.7	20		LIMESTONE - medium gray, fine to coarse grained, with clay seams, with interbedded shale, moderately to slightly weathered			2 (19.8'-29.8')	97	91	Photo of Approx. Boring Location
907.7	24								
903.7	28					3 (29.8'-36.8')	99	80	Rock Qu = 611 ksf

Please note: Boring log is for information only. Soil borings only show conditions observed in specific recovered samples at that particular location. Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky — Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-9
LOCATION: Nicholasville, Kentucky
WEATHER: Overcast/Rainy, 50's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-26-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: N. Consigli
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 931.7

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
899.7	32		LIMESTONE - medium gray, fine to coarse grained, with clay seams, with interbedded shale, moderately to slightly weathered						
895.7	36		Coring Terminated at 36.8 feet						
891.7	40								
887.7	44								
883.7	48								
879.7	52								
875.7	56								
871.7	60								

Please note: Boring log is for information only. Soil borings only show conditions observed in specific recovered samples at that particular location.
Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-10
LOCATION: Nicholasville, Kentucky
WEATHER: Rainy, 40's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-24-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 929.4

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
929.4	0		TOPSPOIL / ROOT ZONE - 6 inches			3-5-6	18		Dry upon completion of soil augering
			FILL - sampled as STIFF to VERY STIFF, brown and dark gray clay, with rock fragments, with small pieces of wood, moist			7-9-12	15		
925.4	4		FAT CLAY (CH) - STIFF to HARD, brown and tan, with black oxide nodules, with sand, wet			3-6-7	14		
						4-7-9	14		
921.4	8					11-50/0.3	6		
			Weathered Rock						
917.4	12		Auger Refusal at 10.7 feet Begin Coring at 10.7 feet			Run No. 1 (10.7'-15.7')	Recovery (%) 82	RQD (%) 27	No core water loss observed
913.4	16					2 (15.7'-25.7')	98	38	
909.4	20		LIMESTONE - medium to dark gray, coarse grained, with clay seams, with interbedded shale, moderately weathered						
905.4	24					3 (25.7'-35.7')	99	50	Rock Qu = 832 ksf
901.4	28								

Photo of Approx. Boring Location

Please note: Boring log is for information only. Soil borings only show conditions observed in specific recovered samples at that particular location. Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-10
LOCATION: Nicholasville, Kentucky
WEATHER: Rainy, 40's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-24-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 929.4

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
897.4	32		LIMESTONE - medium to dark gray, coarse grained, with clay seams, with interbedded shale, moderately weathered						
893.4	36		Coring Terminated at 35.7 feet						
889.4	40								
885.4	44								
881.4	48								
877.4	52								
873.4	56								
869.4	60								

Please note: Boring log is for information only. Soil borings only show conditions observed in specific recovered samples at that particular location.
Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-11
LOCATION: Nicholasville, Kentucky
WEATHER: Overcast, 60's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-25-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: N. Consigli
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 932.4

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
932.4	0		TOPSOIL / ROOT ZONE - 7 inches			2-5-10	7		Dry upon completion of soil augering
			FILL - sampled as VERY STIFF to STIFF, brown, with rock fragments, with black oxide nodules, moist			6-8-6	3		
928.4	4		FAT CLAY (CH) - STIFF, orangish brown with gray mottling, with black oxide nodules, with sand, moist			4-6-8	13		
						6-7-50/0.1	13		
924.4	8		Auger Refusal at 7.8 feet Begin Coring at 7.8 feet			Run No. 1 (7.8'-17.8')	Recovery (%) 95	RQD (%) 72	No core water loss observed
920.4	12								
916.4	16								
			LIMESTONE - light to medium gray, fine to coarse grained, with clay seams, with interbedded shale, slightly weathered			2 (17.8'-27.8')	100	77	
912.4	20								Photo of Approx. Boring Location
908.4	24								
904.4	28					3 (27.8'-37.8')	98	83	Rock Qu = 804 ksf

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Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-11
LOCATION: Nicholasville, Kentucky
WEATHER: Overcast, 60's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-25-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: N. Consigli
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 932.4

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
900.4	32		LIMESTONE - light to medium gray, fine to coarse grained, with clay seams, with interbedded shale, slightly weathered						
896.4	36								
			Coring Terminated at 37.8 feet						
892.4	40								
888.4	44								
884.4	48								
880.4	52								
876.4	56								
872.4	60								

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Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-12
LOCATION: Nicholasville, Kentucky
WEATHER: Overcast, 60's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-25-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: N. Consigli
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 935.9

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
935.9	0		TOPSOIL / ROOT ZONE - 5 inches			3-5-8	5		Dry upon completion of soil augering
			FILL - sampled as STIFF, brown clay, with fine roots, with rock fragments, moist			8-8-10	11		
931.9	4		FAT CLAY (CH) - VERY STIFF, brown with orange mottling, with black oxide nodules, with sand, moist			50/0.3	3		
			Auger Refusal at 4.4 feet Begin Coring at 4.4 feet			Run No.	Recovery (%)	RQD (%)	
						1 (4.4'-14.4')	90	55	
927.9	8								
			LIMESTONE - medium gray, fine to coarse grained with clay seams, with interbedded shale, moderately weathered						
923.9	12								
						2 (14.4'-24.4')	95	87	Core water loss observed at approximately 14 feet
919.9	16		VOID from 15.5 to 15.8 feet						
									Photo of Approx. Boring Location
915.9	20								
911.9	24		LIMESTONE - medium gray, fine to coarse grained with clay seams, with interbedded shale, moderately weathered			3 (24.4'-30.5')	100	89	
907.9	28		Coring Terminated at 30.5 feet						Rock Qu = 560 ksf

Please note: Boring log is for information only. Soil borings only show conditions observed in specific recovered samples at that particular location.
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Consulting Services Inc. of Kentucky — Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-13
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 60's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-25-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: N. Consigli
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 932.5

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
932.5	0		TOPSOIL / ROOT ZONE - 6 inches			7-7-9	10		Dry upon completion of soil augering
			FILL - sampled as VERY STIFF to FIRM, brown, with rock fragments, moist			8-8-9	11		
928.5	4					5-6-8	11		
						3-3-3	10		
924.5	8		FAT CLAY (CH) - FIRM, orangish brown with gray mottling, with black oxide nodules, with sand, moist						
			Weathered Rock			Run No.	Recovery (%)	RQD (%)	No core water loss observed
			Auger Refusal at 9.1 feet Begin Coring at 9.1 feet			1 (9.1'-19.1')	94	82	
920.5	12								
916.5	16								Photo of Approx. Boring Location
			LIMESTONE - medium gray, fine to coarse grained, with clay seams, with interbedded shale, slightly weathered			2 (19.1'-28.6')	96	88	
912.5	20								
908.5	24								Rock Qu = 822 ksf
904.5	28		Coring Terminated at 28.6 feet						

Please note: Boring log is for information only. Soil borings only show conditions observed in specific recovered samples at that particular location.
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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-14
LOCATION: Nicholasville, Kentucky
WEATHER: Cloudy, 40's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-24-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 937.3

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
937.3	0		FILL - sampled as VERY STIFF, dark gray and brown clay, with rock fragments, moist			4-5-11	18		Dry upon completion of soil augering
						21-50/0.4	7		
933.3	4		Auger Refusal at 2.4 feet (encountered a possible large boulder in fill)						
929.3	8								
925.3	12								
921.3	16								
917.3	20								
913.3	24								
909.3	28								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky — Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-14A
LOCATION: Nicholasville, Kentucky
WEATHER: Cloudy, 40's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-24-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 937.5

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
937.5	0		Sounding - no samples taken Offset 2 feet from boring B-14 due to encountering a relatively shallow auger refusal depth						Dry upon completion of soil augering
933.5	4		FILL - sampled as STIFF, brown clay, with rock fragments, moist			10-6-6	12		
			FAT CLAY (CH) - STIFF, brown, with trace black oxide nodules, moist						
			FAT CLAY (CH) - VERY STIFF, brown with tan mottling, with black oxide nodules, with sand, moist			5-13-50/0.4	16		
929.5	8		Weathered Rock			Run No.	Recovery (%)	RQD (%)	Core water loss observed at 8.6 feet
			Auger Refusal at 8.1 feet Begin Coring at 8.1 feet			1 (8.1'-15.1')	79	50	
925.5	12		LIMESTONE - light to medium gray, coarsed grained, with interbedded shale, moderately weathered						
			VOID from 8.6 to 9.8 feet						
921.5	16					2 (15.1'-25.1')	99	59	
917.5	20		LIMESTONE - light to medium gray, coarsed grained, with interbedded shale, moderately weathered						
913.5	24					3 (25.1'-35.1')			
909.5	28								

Photo of Approx. Boring Location

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Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

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Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-14A
LOCATION: Nicholasville, Kentucky
WEATHER: Cloudy, 40's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-24-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 937.5

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
905.5	32		LIMESTONE - light to medium gray, coarsed grained, with interbedded shale, moderately weathered			4 (35.1'-43.1')	100	90	Rock Qu = 608 ksf
901.5	36								
897.5	40								
893.5	44		Coring Terminated at 43.1 feet						
889.5	48								
885.5	52								
881.5	56								
877.5	60								

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Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-15
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 60's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 04-21-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 903.2

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
903.2	0		ROOT ZONE - 6 inches			2-3-6	15		Dry upon completion of soil augering
			SANDY FAT CLAY (CH) - STIFF, brown and tan, with pebbles, moist			6-6-6	15		
899.2	4					4-6-9	10		
						4-50/0.1	7		
895.2	8		Weathered Rock						
			Auger Refusal at 8.1 feet Begin Coring at 8.1 feet			Run No.	Recovery (%)	RQD (%)	
						1 (8.1'-15.5')	87	21	
891.2	12								
887.2	16		LIMESTONE - light to medium gray, with interbedded shale, fine to coarse grained, with clay seams (in top 2 feet), moderately to slightly weathered			2 (15.5'-25.5')	100	74	
883.2	20								
879.2	24					3 (25.5'-35.5')	98	64	
875.2	28								

Photo of Approx. Boring Location

Core water loss observed at 30 feet

Please note: Boring log is for information only. Soil borings only show conditions observed in specific recovered samples at that particular location.
Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-15
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 60's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 04-21-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 903.2

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
871.2	32		LIMESTONE - light to medium gray, with interbedded shale, fine to coarse grained, with clay seams (in top 2 feet), moderately to slightly weathered		4 (35.5'-45.5')	99	56	Rock Qu = 894 ksf Core water return observed at 37 feet	
867.2	36								
863.2	40								
859.2	44		Coring Terminated at 45.5 feet						
855.2	48								
851.2	52								
847.2	56								
843.2	60								

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Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-16
LOCATION: Nicholasville, Kentucky
WEATHER: Cloudy, 50's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 04-22-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 905.8

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
905.8	0		ROOT ZONE - 6 inches			3-4-6	18		Dry upon completion of soil augering
			SANDY FAT CLAY (CH) - STIFF, brown, with trace black oxide nodules, moist			4-6-6	14		
901.8	4		SANDY FAT CLAY (CH) - STIFF, tan and yellow, with fine roots, moist			4-6-9	13		
						6-9-50/0.3	10		
897.8	8		Weathered Rock Auger Refusal at 7.8 feet Begin Coring at 7.8 feet			Run No. 1 (7.8'-17.8')	Recovery (%) 89	RQD (%) 48	
893.8	12								Core water loss observed at approximately 12 feet
889.8	16								
			LIMESTONE - light to medium gray, with interbedded shale, fine to coarse grained, with clay seams (in top 5 feet), moderately to slightly weathered			2 (17.8'-27.8')	99	70	
885.8	20								
881.8	24								
877.8	28					3 (27.8'-37.8')	100	53	

Photo of Approx. Boring Location

Please note: Boring log is for information only. Soil borings only show conditions observed in specific recovered samples at that particular location.
Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky — Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-16
LOCATION: Nicholasville, Kentucky
WEATHER: Cloudy, 50's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 04-22-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 905.8

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
873.8	32		LIMESTONE - light to medium gray, with interbedded shale, fine to coarse grained, with clay seams (in top 5 feet), moderately to slightly weathered			4 (37.8'-47.8')	100	59	
869.8	36								
865.8	40								
861.8	44								
857.8	48					5 (47.8'-57.8')	98	89	Rock Qu = 824 ksf
853.8	52								
849.8	56								
845.8	60		Coring Terminated at 57.8 feet						

Please note: Boring log is for information only. Soil borings only show conditions observed in specific recovered samples at that particular location.
Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky — Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-17
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 50's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 04-01-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 881.2

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
881.2	0		TOPSOIL / ROOT ZONE - 1 inch			2-3-4	6		Dry upon completion of soil augering
			FILL - sampled as FIRM to STIFF, brown clay, with fine roots, with rock fragments, with small pieces of wood, moist			5-6-8	7		
877.2	4					5-6-9	14		
						8-8-7	11		
873.2	8		SANDY FAT CLAY (CH) - FIRM, tan with gray and brown mottling, with highly weathered limestone fragments, moist			3-4-4	13		
869.2	12		Weathered Rock						
			Auger Refusal at 12.9 feet Begin Coring at 12.9 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
						1 (12.9'-22.9')	99	38	
865.2	16								
861.2	20								Rock Qu = 1,017 ksf
			LIMESTONE - light to medium gray, medium to coarse grained, with interbedded shale, slightly weathered			2 (22.9'-32.9')	99	28	
857.2	24								
853.2	28								

Photo of Approx. Boring Location

Please note: Boring log is for information only. Soil borings only show conditions observed in specific recovered samples at that particular location.
Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-17
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 50's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 04-01-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 881.2

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
849.2	32		LIMESTONE - light to medium gray, medium to coarse grained, with interbedded shale, slightly weathered						
			Coring Terminated at 32.9 feet						
845.2	36								
841.2	40								
837.2	44								
833.2	48								
829.2	52								
825.2	56								
821.2	60								

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Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

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Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-18
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 60's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-30-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 881.1

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
881.1	0		TOPSOIL / ROOT ZONE - 6 inches			4-7-8	15		Dry upon completion of soil augering
			FILL - sampled as STIFF, brown clay, with rock fragments, moist			6-9-10	10		
			CLAYEY SAND (SC) - FIRM to LOOSE, brown and tan, with silt, moist (alluvial)						
877.1	4					3-4-4	16		
						3-50/0.3	6		
873.1	8		Weathered Rock			Run No.	Recovery (%)	RQD (%)	
			Auger Refusal at 7.4 feet Begin Coring at 7.4 feet			1 (7.4'-17.4')	98	20	
			VOID from 10.0 to 10.2 feet						Core water loss observed at 10 feet
869.1	12		LIMESTONE - light to medium gray, medium to coarse grained, with interbedded shale, slightly weathered						Rock Qu = 754 ksf
865.1	16								
			Coring Terminated at 17.4 feet						
861.1	20								
857.1	24								
853.1	28								

Photo of Approx. Boring Location

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Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-19
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 60's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-30-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 880.7

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
880.7	0		TOPSOIL / ROOT ZONE - 6 inches			2-5-6	15		Dry upon completion of soil augering
			FILL - sampled as STIFF, brown clay, with fine roots, with rock fragments, moist			5-9-9	12		
876.7	4		CLAYEY SAND (SC) - FIRM, brown and tan, with silt, with pebbles, wet (alluvial)			4-5-12	15		
			Weathered Rock						
872.7	8		Auger Refusal at 6.4 feet						
868.7	12								
864.7	16								
860.7	20								
856.7	24								
852.7	28								

Photo of Approx. Boring Location

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Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

Consulting Services Inc. of Kentucky — Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-20
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 30's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 04-01-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 884.4

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
884.4	0		TOPSOIL / ROOT ZONE - 4 inches SHOT ROCK FILL - HARD			10-18-22 30-23-16	10 1		Dry upon completion of soil augering
880.4	4		FILL - sampled as STIFF, dark brown clay, moist			4-5-8	11		
			FILL - sampled as STIFF, greenish brown and black clay, moist			3-4-6	13		
876.4	8		FAT CLAY (CH) - HARD, tan with gray mottling, moist Weathered Rock Auger Refusal at 10.4 feet			11-20-50/0.1	13		
872.4	12								
868.4	16								
864.4	20								
860.4	24								
856.4	28								

Photo of Approx. Boring Location

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Elevations provided by the project surveyor, Hall Harmon Engineers, Inc

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Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-21
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 40's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 04-01-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 885.1

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
885.1	0		TOPSOIL / ROOT ZONE - 4 inches			5-8-9	11		Dry upon completion of soil augering
			FILL - sampled as VERY STIFF to HARD, brown clay, with fine roots, with rock fragments, moist			8-50/0.4	6		
881.1	4					8-17-36	13		
			FILL - sampled as STIFF to VERY STIFF, greenish brown and black clay, with small pieces of decomposing wood, moist			4-5-8	15		
877.1	8					4-8-12	14		
873.1	12		Auger Refusal at 11.3 feet Begin Coring at 11.3 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
						1 (11.3'-21.3')	98	23	
869.1	16		LIMESTONE - light to medium gray, coarse grained, with interbedded shale, slightly weathered						Rock Qu = 974 ksf
865.1	20		Coring Terminated at 21.3 feet						
861.1	24								
857.1	28								

Photo of Approx. Boring Location

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-22
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 40's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 04-21-2015
DRILLING METHOD: 3-1/4" ID HSA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 889.8

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
889.8	0		TOPSOIL / ROOT ZONE - 6 inches			2-4-15	11		Dry upon completion of soil augering
			FILL - sampled as VERY STIFF to FIRM, brown clay, with fine roots, with rock fragments, moist			10-9-8	0		
885.8	4					11-9-13	12		
						14-7-6	4		
881.8	8					6-4-4	14		
877.8	12		CLAYEY SAND (SC) - FIRM, brown and gray, with silt, wet (alluvial)			5-4-10	12		
873.8	16		Weathered Rock			Run No.	Recovery (%)	RQD (%)	No core water loss observed
			Auger Refusal at 15.8 feet Begin Coring at 15.8 feet			1 (15.8'-25.8')	98	36	
869.8	20		LIMESTONE - light to medium gray, with interbedded shale, fine to coarse grained, slightly weathered						Rock Qu = 767 ksf
865.8	24								
			Coring Terminated at 25.8 feet						
861.8	28								

Photo of Approx. Boring Location

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-23
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 50's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 03-30-2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 915.7

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
915.7	0		TOPSOIL / ROOT ZONE - 1 inch			2-5-6	10		Dry upon completion of soil augering
			FILL - sampled as STIFF, brown clay, with rock fragments, moist			10-5-6	11		
911.7	4					5-9-20	18		
			CLAYEY SAND (SC) - VERY FIRM, brown with tan mottling, with black oxide nodules, with limestone fragments (at bottom of splitspoon), wet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
907.7	8		Weathered Rock			1 (5.7'-15.7')	85	16	
			Auger Refusal at 5.7 feet Begin Coring at 5.7 feet						
903.7	12		LIMESTONE - light to medium gray, medium to coarse grained, with interbedded shale, moderately weathered						
899.7	16		Coring Terminated at 15.7 feet						
895.7	20								
891.7	24								
887.7	28								

Photo of Approx. Boring Location

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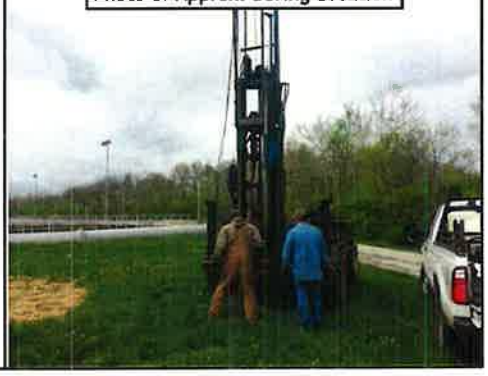
PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-24
LOCATION: Nicholasville, Kentucky
WEATHER: Cloudy, 50's
DRILL RIG TYPE: CME-550
DRILLER: Geo-Drill
DATE DRILLED: 04-20-2015
DRILLING METHOD: 3-1/4" ID HSA
CSI FIELD REP: J. Workman
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 888.4

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
888.4	0		TOPSOIL / ROOT ZONE - 4 inches			2-8-11	18		Dry upon completion of soil augering
			FILL - sampled as VERY STIFF to HARD, brown clay, with rock fragments, moist			50/0.4	4		
884.4	4					6-8-50/0.4	14		
						5-6-8	18		
880.4	8		FILL - sampled as STIFF, orangish brown and tan clay, with fine roots, moist			3-5-7	3		
876.4	12								
			Weathered Rock			16-50/0.1	7		
			Auger Refusal at 14.2 feet Begin Coring at 14.2 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
872.4	16					1 (14.2'-24.2')	97	33	
868.4	20		LIMESTONE - light to medium gray, with interbedded shale, medium to coarse grained, moderately weathered						Rock Qu = 806 ksf
864.4	24		Coring Terminated at 24.2 feet						
860.4	28								

Photo of Approx. Boring Location



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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-25
LOCATION: Nicholasville, Kentucky
WEATHER: Overcast, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 26, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 908.4

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
908.4	0		TOPSOIL - 2 inches			7-8-13	16		Dry upon completion of soil augering
			FILL - sampled as VERY STIFF, brown clay, with fine roots, with rock fragments, with small pieces of wood, moist			12-10-9	11		
904.4	4		CLAYEY SAND (SC) - FIRM, reddish-brown and tan, with trace black oxide nodules, wet						
			Weathered Rock						
			Auger Refusal at 4.1 feet						
900.4	8								
896.4	12								
892.4	16								
888.4	20								
884.4	24								
880.4	28								

Photo of Approx. Boring Location

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-26
LOCATION: Nicholasville, Kentucky
WEATHER: Overcast, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 26, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 908.8

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
908.8	0		TOPSOIL - 1 inch			5-6-6	15		Dry upon completion of soil augering
			FILL - sampled as STIFF, brown and gray clay, with fine roots, with rock fragments, moist			8-50/0.2	7		
			CLAYEY SAND (SC) - DENSE, reddish-brown, wet						
904.8	4		Weathered Rock			Run No.	Recovery (%)	RQD (%)	
			Auger Refusal at 3.4 feet Begin Coring at 3.4 feet			1 (3.4' - 8.4')	90	28	
			LIMESTONE - light gray, with clay seams in top 8 feet, with interbedded shale, medium to coarse grained, moderately weathered, hard						
900.8	8					2 (8.4' - 13.4')	90	27	Core water loss observed at 8.5 feet
896.8	12								
			Coring Terminated at 13.4 feet						
892.8	16								
888.8	20								
884.8	24								
880.8	28								

Photo of Approx. Boring Location

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-27
LOCATION: Nicholasville, Kentucky
WEATHER: Overcast, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 26, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 908.2

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
908.2	0		TOPSOIL - 3 inches FILL - sampled as VERY STIFF, brown and gray clay, with fine roots, with rock fragments, moist			5-8-9 11-11-17	14 9		Dry upon completion of soil augering
904.2	4		Weathered Rock Auger Refusal at 4.1 feet						
900.2	8								
896.2	12								
892.2	16								
888.2	20								
884.2	24								
880.2	28								

Photo of Approx. Boring Location

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-28
LOCATION: Nicholasville, Kentucky
WEATHER: Overcast, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 26, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 901.5

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
901.5	0		TOPSOIL - 1 inch			6-8-8	16		Dry upon completion of soil augering
			FILL - sampled as VERY STIFF, brown and gray clay, with fine roots, with rock fragments, moist			8-16-16	12		
897.5	4		CLAYEY SAND (SC) - DENSE, brown with grayish-tan mottling, wet						
			Weathered Rock						
			Auger Refusal at 3.4 feet						
893.5	8								
889.5	12								
885.5	16								
881.5	20								
877.5	24								
873.5	28								

Photo of Approx. Boring Location

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-29
LOCATION: Nicholasville, Kentucky
WEATHER: Overcast, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 26, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 902.1

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
902.1	0		TOPSOIL - 1 inch			9-17-10	14		Dry upon completion of soil augering
			FILL - sampled as VERY STIFF, reddish-brown clay, with fine roots, with trace black oxide nodules, moist			12-15-17	17		
898.1	4		CLAYEY SAND (SC) - DENSE, reddish-brown and grayish-tan, with trace black oxide nodules, moist			50/0.3	2		
			Weathered Rock						
894.1	8		Auger Refusal at 4.9 feet						
890.1	12								
886.1	16								
882.1	20								
878.1	24								
874.1	28								

Photo of Approx. Boring Location

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-30
LOCATION: Nicholasville, Kentucky
WEATHER: Overcast, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 26, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 903.4

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
903.4	0		FILL - sampled as HARD, reddish-brown and gray clay, with fine roots, with rock fragments, with small pieces of wood, moist			50/0.1	1		Dry upon completion of soil augering
						50/0.3	3		
			Weathered Rock						
899.4	4		Auger Refusal at 2.7 feet						
895.4	8								
891.4	12								
887.4	16								
883.4	20								
879.4	24								
875.4	28								

Photo of Approx. Boring Location

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858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: B-30A
LOCATION: Nicholasville, Kentucky
WEATHER: Overcast, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 26, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 903.4

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
903.4	0		Sounding - no samples taken Offset from B-30 due to encountering a relatively shallow auger refusal Weathered Rock						Dry upon completion of soil augering
899.4	4		Auger Refusal at 3.6 feet						
895.4	8								
891.4	12								
887.4	16								
883.4	20								
879.4	24								
875.4	28								

Photo of Approx. Boring Location

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-201
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 60's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 26, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 913.6

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
913.6	0		Sounding - no samples taken						Dry upon completion of soil augering
			Auger Refusal at 1.2 feet (possible false auger refusal)						
909.6	4								
905.6	8								
901.6	12								
897.6	16								
893.6	20								
889.6	24								
885.6	28								

Photo of Approx. Boring Location

Please note: Boring log is for information only. Soil borings only show conditions observed in specific recovered samples at that particular location. Elevations were provided by the project surveyor, Hall Harmon Engineers, Inc.

Consulting Services Inc. of Kentucky — Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-201A
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 60's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 26, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 913.6

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
913.6	0		Sounding - no samples taken Offset from RC-201 due to encountering a relatively shallow auger refusal						Dry upon completion of soil augering
909.6	4								
905.6	8								
901.6	12								
897.6	16								
893.6	20		Weathered Rock Auger Refusal at 18.7 feet Begin Coring at 18.7 feet LIMESTONE - light to medium gray, medium to coarse grained, moderately weathered, with interbedded shale, with clay seams in top 8 feet, crystallization observed at 31 feet, hard			Run No. 1 (18.7' - 28.7') 2 (28.7' - 33.7')	Recovery (%) 95 97	RQD (%) 58 63	Core water loss and a 2 inch void were observed at 19.5 feet Rock Qu = 745 ksf
889.6	24								
885.6	28								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-201A
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 60's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 26, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 913.6

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
881.6	32		LIMESTONE - light to medium gray, medium to coarse grained, moderately weathered, with interbedded shale, with clay seams in top 8 feet, crystallization observed at 31 feet, hard						
877.6	36		Coring Terminated at 33.7 feet						
873.6	40								
869.6	44								
865.6	48								
861.6	52								
857.6	56								
853.6	60								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-202
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 25, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 924.5

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
924.5	0		Sounding - no samples taken						Dry upon completion of soil augering
920.5	4								
916.5	8								
			Auger Refusal at 10.2 feet Begin Coring at 10.2 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
912.5	12		LIMESTONE - light to medium gray, fine to medium grained, with interbedded shale, with clay seams in top 8 feet			1 (10.2' - 20.2')	98	16	
908.5	16								
904.5	20					2 (20.2' - 29.2')	100	75	Rock Qu = 842 ksf
900.5	24								
896.5	28		Coring Terminated at 29.2 feet						

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky — Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-203
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 25, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 922.2

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
922.2	0		Sounding - no samples taken						Dry upon completion of soil augering
918.2	4								
914.2	8								
			Auger Refusal at 9.8 feet Begin Coring at 9.8 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
910.2	12		FILL - boulders and rock fragments with soil intermixed			1 (9.8' - 19.8')	100	22	
906.2	16		LEAN CLAY (CL) - brown						Photo of Approx. Boring Location
902.2	20		LIMESTONE - light to medium gray, fine to coarse grained, moderately weathered to slightly weathered, with clay seams in top 6 feet, with interbedded shale, hard			2 (19.8' - 29.8')	100	62	
898.2	24								
894.2	28		Coring Terminated at 29.8 feet						Rock Qu = 891 ksf

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-204
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: August 31, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 921.3

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
921.3	0		Sounding - no samples taken						Dry upon completion of soil augering
917.3	4								
913.3	8								
909.3	12								
905.3	16		Auger Refusal at 15.3 feet Begin Coring at 15.3 feet LIMESTONE - light gray, severely weathered, medium grained, with clay seams, medium hard			Run No. 1 (15.3' - 20.3')	Recovery (%) 92	RQD (%) 22	
901.3	20		LIMESTONE - gray, with dark gray banding, fossiliferous, water stained fractures and joints, heavily to moderately weathered			2 (20.3' - 25.3')	100	76	Core water loss observed at 20.3 feet Rock Qu = 1,319 ksf
897.3	24								
893.3	28		Coring Terminated at 25.3 feet						

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-205
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 60's
DRILL RIG TYPE: CME-550
DRILLER: Tri-State Drilling
DATE DRILLED: August 31, 2015
DRILLING METHOD: 2 1/4" ID HSA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 926.5

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
926.5	0		Sounding - no samples taken						Dry upon completion of soil augering
922.5	4								
918.5	8								
914.5	12								
910.5	16		Auger Refusal at 16.2 feet Begin Coring at 16.2 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
906.5	20		LIMESTONE - medium gray, medium to coarse grained, moderately weathered, with clay seams in top 5 feet, with interbedded shale, hard			1 (16.2' - 20.0') 2 (20.0' - 25.0')	98 100	30 52	Rock Qu = 979 ksf
902.5	24								
898.5	28		Coring Terminated at 25.0 feet						

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-206
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 28, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 928.1

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
928.1	0		Sounding - no samples taken						Dry upon completion of soil augering
924.1	4								
920.1	8								
916.1	12								
912.1	16		Weathered Rock Auger Refusal at 15.3 feet Begin Coring at 15.3 feet LIMESTONE - light to medium gray, with interbedded shale, fine to medium grained, fossiliferous band from 17.0 feet to 17.3 feet			Run No. 1 (15.3' - 17.3') 2 (17.3' - 22.5')	Recovery (%) 92 98	RQD (%) 0 53	No core water loss observed Rock Qu = 959 ksf
908.1	20								
904.1	24		Coring Terminated at 22.5 feet						
900.1	28								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky — Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-207
LOCATION: Nicholasville, Kentucky
WEATHER: Cloudy, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 25, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 929.9

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
929.9	0		Sounding - no samples taken						Dry upon completion of soil augering
925.9	4								
921.9	8								
917.9	12		Weathered Rock Auger Refusal at 12.3 feet Begin Coring at 12.3 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed A 12 inch clay seam observed at 13 feet
913.9	16		LIMESTONE - light to medium gray, fine to coarse grained, with interbedded shale, moderately to slightly weathered, with clay seams in top 6 feet, moderately hard			1 (12.3' - 21.5')	100	66	A 5 inch clay seam observed at 15 feet
909.9	20					2 (21.5' - 31.5')	100	78	
905.9	24								
901.9	28								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-207
LOCATION: Nicholasville, Kentucky
WEATHER: Cloudy, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 25, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 929.9

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
897.9	32		LIMESTONE - light to medium gray, fine to coarse grained, with interbedded shale, moderately to slightly weathered, with clay seams in top 6 feet, moderately hard			3 (31.5' - 34.0')	100	33	Rock Qu = 571 ksf
893.9	36		Coring Terminated at 34.0 feet						
889.9	40								
885.9	44								
881.9	48								
877.9	52								
873.9	56								
869.9	60								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-301
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: CME-550
DRILLER: Tri-State Drilling
DATE DRILLED: August 31, 2015
DRILLING METHOD: 2 1/4" ID HSA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 920.5

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
920.5	0		Sounding - no samples taken						Dry upon completion of soil augering
916.5	4								
			Auger Refusal at 6.0 feet Begin Coring at 6.0 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
912.5	8					1 (6.0' - 9.5')	98	50	
			LIMESTONE - medium gray, medium to coarse grained, moderately to slightly weathered, with clay seams in top 8 feet, with interbedded shale, hard			2 (9.5' - 14.5')	98	65	
908.5	12								
						3 (14.5' - 19.5')	100	98	
904.5	16								Rock Qu = 1,415 ksf
900.5	20					4 (19.5' - 24.5')	93	85	
896.5	24		Coring Terminated at 24.5 feet						
892.5	28								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-302
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: September 2, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 918.8

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
918.8	0		Sounding - no samples taken						Dry upon completion of soil augering
914.8	4								
910.8	8								
			Weathered Rock						
906.8	12		Auger Refusal at 9.8 feet Begin Coring at 9.8 feet LIMESTONE - gray to dark gray, with clay partings in top foot, fine to medium grained, slightly weathered, hard			Run No. 1 (9.8' - 15.0')	Recovery (%) 100	RQD (%) 96	No core water loss observed Rock Qu = 783 ksf
902.8	16		Coring Terminated at 15.0 feet						
898.8	20								
894.8	24								
890.8	28								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky — Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-303
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: September 2, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 925.3

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
925.3	0		Sounding - no samples taken						Dry upon completion of soil augering
921.3	4		Auger Refusal at 5.1 feet Begin Coring at 5.1 feet			Run No.	Recovery (%)	RQD (%)	
917.3	8		LIMESTONE - light to medium gray, with shale partings, with clay seams in top 2 feet, fine to coarse grained, heavily to moderately weathered, soft to medium hard			1 (5.1' - 10.1')	88	40	Core water loss observed at 9.0 feet
913.3	12					2 (10.1' - 15.1')	98	78	Rock Qu = 471 ksf
909.3	16		Coring Terminated at 15.1 feet						
905.3	20								
901.3	24								
897.3	28								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-304
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: September 3, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 931.4

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
931.4	0		Sounding - no samples taken						Dry upon completion of soil augering
927.4	4		Weathered Rock Auger Refusal at 5.1 feet Begin Coring at 5.1 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
923.4	8		LIMESTONE - light to dark gray, with shale partings, fossiliferous, with quartz inclusions, with clay seams in top 3 feet, fine to medium grained, moderately weathered, hard			1 (5.1' - 10.1')	96	45	
919.4	12					2 (10.1' - 15.1')	98	84	Rock Qu = 748 ksf
915.4	16		Coring Terminated at 15.1 feet						
911.4	20								
907.4	24								
903.4	28								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-305
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: September 1, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 927.0

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
927	0		Sounding - no samples taken						Dry upon completion of soil augering
923	4		Weathered Rock Auger Refusal at 4.9 feet Begin Coring at 4.9 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
919	8		LIMESTONE - light to medium gray, with interbedded shale, fine to medium grained, with clay seams (in top 5 feet), severely weathered, medium hard			1 (4.9' - 9.9')	88	30	
						2 (9.9' - 14.9')	92	0	
915	12								
						3 (14.9' - 19.9')	95	16	
911	16								
907	20					4 (19.9' - 24.9')	95	13	
903	24					5 (24.9' - 29.9')	93	0	Photo of Approx. Boring Location
899	28					6 (29.9' - 34.9')	93	13	

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Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-305
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: September 1, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 927.0

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
895	32		LIMESTONE - light to medium gray, with interbedded shale, fine to medium grained, with clay seams (in top 5 feet), severely weathered, medium hard			7 (34.9' - 39.9')	97	37	Rock Qu = 1,018 ksf
891	36								
887	40		Coring Terminated at 39.9 feet						
883	44								
879	48								
875	52								
871	56								
867	60								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

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PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-305A
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: September 3, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 927.1

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
927.1	0		Sounding - no samples taken						Dry upon completion of soil augering
923.1	4		Weathered Rock Auger Refusal at 4.8 feet Begin Coring at 4.8 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
						1 (4.8' - 9.8')	73	0	
919.1	8		LIMESTONE - light to dark gray, with shale partings, fine to medium grained, severely to moderately weathered, hard						Rock Qu = 799 ksf
						2 (9.8' - 14.8')	100	77	
915.1	12								
911.1	16		Coring Terminated at 14.8 feet						
907.1	20								
903.1	24								
899.1	28								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-306
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: CME-550
DRILLER: Tri-State Drilling
DATE DRILLED: August 31, 2015
DRILLING METHOD: 2 1/4" ID HSA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 924.8

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
924.8	0		Sounding - no samples taken						Dry upon completion of soil augering
920.8	4								
			Auger Refusal at 6.5 feet Begin Coring at 6.5 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
916.8	8		LIMESTONE - light to medium gray, with clay seams in top 4 feet, with interbedded shale, medium to coarse grained, moderately to slightly weathered, hard			1 (6.5' - 10.0')	98	24	
						2 (10.0' - 15.0')	100	85	
912.8	12								
						3 (15.0' - 20.0')	97	82	
908.8	16								Photo of Approx. Boring Location
904.8	20					4 (20.0' - 25.0')	100	100	
900.8	24								Rock Qu = 625 ksf
						5 (25.0' - 29.0')	100	63	
896.8	28		Coring Terminated at 29.0 feet						

Please note: Boring log is for information only. Soil borings only show conditions observed in specific recovered samples at that particular location. Elevations were provided by the project surveyor, Hall Harmon Engineers, Inc.

Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-307
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: August 30, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 928.8

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
928.8	0		Sounding - no samples taken						Dry upon completion of soil augering
924.8	4								
920.8	8		VOID Weathered Rock						
			Auger Refusal at 9.4 feet Begin Coring at 9.4 feet			Run No.	Recovery (%)	RQD (%)	No core water return observed
916.8	12		LIMESTONE - medium gray to bluish-gray, with interbedded shale, with quartz inclusions at 22.5 feet, fine to medium grained, with angular fracture from 30.2 feet to 30.5 feet, hard			1 (9.4' - 19.4')	97	49	
912.8	16								Photo of Approx. Boring Location
908.8	20					2 (19.4' - 25.9')	94	56	
904.8	24					3 (25.9' - 32.9')	100	83	Rock Qu = 960 ksf
900.8	28								

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-307
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: August 30, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 928.8

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
896.8	32		LIMESTONE - medium gray to bluish-gray, with interbedded shale, with quartz inclusions at 22.5 feet, fine to medium grained, with angular fracture from 30.2 feet to 30.5 feet, hard						
892.8	36								
888.8	40								
884.8	44								
880.8	48								
876.8	52								
872.8	56								
868.8	60		Coring Terminated at 32.9 feet						

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-308
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 60's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 25, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 927.4

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
927.4	0		Sounding - no samples taken						Dry upon completion of soil augering
923.4	4		Weathered Rock Auger Refusal at 3.8 feet Begin Coring at 3.8 feet LIMESTONE - medium to dark gray, with interbedded shale, with clay seams in top 3 feet, fine to medium grained, hard			Run No. 1 (3.8' - 8.8') 2 (8.8' - 11.8') 3 (11.8' - 21.8')	Recovery (%) 100 100 98	RQD (%) 35 19 91	No core water loss observed Rock Qu = 906 ksf
919.4	8								
915.4	12								
911.4	16								
907.4	20								
903.4	24		Coring Terminated at 21.8 feet						
899.4	28								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-309
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 24, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 926.6

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
926.6	0		Sounding - no samples taken						Dry upon completion of soil augering
922.6	4								
			Weathered Rock			Run No.	Recovery (%)	RQD (%)	No core water loss observed
918.6	8		Auger Refusal at 6.9 feet Begin Coring at 6.9 feet			1 (6.9' - 16.9')	92	50	
			LIMESTONE - light to dark gray, fine to coarse grained, with interbedded shale, with clay seams in top 8 feet						
914.6	12								
910.6	16					2 (16.9' - 21.9')	100	70	
906.6	20								Rock Qu = 1,052 ksf
			Coring Terminated at 21.9 feet						
902.6	24								
898.6	28								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-310
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: September 2, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 926.8

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
926.8	0		Sounding - no samples taken						Dry upon completion of soil augering
922.8	4								
			Weathered Rock			Run No.	Recovery (%)	RQD (%)	No core water loss observed
918.8	8		Auger Refusal at 7.4 feet Begin Coring at 7.4 feet			1 (7.4' - 12.4')	88	37	
			LIMESTONE - light to medium gray, with clay seams, with shale partings, fine to medium grained, soft to medium hard, moderately weathered						
914.8	12					2 (12.4' - 17.7')	79	63	
910.8	16		VOID						
			LIMESTONE - light to medium gray, with shale partings, fine to medium grained, soft to medium hard, moderately weathered			3 (17.7' - 22.7')	100	79	
906.8	20								Rock Qu = 516 ksf
902.8	24		Coring Terminated at 22.7 feet						
898.8	28								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-311
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: September 1, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 927.9

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
927.9	0		Sounding - no samples taken						Dry upon completion of soil augering
923.9	4		Weathered Rock Auger Refusal at 4.1 feet Begin Coring at 4.1 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
						1 (4.1' - 9.1')	87	7	
919.9	8		LIMESTONE - light to dark gray, with interbedded shale, with quartz inclusion, fine to coarse grained, severely to moderately weathered, soft to medium hard			2 (9.1' - 14.1')	97	16	
915.9	12					3 (14.1' - 19.1')	98	7	Photo of Approx. Boring Location
911.9	16								
907.9	20					4 (19.1' - 24.1')	87	7	
903.9	24					5 (24.1' - 29.1')	100	27	Rock Qu = 655 ksf
899.9	28					6 (29.1' - 34.1')	98	29	

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-311
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: September 1, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 927.9

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
895.9	32		LIMESTONE - light to dark gray, with interbedded shale, with quartz inclusion, fine to coarse grained, severely to moderately weathered, soft to medium hard			7 (34.1' - 42.1')	99	71	
891.9	36								
887.9	40								
			Coring Terminated at 42.1 feet						
883.9	44								
879.9	48								
875.9	52								
871.9	56								
867.9	60								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-312
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: September 3, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 930.3

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
930.3	0		Sounding - no samples taken						Dry upon completion of soil augering
926.3	4		Weathered Rock Auger Refusal at 5.2 feet Begin Coring at 5.2 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
922.3	8		LIMESTONE - gray, with shale partings, with clay seams, with water stained joints, fine to medium grained, moderately weathered, hard			1 (5.2' - 10.2')	95	52	
918.3	12					2 (10.2' - 15.2')	100	90	Rock Qu = 1,188 ksf
914.3	16		Coring Terminated at 15.2 feet						
910.3	20								
906.3	24								
902.3	28								

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-313
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: September 3, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 928.0

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
928	0		Sounding - no samples taken						Dry upon completion of soil augering
924	4		Weathered Rock Auger Refusal at 3.7 feet Begin Coring at 3.7 feet LIMESTONE - light to dark gray, with clay seams, with interbedded shale, fine to medium grained, heavily to slightly weathered, soft to medium hard			Run No. 1 (3.7' - 8.7')	Recovery (%) 92	RQD (%) 15	No core water loss observed
920	8					2 (8.7' - 13.7')	97	0	
916	12					3 (13.7' - 18.7')	95	27	
912	16								
908	20					4 (18.7' - 23.7')	95	0	Photo of Approx. Boring Location
904	24					5 (23.7' - 29.0')	99	97	
900	28		Coring Terminated at 29.0 feet						Rock Qu = 597 ksf

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858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-401
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: August 30, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 931.6

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
931.6	0		Sounding - no samples taken						Dry upon completion of soil augering
927.6	4								
			Weathered Rock						
923.6	8		Auger Refusal at 7.9 feet Begin Coring at 7.9 feet LIMESTONE - light to medium gray, fine to coarse grained, with interbedded shale, moderately weathered, fossiliferous, hard			Run No. 1 (7.9' - 17.9')	Recovery (%) 95	RQD (%) 62	No core water loss observed
919.6	12								
915.6	16								
						2 (17.9' - 27.9')	100	88	
911.6	20								
907.6	24								
									Photo of Approx. Boring Location
903.6	28					3 (27.9' - 36.0')	100	100	

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858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-401
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: August 30, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 931.6

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
899.6	32		LIMESTONE - light to medium gray, fine to coarse grained, with interbedded shale, moderately weathered, fossiliferous, hard						Rock Qu = 316 ksf
895.6	36		Coring Terminated at 36.0 feet						
891.6	40								
887.6	44								
883.6	48								
879.6	52								
875.6	56								
871.6	60								

Photo of Approx. Boring Location

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Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-402
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: August 30, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 927.5

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
927.5	0		Sounding - no samples taken						Dry upon completion of soil augering
923.5	4								
			Weathered Rock						
919.5	8		Auger Refusal at 8.2 feet Begin Coring at 8.2 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
						1 (8.2' - 11.5')	85	13	
			LIMESTONE - light gray, with interbedded shale, with clay seams (in top 3 feet), severely to moderately weathered, fossiliferous, medium hard to hard						
915.5	12					2 (11.5' - 21.5')	97	65	
911.5	16								
907.5	20					3 (21.5' - 31.5')	99	77	Photo of Approx. Boring Location
903.5	24								Rock Qu = 1,416 ksf
899.5	28								

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-402
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: Mobile B-34
DRILLER: Geo-Drill
DATE DRILLED: August 30, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: T. Greenwell
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 927.5

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
895.5	32		LIMESTONE - light gray, with interbedded shale, with clay seams in top 3 feet, severely weathered, fossiliferous, medium hard to hard						
891.5	36		Coring Terminated at 31.5 feet						
887.5	40								
883.5	44								
879.5	48								
875.5	52								
871.5	56								
867.5	60								

Photo of Approx. Boring Location

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858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-403
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: CME-550
DRILLER: Tri-State Drilling
DATE DRILLED: August 31, 2015
DRILLING METHOD: 2 1/4" ID HSA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 908.9

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
908.9	0		Sounding - no samples taken						Dry upon completion of soil augering
904.9	4								
			Auger Refusal at 6.0 feet Begin Coring at 6.0 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
900.9	8					1 (6.0' - 9.5')	74	36	
			LIMESTONE - light gray, fine to medium grained, moderately to slightly weathered, with clay seams in top 8 feet, with interbedded shale, hard			2 (9.5' - 14.5')	100	32	
896.9	12								
						3 (14.5' - 19.5')	100	78	Rock Qu = 685 ksf
892.9	16								
888.9	20		Coring Terminated at 19.5 feet						
884.9	24								
880.9	28								

Photo of Approx. Boring Location

Please note: Boring log is for information only. Soil borings only show conditions observed in specific recovered samples at that particular location.
Elevations were provided by the project surveyor, Hall Harmon Engineers, Inc.

Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-404
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: CME 550
DRILLER: Tri-State Drilling
DATE DRILLED: September 1, 2015
DRILLING METHOD: 2 1/4" ID HSA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 888.5

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
888.5	0		Sounding - no samples taken						Dry upon completion of soil augering
884.5	4								
880.5	8								Photo of Approx. Boring Location
876.5	12								
			Auger Refusal at 14.5 feet Begin Coring at 14.5 feet			Run No.	Recovery (%)	RQD (%)	
872.5	16					1 (14.5' - 19.5')	93	75	
			LIMESTONE - light to medium gray, with interbedded shale, with clay seams in top 5 feet, coarse grained, slightly weathered, medium hard						
868.5	20					2 (19.5' - 24.5')	100	88	Core water loss observed at 20.0 feet
864.5	24					3 (24.5' - 29.5')	93	58	
860.5	28					4 (29.5' - 32.5')	97	28	Rock Qu = 707 ksf

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-404
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 80's
DRILL RIG TYPE: CME 550
DRILLER: Tri-State Drilling
DATE DRILLED: September 1, 2015
DRILLING METHOD: 2 1/4" ID HSA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 888.5

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
856.5	32		LIMESTONE - light to medium gray, with interbedded shale, with clay seams in top 5 feet, coarse grained, slightly weathered, medium hard			5 (32.5' - 34.0')	100	100	
						6 (34.0' - 35.5')	89	55	
852.5	36		Coring Terminated at 35.5 feet						
848.5	40								
844.5	44								
840.5	48								
836.5	52								
832.5	56								
828.5	60								

Photo of Approx. Boring Location

Please note: Boring log is for information only. Soil borings only show conditions observed in specific recovered samples at that particular location. Elevations were provided by the project surveyor, Hall Harmon Engineers, Inc.

Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-405
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: CME-550
DRILLER: Tri-State Drilling
DATE DRILLED: September 1, 2015
DRILLING METHOD: 2 1/4" ID HSA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 888.0

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
888	0		Sounding - no samples taken						Dry upon completion of soil augering
884	4								
880	8								
876	12								
872	16		Auger Refusal at 14.5 feet Begin Coring at 14.5 feet LIMESTONE - light to medium gray, with interbedded shale, medium to coarse grained, slightly weathered, hard			Run No. 1 (14.5' - 19.5')	Recovery (%) 98	RQD (%) 85	Core water loss observed at 17.0 feet
868	20					2 (19.5' - 24.5')	95	57	Photo of Approx. Boring Location
864	24					3 (24.5' - 26.5')	100	63	Rock Qu = 1,211 ksf
860	28		Coring Terminated at 26.5 feet						

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Elevations were provided by the project surveyor, Hall Harmon Engineers, Inc.

Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-406
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 60's
DRILL RIG TYPE: CME-550
DRILLER: Tri-State Drilling
DATE DRILLED: September 1, 2015
DRILLING METHOD: 2 1/4" ID HSA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 887.5

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
887.5	0		Sounding - no samples taken						Dry upon completion of soil augering
883.5	4								
879.5	8		Auger Refusal at 7.0 feet Begin Coring at 7.0 feet FILL - boulders and rock fragments with intermixed soil			Run No.	Recovery (%)	RQD (%)	
875.5	12					1 (12.0' - 15.0')	100	58	
871.5	16		LIMESTONE - light to medium gray, with clay seams in top 4 feet, with interbedded shale, medium to coarse grained, moderately to slightly weathered, hard			2 (15.0' - 20.0')	98	77	Core water loss was observed at 15.0 feet
867.5	20					3 (20.0' - 21.0')	100	75	Rock Qu = 486 ksf
863.5	24		Coring Terminated at 21.0 feet						Photo of Approx. Boring Location
859.5	28								

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-501
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 28, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: C. Yohe
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 881.2

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
881.2	0		Sounding - no samples taken						Dry upon completion of soil augering
877.2	4								
873.2	8								
			Weathered Rock						
869.2	12		Auger Refusal at 10.9 feet Begin Coring at 10.9 feet LIMESTONE - light gray to gray, with interbedded shale, moderately weathered, with a decomposed seam from 11.4' to 11.7'			Run No. 1 (10.9' - 20.9')	Recovery (%) 100	RQD (%) 68	No core water loss observed Rock Qu = 779 ksf
865.2	16								
861.2	20		Coring Terminated at 20.9 feet						
857.2	24								
853.2	28								

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Elevations were provided by the project surveyor, Hall Harmon Engineers, Inc.

Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-502
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 28, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: C. Yohe
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 881.8

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
881.8	0		Sounding - no samples taken						Dry upon completion of soil augering
877.8	4								
873.8	8		Weathered Rock						
869.8	12		Auger Refusal at 10.7 feet Begin Coring at 10.7 feet LIMESTONE - light gray, medium grained, with interbedded shale, moderately weathered, hard			Run No. 1 (10.7' - 20.7')	Recovery (%) 98	RQD (%) 79	No core water loss observed Rock Qu = 758 ksf
865.8	16								
861.8	20		Coring Terminated at 20.7 feet						
857.8	24								
853.8	28								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-503
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: CME-550
DRILLER: Tri-State Drilling
DATE DRILLED: August 28, 2015
DRILLING METHOD: 2 1/4" ID HSA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 908.1

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
908.1	0		Sounding - no samples taken						Dry upon completion of soil augering
904.1	4		Auger Refusal at 4.5 feet Begin Coring at 4.5 feet			Run No.	Recovery (%)	RQD (%)	No core water loss observed
						1 (4.5' - 5.0')	100	0	
						2 (5.0' - 10.0')	97	20	
900.1	8		LIMESTONE - medium gray, medium to coarse grained, moderately weathered, with interbedded shale, with clay seams in top 10 feet, with vertical fracture from 25.0' - 25.1', hard						
						3 (10.0' - 15.0')	100	38	
896.1	12								
						4 (15.0' - 20.0')	100	37	
892.1	16								
888.1	20					5 (20.0' - 25.0')	98	63	
									Rock Qu = 900 ksf
884.1	24								Photo of Approx. Boring Location
			Coring Terminated at 25.0 feet						
880.1	28								

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Elevations were provided by the project surveyor, Hall Harmon Engineers, Inc.

Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-504
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: CME-550
DRILLER: Tri-State Drilling
DATE DRILLED: August 27, 2015
DRILLING METHOD: 2 1/4" ID HSA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 910.6

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
910.6	0		Sounding - no samples taken						Dry upon completion of soil augering
			Weathered Rock						
906.6	4		Auger Refusal at 4.0 feet Begin Coring at 4.0 feet			Run No.	Recovery (%)	RQD (%)	
						1 (4.0' - 5.0')	83	0	
			LIMESTONE - light gray, medium to coarse grained, with clay seams in top 8 feet, moderately weathered, hard			2 (5.0' - 10.0')	98	23	
902.6	8								
						3 (10.0' - 15.0')	100	47	
898.6	12		LIMESTONE - light to medium gray, medium to coarse grained, slightly weathered, with interbedded shale, hard						
						4 (15.0' - 20.0')	100	52	
894.6	16								
890.6	20					5 (20.0' - 25.0')	100	63	
886.6	24					6 (25.0' - 30.0')	95	93	Photo of Approx. Boring Location
882.6	28					7 (30.0' - 35.0')	100	95	

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-504
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: CME-550
DRILLER: Tri-State Drilling
DATE DRILLED: August 27, 2015
DRILLING METHOD: 2 1/4" ID HSA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 910.6

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (in)	RQD (%)	Notes
878.6	32		LIMESTONE - light to medium gray, medium to coarse grained, slightly weathered, with interbedded shale, hard						
						8 (35.0' - 40.0')	98	87	
874.6	36								Core water loss observed at 38.0 feet
870.6	40					9 (40.0' - 45.0')	100	85	Vertical fracture observed from 40.3 feet to 40.5 feet
866.6	44					10 (45.0' - 50.0')	100	45	
862.6	48					11 (50.0' - 55.0')	98	42	
858.6	52					12 (55.0' - 60.0')	100	95	
854.6	56								Photo of Approx. Boring Location
850.6	60					13 (60.0' - 65.0')	95	93	

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Consulting Services Inc. of Kentucky

Boring Log

856 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-504
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: CME-550
DRILLER: Tri-State Drilling
DATE DRILLED: August 27, 2015
DRILLING METHOD: 2 1/4" ID HSA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 910.6

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
846.6	64		LIMESTONE - light to medium gray, medium to coarse grained, slightly weathered, with interbedded shale, hard			14 (65.0' - 70.0')	100	92	
842.6	68					15 (70.0' - 73.0')	100	100	
838.6	72								Rock Qu = 860 ksf
			Coring Terminated at 73.0 feet						
834.6	76								
830.6	80								
826.6	84								
822.6	88								

Photo of Approx. Boring Location

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-505
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 28, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: C. Yohe
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 914.5

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
914.5	0		Sounding - no samples taken						Dry upon completion of soil augering
910.5	4		Weathered Rock Auger Refusal at 4.7 feet Begin Coring at 4.7 feet			Run No. 1 (4.7' - 6.3') 2 (6.3' - 10.0')	Recovery (%) 68 90	RQD (%) 0 20	No core water loss observed
906.5	8		LIMESTONE - gray to light gray, moderately weathered, medium grained, with interbedded shale, with vertical fractures from 14.3 feet to 14.5 feet and 15.5 feet to 5.8 feet, with clay seams from 17.6 feet to 17.7 feet and 18.0 feet to 8.5 feet, hard			3 (10.0' - 20.0')	94	55	
902.5	12								
898.5	16								Rock Qu = 568 ksf
894.5	20		Coring Terminated at 20.0 feet						Photo of Approx. Boring Location
890.5	24								
886.5	28								

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Consulting Services Inc. of Kentucky

Boring Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman WWTP WWS Facility
PROJECT NUMBER: LX150053
BORING NUMBER: RC-506
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
DRILL RIG TYPE: Mobile B-80
DRILLER: Geo-Drill
DATE DRILLED: August 26, 2015
DRILLING METHOD: 4" OD SFA
CSI FIELD REP: J. Wheat
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: 907.3

ELEV. (feet)	DEPTH (feet)	Water Level	Strata Description	SOIL TYPE	SAMPLES	SPT Blow Counts	Recovery (In)	RQD (%)	Notes
907.3	0		Sounding - no samples taken						Dry upon completion of soil augering
903.3	4		Weathered Rock Auger Refusal at 3.7 feet Begin Coring at 3.7 feet LIMESTONE - light to medium gray, medium to coarse grained, moderately weathered, with interbedded clay seams in top 7 feet, hard			Run No. 1 (3.7' - 10.1')	Recovery (%) 42	RQD (%) 19	No core water loss observed Rock Qu = 1,428 ksf
899.3	8								
895.3	12		Limestone - gray, with interbedded shale, fine to coarse grained, moderately to slightly weathered, moderately hard			2 (10.1' - 20.1')	100	76	
891.3	16								
887.3	20		Coring Terminated at 20.1 feet						
883.3	24								
879.3	28								

Photo of Approx. Boring Location

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Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
B-1	11.3 feet to 21.3 feet	Limestone - light to medium gray, medium to coarse grained, with interbedded shale, moderately weathered Core water loss observed at 12.8 feet Recovery: 88% RQD: 33% (poor engineering quality) ***Void observed from 12.8 to 14.0 feet** Rock Q_u = 1,325 ksf	
B-2	18.1 feet to 28.1 feet	Limestone - light to medium gray, medium to coarse grained, with interbedded shale, moderately to slightly weathered No core water loss observed Recovery: 98% RQD: 33% (poor engineering quality) Rock Q_u = 991 ksf	

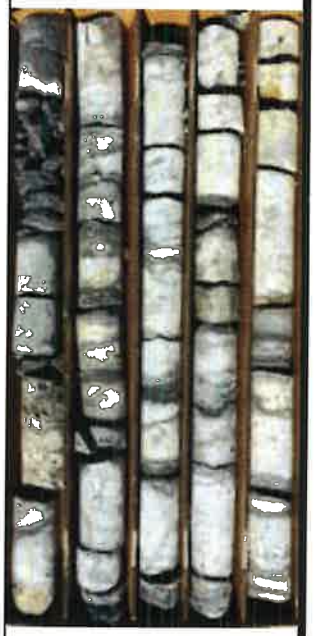
Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
B-3	14.8 feet to 24.8 feet	Limestone - light to medium gray, coarse to fine grained, with clay seams, with interbedded shale, moderately weathered No core water loss observed Recovery: 98% RQD: 0% (very poor engineering quality) Rock Q_u = 714 ksf	
B-4	1st run: 17.7 feet to 24.0 feet 2nd run: 24.0 feet to 27.7 feet	Limestone- light to medium gray, medium to coarse grained, with interbedded shale, moderately weathered Core water loss observed at 19.7 feet 1st run: Recovery: 100% RQD: 12% (very poor engineering quality) 2nd run: Recovery: 100% RQD: 25% (very poor engineering quality) Rock Q_u = 732 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
B-5A	17.7 feet to 27.7 feet	Limestone - light to medium gray, medium to coarse grained, with interbedded shale, moderately weathered No core water return observed Recovery: 100% RQD: 42% (poor engineering quality) Rock Q_u = 411 ksf	
B-6	17.2 feet to 27.2 feet	Limestone - light to medium gray, medium to coarse grained, with interbedded shale, moderately weathered No core water loss observed Recovery: 100% RQD: 17% (very poor engineering quality) Rock Q_u = 647 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
B-7	1st run: 9.6 feet to 19.6 feet	Limestone - light to medium gray, medium to coarse grained, with interbedded shale, moderately weathered No core water loss observed 1st run: Recovery: 98% RQD: 35% (poor engineering quality) Rock Q_u = 557 ksf	
B-7	2nd run: 19.6 feet to 21.6 feet	Limestone - light to medium gray, medium to coarse grained, with interbedded shale, moderately weathered No core water loss observed 2nd run: Recovery: 100% RQD: 38% (poor engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
B-8	1st run: 10.7 feet to 19.7 feet	Limestone - light to medium gray, fine to coarse grained, with clay seams, with interbedded shale, moderately weathered No core water loss observed 1st run: Recovery: 92% RQD: 53% (fair engineering quality)	
B-8	2nd run: 19.7 feet to 29.7 feet	Limestone - light to medium gray, fine to coarse grained, with clay seams, with interbedded shale, moderately weathered No core water loss observed 2nd run: Recovery: 99% RQD: 95% (excellent engineering quality) Rock Q_u = 609 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
B-8	3rd run: 29.7 feet to 35.7 feet	Limestone - light to medium gray, fine to coarse grained, with clay seams, with interbedded shale, moderately weathered No core water loss observed 3rd run: Recovery: 99% RQD: 78% (good engineering quality)	
B-9	1st run: 11.8 feet to 19.8 feet	Limestone - medium gray, fine to coarse grained, with clay seams, with interbedded shale, moderately to slightly weathered No core water loss observed 1st run: Recovery: 99% RQD: 53% (fair engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
B-9	2nd run: 19.8 feet to 29.8 feet	Limestone - medium gray, fine to coarse grained, with clay seams, with interbedded shale, moderately to slightly weathered No core water loss observed 2nd run: Recovery: 97% RQD: 91% (excellent engineering quality)	
B-9	3rd run: 29.8 feet to 36.8 feet	Limestone - medium gray, fine to coarse grained, with clay seams, with interbedded shale, moderately to slightly weathered No core water loss observed 3rd run: Recovery: 99% RQD: 80% (good engineering quality) Rock Q_u = 611 ksf	

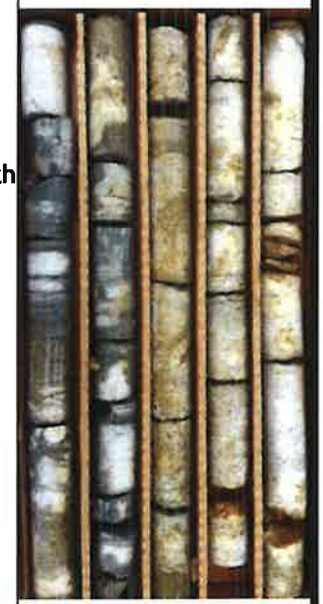
Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
B-10	1st run: 10.7 feet to 15.7 feet	Limestone - medium to dark gray, coarse grained, with clay seams, with interbedded shale, moderately weathered No core water loss observed 1st run: Recovery: 82% RQD: 27% (poor engineering quality)	
B-10	2nd run: 15.7 feet to 25.7 feet	Limestone - medium to dark gray, coarse grained, with clay seams, with interbedded shale, moderately weathered No core water loss observed 2nd run: Recovery: 98% RQD: 38% (poor engineering quality) Rock Q_u = 832 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
B-10	3rd run: 25.7 feet to 35.7 feet	Limestone - medium to dark gray, coarse grained, with clay seams, with interbedded shale, moderately weathered No core water loss observed 3rd run: Recovery: 99% RQD: 50% (fair engineering quality)	
B-11	1st run: 7.8 feet to 17.8 feet	Limestone - light to medium gray, fine to coarse grained, with clay seams, with interbedded shale, slightly weathered No core water loss observed 1st run: Recovery: 95% RQD: 72% (fair engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
B-11	2nd run: 17.8 feet to 27.8 feet	Limestone - light to medium gray, fine to coarse grained, with clay seams, with interbedded shale, slightly weathered No core water loss observed 2nd run: Recovery: 100% RQD: 77% (good engineering quality)	
B-11	3rd run: 27.8 feet to 37.8 feet	Limestone - light to medium gray, fine to coarse grained, with clay seams, with interbedded shale, slightly weathered No core water loss observed 3rd run: Recovery: 98% RQD: 83% (good engineering quality) Rock Q_u = 804 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
B-12	1st run: 4.4 feet to 14.4 feet	Limestone - medium gray, fine to coarse grained with clay seams, with interbedded shale, moderately weathered Core water loss observed at approximately 14 feet 1st run: Recovery: 90% RQD: 55% (fair engineering quality)	
B-12	2nd run: 14.4 feet to 24.4 feet	Limestone - medium gray, fine to coarse grained with clay seams, with interbedded shale, moderately weathered Core water loss observed at approximately 14 feet 2nd run: Recovery: 95% RQD: 87% (good engineering quality) ***Void observed from 15.5 to 15.8 feet**	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
B-12	3rd run: 24.4 feet to 30.5 feet	Limestone - medium gray, fine to coarse grained with clay seams, with interbedded shale, moderately weathered Core water loss observed at approximately 14 feet 3rd run: Recovery: 100% RQD: 89% (good engineering quality) Rock Q_u = 560 ksf	
B-13	1st run: 9.1 feet to 19.1 feet	Limestone - medium gray, fine to coarse grained, with clay seams, with interbedded shale, slightly weathered No core water loss observed 1st run: Recovery: 94% RQD: 82% (good engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
B-13	2nd run: 19.1 feet to 28.6 feet	Limestone - medium gray, fine to coarse grained, with clay seams, with interbedded shale, slightly weathered No core water loss observed 2nd run: Recovery: 96% RQD: 88% (good engineering quality) Rock Q_u = 822 ksf	
B-14A	1st run: 8.1 feet to 15.1 feet	Limestone - light to medium gray, coarse grained, with interbedded shale, moderately weathered Core water loss observed at 8.6 feet 1st run: Recovery: 79% RQD: 50% (poor engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
B-14A	2nd run: 15.1 feet to 25.1 feet	Limestone - light to medium gray, coarse grained, with interbedded shale, moderately weathered Core water loss observed at 8.6 feet 2nd run: Recovery: 99% RQD: 59% (fair engineering quality)	
B-14A	3rd run: 25.1 feet to 35.1 feet	Limestone - light to medium gray, coarse grained, with interbedded shale, moderately weathered Core water loss observed at 8.6 feet 3rd run: Recovery: 99% RQD: 73% (fair engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
B-14A	4th run: 35.1 feet to 43.1 feet	Limestone - light to medium gray, coarse grained, with interbedded shale, moderately weathered Core water loss observed at 8.6 feet 4th run: Recovery: 100% RQD: 90% (good engineering quality) Rock Q_u = 608 ksf	
B-15	1st run: 8.1 feet to 15.5 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, with clay seams (in top 2 feet), moderately to slightly weathered Core water loss observed at 30 feet and core water return observed at 37 feet 1st run: Recovery: 87% RQD: 21% (very poor engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
B-15	2nd run: 15.5 feet to 25.5 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, moderately to slightly weathered Core water loss observed at 30 feet and core water return observed at 37 feet 2nd run: Recovery: 100% RQD: 74% (fair engineering quality)	
B-15	3rd run: 25.5 feet to 35.5 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, moderately to slightly weathered Core water loss observed at 30 feet and core water return observed at 37 feet 3rd run: Recovery: 98% RQD: 64% (fair engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
B-15	4th run: 35.5 feet to 45.5 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, moderately to slightly weathered Core water loss observed at 30 feet and core water return observed at 37 feet 4th run: Recovery: 99% RQD: 56% (fair engineering quality) Rock Q_u = 894 ksf	
B-16	1st run: 7.8 feet to 17.8 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, with clay seams (in top 5 feet), moderately to slightly weathered Core water loss observed at approximately 12 feet 1st run: Recovery: 89% RQD: 48% (poor engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
B-16	2nd run: 17.8 feet to 27.8 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, moderately to slightly weathered Core water loss observed at approximately 12 feet 2nd run: Recovery: 99% RQD: 70% (fair engineering quality)	
B-16	3rd run: 27.8 feet to 37.8 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, moderately to slightly weathered Core water loss observed at approximately 12 feet 3rd run: Recovery: 100% RQD: 53% (fair engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
B-16	4th run: 37.8 feet to 47.8 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, moderately to slightly weathered Core water loss observed at approximately 12 feet 4th run: Recovery: 100% RQD: 59% (fair engineering quality)	
B-16	5th run: 47.8 feet to 57.8 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, moderately to slightly weathered Core water loss observed at approximately 12 feet 5th run: Recovery: 98% RQD: 89% (good engineering quality) Rock Q_u = 824 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
B-17	1st run: 12.9 feet to 22.9 feet	Limestone - light to medium gray, medium to coarse grained, with interbedded shale, slightly weathered No core water loss observed 1st run: Recovery: 99% RQD: 38% (poor engineering quality) Rock Q_u = 1,017 ksf	
B-17	2nd run: 22.9 feet to 32.9 feet	Limestone - light to medium gray, medium to coarse grained, with interbedded shale, slightly weathered No core water loss observed 2nd run: Recovery: 99% RQD: 28% (poor engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
B-18	7.4 feet to 17.4 feet	Limestone - light to medium gray, medium to coarse grained, with interbedded shale, slightly weathered Core water loss observed at 10 feet Recovery: 98% RQD: 20% (very poor engineering quality) ***Void observed from 10.0 to 10.2 feet** Rock Q_u = 754 ksf	
B-21	11.3 feet to 21.3 feet	Limestone - light to medium gray, coarse grained, with interbedded shale, slightly weathered No core water loss observed Recovery: 98% RQD: 23% (very poor engineering quality) Rock Q_u = 974 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
B-22	15.8 feet to 25.8 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, slightly weathered No core water loss observed Recovery: 98% RQD: 36% (poor engineering quality) Rock Q_u = 767 ksf	
B-23	5.7 feet to 15.7 feet	Limestone - light to medium gray, medium to coarse grained, with interbedded shale, moderately weathered No core water loss observed Recovery: 85% RQD: 16% (very poor engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
B-24	14.2 feet to 24.2 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, moderately weathered No core water loss observed Recovery: 97% RQD: 33% (poor engineering quality) Rock Q_u = 806 ksf	
B-26	1st run: 3.4 feet to 8.4 feet 2nd run: 8.4 feet to 13.4 feet	Limestone - light gray, with interbedded shale, medium to coarse grained, with clay seams (in top 8 feet), moderately weathered Core water loss observed at 8.5 feet 1st run: Recovery: 90% RQD: 28% (poor engineering quality) 2nd run: Recovery: 90% RQD: 27% (poor engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
RC-201A	1st run: 18.7 feet to 28.7 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, with clay seams (in top 8 feet), moderately weathered Core water loss observed at 19.5 feet 1st run: Recovery: 95% RQD: 58% (fair engineering quality) ***Void observed from 19.5 feet to 19.7 feet** Rock Q_u = 745 ksf	
RC-201A	2nd run: 28.7 feet to 33.7 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, with crystallization at 31 feet, moderately weathered Core water loss observed at 19.5 feet 2nd run: Recovery: 97% RQD: 63% (fair engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
RC-202	1st run: 10.2 feet to 20.2 feet	Limestone - light to medium gray, with interbedded shale, fine to medium grained, with clay seams (in top 8 feet), moderately weathered No core water loss observed 1st run: Recovery: 98% RQD: 16% (very poor engineering quality) ***Void observed from 19.5 to 19.7 feet**	
RC-202	2nd run: 20.2 feet to 29.2 feet	Limestone - light to medium gray, with interbedded shale, fine to medium grained, moderately weathered No core water loss observed 2nd run: Recovery: 100% RQD: 75% (fair engineering quality) Rock Q_u = 842 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
RC-203	1st run: 16.7 feet to 19.8 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, with clay seams (in top 6 feet), moderately to slightly weathered No core water loss observed 1st run: Recovery: 100% RQD: 22% (very poor engineering quality) ***Void observed from 19.5 to 19.7 feet**	
RC-203	2nd run: 19.8 feet to 29.8 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, moderately to slightly weathered No core water loss observed 2nd run: Recovery: 100% RQD: 62% (fair engineering quality) Rock Q_u = 891 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-204	1st run: 15.3 feet to 20.3 feet 2nd run: 20.3 feet to 25.3 feet	Limestone - light to medium gray, with interbedded shale, medium grained, with clay seams (in top 2 feet), severely to moderately weathered Core water loss observed at 20.3 feet 1st run: Recovery: 92% RQD: 22% (very poor engineering quality) 2nd run: Recovery: 100% RQD: 76% (good engineering quality) Rock Q_u = 1,139 ksf	
RC-205	1st run: 16.2 feet to 20.0 feet 2nd run: 20.0 feet to 25.0 feet	Limestone - medium gray, with interbedded shale, medium to coarse grained, with clay seams (in top 5 feet), moderately weathered No core water loss observed 1st run: Recovery: 98% RQD: 30% (poor engineering quality) 2nd run: Recovery: 100% RQD: 52% (good engineering quality) Rock Q_u = 979 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-206	1st run: 15.3 feet to 17.3 feet 2nd run: 17.3 feet to 22.5 feet	Limestone - light to medium gray, with interbedded shale, fine to medium grained, with fossiliferous band (from 17.0 feet to 17.3 feet), moderately weathered No core water loss observed 1st run: Recovery: 92% RQD: 0% (very poor engineering quality) 2nd run: Recovery: 98% RQD: 53% (good engineering quality) Rock Q_u = 959 ksf	
RC-207	1st run: 12.3 feet to 21.5 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, with clay seams (in top 6 feet), moderately to slightly weathered No core water loss observed 1st run: Recovery: 100% RQD: 66% (fair engineering quality) ***A 12-inch clay seam and 5-inch clay seam was observed at 13 and 15 feet, respectively**	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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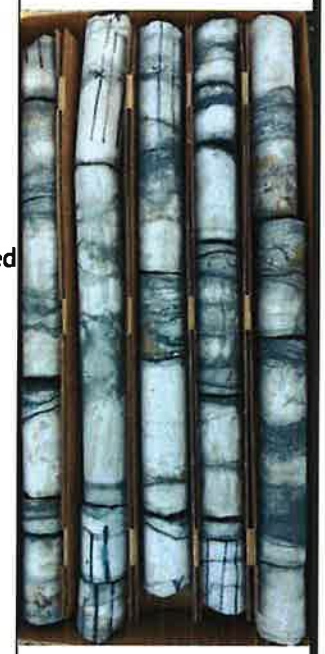
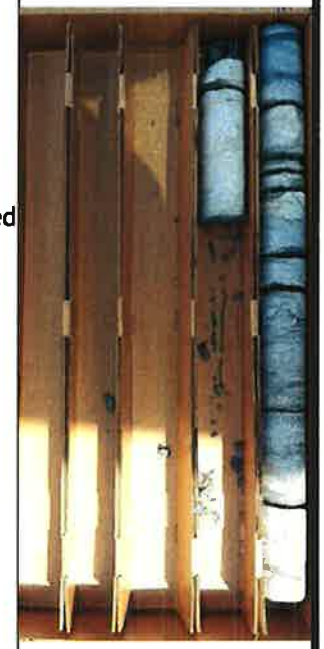
Boring	Run	Description and Notes	Photo of Core
RC-207	2nd run: 21.5 feet to 31.5 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, moderately to slightly weathered No core water loss observed 2nd run: Recovery: 100% RQD: 78% (good engineering quality)	
RC-207	3rd run: 31.5 feet to 34.0 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, moderately to slightly weathered No core water loss observed 3rd run: Recovery: 100% RQD: 33% (poor engineering quality) Rock Q_u = 571 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
RC-301	1st run: 6.0 feet to 9.5 feet 2nd run: 9.5 feet to 14.5 feet	Limestone - medium gray, with interbedded shale, medium to coarse grained, with clay seams (in top 8 feet), moderately to slightly weathered No core water loss observed 1st run: Recovery: 98% RQD: 50% (fair engineering quality) 2nd run: Recovery: 98% RQD: 65% (fair engineering quality)	
RC-301	3rd run: 14.5 feet to 19.5 feet 4th run: 19.5 feet to 24.5 feet	Limestone - medium gray, with interbedded shale, medium to coarse grained, moderately to slightly weathered No core water loss observed 3rd run: Recovery: 100% RQD: 98% (excellent engineering quality) 4th run: Recovery: 93% RQD: 85% (good engineering quality) Rock Q_u = 1,415 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
RC-302	9.8 feet to 15.0 feet	Limestone - gray to dark gray, with interbedded shale, fine to medium grained, with clay seams (in top foot), slightly weathered No core water loss observed Recovery: 100% RQD: 96% (excellent engineering quality) Rock Q_u = 783 ksf	
RC-303	1st run: 5.1 feet to 10.1 feet 2nd run: 10.1 feet to 15.1 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, with clay seams (in top 2 feet), severely to moderately weathered Core water loss observed at 9.0 feet 1st run: Recovery: 88% RQD: 40% (poor engineering quality) 2nd run: Recovery: 98% RQD: 78% (good engineering quality) Rock Q_u = 471 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
RC-304	1st run: 5.1 feet to 10.1 feet 2nd run: 10.1 feet to 15.1 feet	Limestone - light to dark gray, with interbedded shale, fine to medium grained, with clay seams (in top 3 feet), fossiliferous, with quartz inclusions, moderately weathered No core water loss observed 1st run: Recovery: 96% RQD: 45% (poor engineering quality) 2nd run: Recovery: 98% RQD: 84% (good engineering quality) Rock Q_u = 748 ksf	
RC-305	1st run: 4.9 feet to 9.9 feet 2nd run: 9.9 feet to 14.9 feet	Limestone - light to medium gray, with interbedded shale, fine to medium grained, with clay seams (in top 5 feet), severely weathered No core water loss observed 1st run: Recovery: 88% RQD: 30% (poor engineering quality) 2nd run: Recovery: 92% RQD: 0% (very poor engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
RC-305	3rd run: 14.9 feet to 19.9 feet 4th run: 19.9 feet to 24.9 feet	Limestone - light to medium gray, with interbedded shale, fine to medium grained, severely weathered No core water loss observed 3rd run: Recovery: 95% RQD: 16% (very poor engineering quality) 4th run: Recovery: 95% RQD: 13% (very poor engineering quality)	
RC-305	5th run: 24.9 feet to 29.9 feet 6th run: 29.9 feet to 34.9 feet	Limestone - light to medium gray, with interbedded shale, fine to medium grained, with clay seams (in top 5 feet), severely weathered No core water loss observed 5th run: Recovery: 93% RQD: 0% (very poor engineering quality) 6th run: Recovery: 93% RQD: 13% (very poor engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
RC-305	7th run: 34.9 feet to 39.9 feet	Limestone - light to medium gray, with interbedded shale, fine to medium grained, severely weathered No core water loss observed 7th run: Recovery: 97% RQD: 37% (poor engineering quality) Rock Q_u = 1,018 ksf	
RC-305A	1st run: 4.8 feet to 9.8 feet 2nd run: 9.8 feet to 14.8 feet	Limestone - light to dark gray, with interbedded shale, fine to medium grained, severely to moderately weathered No core water loss observed 1st run: Recovery: 73% RQD: 0% (very poor engineering quality) 2nd run: Recovery: 100% RQD: 77% (good engineering quality) Rock Q_u = 799 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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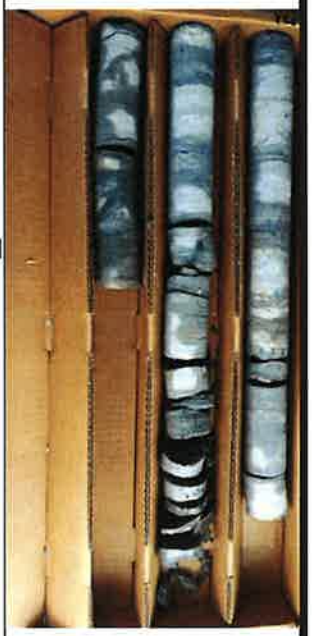
Boring	Run	Description and Notes	Photo of Core
RC-306	1st run: 6.5 feet to 10.0 feet 2nd run: 10.0 feet to 15.0 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, with clay seams (in top 4 feet), moderately to slightly weathered No core water loss observed 1st run: Recovery: 98% RQD: 24% (very poor engineering quality) 2nd run: Recovery: 100% RQD: 85% (good engineering quality)	
RC-306	3rd run: 15.0 feet to 20.0 feet 4th run: 20.0 feet to 25.0 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, moderately to slightly weathered No core water loss observed 3rd run: Recovery: 97% RQD: 82% (good engineering quality) 4th run: Recovery: 100% RQD: 100% (excellent engineering quality) Rock Q_u = 625 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-306	5th run: 25.0 feet to 29.0 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, moderately to slightly weathered No core water loss observed 5th run: Recovery: 100% RQD: 63% (fair engineering quality)	
RC-307	1st run: 9.4 feet to 19.4 feet	Limestone - medium to bluish-gray, with interbedded shale, fine to medium grained, with quartz inclusions, slightly weathered No core water return observed 1st run: Recovery: 97% RQD: 49% (poor engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
RC-307	2nd run: 19.4 feet to 25.9 feet	Limestone - medium to bluish-gray, with interbedded shale, fine to medium grained, with quartz inclusions, slightly weathered No core water return observed 2nd run: Recovery: 94% RQD: 56% (fair engineering quality)	
RC-307	3rd run: 25.9 feet to 32.9 feet	Limestone - medium to bluish-gray, with interbedded shale, fine to medium grained, with angular fracture from 30.2 feet to 30.5 feet, slightly weathered No core water return observed 3rd run: Recovery: 100% RQD: 83% (good engineering quality) Rock Q_u = 960 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
RC-308	1st run: 3.8 feet to 8.8 feet 2nd run: 8.8 feet to 11.8 feet	Limestone - medium to dark gray, with interbedded shale, fine to medium grained, with clay seams (in top 3 feet), slightly weathered No core water loss observed 1st run: Recovery: 100% RQD: 35% (poor engineering quality) 2nd run: Recovery: 100% RQD: 19% (very poor engineering quality)	
RC-308	3rd run: 11.8 feet to 21.8 feet	Limestone - medium to dark gray, with interbedded shale, fine to medium grained, slightly weathered No core water loss observed 3rd run: Recovery: 98% RQD: 91% (excellent engineering quality) Rock Q_u = 906 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
RC-309	1st run: 6.9 feet to 16.9 feet	Limestone - light to dark gray, with interbedded shale, fine to medium grained, with clay seams (in top 8 feet), moderately weathered No core water loss observed 1st run: Recovery: 92% RQD: 50% (fair engineering quality)	
RC-309	2nd run: 16.9 feet to 21.9 feet	Limestone - light to dark gray, with interbedded shale, fine to medium grained, slightly weathered No core water loss observed 2nd run: Recovery: 100% RQD: 70% (fair engineering quality) Rock Q_u = 1,052 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-310	1st run: 7.4 feet to 12.4 feet 2nd run: 12.4 feet to 17.7 feet	Limestone - light to medium gray, with interbedded shale, fine to medium grained, with clay seams, moderately weathered No core water loss observed 1st run: Recovery: 88% RQD: 37% (poor engineering quality) 2nd run: Recovery: 79% RQD: 63% (fair engineering quality) ***Void observed at 15.8 feet to 16.7 feet**	
RC-310	3rd run: 17.7 feet to 22.7 feet	Limestone - light to medium gray, with interbedded shale, fine to medium grained, moderately weathered No core water loss observed 3rd run: Recovery: 100% RQD: 79% (good engineering quality) Rock Q_u = 516 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
RC-311	1st run: 4.1 feet to 9.1 feet 2nd run: 9.1 feet to 14.1 feet	Limestone - light to dark gray, with interbedded shale, with quartz inclusions, fine to coarse grained, severely to moderately weathered No core water loss observed 1st run: Recovery: 87% RQD: 7% (very poor engineering quality) 2nd run: Recovery: 97% RQD: 16% (very poor engineering quality)	
RC-311	3rd run: 14.1 feet to 19.1 feet 4th run: 19.1 feet to 24.1 feet	Limestone - light to dark gray, with interbedded shale, with quartz inclusions, fine to coarse grained, severely to moderately weathered No core water loss observed 3rd run: Recovery: 98% RQD: 7% (very poor engineering quality) 4th run: Recovery: 87% RQD: 7% (very poor engineering quality) Rock Q_u = 655 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
RC-311	5th run: 24.1 feet to 29.1 feet 6th run: 29.1 feet to 34.1 feet	Limestone - light to dark gray, with interbedded shale, with quartz inclusions, fine to coarse grained, severely to moderately weathered No core water loss observed 5th run: Recovery: 100% RQD: 27% (poor engineering quality) 6th run: Recovery: 98% RQD: 29% (poor engineering quality)	
RC-311	7th run: 34.1 feet to 42.1 feet	Limestone - light to dark gray, with interbedded shale, with quartz inclusions, fine to coarse grained, severely to moderately weathered No core water loss observed 7th run: Recovery: 99% RQD: 71% (fair engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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Boring	Run	Description and Notes	Photo of Core
RC-312	1st run: 5.2 feet to 10.2 feet 2nd run: 10.2 feet to 15.2 feet	Limestone - gray, with interbedded shale, fine to medium grained, with clay seams, moderately weathered No core water loss observed 1st run: Recovery: 95% RQD: 52% (fair engineering quality) 2nd run: Recovery: 100% RQD: 90% (excellent engineering quality) Rock Q_u = 1,188 ksf	
RC-313	1st run: 3.7 feet to 8.7 feet 2nd run: 8.7 feet to 13.7 feet	Limestone - light to dark gray, with clay seams, with interbedded shale, fine to medium grained, heavily to slightly weathered No core water loss observed 1st run: Recovery: 92% RQD: 15% (very poor engineering quality) 2nd run: Recovery: 97% RQD: 0% (very poor engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-313	3rd run: 13.7 feet to 18.7 feet 4th run: 18.7 feet to 23.7 feet	Limestone - light to dark gray, with clay seams, with interbedded shale, fine to medium grained, heavily to slightly weathered No core water loss observed 3rd run: Recovery: 95% RQD: 27% (poor engineering quality) 4th run: Recovery: 95% RQD: 0% (very poor engineering quality)	
RC-313	5th run: 23.7 feet to 29.0 feet	Limestone - light to dark gray, with clay seams, with interbedded shale, fine to medium grained, heavily to slightly weathered No core water loss observed 5th run: Recovery: 99% RQD: 97% (excellent engineering quality) Rock Q_u = 597 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
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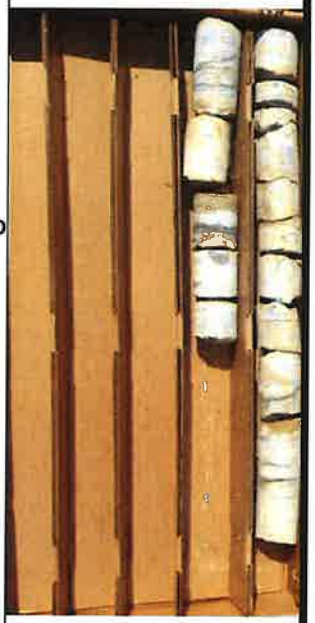
Boring	Run	Description and Notes	Photo of Core
RC-401	1st run: 7.9 feet to 17.9 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, fossiliferous, moderately weathered No core water loss observed 1st run: Recovery: 95% RQD: 62% (fair engineering quality)	
RC-401	2nd run: 17.9 feet to 27.9 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, fossiliferous, moderately weathered No core water loss observed 2nd run: Recovery: 100% RQD: 88% (good engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-401	3rd run: 27.9 feet to 36.0 feet	Limestone - light to medium gray, with interbedded shale, fine to coarse grained, fossiliferous, moderately weathered No core water loss observed 3rd run: Recovery: 100% RQD: 100% (excellent engineering quality) Rock Q_u = 316 ksf	
RC-402	1st run: 8.2 feet to 11.5 feet	Limestone - light gray, with interbedded shale, with clay seams (in top 3 feet), medium grained, fossiliferous, severely to moderately weathered No core water loss observed 1st run: Recovery: 85% RQD: 13% (very poor engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-402	2nd run: 11.5 feet to 21.5 feet	Limestone - light gray, with interbedded shale, medium grained, fossiliferous, severely to moderately weathered No core water loss observed 2nd run: Recovery: 97% RQD: 65% (fair engineering quality)	
RC-402	3rd run: 21.5 feet to 31.5 feet	Limestone - light gray, with interbedded shale, medium grained, fossiliferous, severely to moderately weathered No core water loss observed 3rd run: Recovery: 99% RQD: 77% (good engineering quality) Rock Q_u = 1,416 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-403	1st run: 6.0 feet to 9.5 feet 2nd run: 9.5 feet to 14.5 feet	Limestone - light gray, with interbedded shale, fine to medium grained, with clay seams (in top 8 feet), moderately weathered No core water loss observed 1st run: Recovery: 74% RQD: 36% (poor engineering quality) 2nd run: Recovery: 100% RQD: 32% (poor engineering quality) Rock Q_u = 685 ksf	
RC-403	3rd run: 14.5 feet to 19.5 feet	Limestone - light gray, with interbedded shale, fine to medium grained, slightly weathered No core water loss observed 3rd run: Recovery: 100% RQD: 78% (good engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-404	1st run: 14.5 feet to 19.5 feet 2nd run: 19.5 feet to 24.5 feet	Limestone - light to medium gray, with interbedded shale, coarse grained, with clay seams (in top 5 feet), slightly weathered Core water loss observed at 20 feet 1st run: Recovery: 93% RQD: 75% (fair engineering quality) 2nd run: Recovery: 100% RQD: 88% (good engineering quality)	
RC-404	3rd run: 24.5 feet to 29.5 feet	Limestone - light to medium gray, with interbedded shale, coarse grained, slightly weathered Core water loss observed at 20 feet 3rd run: Recovery: 93% RQD: 58% (fair engineering quality) Rock Q_u = 707 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-404	4th run: 29.5 feet to 32.5 feet 5th run: 32.5 feet to 34.0 feet 6th run: 34.0 feet to 35.5 feet	Limestone - light to medium gray, with interbedded shale, coarse grained, slightly weathered Core water loss observed at 20 feet 4th run: Recovery: 97% RQD: 28% (poor engineering quality) 5th run: Recovery: 100% RQD: 100% (excellent engineering quality) 6th run: Recovery: 89% RQD: 55% (fair engineering quality)	
RC-405	1st run: 14.5 feet to 19.5 feet 2nd run: 19.5 feet to 24.5 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, slightly weathered Core water loss observed at 17 feet 1st run: Recovery: 98% RQD: 85% (excellent engineering quality) 2nd run: Recovery: 95% RQD: 57% (fair engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-405	3rd run: 24.5 feet to 26.5 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, slightly weathered Core water loss observed at 17 feet 3rd run: Recovery: 100% RQD: 63% (fair engineering quality) Rock Q_u = 1,211 ksf	
RC-406	1st run: 12.0 feet to 15.0 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, with clay seams (in top 4 feet), moderately weathered Core water loss observed at 15 feet 1st run: Recovery: 100% RQD: 58% (fair engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-406	2nd run: 15.0 feet to 20.0 feet 3rd run: 20.0 feet to 21.0 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, slightly weathered Core water loss observed at 15 feet 2nd run: Recovery: 98% RQD: 77% (good engineering quality) 3rd run: Recovery: 100% RQD: 75% (fair engineering quality) Rock Q_u = 486 ksf	
RC-501	10.9 feet to 20.9 feet	Limestone - light to medium gray, with interbedded shale, medium grained, with decomposed seam from 11.4 feet to 11.7 feet, moderately weathered No core water loss observed Recovery: 100% RQD: 66% (fair engineering quality) Rock Q_u = 779 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-502	10.7 feet to 20.7 feet	Limestone - light gray, with interbedded shale, medium grained, moderately weathered No core water loss observed Recovery: 98% RQD: 79% (good engineering quality) Rock Q_u = 758 ksf	
RC-503	1st run: 4.5 feet to 5.0 feet 2nd run: 5.0 feet to 10.0 feet	Limestone - medium gray, with interbedded shale, medium to coarse grained, with clay seams (in top 10 feet), moderately weathered No core water loss observed 1st run: Recovery: 100% RQD: 0% (very poor engineering quality) 2nd run: Recovery: 97% RQD: 20% (poor engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-503	3rd run: 10.0 feet to 15.0 feet 4th run: 15.0 feet to 20.0 feet	Limestone - medium gray, with interbedded shale, medium to coarse grained, with clay seams (in top 10 feet), moderately weathered No core water loss observed 3rd run: Recovery: 100% RQD: 38% (poor engineering quality) 4th run: Recovery: 100% RQD: 37% (poor engineering quality)	
RC-503	5th run: 16.9 feet to 21.9 feet	Limestone - medium gray, with interbedded shale, medium to coarse grained, with vertical fracture from 25.0 feet to 25.1 feet, moderately weathered No core water loss observed 5th run: Recovery: 98% RQD: 63% (fair engineering quality) Rock Q_u = 900 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-504	1st run: 4.0 feet to 5.0 feet 2nd run: 5.0 feet to 10.0 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, slightly weathered Core water loss observed at 38 feet 1st run: Recovery: 83% RQD: 0% (very poor engineering quality) 2nd run: Recovery: 98% RQD: 23% (poor engineering quality)	
RC-504	3rd run: 10.0 feet to 15.0 feet 4th run: 15.0 feet to 20.0 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, slightly weathered Core water loss observed at 38 feet 3rd run: Recovery: 100% RQD: 47% (poor engineering quality) 4th run: Recovery: 100% RQD: 52% (fair engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-504	5th run: 20.0 feet to 25.0 feet 6th run: 25.0 feet to 30.0 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, slightly weathered Core water loss observed at 38 feet 5th run: Recovery: 100% RQD: 63% (fair engineering quality) 6th run: Recovery: 95% RQD: 93% (excellent engineering quality)	
RC-504	7th run: 30.0 feet to 35.0 feet 8th run: 35.0 feet to 40.0 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, slightly weathered Core water loss observed at 38 feet 7th run: Recovery: 100% RQD: 95% (excellent engineering quality) 8th run: Recovery: 98% RQD: 87% (good engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-504	9th run: 40.0 feet to 45.0 feet 10th run: 45.0 feet to 50.0 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, with vertical fracture from 40.3 feet to 40.5 feet, slightly weathered Core water loss observed at 38 feet 9th run: Recovery: 100% RQD: 85% (good engineering quality) 10th run: Recovery: 100% RQD: 45% (poor engineering quality)	
RC-504	11th run: 50.0 feet to 55.0 feet 12th run: 55.0 feet to 60.0 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, slightly weathered Core water loss observed at 38 feet 11th run: Recovery: 98% RQD: 42% (poor engineering quality) 12th run: Recovery: 100% RQD: 95% (excellent engineering quality)	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-504	13th run: 60.0 feet to 65.0 feet 14th run: 65.0 feet to 70.0 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, slightly weathered Core water loss observed at 38 feet 13th run: Recovery: 95% RQD: 93% (excellent engineering quality) 14th run: Recovery: 100% RQD: 92% (excellent engineering quality)	
RC-504	15th run: 70.0 feet to 73.0 feet	Limestone - light to medium gray, with interbedded shale, medium to coarse grained, slightly weathered Core water loss observed at 38 feet 15th run: Recovery: 100% RQD: 100% (excellent engineering quality) Rock Q_u = 860 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-505	1st run: 4.7 feet to 6.3 feet 2nd run: 6.3 feet to 10.0 feet	Limestone - light to medium gray, with interbedded shale, medium grained, with clay seams (in top 13 feet), moderately weathered No core water loss observed 1st run: Recovery: 68% RQD: 0% (very poor engineering quality) 2nd run: Recovery: 90% RQD: 20% (very poor engineering quality)	
RC-505	3rd run: 10.0 feet to 20.0 feet	Limestone - light to medium gray, with interbedded shale, medium grained, with clay seams (in top 13 feet), with vertical fractures from 14.3 feet to 14.5 feet and 15.5 feet to 15.8 feet, moderately weathered No core water loss observed 3rd run: Recovery: 94% RQD: 55% (fair engineering quality) Rock Q_u = 568 ksf	

Rock Core Logs

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Boring	Run	Description and Notes	Photo of Core
RC-506	1st run: 3.7 feet to 10.1 feet	Limestone - medium gray, with interbedded shale, fine to coarse grained, moderately weathered No core water loss observed 1st run: Recovery: 42% RQD: 19% (very poor engineering quality) Rock Q_u = 1,428 ksf	
RC-506	2nd run: 10.1 feet to 20.1 feet	Limestone - medium gray, with interbedded shale, fine to coarse grained, slightly weathered No core water loss observed 2nd run: Recovery: 100% RQD: 76% (good engineering quality)	

Soundings Summary Table

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Sounding No.	Elevation (ft)*	Thickness of Weathered Rock (ft)	Auger Refusal Depth (ft)
S-1	886.8	0.9	14.2
S-2	884.5	N/A	11.3
S-3	882.7	0.3	14.6
S-4	882.9	1.6	11.4
S-5	882.9	0.6	10.4
S-6	883.3	0.1	10.4
S-7	882.9	N/A	9.8
S-8	882.6	1.2	12.1
S-9	882.7	1.9	12.6
S-10	882.8	0.6	11.4
S-11	883.0	0.5	11.8
S-12	880.5	N/A	9.7
S-13	885.3	0.2	11.1
S-14	881.1	0.4	10.2
S-15	881.0	0.2	8.9
S-16	880.6	0.5	9.3
S-17	886.7	N/A	2.1**
S-18	888.9	N/A	4.3**
S-19	889.0	N/A	15.3
S-20			
S-21	886.4	0.5	11.7
S-22			
S-23	880.2	0.4	9.7
S-24			
S-25			
S-26	887.2	0.2	15.3
S-27	887.2	0.4	13.3
S-28	888.1	N/A	5.8**
S-29	887.1	0.5	13.9
S-30			
S-31	888.1	0.9	13.7
S-32	888.3	0.8	12.9
S-33			
S-34	887.5	0.7	12.4
S-35			
S-36			
S-37			
S-38			
S-39			
S-40	890.2	0.1	3.7**

* Elevations were provided by the project surveyor, Hall Harmon Engineering, Inc.
** Possible false auger refusal due to encountering rocky fill material

Soundings Summary Table

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Sounding No.	Elevation (ft)*	Thickness of Weathered Rock (ft)	Auger Refusal Depth (ft)
S-41			
S-42			
S-43	911.4	0.3	4.2
S-44	915.3	N/A	4.4
S-45	918.4	N/A	3.4
S-46	919.2	N/A	2.7
S-47	915.9	0.1	4.7
S-48	914.5	N/A	3.8
S-49	913.7	0.3	6.4
S-50	910.5	N/A	2.3
S-51	906.8	0.1	3.8
S-52	908.3	N/A	4.7
S-53	908.9	0.1	3.9
S-54	908.2	0.7	9.3
S-55	906.1	N/A	6.3
S-56	902.8	N/A	4.2
S-57	904.5	0.1	1.8**
S-58	908.7	0.2	3.9
S-59	909.9	N/A	2.1
S-60	910.8	N/A	3.3
S-61	901.1	0.6	4.7
S-62	903.1	0.2	3.8
S-63	905.4	0.3	6.1
S-64	906.1	0.3	2.1
S-65	907.0	0.3	4.9
S-66			
S-67	897.4	0.1	2.2
S-68	911.3	0.6	13.8
S-69			
S-70	900.3	0.3	5.1
S-71	900.6	0.1	2.4
S-72	899.2	0.2	11.3
S-73	904.2	N/A	1.0**
S-74	910.2	0.1	3.4
S-75	902.9	0.4	4.7
S-76	901.4	N/A	10.3
S-77	900.2	0.6	2.6
S-78			
S-79	907.4	0.6	8.3
S-80			

* Elevations were provided by the project surveyor, Hall Harmon Engineering, Inc.
** Possible false auger refusal due to encountering rocky fill material

Soundings Summary Table

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Sounding No.	Elevation (ft)*	Thickness of Weathered Rock (ft)	Auger Refusal Depth (ft)
S-81	897.4	0.2	12.1
S-82	903.0	N/A	4.2
S-83	913.2	N/A	3.6**
S-84	909.9	0.3	3.1**
S-85	908.2	N/A	2.4**
S-86	906.4	0.2	6.1
S-87	924.2	N/A	1.7**
S-88	919.4	N/A	6.7
S-89	920.1	N/A	8.4
S-90	931.7	0.2	4.3**
S-91	929.4	N/A	5.3**
S-92	929.5	0.3	6.4**
S-93	926.5	N/A	13.6
S-94	936.7	0.1	8.4
S-95	935.6	0.2	12.6
S-96	933.7	0.1	8.2
S-97	934.6	0.3	12.7
S-98	928.5	N/A	3.6**
S-99	930.8	N/A	15.7
S-100	939.7	N/A	3.3
S-101	940.8	0.2	4.6
S-102	929.4	0.2	3.6
S-103	927.7	0.3	6.7
S-104	928.0	0.2	4.3
S-105	926.9	0.3	3.6
S-106	925.6	0.3	4.1
S-107	927.7	0.2	3.3
S-108	924.7	N/A	7.8**
S-109	924.3	0.4	4.1
S-110	922.7	N/A	5.4
S-111	919.8	N/A	5.3
S-112	908.1	N/A	7.1
S-113	912.6	0.5	8.3
S-114	916.0	0.1	5.4
S-115	911.9	N/A	4.7**
S-116	914.0	0.3	3.9

* Elevations were provided by the project surveyor, Hall Harmon Engineering, Inc.
** Possible false auger refusal due to encountering rocky fill material

Soundings Summary Table

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI Project Number - LX150053

Sounding No.	Elevation (ft)*	Thickness of Weathered Rock (ft)	Auger Refusal Depth (ft)
Potential Karst Exploration			
SH-1	926.6	0.2	8.1
SH-2	926.7	0.5	7.1
SH-3	926.0	0.1	9.9
SH-4	925.9	0.2	5.8
SH-5	927.3	0.2	8.9
SH-6	921.6	0.1	4.4
SH-7	920.2	0.3	10.1
SH-8	918.5	0.4	4.2
SH-9	918.9	0.3	6.6
SH-10	921.1	0.4	11.7
SH-11	924.0	0.4	16.2
SH-12	926.4	0.3	9.7
SH-13	926.3	0.3	6.9
SH-14	927.3	0.3	5.6
SH-4	926.1	0.3	3.9

* Elevations were provided by the project surveyor, Hall Harmon Engineering, Inc.

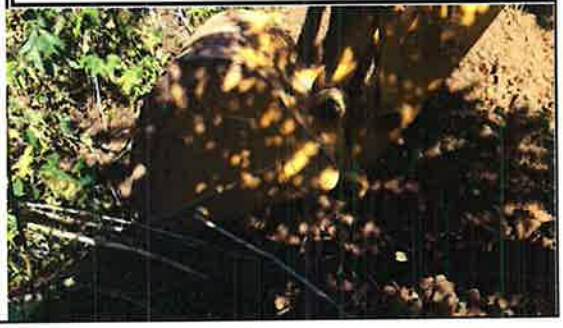
Consulting Services Inc. of Kentucky

Test Pit Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman - Additional Drilling
PROJECT NUMBER: LX150053
TEST PIT NUMBER: TP-11
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
EXCAVATOR TYPE: CAT 312 E
CONTRACTOR: CSI Personnel
DATE EXCAVATED: August 25, 2015
TESTING METHODS: Test Pit
CSI FIELD REP: C. Yohe
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: N/A

ELEV. (feet)	DEPTH (feet)	Water Level	SOIL TYPE	Strata Description	NOTES:
	0			FILL - brown clay, with root hairs, with 4 inch root wads	Dry upon completion of soil excavation
	8			SILTY CLAY (CL-ML) - dark brown to reddish-brown, dry	Photo of Test Pit
	12			Equipment Refusal at 11.0 feet (bedrock)	Photo of Approx. Test Pit Location 

Please Note: Test Pit Log is for information only. Test Pit log only shows conditions observed at that particular location.

Consulting Services Inc. of Kentucky

Test Pit Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman - Additional Drilling
PROJECT NUMBER: LX150053
TEST PIT NUMBER: TP-3
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
EXCAVATOR TYPE: CAT 312 E
CONTRACTOR: CSI Personnel
DATE EXCAVATED: August 25, 2015
TESTING METHODS: Test Pit
CSI FIELD REP: C. Yohe
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: N/A

ELEV. (feet)	DEPTH (feet)	Water Level	SOIL TYPE	Strata Description	NOTES:
	0				
				FILL - brown clay, with root hairs, with root wads	Dry upon completion of soil excavation
	2				
	4				
	6				
	8			SILTY CLAY - dark brown, dry	
	10				
	12				
	14			Equipment Refusal at 13.5 feet (bedrock)	

Photo of Test Pit

Photo of Approx. Test Pit Location

Please Note: Test Pit Log is for information only. Test Pit log only shows conditions observed at that particular location.

Consulting Services Inc. of Kentucky

Test Pit Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman - Additional Drilling
PROJECT NUMBER: LX150053
TEST PIT NUMBER: TP-7
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
EXCAVATOR TYPE: CAT 312 E
CONTRACTOR: CSI Personnel
DATE EXCAVATED: August 25, 2015
TESTING METHODS: Test Pit
CSI FIELD REP: C. Yohe
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION: N/A

ELEV. (feet)	DEPTH (feet)	Water Level	SOIL TYPE	Strata Description	NOTES:
	0				
				FILL - brown clay, with roots hairs, with 4 inch root wads, with large limestone fragments	Dry upon completion of soil excavation
	2				
	4				
				SILTY CLAY - dark brown	
	6				
	8				
	10				
	12				
	14				
				Equipment Refusal at 14.0 feet (bedrock)	

Photo of Test Pit

Photo of Approx. Test Pit Location

Please Note: Test Pit Log is for information only. Test Pit log only shows conditions observed at that particular location.

Consulting Services Inc. of Kentucky

Test Pit Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman - Additional Drilling
LOCATION: Nicholasville, Kentucky
CONTRACTOR: CSI Personnel

PROJECT NUMBER: LX150053
WEATHER: Sunny, 70's
DATE EXCAVATED: August 25, 2015
CSI FIELD REP: C. Yohe

TEST PIT NUMBER: TP-10
EXCAVATOR TYPE: CAT 312 E
TESTING METHODS: Test Pit
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION:

ELEV. (feet)	DEPTH (feet)	Water Level	SOIL TYPE	Strata Description	NOTES:
	0				
				FILL - brown clay, with root hairs, with root wads, silty, dry	Dry upon completion of soil excavation
	2				
	4			SILTY CLAY - dark brown, sandy, moist to wet (at soil/ rock interface)	
	6				
	8				
	10				
	12				
	14			Equipment Refusal at 14.0 feet (bedrock)	

Photo of Test Pit

Please Note: Test Pit Log is for information only. Test Pit log only shows conditions observed at that particular location.

Consulting Services Inc. of Kentucky

Test Pit Log

858 Contract Street | Lexington, Kentucky 40505 | 859.309.6021 tel | 888.792.3121 fax

PROJECT: West Hickman - Additional Drilling
PROJECT NUMBER: LX150053
TEST PIT NUMBER: TP-15
LOCATION: Nicholasville, Kentucky
WEATHER: Sunny, 70's
EXCAVATOR TYPE: CAT 312 E
CONTRACTOR: CSI Personnel
DATE EXCAVATED: August 25, 2015
TESTING METHODS: Test Pit
CSI FIELD REP: C. Yohe
CLIENT: Tetra Tech, Inc.

TOP OF GROUND ELEVATION:

ELEV. (feet)	DEPTH (feet)	Water Level	SOIL TYPE	Strata Description	NOTES:
	0				
				FILL - dark brown silty clay, with root hairs, with root wads	Dry upon completion of soil excavation
	2				
	4			SILTY CLAY (CL-ML) - dark brown to reddish-brown	
				Equipment Refusal at 4.5 feet (bedrock)	
	6				
	8				
	10				
	12				
	14				

Photo of Test Pit

Photo of Approx. Test Pit Location

Please Note: Test Pit Log is for information only. Test Pit log only shows conditions observed at that particular location.

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FIELD TESTING PROCEDURES

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

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

a. Continuous 2-1/2 or 3-1/4 inch I.D. hollow stem augers;

b. Wash borings using roller cone or drag bits (mud or water);

c. Continuous flight augers (ASTM D 1425).

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

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

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

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

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

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

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

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

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

Prior to coring, casing is set in the drilled hole through the overburden soils, if necessary, to keep the hole from caving. Refusal materials are then cored according to ASTM D 2113 using a diamond-studded bit fastened to the

end of a hollow double tube core barrel. This device is rotated at high speeds, and the cuttings are brought to the surface by circulating water. Core samples of the material penetrated are protected and retained in the swivel-mounted inner tube. Upon completion of each drill run, the core barrel is brought to the surface, the core recovered is measured, the samples are removed and the core is placed in boxes for storage.

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

Hand Auger Borings and Dynamic Cone Penetration Testing: Hand auger borings are performed manually by CSI field personnel. This consists of manually twisting hand auger tools into the subsurface and extracting "grab" or baggie samples at intervals determined by the project engineer. At the sample intervals, dynamic cone penetration (DCP) testing is performed. This testing involves the manual raising and dropping of a 20 pound hammer, 18 inches. This "driver" head drives a solid-1¾ inch diameter cone into the ground. DCP "counts" are the number of drops it takes for the hammer to drive three 1¾ inch increments, recorded as X-Y-Z values.

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

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

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

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

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LABORATORY TESTING SUMMARY SHEET

West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky
CSI PROJECT NUMBER - LX150053

Boring No.	Depth (feet)	Sample Type*	USCS Classification	Natural Moisture Content %	% Finer No. 200	Atterberg Limits Information			CBR (Percent at 0.1")	Max. DD (pcf)	OMC (%)	Rock Qu (ksf)	Swell Pressure (psf)
						LL	PL	PI					
B-1	0.0-1.5	SS		21.3									
	1.5-3.0	SS		11.5									
	4.0-5.5	SS		23.0									
	6.5-8.0	SS		22.8									
	9.0-10.4	SS		32.5									
	15.0-15.4	CORE										1,325	
B-2	20.0-20.4	CORE										991	
B-3	20.0-20.4	CORE										714	
B-4	20.0-20.4	CORE										732	
B-5A	25.0-25.4	CORE										411	
B-6	20.0-20.4	CORE										647	
B-7	0.0-1.5	SS		28.6									
	4.0-5.5	SS		15.4									
	6.5-8.0	SS		26.0									
	15.0-15.4	CORE										557	
B-8	25.0-25.4	CORE										609	
B-9	0.0-1.5	SS		27.0									
	1.5-3.0	SS		23.1									
	4.0-5.5	SS		24.3									
	6.5-8.0	SS		29.4									
	9.0-10.5	SS		29.6									
	30.0-30.4	CORE										611	

* SS = splitspoon sample, UD = undisturbed (Shelby tube) sample, BULK = bulk sample, GRAB = grab sample, CORE = rock core sample

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						LL	PL	PI					
B-10	0.0-1.5	SS		18.3									
	1.5-3.0	SS		25.0									
	4.0-5.5	SS	CH	30.5	81.5	72	27	45					
	6.5-8.0	SS		33.4									
	25.0-25.4	CORE										832	
B-11	30.0-30.4	CORE										804	
B-12	30.0-30.4	CORE										560	
B-13	27.0-27.4	CORE										822	
B-14A	35.0-35.4	CORE										608	
B-15	0.0-1.5	SS		29.7									
	1.5-3.0	SS	CH	26.0	58.6	50	24	26					
	4.0-5.5	SS		26.3									
	36.0-36.4	CORE										894	
B-16	0.0-1.5	SS		26.2									
	1.5-3.0	SS		29.6									
	4.0-5.5	SS		24.7									
	48.0-48.4	CORE										824	
B-17	20.0-20.4	CORE										1,017	
B-18	10.0-10.4	CORE										754	

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						LL	PL	PI					
B-19	0.0-1.5	SS		24.7									
	1.5-3.0	SS		25.3									
	4.0-5.5	SS	SC	24.7	36.8	37	24	13					
B-21	18.0-18.4	CORE										974	
B-22	0.0-1.5	SS		18.1									
	4.0-5.5	SS		17.9									
	6.5-8.0	SS		21.5									
	9.0-10.5	SS		20.0									
	14.0-15.5	SS		29.5									
	20.0-20.4	CORE										767	
B-23	0.0-1.5	SS		22.7									
	1.5-3.0	SS		26.2									
	4.0-5.5	SS	SC	24.7	41.9	51	24	27					
B-24	20.0-20.4	CORE										806	
B-25	0.0-1.5	SS		18.2									
	1.5-3.0	SS		20.2									
B-26	0.0-1.5	SS		22.3									
	1.5-3.0	SS		25.8									
B-27	0.0-1.5	SS		19.0									
	1.5-3.0	SS		18.7									

* SS = splitspoon sample, UD = undisturbed (Shelby tube) sample, BULK = bulk sample, GRAB = grab sample, CORE = rock core sample

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Boring No.	Depth (feet)	Sample Type*	USCS Classification	Natural Moisture Content %	% Finer No. 200	Atterberg Limits Information			CBR (Percent at 0.1")	Max. DD (pcf)	OMC (%)	Rock Qu (ksf)	Swell Pressure (psf)
						LL	PL	PI					
B-28	0.0-1.5	SS		22.8									
	1.5-3.0	SS		19.7									
B-29	0.0-1.5	SS	SC	22.4	40.1	60	30	30					
	1.5-3.0	SS		29.2									
RC-201A	20.0-20.3	CORE										745	
RC-202	20.2-20.5	CORE										842	
RC-203	28.0-28.3	CORE										891	
RC-204	22.0-22.3	CORE										1,319	
RC-205	23.0-23.3	CORE										979	
RC-206	21.7-22.0	CORE										959	
RC-207	32.5-32.8	CORE										571	
RC-301	17.0-17.3	CORE										1,415	
RC-302	14.7-15.0	CORE										783	
RC-303	13.0-13.3	CORE										471	
RC-304	11.0-11.3	CORE										748	
RC-305	39.0-39.3	CORE										1,018	

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Boring No.	Depth (feet)	Sample Type*	USCS Classification	Natural Moisture Content %	% Finer No. 200	Atterberg Limits Information			CBR (Percent at 0.1")	Max. DD (pcf)	OMC (%)	Rock Qu (ksf)	Swell Pressure (psf)
						LL	PL	PI					
RC-305A	9.0-9.3	CORE										799	
RC-306	24.0-24.3	CORE										625	
RC-307	26.0-26.3	CORE										960	
RC-308	21.0-21.3	CORE										906	
RC-309	21.0-21.3	CORE										1,052	
RC-310	22.4-22.7	CORE										516	
RC-311	24.1-24.4	CORE										655	
RC-312	10.2-10.5	CORE										1,188	
RC-313	28.7-29.0	CORE										597	
RC-401	32.0-32.3	CORE										316	
RC-402	26.5-26.8	CORE										1,416	
RC-403	14.2-14.5	CORE										685	
RC-404	29.0-29.3	CORE										707	
RC-405	26.2-26.5	CORE										1,211	
RC-406	20.7-21.0	CORE										486	

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CSI PROJECT NUMBER - LX150053

Boring No.	Depth (feet)	Sample Type*	USCS Classification	Natural Moisture Content %	% Finer No. 200	Atterberg Limits Information			CBR (Percent at 0.1")	Max. DD (pcf)	OMC (%)	Rock Qu (ksf)	Swell Pressure (psf)
						LL	PL	PI					
RC-501	13.0-13.3	CORE										779	
RC-502	16.7-17.0	CORE										758	
RC-503	21.6-21.9	CORE										900	
RC-504	72.7-73.0	CORE										860	
RC-505	19.7-20.0	CORE										568	
RC-506	9.2-9.5	CORE										1,428	

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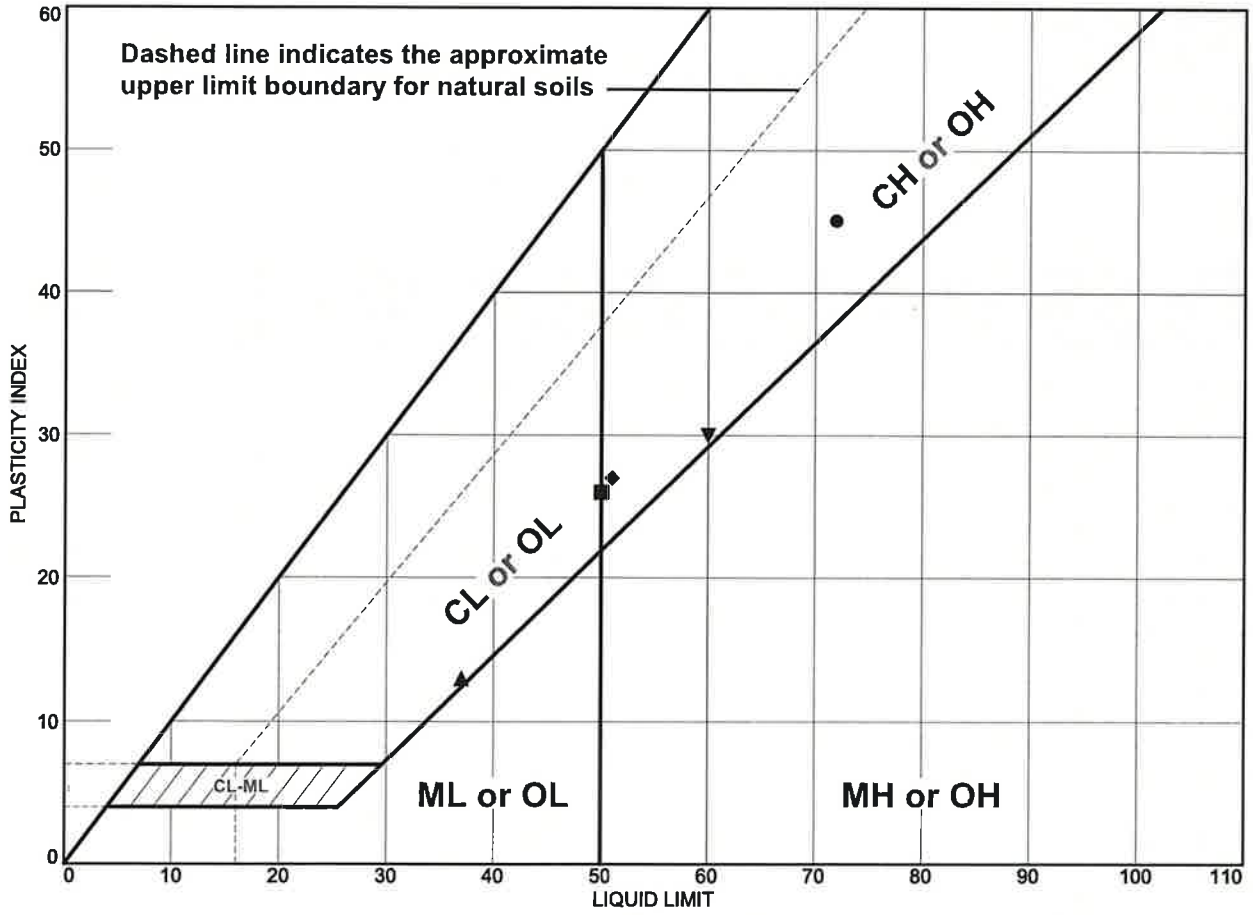
LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	brown and tan FAT CLAY with sand	72	27	45		81.5	CH
■	brown and tan SANDY FAT CLAY	50	24	26		58.6	CH
▲	brown and tan CLAYEY SAND	37	24	13		36.8	SC
◆	brown CLAYEY SAND	51	24	27		41.9	SC
▼	brown CLAYEY SAND	60	30	30		40.1	SC

Project No. LX150053 **Client:** Tetra Tech, Inc.

Project: West Hickman WWTP Wet Weather Storage Facility - Nicholasville, Kentucky

Remarks:

●**Source of Sample:** Borings **Depth:** 4.0-5.5 **Sample Number:** B-10

■**Source of Sample:** Borings **Depth:** 1.5-3.0 **Sample Number:** B-15

▲**Source of Sample:** Borings **Depth:** 4.0-5.5 **Sample Number:** B-19

◆**Source of Sample:** Borings **Depth:** 4.0-5.5 **Sample Number:** B-23

▼**Source of Sample:** Borings **Depth:** 1.5-3.0 **Sample Number:** B-29

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Figure

LABORATORY TESTING PROCEDURES

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

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

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

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

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

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

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

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

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

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

Test	Method	Hammer Wt./Fall	Mold Diam.	Run on Material Finer Than	No. of Layers	No. of Blows/ Layer
Modified	A	10 lb./18"	4"	No. 4 sieve	5	25
D 1557	B	10 lb./18"	4"	3/8" sieve	5	25
	C	10 lb./18"	6"	3/4" sieve	5	56

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

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

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

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