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

NAME	LOCATION	CONTRACT SUM

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

NAME	LOCATION	CONTRACT SUM

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

NAME	POSITION DESCRIPTION	NO. OF YEARS WITH BIDDER

REVISED

11. DBE Participation on current bonded projects under contract:

SUBCONTRACTORS (LIST)	PROJECT (SPECIFIC TYPE)	DBE	MAJORITY

(USE ADDITIONAL SHEETS IF NECESSARY)

12. We acknowledge that, if we are the apparent low Bidder, we will submit to the OWNER within 7 calendar days following the Bid Opening, a sworn statement on the OWNER'S form regarding all current work on hand and under contract, and a statement on the OWNER'S form of the experience of our officers, office management and field management personnel. Additionally, if requested by the OWNER, we will within 7 days following the request submit audited financial statements and loss history for insurance claims for the 3 most recent years (or a lesser period stipulated by the OWNER)—all in accordance with the Bid Documents.

Respectfully submitted:

_____
(Name of Contracting Firm)

BY: _____

TITLE: _____

DATE _____, 20____

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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 of the Lexington-Fayette Urban County Government. Failure to submit this list completely filled out may be cause for rejection of bid.

BRANCH OF WORK - LIST EACH MAJOR ITEM Such as: Grading, bituminous paving, concrete, seeding and protection, construction staking, etc.	**SUBCONTRACTOR**	**DBE Yes/No**
1. Gravity Sewer/Force Main Piping	Name: _____	____
	Address: _____	____
2. Landscaping/Restoration	Name: _____	____
	Address: _____	____
3. Encasement Pipe Bore & Jack	Name: _____	____
	Address: _____	____
4. Bituminous Pavement Replacement	Name: _____	____
	Address: _____	____
5. Stream Bed & Bank Restoration	Name: _____	____
	Address: _____	____
6. Video Inspection	Name: _____	____
	Address: _____	____
7. _____	Name: _____	____
	Address: _____	____

(Attach additional sheet(s) if necessary.)

7. AUTHENTICATION OF BID AND STATEMENT OF NON-COLLUSION AND NON-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 Lexington-Fayette Urban County Government, 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 _____. 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 Lexington-Fayette Urban County Government 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 Subcontractors have not and will not be awarded to any firm(s) that have been debarred from 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.

8. **STATEMENT OF EXPERIENCE**

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

_____

_____

_____

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

_____

_____

_____

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

_____

_____

_____

REVISED

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

_____

_____

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

_____

_____

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

_____

_____

* Include all officers, office management's, Affirmative Action officials, and field management personnel. Attach separate sheets if necessary.

9. EQUAL OPPORTUNITY AGREEMENT

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 _____ 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.

10. EQUAL EMPLOYMENT OPPORTUNITY AFFIRMATIVE ACTION POLICY

It is the policy of _____

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.

11. WORKFORCE ANALYSIS FORM

Name of Organization: _____ Date: ____/____/____

Categories	Total	White		Black		Other		Total	
		M	F	M	F	M	F	M	F
Administrators									
Professionals									
Superintendents									
Supervisors									
Foremen									
Technicians									
Protective Service									
Para-Professionals									
Office/Clerical									
Skilled Craft									
Service/Maintenance									
Total:									

Prepared By: _____

REVISED

12. EVIDENCE OF INSURABILITY

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

Names Insured: _____ Employee ID: _____

Address: _____ Phone: _____

_____

Project to be insured: _____

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	A.M. Best's Rating
SC 1.4.1.A	CGL	$1,000,000 per occ. And $2,000,000 aggregate	$			
SC 1.4.1.B	AUTO	$2,000,000/per occ.	$			
SC 1.4.1.C	WC	Statutory w /endorsement as noted	$			

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.

_____ _____
Agency or Brokerage Name of Authorized Representative

_____ _____
Street Address Title

_____ _____
City State Zip Authorized Signature

_____ _____
Telephone Number 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.

END OF SECTION

EPA Form 5700-49

Attachment Number 10

CERTIFICATION REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) 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;

(c) 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)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to $10,000 or imprisonment for up to 5 years, or both.

_____

Typed Name & Title of Authorized Representative

_____

Signature of Authorized Representative Date

_____ I am unable to certify to the above statements. My explanation is attached.

CERTIFICATION REGARDING LOBBYING
Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

_____
Typed Name & Title of Authorized Representative

_____
Signature of Authorized Representative Date

_____ I am unable to certify to the above statements. My explanation is attached.

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION POLICY

PROJECT NAME: _____ **BID DATE:** _____

1. **Name, address and telephone number of contact person on all DBE matters:**

   Prime Contractor's Name: _____
   Contact Person: _____
   Address: _____
   Phone: _____
   Cell Phone: _____
   Email: _____
   Total Contract Amount: _____

2. **Total dollar amount/percent of contract of MBE participation:** _____

3. **Total dollar amount/percent of contract of WBE participation:** _____

4. **Are certifications* for each MBE/WBE/DBE subcontractor enclosed; if no, please explain:** ☐ Yes ☐ No _____

5. **Are MBE/WBE/DBE subcontracts or letters of intent signed by both parties enclosed; if no, please explain:** ☐ Yes ☐ No _____

6. **List of MBE Subcontractors:**

   Name: _____
   Contact Person: _____
   Address: _____
   Phone: _____
   Cell Phone: _____
   Email: _____
   Type of Contract: _____
   Work to be Done: _____
   Amount: _____

7. **List of WBE Subcontractors:**

   Name: _____
   Contact Person: _____
   Address: _____
   Phone: _____
   Cell Phone: _____
   Email: _____
   Type of Contract: _____
   Work to be Done: _____
   Amount: _____

Attach Additional Sheets, If Necessary

*Self-certification: Self certification of MBE/WBE/DBE firms will NOT be accepted as a valid form of certification of MBE/WBE/DBE status.

8. **Information and documentation concerning efforts taken to comply with EPA's "six good faith efforts"**

(i). Ensure DBE construction firms or material suppliers are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities; including placing DBEs on solicitation lists and soliciting them whenever they are potential sources. A good source for a list of DBEs is the Kentucky Transportation's website: http://transportation.ky.gov/Civil-Rights-and-Small-Business-Development/Pages/Certified-DBE-Directory.aspx.

☐ The prime contractor certifies that a bidders list (see example sheet below) of qualified vendors, including DBEs, was developed for current and future solicitations and that the list will be maintained. *Submit a copy of the list as documentation.*

(ii). Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process; including, whenever possible, posting solicitation for bids or proposals for a sufficient amount of time as to receive a competitive bid or proposal pool.

☐ The prime contractor certifies that every opportunity was provided to a number of DBEs to encourage their participation in the competitive process and that an adequate amount of time was provided for response.

a. List each DBE construction firm or material supplier to which a solicitation was attempted. *Submit copies of letters, emails, faxes, telecommunication logs, certified mail receipts, returned envelopes, certified mail return receipts, etc. as documentation.*

Company name and phone number: _____

Area of work expertise: _____

Date of any follow-ups and person spoke to: _____

b. Advertisements, if applicable: List each publication in which an announcement or notification was placed. *Submit a tear sheet of each announcement from each publication as documentation.*

Name of publication: _____

Date(s) of advertisement: _____

Specific subcontract areas announced: _____

c. Other, if applicable: List each notification method in which an announcement or outreach was used; list serve, public meeting, etc. *Submit applicable information to document effort.*

Method of notification: _____

Date(s) of notification: _____

(iii). Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs; including dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.

☐ The prime contractor certifies that the project was broken into its basic elements (i.e., dirt hauling, landscaping, painting, pipe installation, material supplies, etc.) and that a determination was made whether it's economically feasible to bid the elements separately and that the analysis of this effort was documented with a short memo to the project file.

(iv). Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority business, and women's business enterprises.

☐ The prime contractor certifies that they established delivery schedules which would allow DBEs to participate in the projects.

(v). Use the services and assistance of the Small Business Administration (SBA) and the Minority Business Development Agency (MBDA) of the U.S. Department of Commerce. The easiest way to utilize the services of SBA and MBDA is to visit their websites: www.sba.gov and www.mbda.gov and use the electronic tools available there or you may send the nearest SBA and MBDA office a certified letter that generally describes the solicitation, the dates it will be open, the types of vendors you are seeking and applicable SIC or NAIC codes if known. You may also use the services and assistance of the Kentucky Procurement Assistance Program (KPAP). The easiest way to utilize the services of KPAP is to send an email: ced.kpap@ky.gov and provide information on forthcoming opportunities available to DBEs.

☐ The prime contractor certifies that the assistance of the SBA, MBDA, and/or KPAP was utilized. *Submit pages printed off the SBA and MBDA websites which evidence efforts to register a solicitation on those sites or submit copies of the letter sent and certified mail receipt as documentation; submit copies of emails with KPAP as documentation.*

(vi). If a subcontractor awards any subcontracts, require the subcontractor to take the steps in numbers (i) through (v) above.

☐ The prime contractor certifies that subcontractors used for this project will be required to follow the steps of the "six good faith efforts" as listed above.

9. Signature and date:

To the best of my knowledge and belief, all "six good faith efforts" have been met and the information contained in this document is true and correct; the document has been duly authorized by the legal representative.

_____ _____

Signature Print name and title

_____

Date

Lexington-Fayette Urban County Government
DEPARTMENT OF FINANCE & ADMINISTRATION

Jim Gray
Mayor

William O'Mara
Acting Commissioner

ADDENDUM #3

Bid Number: **3-2013**

Date: February 15, 2013

Subject: **Wolf Run Pump Station Relocation, Contract B-Interceptor & Force Main**

Please address inquiries to:
Betty Landrum @
bettyb@lexingtonky.gov OR
Rich Smith @
rich.smith@hdrinc.com

TO ALL PROSPECTIVE BIDDERS:

Please be advised of the following clarifications to the above referenced bid:

Changes to Specifications

Part II, Information for Bidders: Delete the Bid Schedule, pages P-7 and P-8 and replace with the attached Revised Bid Schedule pages P-7 and P-8 to be submitted with the other required documents for your bid.
Part V, Special Conditions: Add Subpart 12 as follows: "12. EASEMENTS The following easement conditions apply to work performed under this contract. A. At the U.S. Government property (Armed Forces Reserve Center) shown on Drawing 10, construction must be complete within 30 days of commencing work on the property, unless additional time is granted by the Owner for site cleanup and restoration."
Section 01025, Measurement and Payment: Part 2 – Products, revise the Item numbers as follows: Subpart 2.05, Items 8 through 12 Subpart 2.06, Items 13 through 16 Subpart 2.07, Items 17 through 18 Subpart 2.08, Item 19 Subpart 2.09, Items 20 through 26
Section 01025, Measurement and Payment: Part 2 – Products, add Subpart 2.26 as follows: "2.26 CONNECT TO EXISTING MANHOLE (UNIT PRICE – ITEM 44) Payment for tie-in or connection to existing manhole shall be made at the contract unit price each and shall include excavation, backfill, pipe connector system, coring existing manhole (if necessary), and all appurtenances necessary for a complete and watertight installation."

Section 02630, Encasement Pipe: Part 2 – Products, add Subpart 2.04 as follows:

"2.04 For 48-inch gravity sewer pipe installed in steel encasement pipe, the minimum encasement pipe inside diameter shall be the largest outside bell or coupling diameter of the furnished carrier pipe plus nine inches."

Section 02642, Sewage Valves and Gates: Part 2 – Products, add the following as Subpart 2.04:

"2.04 Slide gates shall be designed for wastewater service, aluminum or stainless steel, manufactured by Rodney-Hunt, Waterman Industries, Hydro-Gate Corporation, or acceptable equivalent. Cover plate for influent structure shall be designed for wastewater service, aluminum or stainless steel, designed to support a uniform load of 200 pounds per square foot with a maximum deflection of ¼-inch. Cover plate shall have lifting handles, treads and be furnished with reinforcing ribs if required to support load. Aluminum surfaces in contact with concrete or dissimilar metals shall be painted with shop coat of bituminous paint."

Section 02731, Gravity Sewers: Part 2 – Products, Subpart 2.01 B., delete the entire paragraph.

Section 02731, Gravity Sewers: Part 2 – Products, Subparts 2.01 C. through 2.01 E., delete each Subpart in its entirety and replace with the following:

"C. Carrier pipe installed in encasement pipe installations shall have restrained joints. The restrained joint shall be a boltless system equivalent to FAST GRIP joints as manufactured by American Ductile Iron Pipe.

D. At stream crossings, high density, cross-laminated polyethylene film shall be provided for encasement of ductile iron pipe. The film shall meet the requirements of AWWA C105.

E. Ductile iron pipe and fittings shall have the manufacturer's outside asphaltic coating and an interior lining of ceramic epoxy, Protecto 401 Ceramic Epoxy by Enduron Coatings, Inc. or approved equivalent. The material shall be an amine cured novolac epoxy containing at least 20% by volume of ceramic quartz pigment."

Section 02731, Gravity Sewers: Part 2 – Products, Subpart 2.02 Reinforced Concrete Pipe, delete this Subpart in its entirety.

Section 02731, Gravity Sewers: Part 2 – Products, Subpart 2.03 Polyvinyl Chloride Pipe, delete "(only for small diameter lines per drawings)" in the heading and add Subpart 2.03 A. 10. as follows: "Pipe for large diameter (>15" I.D.) gravity sewers shall meet the ASTM D 1784 Standard for material, and the ASTM F 679 Standard for pipe. Thickness class shall be SDR 35. The pipe shall be made from virgin PVC resin that has been compounded to provide physical and chemical properties that equal or exceed cell class 12364. Pipe shall be connected with integral wall bell and spigot joints. The bell shall consist of an integral wall section with a solid cross section rubber gasket, factory assembled, securely locked in place to prevent displacement during assembly. Joints shall be assembled in accordance with the pipe manufacturer's recommendations and ASTM D3212. Rubber gaskets shall be in compliance with ASTM F 477 and shall be suitable for the service provided."

Section 02731, Gravity Sewers: Part 2 – Products, Subpart 2.04 A., add the following sentence at the end of the paragraph: "Fiberglass pipe shall be minimum stiffness class SN 36."

Section 02731, Gravity Sewers: Part 2 – Products, Subpart 2.04 E. 3., delete the second sentence in its entirety.

Section 02731, Gravity Sewers: Part 2 – Products, Subpart 2.04 F. 3., delete this paragraph in its entirety.

Section 02731, Gravity Sewers: Part 3 – Execution, add Subpart 3.06 as follows:

"3.06 PIPE HANDLING

Ductile iron pipe and fittings lined with ceramic epoxy lining 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. The pipe shall not be dropped or unloaded by rolling. Care should be taken not to let the pipe strike sharp objects while swinging or being offloaded. Ductile iron pipe should never be placed on grade by use of hydraulic pressure from an excavator bucket or by banging with heavy hammers. Ductile iron pipe lined with ceramic epoxy lining can only be pushed when using a restrained joint system that does not allow the spigot to contact the bell shoulder. The pipe may be pulled using restrained joint pipe or restraining gaskets as restraints. Restraining gaskets must never be pushed; nor should the pipe be homed all the way to the bell shoulder with or without restraining gaskets. Pushing or pulling ductile iron pipe lined with ceramic epoxy using any other technique may damage the lining. Consult manufacturer's brochure for product application concerning pushing or pulling operations."

Section 02731, Gravity Sewers: Part 3 – Execution, add Subpart 3.07 as follows:

"3.07 INSTALLATION OF PIPE AND FITTINGS

A. For PVC pipe, conform to manufacturer's instructions and requirements of the ASTM Standard D 2774 for thermoplastic pipe, where applicable.

B. Provide extra care in placing and compacting the required bedding material in the haunch zone when installing gravity sewer pipe and fittings to prevent any voids or unconsolidated material in this zone."

Section 02732, Sewage Force Mains: Part 2 – Products, Subpart 2.01 A., delete second and third sentences and replace with the following: "All pipe and fittings shall be rated to accommodate a maximum working pressure of 150 psi."

Section 02732, Sewage Force Mains: Part 2 – Products, Subpart 2.01 C. and 2.01 D., delete these two subparts in their entirety.

Section 02732, Sewage Force Mains: Part 2 – Products, Subpart 2.01 E., delete the sentence and replace with the following: "Force main carrier pipe installed in encasement pipe installations shall have restrained joints. The restrained joint shall be a boltless system equivalent to FAST GRIP joints as manufactured by American Ductile Iron Pipe."

Section 02732, Sewage Force Mains: Part 2 – Products, Subpart 2.01 F., delete the sentence and replace with the following: "All force main fittings shall have mechanical joint wedge-action restraints, Ebaa Iron Megalug 1100 Series or equivalent. For ductile iron pipe, straight pipe joints on **each side** of fittings shall also be restrained to the distance required by the table below with the appropriate EBAA Iron Megalug restraint, or equivalent."

Fitting and Condition	Length of Straight Pipe Restraint Required
90-degree horizontal bend	50 feet
45-degree horizontal bend	20 feet
22 ½-degree horizontal bend	10 feet
45-degree vertical upthrust	50 feet
22 ½-degree vertical upthrust	25 feet
45-degree vertical downthrust	20 feet
22 ½-degree vertical downthrust	10 feet

Section 02732, Sewage Force Mains: Part 2 – Products, Subpart 2.01 G., delete this paragraph in its entirety.

Section 02732, Sewage Force Mains: Part 2 – Products, Subpart 2.01 H., delete the first sentence and replace with the following: "At stream crossings, high density cross-laminated polyethylene film shall be provided for encasement of ductile iron pipe."

Section 02732, Sewage Force Mains: Part 2 – Products, Subpart 2.01 I., delete this entire subpart and replace with the following: "Ductile iron pipe and fittings shall have the manufacturer's outside asphaltic coating and an interior lining of ceramic epoxy, Protecto 401 Ceramic Epoxy by Enduron Coatings, Inc. or approved equivalent. The material shall be an amine cured novolac epoxy containing at least 20% by volume of ceramic quartz pigment."

Section 02732, Sewage Force Mains: Part 2 – Products, add Subpart 2.02 as follows:

"2.02 POLYVINYL CHLORIDE (PVC) PIPE FOR SEWER FORCE MAINS

A. PVC force main pipe shall meet the requirements of AWWA C905-10 for PVC pressure pipe. The pipe shall be made from virgin PVC resin that has been compounded to provide physical and chemical properties that equal or exceed cell class 12454 as defined in ASTM D1784. PVC pipe shall have cast iron pipe equivalent outside diameters. The pipe shall be DR25 corresponding to a pressure class of 165 psi.

B. Provisions must be made for expansion and contraction at each joint with a rubber ring. The bell shall consist of an integral wall section with a solid cross-section rubber ring which meets the laboratory performance of ASTM D3139. The bell section shall be designed to be at least as strong as the pipe wall.

C. Standard laying lengths shall be 20 feet ± for all sizes. At least 85 percent of the total footage of pipe of any class and size shall be furnished in standard lengths, the remaining 15% in random lengths. Random lengths shall be not less than 10 feet long.

D. Fittings shall be restrained ductile iron mechanical joint in accordance with AWWA C153 and have a body thickness and radii of curvature conforming to ANSI A21.10 or ANSI A21.53 for compact fittings. Fittings must have Protecto 401 ceramic epoxy lining or equivalent.

E. Appropriate restraint shall be provided for all mechanical joint fittings. All fittings shall be restrained with EBAA Iron Megalug wedge-action restraints or equivalent. For PVC pipe, straight pipe joints on **each side** of fittings shall also be restrained to the distance required by the table below with the appropriate EBAA Iron Megalug restraint harness, or equivalent."

Fitting and Condition	Length of Straight Pipe Restraint Required
90-degree horizontal bend	60 feet
45-degree horizontal bend	30 feet
22 ½-degree horizontal bend	15 feet
45-degree vertical upthrust	80 feet
22 ½-degree vertical upthrust	40 feet
45-degree vertical downthrust	30 feet
22 ½-degree vertical downthrust	15 feet

Section 02732, Sewage Force Mains: Part 3 – Execution, Subpart 3.03 D., delete this entire subpart and replace with the following: "Anchorage of bends and fittings shall be accomplished using

mechanical joint wedge-action restraints, Ebaa Iron Megalug 1100 Series or equivalent. Joint restraints are not a separate pay item."
Section 02732, Sewage Force Mains: Part 3 – Execution, Subpart 3.05 A. 4., delete this subpart (a., b., and c.) in its entirety.
Section 02732, Sewage Force Mains: Part 3 – Execution, add Subpart 3.07 as follows: "For pipe handling instructions for ceramic epoxy-lined ductile iron pipe and fittings, see Section 02731, Subpart 3.06."
Section 02735, Manholes and Precast Sewage Structures: Part 2 – Products, Subpart 2.01 A. 1., delete the first sentence and replace with the following: "Concrete manholes shall have minimum inside diameters as indicated on the plans, with precast reinforced concrete developed bases."
Section 02735, Manholes and Precast Sewage Structures: Part 2 – Products, Subpart 2.01 A. 7., delete the sentence and replace with the following: "6-foot, 8-foot, and 10-foot diameter manholes shall have full width base and riser sections, and full width flat slab tops. Vertical manhole steps shall be consistently spaced and shall comply with OSHA (Subpart D) fixed ladders as well as ASTM C478."

Changes to Drawings

Drawings 3, 4, and 5, Line A: On pipe profiles, delete all references to "RCP, FMP or DIP" and replace with "FRP, DIP or PVC".
Drawing 15, Details: Delete the Allowable Fill Heights detail and table from the Drawings.
Drawing 16, Details: To the Trenching, Laying, Backfilling and Bedding Outside R/W Limits details, add the following note: "These details apply to all gravity sewer and force main pipe materials. For flexible pipes, provide special care in placing and compacting the required bedding material in the haunch zone of the pipe to prevent any voids or unconsolidated material in this zone."

Questions	Answers
Please confirm that the gravity and/or force main carrier pipe is not to be included in the bid items for bore and jack, open cut steel casing, or stream crossings.	All carrier pipe for both gravity sewer and force main installation is included in the bid items for gravity sewer and force main.
Is restrained joint pipe required for 48-inch ductile iron pipe?	Only for carrier pipe installed inside an encasement pipe, see this Addendum
Is the intent for the entire force main line to have restrained joints or only at fittings?	See this Addendum
Will trencher tailings be allowed for bedding/backfill?	Bedding and backfill must meet requirements shown on Drawing 16. Pipe bedding material is to be No. 9 stone.
Would a smaller steel casing pipe be considered other than the 70-inch specified on the drawings?	The 70-inch size requirement has been removed; see this Addendum. The size required will depend on the carrier pipe material.
Are the bedding details on Dwg 16 for all pipe materials?	Yes
Which fiberglass pipe pressure class is required?	Minimum SN 36; see this Addendum
RCP pressure class is not shown on the Drawings.	RCP pipe has been removed from the Specifications.

Can the Contractor use individual joint testers or manhole to manhole low pressure air tests to pressure test fiberglass pipe?	All gravity sewer lines shall be tested with low pressure air tests per the Specifications.
Does performing the individual joint test or sectional low pressure air test eliminate the need to do the exfiltration/infiltration test?	Yes
At Station 45+00 on the 48-inch gravity sewer, the overhead power pole and underground electric will be in the excavation for the 48-inch line. What measures have been taken and coordination done in regards to this issue with KU?	The Contractor will need to contact KU and coordinate with them. The Contractor will need to brace pole and protect existing utility lines as necessary.
At MH A-6 on the 48-inch gravity sewer, fill has been placed on the property that will require the manhole and pipe excavation to be sheeted and/or shored due to the height of the fill. Has the newly placed fill been taken into account for the manhole elevations and sheeting requirements at this location?	Additional fill was placed after the design drawings were completed that will require adjustment of the manhole rim elevation at this location. Payment will be made for additional manhole depth at the unit price per vertical foot as bid. The Contractor is responsible for providing sheeting/shoring as necessary to construct the sewer to the elevations shown.
At Station 67+00 of the force main route, there is an existing structure at the rear of the masonry building of the technical school. There does not appear to be room to install the new 30-inch force main in between this structure, the existing force main and the fence. What is the expectation of installation at this location?	LFUCG will require the property owner to remove the addition to the original structure. The addition has been built over an existing easement. The Contractor will not be responsible for removal or replacement of this structure.
Would blasting be considered in additional areas if contractor works out agreement with property owner?	Blasting restrictions will remain as stated in Addendum No. 1.
The plans indicate the casing pipe is to be installed by boring. Are other methods of installing the steel casing pipe, for example tunneling, acceptable?	No, encasement pipe must be installed by boring and jacking method in accordance with approved highway and railroad permits.
Can 6-foot diameter manholes have monolithic base?	No, base slab is required per Specifications.
Is Agru Sure-Grip liner required for manholes?	No, this has been removed from the Specification.
Are any other special coatings required for manholes?	No
What are testing requirements for RCP pipe?	RCP pipe has been removed from the Specification.

Todd Slatin BJL

Todd Slatin, Acting 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: _____

ADDRESS: _____

SIGNATURE OF BIDDER: _____

4. BID SCHEDULE – SCHEDULE OF VALUES

The Bidder agrees to perform all the Work described in the Specifications and shown on the Plans for the following proposed lump sum and/or unit prices, if applicable, which 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. If unit prices are applicable, Bidder must make the extensions and additions showing the total amount of bid.

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.

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. Determination of the actual quantities and classification of unit price work performed by the Contractor will be made by the Engineer in accordance with the General Conditions.

Note: For Item No. 4, Bidder shall circle DIP, FRP, or PVC pipe.
For Item No. 7, Bidder shall circle DIP or PVC pipe.

Contract B – Interceptor and Force Main

Item No.	Item	Unit	Qty.	Unit Price	Total Price
1	Mobilization	LS	1	$	$
2	Bonds and Insurance	LS	1	$	$
3	General Requirements	LS	1	$	$
4	48-inch Gravity Sewer (DIP, FRP, or PVC)	LF	2,995	$	$
5	48-inch Gravity Sewer, DIP	LF	560	$	$
6	10-inch Gravity Sewer	LF	630	$	$
7	30-inch DIP Force Main (DIP or PVC)	LF	9,570	$	$
8	Standard Manhole, 10 ft. Dia.	EA	2	$	$
9	Standard Manhole, 8 ft. Dia. Bolt-Down	EA	3	$	$
10	Standard Manhole, 6 ft. Dia.	EA	2	$	$
11	Standard Manhole, 6 ft. Dia. Bolt-Down	EA	5	$	$
12	Standard Manhole, 4 ft. Dia.	EA	3	$	$
13	Manhole Barrel Extensions, 10 ft. dia.	VF	29	$	$
14	Manhole Barrel Extensions, 8 ft. dia.	VF	21	$	$
15	Manhole Barrel Extensions, 6 ft. dia.	VF	70	$	$
16	Manhole Barrel Extensions, 4 ft. dia.	VF	2	$	$
17	Steel Encasement Pipe, Bore & Jack for 48-inch gravity sewer	LF	145	$	$
18	42-inch Steel Encasement Pipe, Bore & Jack	LF	365	$	$
19	42-inch Steel Encasement Pipe, Open Cut	LF	90	$	$
20	Connect to 30-inch Force Main Pipe	EA	1	$	$
21	Connect to Exist. 30-inch Sewer	EA	1	$	$
22	Connect to Exist. 24-inch Sewer	EA	1	$	$
23	Connect to Exist. 12-inch Sewer	EA	2	$	$

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Item No.	Item	Unit	Qty.	Unit Price	Total Price
24	Connect to Exist. 10-inch Sewer	EA	1	$	$
25	Connect to Exist. 8-inch Sewer	EA	1	$	$
26	Reconnect Existing 6-inch Lateral	EA	1	$	$
27	Connect to WWTP Influent Structure	LS	1	$	$
28	Demolish Exist. Sewer Manhole	EA	3	$	$
29	Cut & Cap Exist. 24-inch Sewer	EA	1	$	$
30	Cut & Cap Exist. 10-inch Sewer	EA	1	$	$
31	Sewage Combination Air Valve & Vault, Automatic	EA	2	$	$
32	Line Marker	EA	12	$	$
33	Bituminous Pavement Replacement	LF	1,000	$	$
34	Concrete Street/Driveway/Sidewalk Replacement	LF	150	$	$
35	Bituminous Pavement – Full Width Overlay (11 ft. wide)	LF	1,000	$	$
36	Concrete Encasement	LF	50	$	$
37	Concrete Support – Utility Crossing	EA	2	$	$
38	Video Inspection	LF	4,185	$	$
39	Creek/Stream Crossing	LF	235	$	$
40	Stream Bed and Bank Restoration	LF	235	$	$
41	Erosion and Sediment Controls	LS	1	$	$
42	Demobilization and Project Closeout	LS	1	$	$
43	Cash Allowance No. 1 – Railroad Permit Charges	LS	1	$ 5,000	$ 5,000
44	Connect To Existing Manhole	EA	1	$	$

The **Total Base Bid Amount** shall be the sum of the unit price items above (Items 1-44) to get the total listed below:

_____

_____ Dollars ($_____).

Amount shall be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.

Lexington-Fayette Urban County Government
DEPARTMENT OF FINANCE & ADMINISTRATION

Jim Gray
Mayor

William O'Mara
Acting Commissioner

ADDENDUM #4

Bid Number: **3-2013**

Date: February 15, 2013

Subject: **Wolf Run Pump Station Relocation, Contract B- Interceptor & Force Main**

Please address inquiries to:
Betty Landrum @
bettyb@lexingtonky.gov OR
Rich Smith @
rich.smith@hdrinc.com

TO ALL PROSPECTIVE BIDDERS:

Please be advised of the following clarifications to the above referenced bid:

Bid opening date has been changed to February 26, 2013 @ 2:00 PM EST

Addendum #5 will be forthcoming.

Todd Slatin, Acting 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: _____

ADDRESS: _____

SIGNATURE OF BIDDER: _____

Lexington-Fayette Urban County Government
DEPARTMENT OF FINANCE & ADMINISTRATION

Jim Gray
Mayor

William O'Mara
Acting Commissioner

ADDENDUM #5

Bid Number: 3-2013

Date: February 20, 2013

Subject: **Wolf Run Pump Station Relocation, Contract B-Interceptor & Force Main**

Please address inquiries to:
Betty Landrum @
bettyb@lexingtonky.gov OR
Rich Smith @
rich.smith@hdrinc.com

TO ALL PROSPECTIVE BIDDERS:

Please be advised of the following clarifications to the above referenced bid:

Changes to Specifications

Part II, Information for Bidders: Delete the Bid Schedule, pages P-7 and P-8 and replace with the attached Revised Bid Schedule pages P-7 and P-8 to be submitted with the other required documents for your bid.
Section 02731, Gravity Sewers: Part 2 – Products, Subpart 2.01 C., delete this paragraph in its entirety.
Section 02731, Gravity Sewers: Part 2 – Products, add Subpart 2.02 as follows: "2.02 REINFORCED CONCRETE PIPE A. All reinforced concrete pipe shall conform to the requirements of ASTM C76, latest edition. Class of pipe shall be Class III. B. Joints shall be bell and spigot type using Forsheda 138 or Forsheda 103 gaskets (or equivalent) and shall conform to ASTM C443. C. The pipe shall be furnished in standard lengths of 8 feet to 16 feet. D. The pipe shall be permanently marked showing the nominal inside diameter, manufacture date, ASTM C76 class, and manufacturer's name. These markings shall be inscribed on the pipe exterior and stenciled on the interior with paint or permanent ink. E. There shall be no lift holes. F. Pipe shall be as manufactured by Independent Concrete Pipe Company or an approvable equivalent. G. Coating and Lining 1. All concrete pipe shall be coated and lined at the pipe manufacturer's plant. 2. The exterior coating and interior lining shall be a high-build glass-flake epoxy coating specifically designed for use on concrete pipe. The coating shall be self priming and

epoxy modified to produce thick films up to 50 mils dry film thickness in a single coat, where required. The coating/lining shall have a permeability rating in accordance with Method A of ASTM E-96-66. Coating shall be Permite Permox PCS-9043 Type II or approved equivalent.

3. Surface preparation and application shall be in accordance with the manufacturer's recommendations. The surface preparation shall remove all loose laitance, form oils, and other loose materials and include a "brush blast" per SSPC. Dry film thicknesses shall be minimum 40 mils for the interior of the pipe and 25 mils for the pipe exterior.

H. Connection of existing and proposed sewer lines to the reinforced concrete pipe shall be accomplished by the following methods:

1. Precast concrete fittings with joints using Forsheda 138 or Forsheda 103 gaskets (or equivalent) conforming to ASTM C443, or
2. Core drilling the reinforced concrete pipe and installing a KOR-N-TEE Model 1200 GP flexible watertight connector (or equivalent) as manufactured by KOR-N-SEAL. Connector shall be made of EPDM rubber. All hardware shall be 304 stainless steel."

Section 02731, Gravity Sewers: Part 2 – Products, Subpart 2.04 A., delete the last sentence (added in Addendum No. 3) and replace with the following: "Fiberglass pipe shall be minimum stiffness class SN 46."

Section 02731, Gravity Sewers: Part 3 – Execution, Subpart 3.04 D. 6., delete the paragraph and replace with the following:
"6. Reinforced concrete pipe shall be tested with joint air test on each joint laid prior to backfilling. Joint testing shall be in accordance with ASTM C1103. At no time shall pipe installation exceed 500 feet from the latest joint tested. If any joint fails the initial joint test, the joint shall be removed and reinstalled until the joint test is successful. No visible leaks shall be allowed after installation of the pipe and testing."

Section 02732, Sewage Force Mains: Part 2 – Products, add Subpart 2.02 F. as follows:
"F. PVC pipe for force main shall be green in color."

Changes to Drawings

Drawings 3, 4, and 5, Line A: On pipe profiles, delete all references to "RCP, FMP or DIP" and replace with "FRP, DIP, PVC or RCP".

Questions	Answers
On P-12 of the Form of Proposal, DBE participation on current bonded projects under contract, are you asking under the project (specific type) portion that we list what type of work they're doing for us? Also, what would you like entered for the majority portion?	Yes, the type of work should be listed and then either "DBE" or "MAJORITY" should be checked to indicate if the subcontractor is considered a DBE or not.
It appears the 42-inch RR bore is 180 ft. long. It would be advisable to extend the northern ending point past the two existing force mains thereby making the bore length 200 feet. It looks like the southern starting point could be moved to the north somewhat to shorten the overall length if desired. Please advise.	The railroad bore is shown as 90 LF bore and jack and 90 LF open cut. An additional 20 LF has been added to the Bid Schedule for 42-inch bore and jack encasement pipe. The exact starting and ending point of the bore and jack will be determined in the field during construction.

Addendum #3 allows Class SN 36 fiberglass pipe for the project. Is this correct or was the intent for this to be SN 46?	This has been revised to SN 46 in this Addendum.
What thickness of asphalt overlay is required and is the section shown on Drawing 16 the detail for the new pavement?	Per Section 01025, the required thickness of the asphalt overlay is 1-1/4 inches. The Section on Drawing 16 is to be used for the trench width pavement replacement. The overlay requires an additional 1-1/4 inches of bituminous material for the full pavement width.

Todd Slatin BJR

Todd Slatin, Acting 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: _____

ADDRESS: _____

SIGNATURE OF BIDDER: _____

4. BID SCHEDULE – SCHEDULE OF VALUES

The Bidder agrees to perform all the Work described in the Specifications and shown on the Plans for the following proposed lump sum and/or unit prices, if applicable, which 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. If unit prices are applicable, Bidder must make the extensions and additions showing the total amount of bid.

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.

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. Determination of the actual quantities and classification of unit price work performed by the Contractor will be made by the Engineer in accordance with the General Conditions.

Note: For Item No. 4, Bidder shall circle DIP, FRP, PVC, or RCP pipe.
For Item No. 7, Bidder shall circle DIP or PVC pipe.

Contract B – Interceptor and Force Main

Item No.	Item	Unit	Qty.	Unit Price	Total Price
1	Mobilization	LS	1	$	$
2	Bonds and Insurance	LS	1	$	$
3	General Requirements	LS	1	$	$
4	48-inch Gravity Sewer (DIP, FRP, PVC, or RCP)	LF	2,995	$	$
5	48-inch Gravity Sewer, DIP	LF	560	$	$
6	10-inch Gravity Sewer	LF	630	$	$
7	30-inch DIP Force Main (DIP or PVC)	LF	9,570	$	$
8	Standard Manhole, 10 ft. Dia.	EA	2	$	$
9	Standard Manhole, 8 ft. Dia. Bolt-Down	EA	3	$	$
10	Standard Manhole, 6 ft. Dia.	EA	2	$	$
11	Standard Manhole, 6 ft. Dia. Bolt-Down	EA	5	$	$
12	Standard Manhole, 4 ft. Dia.	EA	3	$	$
13	Manhole Barrel Extensions, 10 ft. dia.	VF	29	$	$
14	Manhole Barrel Extensions, 8 ft. dia.	VF	21	$	$
15	Manhole Barrel Extensions, 6 ft. dia.	VF	70	$	$
16	Manhole Barrel Extensions, 4 ft. dia.	VF	2	$	$
17	Steel Encasement Pipe, Bore & Jack for 48-inch gravity sewer	LF	145	$	$
18	42-inch Steel Encasement Pipe, Bore & Jack	LF	385	$	$
19	42-inch Steel Encasement Pipe, Open Cut	LF	90	$	$
20	Connect to 30-inch Force Main Pipe	EA	1	$	$
21	Connect to Exist. 30-inch Sewer	EA	1	$	$
22	Connect to Exist. 24-inch Sewer	EA	1	$	$
23	Connect to Exist. 12-inch Sewer	EA	2	$	$

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Item No.	Item	Unit	Qty.	Unit Price	Total Price
24	Connect to Exist. 10-inch Sewer	EA	1	$	$
25	Connect to Exist. 8-inch Sewer	EA	1	$	$
26	Reconnect Existing 6-inch Lateral	EA	1	$	$
27	Connect to WWTP Influent Structure	LS	1	$	$
28	Demolish Exist. Sewer Manhole	EA	3	$	$
29	Cut & Cap Exist. 24-inch Sewer	EA	1	$	$
30	Cut & Cap Exist. 10-inch Sewer	EA	1	$	$
31	Sewage Combination Air Valve & Vault, Automatic	EA	2	$	$
32	Line Marker	EA	12	$	$
33	Bituminous Pavement Replacement	LF	1,000	$	$
34	Concrete Street/Driveway/Sidewalk Replacement	LF	150	$	$
35	Bituminous Pavement – Full Width Overlay (11 ft. wide)	LF	1,000	$	$
36	Concrete Encasement	LF	50	$	$
37	Concrete Support – Utility Crossing	EA	2	$	$
38	Video Inspection	LF	4,185	$	$
39	Creek/Stream Crossing	LF	235	$	$
40	Stream Bed and Bank Restoration	LF	235	$	$
41	Erosion and Sediment Controls	LS	1	$	$
42	Demobilization and Project Closeout	LS	1	$	$
43	Cash Allowance No. 1 – Railroad Permit Charges	LS	1	$ 5,000	$ 5,000
44	Connect To Existing Manhole	EA	1	$	$

The **Total Base Bid Amount** shall be the sum of the unit price items above (Items 1-44) to get the total listed below:

_____

_____ Dollars ($_____).

Amount shall be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.

Division 1 - General Requirements

SECTION 01010 - SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The project includes the construction of approximately 4,200 lf of 48-inch and 10-inch gravity sewers with manholes and approximately 9,500 lf of 30-inch force main.

B. The Contractor shall provide all materials, labor and equipment necessary for completion of the Project. The Contract Documents are intended to provide the basis for proper completion of the work suitable for the intended use of the Owner. Anything not expressly set forth but which is reasonably implied or necessary for proper performance of the Project shall be included.

C. Continuous Operations: 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 component required for the continuous operation until a new or temporary 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 causes the facility/facilities to operate in an illegal manner or fail to operate in a legal manner.

D. The following major Work items are included in the Contract:

Contract B - Approximately 3,570 lf of 48-inch gravity interceptor sewer with manholes, 630 lf of 10-inch gravity sewer with manholes, bore and jack encasement pipe, 4 stream crossings and 9,500 lf of 30-inch ductile iron force main with two air release devices.

1.02 PERMITS

The Contractor shall obtain any permits related to or required by, the Work in this Contract.

1.03 CODES

Comply with applicable codes and regulations of authorities having jurisdiction. Submit copies of inspection reports, notices, citations and similar communications, to the Owner.

1.04 EXISTING CONDITIONS AND DIMENSIONS

A. The Work in this Contract will primarily be performed in or around existing facilities of which a portion must remain functional. The Contractor must maintain the required items and/or systems functional without additional effort by the Owner's personnel and at no extra costs to the Owner.

B. The Contractor is responsible for verifying all existing conditions, elevations, dimensions, etc., and providing his finished work to facilitate existing conditions.

END OF SECTION 01010

SECTION 01015 - WORK SEQUENCE

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The Contractor shall conform to all miscellaneous requirements as contained in the Contract.

B. The Contractor shall perform all Work included in the Contract Documents.

C. The Contractor shall perform all the Work incidental to the items shown in the Contract Documents even though it may not be specifically enumerated.

D. The Contractor will have to perform the work in a sequence acceptable to the Owner, and in some instances the Work will have to be performed in a sequence directed by the Owner.

E. Further, the Contractor shall have to perform all the Work included in this project in a sequence that does not impair the treatment capabilities of the system nor cause undue hardships on day-to-day operating personnel.

1.02 RELATED REQUIREMENTS

A. Part IV - General Conditions.

B. Section 01010 - Summary of Work.

C. Section 01040 - Coordination.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 SCHEDULING THE SEQUENCE OF CONSTRUCTION OPERATIONS

A. The Contractor shall submit to the Engineer, for review and approval, a complete schedule (progress chart) of his proposed sequence of construction operations prior to commencement of the work.

B. The Engineer will neither consider nor approve a construction schedule that fails to utilize the entire time allocated by the Contract for the construction of the Project.

C. The Contractor shall schedule the various construction activities to complete the Project throughout the entire Contract time period. This schedule requirement shall not prevent the Contractor from completing the Project in a shorter time frame than illustrated in the schedule. The construction schedule along with a cost breakdown schedule shall be reviewed and approved by the Owner prior to the submission of the first partial payment request in accordance with the General Conditions.

D. A copy of the construction schedule shall be submitted to the Owner with each pay request, appropriately marked to indicate the actual progress of the work compared to the planned schedule. This revised schedule must be approved by the Owner prior to payment.

3.02 OTHER WORK SEQUENCE ITEMS

A. Contractor(s) shall construct new pump station, interceptor and force main prior to taking existing pump station off-line for demolition.

B. Tie-ins shall be kept to a minimum by performing during off peak hours and dry weather (this includes at the existing pump station and at the Town Branch WWTP).

C. Coordinate closely with plant and pump station operations staff.

D. Maintain sewer flow for all customers by providing temporary pumping whenever necessary.

END OF SECTION 01015

SECTION 01025 - MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 WORK INCLUDED

The Contractor shall furnish all necessary labor, machinery, tools, apparatus, equipment, materials, services and other necessary supplies and perform all work shown on the Drawings and/or described in the Specifications and Contract Documents at the unit or lump sum prices for the items enumerated in Part 2 of this Section.

1.02 COMPUTATION OF QUANTITIES

A. For estimating quantities in which the computation of areas by geometric methods would be comparatively laborious, it is agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such areas.

B. It is further agreed that the computation of the volume of prismoids shall be by the method of average end area.

PART 2 - PRODUCTS

2.01 MOBILIZATION (LUMP SUM – ITEM 1)

Payment for the Contractor's mobilization will be made at the Contract lump sum price and shall include all costs incurred for moving equipment onto the Project area and any pertinent costs related thereto.

2.02 BONDS AND INSURANCE (LUMP SUM – ITEM 2)

Payment for bonds and insurance will be made at the Contract lump sum price, and shall include the costs of the Performance and Payment Bonds provided under the Contract, and the premiums for insurance required under the Contract.

2.03 GENERAL REQUIREMENTS (LUMP SUM – ITEM 3)

Payment for general requirements will be made at the Contract lump sum price distributed over the initial term of the Contract and shall include field supervision and support staff, office supervision and support staff, costs associated with maintaining the field operation, and other items required by the general requirements and conditions of the Contract.

2.04 GRAVITY SEWER/FORCE MAIN (UNIT PRICE – ITEMS 4 THROUGH 7)

A. Payment for gravity sewer and force main will be made at the Contract unit price per linear foot in place, which shall include compensation for furnishing pipe, fittings, joint restraints, trenching (including rock excavation), bedding, laying, jointing, shoring, sheeting and bracing, initial backfill, and all other appurtenances required but not specifically delineated herein. Fittings shall be incidental to this item and not be listed separately

B. The quantity of piping to be paid for shall be the length of pipe measured along the centerline of the completed pipe line without deducting the length of fittings. Gravity sewer shall be measured to manhole entrance, not center.

C. Payment for final backfill shall be included in this pay item except for bituminous and concrete material required in restoration of paved areas and defined in Sections 02510 and 02520. Bituminous and concrete material shall be included in the pay item "Bituminous Pavement Replacement". Class II material (DGA) required in the restoration of gravel roadways and drives shall be included in this pay item and is not a separate pay item.

D. Rock excavation is included in this pay item and will not be paid for separately.

E. Tree removal, if required for installation of the gravity sewer and force main, is included in this pay item and will not be paid for separately.

F. CMP storm drain removal and replacement, if required for installation of the gravity sewer or force main, is included in this pay item and will not be paid for separately.

G. Testing of the completed gravity sewer and force main and any electric, gas or other utility relocation, if necessary, is included in this pay item. However, no payment for the labor portion of this unit item shall be made until the line has been tested and accepted by the Engineer.

H. Payment for seeding and clean-up (including furnishing and placing topsoil, finish grading, seeding, mulching, removal of construction materials and debris, cleaning, and site restoration) is included in this pay item.

2.05 STANDARD MANHOLES (UNIT PRICE – ITEMS 8 THROUGH 13)

Payment for manholes as described in Section 02735 will be made at the Contract unit price each and shall include the furnishing and installation of the precast concrete base, barrels, eccentric cone top section, steps, flexible pipe to manhole gasket, and cast iron frame and cover. Also included is excavation (including rock excavation), earth backfill, and all other materials not specifically delineated herein, but necessary to complete the construction of the manhole as shown on the Drawings. Crushed stone backfill placed around the manhole in Case II backfill situations is included in this pay item. Bituminous material in restoration of paved areas shall be included in the pay item "Bituminous

Pavement Replacement". Class II material (DGA) in restoration of gravel drives and roadways shall be included in this pay item and is not a separate pay item.

2.06 MANHOLE BARREL EXTENSIONS (UNIT PRICE – ITEMS 14 THROUGH 17)

For manholes greater than 6 feet in depth, payment for the additional manhole barrel measured as described in Section 02735, Article 1.03, will be made at the Contract unit price per vertical foot of additional depth, in place. No separate payment will be made for additional steps that are required.

2.07 ENCASEMENT PIPE, BORE AND JACK (UNIT PRICE – ITEMS 18 THROUGH 19)

Payment for gravity sewer lines or force main crossing under roadways and railroads as shown on the Drawings shall include the respective encasement pipe bored under the roadway and railroad and will be made at the Contract unit price per linear foot of encasement pipe for the size and type. This work shall include the encasement pipe, complete in place with fittings, blocking, spacers, end closures, and all items necessary for its construction and installation. Carrier pipe is paid separately.

2.08 ENCASEMENT PIPE, OPEN CUT (UNIT PRICE – ITEM 20)

Payment for gravity sewer lines or force main crossing under roadways and railroads shall include the respective encasement pipe open cut where indicated on the Drawings and will be made at the Contract unit price per linear foot of encasement pipe for the size and type. This work shall include the encasement pipe, complete in place with fittings, blocking, spacers, end closures, and all items necessary for its construction and installation. Carrier pipe is paid separately.

2.09 CONNECT TO EXISTING GRAVITY SEWER, LATERAL OR FORCE MAIN (UNIT PRICE – ITEMS 21 THROUGH 26)

Payment for tie-in or connection to existing gravity sewer, sewer laterals, or force main will be made at the Contract unit price each based on the pipe size and shall include installation, fittings and all other appurtenances necessary to complete the Work. Bypass pumping, if required, shall be included in the unit price and shall not be a separate pay item.

2.10 CONNECT TO EXISTING WWTP INFLUENT STRUCTURE (LUMP SUM ITEM 27)

Payment for tie-in or connection to existing WWTP influent structure will be made at the Contract lump sum price and shall include installation, fittings, concrete work, and all other appurtenances necessary to complete the Work. Bypass pumping, if required, shall be included in the unit price and shall not be a separate pay item.

2.11 DEMOLISH MANHOLE (UNIT PRICE – ITEM 28)

Payment for manhole demolition will be made at the Contract unit price each which shall include excavation, backfill, removal of structure as required, material disposal, site restoration and any other incidental costs to complete the demolition in accordance with the Specifications.

2.12 CUT & CAP SEWER LINE (UNIT PRICE – ITEMS 29 THROUGH 30)

Payment for cutting and capping existing sewer lines will be made at the Contract unit price each based on the pipe size as indicated in the Bid Schedule. Payment shall include excavation, backfill, concrete cap, and any other items necessary to complete the work.

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2.13 SEWAGE COMBINATION AIR VALVE AND VAULT (UNIT PRICE – ITEM 31)

Payment for the sewage combination air valve and vault will be made at the Contract unit price each, complete in place, including all excavation, material, concrete vault, valves, fittings, backfilling, and all appurtenances necessary to complete the installation.

2.14 LINE MARKER (UNIT PRICE – ITEM 32)

Payment for line marker will be made at the Contract unit price each, complete in place, including all labor and materials to install the line marker as shown on the Drawings and specified herein.

2.15 BITUMINOUS PAVEMENT REPLACEMENT (UNIT PRICE – ITEM 33)

Payment for bituminous pavement replacement will be made at the Contract unit price per linear foot which shall include base, placement of bituminous material, compaction and all appurtenances necessary for a complete installation.

2.16 CONCRETE SIDEWALK AND CURB REPLACEMENT (UNIT PRICE – ITEM 34)

Payment for concrete sidewalk and curb replacement will be made at the Contract unit price per linear foot which shall include base, forms, reinforcement, placement of concrete, finishing and all appurtenances necessary for a complete installation.

2.17 BITUMINOUS PAVEMENT OVERLAY (UNIT PRICE – ITEM 35)

Payment for the 1¼-inch bituminous pavement overlay, 11-foot (average) full width, will be made at the Contract unit price per linear foot, complete in place. Payment shall include preparation of the existing surface, placement of overlay material, compaction, tapers, and all incidentals necessary for a complete installation.

2.18 CONCRETE ENCASEMENT (UNIT PRICE – ITEM 36)

Payment for concrete encasement will be made at the Contract unit price per linear foot in place, which shall include compensation for excavation (including rock excavation), concrete and all items necessary to encase the gravity sewer pipe or force main in concrete the full trench width as indicated on the Drawings.

2.19 CONCRETE SUPPORT-UTILITY CROSSING (UNIT PRICE – ITEM 37)

Payment for concrete supports at utility or storm drain crossings will be made at the Contract unit price for each crossing as indicated on the Drawings, which shall include compensation for excavation (including rock excavation), concrete and all items necessary to support the existing pipe(s) and compete the crossing as indicated on the Drawings.

2.20 VIDEO INSPECTION (UNIT PRICE – ITEM 38)

Payment for video inspection of gravity sewers shall be made at the Contract unit price per linear foot of sewer that is video inspected, in accordance with the Specifications.

2.21 CREEK/STREAM CROSSING (UNIT PRICE – ITEM 39)

A. Payment for creek or stream crossing will be made at the Contract unit price per linear foot, which shall include excavation, backfill, concrete encasement, cap stone, creek gravel, and all other materials and installation required as shown on the Drawings and Specifications.

B. The length of crossing shall be the length of pipe measured along the centerline of the completed concrete encasement.

C. Payment for final backfill and restoration of the stream bed and banks is a separate pay item.

D. Rock excavation is included in this pay item and will not be paid for separately.

2.22 STREAM BED AND BANK RESTORATION (UNIT PRICE – ITEM 40)

Payment for stream bed and bank restoration will be made at the Contract unit price per linear foot which shall include stream channel restoration as required per the Drawings, stream and bank restoration as required by the Corps of Engineers permit, and restoration activities as specified in the Restoration Plan, including grading, bank protection, geotextiles, staking, planting of seedlings, and other activities.

2.23 EROSION AND SEDIMENT CONTROLS (UNIT PRICE – ITEM 41)

Payment for erosion and sediment controls will be made at the Contract lump sum price and shall include all costs incurred for erosion and sediment control measures. Measures include straw bales, silt fencing, filter barriers, and other materials, all labor required, and

all items necessary to provide erosion and sediment control for the duration of the project, in accordance with the Plans, Specifications and Best Management Practices included therein.

2.24 DEMOBILIZATION/PROJECT CLOSEOUT (LUMP SUM – ITEM 42)

Payment for the Contractor's demobilization and project closeout will be made at the Contract lump sum price and shall include all costs incurred for removing equipment and materials from the Project area and any pertinent costs related thereto.

2.25 CASH ALLOWANCE (LUMP SUM – ITEM 43)

Payment for cash allowances shall be made in accordance with the requirements of Part V – Special Conditions.

PART 3 - EXECUTION

3.01 PAY ITEMS

A. The pay items listed hereinbefore refer to the items listed in the Bid Schedule and cover all of the pay items for this Contract.

B. Any and all other items of Work listed in the Specifications or shown on the Drawings for this Contract shall be considered incidental to and included in those pay items.

3.02 ESTIMATED QUANTITIES OF WORK

Wherever the estimated quantities of work to be done and materials to be furnished under this Contract are shown in any of the documents, including the Bid Proposal, they are given for use in comparing bids and the right is specifically reserved, except as otherwise limited by the Contract Documents, to increase or diminish them as may be deemed reasonably necessary or desirable by the Owner to complete the Work contemplated by this Contract. Such increase or diminution shall be accompanied by an adjustment in the Contract Amount in accordance with the Contract Conditions, and shall not give cause for claims or liability for damages against the Owner or the Engineer, due to such increase or diminution.

END OF SECTION 01025

SECTION 01040 - COORDINATION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The Contractor for this Contract B shall coordinate with the Contractor for Contract A (pump station) and shall coordinate the Work of all crafts, trades and subcontractors engaged on the Work, and he shall have final responsibility in regards to the schedule, workmanship and completeness of the Work.

B. Coordination with Contract A Contractor will be required during start-up and testing of lines and pump station equipment.

C. The Contractor shall be prepared to guarantee to each of his subcontractors the dimensions which they may require for the fitting of their work to the surrounding work.

D. All crafts, trades and subcontractors shall be made to cooperate with each other and with others as they may be involved in the installation of work which adjoins, incorporates, precedes or follows the work of another. It shall be the Contractor's responsibility to point out areas of cooperation prior to execution of subcontract agreements and the assignment of the parts of the Work. Each craft, trade and subcontractor shall be made responsible to the Contractor, for furnishing embedded items, giving directions for doing all cutting and fitting, making all provisions for accommodating the Work, and for protecting, patching, repairing and cleaning as required to satisfactorily perform the Work.

E. The Contractor shall be responsible for all cutting, digging and other actions of his subcontractors and workmen. Where such action impairs the safety or function of any structure or component of the Project, the Contractor shall make such repairs, alterations and additions as will, in the opinion of the Engineer, bring said structure or component back to its original design condition at no additional cost to the Owner.

F. 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 applicable to his work to the end that complete coordination between the trades will be affected. Each subcontractor shall consult with the Contractor, who shall advise the Engineer if conflicts exist on the Drawings.

G. No extra compensation will be allowed to cover the cost of removing piping, conduits, etc., or equipment found encroaching on space required by others.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01040

SECTION 01090 - REFERENCES AND ABBREVIATIONS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Where any of the following abbreviations are used in the Contract Documents, they shall have the meaning set forth as follows:

ACI	American Concrete Institute
AFBMA	Anti-Friction Bearing Manufacturers Association
AGMA	American Gear Manufacturers Association
AISC	American Institute of Steel Construction
ANS	American National Standard
ANSI	American National Standards Institute
API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWG	American or Brown and Sharpe Wire Gage
AWPA	American Wood-Preservers' Association
AWWA	American Water Works Association
Fed. Spec.	Federal Specifications issued by the Federal Supply Service of the General Services Administration, Washington, DC
IBR	Institute of Boiler and Radiator Manufacturers
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IPS	Iron Pipe Size
NBS	National Bureau of Standards
NEC	National Electrical Code; latest edition
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NPT	National Pipe Thread
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, Inc.
Stl. WG	U.S. Steel Wire, Washburn and Moen, American Steel and Wire or Roebling Gage
125-lb. ANS; 250-lb. ANS	American National Standard for Cast-Iron Pipe Flanges and Flanged Fittings, Designation B16.1-1975, for the appropriate class
UL	Underwriters' Laboratories

B. Reference Standards:

1. For products or workmanship specified by association, trade or federal standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
2. The date of the standard is that in effect as of the Bid date, or the date of the Owner-Contractor Agreement when there are no bids, unless a certain date is indicated for the standard in the Contract Documents.
3. When required by an individual Specification section, the Prime Contractor shall obtain a copy of the standard. Maintain the copy at the job site, available for review by Owner, Engineer, Resident Representative and other appropriate parties until Substantial Completion.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01090

SECTION 01120 - ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.01 SCOPE

For the purpose of this Specification, environmental protection is defined as the retention of the environment in Project construction and to enhance the natural appearance in its final condition. Environmental protection requires consideration of air and land and involves noise as well as other pollutants. In order to prevent, and to provide for abatement and control of, any environmental pollution arising from the construction activities in the performance of this Contract, the Contractor and his subcontractors shall comply with all applicable federal, state and local laws and regulations concerning environmental pollution control and abatement. This Section covers the furnishings of all labor, materials, equipment and performing all work required for the protection of the environment during construction operations except for those measures set forth in other Sections of these specifications.

1.02 PROTECTION OF LAND RESOURCES

The land resources within the Project boundaries and outside the limits of work performed under this Contract shall be preserved in their present condition or be restored to a condition after completion of construction that will appear to be natural and not detract from the appearance of the project.

1.03 RECORDING AND PRESERVING HISTORICAL AND ARCHAEOLOGICAL FINDS

In the event archaeological materials (arrowheads, stone tools, stone axes, prehistoric and historic pottery, bottles, foundations, Civil War artifacts, and other types of artifacts) are uncovered during the construction of this project, work is to immediately cease at the location and the Kentucky Heritage Council shall be contacted. The telephone number is (502) 564-7005. Construction shall not commence at this location until a written release is received from the Kentucky Heritage Council. Failure to report a find could result in legal action.

1.04 PROTECTION OF LAND AREAS

Except for any work on storage areas and access routes specifically assigned for the use of the Contractor under this Contract, the land areas outside the limits of permanent work performed under this Contract shall be preserved in their present condition. Contractor shall confine his construction activities to areas defined for work on the plans or specifically assigned for his use. No other areas shall be used by the Contractor without written consent of the Owner.

1.05 PROTECTION OF TREES AND SHRUBS

A. Reasonable care shall be taken during construction to avoid damage to vegetation.

B. The Contractor shall not deface, injure or destroy trees or shrubs, nor remove or cut them without prior approval from the Owner. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage.

1.06 TREE PROTECTIVE STRUCTURES

Where, in the opinion of the Engineer, trees may possibly be defaced, bruised, injured or otherwise damaged by the Contractor's equipment or by his other operations, he may direct the Contractor to provide temporary protection of such trees by placing boards, plans, or poles around them. Ornamental shrubbery and tree branches shall be temporarily tied back, where appropriate, to minimize damage.

1.07 RESTORATION OF DAMAGED TREES

A. Any tree scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition at the Contractor's expense. Trees which receive damage to branches shall be trimmed of those branches to improve the appearance of the tree. All scars made on trees shall be coated as soon as possible with an approved tree wound dressing.

B. Trees that are to remain, either within or outside established clearing limits, that are damaged by the Contractor so as to be beyond saving in the opinion of the Engineer, shall be immediately removed, if so directed, and replaced with a nursery-grown tree of the same species and size.

1.08 PROTECTION OF WATER RESOURCES

The Contractor shall control the disposal of fuels, oils, bitumens, calcium chloride, acids, or harmful materials, and shall comply with applicable Federal, State, County and Municipal laws concerning pollution of rivers and streams while performing work under this Contract. Special measures shall be taken to prevent chemicals, fuels, oils, greases, bituminous materials, herbicides and insecticides from entering public waters. Water used in on-site material processing, concrete curing, foundation and concrete cleanup, and other waste waters shall not be allowed to reenter a stream if an increase in the turbidity of the stream could result therefrom.

1.09 BURNING

Air pollution restrictions applicable to this project are as follows: Materials shall not be burned on the premises. If the Contractor elects to dispose of waste materials off the premises, by burning, he shall make his own arrangements for such burning area and shall, as specified in the General Conditions, conform to all applicable regulations.

1.10 DUST CONTROL

The Contractor shall maintain all excavations, stockpiles, access roads, waste areas, and all other work free from excess dust to such reasonable degree as to avoid causing a hazard or nuisance to others. Approved temporary methods consisting of sprinkling, chemical treatment, or similar methods will be permitted to control dust. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs.

1.11 EROSION CONTROL

Surface drainage from cuts and fills within the construction limits, whether or not completed, and from borrow and waste disposal areas, shall be graded to control erosion within acceptable limits. Temporary control measures shall be provided and maintained until permanent drainage facilities are completed and operative. The area of bare soil exposed at any one time by construction operations, should be held to a minimum.

1.12 CORRECTIVE ACTION

The Contractor shall, upon receipt of a notice in writing of any noncompliance with the foregoing provisions, take immediate corrective action. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs of damages by the Contractor unless it was later determined that the Contractor was in compliance.

1.13 POST-CONSTRUCTION CLEANUP OR OBLITERATION

The Contractor shall, unless other wise instructed in writing by the Engineer, obliterate all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed areas shall be graded and filled and the entire area seeded.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01120

SECTION 01200 - PROJECT MEETINGS

PART 1 - GENERAL

1.01 PRECONSTRUCTION CONFERENCES

A. Prior to commencing the work, a preconstruction conference will be held at the job site and representatives of the following organizations shall have at least one representative in attendance:

1. Owner.
2. Engineer.
3. Contractor.
4. Major subcontractors as the Contractor may direct, or the Engineer may require upon sufficient notice.
5. Representatives of the appropriate state and federal agencies as they may choose to attend.

B. The preconstruction conference will be for the purpose of reviewing procedures to be followed concerning the orderly flow of required paperwork; coordination of the various parties involved with the project, review of Shop Drawing submittals, Contract time, liquidated damages, payment estimates, Change Orders, and other items of interest to the parties involved.

1.02 PROGRESS MEETINGS

With the express purpose of expediting construction and providing the opportunity for cooperation of affected parties, meetings shall be called which shall be attended by representatives of (a) Owner, (b) the Engineer, (c) the Contractor, (d) all Subcontractors. A location on or near the site will be designated where such meetings will be held. The frequency of meetings shall be at the discretion of the Engineer and Owner.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01200

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.01 WORK INCLUDED

Shop drawings, descriptive literature, project data and samples (when samples are specifically requested) for all manufactured or fabricated items shall be submitted by the Contractor to the Engineer for examination and review in the form and in the manner required by the Engineer. All submittals shall be furnished in at least three (3) copies to be retained by the Engineer and shall be checked and reviewed by the Contractor before submission to the Engineer. The review of the submittal by the Engineer shall not be construed as a complete check, but will indicate only that the general method of construction and detailing is satisfactory. Review of such submittal will not relieve the Contractor of the responsibility for any errors which may exist as the Contractor shall be responsible for the dimensions and design of adequate connections, details, and satisfactory construction of all work.

1.02 RELATED REQUIREMENTS

A. Part IV - General Conditions.

B. Section 01720 - Project Record Documents

1.03 DEFINITIONS

The term "submittals" shall mean shop drawings, manufacturer's drawings, catalog sheets, brochures, descriptive literature, diagrams, schedules, calculations, material lists, performance charts, test reports, office and field samples, and items of similar nature which are normally submitted for the Engineer's review for conformance with the design concept and compliance with the Contract Documents.

1.04 CONTRACTOR'S ULTIMATE RESPONSIBILITY

Review by the Engineer of shop drawings or submittals of material and equipment shall not relieve the Contractor from the responsibilities of furnishing same of proper dimension, size, quantity, materials and all performance characteristics to efficiently perform the requirements and intent of the Contract Documents. Review shall not relieve the Contractor from responsibility for errors of any kind on the shop drawings. Review is intended only to assure conformance with the design concept of the Project and compliance with the information given in the Contract Documents. Review of shop drawings shall not be construed as releasing the Contractor from the responsibility of complying with the Specifications.

1.05 GENERAL REQUIREMENTS FOR SUBMITTALS

A. Shop drawings shall be prepared by a qualified detailer. Details shall be identified by reference to sheet and detail numbers shown on Contract Documents. Where applicable, show fabrication, layout, setting and erection details. Shop drawings are defined as original drawings prepared by the Contractor, subcontractors, suppliers, or distributors performing work under this Contract. Shop drawings illustrate some portion of the work and show fabrication, layout, setting or erection details of equipment, materials and components. The Contractor shall, except as otherwise noted, have prepared the number of reviewed copies required for his distribution plus three (3) which will be retained by the Engineer and Owner. Shop drawings shall be folded to an approximate size of 8-1/2 inch x 11 inch and in such manner that the title block will be located in the lower righthand corner of the exposed surface.

B. Project data shall include manufacturer's standard schematic drawings modified to delete information which is not applicable to the Project, and shall be supplemented to provide additional information applicable to the Project. Each copy of descriptive literature shall be clearly marked to identify pertinent information as it applies to the Project.

C. Where samples are required, they shall be adequate to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged. Provide sufficient size and quantity to clearly illustrate functional characteristics of product and material, with integrally related parts and attachment devices, along with a full range of color samples.

D. All submittals shall be referenced to the applicable item, section and division of the Specifications, and to the applicable Drawing(s) or Drawing schedule(s) and shall be accompanied by transmittal forms in the format provided by the Engineer.

E. The Contractor shall review and check submittals, and indicate his review by initials and date.

F. If the submittals deviate from the Contract Drawings and/or Specifications, the Contractor shall advise the Engineer, in letter of transmittal of the deviation and the reasons therefor. All changes shall be clearly marked on the submittal with a bold mark other than red. Any additional costs for modifications shall be borne by the Contractor.

G. In the event the Engineer does not specifically reject the use of material or equipment at variance to that which is shown on the Drawings or specified, the Contractor shall, at no additional expense to the Owner, and using methods reviewed by the Engineer, make any changes to structures, piping, controls, electrical work, mechanical work, etc., that may be necessary to accommodate this equipment or material. Should equipment other than that on which design drawings are based be accepted by the Engineer, shop drawings shall be submitted detailing all modification work and equipment changes made necessary by the substituted item.

H. Additional information on particular items, such as special drawings, schedules, calculations, performance curves, and material details, shall be provided when specifically requested in the technical Specifications.

I. Submittals for all electrically operated items (including instrumentation and controls) shall include complete wiring diagrams showing lead, runs, number of wires, wire size, color coding, all terminations and connections, and coordination with related equipment.

J. Equipment shop drawings shall indicate all factory or shop paint coatings applied by suppliers, manufacturers and fabricators; the Contractor shall be responsible for insuring the compatibility of such coatings with the field-applied paint products and systems.

K. Fastener specifications of manufacturer shall be indicated on equipment shop drawings.

L. Where manufacturer's brand names are given in the Specifications for building and construction materials and products, such as grout, bonding compounds, curing compounds, masonry cleaners, waterproofing solutions and similar products, the Contractor shall submit names and descriptive literature of such materials and products he proposes to use in this Contract.

M. No material shall be fabricated or shipped unless the applicable drawings or submittals have been reviewed by the Engineer and returned to the Contractor.

N. All bulletins, brochures, instructions, parts lists, and warranties packaged with and accompanying materials and products delivered to and installed in the Project shall be saved and transmitted to the Owner through the Engineer.

1.06 CONTRACTOR RESPONSIBILITIES

A. Verify field measurements, field construction criteria, catalog numbers and similar data.

B. Coordinate each submittal with requirements of Work and Contact Documents.

C. Notify Engineer, in writing at time of submission, of deviations in submittals from requirements of Contract Documents.

D. Begin no work, and have no material or products fabricated or shipped which required submittals until return of submittals with Engineer's stamp and initials or signature indicating review.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01300

SECTION 01380 - CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.01 WORK INCLUDED

Contractor(s) shall provide monthly photographs of the construction throughout the progress of the Work.

1.02 RELATED WORK

A. Part IV - General Conditions.

B. Section 01700 - Project Closeout.

1.03 CONSTRUCTION PHOTOGRAPHY

A. The term "photograph" as used herein refers to a photographic view, including similar exposures taken to assure the usefulness of the photographic record. All necessary photographs shall be taken to assure the usefulness of the photographic record. All photographs shall be taken in color, not black and white. Minimum film size shall be 35 mm print film, film speed and illumination as necessary to provide clear, crisp images. Digital photography may be substituted for film photography as approved by Owner.

B. Provide monthly photographs (two sets) of the construction throughout the 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.

C. Take the photographs as close as possible to the cutoff date for each Application for Payment, except for those photographs necessary to comply with Paragraph D., following.

D. Take photographs at the beginning, during, and completion of each element of construction.

1.04 PRINTS

A. Two prints of each photograph shall be furnished to the Engineer with each pay request, and each print shall have a glossy finish and be mounted in plastic sleeving on a substantial backing. The overall dimensions of each mounted print shall be 4-inches x 6-inches, or larger. Mount with binder tabs or in clear plastic sheets.

B. Each photograph shall have attached to the backing a paper label, approximately 2-1/4-inches wide by 1-3/4-inches high containing the following information in neat lettering:

1. Project name.

2. Contractor's name.
3. Short Description of View.
4. Photo Number and Date Taken.
5. Phototgrapher's (Firm) Name.

1.05 NEGATIVES

The film negatives shall be indexed, cataloged and retained in the files of the Contractor until the completion of the project and shall then be turned over to the Engineer. Digital photographs shall be provided on compact disks with label and identification requirements specified above.

1.06 TECHNIQUE

A. All views shall provide factual presentation of the Work progress.

B. All photos shall provide correct exposure and focus, high resolution and sharpness, maximum depth of field and minimum distortion.

1.07 VIEWS

The photographs shall be from varied views which show the most representative examples of the Work progress.

1.08 PRECONSTRUCTION VIDEO

A. Prior to the initiation of any construction activities, the Contractor shall videotape the entire site, including the complete exterior of all buildings within fifty (50) feet of the edge of Construction Limits.

B. The original of the tape(s) shall be provided to the Owner. One (1) copy of the tape(s) shall be provided to the Engineer. Contractor shall retain one or more copies, as necessary to meet the requirements of their insurance and bonding coverage.

C. Maximum camera travel speed during the taping shall not exceed 5.9 feet per second (approximately 4 miles per hour). Slower camera travel speeds are recommended in and around developed areas. Addresses, stationing, or other orientation information should be provided on an audio track of the videotape. A typewritten index of the tape shall be provided, indicating by tape counter location each address, stationing number or other location identifier, to allow rapid location of specific views on the video record.

D. A minimum of (1) two hour color tape shall be used for documenting the existing site conditions.

1.09 SUBMITTALS

A. Submit Preconstruction Video prior to beginning site clearing activities.

B. Submit monthly construction photograph prints with each Application for Payment.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01380

SECTION 01400 - QUALITY CONTROL

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Work of all crafts and trades shall be laid out to lines and elevations as established by the Contractor from the Drawings or from instructions by the Engineer.

B. Unless otherwise shown, all work shall be plumb and level, in straight lines and true planes, parallel or square to the established lines and levels. The Work shall be accurately measured and fitted to tolerance as established by the best practices of the crafts and trades involved, and shall be as required to fit all parts of the Work carefully and neatly together.

C. All equipment, materials and articles incorporated into the Work shall be new and of comparable quality to that specified. All workmanship shall be first-class and shall be performed by mechanics skilled at, and regularly employed in, their respective trades.

D. The Contractor shall determine that the equipment he proposes to furnish can be brought into the facility and installed in the space available. Equipment shall be installed so that all parts are readily accessible for inspection and maintenance.

1.02 WORKMANSHIP

Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.

1.03 MANUFACTURERS' INSTRUCTIONS

Comply with manufacturers' instructions in full detail as to shipping, handling, storing, installing, start-up and operation.

1.04 MANUFACTURERS' FIELD SERVICES

A. The Contractor shall arrange for the services of qualified service representatives from the companies manufacturing or supplying each type of equipment required in the Specification sections and/or in Section 01450.

B. The manufacturer or supplier shall provide sufficient engineering and technician manhours to satisfactorily complete Supervision of Installation, Equipment Check-out, Field Acceptance Tests, Pre-startup Operator Training, and Post-startup Services (see Section 01450).

1.05 TESTING SERVICES

A. Tests, inspections and certifications of materials, of equipment, of subcontractors' work, or of completed work shall be provided by the Contractor, as required by the various sections of the Specifications, and all costs for such tests, inspections and certifications shall be included in the Contract Price.

B. The Contractor shall submit the name of testing laboratory proposed for use on the Project to the Owner, for approval.

C. The Contractor shall deliver written notice to the Engineer at least two (2) work days in advance of any inspections or tests to be made at the Project site. All inspections or tests to be conducted in the field shall be done in the presence of the Owner or his representative.

D. Certifications by independent testing laboratories may be by properly attested copies of the data including scientific procedures and results of tests.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01400

SECTION 01510 - TEMPORARY UTILITIES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Each Contractor shall maintain strict supervision of use of temporary utility services:
   1. Enforce compliance with applicable standards.
   2. Enforce safety practices.
   3. Prevent abuse of services.

1.02 RELATED REQUIREMENTS (NOT USED)

1.03 REQUIREMENTS OF REGULATORY AGENCIES

A. Each Contractor shall obtain and pay for all permits as required by governing authorities.

B. Each Contractor shall obtain and pay for temporary easements required across property other than that of Owner.

C. Each Contractor shall comply with applicable codes.

1.04 REMOVAL

A. Completely remove temporary materials, equipment, and miscellaneous items upon completion of construction and approval of the Engineer.

B. Repair damage caused by installation and restore to specified or original condition.

1.05 TEMPORARY ELECTRICITY

Electrical services for construction needs and for lighting and heating the work area will be provided by each Contractor.

1.06 TEMPORARY LIGHTING

A. Each Contractor shall furnish and install temporary lighting required for:
   1. Construction needs.
   2. Safe and adequate working conditions.
   3. Public Safety
   4. Security lighting.
   5. Temporary office and storage area lighting.

B. Service periods:
   1. Security lighting: All hours of darkness.
   2. Safety lighting:
      a. Within construction area: All times that authorized personnel are present.
      b. Public areas: At all times.

C. Costs of Installation and Preparation: Each Contractor shall pay all installation, maintenance and removal costs of temporary lighting.

D. Maintenance of temporary lighting service (replacement of bulbs, etc.) shall be the sole responsibility of each Contractor.

1.07 TEMPORARY TELEPHONE SERVICE (Each Contractor shall provide their own.)

A. Furnish and install temporary telephone services for construction needs throughout construction periods.

B. Pay costs for temporary telephone services, including installation, maintenance and removal.

C. Pay costs for all local telephone services.

D. Pay costs of toll charges related to construction of the Project for each Contractor's office.

E. Each Contractor shall have different phone numbers and instruments.

1.08 TEMPORARY WATER

Water necessary for construction, testing and disinfection shall be provided at each Contractor's expense.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01510

SECTION 01530 - BARRIERS

PART 1 - GENERAL

1.01 WORK INCLUDED

The Contractor shall provide all temporary barriers in conformance with local, state, and federal codes.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01530

SECTION 01540 - SECURITY

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The Project area has to remain safely accessible to Owner's personnel; however, each Contractor will provide any non-interfering security he deems necessary to protect his work, equipment, etc.

B. Each Contractor shall provide an adequate system to secure the Project area at all times, especially during non-construction periods; the Contractor shall be solely responsible for taking proper security measures.

C. For both security and safety purposes, cranes, vehicles and other equipment left on-site by each Contractor shall be locked at the end of each working day.

1.02 COSTS

Each Contractor shall pay for all costs for protection and security systems.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01540

SECTION 01550 - ACCESS ROADS AND PARKING AREAS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Access roads.

B. Temporary parking.

C. Existing pavements and parking areas.

D. Permanent pavements and parking areas.

E. Maintenance.

F. Removal and repair.

1.02 RELATED REQUIREMENTS

Section 01510 - Temporary Utilities.

PART 2 - PRODUCTS

2.01 MATERIALS

For temporary construction: Each Contractor's option but must be approved by the Owner.

PART 3 - EXECUTION

3.01 PREPARATION

Clear areas, provide proper surface and storm drainage of premises and adjacent areas. Install erosion protection.

3.02 ACCESS ROADS

A. Construct temporary all-weather access roads from public thoroughfares to serve construction area, of a width and load-bearing capacity to provide unimpeded traffic for construction purposes.

B. Construct temporary bridges and/or culverts to span low areas and allow unimpeded drainage.

C. Extend and relocate as work progress requires, and provide detours as necessary for unimpeded traffic flow.

D. Locate temporary access roads as approved by the Owner and/or the Engineer.

E. Provide and maintain access to all Owner facilities.

3.03 TEMPORARY PARKING

Construct temporary parking areas to accommodate use of construction personnel in an area acceptable to the Owner and/or the Engineer. The Contractor shall enforce the requirement that all Project employees and subcontractors park only in the designated areas. Pay all costs relating to temporary parking.

3.04 MAINTENANCE

A. Maintain traffic and parking areas in a sound condition, free of excavated material, construction equipment, products, mud, snow and ice. Use whatever dust control measures required to prevent airborne particles.

B. Maintain existing paved areas used for construction; promptly repair breaks, potholes, low areas, standing water and other deficiencies to maintain paving and drainage in original and/or specified condition.

3.05 REMOVAL AND REPAIR

A. Remove temporary materials and construction when permanent facilities are usable as directed by the Engineer.

B. Remove underground work and compacted materials to a depth of two (2) feet; fill and grade site as specified.

C. Repair existing permanent facilities damaged by usage to original and/or specified condition.

END OF SECTION 01550

SECTION 01560 - TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Dust control.

B. Erosion and sediment control.

1.02 RELATED REQUIREMENTS

A. Section 01510 - Temporary Utilities.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 DUST CONTROL

A. Execute work by methods to minimize raising dust from construction operations.

B. Provide positive means to minimize construction or traffic generated dust from dispersing into atmosphere.

C. Provide spraying of construction traffic areas with water to hold dust leaving the construction site to the minimum amounts allowed by regulations.

3.02 EROSION AND SEDIMENT CONTROL

A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and provide sediment control.

B. Minimize amount of bare soil exposed at one time.

C. Provide temporary measures such as berms, dikes, drains, hay bales, gabions, etc., as directed by the Engineer so as to minimize siltation due to runoff.

D. Construct fill and waste areas by selective placement to avoid erosive exposed surface of silts or clays.

E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

END OF SECTION 01560

SECTION 01563 - DUST CONTROL

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

Dust control applies to each Contractor.

1.02 RELATED REQUIREMENTS

Section 01565 - Erosion and Sediment Control.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 DUST CONTROL

A. Execute work by methods to minimize raising dust from construction operations.

B. Provide positive means to minimize construction or traffic generated dust from dispersing into atmosphere.

C. Provide spraying of construction traffic areas with water to hold dust leaving the construction site to the minimum amounts allowed by regulations.

END OF SECTION 01563

SECTION 01565 - EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Each Contractor shall do all Work and take all measures necessary to control soil erosion resulting from construction operations, shall prevent the flow of sediment from the construction site, and shall contain construction materials (including excavation and backfill) within his protected working area so as to prevent damage to the adjacent wetlands or water courses.

B. Each Contractor shall not employ any construction method that violates a rule, regulation, guideline or procedure established by Federal, State or local agencies having jurisdiction over the environmental effects of construction.

C. Pollutants such as chemicals, fuels, lubricants, bitumen, raw sewage and other harmful waste shall not be discharged into or alongside of any body of water or into natural or man-made channels leading thereto.

PART 2 - PRODUCTS

2.01 MATERIALS

Silt checks shall be constructed of No. 1 coarse aggregate as defined by the Kentucky Transportation Cabinet. Filter fabric for sediment traps shall be of suitable materials acceptable to the Engineer. Bales may be hay or straw, and shall be reasonably clean and free of noxious weeds and deleterious materials.

PART 3 - EXECUTION

3.01 METHODS OF CONSTRUCTION

A. Each Contractor shall use any of the acceptable methods necessary to control soil erosion and prevent the flow of sediment to the maximum extent possible. These methods shall include, but not be limited to, the use of silt fences, hay bales, water diversion structures, temporary revegetation, diversion ditches and settling basins.

B. Construction operations shall be restricted to the areas of work indicated on the Drawings and to the area which must be entered for the construction of temporary or permanent facilities. The Engineer has the authority to limit the surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and fill operations and to direct the Contractor to provide immediate permanent or temporary pollution control measures to prevent contamination of the wetlands and adjacent watercourses. Such work may involve the construction of temporary berms, dikes, dams, sediment basins, slope

drains, and use of temporary mulches, mats, or other control devices or methods as necessary to control erosion.

C. Excavated soil material shall not be placed adjacent to the wetlands or watercourses in a manner that will cause it to be washed away by high water or runoff. Earth berms or diversions shall be constructed to intercept and divert runoff water away from critical areas. Diversion outlets shall be stable or shall be stabilized by means acceptable to the Engineer. If for any reason construction materials are washed away during the course of construction, the Contractor shall remove those materials from the fouled areas as directed by the Engineer.

D. For Work within easements or rights-of-way, all materials used in construction such as excavation, backfill, roadway, and pipe bedding and equipment shall be kept within the limits of these easements or rights-of-way.

E. Each Contractor shall not pump silt-laden water from trenches or other excavation into the wetlands, or adjacent watercourses. Instead, silt-laden water from his excavations shall be discharged within areas surrounded by baled hay or into sediment traps or ensure that only sediment-free water is returned to the watercourses. Damage to vegetation by excessive watering or silt accumulation in the discharge area shall be avoided.

F. Prohibited construction procedures include, but are not limited to the following:

1. Dumping of spoil material into any streams, wetlands, surface waters, or unspecified locations.
2. Indiscriminate, arbitrary, or capricious operation of equipment in wetlands or surface waters.
3. Pumping of silt-laden water from trenches or excavations into surface waters, or wetlands.
4. Damaging vegetation adjacent to or outside of the construction area limits.
5. Disposal of trees, brush, debris, paints, chemicals, asphalt products, concrete curing compounds, fuels, lubricants, insecticides, washwater from concrete trucks or hydroseeders, or any other pollutant in wetlands, surface waters, or unspecified locations.
6. Permanent or unauthorized alteration of the flow line of any stream.
7. Open burning of debris from the construction work.

G. Any temporary working roadways required shall be clean fill approved by the Engineer. In the event fill is used, the Contractor shall take every precaution to prevent the fill from mixing with native materials of the site. All such foreign fill materials shall be removed from the site following construction.

3.02 EROSION CHECKS

A. Each Contractor shall furnish and install baled hay or straw erosion checks surrounding the base of all deposits of stored excavated material outside of the disturbed area, and where indicated by the Engineer. Checks located surrounding stored material shall be

located approximately 6 feet from that material. Bales shall be held in place with two 2 inch by 2 inch by 3 feet wooden stakes. Each bale shall be butted tightly against the adjoining bale to preclude short circuiting of the erosion check.

B. Each Contractor shall remove silt and sediment from the site as it accumulates at erosion checks and repair damaged checks during construction.

3.03 Each Contractor shall remove all erosion control materials from the site as soon as potential for erosion has been eliminated and when approved by the Engineer. Reseed area where hay bales or silt has been removed.

END OF SECTION 01565

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 of controls.

1.02 RELATED REQUIREMENTS

A. Section 01530 - Barriers.

PART 2 - PRODUCTS

2.01 SIGNS AND DEVICES

A. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.

B. Flagman Equipment: As required by local jurisdictions.

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 any 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.

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 to 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 OF CONTROLS

Remove equipment and devices when no longer required.

END OF SECTION 01570

SECTION 01600 - MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 STORAGE OF MATERIALS AND EQUIPMENT

All excavated spoil, all materials and all equipment to be incorporated in the Work shall be placed so as not to injure any part of the Work or existing facilities and so that free access can be had at all times to all parts of the Work and to all public utility installations in the vicinity of the Work. Materials and equipment shall be kept neatly piled and compactly stored in such locations as will cause a minimum of inconvenience to public travel and adjoining owners, tenants and occupants.

1.02 HANDLING AND DISTRIBUTION

A. The Contractor shall handle, haul, and distribute all materials and all surplus materials on the different portions of the Work, as necessary or required; shall provide suitable and adequate storage room for materials and equipment during the progress of the Work, and be responsible for the protection, loss of, or damage to materials and equipment furnished by him, until final completion and acceptance of the Work.

B. Storage and demurrage charges by transportation companies and vendors shall be borne by the Contractor.

1.03 MATERIALS, SAMPLES, INSPECTION

A. Unless otherwise expressly provided on the Drawings or in any of the other Contract Documents, only new materials and equipment shall be incorporated in the Work. All materials and equipment furnished by the Contractor to be incorporated in the Work shall be subject to the inspection of the Engineer. No material shall be processed or fabricated for the Work or delivered to the Work site without prior concurrence of the Engineer.

B. Facilities and labor for the storage, handling, and inspection of all materials and equipment shall be furnished by the Contractor. Defective materials and equipment shall be removed immediately from the site of the Work.

C. If the Engineer so requires, either prior to or after commencement of the Work, the Contractor shall submit samples of materials for such special tests as the Engineer deems necessary to demonstrate that they conform to the Specifications. Such samples, including concrete test cylinders, shall be furnished, taken, stored, packed, and shipped by the Contractor as directed. The Contractor shall furnish suitable molds for and make the concrete test cylinders. Except as otherwise expressly specified, the Contractor shall make arrangements for, and pay for, the tests.

D. All samples shall be packed so as to reach their destination in good condition, and shall be labeled to indicate the material represented, the name of the building or work and location for which the material is intended, and the name of the Contractor submitting the sample. To ensure consideration of samples, the Contractor shall notify the Engineer by letter that the samples have been shipped and shall properly describe the samples in the letter. The letter of notification shall be sent separate from and should not be enclosed with the samples.

E. The Contractor shall submit data and samples, or place his orders, sufficiently early to permit consideration, inspection and testing before the materials and equipment are needed for incorporation in the Work. The consequences of his failure to do so shall be the Contractor's sole responsibility.

F. In order to demonstrate the proficiency of workmen, or to facilitate the choice among several textures, types, finishes, surfaces, etc., the Contractor shall provide such samples of workmanship of wall, floor, finish, etc., as may be required.

G. When required, the Contractor shall furnish to the Engineer triplicate sworn copies of manufacturer's shop or mill tests (or reports from independent testing laboratories) relative to materials, equipment performance ratings, and concrete data.

H. After review of the samples, data, etc., the materials and equipment used on the Work shall in all respects conform therewith.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01600

SECTION 01700 - PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS

A. Part IV - General Conditions.

B. Section 01710 - Cleaning.

C. Section 01720 - Project Record Documents.

1.02 SUBSTANTIAL COMPLETION

A. Each Contractor:

1. Submit written certification to Engineer that project is substantially complete.
2. Submit list of major items to be completed or corrected.

B. Engineer will make an inspection within seven days after receipt of certification, together with the Owner's representative.

C. Should Engineer consider that work is substantially complete:

1. Each Contractor shall prepare, and submit to Engineer, a list of the items to be completed or corrected, as determined by on-site observation.
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. Each Contractor: Complete work listed for completion or correction, within designated time.

D. Should Engineer consider that work is not substantially complete:

1. He shall immediately notify Contractor, in writing, stating reasons.
2. Contractor: Complete work, and send second written notice to Engineer, certifying that Project, or designated portion of project is substantially complete.
3. Engineer will re-review work.

1.03 FINAL INSPECTION

A. Each 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 on-site observation/review 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. He 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 re-review the work.

1.04 FINAL CLEANING UP

The work will not be considered as completed and final payment made until all final cleaning up has been done by the Contractor in a manner satisfactory to the Engineer. See Section 01710 for detailed requirements.

1.05 CLOSEOUT SUBMITTALS

A. Project Record Documents: to requirements of Section 01720.

B. Warranties and Bonds: to requirements of particular technical specifications and Section 01740.

1.06 INSTRUCTION

Instruct Owner's personnel in operation of all systems, mechanical, electrical and other equipment.

1.07 FINAL APPLICATION FOR PAYMENT

Contractor shall submit final applications in accordance with requirements of General Conditions.

1.08 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 01700

SECTION 01710 - CLEANING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. On a continuous basis, maintain premises free from accumulations of waste, debris, and rubbish, caused by operations.

B. At completion of Work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces; leave Project clean and ready for occupancy.

1.02 RELATED REQUIREMENTS

A. Section 01700 - Project Closeout.

B. Cleaning for Specific Products or 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 or 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 without written permission from the Owner.
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, trash, and rubbish.

B. Wet down dry materials and rubbish to allay dust and prevent blowing dust.

C. At reasonable intervals during progress of Work, clean site and public properties. Provide on-site containers for collection of waste materials, debris, trash, and rubbish.

D. Remove waste materials, debris, trash, and rubbish from site when containers are full, or when directed by the Engineer or Owner's representative, but not less often than once weekly. Legally dispose of all waste materials, debris, trash, and rubbish at dumping areas off of Project site.

E. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.

F. The Contractor shall thoroughly clean all materials and equipment installed.

3.02 FINAL CLEANING

A. Employ experienced workmen, or professional cleaners, for final cleaning.

B. In preparation for substantial completion, conduct final inspection of sight-exposed interior and exterior surface, and of concealed spaces.

C. Repair, patch and touch up marred surfaces to specified finish, to match adjacent surfaces.

D. Broom clean paved surfaces; rake clean other surfaces of grounds.

E. Maintain cleaning until Project, or portion thereof, is occupied by Owner.

F. The Contractor shall restore or replace existing property or structures as promptly and practicable as work progresses.

END OF SECTION 01710

SECTION 01720 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS

A. Part IV - General Conditions.

B. Section 01300 - Submittals.

1.02 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.

1.03 MARKING DEVICES

Provide colored pencil or felt-tip marking pen for all marking.

1.04 RECORDING

A. Label each document "RECORD DRAWING" in 2-inch high printed letters.

B. Keep record documents current.

C. Do not permanently conceal any work until required information has been 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 SUBMITTAL

A. At completion of project, deliver 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 01720

SECTION 01740 - WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Compile specified warranties and bonds.

B. Compile specified service and maintenance contracts.

C. Co-execute submittals when required.

D. Review submittals to verify compliance with Contract Documents.

1.02 RELATED REQUIREMENTS

A. Performance and Payment Bonds.

B. Guaranty.

C. General Warranty of Construction.

D. Warranties and Bonds required for specific products: As listed in other Specification sections.

1.03 WARRANTY BONDS OR CORPORATE GUARANTEES IN LIEU OF EXPERIENCE RECORD

A. When specifically requested in the products and installation general provisions of a Specification section for a particular piece of equipment or product, a record of five (5) years of successful full-scale operation shall be required from the equipment manufacturer. This record of full-scale operation shall be from existing facilities utilizing the equipment or product specified, in an application similar to the application intended for this Project.

B. The manufacturer shall certify in writing to the Contractor that it has the required record of successful full-scale operation. This certification shall be submitted by the Contractor with his construction materials and/or equipment data list. In the event the manufacturer cannot provide the five (5) year certification of experience to the Contractor, the Contractor shall furnish within thirty (30) days after the Notice of Award, a Warranty Bond or Corporation Guarantee from the equipment manufacturer written in the name of the Contractor and acceptable to the Owner. The Warranty Bond or Corporate Guarantee shall be kept in force for five (5) years from the Date of Substantial Completion of the Contract less the number of years of experience the manufacturer may be able to certify to the Engineer. As a minimum, the Bond or Guarantee shall be in force for one (1) year after the Date of Substantial Completion of the Contract. The Warranty Bond shall be

written in an amount equivalent to the manufacturer's quotation, the Contractor's installation cost plus 100 percent (100%). The Warranty Bond or Corporate Guarantee will assure the Owner that, if in the judgement of the Engineer, the equipment does not perform its specified function, the Contractor shall remove the equipment and install equipment that will perform the specified function and the work by the Contractor shall be paid for by the Warranty Bond or Corporate Guarantee.

1.04 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.

1.05 FORM OF SUBMITTALS

A. Prepare in duplicate packets.

B. Format:

1. Size 8 1/2-inch x 11 inches, punch sheets for 3-ring binder: 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.

1.06 TIME OF SUBMITTALS

A. For equipment or component parts of equipment put into service during progress of construction: Submit documents within ten (10) days after inspection and acceptance.

B. Otherwise, make submittals within ten (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.

1.07 SUBMITTALS REQUIRED

Submit warranties, bonds, service and maintenance contracts as specified in the respective sections of the Specifications. Additionally, the Contractor shall warrant the entire contract, including all concrete, paving, piping, and mechanical equipment to be free from defects in design and installation for one (1) year from the date of startup. In the event a component fails to perform as specified or is proven defective in service during the warranty period, the Contractor shall repair the defect without cost to the Owner.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01740

Division 2 - Site Work

SECTION 02050 - DEMOLITION

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. Demolition work shall be included in the Contract.

B. Prior to demolition of structures the following procedures shall be accomplished.

1. Owner release of such structure.
2. All electrical and mechanical services rerouted or shut off outside the area of demolition.
3. Coordinate sequencing with Subcontractors.
4. Survey and record the condition of existing facilities to remain in place that may be affected by the demolition operations. After demolition operations are completed, survey the conditions again and restore existing facilities to the pre-demolition condition, at no additional cost to the Owner.

C. Demolition work shall include all items indicated on the Drawings.

1.02 SCHEDULE

A. Perform demolition and removal work at such a time and in such a manner, so as not to interfere with the Owner's operations, the work of other trades and other Contracts. Follow the Progress Schedule as agreed to and worked out with the Owner.

B. Coordinate demolition and removal work with the work of other Contractors, so that the new construction work installed before, during and after the work of this Section may commence without undue delay.

1.03 PROTECTION

A. Do not close or obstruct streets, walks, and other facilities occupied and used by the Owner and the public, without prior written permission from the Owner and local authorities having jurisdiction.

B. The structural stability of structures adjacent to, or affected by the work of this Contract will be the responsibility of the Contractor. Provide temporary shoring, and bracing where required.

C. Provide all necessary shielding of existing materials and equipment, which are to remain, within or adjacent to work areas.

D. Maintain in service and protect from damage the existing utilities that are indicated to remain.

1.04 UTILITIES

Notify all utilities in sufficient time prior to razing operations to permit them to disconnect and remove and/or relocate the respective utility.

1.05 SEWER SEALING

Plug and seal, using concrete, piping as shown on the drawings or as directed by the Engineer.

1.06 SALVAGEABLE MATERIALS

A. The Owner shall have first right to salvage material.

B. Salvage material and equipment to be retained by the Owner shall be located as directed by the Engineer.

1.07 DEMOLITION OPERATIONS

A. Demolition of existing structures shall be conducted to one of the following standards:

1. As shown on the Contract Drawings, or
2. If not detailed on the Contract Drawings, removed to a minimum of 36 inches below the finished grade, or
3. If not detailed on the Contract Drawings, removed to 36 inches below the location of a new structure.

B. Remove existing concrete using an abrasive saw to make initial cuts not less than 2 inches deep, between areas to be removed and areas to remain, providing a smooth, straight joint or cut line. Make cut lines in floor slabs parallel with walls.

C. If existing abandoned utility lines extend into the area of construction being removed, remove abandoned lines to elevations shown on the drawings, or as directed by the Engineer outside of demolition area and plug permanently with steel cap or concrete.

D. Adequate drainage of all structures demolished shall be provided by providing openings in the floors and walls of the portion of the structures remaining in place. The Contractor shall notify the Engineer, prior to backfilling the structures remaining in place, in order for him to inspect the drainage provision provided.

E. Provide all temporary shoring and bracing as required to transfer loads of existing construction to remain from construction being removed. Remove and dispose of temporary support measures when new construction has been installed by other contractors.

END OF SECTION 02050

SECTION 02110 - SITE CLEARING

PART 1 - GENERAL

1.01 WORK INCLUDED

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 REQUIREMENTS

Conform to applicable local codes and ordinances for disposal of debris.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 EXISTING TREES AND OTHER VEGETATION

A. The Contractor shall not cut or injure any trees or other vegetation outside right-of-way or easement lines and outside areas to be cleared, as indicated on the Drawings, without written permission from the Engineer. The Contractor shall be responsible for all damage 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 of the permanent easement or right-of-way unless otherwise directed by the Engineer.

B. Except where clearing is done by uprooting with machinery, trees, stumps, and stubs to be cleared shall be cut as close to the ground surface as practicable, but no more than 6 inches above the ground surface for small trees and 12 inches for larger trees.

C. Elm bark shall be either buried at least 1 foot deep or burned in suitable incinerators off site with satisfactory antipollution controls and fire prevention controls, to prevent the spread of Dutch Elm disease and as required by applicable laws.

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 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 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 within easement or right-of-way lines for use in finish grading and site restoration. Topsoil stockpiled shall be free from trash, brush, stones over 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 REMOVAL

A. All material 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 02110

SECTION 02150 - SHORING AND BRACING

PART 1 - GENERAL

1.01 SUMMARY

A. Shore and brace sidewalls in excavations with steel sheet piles with wale systems or soldier piles with timber lagging and tie back system as required to protect existing buildings, utilities, roadways, and improvements.

B. Maintain shoring and bracing during construction activities, and remove shoring and bracing if practical when construction and filling is complete.

C. Geotechnical investigation borings, if applicable, were drilled for this project where indicated on the drawings in the report. The geotechnical report was not prepared for purposes of bid development and the accuracy of the report is limited. The Contractor should confer with a geotechnical engineer and/or conduct additional study in the area to obtain the specific type of geotechnical information required for construction and for preparation of bids.

1.02 SUBMITTALS

Provide copies of information on methods of the shoring and bracing system proposed for the work, design basis, calculations where applicable, and copies of shop drawings for inclusion in the project and job-site record files.

1.03 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Shoring and bracing system design shall be prepared and sealed by a registered professional engineer or structural engineer. The system design shall provide the sequence and method of installation and removal. Shoring and bracing system design shall be in accordance with Occupational Safety and Health Administration (OSHA) requirements 29 CFR Section 1926.652.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Steel Sheet Piles: Heavy-gauge steel sheet.

B. Soldier Piles: Steel H-beams.

C. Timber Lagging: Heavy timber. Pressure treated with wood preservative for use below water table for extended time period.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in proper relation with adjacent construction. Coordinate with work of other sections.

B. Locate shoring and bracing to avoid permanent construction. Anchor and brace to prevent collapse.

END OF SECTION 02150

SECTION 02221 - ROCK REMOVAL

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The Contractor shall excavate rock, if encountered, as required to perform the required work, and shall dispose of the excavated material, and shall furnish acceptable material for backfill in place of the excavated rock.

B. In general, rock in pipe trenches shall be excavated so as to be not less than 6 inches from the pipe after it has been laid.

C. Blasting shall be allowed for the construction of the pump station and for that portion of the interceptor north of Old Frankfort Pike. For all other areas, rock removal shall be by mechanical means.

1.02 REFERENCES

A. NFPA 495 - Code for the Manufacture, Transportation, Storage and use of Explosive Materials.

B. Commonwealth of Kentucky Department of Mines and Minerals, Laws and Regulations Governing Explosives and Blasting.

1.03 REGULATORY REQUIREMENTS

A. Conform to Kentucky Department of Mines and Minerals code for explosive disintegration of rock.

B. Obtain permits from local authorities having jurisdiction before explosives are brought to site or drilling is started.

C. KRS 351.330

D. 805 KAR Chapter 4

PART 2 - PRODUCTS

2.01 MATERIALS

A. Rock definition: Solid mineral material that cannot be removed with a power shovel.

B. Explosives: Type recommended by explosives firm and required by authorities having jurisdiction.

C. Delay devices: Type recommended by explosives firm and conforming to state regulations.

D. Blasting mat materials: Type recommended by explosives firm and conforming to state regulations.

PART 3 - EXECUTION

3.01 EXPLOSIVES

A. The Contractor shall keep explosives on the site only in such quantity as may be needed for the Work under way and only during such time as they are being used. He shall notify the Engineer, in advance, of his intention to store and use explosives. Explosives shall be stored in a secure manner and separate from all tools. Caps or detonators shall be safely stored at a point over 100 feet distance from the explosives. When the need for explosives has ended, all such materials remaining on the Work shall be promptly removed from the premises.

B. The Contractor shall observe all state, federal and municipal laws, ordinances and regulations relating to the transportation, storage, handling and use of explosives. In the event that any of the above-mentioned laws, ordinances or regulations require a licensed blaster to perform or supervise the Work of blasting, said licensed blaster shall, at all times have his license on the Work and shall permit examination thereof by the Engineer or other officials having jurisdiction.

3.02 BLASTING PRECAUTIONS

A. No explosives shall be used within 20 feet of:

1. Building and/or structures existing, constructed or under construction.
2. Underground and/or overhead utilities whether existing or partially constructed.

B. Permission for any deviation from the restriction set forth above shall be secured from the Engineer, in writing; however, permission for any such deviations shall not relieve the Contractor from any responsibility in the event of damage to buildings, structures or utilities.

C. All operations involving explosives shall be conducted with all possible care to avoid injury to persons and property. Blasting shall be done only with such quantities and strengths of explosives and in such a manner as will break the rock approximately to the intended lines and grades and yet will leave the rock not to be excavated in an unshattered condition. Care shall be taken to avoid excessive cracking of the rock upon or against which any structure will be built, and to prevent injury to existing pipes or other structures and property above or below ground. Rock shall be well covered with logs or mats, or

both, where required. Sufficient warning shall be given to all persons in the vicinity of the Work before a charge is exploded.

D. The Contractor shall be solely responsible for his blasting operations. The Contractor shall not hold the Owner and/or the Engineer liable for any damages resulting from his blasting operations on this project.

3.03 PREBLAST STRUCTURE SURVEY

A. Perform a preblast survey to determine and document with pictures the condition of adjacent structures, utilities, wells, buried cables, and other features within a minimum of 400 ft. of the blast area unless otherwise required by applicable regulatory authorities. Determine safe distances to structures or other facilities according to NFPA 495, Appendix B. Where facilities are closer than these distances, and natural barriers are not present, or when the amount of explosive cannot be reduced economically, blasting mats shall be used. Provide mats to protect environmentally sensitive areas, trees within 20 feet from the blasting area, streams, and rock formations from throw rock.

B. Purpose of survey is to document existing condition of structures prior to blasting, and is intended to be used as evidence in ascertaining whether and to what extent damage may have occurred as result of blasting.

C. Conduct survey prior to start blasting.

D. Record information for each structure surveyed:

1. Age and type of construction.
2. Location and character of cracks.
3. Evidence of settlement and leakage.
4. Other pertinent information.

E. Record preblast survey information on forms prepared specifically for preblast surveys.

F. Supplement written records with photographs or videotape recordings.

G. Submit copies of written records and photographs or videotapes to respective property owner, as well as, OWNER and ENGINEER, prior to start of blasting.

3.04 BLAST DESIGN

A. Design each blast to avoid damage to existing facilities, adjacent property, and completed Work. Consider effects of blast-induced vibrations and air blast, and fly rock potential in design of each blast.

B. Whenever peak particle velocity exceeds vibration limits, change design of subsequent blasts, as necessary to reduce peak particle velocity to within limits established by BIC.

C. Whenever air blast exceeds limits, change design of subsequent blasts or provide controls necessary to reduce air blast to within specified limits.

3.05 VIBRATION LIMITS

General: Establish appropriate maximum limit for vibration for each structure or facility that is adjacent to or near blast sites. Base maximum limits on expected sensitivity of each structure or facility to vibration, and federal, state, or local regulatory requirements, but not to exceed 1.25 in/sec.

3.06 AIR-BLAST LIMITS

Establish appropriate maximum limit for air blast for each structure or facility that is adjacent to or near blast sites. Base maximum limits on expected sensitivity of each structure or facility to air blast, and federal, state, or local regulatory requirements, but not to exceed 0.015 psi peak overpressure (133 decibels).

3.07 FLY ROCK CONTAINMENT

Where fly rock may damage existing facilities, adjacent property, or completed Work, cover area to be blasted with blasting mats or provide other means that will contain and prevent scattering of blast debris.

3.08 VIBRATION AND AIR-BLAST MONITORING

A. Monitor and record blast-induced vibrations and air blast using suitable sensors and recording equipment for each blast.

B. Contractor shall provide two (2) seismographs during blasting operations capable of the following:

1. Designed for monitoring blast-induced vibrations and air blast.Capable of recording particle velocity in three mutually perpendicular directions in range from 0 to 6 inches per second.
2. Flat vibration frequency response between 4- and 200-Hz.
3. Capable of recording air-blast overpressure up to 140 decibels.
4. Flat air-blast frequency response between 2- and 500-Hz.

C. Monitor on, or at, structures or other facilities that are closest to point of blasting. Monitoring more distant facilities that are expected to be sensitive to blast-induced vibrations and air blast.

D. BIC shall supervise establishment of monitoring programs and initial operation of equipment; review interpretation of records and recommend revisions of blast designs.

E. Include following information in blasting plan.

1. Vibration and air-blast limits as recommended by BIC.
2. Name of qualified BIC who will be responsible for monitoring program and interpretation of records.
3. Types and models of equipment proposed for monitoring.
4. Numbers and locations of proposed monitoring stations.
5. Procedures to be used for coordinating recording of each blast.
6. Steps to be taken if blasting vibrations or air blast exceed limits.

3.09 EXPLOSIVES

The CONTRACTOR shall keep explosives on the site only in such quantity as may be needed for the Work under way and only during such time as they are being used. Notify the OWNER, in advance, of provisions to store and use explosives.

3.10 BLASTING PRECAUTIONS

A. Permission for any deviation from the blasting plan and other specified restrictions shall be secured from the OWNER and applicable authorities, in writing; however, permission for any such deviations shall not relieve the CONTRACTOR from any responsibility in the event of damage to buildings, structures or utilities.

B. All operations involving explosives shall be conducted with all possible care to avoid injury to persons and property. Blasting shall be done only with such quantities and strengths of explosives and in such a manner as will break the rock approximately to the intended lines and grades and yet will leave the rock not to be excavated in an unshattered condition. Care shall be taken to avoid excessive cracking of the rock upon or against which any structure will be built, and to prevent injury to existing pipes or other structures and property above or below ground. Rock shall be well covered with logs or mats, or both, where required. Sufficient warning shall be given to all persons in the vicinity of the Work before a charge is exploded.

C. The CONTRACTOR shall be solely responsible for his blasting operations. The CONTRACTOR shall not hold the OWNER and/or the ENGINEER liable for any damages resulting from his blasting operations on this project.

3.11 BLASTING RECORDS

A. For each blast, document the following:

1. Location of blast in relation to Project stationing or state plane coordinate system and elevation.
2. Date and times of loading and detonation of blast.
3. Name of person in responsible charge of loading and firing.
4. Details of blast design, as previously specified.
5. Vibration records including location and distance of seismograph geophones to blast and to nearest structure, and measured peak particle velocity. Report peak particle velocity in units of inches per second.
6. Air-blast records. Report peak air blast values in units of pounds per square inch

overpressure above atmospheric or in decibels at linear response.

7. Comments by BIC regarding damage to existing facilities, adjacent property, or completed Work, misfires, fly rock occurrences, unusual results, or unusual effects as required.

3.12 SUSPENSION OF BLASTING

A. In event damage to existing facilities, adjacent property, or completed Work occurs due to blasting, immediately suspend blasting and report damage to ENGINEER and OWNER. CONTRACTOR shall be responsible for all costs of repairs or replacement due to damage from blasting.

B. Before resuming blasting operations, adjust design of subsequent blasts, or take other appropriate measures to control effects of blasting, and submit complete description of proposed changes for reducing potential for future damage.

C. Do not resume blasting until authorized by OWNER and applicable regulatory authorities.

3.13 ROCK REMOVAL - MECHANICAL METHOD

A. Excavate and remove rock by the mechanical method. Drill holes and utilize mechanical impact to fracture rock.

B. In utility trenches, excavate 6 inches below invert elevation of pipe and 24 inches wider than pipe diameter.

C. Stockpile excavated materials and reuse select materials for site landscaping. Remove and dispose of excess materials offsite at approved location.

D. Correct unauthorized rock removal in accordance with backfilling and compacting requirements of Section 02220.

3.14 PAYMENT

Rock excavation shall be bid as unclassified and will **not** be paid for separately.

END OF SECTION 02221

SECTION 02225 - EXCAVATING, BACKFILLING, AND COMPACTING FOR UTILITIES

PART 1 - GENERAL

1.01 WORK INCLUDED

The Contractor shall make excavations in such widths and depths as will give suitable room for below grade vaults, pump stations, etc., laying pipe to the lines, grades and elevations, furnish, place and compact all backfill materials specified herein or denoted on the Drawings. The materials, equipment, labor, etc., required herein are to be considered as part of the requirements and costs for installing the various pipes, structures and other items they are incidental to.

1.02 RELATED WORK

A. Section 02221 - Rock Removal.

B. Section 02731 - Gravity Sewers.

C. Section 02732 - Force Mains.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Crushed stone material shall conform with the requirements of the applicable sections of the Kentucky Bureau of Highways Standard Specifications and shall consist of clean, hard, and durable particles or fragments, free from dirt, vegetation or objectionable materials.

B. Two classes of crushed stone material are used in this Section. The type of material in each class is as follows:
   1. Class I - No. 9 Aggregate.
   2. Class II - Dense Graded Aggregate (DGA).

PART 3 - EXECUTION

3.01 EXCAVATION OF TRENCHES

A. Unless otherwise directed by the Engineer, trenches are to be excavated in open cuts.
   1. Where pipe is to be laid in gravel bedding or concrete cradle, the trench may be excavated by machinery to, or just below, the designated subgrade, provided that the material remaining at the bottom of the trench is no more than slightly disturbed.

2. Where pipe is to be laid directly on the trench bottom, the lower part of trenches in earth shall not be excavated to subgrade by machinery. However, just before the pipe is to be placed, the last of the material to be excavated shall be removed by means of hand tools to form a flat or shaped bottom, true to grade, so that the pipe will have a uniform and continuous bearing and support on firm and undisturbed material between joints except for limited areas where the use of pipe slings may have disturbed the bottom.

B. Trenches shall be sufficient width to provide working space on each side of the pipe and to permit proper backfilling around the pipe.
   1. The Contractor shall remove only as much of any existing pavement as is necessary for the prosecution of the Work. The pavement shall be cut with pneumatic tools, without extra compensation to the Contractor, to prevent damage to the remaining road surface. Where pavement is removed in large pieces, it shall be disposed of before proceeding with the excavation.

C. All excavated materials shall be placed a safe distance back from the edge of the trench.

D. Unless specifically directed otherwise by the Engineer, not more than 500 feet of trench shall be opened ahead of the pipe laying work of any one crew, and not more than 500 feet of open ditch shall be left behind the pipe laying work of any one crew. Watchmen or barricades, lanterns and other such signs and signals as may be necessary to warn the public of the dangers in connection with open trenches, excavations and other obstructions, shall be provided by and at the expense of the Contractor.

E. When so required, or when directed by the Engineer, only one-half of street crossings and road crossings shall be excavated before placing temporary bridges over the side excavated, for the convenience of the traveling public. All backfilled ditches shall be maintained in such manner that they will offer no hazard to the passage of traffic. The convenience of the traveling public and the property owners abutting the improvements shall be taken into consideration. All public or private drives shall be promptly backfilled or bridged at the direction of the Engineer.

F. Trench excavation shall include the removal of earth, rock, or other materials encountered in the excavating to the depth and extent shown or indicated on the Drawings.

3.02 GRAVITY SEWER AND FORCE MAIN PIPE BEDDING

A. Piping for gravity sewers and force mains shall be supported as follows: All gravity sewer and force main piping shall be laid on a bed of granular material except when a concrete encasement situation occurs. All pipe bedding material shall be Class I (No. 9 crushed stone aggregate) and shall be placed to a minimum depth of 6 inches. Aggregate bedding shall be graded to provide for a uniform and continuous support beneath the pipe at all points.

B. After each pipe has been brought to grade, aligned, and placed in final position, Class I material shall be deposited and densified under the pipe haunches and on each side of the pipe up to the spring line of the pipe to prevent lateral displacement and hold the pipe in proper position during subsequent pipe jointing, bedding, and backfilling operations.

C. In wet, yielding and mucky locations where pipe is in danger of sinking below grade or floating out of grade or line, or where backfill materials are of such a fluid nature that such movements of pipe might take place during the placing of the backfill, the pipe must be weighted or secured permanently in place by such means as will prove effective.

D. Where an unstable (i.e., water, mud, etc.) trench bottom is encountered, stabilization of the trench bottom is required. This is to be accomplished by undercutting the trench depth and replacing to grade with a foundation of crushed stone aggregate.

E. The depth of the foundation is dependent upon the severity of the trench bottom. The size of stone aggregate used in the foundation will be determined by the condition of the unstable material. Once the trench bottom has been stabilized, the required Class I bedding material can be placed.

F. It should be noted that no pipe shall be laid on solid or blasted rock.

G. Pipe bedding, as required in Paragraphs A, B, C, and D of this Section, is **not** considered a separate pay item.

3.03 GRAVITY SEWER AND FORCE MAIN BACKFILL

A. Initial Backfill:
   1. This backfill is defined as that material which is placed over the pipe from the spring line to a point 12 inches above the top of the pipe. The material shall be Class I (No. 9 crushed stone aggregate) and may be machine placed without compaction. Uneven places in the backfill shall be leveled by hand.
   2. Class I Material in the initial backfilling is **not** a separate pay item. Payment for the material is included in the unit price per linear foot of gravity sewer or force main.

B. Final Backfill:
   1. There are two cases where the method of final backfilling varies. The various cases and their trench situations are as follows:
      a. Case I - Areas not subject to vehicular traffic.
      b. Case II - Paved areas including streets, drives, parking areas, and walks.
   2. In all cases, walking or working on the completed pipelines, except as may be necessary in backfilling, will not be permitted until the trench has been backfilled to a point 12 inches above the top of the pipe. The method of final backfilling for each of the above cases is as follows:
      a. Case I - The trench shall be backfilled from a point 12 inches above the top of the pipe to a point 12 inches below the surface of the ground with earth material free from large rock (greater than 6 inches in the longest dimension),

acceptable to the Engineer. The remainder of the trench shall be backfilled with earth material reasonably free of any rocks.

b. Case II - The trench shall be backfilled from a point 12 inches above the top of the pipe to a point 6 inches below the existing pavement subgrade with Class I (No. 9 crushed stone aggregate) material. The backfill shall be mechanically tamped in approximately 6-inch layers to obtain maximum possible compaction. A minimum 6-inch layer of compacted Class II material shall be placed below the surface subgrade. The remaining backfill shall be as follows:
   1) For gravel surfaces - Class II (dense graded aggregate) material mechanically tamped to maximum possible compaction. The trench may be left with a slight mound if permitted by the Engineer.
   2) For bituminous and concrete surfaces - Bituminous and concrete pavement sections as detailed on the Drawings and as specified for Bituminous Pavement Replacement and Concrete Pavement Replacement.

3. Earth and Class I material used in final backfill is not a separate pay item. Payment shall be included in the price of gravity sewer and force main.
4. Class II material used in final backfill shall be included in the unit price for gravity sewer and force main.

C. A sufficient amount of Class II material shall be stockpiled to insure immediate replacement by the Contractor of any settled areas. No extra payment will be made for the filling in of settled or washed areas by the Contractor.

D. Excavated materials from trenches, in excess of quantity required for trench backfill, shall be disposed of by the Contractor. It shall be the responsibility of the Contractor to obtain location or permits for its disposal, unless specific waste areas have been designated on the Drawings or noted in these Specifications. The cost of disposal of excess excavated materials, as set forth herein, no additional compensation being allowed for hauling or overhaul.

3.04 PLACEMENT OF IDENTIFICATION TAPE

A. Detectable underground marking tape shall be placed over all force main lines. 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 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 2 inches in width. Colors are: yellow - gas, green - sewer, red - electric, blue - water, orange - telephone, brown - force main.

C. The tape shall be the last equipment installed in the trench so as to be first out. The tape shall be buried 4 to 6 inches below top of grade. After trench backfilling, the tape shall be placed in the backfill and allowed to settle into place with the backfill. The tape may be plowed in after final settlement, installed with a tool during the trench backfilling process, unrolled before final restoration or installed in any other way acceptable to the Owner or Engineer.

END OF SECTION 02225

SECTION 02510 - BITUMINOUS PAVEMENT REPLACEMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Provide bituminous pavement for following applications, with prepared subbase and compacted base.

1. Roads.
2. Parking areas.
3. Driveways.
4. Walkways.
5. Curbs.

B. Provide striping for parking, roadway, and handicapped markings.

1.02 SUBMITTALS

Submit for approval product data, test reports.

1.03 QUALITY ASSURANCE

Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Prime coat: Cut-back asphalt.

B. Tack coat: Emulsified asphalt.

C. Asphaltic cement: AASHTO M226 and as required by local authorities.

D. Aggregate: Crushed stone or crushed gravel.

E. Traffic paint: Quick-drying chlorinated-rubber alkyd type, color as approved.

F. Wheel-stops: Precast concrete of uniform color and texture with steel stakes.

PART 3 - EXECUTION

3.01 FULL WIDTH PAVEMENT OVERLAY

A. Asphalt/aggregate Mixture: Comply with local DPW Standard Specifications for Highways and Bridges. Class as required by loading and use.

B. Remove loose material from existing pavement. Proof roll and check for areas requiring additional compaction. Report unsatisfactory conditions in writing. Beginning of work means acceptance of compacted subbase.

C. Apply prime coat to prepared surface. Apply tack coat to previous laid work and adjacent in-place concrete surfaces.

D. Place bituminous concrete at minimum temperature of 225 degrees F in strips not less than 10' wide overlapping joints in previous courses.

E. Construct curbs, where required, to dimensions indicated or if not indicated to standard shapes. Provide tack coat between curb and pavement.

F. Begin rolling when pavement can withstand weight of roller. Roll while still hot to obtain maximum density and to eliminate roller marks.

G. Provide 4" lane and striping paint in uniform, straight lines. Provide wheelstops where indicated and securely dowel into pavement. Protect work from traffic and damage.

H. Test in-place asphalt work for thickness and smoothness. Remove and replace defective work and patch to eliminate evidence of patching. Provide the following minimum thickness and smoothness as required on the Drawings.

3.02 TRENCH WIDTH PAVEMENT REPLACEMENT

A. Sections of pavement shall be replaced as required to install the pipelines. Disturbed pavement shall be reconstructed to original lines and grades with bituminous binder as detailed on the Drawings and in such manner as to leave all such surfaces in fully as good or better condition than that which existed prior to these operations.

B. Prior to trenching, the pavement shall be scored or cut to straight edges along each side of the proposed trench to avoid unnecessary damage to the remainder of the paving. Edges of the existing pavement shall be recut and trimmed as necessary to square, straight edges after the pipe has been installed and prior to placement of the binder course or concrete.

C. Backfilling of trenches shall be in accordance with the applicable portions of Section 02225.

D. Bituminous surface shall be one course construction of an appropriate surface JMF prepared and installed in accordance with the requirements of the Kentucky Department of Highways.

1. Placement and compaction of surface course shall be in accordance with Section 403 of the Kentucky Department of Highways Standard Specifications. Minimum thickness after compaction shall be as detailed on the Drawings.

E. Concrete base, as detailed on the Drawings, shall be 4,000 psi, conforming to the applicable requirements of Division 3.

F. Bituminous pavement replacement is a separate pay item.

END OF SECTION 02510

SECTION 02630 - ENCASEMENT PIPE

PART 1 - GENERAL

1.01 WORK INCLUDED

The Contractor shall furnish all labor, material, and equipment necessary to install encasement pipe together with all appurtenances as shown and detailed on the Drawings and specified herein.

1.02 RELATED WORK

A. Section 02225 - Excavating, Backfilling and Compacting for Utilities.

B. Section 02731 - Gravity Sewers.

C. Section 02732 - Sewage Force Mains.

PART 2 - PRODUCTS

2.01 STEEL PIPE

A. Steel seamless pipe shall be new Grade B steel material, with a minimum yield of 35,000 psi and a wall thickness as shown below unless otherwise required by a permitting authority. The material shall conform to the chemical and mechanical requirements of the latest revision of ASTM A139 "Electric-Fusion (ARC) - Welded Steel Pipe (NPS 4 and Over)," unless otherwise stated herein.

B. The minimum wall thickness shall be as detailed on the Drawings.

C. Welds of the steel casing pipe shall be solid butt-welds with a smooth non-obstructing joint inside and conform to all specifications as required by American Welding Society (AWS). The casing pipe shall be installed without bends. All welders and welding operators shall be qualified as prescribed by AWS requirements.

D. The wall thickness at any point shall be within 12.5% inches of the nominal metal thickness specified.

E. Hydrostatic testing shall not be necessary.

F. A protective coating shall be applied to each length of pipe. Following an SSPC SP-7 "Brush-Off Blast Cleaning" surface preparation, 3 (dry) mils of Tnemec-Primer 10-99 (red), or Porter International Primer 260FD (red), or an equivalent thickness of an approved equivalent paint shall be applied in the manner recommended by the respective paint manufacturer.

G. Each length of pipe shall be legibly marked, stating: manufacturer, diameter, wall thickness and primer.

H. Precaution shall be taken to avoid deforming the pipe and damaging the primer during shipping.

2.02 CARRIER PIPE SPACERS

A. Carrier pipes installed inside encasement pipes shall be centered throughout the length of encasement pipe. Centering shall be accomplished by the installation of polyethylene pipeline spacers attached to the carrier pipe in such manner as to prevent the dislodgement of the spacers as the carrier pipe is pulled or pushed through the encasement pipe. Spacers shall be of such dimensions to provide: full supportive load capacity of the pipe and contents; of such thickness to allow installation and/or removal of the pipe; and to allow no greater than ½ inch movement of the carrier pipe within the cover pipe after carrier pipe is installed.

B. Spacers shall be located immediately behind each bell and at a maximum spacing distance as follows:

Carrier Pipe Diameter (inches)	Maximum Spacing (feet)
2 - 2-1/2	4
3 - 8	7
10 - 26	10
28	9
30	8
32	7
34	6
36 - 38	5.5
40 - 44	5
46 - 48	4

The materials and spacing to be used shall be accepted by the Engineer prior to installation. The polyethylene pipeline spacers shall be manufactured by Pipeline Seal and Insulator, Inc. (PSI), Raci Spacers, Inc., or equivalent. Installation shall be in accordance with manufacturer's recommendations.

2.03 ENCASEMENT PIPE END SEALS

After installation of the carrier pipe within the encasement pipe, the ends of the casing shall be sealed with either a wraparound or a pull-on casing end seals fabricated of minimum 1/8-inch thick neoprene rubber. The seals shall be attached to the encasement pipe and the carrier pipe by 304 stainless steel band clamps not less than 1/2-inch wide. The casing end seals shall be as manufactured by Advance Products & Systems, Inc., or approved equivalent.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Where shown on the Drawings, the Contractor shall install encasement pipe. Install encasement pipe to maintain alignment, grade and the circular shape of the encasement pipe. The encasement pipe shall be straight and true in alignment; and any significant deviation from line or grade, in the opinion of the Engineer or permitting authority, shall be sufficient cause for disapproving or rejecting the installation.

B. Two methods of installation are designated, the open-cut method and the boring method.

1. The open-cut method shall consist of placing the encasement pipe in the excavated trench, then installing the carrier pipe inside the encasement pipe. Excavation, bedding and backfilling shall be in accordance with Section 02225.
2. The boring and jacking method consists of pushing or jacking the encasement pipe into the subsurface material as an auger cuts out the material or after the auger has completed the bore. Where designated on the drawings, crossings beneath state maintained roads, railroads, or other surfaces not to be disturbed, shall be installed by boring and jacking of steel casing pipe followed by installation of the carrier pipe within the casing pipe. The Contractor shall provide a jacking pit, bore through the earth, and/or rock, jack the casing pipe into proper line and grade and then install the carrier pipe within the casing pipe. The approach trench shall be large enough to accommodate one section of casing pipe, the jacks and blocking. The Contractor shall furnish and use adequate equipment to maintain the line and grade.

C. The carrier pipe shall be ductile iron, polyvinyl chloride, or polyethylene pipe as designated on the Drawings. The carrier pipe shall be installed using pipe spacers as described in this Section. Carrier pipe will not be permitted to rest on bells or couplings.

D. Following installation of the carrier pipe, the ends of the encasement pipe shall be sealed with products of the type described in this Section.

3.02 DAMAGE

The cost of repairing damage to the highway or railroad which is caused by a boring and jacking installation shall be borne by the Contractor.

END OF SECTION 02630

SECTION 02642 - SEWAGE VALVES AND GATES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The Contractor shall furnish and install valves, gates, and miscellaneous piping appurtenances, as indicated on the Drawings and as herein specified.

B. The Drawings and Specifications direct attention to certain features of the equipment, but do not purport to cover all the details of their design. The equipment furnished shall be designed and constructed equal to the high quality equipment manufactured by such firms as are mentioned hereinafter, or as permitted by the Engineer. The Contractor shall furnish and install the equipment complete in all details and ready for operation.

C. Electrical work and equipment specified herein shall conform to the requirements of the applicable electrical sections.

D. Enclosures shall be of a suitable type for the atmospheres in which they are installed.

E. Sizes and capacities not specified herein are indicated on the Drawings.

1.02 RELATED WORK

A. Section 02225 - Excavating, Backfilling and Compacting for Utilities.

B. Section 02731 - Gravity Sewers

C. Section 02732 - Sewage Force Mains.

1.03 SUBMITTALS

A. Complete shop drawings of all valves and appurtenances shall be submitted to the Engineer in accordance with the requirements of Section 01300.

B. The manufacturer shall furnish the Engineer two (2) copies of an affidavit stating that the valve and all materials used in its construction conform to the applicable requirements of ANSI/AWWA valve, and that all tests specified therein have been performed and that all test requirements have been met.

C. The Engineer shall be furnished two (2) copies of affidavit that the "valve protection testing" has been done and that all test requirements have been met.

D. The Engineer shall be furnished with two (2) copies of affidavit that inspection, testing and rejection are in accordance with AWWA Standard.

PART 2 - PRODUCTS

2.01 PLUG VALVES

A. Plug valves shall conform to the latest revision of AWWA C507 and shall be of the nonlubricated eccentric type with resilient plugs faced with natural or synthetic rubber suitable for service in sewage and sludge piping.

B. Port areas shall be unobstructed when open and have smoothly shaped waterways of not less than 100 percent (100%) of full pipe area.

C. Bodies shall be of semi-steel, suitable for 125-pound working water pressure and shall have raised seats.

D. Valves 3 inches and larger shall have seats of a welded in overlay of not less than 90 percent (90%) pure nickel or other acceptable material.

E. Valves shall have permanently lubricated upper and lower stainless steel bushings on plug journal ends.

F. Valves shall have bolted bonnets. Valves 4 inches and larger shall be designed so that they can be repacked under line pressure without removing the bonnet from the valve. Packing shall be adjustable.

G. Where there is a lack of space for the valve wrench to operate gear operators, handwheels shall be provided in lieu of the wrench.

H. Gear operators shall be totally enclosed, worm gear type, permanently lubricated, and shall be watertight and dusttight.

I. Gear operators shall be provided with adjustable stops for the open and closed position to prevent overtravel, and shall have a valve disk position indicator.

J. A suitable lever or wrench shall be provided for each six wrench operated valves but at least one wrench for each operating station. Wrenches or wheels and chains shall be of suitable size and sufficient length for easy operation of the valves at their rated working pressure.

K. Plug valves 3 inches and larger shall have mechanical joint or flanged ends faced and drilled in accordance with 125-pound ANSI Standard.

L. Plug valves shall be those manufactured by DeZurik, Milliken, Clow, or approved equal.

2.02 COMBINATION AIR VALVES (SEWAGE)

A. The combination air valves shall be the size appropriate to the pipe size on which they are mounted and equivalent to A.R.I. D-025 combination air valves as manufactured by A.R.I. Flow Control Accessories.

B. The valves shall be of the type that automatically exhausts large quantities of air during the filling of a system and allows air to re-enter during draining or when a vacuum occurs. The valves shall also release small pockets of air as they may accumulate within the piping system under operating pressure. The overall height shall not exceed 21 inches. Valves shall be constructed of high strength plastic, stainless steel, and other non-corrosion materials.

C. The valves shall be rated for not less than 150 psi operating pressure.

2.03 FORCE MAIN LINE MARKER

The force main line markers shall be furnished and installed as indicated on the Drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Valves shall be installed as nearly as possible in the positions indicated on the Drawings consistent with conveniences of operating the handwheel or wrench. All valves shall be carefully erected and supported in their respective positions free from all distortion and strain on appurtenances during handling and installation.

B. All material shall be carefully inspected for defects in workmanship and material, all debris and foreign material cleaned out of valve openings and seats, all operating mechanisms operated to check their proper functioning, and all nuts and bolts checked for tightness.

C. Valves and other equipment which do not operate easily or are otherwise defective shall be repaired or replaced at the Contractor's expense.

D. Valves shall not be installed with stems below the horizontal.

E. Valves shall be set plumb and supported adequately in conformance with the instructions of the manufacturer. Valves mounted on the face of concrete shall be shimmed vertically and grouted in place. Valves in the control piping shall be installed so as to be easily accessible.

F. Where chain wheels are provided for remote operation of valves, two S-shaped hooks shall be provided for each valve to enable the chains to be hooked so as not to interfere with personnel traffic.

G. Valves shall be provided with extension stems where required for convenience of operation. Extension stems shall be provided for valves installed underground and elsewhere so that the operating wrench does not exceed 6 feet in length.

H. A permanent type gasket of uniform thickness shall be provided between flanges of valves and sluice gates and their wall thimble.

I. Wall thimbles shall be accurately set in the concrete walls so that the gates can be mounted in their respective positions without distortion or strain.

J. Plug valves in horizontal sewage and sludge piping shall be installed with the shaft horizontal such that when in the open position, the plug is located in the upper part of the valve body. Valves shall be oriented so that in the closed position, the plug is at the upstream end of the valve.

K. Floorstand operators and stem guides shall be set so that the stems shall run smoothly in true alignment. Guides shall be anchored firmly to the walls. Distances from the centerlines of gates to the operating level or base of floorstand shall be checked by the Contractor and adjusted if necessary to suit the actual conditions of installation.

3.02 PAINTING

A. Valves shall be factory primed and fully coated, inside and out, with fusion bonded epoxy in accordance with the latest revision of AWWA C550 Standard.

END OF SECTION 02642

SECTION 02731 - GRAVITY SEWERS

PART 1 - GENERAL

1.01 WORK INCLUDED

The Contractor shall furnish all labor, material, and equipment necessary to install gravity sewer piping together with all appurtenances as shown and detailed on the Drawings and specified herein.

1.02 RELATED WORK

A. Section 02225 - Excavating, Backfilling, and Compacting for Utilities.

B. Section 02630 – Encasement Pipe.

C. Section 02735 - Manholes and Precast Sewage Structures.

PART 2 - PRODUCTS

2.01 DUCTILE IRON (DI) PIPE AND FITTINGS

A. Ductile iron pipe (DIP) for gravity sewers shall conform to ANSI/AWWA C150/A21.50, ANSI/AWWA C151/A21.51 Standard (latest). The pipe shall conform to pressure class 150 unless noted otherwise. All fittings shall be capable of accommodating pressure up to 250 psi.

B. Fittings shall be ductile iron in accordance with AWWA C153 and have a body thickness and radii of curvature conforming to ANSI A21.10 or ANSI A21.53 for compact fittings and shall conform to the details and dimensions shown therein. Fittings shall have rubber gasket joints meeting the requirements of AWWA C111. Fittings shall be cement-mortar lined and bituminous coated to conform to the latest revision of ANSI/AWWA standards.

C. Restrained joint pipe and fittings shall be a boltless system equivalent to "Field Lok" restraining gaskets or "TRFLEX Joint" as manufactured by U.S. Pipe & Foundry Company.

D. Where indicated, high-density, cross-laminated polyethylene film shall be provided for encasement of ductile iron pipe. The film shall meet the requirements of AWWA C105.

E. Ductile iron pipe and fittings shall have the manufacturer's outside asphaltic coating and an interior lining of ceramic epoxy or polyethylene.
   1. Polyethylene Lined (< 16-inch):
      a. Materials: The lining material for pipe and fittings shall be virgin polyethylene complying with ANSI/ASTM D1248, compounded with an inert filler and

sufficient carbon black to resist ultraviolet rays during storage of the pipe and fittings. The polyethylene shall be bonded to the interior of the pipe or fitting by heat. The polyethylene shall be a modified copolymer utilizing polar functional groups grafted onto the polyethylene chain for enhanced adhesion to ductile iron surfaces.

b. Surface Preparation: All surface areas to be lined shall be blast cleaned comparable to the requirements of SSPC -SP6 or NACE #3. (Note, this is a comparison only since there are no surface preparation specifications for ductile iron pipe. SSPC and NACE surface preparation specifications apply only to steel surfaces and are not directly applicable to ductile iron surfaces.)

c. Application: Polyethylene linings shall cover the inner surface of pipe and fittings extending from the spigot end to the gasket socket.

d. Lining Thickness: Lining in pipe fittings shall be 60 mils nominal thickness.

e. Inspection: Holiday inspection shall be conducted as per ASTM G62, Method B. A boil adhesion test shall be performed in accordance with ASTM C541.

(1) Repair Procedure for Damaged Polyethylene Lining:

(a) Remove any loose lining.

(b) Clean exposed metal surface with power grinder. Abrade lining surface in a 2-inch band surrounding circumference of patched area. Remove resulting dust from surface to be relined.

(c) Mix coal tar epoxy according to manufacturer's recommendation.

(d) Apply first coat.

(e) Allow first coat to cure per manufacturer's instructions.

(f) Abrade surface of epoxy with sand paper to insure good bond between first and second coat. Remove dust resulting from this operation.

(g) Apply second coat of coal tar epoxy. Allow patch to cure according to coal tar epoxy manufacturer's instructions prior to service.

(2) Certification: The pipe or fitting manufacturer must supply a certification attesting to the fact that the application met the requirements of this Specification and that the material was as specified.

6. Polyethylene Lined (> 18-inch):

a. General: The lining shall be a composite lining utilizing a primer coating containing fusion bonded epoxy (FBE) and a surface coating containing fusion bonded polyethylene (FBP). The lining shall be PolybondPLUS as manufactured by the American Cast Iron Pipe Company, Birmingham, AL or approved equivalent.

b. Lining Materials:

(1) Primer: The primer shall contain FBE which is applied in sufficient quantity to achieve a nominal thickness of 5 mils for the pipe or fitting. The FBE material used in the primer formulation should be capable of meeting the following requirements:

Test Parameter	ASTM Test Method	Typical Value
Tensile Strength	D-2370	9,300 psi
Compressive Strength	D-695	11,600 psi
Ultimate Elongation	D-2370	6.9%
Impact (1/8-inch x 3 inch x 3-inch panel) 5/8-inch diameter Tup	G-14	160 in.-lbs.

(2) Surface Layer: The surface layer shall be comprised of medium density modified FBP meeting the requirements of ANSI/ASTM D1248 and compounded with an inert filler. The FBP shall be formulated to the ultraviolet (UV) resistant for a minimum of three (3) years. The color of the FBP shall have a light reflectance value (LRV) of at least 40% aid in the in-situ inspection of the pipeline with video equipment.

(3) The FBP used in the surface coating material should be capable of meeting the following requirements:

Test Parameter	ASTM Test Method	Typical Value
Tensile Strength	D-638	1,650 psi
Ultimate Elongation	D-638	300%
Taber Abrasion Resistance	D-4060	25.0 mg wt. loss/1,000 cycles @ 1,000 gram load
Notched Izod Impact @ 23° C	D-256	8.0 ft.-lbs./in. (no break)
Notched Izod Impact @ 60° C	D-256	6.1 ft.-lbs./in. (no break)
Brittleness Temperature	D-746	-76° C

(3) Application:

(a) Pre-application Inspection: Prior to blast cleaning, all interior surfaces of the pipe and fitting shall be inspected to verify that all interior surfaces are free of hydraulic fluid, grease, or other foreign substances.

(b) Surface Preparation: Surface preparation shall consist of grit/shotblasting or sandblasting the ductile iron surface to a near-gray blast finish. This degree of cleanliness is comparable to a SSPC-SP10, "Near White Blast Cleaning" for steel with the exception that ductile iron attains a gray color when blast cleaned. (The color difference is due to the higher carbon content of ductile iron versus steel.) The blast cleaning operation shall remove 95% of all surface contaminants, including tightly adhered annealing scale. The anchor tooth pattern, resulting from the blasting operation, shall have a minimum height of 3.0 mils. All interior surfaces to be lined shall be blast cleaned to this standard.

(c) Application Requirements: The pipe or fitting shall be heated in a regulated oven to produce a temperature that will insure proper adhesion between the primer and the pipe substrate. The lining shall be applied on one operation with the primer coat applied

immediately prior to the application of the surface coat. The resultant composite lining shall be tightly bonded.

(d) Thickness Requirements: Total thickness for the FBE/FBP lining shall be 60 mils nominal with a 50 mil minimum in the barrel of the pipe.

(e) Lining Coverage: The FBE/FBP lining shall cover the interior surfaces of the pipe and fittings from the interior of the spigot end to the interior edge of the socket sealing area.

(f) Joint Surface Coating: The joint surface coating shall be comprised of a two component epoxy. The use of joint surface coatings containing coal tar is prohibited. Total thickness for the joint coating shall be 8 mils nominal.

i. The joint surface coating shall cover the spigot end across the end of the spigot bevel and extending over the outer surface of the spigot including the gasket sealing area. The joint surface coating shall also cover the socket from the face of the bell, through the gasket sealing area overlapping onto the edge of the FBE/FBP lining.

(4) Testing:

(a) Lining Holiday Test: At the manufacturer's facility, the lining shall be tested over 100% of the pipe barrel surface with a high voltage spark tester as recommended by ASTM Designation G-62 Method B of the latest revision. The minimum test voltage shall be as determined by Method B, as described in the ASTM Designation Section 11.2.3., which is the recommended voltage for all linings with possible areas thicker than 41 mils:

$V=1250 \times T^{1/2}$ where V=voltage end
"T"=thickness of lining in mils

Example: $V=1250 \times 40^{1/2}$ Minimum Voltage=7,906 volts

i. If holidays are found in the lining by the above test at the manufacturing plant, the holiday shall be repaired per the lining manufacturer's recommendation.

ii. The holiday detector shall be commercially available from holiday detection equipment manufacturers such as Spy, Tinker and Rasor, and Zorelco.

(b) Voltage Confirmation Test: To confirm the above voltage is sufficient to detect holidays, the following voltage confirmation test should be performed for each shift or change in detector operator. The holiday detector should be set to the calculated minimum voltage shown above. A known holiday should be made in the lining of a randomly selected pipe using a small sharp pin. The operator should demonstrate that the holiday can be consistently and satisfactorily located at this voltage setting and detector wand speed. If the holiday is not detected at the calculated voltage, then the

voltage should be slowly increased until the known holiday is consistently detected by the operator. This voltage should then become the minimum voltage at which all pipe linings shall be tested.

(5) Field Cutting: Where pipes are cut in the field, it will be necessary to repair the cut end as per the manufacturer's written procedure.

(6) Certification: The pipe or fitting manufacturer must supply a certification attesting to the fact that the application met the requirements of this Specification and that the material was as specified.

(a) Ceramic Epoxy (all sizes):

i. Condition of Items Prior to Surface Preparation: All ductile iron 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 fitting 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 6 inches of the exterior of the spigot ends.

ii. Lining Material: The standard 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.

(b) 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.

(c) Surface Preparation: Prior to abrasion 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 abrasive 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.

(d) Lining: After surface preparation and within 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 Farenheit. 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.

(e) Coating of the Bell Sockets and Spigot Ends: Due to the tolerance involved, the gasket area and spigot end, up to 6 inches back from

the end of the spigot end, must be coated with 6 mils nominal, 10 mils maximum, of 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.

(f) 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.

(g) Touch-up and Repair: Protecto Joint Compound shall be used for touch-up or repair in accordance with manufacturer's recommendations.

(2) Inspection and Certification:

(a) Inspection:

i. All ductile iron pipe and fitting linings shall be checked for thickness using a magnetic film thickness gauge. The thickness gauge testing shall be done using the method outlined in SSPC-PA-2 Film Thickness Rating.

ii. The interior lining of all pipe barrels and fittings shall be tested for pinholes with a non-destructive 2,500 volt (minimum) test. To confirm that the referenced test voltage is sufficient to detect holidays, the following voltage confirmation test shall be performed by an inspection company for each shift or change in detector operator:

- The holiday detector should be set to the referenced voltage and a known holiday should be made in the lining of a randomly selected pipe using a small, sharp pin. The operator should demonstrate that the holiday can be consistently and satisfactorily located at this voltage setting and detector wand speed. If the holiday is not detected at the referenced voltage, then the voltage should be slowly increased until the known holiday is consistently detected by the operator. The detector's voltage (and voltage meter) shall be tested once each day by a separate voltmeter, and the results certified by the pipe manufacturer to confirm the accuracy of the detector's voltage meter.
- Any defects found shall be repaired prior to shipment.

iii. Each pipe joint and fitting shall be marked with the date of the application of the lining system along with its numerical sequence of application on that date with records maintained by the applicator.

iv. Certification: The pipe or fitting manufacturer must supply a

certification attesting to the fact that the application met the requirements of this Specification and that the material was as specified.

(b) Handling: Protecto 401 lined pipe and fitting 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 the lifting, positioning or laying.

7. Pipe shall be furnished in lengths of 16, 16.5, 18, 19, and 20 feet nominal laying lengths. The weight of any single pipe shall not be less than the tabulated weight by more than 5 percent for pipe 12 inches or smaller in diameter, not by more than 4 percent for pipe larger than 12 inches in diameter.

8. The net weight, class or nominal thickness and sampling period shall be marked on each pipe. The pipe shall also be marked to show that it is ductile iron.

F. No separate pay item has been established for fittings and no determination of the number of fittings required on the job has been made. The Contractor, during the bidding phase, shall determine the number of fittings required on the job and include the cost of the fittings and installation in the Contract unit price.

G. Ductile iron pipe and fittings shall be as manufactured by Clow Corporation, U.S. Pipe & Foundry Company, American Cast Iron Pipe Company, or approved equivalent.

2.02 REINFORCED CONCRETE PIPE

A. All reinforced concrete pipe shall conform to the requirements of ASTM C76, latest edition. Class shall be as shown on the Drawings.

B. Joints shall be bell and spigot type using Forsheda 138 or Forsheda 103 gaskets (or equivalent) and shall conform to ASTM C443.

C. The pipe shall be furnished in standard lengths of 8 feet to 16 feet.

D. The pipe shall be permanently marked showing the nominal inside diameter, manufacture date, ASTM C76 class, and manufacturer's name. These markings for 30-inch diameter and larger shall be inscribed on the pipe exterior and stencilled on the interior with paint or permanent ink.

E. There shall be no lift holes.

F. Pipe shall be as manufactured by Independent Concrete Pipe Company or an approvable equivalent.

G. Coating and Lining:

1. All concrete pipe shall be coated and lined at the pipe manufacturer's plant.

2. The exterior coating and interior lining shall be a high build multi-component Amine cured Novalac epoxy polymeric coating/lining equivalent to the Protecto 401 as manufactured by Vulcan Painters, Inc. of Birmingham, AL.

3. The coating/lining shall have a permeability rating in accordance with Method A of ASTM E-96-66.
4. The surface preparation shall remove all loose laitance, form oils, and other loose materials and include a "brush blast" per SSPC.
5. The coating and lining shall be applied in accordance with the manufacturer's requirements and have a minimum dry film thickness (DFT) of:
   a. Exterior Coating: 25 mil DFT.
   b. Interior Coating: 40 mil DFT.

H. Connection of existing and proposed sewer lines to the reinforced concrete pipe shall be accomplished by the following methods:
1. Precast concrete fittings with joints using Forsheda 138 or Forsheda 103 gaskets (or equivalent) conforming to ASTM C443, or
2. Core drilling the reinforced concrete pipe and installing a KOR-N-TEE Model 1200 GP flexible watertight connector (or equivalent) as manufactured by KOR-N-SEAL. Connector shall be made of EPDM rubber. All hardware shall be 304 stainless steel.

2.03 POLYVINYL CHLORIDE (PVC) PIPE (only for small diameter lines per drawings)

A. Solid Wall PVC Pipe (SDR 35):
1. PVC pipe and fittings less than 15 inches in diameter shall conform to the requirements of ASTM Standard Specifications for Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings, Designation D 3034. Pipe and fittings shall have a minimum cell classification of 12454 as defined in ASTM D-1784. All pipe shall have a pipe diameter to wall thickness ratio (SDR) of a maximum of 35.
2. PVC pipe and fitting with diameters 18-inch through 27-inch shall conform to the requirements of ASTM D-1784 and ASTM F-679. Pipe and fittings shall have a minimum cell classification of 12454. The minimum wall thickness shall conform to ASTM F-679 for a minimum pipe stiffness of 46 psi.
3. Joints shall be push-on bell and spigot type using elastomeric ring gaskets conforming to ASTM D 3212 and F 477. The gaskets shall be securely fixed into place in the bells so that they cannot be dislodged during joint assembly. The gaskets shall be of a composition and texture which is resistant to common ingredients of sewage and industrial wastes, including oils and groundwater, and which will endure permanently under the conditions of the proposed use.
4. Pipe shall be furnished in lengths of not more that 13 feet. The centerline of each pipe section shall not deviate from a straight line drawn between the centers of the openings at the ends by more than 1/16 inch per foot of length.
5. PVC pipe shall <u>not</u> have a filler content greater than ten percent (10%) by weight relative to PVC resin in the compound.
6. PVC pipe shall be clearly marked at intervals of 5 feet or less with the manufacturer's name or trademark, nominal pipe size, PVC cell classification, the legend "Type PSM SDR 35 PVC Sewer Pipe" and the designation "ASTM D 3034", or "ASTM F-679". Fittings shall be clearly marked with the manufacturer's name or trademark, nominal size, the material designation "PVC", "PSM" and the designation "ASTM D 3034", or "ASTM F-679".

7. PVC pipe shall have a minimum pipe stiffness of 46 psi for each diameter when measured at 5 percent vertical ring deflection and tested in accordance with ASTM D-2412.
8. Five (5) copies of directions for handling and installing the pipe shall be furnished to the Contractor by the manufacturer at the first delivery of pipe to the job. PVC pipe installation shall conform to ASTM D-2321 latest revision.
9. Pipe shall be as manufactured by J&M Pipe Company, or equivalent.

2.04 FIBERGLASS REINFORCED POLYMER MORTAR (FIBERGLASS) PIPE AND FITTINGS

A. Fiberglass reinforced polymer mortar (fiberglass) pipe and fittings for gravity sewers shall conform to the requirements of ASTM D-3262, current approval, "Standard Specification for 'Fiberglass' (Glass-Fiber-Reinforced Thermosetting Resin) Sewer Pipe."

B. References: This specification references American Society of Testing and Materials (ASTM) standard specifications, which are made a part hereof by such reference and shall be the latest edition and revision thereof.
1. ASTM D-3262 standard specification for "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) sewer pipe.
2. ASTM D-3681 Standard Test Method for chemical resistance of "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) pipe in a deflected condition.
3. ASTM D-4161 Standard Specification for "Fiberglass" pipe joints using flexible elastomeric seals.
4. ASTM D-2412 Standard Test Method for determination of external loading characteristics of plastic pipe by parallel-plate loading.

C. Materials
1. Resin Systems: The manufacturer shall use only polyester resin systems with a proven history of performance in this particular application. The historical data shall have been acquired from a composite material of similar construction and composition as the proposed product.
2. Glass Reinforcements: Chopped glass reinforcement fibers used to manufacture the components shall be of highest quality commercial grade E-glass filaments with binder and sizing compatible with impregnating resins. Continuous circumferential glass reinforcement fibers, where utilized, shall be of grade ECR-glass with binder and sizing compatible with impregnating resins. The internal liner shall be suitable for service in a sewer pipe, and shall be highly resistant to exposure to sulfuric acid as produced by biological activity from hydrogen sulfide gases. Pipe shall meet or exceed requirements of ASTM D-3681.
3. Silica Sand: Sand shall be a minimum of 98% silica with a maximum moisture content of 0.2%.
4. Additives: Resin additives, such as curing agents, pigments, dyes, fillers, thixotropic agents, etc., when used, shall not detrimentally affect the performance of the product.
5. Elastomeric Gaskets: Gaskets shall be supplied by qualified gasket manufacturers and be suitable for the service intended.

D. Manufacture and Construction

1. Pipes: Manufacture pipe by a process that will result in a dense, non-porous, corrosion-resistant, consistent composite structure.
2. Joints: Unless otherwise specified, the pipe shall be field connected with fiberglass couplings that utilize elastomeric EPDM or REKA sealing gaskets as the sole means to maintain joint watertightness. The joints shall meet the performance requirements of ASTM D-4161. Additionally, the joints shall be rated to a pressure of 80% of -14.7 psi as installed. Joints at tie-ins, when needed may utilize fiberglass, gasket-sealed closure couplings.
3. Fittings: Flanges, elbows, reducers, tees, wyes, laterals and other fittings shall be capable of withstanding all operating conditions when installed. They may be contact molded or manufactured from mitered sections of pipe joined by glass-fiber-reinforced overlays. All fittings and couplings shall be pressure rated for a minimum of 50 psi.
4. End Coating: Protective spigot end resin coating shall be applied at the time of manufacture. CONTRACTOR shall similarly coat the ends of all field cut pipes if the wall of the pipe is completely de-aerated during the production process and glass and sand are not impregnated with 100% pure resin to form a wall that cannot be penetrated by water.
5. Fiberglass pipe shall be as manufactured by: Hobas Pipe USA, Inc. Flowtite Pipe, or approved equivalent.
6. For bury depths greater than 20 feet, CONTRACTOR shall comply with special trench construction requirements recommended by the manufacturer.

E. Dimensions

1. Diameters: The actual outside diameter of the pipe barrel shall be in accordance with ASTM D3262. The internal diameters of all pipes shall be as specified on the Contract Drawings for each pipe diameter.
2. Lengths: Pipe shall be supplied in nominal lengths of 20 feet. Actual laying length shall be nominal +1, -4 inches. At least 90% of the total footage of each size and class of pipe, excluding special order lengths, shall be furnished in nominal length sections.
3. Wall Thickness: The minimum wall thickness shall be the required design thickness for the laying conditions. Manufacturer shall provide information in writing to SD1 per the submittal requirements.
4. End Squareness: Pipe ends shall be square to the pipe axis with a maximum tolerance of 1/4".

F. Testing

1. Pipes: Pipes shall be manufactured and tested in accordance with ASTM D3262.
2. Joints: Joints shall meet the requirements of ASTM D4161.
3. Stiffness: As tested in accordance with ASTM D2412. Any fiberglass pipe run that exceeds 20 feet ,but less than 30 feet, in depth to invert anywhere along the run length from one manhole or structure to a second manhole or structure shall be a minimum stiffness of 72 psi for the entire run.
4. Chemical Resistance: Pipe shall meet or exceed the requirements of ASTM D-3262 Table 4 when tested in accordance with ASTM D-3681.

G. Customer Inspection
   1. The Owner or other designated representative shall be entitled to inspect pipes at the factory or witness the pipe manufacturing.
   2. Manufacturers Notification to Customer: Should the Owner request to see specific pipes during any phase of the manufacturing process, the manufacture must provide the Owner with adequate advance notice of when and where the production of those pipes will take place.

H. Packaging, handling, and shipping shall be done in accordance with the manufacturer's instructions.

PART 3 - EXECUTION

3.01 PIPE LAYING

A. All pipe shall be laid with ends abutting and true to the lines and grades indicated on the Drawings. The pipe shall be laid straight between changes in alignment and at uniform grade between changes in grade. Pipe shall be fitted and matched so that when laid in the trench, it will provide a smooth and uniform invert. Supporting of pipe shall be as set out in Section 02225 and in no case shall the supporting of pipe on blocks be permitted.

B. Before each piece of pipe is lowered into the trench, it shall be thoroughly swabbed out to insure its being clean. Any piece of pipe or fitting which is known to be defective shall not be laid or placed in the lines. If any defective pipe or fitting shall be discovered after the pipe is laid, it 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 and beveled to match the factory bevel for insertion into gasketed joints. Bevel can be made with hand or power tools.

C. The interior of the pipe, as the work progresses, shall be cleaned of dirt, jointing materials, and superfluous materials of every description. When laying of pipe is stopped for any reason, the exposed end of such pipe shall be closed with a plywood 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.

D. All pipe shall be laid starting at the lowest point and installed so that the spigot ends point in the direction of flow.

3.02 JOINTING

All joint surfaces shall be cleaned immediately before jointing the pipe. The bell or groove shall be lubricated in accordance with the manufacturer's recommendation. Each pipe unit shall then be carefully pushed into place without damage to pipe or gasket. All pipe shall be provided with home marks to insure proper gasket seating. Details of gasket installation and joint assembly shall follow the direction of the manufacturer's of the joint

material and of the pipe. The resulting joints shall be watertight and flexible. **No solvent cement joints shall be allowed.**

3.03 WATER PIPE CROSSING CONCRETE ENCASEMENT

A. At locations shown on the Drawings, required by the Specifications, or as directed by the Engineer, concrete encasement shall be used when the clearance between the proposed sewer pipe and any existing water pipe is 18 inches or less.

B. Whether the proposed sewer pipe is above or below the existing water pipe, the concrete shall fully encase the sewer pipe and extend to the spring line of the water pipe. Encasement shall extend in each direction along the sewer pipe until the encased sewer pipe is 10 feet from the water pipe, measured perpendicular to the water pipe.

C. Concrete shall be 3000 psi and shall be mixed sufficiently wet to permit it to flow between and under pipes to form a continuous bridge. In tamping the concrete, care shall be taken not to disturb the grade or line of either pipe or damage the joints.

D. Concrete for this Work is not a separate pay item and will be considered incidental to sewer pipe installation.

3.04 TESTING OF GRAVITY SEWER LINES

A. After the gravity piping system has been brought to completion, and prior to final inspection, the Contractor shall rod out the entire system by pushing through each individual line in the system, from manhole to manhole, appropriate tools for the removal from the line of any and all dirt, debris, and trash. If necessary during the process of rodding the system, water shall be turned into the system in such quantities to carry off the dirt, debris and trash.

B. During the final inspection, the Engineer will require all flexible sanitary sewer pipe to be mandrel deflection tested after installation.
   1. The mandrel (go/no-go) device shall be cylindrical in shape and constructed with nine (9) evenly spaced arms of prongs. The mandrel dimension shall be 95 percent of the flexible pipe's published ASTM average inside diameter. Allowances for pipe wall thickness tolerances of ovality (from shipment, heat, shipping loads, poor production, etc.) shall not be deducted from the ASTM average inside diameter, but shall be counted as part of the 5 percent allowance. The contact length of the mandrel's arms shall equivalent or exceed the nominal diameter of the sewer to be inspected. Critical mandrel dimensions shall carry a tolerance ± 0.001 inch.
   2. The mandrel inspection shall be conducted no earlier than 30 days after reaching final trench backfill grade provided, in the opinion of the Engineer, sufficient water densification or rainfall has occurred to thoroughly settle the soil throughout the entire trench depth. Short-term (tested 30 days after installation) deflection shall not exceed 5 percent of the pipe's average inside diameter. The mandrel shall be hand pulled by the contractor through all sewer lines. Any sections of the sewer not passing the mandrel test shall be uncovered and the Contractor shall replace and

recompact the embedment backfill material to the satisfaction of the Engineer. These repaired sections shall be retested with the go/no-go mandrel until passing.

3. The Engineer shall be responsible for approving the mandrel. Proving rings may be used to assist in this. Drawings of the mandrel with complete dimensioning shall be furnished by the Contractor to the Engineer for each diameter and type of flexible pipe.

C. The pipe line shall be made as nearly watertight as practicable, and leakage tests and measurements shall be made. All apparatus and equipment required for testing shall be furnished by the Contractor and the cost shall be included in the unit price bid for pipe and manholes.

1. The Engineer may require the Contractor to smoke test the first section (manhole to manhole) of each size of pipe and type of joint prior to backfilling, to establish and check laying and jointing procedures. The test shall consist of smoke blown into closed-off sections of sewer under pressure and observing any smoke coming from the pipe line indicating the presence of leaks. Other supplementary smoke tests prior to backfilling may be performed by the Contractor at his option; however, any such tests shall not supplant the final tests of the completed work unless such final tests are waived by the Engineer.
2. Where the groundwater level is more than 1 foot above the top of the pipe at its upper end, the Contractor shall conduct either infiltration tests or low pressure air tests on the completed pipeline.
3. Where the groundwater level is less than 1 foot above the top of the pipe at its upper end, the Contractor shall conduct either exfiltration tests or low pressure air tests on the completed pipeline.

D. Low pressure air tests shall be made using equipment specifically designed and manufactured for the purpose of testing sewer lines using low pressure air. The equipment shall be provided with an air regulator valve or air safety valve so set that the internal pressure in the pipeline cannot exceed 8 psig.

1. The test shall be made on each manhole-to-manhole section of pipeline after placement of the backfill. The Engineer or his designated representative must be present to witness each satisfactory air test before it will be accepted as fulfilling the requirements of these Specifications.
2. Pneumatic plugs shall have a sealing length equivalent to or greater than the diameter of the pipe to be tested. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
3. Low pressure air passing through a single control panel, shall be introduced into the sealed line until the internal air pressure reaches 4 psig greater than the maximum pressure exerted by groundwater that may be above the invert of the pipe at the time of test. However, the internal air pressure in the sealed line shall not be allowed to exceed 8 psig. When the maximum pressure exerted by the groundwater is greater than 4 psig, the Contractor shall conduct only an infiltration test.
4. At least two minutes shall be allowed for the air pressure to stabilize in the section under test. After the stabilization period, the low-pressure air supply hose shall be quickly disconnected from control panel. The time required in minutes for the pressure in the section under test to decrease from 3.5 to 2.5 psig (greater than the

maximum pressure exerted by groundwater that may be above the invert of the pipe) shall not be less than that shown in the following table:

Pipe in Diameter in Inches	Minutes
4	2.0
6	3.0
8	4.0
10	5.0
12	5.5
15	7.5
18	8.5
21	10.0
24	11.5
30 & larger	13

5. When the sewer section to be tested contains more than one size of pipe, the minimum allowable time shall be based on the largest diameter pipe in the section, and shall be the time shown in the table reduced by 0.5 minutes.
6. Reinforced concrete pipe shall be tested in accordance with ASTM C 924 (joint testing shall be in accordance with ASTM C 1103). Test time shall be a function of pipe diameter and the length of installed line to be tested as provided in ASTM C 924.

E. Infiltration tests shall be made after underdrains, if present, have been plugged and other groundwater drainage has been stopped such that the groundwater is permitted to return to its normal level insofar as practicable.
   1. Upon completion of a section of the pipeline, the line shall be dewatered and a satisfactory test conducted to measure infiltration for at least 24 hours. The amount of infiltration, including manholes, tees and connections, shall not exceed 100 gallons per nominal inch diameter per mile of sewer per 24 hours.

F. Exfiltration tests which subject the pipeline to an internal pressure, shall be made by plugging the pipe at the lower end and then filling the line and manholes with clean water to a height of 2 feet above the top of the sewer at its upper end. Where conditions between manholes may result in test pressures which would cause leakage at the plugs or stoppers in branches, provisions shall be made by suitable ties, braces and wedges to secure the plugs against leakage resulting from the test pressure.
   1. The rate of leakage from the sewers shall be determined by measuring the amount of water required to maintain the level 2 feet above the top of the pipe.
   2. Leakage from the sewers under test shall not exceed the requirements for leakage into sewers as hereinbefore specified.

G. The Contractor shall furnish suitable test plugs, water pumps, and appurtenances, and all labor required to properly conduct the tests. Suitable bulkheads shall be installed, as required, to permit the test of the sewer. The Contractor shall construct weirs or other means of measurements as may be necessary.

H. Should the sections under test fail to meet the requirements, the Contractor shall do all work of locating and repairing the leaks and retesting as the Engineer may require without additional compensation.

I. If in the judgment of the Engineer, it is impracticable to follow the foregoing procedures for any reason, modifications in the procedures shall be made as required and as acceptable to the Engineer, but in any event, the Contractor shall be responsible for the ultimate tightness of the line within the above test requirements.

3.05 VIDEO INSPECTION

A. All gravity sewer piping shall be video inspected in accordance with Section 02762.

END OF SECTION 02731

SECTION 02732 - SEWAGE FORCE MAINS

PART 1 - GENERAL

1.01 WORK INCLUDED

The Contractor shall furnish all labor, material, and equipment necessary to install force main piping together with all appurtenances as shown and detailed on the Drawings and specified herein.

1.02 RELATED WORK

A. Section 02225 - Excavating, Backfilling, and Compacting for Utilities.

B. Section 02630 - Encasement Pipe

PART 2 - PRODUCTS

2.01 DUCTILE IRON PIPE (DIP) AND FITTINGS

A. Ductile iron pipe (DIP) shall conform to ANSI/AWWA C150/A21.50, ANSI/AWWA C151/A21.51 Standard (latest). The pipe shall conform to pressure class 200 unless noted otherwise. All fittings shall be capable of accommodating pressure up to 250 psi.

B. Fittings shall be ductile iron in accordance with AWWA C153 and have a body thickness and radii of curvature conforming to ANSI A21.10 or ANSI A21.53 for compact fittings and shall conform to the details and dimensions shown therein. Fittings shall have rubber gasket joints meeting the requirements of AWWA C111.

C. Ductile iron flanged joint pipe shall conform to ANSI/AWWA C115/A 21.15 Standard and have a thickness Class of 53. The pipe shall have a rated working pressure of 200 psi with Class 125 flanges. Gaskets shall be ring gaskets with a thickness of 1/8 inch. Flange bolts shall conform to ANSI B 16.1.

D. Flanged fittings shall meet all requirements of ANSI/AWWA C110/A21.10 and have Class 125 flanges. Fittings shall accommodate a working pressure up to 250 psi and be supplied with all accessories.

E. Restrained joint pipe and fittings shall be a boltless system equivalent to "Field Lok" restraining gaskets or "TRFLEX Joint" as manufactured by U.S. Pipe & Foundry Company.

F. Mechanical joint restraints for ductile iron fittings shall be Megalug 1100 Series or approved equivalent.

G. All ductile fittings shall be rated at 250 psi water working pressure plus water hammer. Ductile iron fittings shall be ductile cast-iron grade 70-50-05 per ASTM Specification A339.

H. Where indicated, high-density, cross-laminated polyethylene film shall be provided for encasement of ductile iron pipe. The film shall meet the requirements of AWWA C105.

I. Ductile iron pipe and fittings shall have the manufacturer's outside bituminous coating in accordance with ANSI/AWWA C151/A21.51 for pipe and ANSI/AWWA C110/A21.10 for fittings. Ductile iron pipe and fittings shall have interior lining of ceramic epoxy or polyethylene.

1. Polyethylene Lined (< 16-inch):
   a. Materials: The lining material for pipe and fittings shall be virgin polyethylene complying with ANSI/ASTM D1248, compounded with an inert filler and sufficient carbon black to resist ultraviolet rays during storage of the pipe and fittings. The polyethylene shall be bonded to the interior of the pipe or fitting by heat. The polyethylene shall be a modified copolymer utilizing polar functional groups grafted onto the polyethylene chain for enhanced adhesion to ductile iron surfaces.
   b. Surface Preparation: All surface areas to be lined shall be blast cleaned comparable to the requirements of SSPC -SP6 or NACE #3. (Note, this is a comparison only since there are no surface preparation specifications for ductile iron pipe. SSPC and NACE surface preparation specifications apply only to steel surfaces and are not directly applicable to ductile iron surfaces.)
   c. Application: Polyethylene linings shall cover the inner surface of pipe and fittings extending from the spigot end to the gasket socket.
   d. Lining Thickness: Lining in pipe fittings shall be 60 mils nominal thickness.
   e. Inspection: Holiday inspection shall be conducted as per ASTM G62, Method B. A boil adhesion test shall be performed in accordance with ASTM C541.
      (1) Repair Procedure for Damaged Polyethylene Lining:
         (a) Remove any loose lining.
         (b) Clean exposed metal surface with power grinder. Abrade lining surface in a 2-inch band surrounding circumference of patched area. Remove resulting dust from surface to be relined.
         (c) Mix coal tar epoxy according to manufacturer's recommendation.
         (d) Apply first coat.
         (e) Allow first coat to cure per manufacturer's instructions.
         (f) Abrade surface of epoxy with sand paper to insure good bond between first and second coat. Remove dust resulting from this operation.
         (g) Apply second coat of coal tar epoxy.bb8)Allow patch to cure according to coal tar epoxy manufacturer's instructions prior to service.
      (2) Certification: The pipe or fitting manufacturer must supply a certification attesting to the fact that the application met the requirements of this Specification and that the material was as specified.

6. Polyethylene Lined (> 18-inch):
   a. General: The lining shall be a composite lining utilizing a primer coating containing fusion bonded epoxy (FBE) and a surface coating containing fusion bonded polyethylene (FBP). The lining shall be PolybondPLUS as manufactured by the American Cast Iron Pipe Company, Birmingham, AL or approved equivalent.
   b. Lining Materials:
      (1) Primer: The primer shall contain FBE which is applied in sufficient quantity to achieve a nominal thickness of 5 mils for the pipe or fitting. The FBE material used in the primer formulation should be capable of meeting the following requirements:

Test Parameter	ASTM Test Method	Typical Value
Tensile Strength	D-2370	9,300 psi
Compressive Strength	D-695	11,600 psi
Ultimate Elongation	D-2370	6.9%
Impact (1/8-inch x 3 inch x 3-inch panel) 5/8-inch diameter Tup	G-14	160 in.-lbs.

      (2) Surface Layer: The surface layer shall be comprised of medium density modified FBP meeting the requirements of ANSI/ASTM D1248 and compounded with an inert filler. The FBP shall be formulated to the ultraviolet (UV) resistant for a minimum of three (3) years. The color of the FBP shall have a light reflectance value (LRV) of at least 40% aid in the in-situ inspection of the pipeline with video equipment.
      (3) The FBP used in the surface coating material should be capable of meeting the following requirements:

Test Parameter	ASTM Test Method	Typical Value
Tensile Strength	D-638	1,650 psi
Ultimate Elongation	D-638	300%
Taber Abrasion Resistance	D-4060	25.0 mg wt. loss/1,000 cycles @ 1,000 gram load
Notched Izod Impact @ 23° C	D-256	8.0 ft.-lbs./in. (no break)
Notched Izod Impact @ 60° C	D-256	6.1 ft.-lbs./in. (no break)
Brittleness Temperature	D-746	-76° C

      (3) Application:
         (a) Pre-application Inspection: Prior to blast cleaning, all interior surfaces of the pipe and fitting shall be inspected to verify that all interior surfaces are free of hydraulic fluid, grease, or other foreign substances.
         (b) Surface Preparation: Surface preparation shall consist of grit/shotblasting or sandblasting the ductile iron surface to a near-gray blast finish. This degree of cleanliness is comparable to a

SSPC-SP10, "Near White Blast Cleaning" for steel with the exception that ductile iron attains a gray color when blast cleaned. (The color difference is due to the higher carbon content of ductile iron versus steel.) The blast cleaning operation shall remove 95% of all surface contaminants, including tightly adhered annealing scale. The anchor tooth pattern, resulting from the blasting operation, shall have a minimum height of 3.0 mils. All interior surfaces to be lined shall be blast cleaned to this standard.

(c) Application Requirements: The pipe or fitting shall be heated in a regulated oven to produce a temperature that will insure proper adhesion between the primer and the pipe substrate. The lining shall be applied on one operation with the primer coat applied immediately prior to the application of the surface coat. The resultant composite lining shall be tightly bonded.

(d) Thickness Requirements: Total thickness for the FBE/FBP lining shall be 60 mils nominal with a 50 mil minimum in the barrel of the pipe.

(e) Lining Coverage: The FBE/FBP lining shall cover the interior surfaces of the pipe and fittings from the interior of the spigot end to the interior edge of the socket sealing area.

(f) Joint Surface Coating: The joint surface coating shall be comprised of a two component epoxy. The use of joint surface coatings containing coal tar is prohibited. Total thickness for the joint coating shall be 8 mils nominal.

i. The joint surface coating shall cover the spigot end across the end of the spigot bevel and extending over the outer surface of the spigot including the gasket sealing area. The joint surface coating shall also cover the socket from the face of the bell, through the gasket sealing area overlapping onto the edge of the FBE/FBP lining.

(4) Testing:

(a) Lining Holiday Test: At the manufacturer's facility, the lining shall be tested over 100% of the pipe barrel surface with a high voltage spark tester as recommended by ASTM Designation G-62 Method B of the latest revision. The minimum test voltage shall be as determined by Method B, as described in the ASTM Designation Section 11.2.3., which is the recommended voltage for all linings with possible areas thicker than 41 mils:

$V=1250 \times T^{1/2}$ where V=voltage end
"T"=thickness of lining in mils

Example: $V=1250 \times 40^{1/2}$ Minimum Voltage=7,906 volts

i. If holidays are found in the lining by the above test at the manufacturing plant, the holiday shall be repaired per the lining manufacturer's recommendation.

ii. The holiday detector shall be commercially available from

holiday detection equipment manufacturers such as Spy, Tinker and Rasor, and Zorelco.

(b) Voltage Confirmation Test: To confirm the above voltage is sufficient to detect holidays, the following voltage confirmation test should be performed for each shift or change in detector operator. The holiday detector should be set to the calculated minimum voltage shown above. A known holiday should be made in the lining of a randomly selected pipe using a small sharp pin. The operator should demonstrate that the holiday can be consistently and satisfactorily located at this voltage setting and detector wand speed. If the holiday is not detected at the calculated voltage, then the voltage should be slowly increased until the known holiday is consistently detected by the operator. This voltage should then become the minimum voltage at which all pipe linings shall be tested.

(5) Field Cutting: Where pipes are cut in the field, it will be necessary to repair the cut end as per the manufacturer's written procedure.

(6) Certification: The pipe or fitting manufacturer must supply a certification attesting to the fact that the application met the requirements of this Specification and that the material was as specified.

(a) Ceramic Epoxy (all sizes):

i. Condition of Items Prior to Surface Preparation: All ductile iron 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 fitting 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 6 inches of the exterior of the spigot ends.

ii. Lining Material: The standard 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.

(b) 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.

(c) Surface Preparation: Prior to abrasion 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 abrasive 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.

(d) Lining: After surface preparation and within 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 Farenheit. 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.

(e) Coating of the Bell Sockets and Spigot Ends: Due to the tolerance involved, the gasket area and spigot end, up to 6 inches back from the end of the spigot end, must be coated with 6 mils nominal, 10 mils maximum, of 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.

(f) 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.

(g) Touch-up and Repair: Protecto Joint Compound shall be used for touch-up or repair in accordance with manufacturer's recommendations.

(2) Inspection and Certification:

(a) Inspection:

i. All ductile iron pipe and fitting linings shall be checked for thickness using a magnetic film thickness gauge. The thickness gauge testing shall be done using the method outlined in SSPC-PA-2 Film Thickness Rating.

ii. The interior lining of all pipe barrels and fittings shall be tested for pinholes with a non-destructive 2,500 volt (minimum) test. To confirm that the referenced test voltage is sufficient to detect holidays, the following voltage confirmation test shall be performed by an inspection company for each shift or change in detector operator:

- The holiday detector should be set to the referenced voltage and a known holiday should be made in the lining of a randomly selected pipe using a small, sharp pin. The operator should demonstrate that the holiday can be consistently and satisfactorily located at this voltage setting and detector wand speed. If the holiday is not detected at

the referenced voltage, then the voltage should be slowly increased until the known holiday is consistently detected by the operator. The detector's voltage (and voltage meter) shall be tested once each day by a separate voltmeter, and the results certified by the pipe manufacturer to confirm the accuracy of the detector's voltage meter.

- Any defects found shall be repaired prior to shipment.

iii. Each pipe joint and fitting shall be marked with the date of the application of the lining system along with its numerical sequence of application on that date with records maintained by the applicator.

iv. Certification: The pipe or fitting manufacturer must supply a certification attesting to the fact that the application met the requirements of this Specification and that the material was as specified.

(b) Handling: Protecto 401 lined pipe and fitting 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 the lifting, positioning or laying.

7. Pipe shall be furnished in lengths of 16, 16.5, 18, 19, and 20 feet nominal laying lengths. The weight of any single pipe shall not be less than the tabulated weight by more than 5 percent for pipe 12 inches or smaller in diameter, not by more than 4 percent for pipe larger than 12 inches in diameter.

8. The net weight, class or nominal thickness and sampling period shall be marked on each pipe. The pipe shall also be marked to show that it is ductile iron.

J. No separate pay item has been established for fittings and no determination of the number of fittings required on the job has been made. The Contractor, during the bidding phase, shall determine the number of fittings required on the job and include the cost of the fittings and installation in the Contract unit price.

K. Ductile iron pipe and fittings shall be as manufactured by Clow Corporation, U.S. Pipe & Foundry Company, American Cast Iron Pipe Company, or approved equivalent.

PART 3 - EXECUTION

3.01 LAYING DEPTHS

In general, force mains shall be laid with a minimum cover of 48 inches, except as otherwise indicated on the Drawings.

3.02 WATER PIPE CROSSING CONCRETE ENCASEMENT

A. At locations shown on the Drawings, required by the Specifications, or as directed by the Engineer, steel encasement pipe or concrete encasement shall be used when the clearance between the proposed sewage force main and any existing water pipe is 18 inches or less.

B. Whether the proposed sewage force main is above or below the existing water pipe, if concrete encasement is utilized, the concrete encasement shall fully encase the sewer pipe and extend to the spring line of the water pipe. Concrete encasement or steel encasement pipe shall extend in each direction along the sewer pipe until the encased sewer pipe is 10 feet from the water pipe, measured perpendicular to the water pipe.

C. Concrete shall be 3000 psi and shall be mixed sufficiently wet to permit it to flow between and under pipes to form a continuous bridge. In tamping the concrete, care shall be taken not to disturb the grade or line of either pipe or damage the joints. Steel encasement pipe shall meet the requirements of Section 02630.

D. Concrete or Steel Encasement Pipe for this Work is not a separate pay item and will be considered incidental to sewage force main installation.

3.03 PIPE LAYING

A. All pipe shall be laid with ends abutting and true to the lines and grades indicated on the Drawings. Pipe shall be fitted and matched so that when laid in the Work, it will provide a smooth and uniform invert. Supporting of pipe shall be as set out in Section 02225 and in no case shall the supporting of pipe on blocks be permitted.

B. Before each piece of pipe is lowered into the trench, it shall be thoroughly swabbed out to insure it being clean. Any piece of pipe or fitting which is known to be defective shall not be laid or placed in the lines. If any defective pipe or fittings shall be discovered after the pipe is laid, it 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. Bevel can be made with hand or power tools.

C. The interior of the pipe, as the Work progresses, shall be cleaned of dirt, jointing materials, and superfluous materials of every description. When laying of pipe is stopped for any reason, the exposed end of such pipe shall be closed with a plywood plug fitted so as to exclude earth or other material and precautions taken to prevent floatation of pipe by runoff into trench.

D. Anchorage of Bends:

1. At all tees, plugs, caps and bends of 11-1/4 degrees and over, and at reducers or in fittings where changes in pipe diameter occur, movement shall be prevented by using suitable harness, thrust blocks or ballast. Thrust blocks shall be as shown on the Drawings, with sufficient volumes of concrete being provided; however care

shall be taken to leave weep holes unobstructed and allow for future tightening of all nearby joints. Unless otherwise directed by the Engineer, thrust blocks shall be placed so that pipe and fitting joints will be accessible for repair.

2. Bridles, harness or pipe ballasting shall meet with the approval of the Engineer. Steel rods and clamps shall be galvanized or otherwise rust-proofed or painted.
3. No extra pay shall be allowed for work on proper anchorage of pipe, fittings or other appurtenances. Such items shall be included in the price bid for the supported item.

3.04 POLYETHYLENE ENCASEMENT

Polyethylene encasement shall be installed on ductile iron pipe where indicated on the Contract Drawings. Installation shall be in accordance with Method 'B' as described in AWWA C-105.

3.05 JOINTING

A. Slip Jointed and Heat-Fusion Welded Pipe:

1. All pipe shall be laid with ends abutting and true to the lines and grades indicated on the plans. Pipe shall be fitted and matched so that when laid in the Work, it will provide a smooth and uniform invert. Supporting of pipe shall be as set out in Section 02225 and in no case shall the supporting of pipe on blocks be permitted.
2. Before each piece of pipe is lowered into the trench, it shall be thoroughly swabbed out to insure it being clean. Any piece of pipe or fitting which is known to be defective shall not be laid or placed in the lines. If any defective pipe or fittings shall be discovered after the pipe is laid, it 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. Bevel can be made with hand or power tools.
3. The interior of the pipe, as the Work progresses, shall be cleaned of dirt, jointing materials, and superfluous materials of every description. When laying of pipe is stopped for any reason, the exposed end of such pipe shall be closed with a plywood plug fitted so as to exclude earth or other material and precautions taken to prevent floatation of pipe by runoff into trench.
4. Anchorage of Bends:
   a. At all tees, plugs, caps and bends of 11-1/4 degrees and over, and at reducers or in fittings where changes in pipe diameter occur, movement shall be prevented by using suitable harness, thrust blocks or ballast. Thrust blocks shall be as shown on the Drawings, with sufficient volumes of concrete being provided; however, care shall be taken to leave weep holes unobstructed and allow for future tightening of all nearby joints. Unless otherwise directed by the Engineer, thrust blocks shall be placed so that pipe and fitting joints will be accessible for repair.
   b. Bridles, harness or pipe ballasting shall meet with the approval of the Engineer. Steel rods and clamps shall be galvanized or otherwise rust-proofed or painted.

c. No extra pay shall be allowed for work on proper anchorage of pipe, fittings or other appurtenances. Such items shall be included in the price bid for the supported item.

B. No backfilling (except for securing pipe in place) over pipe will be allowed until the Engineer has the opportunity to make an inspection of the joints, alignment and grade in the section laid, but such inspection shall not relieve the Contractor of further liability in case of defective joints, misalignment caused by backfilling and other such deficiencies that are noted later.

C. All joint surfaces shall be cleaned immediately before jointing the pipe. The joint shall be lubricated in accordance with the pipe manufacturer's recommendations. Each pipe unit shall then be carefully pushed into place without damage to pipe or gasket. All pipe shall be provided with home marks to insure proper gasket seating. Details of gasket installation and joint assembly shall follow the manufacturer's direction for the joint type and material of the pipe. The resulting joints shall be watertight and flexible.

D. Solvent Welded Pipe:
1. All rigid plastic pipe shall be cut, made up, and installed in accordance with the pipe manufacturer's recommendations. When installed exposed, the pipe shall be supported or hung in accordance with the manufacturer's recommendations.
2. Containers of solvent cement shall be completely closed except when cement is being applied to pipe components. Should the solvent cement become lumpy or thickened, it shall be discarded, and a new container opened.
3. Schedule 80 threaded adapters shall be used where necessary to connect to a threaded valve or fitting.
4. Only strap wrenches shall be used for tightening threaded plastic joints, and care shall be taken not to overtighten those joints.
5. Solvent welded pipe shall not be laid or installed when the ambient temperature is below 40 degrees F, nor above 90 degrees F when exposed to direct sunlight. Ends to be joined shall be shielded from direct sunlight prior to and during the laying operation.
6. Provide adequate ventilation when working with pipe joint solvent cement.

3.06 TESTING OF FORCE MAINS

A. The completed work shall comply with the provisions listed herein, or similar requirements which will insure equal or better results. Suitable test plugs, water pump or other equipment and apparatus, and all labor required to properly conduct the tests shall be furnished by the Contractor at no expense to the Owner.

B. Force main piping shall be pressure tested to 250 percent of the normal system operating pressure or to 100 percent of the rated pressure of the pipe, whichever is less. At no time shall the test pressure exceed 100 percent of the pipe's rated pressure. A pipe section shall be accepted if the test pressure does not fall more than 5 percent during the 4-hour period.

C. All piping shall be tested for leakage at a pressure no less than that specified for the pressure test. The leakage shall be less than an allowable amount determined by the following equation:

$$L = \frac{ND\,(P)^{1/2}}{7{,}400}$$

Where: L = allowable leakage (gallon/hour)
N = number of joints in length of pipeline tested
D = nominal diameter of pipe (inches)
P = test pressure (psig)

D. Should the sections under test fail to meet the requirements, the Contractor shall do all work locating and repairing the leaks and retesting as the Engineer may require without additional compensation.

E. If in the judgment of the Engineer, it is impracticable to follow the foregoing procedures for any reason, modifications in the procedures shall be made as required and as acceptable to the Engineer, but in any event, the Contractor shall be responsible for the ultimate tightness of the line within the above test requirements.

END OF SECTION 02732

SECTION 02735 - MANHOLES AND PRECAST SEWAGE STRUCTURES

PART 1 - GENERAL

1.01 WORK INCLUDED

The Contractor shall furnish all labor, material, and equipment necessary to construct manholes for sanitary sewers, including frames, lids, and all appurtenances as shown and detailed on the Drawings and specified herein. Manhole materials shall be precast concrete as detailed on the Drawings.

1.02 RELATED WORK

A. Section 02225 - Excavating, Backfilling and Compacting for Utilities.

B. Section 02731 - Gravity Sewers.

C. Division 3 - Concrete.

1.03 REFERENCE STANDARDS

The latest editions of the following standards shall be considered a part of these specifications. In case of conflict, these specifications shall take precedence over the listed standard.

A. American Association of State Highway and Transportation Officials (AASHTO)
   1. "Standard Specifications for Highway Bridges"

B. ACI 304 - Guide for Measuring, Mixing, Transporting and Placing Concrete.

C. ACI 318 - Building Code Requirements for Reinforced Concrete.

D. ASTM A48 - Standard Specification for Gray Iron Castings.

E. ASTM C443 - Standard Specification for Joints of Circular Concrete Sewer and Culvert Pipe Using Rubber Gaskets.

F. ASTM C478 - Specification for Precast Reinforced Concrete Manholes Sections.

G. ASTM C857 - Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.

H. ASTM C858 - Standard Specification for Underground Precast Concrete Utility Structures.

I. ASTM C890 - Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures.

J. ASTM C913 - Standard Specification for Precast Concrete Water and Wastewater Structures.ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures Pipes and Laterals.

K. ASTM C1244 - Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill.

L. Kentucky 2000 Transportation Cabinet/Department of Highways (KDOH) - Standard Specifications for Road and Bridge Construction

1.04 QUALITY ASSURANCE

A. Precast concrete producer shall demonstrate adherence to the standards set forth in the National Precast Concrete Association Quality Control Manual. Precast concrete producer shall meet the following requirements:
   1. NPCA Certification - The precast concrete producer shall be certified by the National Precast Concrete Association's Plant Certification Program prior to and during production of the products for this project.
   2. Qualifications, Testing and Inspection.
      a. The precast concrete producer shall have been in the business of producing precast concrete products similar to those specified for a minimum of 5 years. The precast concrete producer shall maintain a permanent quality control department or retain an independent testing agency on a continuing basis. The agency shall issue a report, certified by a registered engineer, detailing the ability of the precast concrete producer to produce quality products consistent with industry standards.
      a. The precast concrete producer shall show that the following tests are performed in accordance with the ASTM standards indicated. Tests shall be performed for each 150 cu. yd. of concrete placed, but not less frequently than once per week.
   3. Slump: C143.
   4. Compressive Strength: C31, C192, C39.
   5. Air Content (when air-entrained concrete is being used): C231 or C173.
   6. Unit Weight : C138.
      a. The precast concrete producer shall provide documentation demonstrating compliance with this subparagraph.
      b. The owner may place an inspector in the plant when the products covered by this specification are being manufactured.
      c. The date of manufacture and the name or trademark of the manufacturer shall be clearly marked on the precast sections.

1.05 DELIVERY, STORAGE AND HANDLING

A. Handling: Products shall be stored, handled shipped and unloaded in a manner to minimize damage. Lifting holes or inserts shall be consistent with industry standards. Lifting shall be accomplished with methods or devices intended for this purpose.

B. Acceptance at Site: The Owner's representative shall make final inspection and acceptance of the precast concrete products upon arrival at the jobsite.

PART 2 - PRODUCTS

2.01 CONCRETE MANHOLES - GENERAL

A. Manholes: ASTM C478 shall conform, in shape, size, dimensions, materials, and other respects, to the details indicated on the Drawings.
   1. Concrete manholes shall be minimum 5-foot inside diameter with precast reinforced concrete developed bases. Invert channels shall be factory constructed when the base is made. Sloping invert channels shall be constructed whenever the difference between the inlet and outlet elevation is 2 feet or less. The inverts of the developed bases shall conform accurately to the size of the adjoining pipes. Side inverts shall be curved and main inverts (where direction changes) shall be laid out in smooth curves of the longest possible radius which is tangent, within the manhole, to the centerlines of adjoining pipelines. Manholes shall have cast-in-place or plastic formed inverts which shall be installed after construction of the manhole.
   2. The concrete manhole walls (risers and cones) shall be precast concrete sections. Minimum strength of the concrete for the precast sections shall be 4,000 psi at the time of shipment.
   3. Manholes with a diameter of 5 feet or larger shall have a base slab.
   4. Joints: ASTM C443 rubber gasket.
   5. Grade Rings: ASTM C478 or ASTM D1248.
   6. Flat Slab Tops : ASTM C478. Provide with 60-inch spigot for risers on base sections for 54-inch and 60-inch sewers.
   7. Liner: Agru Sure-Grip.
   8. Manhole frames and lids shall be as specified hereinafter in this Section.

B. Manholes shall be manufactured by Sherman Dixie, Rinker or approved equivalent.

2.02 PRECAST CONCRETE SECTIONS

A. Precast concrete sections and appurtenances: ASTM C478 with the following exceptions and additional requirements.
   1. The wall sections shall be not less than 5 inches thick.
   2. Only Type II cement shall be used except as otherwise specified.

B. Joints between sections shall be made watertight through the use of rubber O-ring gaskets or rubber profile gaskets. Gaskets shall conform to the ASTM C443. Rope

mastic or butyl mastic sealant shall not be allowed except as sealant between the cone section, any adjusting sections or rings, and the frame casting.

C. Joints between grade rings shall be sealed with ASTM C443 1-inch O-ring gasket.

2.03 MANHOLE FRAMES AND LIDS

A. Cast-iron manhole frames and lids shall meet the requirements shown on the Drawings, or as specified.
   1. The castings shall be of good quality, durable, evengrained cast iron, smooth, free from scale, lumps, blisters, sandholes, and defects. Contact surfaces of covers and frame seats shall be machined to prevent rocking of lids.
   2. Castings ASTM A48, minimum Class 35.
   3. Minimum manhole frame opening shall be 23 inches in diameter. The lids shall have two (2) pick holes about 1-1/4 inches wide and ½ inches deep with 3/8-inch undercut all around. Covers shall not be perforated unless otherwise indicated
   4. All lids shall be marked in large letters "SANITARY SEWER" in the center, as shown on the Drawings.

B. Standard frames and lids: heavy duty, non-rocking Neenah R-1733 or approved equivalent. Watertight frames and lids: heavy duty, non-rocking Neenah R-1916E or approved equivalent.

2.04 PIPE CONNECTOR SYSTEM

A. All holes for pipe connections in manhole and wetwell barrels and bases shall have a factory-installed flexible rubber pipe connector system to prevent infiltration. The pipe connector system shall conform to the latest revision of ASTM C923.

B. For manholes of 12 feet or less in depth, without the presence of ground water, the pipe connector system shall be A-Lok Manhole Pipe Seal as manufactured by A-Lok Corporation, Trenton, NJ; Contour Seal or Kor-N-Seal as manufactured by National Pollution Control Systems, Inc., Nashua, NH; PSX as manufactured by Press-Seal Gasket Corporation, or an approved equivalent.

C. For manholes of 12 feet or greater in depth, or when ground water is present, the pipe connector system shall be A-Lok Manhole Pipe Seal as manufactured by A-Lok Corporation, Trenton, NJ, or an approved equivalent.

2.05 POLYETHYLENE DIAPHRAGM MANHOLE FRAME INSERTS

A. Polyethylene diaphragm manhole frame inserts shall be installed in all manholes or those manholes which are susceptible to inflow as indicated on the Drawings.
   1. Polyethylene diaphragm manhole frame inserts shall be manufactured from corrosion-proof material suitable for atmospheres containing hydrogen sulfide and diluted sulfuric acid.

2. The body of the manhole insert shall be made of high density polyethylene copolymer material meeting ASTM D1248, Class A, Category 5, Type 111 (the insert shall have a minimum impact brittleness temperature of minus 180 degrees Fahrenheit). The thickness shall be a uniform 1/8 inch or greater. The manhole frame insert shall be manufactured to dimensions as shown on the Drawings to allow easy installation within the manhole frame.
3. Insert gaskets shall be made of closed cell neoprene. The gasket shall have a pressure sensitive adhesive on one side and shall be placed under the weight bearing surface of the insert by the manufacturer. The adhesive shall be compatible with the manhole insert material so as to form a long-lasting bond in either wet or dry conditions.
4. A lift strap shall be attached to the rising edge of the bowl insert. The lift strap shall be made of 1 inch wide woven polypropylene web and shall be seared on all cut ends to prevent unraveling. The lift strap shall be attached to the manhole insert by means of a wide head stainless steel 3/16" rivet and a stainless steel 3/4-inch backup washer. Placement of the lift strap shall provide easy visual location.
5. Standard ventilation shall be by means of vent hole on the side wall of the manhole frame insert approximately 3/4-inches below the lip. The vent hole will allow a maximum release of 5 gallons per 24 hours when the insert is full. Sewer gas is vented at one PSI or less.
6. The manhole frame insert shall be manufactured to fit the manhole frame rim upon which the manhole cover rests. The Contractor is responsible for obtaining specific measurements of each manhole cover to insure a proper fit. The manhole frame shall be cleaned of all dirt, scale and debris before placing the manhole frame insert on the rim.

B. The polyethylene diaphragm manhole inserts shall be Sewer Guard SD by ChemRex, No Flow In Flow or approved equivalent.

2.06 GRADE RINGS

All grade adjustments of manhole frame and cover assemblies shall be completed utilizing reinforced concrete grade rings or injection molded High Density Polyethylene (HDPE) adjustment rings as manufactured by Ladtech, Inc. or approved equal.

A. Reinforced Concrete Grade Adjustment Rings
1. Precast reinforced concrete grade adjustment rings shall conform to ASTM C478 and shall be free from cracks, voids and other defects.
2. The adjustment rings shall be tested to assure compliance with impact and loading requirements per AASHTO's Standard Specification for Highway Bridges.
3. Installation shall be according to the manufacturer's recommendations and the following procedure:
   a. Clean the concrete cone or top slab with a whisk broom or chisel to assure a flat sealing surface free of rocks, gravel, blacktop, protruding concrete, frozen, and other debris.

b. Measure the distance from the cone or top slab to the projected finish grade and deduct for the cover frame. Determine the net buildup of rings necessary to come within 1/4-inch of grade with the cover frame in place.
c. Determine the best rings height combination to achieve necessary adjustment.
d. Use mortar to create a flat sealable surface if the cone or top slab is too badly chipped or damaged to attain a good seal. Apply two strips of Conseal or approved equal to the cone or top slab around the entire circumference, overlapping the ends.
e. Place the first ring down onto the cone or top slab.
f. Apply two strips of Conseal or approved equal to the top of the first grade ring around the entire circumference, overlapping the ends.
g. Place the second ring down onto the first ring.
h. Continue the assembly per steps f) and g) for each adjustment ring being used.
i. Prior to setting the cover frame in place, apply two strips of Conseal or approved equal to the last rings around the entire circumference, overlapping the ends.
j. Set the cover frame in place, centered on the top ring.

B. High Density Polyethylene (HDPE) Grade Adjustment Rings
1. Plastic adjustment rings shall be manufactured from Polyethylene plastic as identified in ASTM D 1248 (Standard Specification for Polyethylene Plastic Molding and Extrusion Materials). Material properties shall be tested and qualified for usage per the ASTM Test Methods reference in ASTM D 1248. Recycled material meeting the above requirement may be used.
2. Plastic adjustment rings shall be manufactured utilizing the injection molding process as defined by the Society of Plastic Engineers (SPE).
3. The adjustment rings shall be tested to assure compliance with impact and loading requirements per AASHTO's Standard Specification for Highway Bridges.
4. Installation shall be according to manufacturer's recommendations and the following procedure.
   a. Clean the concrete cone or top slab with a whisk broom or chisel to assure a flat seating surface free of rocks, gravel, blacktop, protruding concrete, frozen or other debris.
   b. Measure the distance from the cone or top slab to the projected finish grade and deduct for the cover frame. Determine the net buildup of rings necessary to come within 1/4-inch of grade with the cover frame in place.
   c. Determine the best ring height combination to attain necessary adjustment. Molded slope rings shall be used to match grades of paved surfaces that are not flat. Molded slope rings shall be used to match grades of paved surfaces that are not flat. Molded slope rings shall be used to accommodate other grades that are not flat only when directed by the ENGINEER.
   d. Dry stack rings on cone. Index any slope rings as necessary. Place cover frame casting on top of the assembly and verify height and slope match.
   e. Mark the entire stack with a vertical line and disassemble.

f. Use mortar to create a flat sealable surface if the cone or top slab is too badly chipped or damaged to attain a good seal. Apply a 1-inch by 1-inch Conseal as close to the male lip at the bottom of the first ring as possible.

g. Place the first ring down onto the cone or top slab with the male lip into the opening, aligning the vertical line.

h. Apply a 3/8-inch bead of approved butyl rope on the bottom of the next ring, as close to the male lip as possible around the entire 360□ of the ring.

i. Place the second ring down onto the first ring with the male lip interlocking into the center, aligning the vertical line.

j. Apply the assembly per step h) and I) for each adjustment ring being used.

k. Prior to setting the cover frame in place, apply 1-1-inch by 1-inch Conseal inch bead of approved butyl sealant on top of the last ring. Apply the sealant in a location to contact the cover frame the full 360□.

l. Set the cover frame in place, centered on the top ring. Apply sufficient butyl rubber to achieve 10-inch vacuum test if required.

5. All HDPE adjustment rings shall be covered by a full two year warranty that warrants the adjustment rings for two years from the date of installation against defects in materials. Any defective adjustment rings shall be replaced at no cost to the OWNER.

2.07 ACCESSORIES

A. Straps: 306 stainless steel minimum 3-inch wide x 12-inch long x 0.25 inch thick.

B. Strap Anchors: Stainless steel 0.625-inch Hilti Kwik Bolt II stud version expansion anchor or equal with stainless steel washers and nuts. Verify length with connection location.

C. Frame Anchors: Stainless steel 0.625-inch Hilti Kwik Bolt II stud version expansion anchor or equal with stainless steel washers and nuts. Verify length with connection location.

D. Grade Ring Anchors: stainless steel 0.625-inch diameter x maximum 16-inch long threaded rod, washers and nuts with stainless steel Hilti HDI drop-in anchor or equal.

PART 3 - EXECUTION

3.01 FABRICATION - PRECAST SECTIONS

A. Prior to placement of reinforcing steel and concrete, secure liner with sealing strips and joint splices to formwork in accordance with the liner manufacturer recommendations to provide continuous uniform surface.

B. No more than two (2) lift holes or inserts may be cast or drilled in the exterior of each section.

C. Acceptance of the sections will be on the basis of material tests and inspection of the completed product and test cylinders if requested by the Engineer.

3.02 PREPARATION

A. Excavation, Backfill and Compaction shall be in accordance with Section 02225.

B. Foundations: Shall be obtained by removal and replacement of unsuitable material with well graded granular material; or by tightening with coarse ballast rock; or by such other means as provided for foundation preparation of the connected sanitary sewer. Where water is encountered at the site, cast-in-place base or monolithic structures shall be placed on a one-piece waterproof membrane, so placed as to prevent any movement of water into the fresh concrete.

C. Bedding: Shall be a well-graded granular bedding material conforming to the requirements for sewer pipe bedding material but not less than 4 inches in thickness and extending either to the limits of the excavation or to a minimum of 12 inches outside the outside limits of the base section. In the latter case, the balance of the excavated area shall be filled with borrow well tamped to the level of the top of the bedding to positively prevent any lateral movement of the bedding when the weight of the manhole is placed upon it. The bedding material shall be firmly tamped and made smooth and level to assure uniform contact and support of the manhole.

D. Pipe connections to existing manholes shall be made so that finish work will conform as nearly as practicable to the applicable requirements specified for new manholes, including all necessary concrete work, cutting, and shaping. The connection shall be centered on the manhole. Holes for the new pipe shall be of sufficient diameter to allow packing cement mortar around the entire periphery of the pipe but no larger then 1.5 times the diameter of the pipe. Cutting the manhole shall be done in a manner that will cause the least damage to the walls.

E. Cutting into piping for connections shall not be done except in special approved cases. When the connecting pipe cannot be adequately supported on undistributed earth or tamped backfill, the pipe shall be encased in concrete backfill or supported on a concrete cradle as directed. Concrete required because of conditions resulting from faulty construction methods or negligence by the Contractor shall be installed at no additional cost to the Government. The installation of wye branches in an existing sewer shall be made by a method which does not damage the integrity of the existing sewer. One acceptable method consists of removing one pipe section, breaking off the upper half of the bell of the next lower section and half of the running bell of wye section. After placing the new section, it shall be rotated so the broken half joint packing and cement mortar.

F. Where indicated on the Drawings, stub-outs of the specified size for future lateral connections shall be constructed. The pipe used for stubbing out shall extend a nominal 2 feet beyond the outside of the manhole barrel and shall terminate with a bell end (or spoigot end if applicable.) The pipe shall be sealed with an approved, prefabricated plug or cap conforming to the joint detail of the pipe supplied. For large

sewers, a short section of pipe (not more than 4 feet in length) sealed at one end may be installed on the manhole stub. Shop Drawings shall be submitted for approval. The use of brick or concrete as a means of plugging will only be authorized on sewers to be abandoned. Unless otherwise provided for the Proposal or noted elsewhere on the Drawings, stub-outs will be considered to be incidental to the construction of manholes and all costs incurred shall be included in the unit price for the manhole structure.

3.03 SETTING PRECAST SECTIONS

A. Construct base slab of cast-in-place concrete or use precast concrete base sections. Make inverts in cast-in-place concrete and precast concrete bases with a smooth-surfaced semi-circular bottom conforming to the inside contour of the adjacent sewer sections. For changes in direction of the sewer and entering branches into the manhole, make a circular curve in the manhole invert of as large a radius as manhole size will permit. For cast-in-place concrete construction, either place or cast bottom slabs and walls integrally or key and bond walls to bottom slab. No parging will be permitted on interior manhole walls. For precast concrete construction, make joints between manhole sections with the gaskets specified for this purpose; install in the manner specified for installing joints in concrete piping. Parging will not be required for precast concrete manholes. Cast-in-place concrete work shall be in accordance with the requirements specified under paragraph entitled "Concrete Work" of this section. Make joints between concrete manholes and pipes entering manholes with the resilient connectors specified for this purpose; install in accordance with the recommendations of the connector manufacturer. Where a new manhole is constructed on an existing line remove existing pipe as necessary to construct the manhole. Cut existing pipe so that pipe ends are approximately flush with the interior face of the manhole wall, but not protruding into the manhole. Use resilient connectors as previously specified for pipe connectors to concrete manholes.

B. Pre-Cast Base Section Placement: Shall be placed on the prepared bedding so as to be fully and uniformly supported in true alignment and making sure that entering pipes can be inserted on proper grade.

C. Precast reinforced concrete sections shall be set so as to be vertical and with sections in plumb alignment.

D. Rubber gaskets shall be installed in all section joints in accordance with the manufacturer's recommendations or epoxy grout in accordance with manhole manufacturer recommendation.

E. All lift holes in sections shall be thoroughly plugged with rubber plugs made specifically for this purpose or epoxy grout in accordance with manhole manufacturer recommendations.

F. Liner joints shall be sealed in accordance with manufacturer recommendations.

G. The manholes shall be of watertight construction. Manhole lids shall be in place in the frames on completion of work at the manholes.

H. Clean manhole structures of all debris prior to installation of frames and testing.

3.04 SETTING MANHOLE FRAMES AND LIDS

A. Top of manholes shall be flush with finished lawns, landscaped areas and pavements and shall not project above the existing ground level more than 12 inches in other areas unless otherwise indicated on the plans.

B. The Contractor shall coordinate elevations of manhole covers in paved streets with the Owner. Properly slope and install casting to match existing pavement surface. If resurfacing of the street in which sewers are laid is scheduled within twelve (12) months, top of frame and lid shall be set 1-1/2 inches above the existing pavement surface in anticipation of the resurfacing operations, unless otherwise approved by Owner and Street Authorities.

3.05 INSTALLATION OF MANHOLE FRAME SEAL

A. The Contractor shall measure the manhole to determine the information required on the manufacturer's "Sizing and Ordering" procedure.

B. All sealing surfaces shall be reasonably smooth, clean and free of any form offsets or excessive honeycomb. The top internal portions of the cone shall have a minimum 3-inch high vertical surface. The preparation of this vertical surface when none exists shall be in accordance with the frame seal manufacturer's instructions.

C. The internal frame seals and extensions shall be installed in accordance with the manufacturer's instructions. The Contractor shall have a manufacturer's recommended expansion tool and all other equipment/tools necessary to install the frame seals.

D. Manhole frame seals shall be visually inspected after installation to ensure that the seal is properly positioned, tight against the manhole and frame surfaces, that no voids or leakage points exist and that the bands are securely locked in place. Any seals failing this inspection shall be reinstalled or replaced as necessary and reinspected at no additional cost to the Owner.

3.06 VACUUM TESTING OF MANHOLES AND PRECAST SEWAGE STRUCTURES

A. Manholes shall be tested in accordance with ASTM C1244, after installation with all connection in place. The vacuum test method is intended to demonstrate the condition of manholes prior to backfill. It may also be used to test manholes after backfilling; however, testing should be correlated with the connector supplier.

B. Where groundwater is present in the excavation and trenches, the Contractor shall take any necessary steps (including construction of a piezometric tube adjacent to the manhole) to determine the depth of groundwater above the invert of the manhole at the time of testing, at no additional cost to the Owner. Information concerning groundwater levels above the invert shall be used to determine the amount of vacuum applied during the test.

C. A vacuum test for manholes **shall** include testing of the joint seal between the cast iron frame and the concrete cone, top slab, and any grade rings. Where a hatch and cover are provided in the top of a precast sewage structure, the Contractor shall provide a means of establishing a seal over the hatch, unless the Drawings and notes indicate that the hatch is to be tested for vacuum.

D. Prior to the test, the following items shall be complete:
   1. Lift holes, if any, shall be plugged with an approved, non-shrink grout prior to testing.
   2. Drop connections, if any, shall be installed prior to testing.

E. Testing Procedure:
   1. Temporarily plug, with the plugs being braced to prevent the plugs or pipes from being drawn into the manhole, all pipes entering the manhole at least eight inches into the sewer pipe(s). The plug must be inflated at a location past the manhole/pipe gasket.
   2. The test head shall be placed on the top of the conical, over the manway opening in a flat top, or (in the case of a wetwell or valve vault) over such adapter as may be required, and inflated in accordance with the manufacturer's recommendations.
   3. A vacuum of 10-inches of mercury shall be drawn on the manhole, or such lesser amount of vacuum that the combined vacuum and positive external head pressure from groundwater does not exceed the recommended pressure ratings for the pipe connector system. The vacuum shall be measured by a test gauge which shall be liquid filled, having a 3.5-inch diameter face, reading from zero to thirty inches of mercury.
   4. The indicated vacuum (as determined under the preceding paragraph) shall be drawn on the manhole, the valve on the vacuum line of the test head closed, and the vacuum pump shut off. The time shall be measured for the vacuum to drop 1-inch of mercury.
   5. The manhole shall be considered to pass the vacuum test if the time for the vacuum reading to drop 1-inch of mercury meets or exceeds the values indicated in the following table:

Minimum Test Times for Various Manhole Diameters (seconds)									
Depth (ft)	Diameter (inches)								
	30	33	36	42	48	54	60	66	72
8	11	12	14	17	20	23	26	29	33
10	14	15	18	21	25	29	33	36	41
12	17	18	21	25	30	35	39	43	49
14	20	21	25	30	35	41	46	51	57
16	22	24	28	34	40	46	52	58	67
18	25	27	32	38	45	52	59	65	73
20	28	30	35	42	50	58	65	72	81
22	31	33	39	46	55	64	72	79	89
24	33	36	42	51	59	69	78	87	97
26	36	39	46	55	64	75	85	94	105
28	39	42	49	59	69	81	91	101	113
30	42	45	53	63	74	87	98	108	121

6. If a manhole fails the vacuum test, the manhole shall be repaired with a non-shrinkable grout or other suitable material based on the material of which the manhole is constructed and retested, as stated above.
7. Failure of this vacuum test shall not preclude acceptance by appropriate water infiltration of exfiltration testing, or such other means as may be accepted by the Engineer.
8. All temporary plugs and braces shall be removed after each test.

3.07 RESTORATION

A. Grade around manhole in unpaved areas to match adjacent contours and for positive drainage away from manhole lid.

B. Protect manholes during pavement restoration. Clean casting and lid after pavement restoration is complete.

END OF SECTION 02735

SECTION 02762 – SANITARY SEWER VIDEO INSPECTION

PART 1 - GENERAL

1.01 SUMMARY

A. The Work under this section consists of furnishing all labor, materials, and equipment required to perform closed circuit television (CCTV) inspection of installed sewer lines.

B. Debris removal and disposal shall be performed in accordance with all federal, state, and local standards.

C. Measurement and payment for the cost of work specified in this Section shall be based on unit prices listed in the Bid Form.

1.02 SUBMITTALS

A. Contractor shall submit the following items, in accordance with the requirements of Section 01300, Submittals:
   1. A list of equipment, materials, and personnel to be used on the project, including all permits obtained prior to commencing the work.
   2. Originals of all inspection data in DVD format.

1.03 QUALITY ASSURANCE

A. The equipment used shall be in good working order and provide continuous operation during CCTV inspection.

B. DVD recordings shall be of good visual quality, capable of slow motion and pausing without significant reduction of visual quality.

C. CCTV inspection shall be performed in accordance with PACP specifications and coding, by PACP-certified technicians.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 EQUIPMENT

A. Closed Circuit Television Camera shall meet the following requirements:
   1. Specifically designed and constructed for sewer line television inspection.
   2. Lighting shall be suitable to provide clear color pictures of periphery of pipe.
   3. Operable in 100 percent relative humidity conditions.

4. Provide a minimum of 600 lines of resolution.
5. To achieve peak picture quality throughout all conditions encountered, variable intensity control of camera lights and remote control for focus and iris shall be located at monitoring station.
6. Focal distance shall be adjustable through range from 6 inches to infinity.
7. Camera, television monitor, and other components of color video system shall be capable of producing picture quality to satisfaction of Engineer and if unsatisfactory, equipment shall be removed and replaced with satisfactory equipment.
8. Camera shall have ability to rotate lens 360°, or have pan and tilt capability.

3.02 INTERNAL CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION

A. General:
1. All sewer lines shall be visually inspected by means of closed circuit television (CCTV) system. The inspection shall be done one line segment (manhole to manhole) at a time and the flow in the line being inspected shall be suitably controlled as specified in Subpart 3.05, Sewer Flow Control.
2. The Contractor shall maintain the necessary capabilities to CCTV inspect the sewer lines included in this contract, with line lengths not exceeding 500 feet. The television camera used for the inspection shall meet the requirements of Subpart 3.01.B of this Section.

B. CCTV Inspection:
1. Contractor shall investigate the interior condition of each sewer line to identify all observed structural defects, pipe sags, exfiltration, infiltration, and inflow, as well as the general condition of the sewer conveyance at the time of inspection. Owner shall be provided the opportunity to monitor the CCTV images as the sewer line is being investigated.
2. A distance meter shall be furnished on the videotape. The meter shall be checked using distances between manholes. Meter distances and actual distances shall be consistent.

C. Defect Imaging:
1. Contractor shall produce color videotape footage of each CCTV inspection. Video footage shall contain the following printed information at the beginning of each CCTV inspection:
   a. Project Name and Project Number
   b. Starting Manhole and Ending Manhole Numbers
   c. Starting Manhole Location
   d. Date and Time
   e. Sewer Line Material
   f. Sewer Line Diameter
   g. Videotape Index Counter Number

2. Videotape footage of the interior of each sewer line shall provide clear and accurate images of all observed service connections, structural defects, pipe sags, exfiltration, infiltration, and inflow, as well as the general condition of each line at the time of inspection.

D. Field Records.
   1. DVD recordings of the internal line inspections shall be delivered to the Owner.
   2. Contractor shall record the measured distance of each CCTV inspection. All distance measurements shall begin at the center of the starting manhole and end at the center of the ending manhole.

END OF SECTION 02762

SECTION 02930 – SEEDING AND PLANTINGS

PART 1 - WORK INCLUDED

1.01 CLEAN-UP

Upon completion of the Project, the Contractor shall remove all debris and surplus construction materials resulting from his work. The Contractor shall grade the ground along each side of the pipe trenches and/or structures in a uniform and neat manner leaving the construction area in a shape as near as possible to the original ground line, or as shown on the Drawings.

1.02 STREAM BANK RESTORATION

Contractor shall restore stream crossing areas in accordance with Restoration Plan included as supplemental information to the U.S. Army Corps of Engineers permit included in Appendix C. This includes furnishing and planting trees and shrubs as specified.

1.02 QUALITY ASSURANCE

Packaged products shall bear manufacturer's certified analysis. Comply with regulations applicable to landscape materials. Reject and replace unsatisfactory or defective material.

PART 2 - PRODUCTS

2.01 SEED

A. Grass seed shall be mixed and guaranteed by the supplier to consist of the following:

1. Annual Rye: 60 percent.
2. Kentucky Bluegrass: 20 percent.
3. Falcon Fescue: 20 percent.

2.02 TOPSOIL

Topsoil shall be material stripped and stored under work of Section 02110 and shall be used for all work under this Section. If the quantity of stored topsoil is inadequate or if none has been salvaged from the Project site, the Contractor shall furnish at his own expense sufficient topsoil to properly install all work as specified herein. Topsoil shall be original surface loam obtained from well drained areas from which topsoil has not been removed previously, either by erosion, clearing and removal of tress or mechanical means. It shall not contain subsoil material and shall be clean and free of clay lumps, roots, stones or similar substances more than 2 inches in any dimension, debris, discarded fragments of building materials or weeds and weed seeds.

2.03 SOIL IMPROVEMENTS

A. Commercial fertilizers shall be of analyses specified, or as recommended by the Agricultural Extension Service for treatment of topsoil in the area from which removed, 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 guaranteed analysis. Any fertilizer which becomes caked or otherwise damaged, making it unsuitable for use, will not be accepted.

B. Lime, if recommended for soil treatment by the Agricultural Extension Service, shall be ground limestone (Dolomite) containing not less than 85 percent of total carbonates, and shall be ground to such a fineness that 50 percent will pass through a 100-mesh sieve, and 90 percent will pass through a 20-mesh sieve. Coarser material shall be acceptable provided that required rates of application are increased proportionally on the basis of quantities passing the 100-mesh sieve.

PART 3 - EXECUTION

3.01 SEEDING

A. After installation of the Project, topsoil shall be spread evenly to a minimum 4-inch depth and lightly compacted. No topsoil shall be spread in a frozen or muddy condition.
   1. Any stored topsoil remaining after work is in place shall be disposed of by the Contractor as directed by the Engineer.

B. Soil improvement shall be made if and as recommended by the Agricultural Extension Service prior to seeding.
   1. Ground limestone, if required, shall be applied at the recommended rates per square yard and shall be thoroughly mixed into the topsoil.
   2. Fertilizers, if required shall be of analysis and rates per square yard as recommended in the topsoil analysis and shall be mixed lightly in the top few inches of topsoil.

C. 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 a uniformly fine texture. Areas shall be seeded evenly with a mechanical spreader at a rate of 2 pounds per 1,000 square feet, lightly raked and watered with a fine spray.

D. After seed has been distributed, the Contractor shall cover areas that are likely to washout with straw to a depth of 1-1/2 inches.

E. Seeded areas shall be protected and maintained by watering, regular mowing and reseeding as may be necessary to produce a uniform stand of grass. Maintenance shall continue throughout the guarantee period until a dense, uniform turf is established.

F. All paved streets, roads, sidewalks, curbs, fences, stonewalls, lawns, etc., disturbed during construction shall be restored, repaired, or replaced to as good a condition as existed prior to construction. All materials and workmanship shall conform to standard practices and specifications of the Owner and/or the Kentucky Department of Highways, whichever applies.

G. The Contractor shall remove from the site all equipment, unused materials and other items at his expense. The construction site shall be left in a neat, orderly condition, clear of all unsightly items, before the Work is finally accepted.

END OF SECTION 02930

Division 3 - Concrete

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS

A. Section 00710 - General Conditions.

B. Section 02225 -- Excavation, Backfilling and Compacting for Utilities.

1.02 SUBMITTALS

A. The Contractor shall submit the following data to the Engineer for review:
   1. Mix designs for all mixes proposed or required to be used, including all mixes containing admixtures.
   2. Certification by the manufacturer that cement meets the Specification contained herein.
   3. Reports on laboratory compression tests of cylinders taken during concrete placement.
   4. Manufacturer's cut sheets for all other concrete related products.

PART 2 - PRODUCTS

2.01 CLASSES OF CONCRETE AND USAGE

A. Structural concrete of the various classes required shall be proportioned to produce the following 28-day compressive strengths:
   1. Selection of Proportions for 4,500 psi Concrete:
      a. 4,500 psi compressive for strength at 28 days.
      b. Type I/II cement plus air.
      c. Maximum water/cement ratio - 0.42.
      d. Minimum cement content - 564 lbs. (6.0 bags)/cubic yard concrete.
      e. Nominal maximum size coarse aggregate - No. 67 (3/4-inch maximum) or No. 57 (1-inch maximum).
      f. Air content - 5% plus or minus 1% by volume.
      g. Slump - 4 inches in accordance with ASTM C-143, when measured with only an air entraining admixture. Additional slump is allowed by use of water reducing or superplasticizing admixtures.
   2. Selection of Proportions for 3,000 psi Concrete:
      a. 3,000 psi compressive strength at 28 days.
      b. Type I/II cement plus air.
      c. Maximum water/cement ratio - 0.56.
      d. Minimum cement content - 470 lbs. (5.0 bags)/cubic yard concrete.
      e. Nominal maximum size coarse aggregate - No. 67 (3/4-inch maximum) or No. 57 (1-inch maximum).

f. Air content - 5% plus or minus 1% by volume.
g. Slump - 4 inches in accordance with ASTM C-143, when measured with only an air entraining admixture.

B. Concrete shall be used as follows:
1. 4,500 psi concrete for all concrete work except as noted below.
2. 3,000 psi concrete for encasement of piping where indicated, and thrust blocking.

C. All testing of aggregates and determination of proportions shall be or have been performed by a recognized independent testing laboratory.

D. Cement for exposed concrete shall have a uniform color classification.

E. Type I/II cement conforming to ASTM C-150 shall be used in all concrete.

F. Coarse aggregate shall be crushed stone having clean, hard, uncoated particles, and shall be free from injurious amount of soft, friable, thin, elongated or laminated pieces. Coarse aggregates shall conform to all requirements of ASTM C-33.

G. Fine aggregates shall be natural sand having clean, hard, uncoated grains, free from injurious amounts of clay, dust, organic matter or other deleterious substances, and shall conform to ASTM C-33.

H. Water for concrete shall be clean, fresh, and free from injurious amounts of oil, acid, alkali, organic matter, or other deleterious substances.

2.02 ADMIXTURES

A. An air entraining admixture shall be used on all concrete and shall be the neutralized vinsol resin type such as Master Builders MB-VR, Euclid Chemical Company AIR-MIX or equivalent. The admixture shall meet the requirements of ASTM C-260.

B. Other admixtures (water reducing agents, acellerating agents, retarding agents, superplasticizing agents) shall be considered where necessary to meet the needs of construction.

C. Admixtures shall be used in concrete design mixes in the same manner and proportions as in the field so that the effects of the admixtures are included in preliminary test submitted to the Engineer for review prior to the start of construction.

2.03 REINFORCEMENT

A. The minimum yield strength of the reinforcement shall be 60,000 pounds per square inch. Bar reinforcement shall conform to the requirements of ASTM A-615. All bar reinforcement shall be deformed.

B. Welded wire fabric shall conform to ASTM A-185 and shall be of weight and gauge as indicated on the Drawings.

C. Reinforcement supports and other accessories in contact with the forms for members which will be exposed to view in the finished work shall be of stainless steel or shall have approved high-density polyethylene tips so that the metal portion shall be at least one-quarter of an inch from the form or surface. Supports for reinforcement, when in contact with the ground or stone fill, shall be precast stone concrete blocks.

2.04 OTHER MATERIALS

A. Anchorage items shall be of standard manufacture and of type required to engage with the anchors to be installed therein under other sections of the Specifications and shall be subject to approval by the Engineer.

B. Premolded expansion-joint filler strips shall conform to ASTM D-1752 and shall be 3/8-inch thick unless otherwise shown.

C. Joint sealants shall conform to ANSI 116.1. The following joint sealants are acceptable:
1. Colma by Sika Corporation.
2. Hornflex by A. C. Horn, Inc.
3. Sonolastic by Sonneborn Division of Contech, Inc.

D. GROUT

1. Precision-support grout shall consist of a non-shrink, ready-to-use, precision grout material; proportioned, pre-mixed and packaged at the factory; delivered to the job site to place with only the addition of water; forming, placing and curing as stipulated by the manufacturer.
2. Grouts which depend upon aluminum powders, chemicals, or other agents which produce gas for expansion are not acceptable.
3. Precision-support grout shall also meet the following requirements:
   a. Free of gas producing agents.
   b. Free of oxidizing catalysts.
   c. Free of inorganic accelerators, including chlorides.

E. Construction Joint Waterstops:
1. Polyvinylchloride (PVC) Waterstops:
   a. Provide PVC waterstops complying with Corps of Engineers CRD-C572.
   b. Provide serrated type with a minimum thickness of 3/8 inch by a minimum width of 6 inches may be provided in specific applications as approved by the ENGINEER.
   c. Provide PVC waterstops as manufactured by Greenstreak Plastic Products company; Vinylex Corporation, or equivalent product.
2. Adhesive Waterstop:
   a. Provide pre-formed adhesive waterstop in construction joint locations where shown, or as alternative to PVC waterstop where appropriate.

b. The preformed waterstop shall meet or exceed all requirements of Federal Specifications SS-S-210A, "Sealing Compounds for Expansion Joints".
c. Provide adhesive waterstops as manufactured by Synko-Flex Products, Division of Henry Products, Inc.; or equivalent product.

3. Hydrophilic Waterstops:
a. Hydrophilic waterstop may be used as an alternate to the adhesive waterstop.
b. Provide waterstops as manufactured by Greenstreak Plastic Products Company; Adeka, Inc.; or equivalent product.

F. Membrane Forming Curing compound: ASTM C 309, Type I-D.
1. Provide without fugitive dye when requested by Engineer.

G. Epoxy Bonding Agent: Provide two-component epoxy resin bonding agent as manufactured by Sika Chemical Corporation; A.C. Horn, Incorporated; or equivalent product.

H. Adhesive Dowels:
1. Drilling equipment used and installation of adhesive dowels shall be in accordance with manufacturer's instructions.
2. Assure that embedded items are protected from damage and are not filled in with concrete.
3. Unless otherwise shown or approved by Engineer, embedment depths shall be based on a compressive strength of 2,500 psi when embedded into existing concrete.)
4. The Contractor shall comply with the adhesive material manufacturer's installation instructions on the hole diameter. The Contractor shall properly clean out the hole utilizing a synthetic brush and compressed air to remove all loose material from the hole, prior to installing adhesive capsules or material. Proper mixing of the two-component system shall be done to the manufacturer's recommendations.
5. Adhesive material manufacturer's representative shall observe and demonstrate the proper installation procedures for the adhesive dowels and adhesive material at no additional expense to the Owner. Each installer shall be certified in writing by the manufacturer to be qualified to install the adhesive dowels.
6. Provide two-component dowel installation adhesive as manufactured by Hilti Corporation, or approved equivalent product.

PART 3 - EXECUTION

3.01 PLACING REINFORCEMENT

A. Reinforcement shall be bent cold to the dimensions and shapes shown on the Drawings and within tolerances specified in the CRSI Manual of Standard Practice.

B. Before being placed in position, reinforcement shall be cleaned of loose mill and rust scale, dirt and other coatings that will interfere with development of proper bond.

C. Reinforcement shall be accurately placed in positions shown on the Drawings and firmly held in place during placement and hardening of concrete by using annealed wire ties. Bars shall be tied at all intersections except where spacing is less than one foot in both directions, then alternate intersections may be tied.

D. Distance from the forms shall be maintained by means of stays, blocks, ties, hangers or other approved supports. Blocks for holding the reinforcement from contact with the forms shall be precast mortar blocks or approved metal chairs. Layers of bars will be separated by precast mortar blocks or other equally suitable devices; the use of pebbles, pieces of broken stone or brick, metal pipe and other such blocks will not be permitted. If fabric reinforcement is shipped in rolls, it shall be straightened into flat sheets before being placed.

E. Before any concrete is placed, the Engineer shall have inspected the placing of the steel reinforcement and given permission to deposit the concrete. Concrete placed in violation of this provision will be rejected and thereupon shall be removed.

F. Unless otherwise specified, reinforcement shall be furnished in the full lengths indicated on the plans. Splicing of bars, except where shown on the plans, will not be permitted without the approval of the Engineer. Where splices are made, they shall be staggered insofar as possible.

3.02 TESTING AGGREGATES AND DETERMINING PROPORTIONS

A. No concrete shall be used in the work until the materials and mix design have been accepted by the Engineer.

B. The conformity of aggregates to the Specifications hereinbefore given shall be demonstrated and determined by tests per ASTM C-33 made with representative samples of the materials to be used on the work.

C. The actual proportions of cement, aggregates, admixtures and water necessary to produce concrete conforming to the requirements set forth herein shall be determined by making test cylinders using representative samples of the materials to be used in the work. A set of four standard 6-inch cylinders shall be made and cured per ASTM C-31. Two shall be tested at 7 days and two at 28 days per ASTM C-39. The slump shall not be less than the greatest slump expected to be used in the work.

D. Reports on the tests and a statement of the proportions proposed for the concrete mixture, shall be submitted in triplicate to the Engineer for review as soon as possible, but not less than five days prior to the proposed beginning of the concrete work. If the Contractor furnishes in writing, similar, reliable detailed information from an acceptable source, and of date not more than four months prior to the time when concrete will be used on this project, the above requirements for laboratory test may be modified by the Engineer. Such data shall derive from mixtures containing constituents, including the admixtures where used, of the same types and from the same sources as will be used on this project.

E. The Engineer shall have the right to make check tests of aggregates and concrete, using the same materials, and to order changes as may be necessary to meet the specified requirements.

F. The Contractor may request permission to add water at the job site; and when the addition of water is permitted by the Engineer, the quantity added shall be the responsibility of the Contractor and in no case shall the total water per bag of cement exceed the ratio set forth herein.

G. If concrete of the required characteristics is not being produced as the work progresses, the Engineer may order such changes in proportions or materials or both, as may be necessary to secure concrete of the specified quality. The Contractor shall make such changes at his own expense and no extra compensation will be allowed because of such changes.

3.03 MIXING

A. All central-plant and rolling-stock equipment and methods shall conform to the Truck Mixer and Agitator Standards of the Truck Mixer Manufacturers' Bureau of the National Ready Mixed Concrete Association, as well as the ACI Standards for measuring, Mixing and Placing Concrete (ACI 614), and with the ASTM Standard Specification for Ready-Mixed Concrete, Designation C94, insofar as applicable.

B. Ready-mixed concrete shall be transported to the site in watertight agitator or mixer trucks. The quantity of concrete to be mixed or delivered in any one batch shall not exceed the rated capacity of the mixer or agitator for the respective conditions as stated on the nameplates.

C. Central-mixed concrete shall be plant-mixed a minimum of 1-1/2 minutes per batch, and then shall be truck-mixed or agitated a minimum of 8 minutes. Agitation shall begin immediately after the premixed concrete is placed in the truck and shall continue without interruption until discharge. For transit-mixed concrete the major portion of the mixing water shall be added and mixing started immediately after the truck is charged.

D. The amount of water initially added shall be recorded on the delivery slip for the Engineer's information; no additional water shall be added, either in transit or at the site, except as directed. Mixing (at mixing speed) shall be continued for at least 10 minutes followed by agitation without interruption until discharge. Concrete shall be discharged at the site within 1-1/2 hours after water was first added to the mix, and shall be mixed at least 5 minutes after all water has been added.

E. Concrete which has become compacted or segregated during transportation to or in the site of the work shall be satisfactorily remixed just prior to being placed in the forms.

F. Partially hardened concrete shall not be deposited in the forms. The retempering of concrete which has partially hardened (that is, the remixing of concrete with or without additional cement, aggregate, or water) will not be permitted.

3.04 COMPRESSION TESTS

A. During the progress of the work, at least one (1) set of four (4) compression test cylinders shall be made for each 50 cubic yards of concrete or major fraction thereof, and not less than one such set for each type of concrete for each day's pouring. Cylinders made in the field shall be made and cured in accordance with the ASTM Standard Method of Making and Curing Concrete Test Specimens in the Field, Designation C31, except that wherever possible molds shall be left on the cylinders until they have reached the laboratory. Testing services to satisfy the requirements of ACI shall be paid for by the Contractor at his expense. Testing lab must be approved by the Engineer.

B. One cylinder of each set shall be broken in accordance with ASTM C-39 at seven (7) days and the other two at twenty-eight (28) days. Two copies of these test results shall be submitted to the Engineer on the same day of the tests.

C. On evidence of these tests, any concrete that fails to meet the specified strength requirements shall be strengthened or replaced as directed by the Engineer at the Contractor's expense.

3.05 METALWORK IN CONCRETE

A. All trades shall be notified, at the proper time, to install items to be embedded in concrete.

B. All castings, inserts, conduits, and other metalwork shall be accurately built into or encased in the concrete by the Contractor as directed, and all necessary precautions shall be taken to prevent the metalwork from being displaced or deformed.

C. Anchor bolts shall be set by means of substantial templates.

3.06 PLACING AND COMPACTING CONCRETE

A. At least twenty-four (24) hours before the Contractor proposes to make any placement of concrete, he shall notify the Engineer of his intention and planned procedure. Unless otherwise permitted, the work shall be so executed that a section begun an any day shall be completed during daylight of the same day.

B. No concrete shall be placed until the subgrade has been accepted in accordance with the requirements of Section 01400, Quality Control, nor shall it be placed on frozen subgrade or in water. Placement of concrete shall not be scheduled until the forms, , reinforcing, and preliminary work have been accepted. No concrete shall be placed until all materials to be built into the concrete have been set and have been accepted by the various trades and by the Engineer. All such materials shall be thoroughly clean and free form rust, scale, oil, or any other foreign matter.

C. Forms and excavations shall be free from water and all dirt, debris, and foreign matter when concrete is placed. Except as otherwise directed, wood forms and embedded wood called for or allowed shall be thorough wetted just prior to placement of concrete.

D. Concrete placed at air temperatures below 40 degrees shall have a minimum temperature of 50 degrees F. and a maximum of 70 degrees F. when placed.

E. Concrete shall be transported from the mixer to the place of final deposit as rapidly as practicable and by methods which will prevent separation of ingredients and avoid rehandling.

F. Chutes for conveying concrete shall be metal or metal-lined and of such size, design, and slope as to ensure a continuous flow of concrete without segregation. The slope of chutes shall be not flatter than 1 on 2 and all parts of a chute shall have approximately the same slope. The discharge end of the chute shall be provided with a baffle, or, if required, a spout; and the end of the chute or spout shall be kept as close as practicable to, but in no event more than 5 feet above the surface of the fresh concrete. When the operation is intermittent, the chute shall discharge into a hopper.

G. In thin sections of considerable height (such as walls and columns), concrete shall be placed in such a manner as will prevent segregation and accumulations of hardened concrete on the forms or reinforcement above the mass of concrete being placed. To achieve this end, suitable hoppers, spouts with restricted outlets, etc., shall be used as required or permitted unless the forms are provided with suitable openings.

H. Chutes, hoppers, spouts, etc., shall be thoroughly cleaned before and after each run and the water and debris shall not be discharge inside the form.

I. For any one placement, concrete shall be deposited continuously in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause the formation of seams and planes of weakness within the section, and so as to maintain, until the completion of the unit, an approximately horizontal, plastic surface.

J. No wooden spreaders shall be left in the concrete.

K. During and immediately after being deposited, concrete shall be thoroughly compacted by means of suitable tools and methods, such as internal-type mechanical vibrators operating at not less than 5,000 rpm., or other tool spading, to produce the required density and quality of finish. Vibration shall be done only by experienced operators under close supervision and shall be carried on in such a manner and only long enough to produce homogeneity and optimum consolidation without permitting segregation of the solid constituents, "pumping" of air, or other objectionable results. All vibrators shall be supplemented by proper spade puddling approximately 2 to 3 inches away from forms to remove included bubbles and honeycomb. Excessive spading against the forms, causing the deposition of weak mortar at the surface, shall be avoided.

L. The concrete shall be thoroughly rodded and tamped about embedded materials so as to secure perfect adhesion and prevent leakage. Care shall be taken to prevent the displacement of such materials during concreting.

3.07 CURING AND PROTECTION

A. All concrete, particularly slabs and including finished surfaces, shall be treated immediately after concreting or cement finishing is completed, to provide continuous moist curing for at least seven days, regardless of the adjacent air temperature. Walls and vertical surfaces may be covered with continuously saturated burlap, or kept moist by other acceptable means. Horizontal surfaces, slab, etc., shall be ponded to a depth of 1/2-inch wherever practicable, or kept continuously wet by the use of lawn sprinklers, a complete covering of continuously saturated burlap, or by other acceptable means.

B. For at least seven (7) days after having been placed, all concrete shall be so protected that the temperature at the surface will not fall below 45 degrees F.
   1. No manure, salt, or other chemicals shall be used for protection.
   2. Wherever practicable, finished slabs shall be protected form the direct rays of the sun to prevent checking and crazing.

3.08 HOT WEATHER CONDITIONS

Placing of concrete under conditions of high temperature, low humidity or wind shall be done in accordance with the American Concrete Institute "Hot Weather Conditions" (latest edition).

3.09 COLD WEATHER CONDITIONS

Cold weather concreting procedures precautions shall conform with American Concrete Institute "Cold Weather Concreting" (latest edition).

END OF SECTION 03300

Divisions 4 through 16 – Not Used

Appendix A

Kentucky Division of Water Construction Permit

STEVEN L. BESHEAR
GOVERNOR

LEONARD K. PETERS
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
200 FAIR OAKS LANE, 4TH FLOOR
FRANKFORT, KENTUCKY 40601
www.kentucky.gov

December 15, 2011

Honorable Jim Newberry, Mayor
Lexington Fayette Urban Co Government
301 Lisle Industrial Ave
Lexington, KY 40511

RE: Wolf Run Pump Sta Relocation
L0953, A10-08
Lexington Town Branch WWTP
1073 Activity ID: FGL20110001

Dear Mayor Newberry:

The Kentucky Division of Water has reviewed for completeness and adequacy the construction plans and specifications submitted for the above referenced contract. The Division of Water hereby approves these plans and specifications. The approval conditions and a list of eligible/ineligible items are enclosed. Please note that ineligible items must be bid separately.

We are enclosing one (1) set of approved plans and specifications. An identical set should be made available at the project site at all times. If modifications with respect to the sanitary features of design are made to these plans and specifications before advertising for bids, a complete set of revised plans and specifications must be submitted to the Division of Water for approval. A second Division of Water construction approval must be issued by separate correspondence before proceeding with advertising for bids.

You may now advertise for bids on the construction of this project. In addition to other notifications, this project must be advertised in the newspaper of the largest daily circulation in the project area. You are cautioned not to advertise unless you have a proper wage decision that will not expire before bids can be received and a tentative contract award made. The Federal Davis-Bacon wage rates are applicable for this project. Please contact all other funding sources for their requirements.

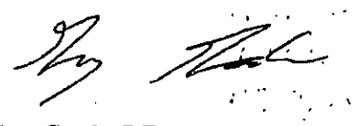
A set of as-bid plans and specifications must be submitted to the Division of Water when the project is advertised for bids if changes were made by addenda after our approval.

You are reminded that these construction contracts are subject to the equal employment opportunity requirements contained in Executive Order 11246. Equal employment opportunity affirmative action by the prime contractors and all subcontractors is mandated throughout the duration of the contract. Documentation of efforts to comply with Executive Order 11246, Equal Employment Opportunity is required. Compliance with the DBE Fair Share Policy in accordance with 40 CFR 31.36(e) is required

Please review the attached Project Review and Cost Summary Form for details of the information to be collected and retained in your files or to be submitted to the Division for review and approval. This form must be completed, signed by the recipient, and with the necessary information be then forwarded to the Division of Water. This signature will certify that all the information to be retained by the recipient has been secured and is available for review by the Division at the pre-construction conference. The required information must be forwarded to the Division for review within fourteen (14) days of bid opening.

You are cautioned that the advertisement and award of this contract will be subject to the laws and regulations that govern the Clean Water State Revolving Fund (CWSRF) and to the conditions of your loan agreement. If we can be of further assistance, please call me, Project Engineer, at (502) 564-3410, extension 4832.

Sincerely,



Greg Goode, P.E.
Water Infrastructure Branch
Division of Water

Enclosures

(Project Review and Cost Summary Form)
(1 set P & S; approval conditions; eligible and ineligible lists)

c: Kentucky Infrastructure Authority
Tom Schaffer, P.E., HDR Engineering
Cabinet for Economic Development
Construction DataFax Inc.
Fayette County Health Department

Sewer Line Construction
Lexington Town Branch WWTP
Facility Requirements

Activity ID No.: APE20110009

PORT0000000055 (KY0021491) Town Branch WWTP:

Submittal/Action Requirements:

Condition No.	Condition
S-1	When this system is completed, the applicant shall submit written certification: Due 30 calendar days after Completion of Construction to the Division of Water that the facilities have been constructed and tested in accordance with the approved plans and specifications and the above approval conditions. Such certification shall be signed by a registered professional engineer. Failure to certify may result in penalty assessment and/or future approvals being withheld. [401 KAR 5:005 Section 24(2)]

Narrative Requirements:

Condition No.	Condition
T-1	The plans and specifications submitted for the project are approved by the Environmental and Public Protection Cabinet as to sanitary features, subject to the requirements contained within the permit. [401 KAR 5:005 Section 24(4)(a)]
T-2	Authority to construct these sewers is hereby granted. This approval is issued under the provisions of KRS Chapter 224.10-100 (19) regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any permits or licenses required by this Cabinet and other state, federal, and local agencies. [401 KAR 5:005 Section 24(4)(a)]
T-3	The plans include approximately 3,560 linear feet of 48 inch sanitary sewers, a lift station with 4 pumps of 3,650 gpm with 88 feet TDH, a mechanically cleaned bar screen, a manually cleaned bar screen, bioxide and activated carbon odor control facilities and approximately 9,475 linear feet of 30 inch force main pipe. The flow from these lines is to be treated at the Town Branch Wastewater Treatment Plant, KPDES Permit No. KY0021491, Fayette County, Kentucky. [401 KAR 5:005 Section 24(4)(a)]
T-4	The types of sanitary sewer pipe shall be limited to the following: DIP and RCP. [401 KAR 5:005 Section 1(2)]
T-5	The flow will be equivalent to the flow received by the decommissioned Wolf Run Pump Station. [401 KAR 5:005 Section 1(2)]
T-6	Ductile iron pipe used for gravity sewers shall conform to ASTM A-746-82, or latest revision. [Ten States (WW) 33.81]
T-7	Ductile iron pipe used for pressure sewers shall conform to AWWA C-150-76 and AWWA C-151-76 or latest revision. [Ten States (WW) 33.81]

PORT0000000055 (continued):

Narrative Requirements:

Condition No.	Condition
T-8	Fittings for ductile iron pipe shall conform to AWWA C-110-77, or latest revision. [Ten States (WW) 33.81]
T-9	Pipe joints used for ductile iron pipe shall conform to AWWA C-111-80, or latest revision. [Ten States (WW) 33.81]
T-10	Ductile iron pipe installation shall conform to AWWA C-600-82, or latest revision. [Ten States (WW) 33.81]
T-11	Gravity sewer lines and force mains shall have a minimum of thirty (30) inches of cover or provide comparable protection. [401 KAR 5:005 Section 8(9)]
T-12	All sewers shall be low pressure air tested. A deflection test shall be performed on all gravity sanitary sewers using flexible pipe. The test shall be performed after the final backfill has been in place for at least thirty days. No pipe shall exceed a deflection of five percent. If the deflection test is to be run using a rigid ball or mandrel, it shall have a diameter equal to 95% of the inside diameter of the pipe. The test shall be performed without mechanical pulling devices. Each new manhole shall be tested for watertightness. [401 KAR 5:005 Section 8(6)(a)]
T-13	If gravity sewer lines and force mains are to be constructed in fill areas, the fill areas shall be compacted to ninety-five (95) percent density as determined by the Standard Proctor Density test or to a minimum of ninety (90) percent density as determined by the Modified Proctor Density test prior to the installation of the sewer lines. [401 KAR 5:005 Section 8(10)]
T-14	Sewers crossing water mains shall be laid to provide a vertical distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints are equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to prevent damage to the water main. [Ten States (WW) 38.32]
T-15	Sewers shall be laid at least 10 feet horizontally from any existing or proposed water main. The distance shall be measured from edge to edge. [Ten States (WW) 38.31]
T-16	Concrete anchors shall be provided, with a spacing not over thirty six (36) feet center to center, on all gravity sewer lines having a slope greater than twenty (20) percent and up to thirty five (35) percent. [Ten States (WW) 33.46]
T-17	The entrance of groundwater into, or loss of waste from, a new gravity sewer line shall be limited to 200 gpd per inch of diameter per mile of the gravity sewer line. This limitation includes manholes, gravity sewer lines, and appurtenances. [401 KAR 5:005 Section 8(5)]
T-18	Air release valves shall be installed at high points in any proposed force main. [401 KAR 5:005 Section 8(19)]

PORT0000000055 (continued):

Narrative Requirements:

Condition No.	Condition
T-19	An audible and visible alarm shall be provided at any proposed wastewater pump station. [Ten States (WW) 45]
T-20	Requirements for Sewer Line Extensions. All proposed pump station wetwells shall be sized such that, based on the average flow, the time to fill the wetwell from the pump-off elevation to the pump-on elevation shall not exceed thirty (30) minutes. [401 KAR 5:005 Section 8(16)]
T-21	Adequate thrust blocks shall be provided at all significant bends in any proposed sewer force main in order to prevent movement. [Ten States (WW) 48.4]
T-22	The integrity of any proposed force main shall be verified by leakage tests. The applicant shall describe the proposed testing methods and leakage limits in the specifications submitted with the permit application. [401 KAR 5:005 Section 8(6)(b)]
T-23	Facilities shall be designed in accordance with the "Recommended Standards for Wastewater Facilities" of the Great Lakes-Upper Mississippi River Board of State Public Health and Environmental Managers, commonly referred to as "Ten States' Standards", 1990 edition. [401 KAR 5:005 Section 7(1)(a)]
T-24	The permit is issued to the applicant and the permittee shall remain the responsible party for compliance with all applicable statutes and administrative regulations until a notarized applicable change in ownership certification is submitted and the transfer of ownership is acknowledged by the cabinet. [401 KAR 5:005 Section 24(3)]
T-25	There shall be no deviations from the plans and specifications submitted with the application or the conditions specified unless authorized in writing by the cabinet. [401 KAR 5:005 Section 24(4)(b)1]
T-26	The issuance of a permit by the cabinet does not convey any property rights of any kind or any exclusive privilege. [401 KAR 5:005 Section 24(6)]
T-27	A permit to construct a facility shall be effective upon issuance unless otherwise conditioned. Construction shall be commenced within two (2) years. If construction is not commenced within the (2) years following a permit's issuance, a new permit shall be obtained before construction may begin. [401 KAR 5:005 Section 24(1)]
T-28	The Construction Permit is effective on December 15, 2011 and expires on December 15, 2013. [401 KAR 5:005 Section 24(1)]

L0953
Lexington Fayette Urban Co Government

(FUND A) ELIGIBLE ITEMS:

Contract Description: The plans include approximately 3,560 linear feet of 48 inch sanitary sewers, a lift station with 4 pumps of 3,650 gpm with 88 feet TDH, a mechanically cleaned bar screen, a manually cleaned bar screen, bioxide and activated carbon odor control facilities and approximately 9,475 linear feet of 30 inch force main pipe.

APPROVAL CONDITIONS:

Clear site certificates must be presented to the Division of Water before the loan agreement can be executed. Complete and return the enclosed Project Review and Cost Summary Form.

Appendix B

Kentucky Division of Water Stream Crossing and Floodplain Permit

STEVEN L. BESHEAR
GOVERNOR

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
200 FAIR OAKS LANE, 4TH FLOOR
FRANKFORT, KENTUCKY 40601
www.kentucky.gov

LEONARD K. PETERS
SECRETARY

STREAM CONSTRUCTION PERMIT

For Construction In Or Along A Stream

Issued to: **LFUCG - Division of Water Quality**
Address: **125 Lisle Industrial Ave**
Lexington, KY 40511

Permit expires on
October 10, 2013

Permit No. **20005**

In accordance with KRS 151.250 and KRS 151.260, the Energy and Environment Cabinet approves the application dated **July 9, 2012** for **construction of a pump station, approximately 3,548 LF of a 48"-dia. gravity sewer, 624 LF of a 10"-dia. sewerline, 2725 LF of a 30"-dia. force main (DIP) in or along the floodplain of Town Branch and Wolf Run at about stream mile 0.2, with coordinates 38.071489, -84.554009, including subfluvial crossings, in Fayette County.** AI: 1073

There shall be no deviation from the plans and specifications submitted and hereby approved unless the proposed change shall first have been submitted to and approved in writing by the Cabinet. This approval is subject to the attached limitations. **Please read these limitations carefully!** If you are unable to adhere to these limitations for any reason, please contact this office prior to construction.

This permit is valid from the standpoint of stream obstruction only. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal and local agencies. Specifically if the project involves work in a stream, such as bank stabilization, dredging, relocation, or in designated wetlands, a 401 Water Quality Certification from the Division of Water will be required.

This permit is nontransferable and is not valid unless actual construction of this authorized work is begun prior to the expiration date noted above. Any violation of the Water Resources Act of 1966 as amended is subject to penalties as set forth in KRS 151.990.

If you have any questions regarding this permit, please call Soheyl Bigdeli at (502) 564-3410.

Issued October 10, 2012.

Todd Powers, P.E., Supervisor
Floodplain Management Section
Surface Water Permit Branch

TAP/SB/nm

pc: Frankfort Regional Office
Marwan Rayan- Fayette Co. Floodplain Coordinator
Richard Smith, P.E.(by email)
File

Stream Construction Permit
Lexington Town Branch WWTP
Facility Requirements
Permit Number:20005
Activity ID No.: APE20120009

STRC0000000008 (Pump station and utility lines) Construction of a pump station, approximately 3,548 LF of a 48"-dia. gravity sewer, 624 LF of a 10"-dia. sewerline, 2725 LF of a 30"-dia. force main (DIP) in or along the floodplain of Town Branch and Wolf Run at about stream mile 0.2, with coordinates 38.071489, -84.554009, including subfluvial crossings in Fayette County.:

Submittal/Action Requirements:

Condition No.	Condition
S-1	LFUCG must submit final construction report: Due within 90 days after completion of construction LFUCG must notify in writing that the project has been completed in accordance with the approved plans and specifications. A Final Construction Report Form is enclosed. [401 KAR 4:060 Section 6]

Narrative Requirements:

Condition No.	Condition
T-1	The issuance of this permit by the cabinet does not convey any property rights of any kind or any exclusive privilege. [KRS 151.250 & 401 KAR 4:060]
T-2	This permit is issued from the standpoint of stream obstruction only and does not constitute certification of any other aspect of the proposed construction. The applicant is liable for any damage resulting from the construction, operation, or maintenance of this project. This permit has been issued under the provisions of KRS Chapter 151.250 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal and local agencies. [KRS 151.250]
T-3	A copy of this permit must be available at the construction site. [KRS 151.250]
T-4	Any work performed by or for LFUCG that does not fully conform to the submitted application or drawings and the limitations set forth in this permit, is subject to partial or total removal and enforcement actions pursuant to KRS 151.280 as directed by the Kentucky Department for Environmental Protection. [KRS 151.280]
T-5	Any design changes or amendments to the approved plans must be submitted to the Division of Water and approved in writing prior to implementation. [KRS 151.250]
T-6	Since Fayette County participates in the National Flood Insurance Program, a local floodplain permit must be obtained prior to beginning of construction. Upon completion of construction LFUCG must contact the local permitting agency for final approval of the construction for compliance with the requirements of the local floodplain ordinance. [401 KAR 4:060 Section 9(c)]

Narrative Requirements:

Condition No.	Condition
T-7	The permittee must obtain a Water Quality Certification (or a determination that none is required) through the Division of Water, Water Quality Branch before beginning construction. Contact the Water Quality Certification Supervisor at (502) 564-3410. [KRS 224.16-050 & Clean Water Act Section 401]
T-8	Any flood damagable electrical components shall be elevated above the base flood elevation of 869 feet MSL or provided with ground fault breakers. [KRS 151.250]
T-9	It is the intent of this permit that no fill or obstructions be placed within the limits of the designated floodway. The floodway limits are determined by the Federal Insurance Administration of the Federal Emergency Management Agency (FEMA), and shown on the Flood Boundary and Floodway Map included in the Flood Insurance Study for Fayette County dated 9/17/2008. Copies of the Flood Insurance Study are on file with LFUCG, the Division of Water, and the Federal Insurance Administration in Atlanta, Georgia. [401 KAR 4:060 Section 4(1)]
T-10	Erosion prevention measures, sediment control measures, and other site management practices shall be designed, installed, and maintained in an effective operating condition to prevent migration of sediment off site. [KRS 224.70-110]
T-11	To avoid secondary adverse impacts, all materials used shall be stable and inert, free from pollutants and floatable objects, and shall meet all appropriate engineering standards. (Inert here means materials that are not chemically reactive and that will not rot or decompose, such as soil, rock, broken concrete or similar materials.). [401 KAR 4:060 Section 7]
T-12	Stream crossings shall restore and stabilize the stream bank as closely as possible to its original location and configuration, and shall be completed without compromising the conveyance capacity of the stream at any time. [401 KAR 4:060]
T-13	All debris and excess material shall be removed for disposal outside of the base floodplain. [401 KAR 4:060]
T-14	Upon completion of construction all disturbed areas shall be seeded and mulched or otherwise stabilized to prevent erosion. [401 KAR 4:060]

Appendix C

Corps of Engineers Nationwide Permits

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE KY 40201-0059

http://www.lrl.usace.army.mil/

October 12, 2012

Operations Division
Regulatory Branch (South)
ID No. LRL-2012-682-mlc

Mr. Richard Smith
HDR Engineering, Inc
2517 Sir Barton Way
Lexington, Kentucky 40509

Dear Mr. Smith:

This is in response to your request for authorization on behalf of Lexington-Fayette Urban County Government to install five stream crossings for a gravity sewer and force main, located in Lexington, Fayette County, Kentucky. The installation of the 48-inch gravity sewer would follow Wolf Run and cross Wolf Run at three separate locations. A 30-inch force main would be constructed and would follow the Central KY Railroad line, crossing Town Branch and an unnamed tributary to Town Branch. See enclosed Table 1 for impacts and crossing locations. The information supplied by you was reviewed to determine whether a Department of the Army (DA) permit will be required under the provisions of Section 404 of the Clean Water Act.

This project is considered a discharge of backfill or bedding material for utility lines. The project is authorized under the provisions of Nationwide Permit (NWP) No. 12, Utility Line Activities, as published in the Federal Register February 21, 2012. Under the provisions of this authorization Lexington-Fayette Urban County Government must comply with the enclosed Terms and General Conditions for NWP No. 12 and the following Special Condition:

The permittee must conduct all removal of trees associated with the project between the dates of October 15th to March 31st.

Lexington-Fayette Urban County Government must also comply with the enclosed Water Quality Certification (WQC) Conditions for NWP No. 12 dated March 19, 2012, issued by the Kentucky Division of Water (KDOW). Once Lexington-Fayette Urban County Government obtains a certification, or if no application was required, they may proceed with the project without further contact or verification from us.

This decision is valid for 2 years from the date of this letter. The enclosed Compliance Certification should be signed and returned when the project is completed. If this project is not completed within this 2-year period or if this project is modified, Lexington-Fayette Urban

Table 1

Crossing	Line	Station	Latitude	Longitude	Impact*(Linear Feet)	Stream
1	48-inch Gravity	14+35	38.069865	-84.554045	70	Wolf Run
2	48-inch Gravity	25+70	38.066915	-84.554351	56	Wolf Run
3	48-inch Gravity	44+59	38.063044	-84.550494	50	Wolf Run
4	Force Main	32+86	38.071502	-84.547741	75	Town Branch
5	Force Main	49+14	38.069790	-84.543550	26	Unnamed Tributary to Town Branch

*Impacts include length of the temporary low water crossing

Terms for Nationwide Permit No. 12 – Utility Line Activities

12. Utility Line Activities. Activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2-acre of waters of the United States for each single and complete project.

Utility lines: This NWP authorizes the construction, maintenance, or repair of utility lines, including outfall and intake structures, and the associated excavation, backfill, or bedding for the utility lines, in all waters of the United States, provided there is no change in pre-construction contours. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio and television communication. The term "utility line" does not include activities that drain a water of the United States, such as drainage tile or french drains, but it does apply to pipes conveying drainage from another area.

Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

Utility line substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with a power line or utility line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2-acre of waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities.

Foundations for overhead utility line towers, poles, and anchors: This NWP authorizes the construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the United States, provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible.

Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows.

This NWP may authorize utility lines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (See 33 CFR Part 322). Overhead utility lines constructed over section 10 waters and utility lines that are routed in or under section 10 waters without a discharge of dredged or fill material require a section 10 permit.

This NWP also authorizes temporary structures, fills, and work necessary to conduct the utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if any of the following criteria are met: (1) the activity involves mechanized land clearing in a forested wetland for the utility line right-of-way; (2) a section 10 permit is required; (3) the utility line in waters of the United States, excluding overhead lines, exceeds 500 feet; (4) the utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to or along a stream bed that is within that jurisdictional area; (5) discharges that result in the loss of greater than 1/10-acre of waters of the United States; (6) permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or (7) permanent access roads are constructed in waters of the United States with impervious materials. (See general condition 31.) (Sections 10 and 404)

Note 1: Where the proposed utility line is constructed or installed in navigable waters of the United States (i.e., section 10 waters) within the coastal United States, the Great Lakes, and United States territories, copies of the pre-construction notification and NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the utility line to protect navigation.

Note 2: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work, in accordance with the requirements for temporary fills.

Note 3: Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, not utility lines, and may require a permit from the U.S. Coast Guard pursuant to Section 9 of the Rivers and Harbors Act of 1899. However, any discharges of dredged or fill material into waters of the United States associated with such pipelines will require a section 404 permit (see NWP 15).

Note 4: For overhead utility lines authorized by this NWP, a copy of the PCN and NWP verification will be provided to the Department of Defense Siting Clearinghouse, which will evaluate potential effects on military activities.

US Army Corps of Engineers
Louisville District

Nationwide Permit Conditions

The following General Conditions must be followed in order for any authorization by NWP to be valid:

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the US Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the US.

(c) The permittee understands and agrees that, if future operations by the US require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the US. No claim shall be made against the US on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the US that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the US during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, US Forest Service, US Fish and Wildlife Service).

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification (PCN) to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the PCN must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete PCN. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from Corps.

(d) As a result of formal or informal consultation with the USFWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the US to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the USFWS and NMFS at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.noaa.gov/fisheries.html respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the USFWS's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the USFWS to determine if such "take" permits are required for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA is complete.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the US are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the US to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment.

(2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the US, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the US, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(h) Where certain functions and services of waters of the US are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or USEPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the US authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the US for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature: "When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____
(Transferee)

_____
(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

31. Pre-Construction Notification (PCN). (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a PCN as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the US expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(4) The PCN must include a delineation of wetlands, other special aquatic sites, and waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the US. The 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of PCN Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP activities that require PCN notification and result in the loss of greater than 1/2-acre of waters of the US, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require PCN notification and will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed, and for all NWP 48 activities that require PCN notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (USFWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the PCN notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each PCN notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of PCN notifications to expedite agency coordination.

Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project.

STEVEN L. BESHEAR
GOVERNOR

LEONARD K. PETERS
SECRETARY

ENERGY AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
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General Certification--Nationwide Permit # 12
Utility Line Backfill and Bedding

This General Certification is issued March 19, 2012, in conformity with the requirements of Section 401 of the Clean Water Act of 1977, as amended (33 U.S.C. §1341), as well as Kentucky Statute KRS 224.16-050.

For this and all nationwide permits, the definition of surface water is as per 401 KAR 10:001 Chapter 10, Section 1(80): Surface Waters means those waters having well-defined banks and beds, either constantly or intermittently flowing; lakes and impounded waters; marshes and wetlands; and any subterranean waters flowing in well-defined channels and having a demonstrable hydrologic connection with the surface. Lagoons used for waste treatment and effluent ditches that are situated on property owned, leased, or under valid easement by a permitted discharger are not considered to be surface waters of the commonwealth.

Agricultural operations, as defined by KRS 224.71-100(1) conducting activities pursuant to KRS 224.71-100 (3), (4), (5), (6), or 10 are deemed to have certification if they are implementing an Agriculture Water Quality Plan pursuant to KRS 224.71-145.

For all other operations, the Commonwealth of Kentucky hereby certifies under Section 401 of the Clean Water Act (CWA) that it has reasonable assurances that applicable water quality standards under Kentucky Administrative Regulations Title 401, Chapter 10, established pursuant to Sections 301, 302, 304, 306 and 307 of the CWA, will not be violated for the activity covered under NATIONWIDE PERMIT 12, namely Utility Line Backfill and Bedding, provided that the following conditions are met:

1. The activity will not occur within surface waters of the Commonwealth identified by the Kentucky Division of Water as Outstanding State or National Resource Water, Cold Water Aquatic Habitat, or Exceptional Waters.

2. The activity will not occur within surface waters of the Commonwealth identified as perpetually-protected (e.g. deed restriction, conservation easement) mitigation sites.

3. This general water quality certification is limited to the crossing of surface waters by utility lines. This document does not authorize the installation of utility lines in a linear manner within the stream channel or below the top of the stream bank.

4. For a single crossing, impacts from the construction and maintenance corridor in surface waters shall not exceed 50 feet of bank disturbance.

5. This general certification shall not apply to nationwide permits issued for individual crossings which are part of a larger utility line project where the total cumulative impacts from a single and complete linear project exceed ½ acre of wetlands or 300 linear feet of surface waters. Cumulative impacts include utility line crossings, permanent or temporary access roads, headwalls, associated bank stabilization areas, substations, pole or tower foundations, maintenance corridor, and staging areas.

6. Stream impacts under Conditions 4 and 5 of this certification are defined as the length of bank disturbed. For the utility line crossing and roads, only one bank length is used in calculation of the totals.

7. Stream impacts covered under this General Water Quality Certification and undertaken by those persons defined as an agricultural operation under the Agricultural Water Quality Act must be completed in compliance with the Kentucky Agricultural Water Quality Plan (KWQP).

8. The Kentucky Division of Water may require submission of a formal application for an individual certification for any project if the project has been determined to likely have a significant adverse effect upon water quality or degrade the waters of the Commonwealth so that existing uses of the water body or downstream waters are precluded.

9. Activities that do not meet the conditions of this General Water Quality Certification require an Individual Section 401 Water Quality Certification.

10. Blasting of stream channels, even under dry conditions, is not allowed under this general water quality certification.

11. Utility lines placed parallel to the stream shall be located at least 50 feet from an intermittent or perennial stream, measured from the top of the stream bank. The cabinet may allow construction within the 50 foot buffer if avoidance and minimization efforts are shown and adequate methods are utilized to prevent soil from entering the stream.

12. Utility line stream crossings shall be constructed by methods that maintain flow and allow for a dry excavation. Water pumped from the excavation shall be contained and allowed to settle prior to re-entering the stream. Excavation equipment and vehicles shall operate outside of the flowing portion of the stream. Spoil material from the excavation shall not be allowed to enter the flowing portion of the stream.

13. The activities shall not result in any permanent changes in pre-construction elevation contours in surface waters or wetlands or stream dimension, pattern or profile.

14. Utility line activities which impact wetlands shall not result in conversion of the area to non-wetland status. Mechanized land clearing of forested wetlands for the installation or maintenance of utility lines is not authorized under this certification.

15. Activities qualifying for coverage under this General Water Quality Certification are subject to the following conditions:

- Erosion and sedimentation pollution control plans and Best Management Practices must be designed, installed, and maintained in effective operating condition at all times during construction activities so that violations of state water quality standards do not occur.
- Sediment and erosion control measures, such as check-dams constructed of any material, silt fencing, hay bales, etc., shall not be placed within surface waters of the Commonwealth, either temporarily or permanently, without prior approval by the Kentucky Division of Water's Water Quality Certification Section. If placement of sediment and erosion control measures in surface waters is unavoidable, design and placement of temporary erosion control measures shall not be conducted in such a manner that may result in instability of streams that are adjacent to, upstream, or downstream of the structures. All sediment and erosion control devices shall be removed and the natural grade restored within the completion timeline of the activities.
- Measures shall be taken to prevent or control spills of fuels, lubricants, or other toxic materials used in construction from entering the watercourse.
- Removal of riparian vegetation shall be limited to that necessary for equipment access.
- To the maximum extent practicable, all in-stream work under this certification shall be performed under low-flow conditions.
- Heavy equipment, e.g. bulldozers, backhoes, draglines, etc., if required for this project, should not be used or operated within the stream channel. In those instances in which such in-stream work is unavoidable, then it shall be performed in such a manner and duration as to minimize turbidity and disturbance to substrates and bank or riparian vegetation.

- Any fill shall be of such composition that it will not adversely affect the biological, chemical, or physical properties of the receiving waters and/or cause violations of water quality standards. If rip-rap is utilized, it should be of such weight and size that bank stress or slump conditions will not be created because of its placement.

- If there are water supply intakes located downstream that may be affected by increased turbidity and suspended solids, the permittee shall notify the operator when such work will be done.
- Should evidence of stream pollution or jurisdictional wetland impairment and/or violations of water quality standards occur as a result of this activity (either from a spill or other forms of water pollution), the Kentucky Division of Water shall be notified immediately by calling (800) 928-2380.

Non-compliance with the conditions of this general certification or violation of Kentucky state water quality standards may result in civil penalties.

Compliance Certification:

Permit Number: LRL-2012-682-mlc

Name of Permittee: Lexington-Fayette Urban County Government, Division of Water

Date of Issuance: October 12, 2012

Upon completion of the activity authorized by this permit and any mitigation required by this permit, sign this certification and return it to the following address:

U.S. Army Corps of Engineers
CELRL-OP-FS
P.O. Box 59
Louisville, Kentucky 40201

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

_____ _____

Signature of Permittee Date

9/25/2012

SUPPLEMENTAL INFORMATION – APPLICATION FOR USACE PERMIT

REVIEW ID# LRL-2012-682-MLC

1. LOCATION OF STREAM CROSSINGS

ID NO.	LINE	STATION	LAT	LONG	LINEAR FOOTAGE OF IMPACT	SQUARE FOOTAGE OF IMPACT	STREAM NAME/ CLASSIFICATION
1	48-inch Gravity	14+35	38.069865	-84.554045	50	300	Wolf Run, Perennial
2	48-inch Gravity	25+70	38.066915	-84.554351	36	216	Wolf Run, Perennial
3	48-inch Gravity	44+59	38.063044	-84.550494	30	180	Wolf Run, Perennial
4	Force Main	32+86	38.071502	-84.547741	55	248	Town Branch, Perennial
5	Force Main	49+14	38.06979	-84.54355	6	27	Unnamed Trib. to Town Branch, Ephemeral
6	Force Main	86+70	38.063923	-84.533027	170	765	Unnamed Trib. to Town Branch, Ephemeral
7	Force Main	100+07	38.06293	-84.529724	0	0	Unnamed Trib. to Town Branch, Ephemeral

2. RESTORATION PLAN

Restoration of stream crossing areas will proceed immediately following construction of the sewer lines. Grading and hard bank stabilization work (site preparation) will be done initially. Temporary soil stabilization measures will be constructed to prevent erosion and sediment transport. Re-vegetation of the site with native herbaceous and woody species will follow during the growing season (April to October). The construction schedule is not established at the time, but it is anticipated that restoration will occur in phases as construction along segments of the pipeline are completed.

ID NO.	RESTORATION ACTIVITY	RESTORATION GOAL
1 thru 4	• Grade banks to original contours • Install hard bank protection where required • Seed with approved restoration mix • Install geotextile blanket across bank face • Mulch with straw over seeded areas • Live stake geotextile blanket with native woody species • Plant with hardwood shrub seedlings above blanket (top of bank)	Stable bank and 25 foot riparian zone
5	Wet weather ditch with no defined stream bed or banks to be restored. Restore ditch to preconstruction drainage conditions, seed and mulch	Restore drainage conditions
6	Wet weather swale with no defined ditch. Restore to preconstruction drainage conditions, seed and mulch	Restore drainage conditions
7	Crossing under 60-inch RCP drain in roadway. Restore roadway to preconstruction conditions	Maintain drainage thru 60-inch storm drain

Appendix D

Kentucky Department of Highways
Encroachment Permit

RECEIVED APR 21 2011

TRANSPORTATION CABINET

Steven L. Beshear
Governor

Department of Highways District 7 Office
763 West New Circle Rd., Building 2
Lexington, KY 40512
(859) 246-2355

Michael W. Hancock, P.E.
Secretary

Charles Martin
Lexington Fayette Urban Co. Govt.
301 Lisle Industrial Avenue
Lexington, Kentucky 40511

Subject: Fayette County MP 034-1681-004.849
KY 1681 (Old Frankfort Pike)
Lexington Fayette Urban Co. Govt.
Utility(APP NO 07-0116-11)

Dear Applicant:

Attached is your application for a permit that has been approved by the Department of Highways.

Please see that work is done in conformity with permit and applicable conditions. If you have any questions, please contact Corrin Gulick, Permit Engineer, at (859) 246-2355.

Sincerely,

Kelly A. Baker

4/20/11
Date

Kelly A. Baker, P.E.
Branch Manager Engineering Support

KAB/mb
Attachments

KENTUCKY TRANSPORTATION CABINET
Department of Highways
Permits Branch

TC 99-1E
Rev.
02/2010

Released Date _____

ENCROACHMENT PERMIT

PERMIT NO. 07-0111-11

APPLICANT IDENTIFICATION:

NAME: Lexington-Fayette Urban County Government
CONTACT PERSON: Charles Martin, P.E.
ADDRESS: 301 Lisle Industrial Avenue
CITY: Lexington
STATE: KY ZIP CODE: 40511
PHONE: area code (859) 425-2400

PROJECT IDENTIFICATION:

ACCESS CONTROL: ☒ By Permit ☐ Partial ☐ Full
COUNTY: Fayette PRIORITY ROUTE NO: KY1681
MILEPOINT: 4.849 ☐ Left ☒ Right ☒ X-ing
PROJECT STATUS: ☒ Maint. ☒ Const. ☐ Design
PROJECT # STATE: MP 034-1681-004.849
PROJECT # FEDERAL: _____
ROAD/STREET NAME: Old Frankfort Pike

TYPE OF ENCROACHMENT:

☐ COMMERCIAL ENTRANCE - BUSINESS* _____
☐ PRIVATE ENTRANCE: ☐ Single Family ☐ Farm
☒ UTILITY: ☐ Overhead ☒ Underground
☐ GRADE: ☐ Fill ☐ Landscape on R/W
☐ AIRSPACE: ☐ Agreement ☐ Lease
☐ C & R Sign(s)
☐ TODS
☐ LOGOS
☐ OTHER: (Specify)

*Electronic PDF file required of final plans and specifications

ATTACHMENTS:

☐ Standard Drawings (List on TC 99-21 under Misc.)
☒ Applicant's Plans
☐ Highway Plan and Profile Sheets
☐ TC 99-3 (Ponding Encroachment Specs. and Conditions)
☐ TC 99-4 (Rest Area Usage Specs. and Conditions)
☐ TC 99-5 (Tree Cutting/Trimming Specs. and Conditions)
☐ TC 99-6 (Chemical Use of Specs. and Conditions)
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☐ TC 99-202 (Temporary Agritourism Site Application)
☐ TC 99-203 (Attraction Eligibility Information)
☐ TC 99-204 (Signing Incentive Program Application)
☐ Other Attachments (Specify):

BUD
Before 'U' Dig
CALL TOLL FREE
1-800-752-6007

TYPE OF INDEMNITY: ☐ Bond ☐ Cash
☐ SELF-INSURED AMOUNT ENCUMBERED $ 5000.00
☐ OTHER _____

NAME AND ADDRESS OF LOCAL INSURANCE AGENCY OR SELF-INSURED REPRESENTATIVE:

INDEMNITY: The applicant, in order to secure this obligation, has deposited with the Transportation Cabinet as a guarantee of conformance with the Department's Encroachment Permit requirements, an indemnity in the amount of $ _____ as determined by the Department. It shall be the responsibility of the applicant or permitee, his heirs and assignees to keep all indemnities in full force until construction or reconstruction has been completed and duly accepted by an authorized agent of the Transportation Cabinet, Department of Highways.

BRIEF DESCRIPTION OF WORK TO BE DONE.

Bore and jack a 70-inch steel encasement pipe under road in order to install a 48-inch gravity sewer.

Applicant certifies project area ☐ does ☒ does not exceed one acre. Projects disturbing more than one acre require a KPDES KYR 10 permit.

IMPORTANT (PLEASE READ): Applicant ☐ does ☒ does not intend to apply for excess R/W.

When the work is completed in accordance with the terms of this encroachment permit, your indemnity will be released. However, the permit is effective until revoked by the Transportation Cabinet and the terms on the permit accompanying permit documents and drawings remain in effect as long as the encroachment exists. **FUTURE MAINTENANCE OF THE ENCROACHMENT IS THE RESPONSIBILITY OF THE PERMITEE.** It is important that you understand the requirements of this encroachment permit application and accompanying documents. If you have not done so, it is suggested that you review these documents and place the permit package in a safe place for future reference.

A copy of this permit and all documents shall be given to your contractor and shall be readily available at the work site for the encroachment permit inspector to review at all times. Failure to meet this requirement may result in cancellation of this permit.

IN THE EVENT THIS APPLICATION IS APPROVED, THIS DOCUMENT SHALL CONSTITUTE A PERMIT FOR THE APPLICANT TO USE THE RIGHT-OF-WAY, BUT ONLY IN THE MANNER AUTHORIZED BY THIS DOCUMENT AND REGULATIONS OF THE DEPARTMENT AND THE DRAWINGS, PLANS, ATTACHMENTS, AND OTHER PERTINENT DATA ATTACHED HERETO AND MADE A PART HEREOF.

Permit No. _____

The permittee agrees to the following terms and conditions:

1. The permittee shall comply with and is bound by the requirements of the Department's Permits Manual as revised to and in effect on the date of the issuance of this permit which is made a part hereof by reference.

2. Permittee agrees that if the Department determines that vehicular capacity deficiencies or over capacity conditions develop as a result of the installation and use of this facility, the permittee shall adjust, relocate, or reconstruct the facilities and/or provide and bear the expenses for signs, auxiliary lanes, or other corrective measures reasonably deemed necessary by the Department and as set forth in the Department's Permits Manual within a reasonable length of time after receipt of written notice regarding such adjustments, relocation, additions, modifications, or corrective measures, such time to be specified in the notice. In cases where traffic signals are permitted or required, as determined by the Department, the costs for signal equipment and installation(s) shall be borne by the permittee and/or the Department in accordance with Department policy then in force as set forth in the Traffic Operations Manual. Any modifications to the permittee's entrance necessary to accommodate signalization (including necessary easement(s) on private property) shall be the responsibility of the permittee, at no expense to the Department. (This applies only to Entrance Permits.)

3. The said encroachment will not infringe on the frontage rights of an abutting owner without written consent of the said owner as hereto: "I(we) consent to the granting of attached permit." _____

   Date _____ (This does not apply to utilities which serve the general public.)

4. Any permit granted hereunder shall be with the full understanding that it shall not interfere with any similar rights or permits heretofore granted to any other party except as otherwise provided by law.

5. A plan prepared by HDR Incorporated and dated August 2010 is attached hereto and made a part hereof, which describes the facilities to be constructed by the permittee for which facilities this permit is granted. The permittee agrees as a condition to the issuance of the permit to construct and maintain such facilities in accordance with said plan, and the permittee shall not use the facilities authorized herein in any manner contrary to that prescribed by this permit and plan. Normal usage and routine maintenance only are authorized under this permit.

6. Permittee shall comply with the Manual on Uniform Traffic Control Devices as revised to and in effect on the date of the issuance of this permit which is made a part hereof by reference.

7. Permittee shall at all times from date when work is first commenced and until such time as all facilities are removed from the right-of-way premise, defend, protect, and save harmless the Department from all liability, claims, and demands arising out of work undertaken by the permittee pursuant to this permit, due to any negligent act or omission by the permittee, its servants, agents, employees, or contractors. This provision shall not inure to the benefit of any third party or operate to enlarge any liability of the Department beyond that existing at common law if this right to indemnity did not exist.

8. Upon a violation of any of the provisions of this permit, the Department may revoke the permit by giving notice to the permittee in writing to remove from the right-of-way any facilities placed thereon within a reasonable time as set forth in the notice, and in the event said facilities are not so removed, and the right-of-way restored the Department may cause same to be removed, and the costs thereof shall be charged to the permittee.

9. The permittee, his successors and assigns shall use the encroachment premises in compliance with all Federal requirements imposed pursuant to the provisions of the Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000-1) and regulations of the U.S. Department of Transportation as set forth in Title 49 C.F.R., Part 21, and as said regulations may be amended.

10. Permittee agrees that in the event it should become necessary, as may be reasonably determined by the Department, for the facilities covered by this permit to be removed or relocated in connection with the reconstruction, relocation, or improvement of the abutting highway, the Department may revoke this permit and require removal or relocation by the permittee at his own expense according and pursuant to the procedures provided in Paragraph 8 above except in those cases where the Department is required by law to pay any or all the same.

11. The permittee understands and agrees that this permit is personal to the permittee and shall not inure to his successors and assigns without the written approval of the Department that he is bound by the provisions of this permit as long as the encroachment exists unless a written release has been obtained from the Department. (Does not apply to utilities serving the general public.)

12. If the work authorized by this permit is on a project in the construction phase, it shall be the responsibility of the permittee to make personal contact with _____ Resident Engineer on the project to coordinate the permitted work with the State's prime contractor on the project.

13. This permit does not alleviate any requirements of any other government agency.

14. Permittee agrees to keep the priority route in which this permit was issued clear of dirt, mud, and debris during construction and for the life of this permit.

ANY ATTEMPT TO ALTER THIS FORM CONSITUTES A VOID PERMIT.

THE UNDERSIGNED APPLICANT (being duly authorized representative/owner) DOES AGREE TO ALL TERMS AND CONDITIONS SET FORTH HEREIN.

☐ January 1st, 20 ☒ July 1st, 2012 — Completion Date

10/25 — Date

Signature

RECOMMENDED FOR APPROVAL

PERMIT ENGINEER — Title

Signature

Kelly A. Baker — Chief District Engineer

4/20/11 — Date

PRIVATE ENTRANCE: TO BE COMPLETED BY PERSONNEL INSTALLING FACILITY.

Installed By _____ Title _____ Signature _____ Date

ANY ATTEMPT TO ALTER THIS FORM CONSITUTES A VOID PERMIT.

ANY ATTEMPT TO ALTER THIS FORM CONSTITUTES A VOID PERMIT.

KENTUCKY TRANSPORTATION CABINET
Department of Highways
Permits Branch

TC 99-1E
Rev.
02/2010

Released Date _____

ENCROACHMENT PERMIT

PERMIT NO. 07-0116-01

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NAME: Lexington-Fayette Urban County Government
CONTACT PERSON: Charles Martin, P.E.
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CITY: Lexington
STATE: KY ZIP CODE: 40511
PHONE: area code (859) 425-2400

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☐ C & R Sign(s)
☐ TODS
☐ LOGOS
☐ OTHER: (Specify)

*Electronic PDF file required of final plans and specifications

TYPE OF INDEMNITY: ☐ Bond ☐ Cash
☐ SELF-INSURED AMOUNT ENCUMBERED $ 5000.00
☐ OTHER _____

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☐ TC 99-203 (Attraction Eligibility Information)
☐ TC 99-204 (Signing Incentive Program Application)
☐ Other Attachments (Specify):

811 Before 'U' Dig CALL TOLL FREE 1-800-752-6007 For Utility Locations

INDEMNITY: The applicant, in order to secure this obligation, has deposited with the Transportation Cabinet as a guarantee of conformance with the Department's Encroachment Permit requirements, an indemnity in the amount of $ _____ as determined by the Department. It shall be the responsibility of the applicant or permitee, his heirs and assignees to keep all indemnities in full force until construction or reconstruction has been completed and duly accepted by an authorized agent of the Transportation Cabinet, Department of Highways.

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IMPORTANT (PLEASE READ): Applicant ☐ does ☒ does not intend to apply for excess-R/W.

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   Date _____ (This does not apply to utilities which serve the general public.)

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8. Upon a violation of any of the provisions of this permit, the Department may revoke the permit by giving notice to the permittee in writing to remove from the right-of-way any facilities placed thereon within a reasonable time as set forth in the notice, and in the event said facilities are not so removed, and the right-of-way restored the Department may cause same to be removed, and the costs thereof shall be charged to the permittee.

9. The permittee, his successors and assigns shall use the encroachment premises in compliance with all Federal requirements imposed pursuant to the provisions of the Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000-1) and regulations of the U.S. Department of Transportation as set forth in Title 49 C.F.R., Part 21, and as said regulations may be amended.

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14. Permittee agrees to keep the priority route in which this permit was issued clear of dirt, mud, and debris during construction and for the life of this permit.

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THE UNDERSIGNED APPLICANT (being duly authorized representative/owner) DOES AGREE TO ALL TERMS AND CONDITIONS SET FORTH HEREIN.

☐ January 1st, 20 ☒ July 1st, 2012	10/25	
Completion Date	Date	Signature

RECOMMENDED FOR APPROVAL

PERMIT ENGINEER		Kelly A. Baker	11/30/11
Title	Signature	~~Chief District Engineer~~ for Chief Engineer	Date

PRIVATE ENTRANCE: TO BE COMPLETED BY PERSONNEL INSTALLING FACILITY.

Installed By _____		
Title	Signature	Date

ANY ATTEMPT TO ALTER THIS FORM CONSITUTES A VOID PERMIT.

ANY ATTEMPT TO ALTER THIS FORM CONSITUTES A VOID PERMIT.

NOTICE OF COMPLETION OF ENCROACHMENT PERMIT WORK

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

Application Identification

Name: Lexington-Fayette Urban County Government

Contact Person: Charles Martin

Address: 301 Lisle Industrial Avenue

City: Lexington

State: Kentucky

Telephone: 859-425-2400

Project Identification

Permit Number: 07-0116-11

County: Fayette

Route Number: KY 1681

Road Name: Old Frankfort Pike

Milepoint: 4.849

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

_____
Applicant

Please Return To: Corrin Gulick, Permit Engineer
Department of Highways
District Seven
P. O. Box 11127
Lexington, KY 40512-1127

ENCROACHMENT PERMIT GENERAL NOTES & SPECIFICATIONS

Permit No. ROAD BORE

II. SAFETY

A. General Provisions

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

☒ All work necessary in shoulder or ditch line areas of a state highway shall be scheduled to be promptly completed so that hazards adjacent to the traveled way are kept to an absolute minimum.

☒ No more than one (1) traveled-lane shall be blocked or obstructed during normal working hours. All signs and flaggers during lane closure shall conform to the Manual on Uniform Traffic Control Devices.

☒ When necessary to block one (1) traveled-lane of a state highway, the normal working hours shall be as directed by the Department. No lanes shall be blocked or obstructed during adverse weather conditions (rain, snow, fog, etc.) without specific permission from the Department. Working hours shall be between 9:00 a.m. and 3:30 p.m.

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

☒ No nonconstruction equipment or vehicles or office trailers shall be allowed on the right of way during working hours.

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

B. Explosives

☒ No explosive devices or explosive material shall be used within state right of way without proper license and approval of the Kentucky Department of Mines and Minerals, Explosive Division.

C. Other Safety Requirements

☒ All workers within 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 Standard for Safety Apparel and Headwear"

III. UTILITIES - Applicable Fully Controlled Access Highways ONLY

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

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

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

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

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

Permit No. ROAD BORE

II. UTILITIES (Continued)

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

☒ Parallel lines shall be constructed between back slope of ditch line and right-of-way line and shall have a minimum of 30-inch cover above top of pipe or conduit.

☐ All pavement cuts shall be restored per Kentucky Transportation Cabinet form TC 99-13.

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

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

☐ Special requirements:

III. GENERAL

A. OSHA

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

B. Archaeological

☒ Whenever materials of an archaeological nature are discovered during the course of construction work or maintenance operations, contact shall be made immediately with the Division of Environmental Analysis, which maintains an archaeologist on staff, or with the Office of the State Archaeologist located at the University of Kentucky. Following this consultation, further action shall be decided on a case-by-case basis by the State Highway Engineer or the Transportation Planning Engineer or their designated representative.

C. Utilities in the Work Areas

☒ The permittee shall be responsible for any damage to existing utilities, and any utility modifications or relocations within state right of way necessary, as determined by the Department or by the owner of the utility, shall be at the expense of the permittee and subject to the approval of the Department.

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

D. Environmental

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

Websites

http://www.water.ky.gov/permitting/wastewaterpermitting/KPDES/storm/

Inspectors for KPDES KYR10 at www.KEPSC.org

Permit No. ROAD BORE

IV. RIGHT-OF-WAY RESTORATION

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

Lawn or High Maintenance Situation	70% Lawn Fescue (e.g., variety - Falcon) 30% Bluegrass **or** 70% Lawn Rye (e.g., variety - Derby) 30% Bluegrass
Right of Way Lawn Maintenance Situation	70% KY 31 Fescue 30% Perennial Rye Grass **or** 100% KY Fescue

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

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

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

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

☒ Existing concrete right of way markers shall not be disturbed, but if damaged in any way, they shall be entirely replaced by the permittee, with new concrete markers to match the original markers, in accordance with Kentucky Department of Highways Standard Drawings. Markers that are entirely removed shall be re-established in the proper locations by the permittee and to the satisfaction of the Department.

☐ Other right of way restoration requirements are as follows:

V. DRAINAGE

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

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

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

_____

_____

NOTICE TO PERMITTEE

THE PERMITTEE AGREES THAT ALL WORK WITHIN THE EXISTING RIGHT OF WAY SHALL BE DONE IN ACCO
WITH THE PLANS AS APPROVED AND PERMITTED BY AN ENCROACHMENT PERMIT. ANY CHANGES OR VAR
MADE AT THE TIME OF CONSTRUCTION WITHOUT WRITTEN APPROVAL FROM THE DEPARTMENT OF HIGHWAY
SHALL BE REMOVED BY THE PERMITTEE AT NO EXPENSE TO THE DEPARTMENT OF HIGHWAYS AND SHALL B
REDONE BY THE PERMITTEE TO CONFORM WITH THE APPROVED PLANS.

Kentucky Transportation Cabinet
Department of Highways
Permits Branch

EXHIB
TC 9
Rev. 9

TYPICAL HIGHWAY BORING CROSSING DETAIL

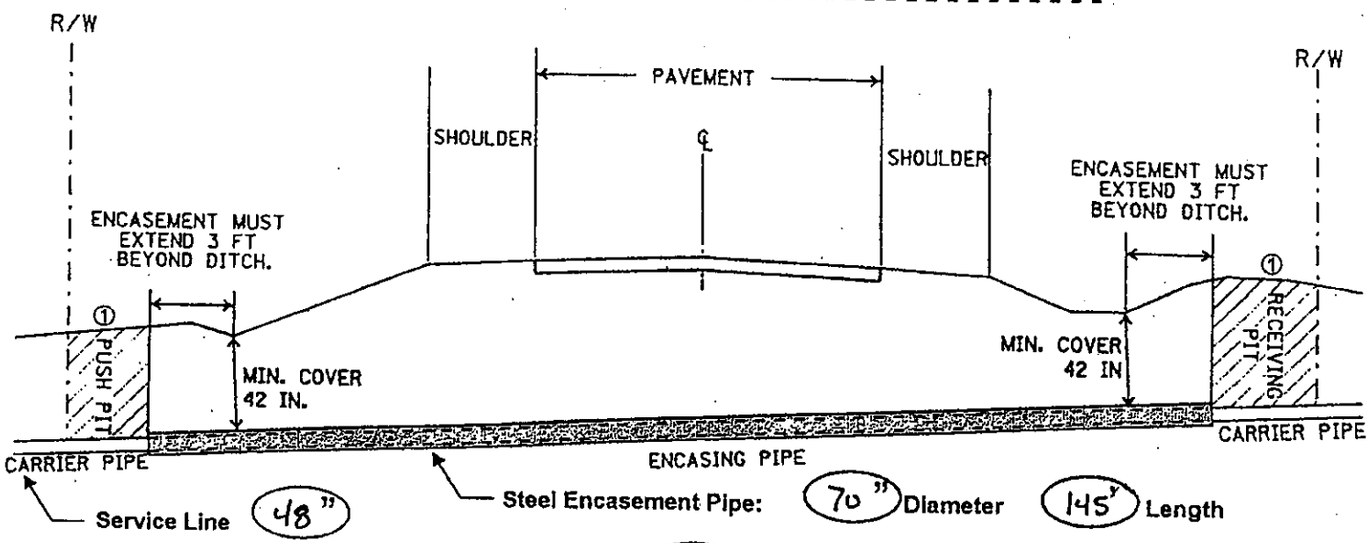
1. Push Pit and Receiving Pit shall be backfilled and thoroughly compacted.
2. All ditch lines are to remain open at all times.
3. Seed and straw all disturbed areas immediately after completing the work.
4. Provide traffic control as required to insure the safety of the public in accordance with the current edition of the Manual on Uniform Traffic Control Devices.

ALL SERVICES OVER 2" IN DIAMETER SHALL REQUIRE ENCASEMENT.

Route Number: Ky 1681

Pavement Width: 45'

Failure to place bore at 42" depth will result in re-boring at applicant's expense, and may result in forfeiture of bond or other indemnity.



Service Line (48")

Steel Encasement Pipe: (70") Diameter (145') Length

Auger Size: (") (not more than 2" larger than encasement pipe O.D.)

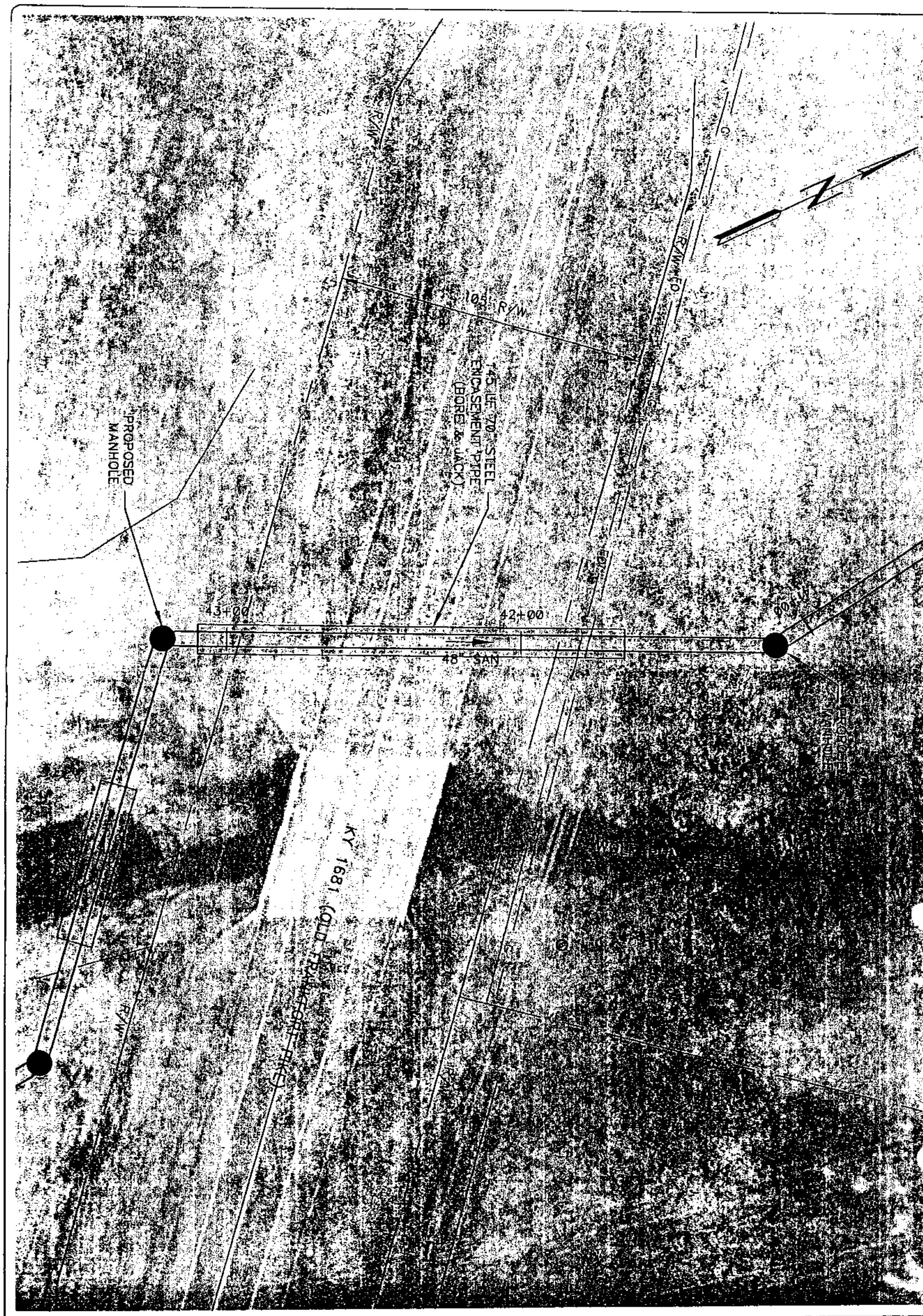
① Push pit and receiving pit shall be backfilled and thoroughly compacted.

2. All ditch lines shall be restored to original condition.

3. Shape, seed, and straw all disturbed areas.

4. Services over 2" shall be steel encased unless exempt under Chapter Two of the KYTC Permits Guidance Manual.

KENTUCKY DEPARTMENT OF HIGHWAYS	
TYPICAL HIGHWAY BORING CROSSING DETAIL	
TC99-10 Re	)6 Dist. 4



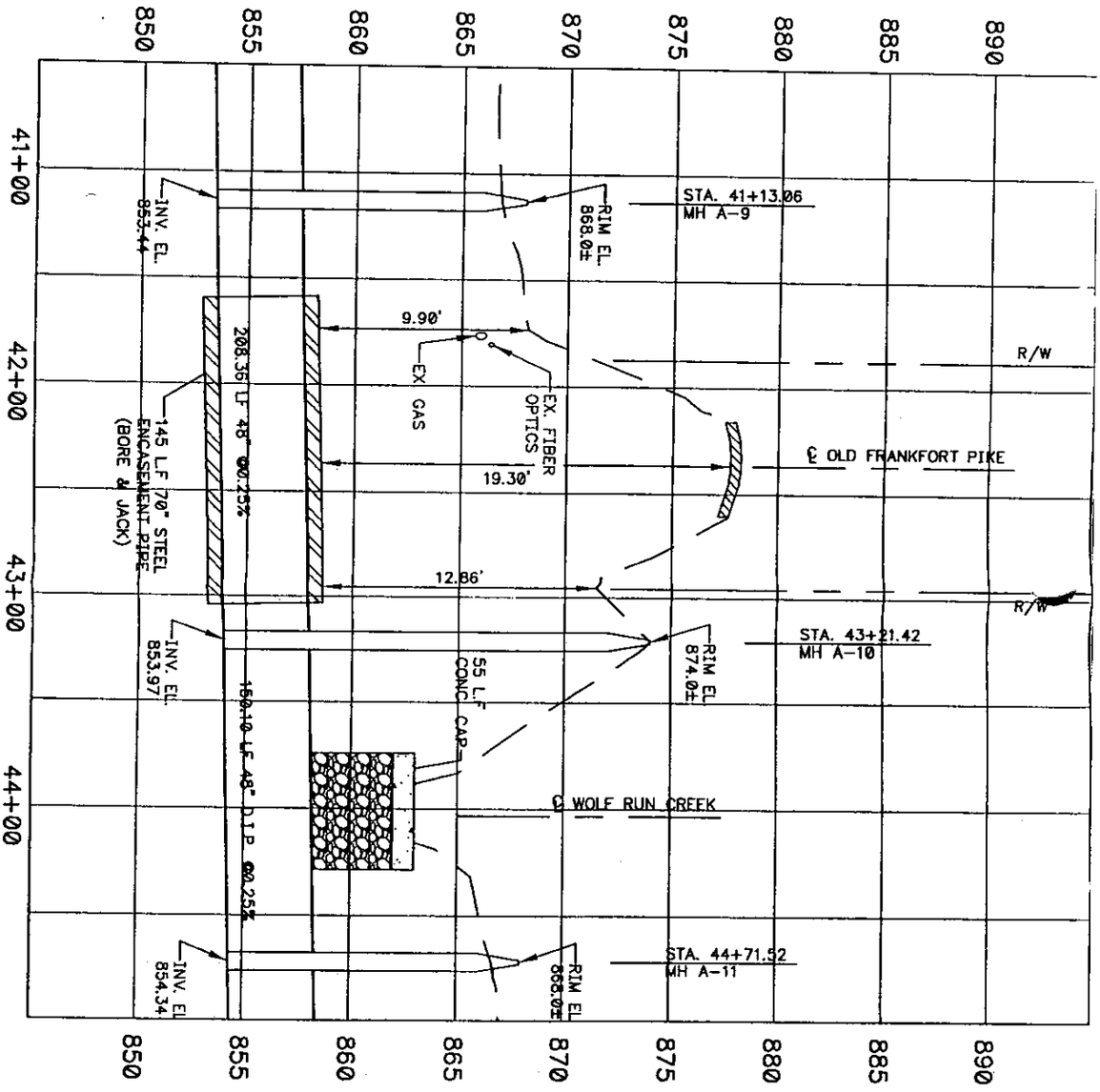
SCALE: 1"=50'
DATE: AUGUST, 2010
JOB NO.:
DESIGNED:
DRAWN:
CHECKED:
Q/C:
OWNER APPROVAL:
BY:
TITLE:
REVISIONS:
NO. DATE

DRAWING: 1 OF

WOLF RUN
GRAVITY SEWER AND FORCE MAIN
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
LEXINGTON, KENTUCKY

KTC ENCROACHMENT PERMIT – PLAN
KY 1681 (OLD FRANKFORT PIKE)

HDR | Quest
HDR|Quest Engineers, Inc.
Lexington, Kentucky — Louisville, Kentucky
Columbus, Ohio — Cincinnati, Ohio



DRAWING 2 OF

WOLF RUNN
GRAVITY SEWER AND FORCE MAIN
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
LEXINGTON, KENTUCKY

KTC ENCROACHMENT PERMIT – PROFILE
KY 1681 (OLD FRANKFORT PIKE)

HDR | Quest
HDR|Quest Engineers, Inc.
Lexington, Kentucky · Louisville, Kentucky
Columbus, Ohio · Cincinnati, Ohio

RECEIVED APR 21 2011

TRANSPORTATION CABINET

Steven L. Beshear
Governor

Department of Highways District 7 Office
763 West New Circle Rd., Building 2
Lexington, KY 40512
(859) 246-2355

Michael W. Hancock, P.E.
Secretary

Charles Martin
Lexington Fayette Urban Co. Govt.
301 Lisle Industrial Avenue
Lexington, Kentucky 40511

Subject: Fayette County MP 034-0004-006.784
KY 0004 (New Circle Road)
Lexington Fay. Urban Co. Govt.
Utility(APP NO 07-0117-11)

Dear Applicant:

Attached is your application for a permit that has been approved by the Department of Highways.

Please see that work is done in conformity with permit and applicable conditions. If you have any questions, please contact Corrin Gulick, Permit Engineer, at (859) 246-2355.

Sincerely,

Kelly A. Baker

4/20/11
Date

Kelly A. Baker, P.E.
Branch Manager Engineering Support

KAB/mb
Attachments

Kentucky UNBRIDLED SPIRIT

NTUCKY TRANSPORTATION CABINET
Department of Highways
Permits Branch

TC 99-1E
Rev.
02/2010

Released Date _____

ENCROACHMENT PERMIT

PERMIT NO. 07-0177-11

APPLICANT IDENTIFICATION:

NAME: Lexington-Fayette Urban County Government
CONTACT PERSON: Charles Martin, P.E.
ADDRESS: 301 Lisle Industrial Avenue
CITY: Lexington
STATE: KY ZIP CODE: 40511
PHONE: area code (859) 425-2400

PROJECT IDENTIFICATION:

ACCESS CONTROL: ☒ By Permit ☐ Partial ☐ Full
COUNTY: Fayette PRIORITY ROUTE NO: KY4
MILEPOINT: 6.784 ☐ Left ☒ Right ☒ X-ing
PROJECT STATUS: ☒ Maint. ☒ Const. ☐ Design
PROJECT # STATE: hm 7034-0004-006.784
PROJECT # FEDERAL: _____
ROAD/STREET NAME: New Circle Road

TYPE OF ENCROACHMENT:

☐ COMMERCIAL ENTRANCE - BUSINESS* _____
☐ PRIVATE ENTRANCE: ☐ Single Family ☐ Farm
☒ UTILITY: ☐ Overhead ☒ Underground
☐ GRADE: ☐ Fill ☐ Landscape on R/W
☐ AIRSPACE: ☐ Agreement ☐ Lease
☐ C & R Sign(s)
☐ TODS
☐ LOGOS
☐ OTHER: (Specify)

*Electronic PDF file required of final plans and specifications

ATTACHMENTS:

☐ Standard Drawings (List on TC 99-21 under Misc.)
☒ Applicant's Plans
☐ Highway Plan and Profile Sheets
☐ TC 99-3 (Ponding Encroachment Specs. and Conditions)
☐ TC 99-4 (Rest Area Usage Specs. and Conditions)
☐ TC 99-5 (Tree Cutting/Trimming Specs. and Conditions)
☐ TC 99-6 (Chemical Use of Specs. and Conditions)
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☐ TC 99-23 (Mass Transit Shelter Specs. and Conditions)
☐ TC 99-201 (Tourist Signage Program Application)
☐ TC 99-202 (Temporary Agritourism Site Application)
☐ TC 99-203 (Attraction Eligibility Information)
☐ TC 99-204 (Signing Incentive Program Application)
☐ Other Attachments (Specify):

811
Before 'U' Dig
CALL TOLL FREE
1-800-752-6007
For Kentucky Facility Locations

TYPE OF INDEMNITY: ☐ Bond ☐ Cash
☐ SELF-INSURED AMOUNT ENCUMBERED $ 5000.00
☐ OTHER _____

NAME AND ADDRESS OF LOCAL INSURANCE AGENCY OR SELF-INSURED REPRESENTATIVE:

INDEMNITY: The applicant, in order to secure this obligation, has deposited with the Transportation Cabinet as a guarantee of compliance with the Department's Encroachment Permit requirements, an indemnity in the amount of $ _____ as determined by the Department. It shall be the responsibility of the applicant or permitee, his heirs and assignees to keep all indemnities in full force until construction or reconstruction has been completed and duly accepted by an authorized agent of the Transportation Cabinet, Department of Highways.

BRIEF DESCRIPTION OF WORK TO BE DONE.

Bore and jack a 42-inch steel encasement pipe under road in order to install a 30-inch sewer force main.

Applicant certifies project area ☐ does ☒ does not exceed one acre. Projects disturbing more than one acre require a KPDES KYR 10 permit.

IMPORTANT (PLEASE READ): Applicant ☐ does ☒ does not intend to apply for excess R/W.

When the work is completed in accordance with the terms of this encroachment permit, your indemnity will be released. However, the permit is effective until revoked by the Transportation Cabinet and the terms on the permit accompanying permit documents and drawings remain in effect as long as the encroachment exists. **FUTURE MAINTENANCE OF THE ENCROACHMENT IS THE RESPONSIBILITY OF THE PERMITEE.** It is important that you understand the requirements of this encroachment permit application and accompanying documents. If you have not done so, it is suggested that you review these documents and place the permit package in a safe place for future reference.

A copy of this permit and all documents shall be given to your contractor and shall be readily available at the work site for the encroachment permit inspector to review at all times. Failure to meet this requirement may result in cancellation of this permit.

IN THE EVENT THIS APPLICATION IS APPROVED, THIS DOCUMENT SHALL CONSTITUTE A PERMIT FOR THE APPLICANT TO USE THE RIGHT-OF-WAY, BUT ONLY IN THE MANNER AUTHORIZED BY THIS DOCUMENT AND REGULATIONS OF THE DEPARTMENT AND THE DRAWINGS, PLANS, ATTACHMENTS, AND OTHER PERTINENT DATA ATTACHED HERETO AND MADE A PART HEREOF.

Permit No. ____________

The permittee agrees to the following terms and conditions:

1. The permittee shall comply with and is bound by the requirements of the Department's Permits Manual as revised to and in effect on the date of the issuance of this permit which is made a part hereof by reference.

2. Permittee agrees that if the Department determines that vehicular capacity deficiencies or over capacity conditions develop as a result of the installation and use of this facility, the permittee shall adjust, relocate, or reconstruct the facilities and/or provide and bear the expenses for signs, auxiliary lanes, or other corrective measures reasonably deemed necessary by the Department and as set forth in the Department's Permits Manual within a reasonable length of time after receipt of written notice regarding such adjustments, relocation, additions, modifications, or corrective measures, such time to be specified in the notice. In cases where traffic signals are permitted or required, as determined by the Department, the costs for signal equipment and installation(s) shall be borne by the permittee and/or the Department in accordance with Department policy then in force as set forth in the Traffic Operations Manual. Any modifications to the permittee's entrance necessary to accommodate signalization (including necessary easement(s) on private property) shall be the responsibility of the permittee, at no expense to the Department. (This applies only to Entrance Permits.)

3. The said encroachment will not infringe on the frontage rights of an abutting owner without written consent of the said owner as hereto: "I(we) consent to the granting of attached permit." ____________

Date ____________ (This does not apply to utilities which serve the general public.)

4. Any permit granted hereunder shall be with the full understanding that it shall not interfere with any similar rights or permits heretofore granted to any other party except as otherwise provided by law.

5. A plan prepared by HDR Incorporated and dated August 2010 is attached hereto and made a part hereof, which describes the facilities to be constructed by the permittee for which facilities this permit is granted. The permittee agrees as a condition to the issuance of the permit to construct and maintain such facilities in accordance with said plan, and the permittee shall not use the facilities authorized herein in any manner contrary to that prescribed by this permit and plan. Normal usage and routine maintenance only are authorized under this permit.

6. Permittee shall comply with the Manual on Uniform Traffic Control Devices as revised to and in effect on the date of the issuance of this permit which is made a part hereof by reference.

7. Permittee shall at all times from date when work is first commenced and until such time as all facilities are removed from the right-of-way premise, defend, protect, and save harmless the Department from all liability, claims, and demands arising out of work undertaken by the permittee pursuant to this permit, due to any negligent act or omission by the permittee, its servants, agents, employees, or contractors. This provision shall not inure to the benefit of any third party or operate to enlarge any liability of the Department beyond that existing at common law if this right to indemnity did not exist.

8. Upon a violation of any of the provisions of this permit, the Department may revoke the permit by giving notice to the permittee in writing to remove from the right-of-way any facilities placed thereon within a reasonable time as set forth in the notice, and in the event said facilities are not so removed, and the right-of-way restored the Department may cause same to be removed, and the costs thereof shall be charged to the permittee.

9. The permittee, his successors and assigns shall use the encroachment premises in compliance with all Federal requirements imposed pursuant to the provisions of the Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000-1) and regulations of the U.S. Department of Transportation as set forth in Title 49 C.F.R., Part 21, and as said regulations may be amended.

10. Permittee agrees that in the event it should become necessary, as may be reasonably determined by the Department, for the facilities covered by this permit to be removed or relocated in connection with the reconstruction, relocation, or improvement of the abutting highway, the Department may revoke this permit and require removal or relocation by the permittee at his own expense according and pursuant to the procedures provided in Paragraph 8 above except in those cases where the Department is required by law to pay any or all the same.

11. The permittee understands and agrees that this permit is personal to the permittee and shall not inure to his successors and assigns without the written approval of the Department that he is bound by the provisions of this permit as long as the encroachment exists unless a written release has been obtained from the Department. (Does not apply to utilities serving the general public.)

12. If the work authorized by this permit is on a project in the construction phase, it shall be the responsibility of the permittee to make personal contact with ____________ Resident Engineer on the project to coordinate the permitted work with the State's prime contractor on the project.

13. This permit does not alleviate any requirements of any other government agency.

14. Permittee agrees to keep the priority route in which this permit was issued clear of dirt, mud, and debris during construction and for the life of this permit.

ANY ATTEMPT TO ALTER THIS FORM CONSITUTES A VOID PERMIT.

THE UNDERSIGNED APPLICANT (being duly authorized representative/owner) DOES AGREE TO ALL TERMS AND CONDITIONS SET FORTH HEREIN.

☐ January 1st, 20 ☒ July 1st, 2012 — Completion Date | 10/25/10 — Date | [signature] — Signature

RECOMMENDED FOR APPROVAL

PERMIT ENGINEER — Title | [signature] — Signature | [signature] ~~Chief District Engineer~~ TEBm E — 4/20/11 Date. Supt.

PRIVATE ENTRANCE: TO BE COMPLETED BY PERSONNEL INSTALLING FACILITY.

Installed By ____________ Title ____________ Signature ____________ Date

ANY ATTEMPT TO ALTER THIS FORM CONSITUTES A VOID PERMIT.

A N Y A T T E M P T T O A L T E R T H I S F O R M C O N S T I T U T E S A V O I D P E R M I T.

NTUCKY TRANSPORTATION CABINET
Department of Highways
Permits Branch

TC 99-1E
Rev.
02/2010

Released Date _____

ENCROACHMENT PERMIT

PERMIT NO. 07-0117-11

APPLICANT IDENTIFICATION:

NAME: Lexington-Fayette Urban County Government
CONTACT PERSON: Charles Martin, P.E.
ADDRESS: 301 Lisle Industrial Avenue
CITY: Lexington
STATE: KY ZIP CODE: 40511
PHONE: area code (859) 425-2400

PROJECT IDENTIFICATION:

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MILEPOINT: 6.784 ☐ Left ☒ Right ☒ X-ing
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PROJECT # STATE: hn7034-0004-006.184
PROJECT # FEDERAL: _____
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☐ PRIVATE ENTRANCE: ☐ Single Family ☐ Farm
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☐ TC 99-203 (Attraction Eligibility Information)
☐ TC 99-204 (Signing Incentive Program Application)
☐ Other Attachments (Specify):

811 BUD
Before 'U' Dig
CALL TOLL FREE
1-800-752-6007
For Buried Line/Cable Locations

TYPE OF INDEMNITY: ☐ Bond ☐ Cash
☐ SELF-INSURED AMOUNT ENCUMBERED $ 5000.00
☐ OTHER _____

NAME AND ADDRESS OF LOCAL INSURANCE AGENCY OR SELF-INSURED REPRESENTATIVE:

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   Date _____ (This does not apply to utilities which serve the general public.)

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5. A plan prepared by HDR Incorporated and dated August 2010 is attached hereto and made a part hereof, which describes the facilities to be constructed by the permittee for which facilities this permit is granted. The permittee agrees as a condition to the issuance of the permit to construct and maintain such facilities in accordance with said plan, and the permittee shall not use the facilities authorized herein in any manner contrary to that prescribed by this permit and plan. Normal usage and routine maintenance only are authorized under this permit.

6. Permittee shall comply with the Manual on Uniform Traffic Control Devices as revised to and in effect on the date of the issuance of this permit which is made a part hereof by reference.

7. Permittee shall at all times from date when work is first commenced and until such time as all facilities are removed from the right-of-way premise, defend, protect, and save harmless the Department from all liability, claims, and demands arising out of work undertaken by the permittee pursuant to this permit, due to any negligent act or omission by the permittee, its servants, agents, employees, or contractors. This provision shall not inure to the benefit of any third party or operate to enlarge any liability of the Department beyond that existing at common law if this right to indemnity did not exist.

8. Upon a violation of any of the provisions of this permit, the Department may revoke the permit by giving notice to the permittee in writing to remove from the right-of-way any facilities placed thereon within a reasonable time as set forth in the notice, and in the event said facilities are not so removed, and the right-of-way restored the Department may cause same to be removed, and the costs thereof shall be charged to the permittee.

9. The permittee, his successors and assigns shall use the encroachment premises in compliance with all Federal requirements imposed pursuant to the provisions of the Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000-1) and regulations of the U.S. Department of Transportation as set forth in Title 49 C.F.R., Part 21, and as said regulations may be amended.

10. Permittee agrees that in the event it should become necessary, as may be reasonably determined by the Department, for the facilities covered by this permit to be removed or relocated in connection with the reconstruction, relocation, or improvement of the abutting highway, the Department may revoke this permit and require removal or relocation by the permittee at his own expense according and pursuant to the procedures provided in Paragraph 8 above except in those cases where the Department is required by law to pay any or all the same.

11. The permittee understands and agrees that this permit is personal to the permittee and shall not inure to his successors and assigns without the written approval of the Department that he is bound by the provisions of this permit as long as the encroachment exists unless a written release has been obtained from the Department. (Does not apply to utilities serving the general public.)

12. If the work authorized by this permit is on a project in the construction phase, it shall be the responsibility of the permittee to make personal contact with _____ Resident Engineer on the project to coordinate the permitted work with the State's prime contractor on the project.

13. This permit does not alleviate any requirements of any other government agency.

14. Permittee agrees to keep the priority route in which this permit was issued clear of dirt, mud, and debris during construction and for the life of this permit.

ANY ATTEMPT TO ALTER THIS FORM CONSITUTES A VOID PERMIT.

THE UNDERSIGNED APPLICANT (being duly authorized representative/owner) DOES AGREE TO ALL TERMS AND CONDITIONS SET FORTH HEREIN.

☐ January 1st, 20 ☒ July 1st, 2012	10/25/10	
Completion Date	Date	Signature

RECOMMENDED FOR APPROVAL

PERMIT ENGINEER		~~Chief~~ District Engineer	4/20/11
Title	Signature		Date

PRIVATE ENTRANCE: TO BE COMPLETED BY PERSONNEL INSTALLING FACILITY.

Installed By _____ _____ _____

Title Signature Date

ANY ATTEMPT TO ALTER THIS FORM CONSITUTES A VOID PERMIT.

ANY ATTEMPT TO ALTER THIS FORM CONSTITUTES A VOID PERMIT.

NOTICE OF COMPLETION OF ENCROACHMENT PERMIT WORK

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

Application Identification

Name: Lexington-Fayette Urban County Government

Contact Person: Charles Martin

Address: 301 Lisle Industrial Avenue

City: Lexington

State: Kentucky

Telephone: 859-425-2400

Project Identification

Permit Number: 07-0117-11

County: Fayette

Route Number: KY 4

Road Name: New Circle Road

Milepoint: 6.784

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

_____
Applicant

Please Return To: Corrin Gulick, Permit Engineer
Department of Highways
District Seven
P. O. Box 11127
Lexington, KY 40512-1127

ENCROACHMENT PERMIT GENERAL NOTES & SPECIFICATIONS

Permit No. ROAD BORE

I. SAFETY

A. General Provisions

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

☒ All work necessary in shoulder or ditch line areas of a state highway shall be scheduled to be promptly completed so that hazards adjacent to the traveled way are kept to an absolute minimum.

☒ No more than one (1) traveled-lane shall be blocked or obstructed during normal working hours. All signs and flaggers during lane closure shall conform to the Manual on Uniform Traffic Control Devices.

☒ When necessary to block one (1) traveled-lane of a state highway, the normal working hours shall be as directed by the Department. No lanes shall be blocked or obstructed during adverse weather conditions (rain, snow, fog, etc.) without specific permission from the Department. Working hours shall be between 9:00 a.m. and 3:30 p.m.

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

☒ No nonconstruction equipment or vehicles or office trailers shall be allowed on the right of way during working hours.

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

B. Explosives

☒ No explosive devices or explosive material shall be used within state right of way without proper license and approval of the Kentucky Department of Mines and Minerals, Explosive Division.

C. Other Safety Requirements

☒ All workers within 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 Standard for Safety Apparel and Headwear"

II. UTILITIES - Applies to Fully Controlled Access Highways ONLY

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

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

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

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

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

Permit No. ROAD BORE

III. UTILITIES (Continued)

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

☒ Parallel lines shall be constructed between back slope of ditch line and right-of-way line and shall have a minimum of 30-inch cover above top of pipe or conduit.

☐ All pavement cuts shall be restored per Kentucky Transportation Cabinet form TC 99-13.

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

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

☐ Special requirements:

IV. GENERAL

A. OSHA

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

B. Archaeological

☒ Whenever materials of an archaeological nature are discovered during the course of construction work or maintenance operations, contact shall be made immediately with the Division of Environmental Analysis, which maintains an archaeologist on staff, or with the Office of the State Archaeologist located at the University of Kentucky. Following this consultation, further action shall be decided on a case-by-case basis by the State Highway Engineer or the Transportation Planning Engineer or their designated representative.

C. Utilities in the Work Areas

☒ The permittee shall be responsible for any damage to existing utilities, and any utility modifications or relocations within state right of way necessary, as determined by the Department or by the owner of the utility, shall be at the expense of the permittee and subject to the approval of the Department.

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

D. Environmental

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

Websites

http://www.water.ky.gov/permitting/wastewaterpermitting/KPDES/storm/

Inspectors for KPDES KYR10 at www.KEPSC.org

Permit No. ROAD BORE

IV. RIGHT-OF-WAY RESTORATION

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

Lawn or High Maintenance Situation	70% Lawn Fescue (e.g., variety - Falcon) 30% Bluegrass or 70% Lawn Rye (e.g., variety - Derby) 30% Bluegrass
Right of Way Lawn Maintenance Situation	70% KY 31 Fescue 30% Perennial Rye Grass or 100% KY Fescue

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

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

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

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

☒ Existing concrete right of way markers shall not be disturbed, but if damaged in any way, they shall be entirely replaced by the permittee, with new concrete markers to match the original markers, in accordance with Kentucky Department of Highways Standard Drawings. Markers that are entirely removed shall be re-established in the proper locations by the permittee and to the satisfaction of the Department.

☐ Other right of way restoration requirements are as follows:

V. DRAINAGE

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

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

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

_____

_____

NOTICE TO PERMITTEE

THE PERMITTEE AGREES THAT ALL WORK WITHIN THE EXISTING RIGHT OF WAY SHALL BE DONE IN ACCO[illegible]
WITH THE PLANS AS APPROVED AND PERMITTED BY AN ENCROACHMENT PERMIT. ANY CHANGES OR VAR[illegible]
MADE AT THE TIME OF CONSTRUCTION WITHOUT WRITTEN APPROVAL FROM THE DEPARTMENT OF HIGHWAY
SHALL BE REMOVED BY THE PERMITTEE AT NO EXPENSE TO THE DEPARTMENT OF HIGHWAYS AND SHALL B
REDONE BY THE PERMITTEE TO CONFORM WITH THE APPROVED PLANS.

Kentucky Transportation Cabinet
Department of Highways
Permits Branch

EXHIB
TC 9
Rev. 9

TYPICAL HIGHWAY BORING CROSSING DETAIL

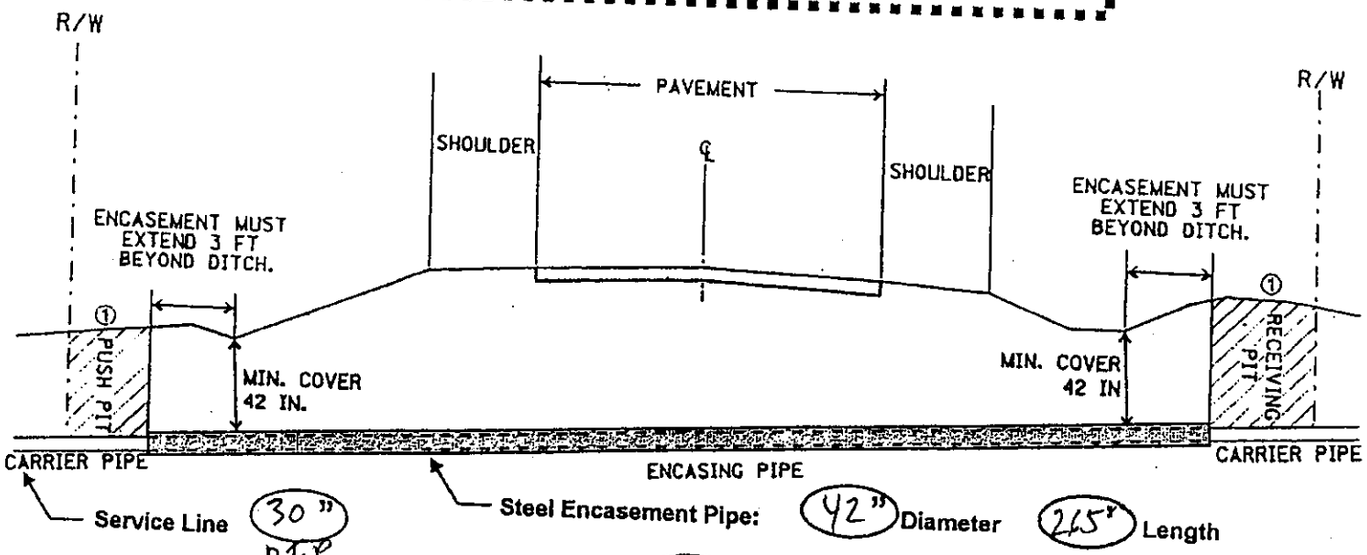
1. Push Pit and Receiving Pit shall be backfilled and thoroughly compacted.
2. All ditch lines are to remain open at all times.
3. Seed and straw all disturbed areas immediately after completing the work.
4. Provide traffic control as required to insure the safety of the Public in accordance with the current edition of the Manual on Uniform Traffic Control Devices.

ALL SERVICES OVER 2" IN DIAMETER SHALL REQUIRE ENCASEMENT.

Route Number: Ky 4

Pavement Width: FOUR LANES, SB 30' & NB 45' WITH GRASS MEDIAN

Failure to place bore at 42" depth will result in re-boring at applicant's expense, and may result in forfeiture of bond or other indemnity.



Auger Size: ( ) " (not more than 2" larger than encasement pipe O.D.)

① Push pit and receiving pit shall be backfilled and thoroughly compacted.

2. All ditch lines shall be restored to original condition.
3. Shape, seed, and straw all disturbed areas.
4. Services over 2" shall be steel encased unless exempt under Chapter Two of the KYTC Permits Guidance Manual.

KENTUCKY DEPARTMENT OF HIGHWAYS

TYPICAL HIGHWAY BORING CROSSING DETAIL

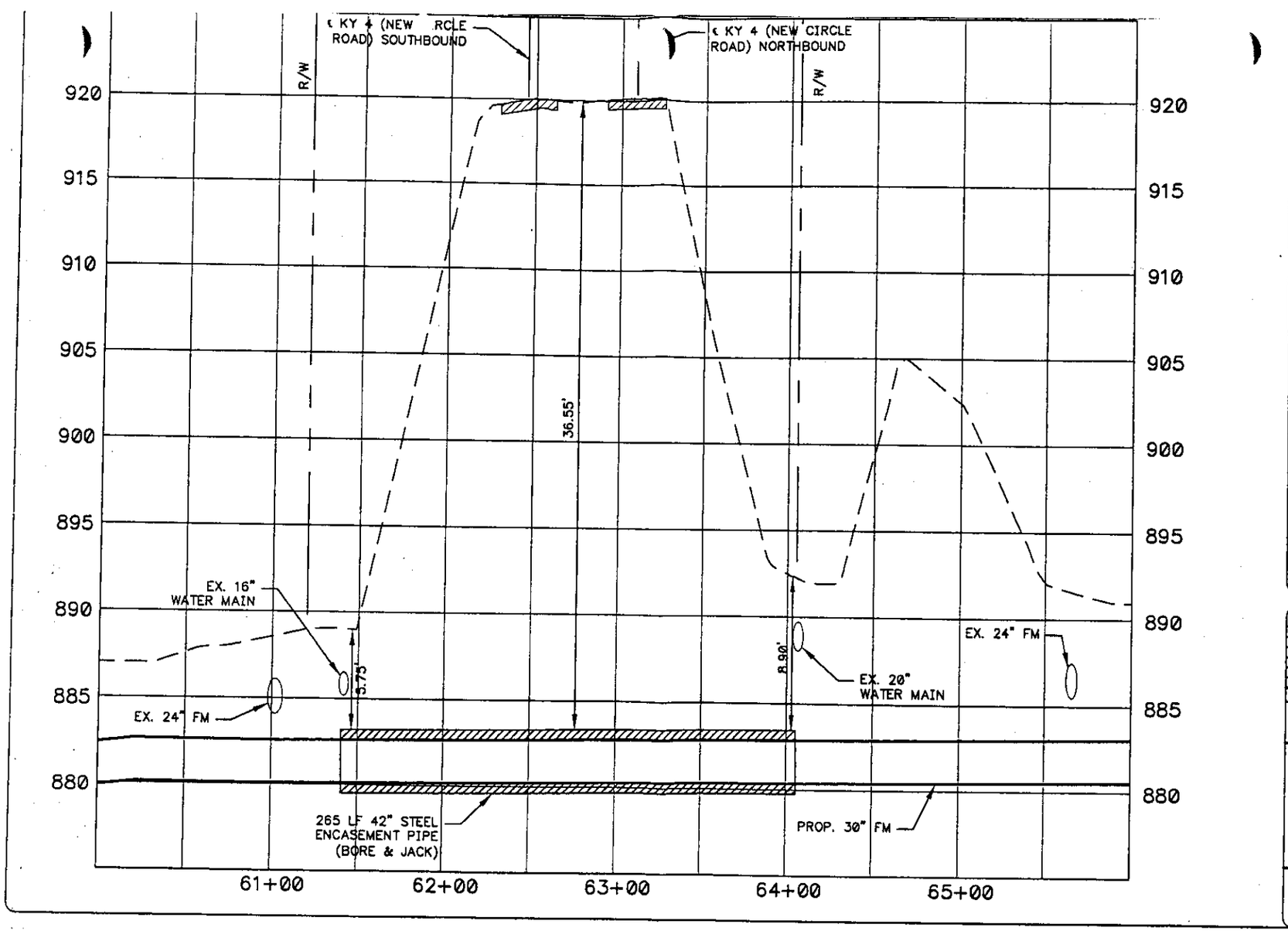
TC99-10 Rev. | Dist. 4

WOLF RUN
GRAVITY SEWER AND FORCE MAIN
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
LEXINGTON, KENTUCKY

KTC ENCROACHMENT PERMIT – PLAN
KY 4 (NEW CIRCLE ROAD)

HDR | Quest
HDR|Quest Engineers, Inc.
Lexington, Kentucky — Louisville, Kentucky
Columbus, Ohio — Cincinnati, Ohio

OWNER APPROVAL:
BY:
TITLE:
REVISIONS:
DRAWING:
1
OF



HDR|Quest
HDR|Quest Engineers, Inc.
Lexington, Kentucky Louisville, Kentucky
Columbus, Ohio Cincinnati, Ohio

WOLF RUNN
GRAVITY SEWER AND FORCE MAIN
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
LEXINGTON, KENTUCKY

KTC ENCROACHMENT PERMIT – PROFILE
KY 4 (NEW CIRCLE ROAD)

SCALE: 1"=50' HORZ. 1"=5' VERT.
DATE: AUGUST, 2010
JOB NO.: CON 69417467
DESIGNED: GTB
DRAWN: GTB
CHECKED:
QA/QC:
OWNER APPROVAL:
BY:
TITLE:
DATE:
REVISIONS:
NO. DATE

DRAWING: 2
OF

Appendix E

CSX Railroad Permit

1.3 No additional structures or other facilities shall be placed, allowed, or maintained by Licensee in, upon or on the Encroachment except upon prior separate written consent of Licensor.

2. ENCROACHMENT FEE; TERM:

2.1 Licensee shall pay Licensor a one-time nonrefundable Encroachment Fee of FOUR THOUSAND AND 00/100 U.S. DOLLARS ($4,000.00) upon execution of this Agreement. Licensee agrees that the Encroachment Fee applies only to the original Licensee under this Agreement. In the event of a successor (by merger, consolidation, reorganization and/or assignment) or if the original Licensee changes its name, then Licensee shall be subject to payment of Licensor's current administrative and document preparation fees for the cost incurred by Licensor in preparing and maintaining this Agreement on a current basis.

2.2 However, Licensee assumes sole responsibility for, and shall pay directly (or reimburse Licensor), any additional annual taxes and/or periodic assessments levied against Licensor or Licensor's property solely on account of said Facilities or Encroachment.

2.3 This Agreement shall terminate as herein provided, but shall also terminate upon: (a) Licensee's cessation of use of the Facilities or Encroachment for the purpose(s) above; (b) removal of the Facilities; (c) subsequent mutual consent; and/or (d) failure of Licensee to complete installation within five (5) years from the effective date of this Agreement.

2.4 In further consideration for the license or right hereby granted, Licensee hereby agrees that Licensor shall not be charged or assessed, directly or indirectly, with any part of the cost of the installation of said Facilities and appurtenances, and/or maintenance thereof, or for any public works project of which said Facilities is a part.

3. CONSTRUCTION, MAINTENANCE AND REPAIRS:

3.1 Licensee shall construct, maintain, relocate, repair, renew, alter, and/or remove the Facilities, in a prudent, workmanlike manner, using quality materials and complying with any applicable standard(s) or regulation(s) of Licensor (A.R.E.M.A. Specifications), or Licensee's particular industry, National Electrical Safety Code, or any governmental or regulatory body having jurisdiction over the Encroachment.

3.2 Location and construction of Facilities shall be made strictly in accordance with design(s) and specifications furnished to and approved by Licensor and of material(s) and size(s) appropriate for the purpose(s) above recited.

3.3 All of Licensee's work, and exercise of rights hereunder, shall be undertaken at time(s) satisfactory to Licensor, and so as to eliminate or minimize any impact on or interference with the safe use and operation of Licensor's property and appurtenances thereto.

3.4 In the installation, maintenance, repair and/or removal of said Facilities, Licensee shall not use explosives of any type or perform or cause any blasting without the separate express written consent of Licensor. As a condition to such consent, a representative will be assigned by Licensor to monitor blasting, and Licensee shall reimburse Licensor for the entire cost and/or expense of furnishing said monitor.

3.5 Any repairs or maintenance to the Facilities, whether resulting from acts of Licensee, or natural or weather events, which are necessary to protect or facilitate Licensor's use of its property, shall be made by Licensee promptly, but in no event later than thirty (30) days after Licensee has notice as to the need for such repairs or maintenance.

3.6 Licensor, in order to protect or safeguard its property, rail operations, equipment and/or employees from damage or injury, may request immediate repair or renewal of the Facilities, and if the same is not performed, may make or contract to make such repairs or renewals, at the sole risk, cost and expense of Licensee.

3.7 Neither the failure of Licensor to object to any work done, material used, or method of construction or maintenance of said Encroachment, nor any approval given or supervision exercised by Licensor, shall be construed as an admission of liability or responsibility by Licensor, or as a waiver by Licensor of any of the obligations, liability and/or responsibility of Licensee under this Agreement.

3.8 All work on the Encroachment shall be conducted in accordance with Licensor's safety rules and regulations.

3.9 Licensee hereby agrees to reimburse Licensor any loss, cost or expense (including losses resulting from train delays and/or inability to meet train schedules) arising from any failure of Licensee to make repairs or conduct maintenance as required by Section 3.5 above or from improper or incomplete repairs or maintenance to the Facilities or Encroachment.

4. PERMITS, LICENSES:

4.1 Before any work hereunder is performed, or before use of the Encroachment for the contracted purpose, Licensee, at its sole cost and expense, shall obtain all necessary permit(s) (including but not limited to zoning, building, construction, health, safety or environmental matters), letter(s) or certificate(s) of approval. Licensee expressly agrees and warrants that it shall conform and limit its activities to the terms of such permit(s), approval(s) and authorization(s), and shall comply with all applicable ordinances, rules, regulations, requirements and laws of any governmental authority (State, Federal or Local) having jurisdiction over Licensee's activities, including the location, contact, excavation and protection regulations of the Occupational Safety and Health Act (OSHA) (29 CFR 1926.651(b)), et al., and State "One Call" - "Call Before You Dig" requirements.

4.2 Licensee assumes sole responsibility for failure to obtain such permit(s) or approval(s), for any violations thereof, or for costs or expenses of compliance or remedy.

activities, to Licensor's Railroad Protective Liability (RPL) Policy for the period of actual construction. This coverage is offered at Licensor's discretion and may not be available under all circumstances.

10.6 Notwithstanding the provisions of Sections 10.1 and 10.2, Licensee, pursuant to State Statute(s), may self-insure or self-assume, in any amount(s), any contracted liability arising under this Agreement, under a funded program of self-insurance, which fund will respond to liability of Licensee imposed by and in accordance with the procedures established by law.

11. GRADE CROSSINGS; FLAGGING:

11.1 Nothing herein contained shall be construed to permit Licensee or Licensee's contractor to move any vehicles or equipment over the track(s), except at public road crossing(s), without separate prior written approval of Licensor (CSXT Form 7422).

11.2 If Licensor deems it advisable, during any construction, maintenance, repair, renewal, alteration, change or removal of said Facilities, to place watchmen, flagmen, inspectors or supervisors for protection of operations of Licensor or others on Licensor's rail corridor at the Encroachment, and to keep persons, equipment or materials away from the track(s), Licensor shall have the right to do so at the expense of Licensee, but Licensor shall not be liable for failure to do so.

11.3 Subject to Licensor's consent and to Licensor's Railroad Operating Rules and labor agreements, Licensee may provide flagmen, watchmen, inspectors or supervisors during all times of construction, repair, maintenance, replacement or removal, at Licensee's sole risk and expense; and in such event, Licensor shall not be liable for the failure or neglect of such watchmen, flagmen, inspectors or supervisors.

12. LICENSOR'S COSTS:

12.1 Any additional or alternative costs or expenses incurred by Licensor to accommodate Licensee's continued use of Licensor's property as a result of track changes or wire changes shall also be paid by Licensee.

12.2 Licensor's expense for wages ("force account" charges) and materials for any work performed at the expense of Licensee pursuant hereto shall be paid by Licensee within thirty (30) days after receipt of Licensor's bill therefor. Licensor may, at its discretion, request an advance deposit for estimated Licensor costs and expenses.

12.3 Such expense shall include, but not be limited to, cost of railroad labor and supervision under "force account" rules, plus current applicable overhead percentages, the actual cost of materials, and insurance, freight and handling charges on all material used. Equipment rentals shall be in accordance with Licensor's applicable fixed rate. Licensor may, at its discretion, require advance deposits for estimated costs of such expenses and costs.

13. DEFAULT, BREACH, WAIVER:

13.1 The proper and complete performance of each covenant of this Agreement shall be deemed of the essence thereof, and in the event Licensee fails or refuses to fully and completely perform any of said covenants or remedy any breach within thirty (30) days after receiving written notice from Licensor to do so (or within forty-eight (48) hours in the event of notice of a railroad emergency), Licensor shall have the option of immediately revoking this Agreement and the privileges and powers hereby conferred, regardless of encroachment fee(s) having been paid in advance for any annual or other period. Upon such revocation, Licensee shall make removal in accordance with Article 14.

13.2 No waiver by Licensor of its rights as to any breach of covenant or condition herein contained shall be construed as a permanent waiver of such covenant or condition, or any subsequent breach thereof, unless such covenant or condition is permanently waived in writing by Licensor.

13.3 Neither the failure of Licensor to object to any work done, material used, or method of construction or maintenance of said Encroachment, nor any approval given or supervision exercised by Licensor, shall be construed as an admission of liability or responsibility by Licensor, or as a waiver by Licensor of any of the obligations, liability and/or responsibility of Licensee under this Agreement.

14. TERMINATION, REMOVAL:

14.1 All rights which Licensee may have hereunder shall cease upon the date of (a) termination, (b) revocation, or (c) subsequent agreement, or (d) Licensee's removal of the Facility from the Encroachment. However, neither termination nor revocation of this Agreement shall affect any claims and liabilities which have arisen or accrued hereunder, and which at the time of termination or revocation have not been satisfied; neither party, however, waiving any third party defenses or actions.

14.2 Within thirty (30) days after revocation or termination, Licensee, at its sole risk and expense, shall (a) remove the Facilities from the rail corridor of Licensor, unless the parties hereto agree otherwise, (b) restore the rail corridor of Licensor in a manner satisfactory to Licensor, and (c) reimburse Licensor any loss, cost or expense of Licensor resulting from such removal.

15. NOTICE:

15.1 Licensee shall give Licensor at least thirty (30) days written notice before doing any work on Licensor's rail corridor, except that in cases of emergency shorter notice may be given. Licensee shall provide proper notification as follows:

a. For non-emergencies, Licensee shall complete and submit Licensor's Outside Party Number Request Form (Form # OP) by facsimile, to facsimile numbers: (904) 245-3692. Licensee may also scan and email a completed form to email address:

OP_Request@csx.com. A blank form, as well as additional instructions and information, can be obtained from Licensor's web site, via web link: http://www.csx.com/share/wwwcsx_mura/assets/File/Customers/Non-freight_Services/Property_Real_Estate/Outside_Party_Number_Request_Form.pdf.

b. For emergencies, Licensee shall complete all of the steps outlined in Section 15.1 a. above, and shall also include detailed information of the emergency. Licensee shall also call and report details of the emergency to Licensor's Rail Operations Emergency Telephone Number: 1-800-232-0144. In the event Licensor needs to contact Licensee concerning an emergency involving Licensee's Facility(ies), the emergency phone number for Licensee is: 859-425-2400.

15.2 All other notices and communications concerning this Agreement shall be addressed to Licensee at the address above, and to Licensor at the address shown on Page 1, c/o CSXT Contract Management, J180; or at such other address as either party may designate in writing to the other.

15.3 Unless otherwise expressly stated herein, all such notices shall be in writing and sent via Certified or Registered Mail, Return Receipt Requested, or by courier, and shall be considered delivered upon: (a) actual receipt, or (b) date of refusal of such delivery.

16. ASSIGNMENT:

16.1 The rights herein conferred are the privileges of Licensee only, and Licensee shall obtain Licensor's prior written consent to any assignment of Licensee's interest herein; said consent shall not be unreasonably withheld.

16.2 Subject to Sections 2 and 16.1, this Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors or assigns.

16.3 Licensee shall give Licensor written notice of any legal succession (by merger, consolidation, reorganization, etc.) or other change of legal existence or status of Licensee, with a copy of all documents attesting to such change or legal succession, within thirty (30) days thereof.

16.4 Licensor expressly reserves the right to assign this Agreement, in whole or in part, to any grantee, lessee, or vendee of Licensor's underlying property interests in the Encroachment, upon written notice thereof to Licensee.

16.5 In the event of any unauthorized sale, transfer, assignment, sublicense or encumbrance of this Agreement, or any of the rights and privileges hereunder, Licensor, at its option, may revoke this Agreement by giving Licensee or any such assignee written notice of such revocation; and Licensee shall reimburse Licensor for any loss, cost or expense Licensor may incur as a result of Licensee's failure to obtain said consent.

17. TITLE:

17.1 Licensee understands that Licensor occupies, uses and possesses lands, rights-of-way and rail corridors under all forms and qualities of ownership rights or facts, from full fee simple absolute to bare occupation. Accordingly, nothing in this Agreement shall act as or be deemed to act as any warranty, guaranty or representation of the quality of Licensor's title for any particular Encroachment or segment of Rail Corridor occupied, used or enjoyed in any manner by Licensee under any rights created in this Agreement. It is expressly understood that Licensor does not warrant title to any Rail Corridor and Licensee will accept the grants and privileges contained herein, subject to all lawful outstanding existing liens, mortgages and superior rights in and to the Rail Corridor, and all leases, licenses and easements or other interests previously granted to others therein.

17.2 The term "license," as used herein, shall mean with regard to any portion of the Rail Corridor which is owned by Licensor in fee simple absolute, or where the applicable law of the State where the Encroachment is located otherwise permits Licensor to make such grants to Licensee, a "permission to use" the Rail Corridor, with dominion and control over such portion of the Rail Corridor remaining with Licensor, and no interest in or exclusive right to possess being otherwise granted to Licensee. With regard to any other portion of Rail Corridor occupied, used or controlled by Licensor under any other facts or rights, Licensor merely waives its exclusive right to occupy the Rail Corridor and grants no other rights whatsoever under this Agreement, such waiver continuing only so long as Licensor continues its own occupation, use or control. Licensor does not warrant or guarantee that the license granted hereunder provides Licensee with all of the rights necessary to occupy any portion of the Rail Corridor. Licensee further acknowledges that it does not have the right to occupy any portion of the Rail Corridor held by Licensor in less than fee simple absolute without also receiving the consent of the owner(s) of the fee simple absolute estate. Further, Licensee shall not obtain, exercise or claim any interest in the Rail Corridor that would impair Licensor's existing rights therein.

17.3 Licensee agrees it shall not have nor shall it make, and hereby completely and absolutely waives its right to, any claim against Licensor for damages on account of any deficiencies in title to the Rail Corridor in the event of failure or insufficiency of Licensor's title to any portion thereof arising from Licensee's use or occupancy thereof.

17.4 Licensee agrees to fully and completely indemnify and defend all claims or litigation for slander of title, overburden of easement, or similar claims arising out of or based upon the Facilities placement, or the presence of the Facilities in, on or along any Encroachment(s), including claims for punitive or special damages.

17.5 Licensee shall not at any time own or claim any right, title or interest in or to Licensor's property occupied by the Encroachments, nor shall the exercise of this Agreement for any length of time give rise to any right, title or interest in Licensee to said property other than the license herein created.

17.6 Nothing in this Agreement shall be deemed to give, and Licensor hereby expressly waives, any claim of ownership in and to any part of the Facilities.

17.7 Licensee shall not create or permit any mortgage, pledge, security, interest, lien or encumbrances, including without limitation, tax liens and liens or encumbrances with respect to work performed or equipment furnished in connection with the construction, installation, repair, maintenance or operation of the Facilities in or on any portion of the Encroachment (collectively, "Liens or Encumbrances"), to be established or remain against the Encroachment or any portion thereof or any other Licensor property.

17.8 In the event that any property of Licensor becomes subject to such Liens or Encumbrances, Licensee agrees to pay, discharge or remove the same promptly upon Licensee's receipt of notice that such Liens or Encumbrances have been filed or docketed against the Encroachment or any other property of Licensor; however, Licensee reserves the right to challenge, at its sole expense, the validity and/or enforceability of any such Liens or Encumbrances.

18. GENERAL PROVISIONS:

18.1 This Agreement, and the attached specifications, contains the entire understanding between the parties hereto.

18.2 Neither this Agreement, any provision hereof, nor any agreement or provision included herein by reference, shall operate or be construed as being for the benefit of any third person.

18.3 Except as otherwise provided herein, or in any Rider attached hereto, neither the form of this Agreement, nor any language herein, shall be interpreted or construed in favor of or against either party hereto as the sole drafter thereof.

18.4 This Agreement is executed under current interpretation of applicable Federal, State, County, Municipal or other local statute, ordinance or law(s). However, each separate division (paragraph, clause, item, term, condition, covenant or agreement) herein shall have independent and severable status for the determination of legality, so that if any separate division is determined to be void or unenforceable for any reason, such determination shall have no effect upon the validity or enforceability of each other separate division, or any combination thereof.

18.5 This Agreement shall be construed and governed by the laws of the state in which the Facilities and Encroachment are located.

18.6 If any amount due pursuant to the terms of this Agreement is not paid by the due date, it will be subject to Licensor's standard late charge and will also accrue interest at eighteen percent (18%) per annum, unless limited by local law, and then at the highest rate so permitted.

18.7 Licensee agrees to reimburse Licensor for all reasonable costs (including attorney's fees) incurred by Licensor for collecting any amount due under the Agreement.

18.8 The provisions of this License are considered confidential and may not be disclosed to a third party without the consent of the other party(s), except: (a) as required by statute, regulation or court order, (b) to a parent, affiliate or subsidiary company, (c) to an auditing firm or legal counsel that are agreeable to the confidentiality provisions, or (d) to Lessees of Licensor's land and/or track who are affected by the terms and conditions of this Agreement and will maintain the confidentiality of this Agreement.

18.9 Licensor shall refund to Licensee any overpayments collected, plus any taxes paid in advance; PROVIDED, however, such refund shall not be made when the cumulative total involved is less than One Hundred Dollars ($100.00).

21. RIDERS:

21.1 The following Rider(s) is/are herewith attached and included herein:

[X] Railroad Protection Rider

IN WITNESS WHEREOF, the parties hereto have executed this Agreement in duplicate (each of which shall constitute an original) as of the effective date of this Agreement.

Witness for Licensor:

CSX TRANSPORTATION, INC.

_____

By: _____

Print/Type Name: _____

Print/Type Title: _____

Witness for Licensee:

Meredith Nelson
Deputy Council Clerk

LEXINGTON FAYETTE URBAN COUNTY GOVERNMENT

By: _____

Who, by the execution hereof, affirms that he/she has the authority to do so and to bind the Licensee to the terms and conditions of this Agreement.

Print/Type Name: JIM GRAY

Print/Type Title: MAYOR

Tax ID No.: _____

Authority under Ordinance or

Resolution No. _____,

Dated 7/10/12.

RAILROAD PROTECTION RIDER

This Rider is and shall be a part of Agreement No. CSX679498, and is incorporated therein.

1. Licensor has conveyed its interest in only the track(s) facilities where the Encroachment is located to (hereinafter, the "Railroad Company").

2. The provisions of this Rider shall be **in addition to, and not in lieu of** the provisions of the Agreement to which this Rider is appended.

3. No entry onto Licensor's property by Licensee, or by any agent, representative, contractor, subcontractor of Licensee, is permitted until Licensee, after giving at least thirty (30) days advance written notice, schedules the installation with, and receives approval from the Railroad Company, shown below:

R.J. Corman Railroad
One Jay Station
Nicholasville, KY 40356
Phone: 859-881-2499
Email: DJHawley@RJCorman.com

In addition, the RPL insurance policy required under Section 10.5 shall name Railroad Company as the named insured, instead of Licensor. The RPL insurance policy requirements listed in Section 10.5 are hereby only offered as suggestions on behalf of the Railroad Company. The Railroad Company reserves the right to alter, revise, or change the provisions and/or monetary coverage limits of the required RPL insurance policy. The RPL insurance policy shall be sent to the Railroad Company for review and approval. No entry onto the corridor is permitted until Railroad Company issues its written approval of said RPL policy to Licensor.

4. The notice shall be accompanied by drawing(s) showing the general plan, elevation, details and methods of Licensee's proposed construction.

5. The term "Licensor" contained in Sections 3, 5 through 12, 14, 15, 17, and 18 of the Agreement to which this Rider is appended shall also apply to Railroad Company.

CSX | Print Form | Reset Form

Mail To: CSX Transportation, Inc.
ATTN: Corridor Occupancy Services
500 Water Street, J-180
Jacksonville, FL 32202
Submittal Must Include Drawing(s) and Review Fee(s)

FORM CSXT #A01 03/30/09

APPLICATION FOR FACILITY/UTILITY INSTALLATIONS

Application Date: ~~Aug 10, 2010~~ March 20, 2011 TMS

CSXT File/Agreement Number: CSX679498

SECTION 1: FACILITY OWNER INFORMATION — TO BE COMPLETED BY APPLICANT

Owner/Legal Company Identification (required)

Owner's Complete Legal Company Name:	Lexington Fayette Urban County Government				
Legal Address (1):	301 Lisle Industrial Avenue				
Legal Address (2):					
City:	Lexington	State:	KY	Zip:	40511

RECEIVED
APR 11 2011
CSX TRANSPORTATION PROPERTY SERVICES

Business Type:	☐ Corporation	☐ Limited Liability Company	☐ Limited Partnership
	☑ Municipality	☐ Limited Liability Partnership	☐ General Partnership
State of Incorporation:	Kentucky	Other Business Type - Describe:	

Billing Address

☑ *(Check box if same as above); if not, please complete below.*

Billing Address (1):					
Billing Address (2):					
City:		State:		Zip:	

Owner Contact Information

Contact Name:	Charles Martin, P.E.	Contact Title:	Director of Water Quality
Office Phone:	859-425-2400 Ext.:	Mobile Phone:	fax: 859-254-7787
Email:	chmartin@lexingtonky.gov	Emergency Phone:	

SECTION 2: PROJECT CONTACT INFORMATION — TO BE COMPLETED BY APPLICANT

☐ *Check here if address is the same as legal address above.*
☐ *If not the same as above, check here if agreement should be mailed to this address.*

Project Engineer/Consultant/Agent Information

Engineer/Consultant/ Agent Company Name:	HDR Incorporated				
Contact Name:	Tom Schaffer, P.E.				
Mailing Address:	2517 Sir Barton Way				
City:	Lexington	State:	KY	Zip:	40509
Office Phone:	859-223-3755	Mobile Phone:	859-321-3365		
Email:	tom.schaffer@hdrinc.com				

Exhibit "A"
Sheet 1 of 2
CSXT File No. 679498

SECTION 3: PROJECT INFORMATION/LOCATION — **TO BE COMPLETED BY APPLICANT**

Project Reference

Is this covered by an existing CSX permit/agreement or master agreement:

- ☐ Yes — Provide Agreement # and/or date:
- ☑ No

Is this project related to another transaction/project with CSX:

- ☐ Yes — Describe:
- ☑ No

Provide utility owner project reference number:

Project Scope

Check box to indicate type of installation request:

- ☑ New Installation Request
- ☐ Upgrade/Replacement/Relocation of Existing Facilities

Will proposed installation connect to an existing facility within railroad corridor:

- ☐ Yes — Provide name of connecting facility owner:
- ☑ No

Check all boxes that apply to indicate type of installation request:

- ☑ Sub-grade
- ☐ Aerial

If "Sub-grade," check all boxes that apply to indicate proposed method of installation:

- ☑ Jack & Bore
- ☐ Horizontal Directional Drill
- ☐ Other — Describe:

Project Description

Description / Scope *(include: purpose, scope of work, materials, equipment, geographic features, special conditions)*:

To bore and jack a 42" casing pipe under railroad in order to install a 30" sewer force main.

Exhibit "A"
Sheet 2 of 2
CSXT File No. 729498

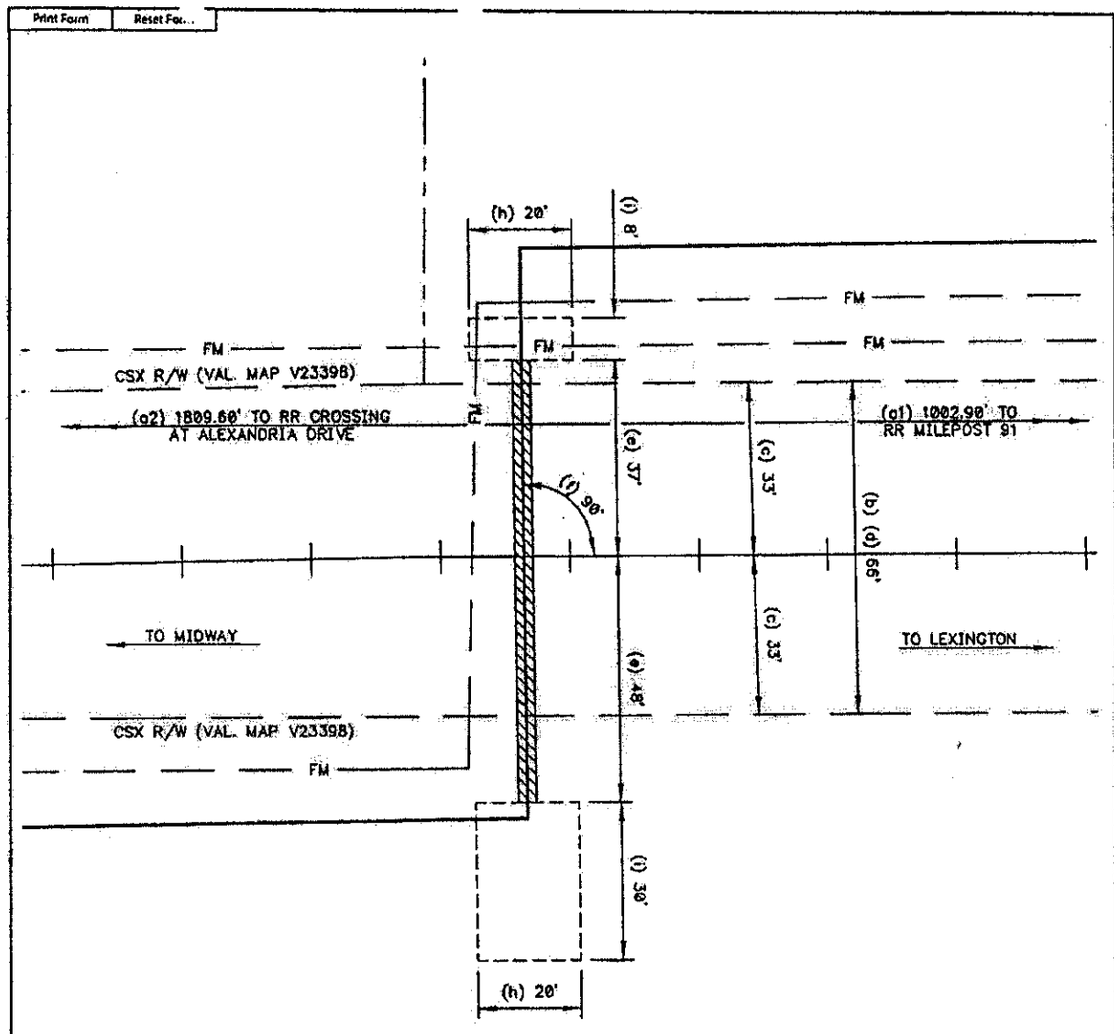
Project Location

City:	Lexington	County:	Fayette	State:	Kentucky

Will facility installation be located entirely within public road right-of-way:

- ☐ Yes — Provide AAR/DOT Crossing Inventory Number of Road (posted at crossing):
- ☑ No

Print Form | Reset For...



NOTES:

(a1) Distance from crossing to nearest actual milepost. (1002.91' from MP 91).

(a2) Distance from crossing to nearest public road intersection. (ID No. 346 816 E).

(b) Width of CSX R/W.

(c) Distance from centerline of track to R/W.

(d) Total length of pipe on CSX R/W.

(e) Distance from centerline of track to face of pits.

(f) Angle of crossing.

(h) Width of launching/receiving pit.

(i) Length of launching/receiving pit.

Exhibit "B"
Sheet 1 of 2
CSXT File No. G 7949Y

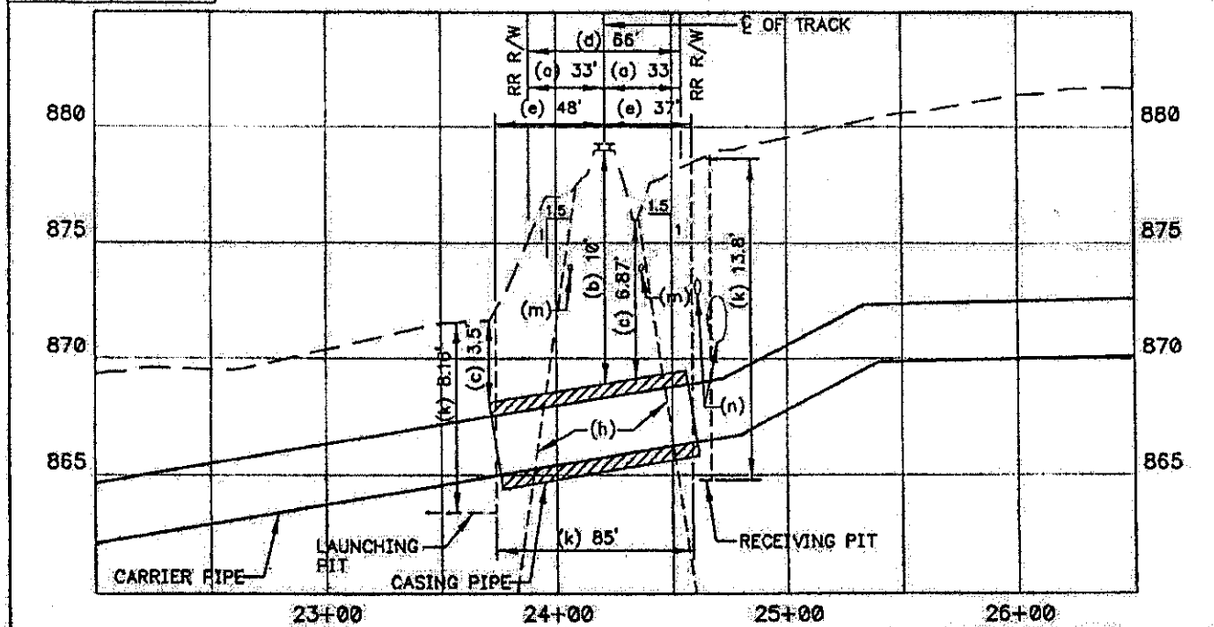
CSX Real Estate Engineering
Engineering Design Approved
By:
Date: 6-29-11

HDR

HDR Engineering, Inc.

Location:	Lexington, Kentucky
Latitude:	38 deg. 04 min. 19 sec.
Longitude:	84 deg. 32 min. 50 sec.
Drawing No.:	Sheet 1 of 1
Drawing Date:	Aug 9, 2010 Last Revised:
Drawing Scale:	1 Inches = 20 Feet

Print Form | Reset For.



NOTES:

Exhibit "B"
Sheet 2 of 2
CSXT File No. 679468

CSX Real Estate Engineering
Engineering Design Approved
By:
Date: 6-29-11

THE FRONT OF THE CASING PIPE SHALL BE PROVIDED WITH MECHANICAL ARRANGEMENTS OR DEVICES THAT WILL POSITIVELY PREVENT THE AUGER FROM LEADING THE PIPE SO THAT NO UNSUPPORTED EXCAVATION IS AHEAD OF THE PIPE.
CSXT PIPELINE SPECS. PAGE 23, (k), iii (c)

CASING PIPE ENDS WILL BE SEALED IN ACCORDANCE WITH CSXT SPECS.
CSXT PIPELINE SPECS. PAGE 19, E)

Additional Notes/Information:

(a) Distance from centerline of track to CSX R/W.

(b) Distance from base-of-rail to top-of-casing.

(c) Distance from base-of-ditch to top-of-casing.

(d) Total length of pipe on CSX R/W.

(e) Distance from centerline of track to face of pits.

(h) Theoretical embankment line: starts 12' from centerline of track and extends away from track at a slope of 1.5' over and 1' down.

(k) Depth of launching/receiving pit.

CSXT Pipeline Spec. Reference	PIPELINE CONTENT DETAILS		
	Commodity Description:	Sanitary Sewer	
	Maximum Operating Pressure:		
	Is Commodity Flammable:	☐ Yes ☑ No	
	CARRIER/CASING PIPE DETAILS		
		Carrier Pipe	Casing Pipe
Page 13, Ch. 8 17, D)	Pipe Material:	Ductile Iron Pipe	Steel
Page 13, Ch. 8 17, D)	Material Specifications & Grade:	ANSI/AWWA C151/A21.51	ASTM 139/Grade B
Page 13, Ch. 8 17, D)	Specified Minimum Yield Strength:	42,000 psi	35,000 psi
	Nominal Size Outside Diameter (inches):	32"	42"
Page 14, Ch. 8	Wall Thickness (inches):	.43"	.625"
Page 13, Ch. 8 17, D)	Type of Seam:	Centrifugal Cast	Electric Fusion ARC Weld
Page 13, Ch. 8 17, D)	Type of Joints:	Bell & Spigot	Welded
Page 18, k)	Tunnel Liner Plates Required:	☑ No ☐ Yes	
	Cathodic Protection:	☑ No ☐ Yes	Type:
	Protective Coating:	☑ No ☐ Yes	Type:
	Temp. Track Support or Rip-Rap Req.:	☑ No ☐ Yes	Must Describe & Show on Drawing

HDR

HDR Engineering, Inc.

Location:	Lexington, Kentucky
Latitude:	38 deg. 04 min. 19 sec.
Longitude:	84 deg. 32 min. 58 sec.
Drawing No.:	Sheet 2 of 2
Drawing Date:	Aug 9, 2010 Last Revised:
Drawing Scale: V	1 inches = 5 Feet
Drawing Scale: H	1 inches = 50 Feet

Client#: 143864 41LEXINGTONF4

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 1/11/2013

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 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	CONTACT NAME: Brenda Stickrod	
J Smith Lanier & Co-Lexington Powell-Walton-Milward P O Box 2030 Lexington, KY 40588	PHONE (A/C, No, Ext): 800-796-3567	FAX (A/C, No): 859-254-8020
	E-MAIL ADDRESS: bstickrod@pwm-jsl.com	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : National Casualty Company	11991
INSURED Lexington-Fayette Urban Co Government 200 East Main Room 338, Government Center Lexington, KY 40507	INSURER B :	
	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES CERTIFICATE NUMBER: 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 INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY			PGO0000022	07/01/2012	07/01/2013	EACH OCCURRENCE	$5,000,000
	☐ COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
	☐ CLAIMS-MADE ☐ OCCUR						MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$5,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$
	☐ POLICY ☐ PRO-JECT ☐ LOC						PRODUCTS - COMP/OP AGG	$5,000,000
								$
A	AUTOMOBILE LIABILITY			PGO0000022	07/01/2012	07/01/2013	COMBINED SINGLE LIMIT (Ea accident)	$5,000,000
	☐ ANY AUTO						BODILY INJURY (Per person)	$
	☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	☐ HIRED AUTOS ☐ NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$
								$
	☐ UMBRELLA LIAB ☐ OCCUR						EACH OCCURRENCE	$
	☐ EXCESS LIAB ☐ CLAIMS-MADE						AGGREGATE	$
	☐ DED ☐ RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						☐ WC STATU-TORY LIMITS ☐ OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐	N / A					E.L. EACH ACCIDENT	$
	(Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$
A	Errors and Omissions			PGO0000022	07/01/2012	07/01/2013	$5,000,000 Aggregate	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Coverage is Excess of the Retained Limit

R.J. Corman Railroad Co./Central Kentucky Line, Attn: Debbie Hawley, P.O. Box 788, Nicholasville, KY 40340 is named as additional insured as per written contract, but only with respects to the general liability insurance and subject to the provisions and limitations of the policy. This certificate applies to all contracts/agreements between the named insured and CSXT.

CERTIFICATE HOLDER

CSX Transportation, Inc.
500 Water Street
Speed Code J-180
Jacksonville, FL 32202

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

PXL